



RESTORING SIERRA MEADOWS: THE SOURCE OF CALIFORNIA'S WATER



DEAR EARTHWATCHER,

Welcome to *Restoring Sierra Meadows: The Source of California's Water!* I hope this expedition will be interesting, challenging, and fun. Before you delve into this expedition briefing, I'd like to tell you a little about why this project and your help are important.

The California Floristic Province is one of the world's biodiversity hotspots, meaning that it is home to a disproportionately high number of plant and animal species (biodiversity) that exist nowhere else on Earth. Meadows across the Sierra Nevada contain very distinct and diverse plant and animal communities that are threatened by human impacts from recreation, grazing and larger scale issues like climate change.

Meadows are also important for water storage and habitat connectivity, providing California with water to sustain its ever-growing population and agricultural endeavors. Promoting the restoration of mountain meadows is critical for supplying our state with enough water to grow and habitat for the plant and animal species that we cherish.

As participants in this research, you will provide much needed assistance in helping scientists quantify and describe the health of mountain meadows, as well as collect data on aspen and trees, groundwater levels, plant species abundance, soil moisture, and stream bank stability.

We look forward to meeting you and working with you in this research project. See you soon!

With best regards on behalf of our entire research team,

Rachel Hutchinson
River Science Director
South Yuba River Citizens League

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GENERAL INFORMATION

RESTORING SIERRA MEADOWS: THE SOURCE OF CALIFORNIA'S WATER



EARTHWATCH SCIENTISTS

Rachel Hutchinson, River Science Director,
South Yuba River Citizens League

Cordi Craig, River Restoration Coordinator,
South Yuba River Citizens League

Karl Ronning, Hydrologist,
South Yuba River Citizens League

RESEARCH SITE

Sagehen Creek Research Station, California

EXPEDITION DATES

Team 1: June 25–July 2, 2016 (GROUP)

Team 2: July 10–July 16, 2016 (TEACH EARTH)

Team 3: July 24–July 30, 2016 (TEACH EARTH)

Team 4: August 6–August 13, 2016 (GROUP)

Team 5: September 9–September 15, 2016

Team 6: September 25–October 1, 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.

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

**Please contact Earthwatch
with any questions.**



TRIP PLANNER

RESTORING SIERRA MEADOWS: THE SOURCE OF CALIFORNIA'S WATER

TRIP PLANNER

IMMEDIATELY

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

90 DAYS PRIOR TO EXPEDITION

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

60 DAYS PRIOR TO EXPEDITION

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

30 DAYS PRIOR TO EXPEDITION

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

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



THE RESEARCH

RESTORING SIERRA MEADOWS: THE SOURCE OF CALIFORNIA'S WATER



THE STORY

Each spring, melting snowpack flows from the Sierra Nevada Mountains, which run 400 miles long and 50 miles wide across eastern California. Some of this water is captured as groundwater by meadows before flowing into California's Central Valley. These meadows function like sponges, collecting runoff during periods of snowmelt and high rainfall, reducing downstream flooding. Meadows collect and store water, and act as natural filters by removing excess sediment and nutrients. Streams that run through meadows slowly drain them, releasing clean water late into the summer and fall when it is needed most. The Sierra Nevada Mountains provide two-thirds of the water supply in California—a state experiencing the worst drought in recorded history.

These delicate ecosystems have been altered by human activities, including grazing cattle that can alter the landscape, climate change (Blankinship and Hart 2014), mining, and fire suppression. These factors can influence meadows in the region by introducing invasive species, degrading streams, and altering the tree species that border the meadows (Ratliff 1985).

Meadows are typically flat areas dominated by grass and flowers, with few woody plants, such as shrubs and trees. Meadows are open, sunny, and often wet, characteristics that attract flora and fauna that could not survive in other areas of the watershed. In a healthy meadow, the edges are typically lined with leafy aspen stands. But as human activities change the landscape, conifers—trees that often outcompete aspens for water and sunlight—have begun to encroach upon the edges. Aspen are an important part of Sierra meadows because they support a unique assemblage of plant species.

Assessing the response of meadow habitat to these alterations is an important step towards understanding how grazing, mining, and fire suppression have changed the size and function of each meadow and increased susceptibility to our changing climate.



RESEARCH AIMS

The goal of SYRCL's Sierra Meadows project is to quantify the benefits of meadow restoration actions on groundwater and surface water, vegetation establishment, aspen recruitment, carbon sequestration, and greenhouse gas emissions within the Yuba watershed. We expect that these efforts will contribute significantly to the body of knowledge about Sierran Meadows.

Over the last two years, SYRCL's meadow restoration program has grown substantially. We are now in the process of restoring over 800 acres within 4 meadows in the Yuba watershed. In the current phase of this project, we are gathering baseline data to help us understand the current state of the meadows where we work and to help identify how specific attributes (like groundwater level or degree of conifer encroachment) of one meadow may change how it responds to restoration actions after projects are complete.

Restoring meadows by improving removing conifers and repairing stream channel conditions is critical to the improvement of meadow ecosystem function, habitat health, and carbon sequestration. In partnership with the Tahoe National Forest and the Truckee Donner Land Trust, the South Yuba River Citizens League (SYRCL) is working on stream and aspen restoration projects in the Yuba watershed. Each restoration project requires baseline and post-restoration monitoring to answer the following research questions:

- Is conifer encroachment more common or denser in meadows with impaired hydrology or where fire suppression practices have been in place?
- Are aspens returning to areas where conifers have been removed? Do restoration actions raise groundwater levels and overall meadow soil moisture within the meadow?
- Will meadow vegetation become denser and dominated by wetland species after restoration actions occur?

Will we see more carbon being sequestered within meadows before or after restoration?

HOW YOU WILL HELP

Each day you will work with a small group to evaluate stands of aspens or encroaching conifers, survey the stream channels, measure groundwater levels, vegetation density, soil carbon, or assist with greenhouse gas measurements within a meadow. You will be trained in all methods and will be supervised by a trained scientist throughout the entire duration of your expedition. After an initial orientation and introduction to the research tasks, you will receive daily basic training to ensure you and your team are comfortable and confident in accomplishing the tasks required of you and understand why the tasks are necessary to address the research objectives of this project.

STREAMLINE EVALUATIONS: Streamline evaluations will be conducted by walking the middle line of the stream and taking cross-section measurements and water depth within the stream bed. At some locations, stream velocity may be measured using a flow-meter.

ASPEN STAND EVALUATIONS: While conducting evaluations of aspen stands, you will identify aspens and conifers, measure the size and density of stands and trees, assess total vegetative understory cover, and estimate the density of conifers that have already been removed. You may also be assisting with removing small conifers within aspen stands.

VEGETATION DENSITY: Vegetation sampling will include sampling within small plots to identify all plants and how frequently they occur within the meadow.

GROUNDWATER MEASUREMENT: Groundwater measurements will include measuring water depth within groundwater wells. You may also be assisting with installing groundwater wells.

GREENHOUSE GAS: Measure greenhouse gases by taking air samples and soil carbon sequestration by taking soil samples.



DAILY LIFE IN THE FIELD

PLANS FOR YOUR TEAM

On the first two days of the expedition, you will receive an orientation to Sagehen Creek Research Station, including a health and safety briefing and introduction to the research. During the expedition, you will collect data in meadows near the upper sections of the South Yuba River and Donner Summit.

In addition to collecting data, you will also be given lectures on topics such as water use in California water and ecology of meadows and forests. Additionally, you will watch an environmental film focused on water issues that was featured at SYRCL's Wild and Scenic Film Festival.

In the setting of ecological field research, there is often a blurry line between work and play. The "work" can be quite enjoyable, and some volunteers have found it to be a life-changing experience. You will most likely experience a steep learning curve over the first few days of the project and will be pleasantly surprised at how much you have learned and accomplished by the end of the project.

ITINERARY

DAILY ACTIVITIES

While there is no typical day in the field our 'typical' day will be: Breakfast, a briefing of the work to be done for the day, the safety considerations involved with the work, and how the scientists will be using the data we will be collecting. We will follow this up by assembling our field gear, gathering our lunches, and heading into the field. We will collect scientific data to assess streamlines by measuring water depth and velocity, aspen stands by measuring the size and density of stands of trees, vegetation transects by walking a straight line and recording all the flower and grass species you encounter, groundwater well depth by measuring water depths, measuring greenhouse gas flux. We will have lunch in the field and complete our field work before heading back to the field station to add our data to the database and debrief. We will also spend time one day experiencing meadow restoration by removing small conifers in aspen stands. After a down time for journaling, hiking, taking pictures, or hanging out we will have dinner and listen to a research talk, or watch a wild and scenic film.

DAY 1: ARRIVAL

- Arrive at Reno-Tahoe International Airport where you will be met by the Earthwatch Scientist
- Travel to Sagehen Creek Research Station (approximately a one-hour drive)
- Settle into the accommodations, group dinner, introduction to the research

DAY 2: INTRODUCTION

- Travel to Loney or Van Norden Meadow
- Training on research tasks in a meadow: flower/grass transects, tree measuring, groundwater well monitoring, carbon sequestration monitoring.

DAY 3-6: DATA COLLECTION

- Data collection in meadows across the North & South Yuba drainage basin
- Flower and grass transects, measuring tree growth, groundwater measurements, soil sampling, streamline evaluations
- Evening lectures and videos
- Student presentations on the research

DAY 7: DEPARTURE

- Depart Sagehen Creek Research Station (approximate a one-hour drive)
- Arrive to Reno-Tahoe International Airport



ACCOMMODATIONS AND FOOD

ABOUT YOUR HOME IN THE FIELD

SLEEPING

Your team will stay at the Sagehen Creek Research Station, which is run by the University of California. Take a few minutes to explore the website at sagehen.berkeley.edu/ to get to know this special spot. The station houses scientists from all over the country studying the ecology, behavior, and evolution to many different organisms in the area. You'll sleep in single-room cabins furnished with several bunk beds. Three to six volunteers of the same sex will share a cabin. No bedding is provided, so you will have to bring your own sleeping bag (or linens and blanket), pillow, and bath towel(s).

BATHROOMS

Bathrooms and showers are located just outside of the bunkhouses in separate buildings.

ELECTRICITY

You are welcome to bring your own electronic equipment (cellphones, digital cameras, laptops, etc.), but you will be required to limit your use of cellphones or laptops to recreational time only.

PERSONAL COMMUNICATIONS

For those with laptops, a spotty wireless connection is available. Cell phones do not work within the station grounds. Volunteers with laptops may find that Skype is a better option for communicating with loved ones back home.

FACILITIES AND AMENITIES

The station provides free laundry soap and use of washing machines, but there are no dryers on site (the station tends to be fairly arid, so clothes will dry quickly on the line). There is a shared refrigerator in the kitchen area if you have some food you'd like to keep cold, but no food is allowed in the cabins. This is an important precautionary measure that insures that wildlife will not try to enter the sleeping quarters. The research facilities include a small library, some museum collections, and a working herbarium, as well as the Technical Equipment Laboratory, which provides microscope facilities, constant temperature chambers, and other equipment.

DISTANCE TO THE FIELD SITE

Your team will travel to general location of the research sites by van. The furthest site is approximately a 1 hour drive. Then, the team will walk on a trail to the road to the meadow, no more than two miles.

FOOD AND WATER

Meals will be prepared cooperatively by the research staff and your team. Cold breakfasts will usually be provided, as the team will be out in the field early. In good weather, meals will be eaten outside on picnic tables. The team will typically be out for the entire day, so each person will prepare their own bagged lunch to take along. The research staff and volunteers will eat together and all are expected to help with dishwashing.

TYPICAL MEALS

BREAKFAST	Cereal, toast, muffins, yogurt, and fresh fruit
LUNCH	Bag lunches: sandwich fixings, fruit, chips, snacks, etc.
DINNER	Classic American food
BEVERAGES	Juice, milk, iced tea, hot tea, coffee, water

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.

This project can cater for vegetarian diets easily, as well as vegan, gluten-free, and lactose-free diets.

PROJECT CONDITIONS

THE FIELD ENVIRONMENT



GENERAL CONDITIONS

Sagehen Creek Research Station July to September is typically very sunny, but afternoon thunderstorms are possible. The meadows in which you will work can be buggy and muddy. The evenings can be very cold at the station, even in the middle of summer. Rain is uncommon, but afternoon thunderstorms are possible.

GENERAL CONDITIONS

HUMIDITY: 0%–20%

TEMPERATURE RANGE: July–September: 23°–100° F

ALTITUDE: 2,624–12,000 feet above sea level

RAINFALL: <1 inch

ESSENTIAL ELIGIBILITY REQUIREMENTS:

All participants must be able to:

- Follow verbal and/or visual instructions independently or with the assistance of a companion.
- Walk over uneven, forested, mountainous, or hilly terrain for two to four hours for a distance of three to five miles per day, often in high temperatures.
- Independently follow verbal or visual instructions.
- Enjoy being outdoors all day in all types of weather, including high temperatures but usually low humidity.
- Enjoy being outdoors in the potential presence of wild animals, snakes, and insects.
- Enjoy working as a team, and function cohesively within a group.
- Carry personal daily supplies, such as lunch, water, and a camera.
- Tolerate working at high altitudes.
- Get low enough to access and collect samples on the ground and in the brush.
- Sit and ride, with seatbelt fastened, in project vehicles for up to approximately three hours per day.



POTENTIAL HAZARDS

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HAZARD TYPE	ASSOCIATED RISKS AND PRECAUTIONS
Transportation	The team will be transported over some rough dirt roads, some of which have many curves and big drop-offs. If you get carsick, bring medication. You must always wear a seatbelt.
Hiking	The fieldwork requires moderate hiking. The team may also hike on recreational days. Getting lost and tripping or falling are hazards; stay close to project staff and follow all instructions.
Altitude	High altitudes can cause physical effects like dizziness, nausea, headaches, sleepiness, and shortness of breath. Different people react in different ways. Having good physical fitness (primarily cardiovascular health), ascending in stages, and drinking lots of water can help prevent altitude sickness; however, even some people in great shape can experience negative effects. The beginning of the project is designed to help you adjust. Report any signs of altitude-related illness (e.g., headache, nausea or fatigue) to staff immediately.
Animals and Plants	Hazards include cacti with sharp spines, scorpions, and stinging wasps and ants. Some plants and arthropods in the area are dangerous. Do not touch cacti or any animals. You might see rattlesnakes in the desert, but it is not likely. Always watch your step as you hike.
Climate and Weather	It will be hot and dry, so heat exhaustion, dehydration, and sunburn are serious hazards. You must drink plenty of water, wear protective clothing, and use lots of sunscreen. Nights will be cold so be prepared with a warm fleece, hat, and pajamas.
Project Tasks/ Equipment	Hands should always be washed after being in the field, especially before eating. Volunteers are encouraged to take regular breaks and to avoid overexerting themselves. Teamwork and attention to proper technique will keep you from wearing out or getting injured. Inform a staff member immediately if you are feeling tired or ill.
Personal Security	Sagehen Creek Research Station a generally safe region for travelers; however, do not leave valuables unattended in public areas.
Swimming	Recreational swimming is an option. Drowning is a hazard. Swimming is permitted only in areas with lifeguards on duty and is not allowed alone or at night on any Earthwatch expedition.
Distance from Medical Care	In the field, the nearest medical facility is about an hour away. At the field station, we will be about 30 minutes from the nearest hospital. There is no cell phone reception at our field locations, but each team will have a SPOT device with them in case of emergency.
Disease	Please see below for immunization recommendations. Most diseases are prevented with basic safety cautions. Please see the CDC (cdc.gov) or WHO (who.int) websites for more information. Diseases present in this region of the U.S. include, but are not limited to, Lyme disease, rabies, bovine spongiform encephalopathy, pertussis, and West Nile Fever.



SAFETY

HEALTH INFORMATION



EMERGENCIES IN THE FIELD

Accommodations and 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 by using a SPOT beacon. 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:

Rachel Hutchinson (First Aid/CPR)

Cordi Craig (First Aid/CPR)

Karl Ronning (First Aid/CPR)

Jeff Brown (First Aid/CPR),

Faerthen Felix (First Aid/CPR),

Teen Facilitator (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



TRAVEL TIPS

SUGGESTIONS FOR THE ROAD



YOUR DESTINATION

LANGUAGE: English

TIME ZONE: Pacific Standard Time, which equals GMT -8 hours in the winter months.

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.

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

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

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:

South Yuba River Citizens League

c/o Rachel Hutchinson
313 Railroad Avenue Suite 101
Nevada City, California 95959





EXPEDITION PACKING LIST

WHAT TO BRING

EXPEDITION PACKING CHECKLIST

GENERAL

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

CLOTHING/FOOTWEAR FOR FIELDWORK

- Earthwatch T-shirt
- Lightweight, quick-drying, long-sleeved shirts
- Lightweight, quick drying, long pants
- Well worn-in, comfortable hiking boots or waterproof Gore-Tex shoes (you will be walking through muddy areas)
- Warm layers of clothing (e.g., lightweight jacket or fleece for cool evenings)
- Rain jacket (rain is uncommon, but afternoon thunderstorms are possible)
- Hat to protect against sun

CLOTHING/FOOTWEAR FOR LEISURE

- At least one set of clothing to keep clean for end of expedition
- Comfortable shoes/trainers/slippers for the accommodations
- Flip-flops for showers
- Warm pajamas and socks for sleeping
- Swimsuit and beach towel for recreational time

FIELD SUPPLIES

- Small daypack
- Sunscreen lotion with SPF 30 or higher
- Flashlight with extra batteries and extra bulb
- Two one-liter water bottles
- Insect repellent

- Sunglasses
- Headlamp or flashlight with extra batteries and extra bulb, for walking around the field station at night

BEDDING AND BATHING

- Sleeping bag or twin bed linens and a blanket. It gets cold at night in the field station
- Small travel pillow and pillowcase
- Bath towel(s)

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

- Head net (to keep mosquitos off you while in the field)
- Pencil and notebook for note taking during lectures or journaling
- 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. Space is limited so we recommend packing a duffel bag and discourage large hard suitcases.



PROJECT STAFF

YOUR RESOURCES IN THE FIELD



RACHEL HUTCHINSON is the River Science Director of the South Yuba River Citizens League (SYRCL) and works primarily in riparian ecosystems as a riparian ecologist. Ms. Hutchinson received her master's degree in water resources from The University of Idaho where she studied the impacts of invasive plant species on restored riparian ecosystems. Ms. Hutchinson will work with the Restoration Coordinator to lead volunteers in the field assist with sample collection and field assignments.

CORDI CRAIG is the River Restoration Coordinator at the South Yuba River Citizens League and works on SYRCL's restoration projects from the headwaters to the floodplain. Ms. Craig graduated from the University of Michigan with a degree in Anthropology and a focus in environmental conservation and sustainability.



KARL RONNING is the Hydrologist at the South Yuba River Citizens League and works primarily on examining the impacts from historic mines throughout the watershed and monitoring hydrologic monitoring for restoration projects in the Yuba's headwater meadows. Mr. Ronning earned his BS in Soil, Environmental, and Atmospheric Sciences at the University of Missouri-Columbia. Last year, Karl finished his last term of service as SYRCL's River Monitoring Coordinator and managed over 70 river monitors collecting data to protect the Yuba watershed. He is very interested in water conservation and managing fresh water as a sustainable resource to protect the environment to meet current and future human demand.

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

NOTE: Staff schedules are subject to change.



RECOMMENDED READING

YOUR RESOURCES AT HOME

RESOURCES

ARTICLES

- Restoring California Meadows Could Help Combat Climate Change and Increase Water Supply by Amy Quinton, Capitol Public Radio News—<http://www.capradio.org/articles/2015/11/20/restoring-california-meadows-could-help-combat-climate-change-and-increase-water-supply/>

BOOKS

- California Rivers and Streams by Jeffrey F. Mount

FIELD GUIDES

- Northwest California: A Natural History by John O. Sawyer
- The Laws Field Guide to the Sierra Nevada by John Muir Laws

PROJECT-RELATED WEBSITE

- Restoration with South Yuba River Citizen's League: yubariver.org/restoration/

EARTHWATCH SOCIAL MEDIA

- FACEBOOK: [facebook.com/Earthwatch](https://www.facebook.com/Earthwatch)
- TWITTER: twitter.com/earthwatch_org
- INSTAGRAM: [instagram.com/earthwatch](https://www.instagram.com/earthwatch)
- BLOG: earthwatchunlocked.wordpress.com
- YOUTUBE: [youtube.com/earthwatchinstitute](https://www.youtube.com/earthwatchinstitute)

LITERATURE CITED

LITERATURE

- Blankinship, Joseph C. and Stephen C. Hart. 2014. Hydrological Control of Greenhouse Gas Fluxes in a Sierra Nevada Subalpine Meadow. *Arctic, Antarctic, and Alpine Research*. 46(2):355-364.
- Ratliff, RD. 1985. Meadows in the Sierra Nevada: state of knowledge. *General technical report PSW-84*. Berkeley: United States Forest Service.



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



Participants Name: _____
Please Print

UNIVERSITY OF CALIFORNIA, BERKELEY – SAGEHEN CREEK FIELD STATION

Waiver of Liability, Assumption of Risk, and Indemnity Agreement

Waiver: In consideration of being permitted to participate in any way in
[_____

_____]

, I, for myself, my heirs, personal representatives or assigns, **do hereby release, waive, discharge, and covenant not to sue** The Regents of the University of California, its officers, employees, and agents from liability **from any and all claims including negligence of the Regents of the University of California, its officers, employees and agents**, resulting personal injury, accidents or illnesses (including death), and property loss arising from, but not limited to, participation in [_____].

Signature of Parent/Guardian of Minor Date Signature of Participant Date

Assumption of Risks: Participation in [_____] carries with it certain inherent risks that cannot be eliminated regardless of the care taken to avoid injuries. The specific risks vary from one activity to another, but the risks range from 1) minor injuries such as scratches, bruises, and sprains 2) major injuries such as eye injury or loss of sight, joint or back injuries, heart attacks, and concussions 3) catastrophic injuries including paralysis and death.

I have read the previous paragraphs and I know, understand, and appreciate these and other risks that are inherent in [_____]. I Hereby assert that my participation is voluntary and that I knowingly assume all such risks.

Indemnification and Hold Harmless: I also agree to INDEMNIFY AND HOLD The Regents of the University of California HARMLESS from any and all claims, actions, suits, procedures, costs, expenses, damages and liabilities, including attorneys fees brought as a result of my involvement in [_____] and to reimburse them for any such expenses incurred.

Severability: The undersigned further expressly agrees that the foregoing waiver and assumption of risks agreement is intended to be as broad and inclusive as is permitted by the law of the State of California and that if any portion thereof is held invalid, it is agreed that the balance shall, notwithstanding, continue in full legal force and effect.

Acknowledgement of Understanding: I have read this waiver of liability, assumption of risk, and indemnity agreement, fully understand its terms, and **understand that I am giving up substantial rights, including my right to sue.** I acknowledge that I am signing the agreement freely and voluntarily, and **intend by my signature to be a complete and unconditional release of all liability** to the greatest extent allowed by law.

Signature of Parent/Guardian of Minor Date Signature of Participant Date
Participant's Age (if minor) _____

UNIVERSITY OF CALIFORNIA, NATURAL RESERVE SYSTEM

PHOTO CONSENT FORM

From time to time, the University of California Natural Reserve System (NRS) makes videos, photographs, or audio recordings of activities in or related to NRS reserves. These photographs, tapes, and videos are used solely in support of the NRS and its research, educational, and outreach missions. Their uses include, but are not limited to, NRS brochures, its website, books, and materials sent to media outlets that inform the public about various activities at NRS reserves. These products may be excerpted in newspapers and magazines, or republished in electronic media. We appreciate your cooperation in signing the following consent for the University to use all and any images or sounds of you appearing in these photographs, videos, or audio tape recordings. I understand the photograph(s) or video or audio recording(s) taken of me by agents, employees, or representatives of The Regents of the University of California (hereinafter called "the University") shall be used in connection with the University's dissemination of information by its public service and academic programs to the general public.

I hereby irrevocably authorize the University to copy, exhibit, publish, or distribute any and all such images and audios of me or in which I appear, including composite or artistic forms and media, for purposes of publicizing University programs or for any other lawful purpose. In addition, I waive any right to inspect or approve the finished product, including written copy, in which my likeness appears.

I hereby hold harmless and release and forever discharge the University from all claims, demands, and causes of action which I, my heirs, representatives, executors, administrators, or any other persons acting on my behalf or on behalf of my estate have or may have by reason of this authorization.

_____	_____
(Signature)	(Date)
_____	_____
(Printed Name)	(Street Address)

	(City, State, Zip Code)

(If the person signing is under age 18, there should be consent by a parent or guardian, as follows:)

I hereby certify that I am the parent or guardian of _____,
the minor named above, and do hereby give my consent without reservations to the foregoing
on behalf of this person.

_____	_____
(Parent/Guardian's Signature)	(Date)

(Parent/Guardian's Printed Name)	



**South Yuba River Citizens League (SYRCL)
EXCURSION WAIVER AND RELEASE OF LIABILITY**

I, _____ (print name), hereby, with full knowledge of my rights do freely, voluntarily and without inducement or duress enter into this Volunteer Waiver and Release of Liability ("Agreement") in favor of the South Yuba River Citizens League (SYRCL), a California nonprofit organization.

1. **Assumption of Risk.** I am participating in a SYRCL EVENT with the knowledge that there is some risk that I may be injured in the course thereof. The SYRCL EVENT includes activities that may be hazardous to me, including, but not limited to, travel, walking uphill and downhill on uneven surfaces, potential encounters with hazardous plants (i.e. poison oak, thistles, & blackberry), ticks, and working with tools. I hereby expressly, voluntarily, and specifically assume the risk of injury or harm in connection with my volunteer activities.

2. **Waiver and Release.** I hereby release, discharge, and hold harmless SYRCL, its directors, officers, employees, volunteers, agents, successors, assigns, partners, and other representatives (collectively "SYRCL") from and all liability, claims, actions, and demands of whatever kind, in law or equity, that I, my heirs, guardians, legal representatives, assigns or other representatives (collectively "I") now have or may hereafter have for any bodily or personal injury, illness, death, property damage or any other liability or harm resulting from or in connection with my participation in volunteer activities for SYRCL. I hereby agree that I will not make a claim of any kind against or file an action of any kind against SYRCL for any injury, harm, damages, or compensation resulting from negligence, howsoever, caused as a result of or in connection with my participation in volunteer activities for SYRCL. I INTEND THIS AGREEMENT TO EXEMPT AND RELIEVE SYRCL FROM LIABILITY FOR PERSONAL INJURY, PROPERTY DAMAGES OR WRONGFUL DEATH CAUSED BY NEGLIGENCE.

3. **Insurance; Medical Treatment; Workers Compensation.** I understand and hereby agree that SYRCL does not assume any responsibility for providing assistance, including but not limited to medical, health, disability or workers' compensation care, insurance or compensation, in the event of any injury, illness, death, or property damage with respect to my participation in the salmon tour with SYRCL, and I expressly waive any claim for compensation or liability on the part of SYRCL. I hereby release and forever discharge SYRCL from any claim whatsoever arising on account of any first aid, medical treatment, or other service rendered, or not rendered, in connection with the SYRCL EVENT.

4. **Photo, Audio, Video, Work Product and Intellectual Property Release.** I hereby grant and convey to SYRCL all right, title, and interest I may have or acquire in any and all photographic images, video, or audio recordings made by or for SYRCL, as well as all right, title and interest I may have in any work product or intellectual property in connection with my participation in the SYRCL EVENT.

5. **Miscellaneous.** I hereby expressly agree that this Agreement is intended to be as broad and inclusive as permitted by California law, which shall govern, and shall be liberally interpreted in SYRCL's favor. If any provision of this Waiver is invalidated by any court of competent jurisdiction, the remaining provisions shall continue in effect. This agreement is the entire agreement between the parties

I HAVE CAREFULLY READ THIS AGREEMENT AND FULLY UNDERSTAND ITS CONTENTS.

DATED: _____ SIGNATURE: _____

DATED: _____ SIGNATURE: _____
Parent or Guardian (if participant is under 18)

Name of person to contact in case of an emergency: _____

Phone number of person to contact in case of an emergency: _____

MESSAGE FROM EARTHWATCH

DEAR EARTHWATCHER,

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

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

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

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

Sincerely,



Scott Kania
President and CEO, Earthwatch





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