

SCIENTIFIC RESEARCH AND COLLECTING PERMIT



Grants permission in accordance with the attached general and special conditions

United States Department of the Interior
National Park Service

Yosemite

Study#: YOSE-00884

Permit#: YOSE-2022-SCI-0004

Start Date: Jan 19, 2022

Expiration Date: Dec 31, 2022

Coop Agreement#:

Optional Park Code:

Name of principal investigator:

Name: Ms Michelle Toshack

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Name of institution represented:

Adventure Scientists

Additional investigators or key field assistants:

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Name: Joshua Theurer

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Study Title:

Wild and Scenic Rivers

Purpose of study:

We will conduct a nationwide water quality monitoring study on Wild and Scenic River (WSR) segments across 40 states on federal lands. This project will update the water quality status of the majority of rivers across the National Wild and Scenic River system (NWSRS). Adventure Scientists is prepared to provide advisory data to support federal and state agencies in their efforts to implement the Clean Water Act (CWA), which include TMDLs (total maximum daily loads) as well as 303(b) and 303(d) listings. Adventure Scientists has designed the project to meet the priorities and standards of a variety of stakeholders and to ensure data can improve agencies' decision-making capacity. In addition, state water quality agencies have expressed that regular monitoring of all surface waters improve their management ability, which includes updating assessments of impaired waters and collecting data on waters identified as having a good status but with no data to verify those conditions. The multi-level and inter-agency relationships that develop during the life of the project should allow us to better coordinate across groups in response to water quality issues in the NWSRS.

Several states require repeat monitoring and minimum data points to determine the status of surface waters, including rivers, in order to comply with the CWA. Therefore, Adventure Scientists is planning for four years of data collection (until fall/winter 2022) to enable the collection of sufficient data for river segments with significant data gaps/needs (e.g., unassessed and unknown waters). At full scale, volunteers may be deployed in 40 states.

Subject/Discipline:

Water Quality

Locations authorized:

Research activities will take place in Yosemite NP and data collection will occur in designated Wild and Scenic portions of the Tuolumne River. Exact points for data collection are to be determined, and will be marked by volunteers when collecting data.

Transportation method to research site(s):

Volunteers will access sampling sites by kayak, boat, or on foot.

Collection of the following specimens or materials, quantities, and any limitations on collecting:

Name of repository for specimens or sample materials if applicable:

NPS General Conditions for Scientific Research and Collecting Permit (available at the RPRS HELP page) apply to this permit. The following specific conditions or restrictions, and any attached conditions, also apply to this permit:

Park Contact for this permit is Cat Fong 209-379-1295

This permit is only valid until December 31, 2022. The researcher will need to apply for a renewal permit early in 2023 (January or February), if wanting to continue the study as it is NOT automatic. This is submitted in the RPRS website by following the links under the heading, Submit applications for research permits. After typing in your last name, the website finds all your permits in all NPS units. You can find your Yosemite permit and click on the link, apply for permission to continue this study at this park (a renewal request).

Yosemite requires that you have both your IAR and renewal application in the website before your application for the New Year can be reviewed. Please also note: Before your permit will be issued, any Repository Agreement for Collected Specimens (included as appendix pages in the final application sent to you after your application submittal by the RPRS website) must be signed by the responsible official at the repository institution and emailed to Mitzi Thornley at Mitzi_thornley@nps.gov.

Researcher will NOT collect special status plants or animals.
DRIVING ON RESTRICTED-USE ROADS IS NOT ALLOWED.

Cultural Resources in Yosemite are protected by the Historic Preservation Act of 1966, as amended (16 U.S.C. 470). Archaeological resources in the park are also protected and the Archaeological Resource Protection Act of 1979, as amended (16 U.S.C. 470aa), which carries criminal and civil penalties for removing or damaging archaeological resources. The Permittee shall provide adequate supervision of its employees, clients, and team members to ensure that the park's historical and archeological resources are not disturbed. The Permittee is responsible for informing its employees, clients, and team members of park regulations. Any ground disturbance must be cleared with the Chief, Resources Management, and Science.

Researcher will send two (2) copies of the final report to Curator of Collections, at laura_bender@nps.gov or via phone at 209-372-0282.

Researcher is required to send to Yosemite National Park Resources Management and Science Division all relevant spatial data that was collected within the park. The preferred format for the data is ESRI Arc (vector or grid), either shapefiles, coverages, geodatabases, or grids. It is also preferable to have the data projected in UTM zone 11 North, North American Datum 1983. Digital data must also include a full metadata file that describes the data, including spatial reference system, contact information, abstract of data collection and purpose, information on the data itself, and all other relevant information. Metadata should adhere to the Federal Geographic Data Committee standard.

Researcher or park staff can contact the Yosemite Research Permit Coordinator, Mitzi Thornley (209) 742-2722 if there are any questions.

Over 95% of Yosemite is Congressionally-designated wilderness. Although research is one of the purposes of wilderness, it is important to tread lightly in the wilderness and to protect wilderness values. The park will carefully review any research proposals which place equipment (e.g. telemetry towers, monitoring instruments, etc.) in wilderness, and the permit application must be specific about such equipment. The use of equipment in wilderness is more likely to be approved if the application specifies why it is necessary for the equipment to be placed in wilderness, and why it cannot be placed outside of wilderness. Researchers, like all wilderness users, are asked to minimum human disturbance in wilderness. For overnight use, this means employing minimum impact camping techniques: camping in resilient areas that minimize impacts to vegetation, no camping with 100 feet of water bodies, no new fire rings, maximum group size of 15, no pets, etc. Researchers must comply with the same regulations that visitors are asked to comply with.

Proper food storage is particularly important, whether in the front country or in the wilderness. As with all visitors, researchers are asked to never store food in vehicles, and are required to use bear-proof food storage canisters. You can obtain the canisters by renting from the Bear Canister Program, administered by Yosemite Association (YA), at the wilderness centers in the park for \$5 per canister per 2-week period. If a large number of canisters or required for any time period (or any amount for an extended trip over 2 weeks), researchers must purchase or rent canisters outside the park. The canister rental program in Yosemite cannot handle large rentals plus cover the public rentals as well. You can contact YA at 209-379-2646 for purchasing for about \$50 each. If you do not need at the end of your research period, consider donating back to the Bear Canister Program or to NPS for future researcher use.

GENERAL CONDITIONS for SCIENTIFIC RESEARCH AND COLLECTING PERMIT

United States Department of the Interior National Park Service

1. Authority - The permittee is granted privileges covered under this permit subject to the supervision of the superintendent or a designee, and shall comply with all applicable laws and regulations of the National Park System area and other federal and state laws. A National Park Service (NPS) representative may accompany the permittee in the field to ensure compliance with regulations.
2. Responsibility - The permittee is responsible for ensuring that all persons working on the project adhere to permit conditions and applicable NPS regulations.
3. False information - The permittee is prohibited from giving false information that is used to issue this permit. To do so will be considered a breach of conditions and be grounds for revocation of this permit and other applicable penalties.
4. Assignment - This permit may not be transferred or assigned. Additional investigators and field assistants are to be coordinated by the person(s) named in the permit and should carry a copy of the permit while they are working in the park. The principal investigator

shall notify the park's Research and Collecting Permit Office when there are desired changes in the approved study protocols or methods, changes in the affiliation or status of the principal investigator, or modification of the name of any project member.

5.Revocation - This permit may be terminated for breach of any condition. The permittee may consult with the appropriate NPS Regional Science Advisor to clarify issues resulting in a revoked permit and the potential for reinstatement by the park superintendent or a designee.

6.Collection of specimens (including materials) - No specimens (including materials) may be collected unless authorized on the Scientific Research and Collecting permit.

The general conditions for specimen collections are:

- Collection of archeological materials without a valid Federal Archeology Permit is prohibited.
- Collection of federally listed threatened or endangered species without a valid U.S. Fish and Wildlife Service endangered species permit is prohibited.
- Collection methods shall not attract undue attention or cause unapproved damage, depletion, or disturbance to the environment and other park resources, such as historic sites.
- New specimens must be reported to the NPS annually or more frequently if required by the park issuing the permit. Minimum information for annual reporting includes specimen classification, number of specimens collected, location collected, specimen status (e.g., herbarium sheet, preserved in alcohol/formalin, tanned and mounted, dried and boxed, etc.), and current location.
- Collected specimens that are not consumed in analysis or discarded after scientific analysis remain federal property. The NPS reserves the right to designate the repositories of all specimens removed from the park and to approve or restrict reassignment of specimens from one repository to another. Because specimens are Federal property, they shall not be destroyed or discarded without prior NPS authorization.
- Each specimen (or groups of specimens labeled as a group) that is retained permanently must bear NPS labels and must be accessioned and cataloged in the NPS National Catalog. Unless exempted by additional park-specific stipulations, the permittee will complete the labels and catalog records and will provide accession information. It is the permittee's responsibility to contact the park for cataloging instructions and specimen labels as well as instructions on repository designation for the specimens.
- Collected specimens may be used for scientific or educational purposes only, and shall be dedicated to public benefit and be accessible to the public in accordance with NPS policies and procedures.
- Any specimens collected under this permit, any components of any specimens (including but not limited to natural organisms, enzymes or other bioactive molecules, genetic materials, or seeds), and research results derived from collected specimens are to be used for scientific or educational purposes only, and may not be used for commercial or other revenue-generating purposes unless the permittee has entered into a Cooperative Research And Development Agreement (CRADA) or other approved benefit-sharing agreement with the NPS. The sale of collected research specimens or other unauthorized transfers to third parties is prohibited. Furthermore, if the permittee sells or otherwise transfers collected specimens, any components thereof, or any products or research results developed from such specimens or their components without a CRADA or other approved benefit-sharing agreement with NPS, permittee will pay the NPS a royalty rate of twenty percent (20%) of gross revenue from such sales or other revenues. In addition to such royalty, the NPS may seek other damages to which the NPS may be entitled including but not limited to injunctive relief against the permittee.

7.Reports - The permittee is required to submit an Investigator's Annual Report and copies of final reports, publications, and other materials resulting from the study. Instructions for how and when to submit an annual report will be provided by NPS staff. Park research coordinators will analyze study proposals to determine whether copies of field notes, databases, maps, photos, and/or other materials may also be requested. The permittee is responsible for the content of reports and data provided to the National Park Service.

8.Confidentiality - The permittee agrees to keep the specific location of sensitive park resources confidential. Sensitive resources include threatened species, endangered species, and rare species, archeological sites, caves, fossil sites, minerals, commercially valuable resources, and sacred ceremonial sites.

9.Methods of travel - Travel within the park is restricted to only those methods that are available to the general public unless otherwise specified in additional stipulations associated with this permit.

10.Other permits - The permittee must obtain all other required permit(s) to conduct the specified project.

11.Insurance - If liability insurance is required by the NPS for this project, then documentation must be provided that it has been obtained and is current in all respects before this permit is considered valid.

12.Mechanized equipment - No use of mechanized equipment in designated, proposed, or potential wilderness areas is allowed unless authorized by the superintendent or a designee in additional specific conditions associated with this permit.

13.NPS participation - The permittee should not anticipate assistance from the NPS unless specific arrangements are made and documented in either an additional stipulation attached to this permit or in other separate written agreements.

14.Permanent markers and field equipment - The permittee is required to remove all markers or equipment from the field after the completion of the study or prior to the expiration date of this permit. The superintendent or a designee may modify this requirement through additional park specific conditions that may be attached to this permit. Additional conditions regarding the positioning and identification of markers and field equipment may be issued by staff at individual parks.

15.Access to park and restricted areas - Approval for any activity is contingent on the park being open and staffed for required operations. No entry into restricted areas is allowed unless authorized in additional park specific stipulations attached to this permit.

16.Notification - The permittee is required to contact the park's Research and Collecting Permit Office (or other offices if indicated in the stipulations associated with this permit) prior to initiating any fieldwork authorized by this permit. Ideally this contact should occur at least one week prior to the initial visit to the park.

17. Expiration date - Permits expire on the date listed. Nothing in this permit shall be construed as granting any exclusive research privileges or automatic right to continue, extend, or renew this or any other line of research under new permit(s).
18. Other stipulations - This permit includes by reference all stipulations listed in the application materials or in additional attachments to this permit provided by the superintendent or a designee. Breach of any of the terms of this permit will be grounds for revocation of this permit and denial of future permits.

WARNING: DISEASE THREAT

Equipment Decontamination Protocol for Researchers Working in Yosemite National Park

Yosemite National Park needs to minimize the human spread of parasites and non-native organisms between water bodies. The fungal pathogen, *Batrachochytrium dendrobatidis*, known as chytrid fungus, can be lethal to amphibians. This fungus is now in many lakes and water bodies in the park, is transmitted by aquatic zoospores, and is the proximate cause of recent mass mortalities and declines in the mountain yellow-legged frog.

All researchers must adhere to the following procedures to disinfect equipment, shoes, and clothing after entering a water body and before going to and sampling a new water body (each pond, lake, meadow, stream, tributary, etc.):

1. Before leaving any aquatic site, remove all organic matter (e.g., mud, plants, algae) from nets, measuring and sampling devices, boots, and other surfaces that have come into contact with water or potentially contaminated sediments, and rinse with clean water.
2. After every exposure to any aquatic site, submerge everything that contacted water (e.g., boots, waders, measuring and sampling devices, traps) in a bucket or plastic bag for 2-5 minutes with either:

- (A) Quaternary ammonium compound 128 (use 0.1% of the active ingredient, didecyl dimethyl ammonium chloride [DDAC]), or
- (B) Household bleach (use 2% of the active ingredient, sodium hypochlorite). Bleach should be mixed from a bottle that has not been open for more than six weeks due to its rapid degradation.

Used disinfecting chemicals should be disposed of safely, such as in a sanitary sewer.

When using quaternary ammonium compound 128, rinse the disinfected equipment at least 100 feet from any aquatic area and over organic matter where the compound will break down (e.g., trail soil, decomposing log, duff). Rinse water should be obtained from the next water body.

When using bleach, the chemical does not have to be rinsed from the equipment after disinfection if the equipment is allowed to dry between water bodies. If it does not dry, rinse the treated equipment at least 100 feet from any aquatic area over inorganic substrates (e.g., rocky trail). Rinse water should be obtained from the next water body.

NOTE: completely drying equipment prior to moving between sites is probably not effective if chytrid has a resting stage. Do not substitute the disinfection procedure with drying.

Please contact the Research Permit Coordinator, Mitzi Thornley, (209) 742-2722 with any questions or concerns.

Sources:

Johnson, M.L., L. Berger, L. Philips, and R. Speare. 2003. Fungicidal effects of chemical disinfectants, UV light, desiccation and heat on the amphibian chytrid *Batrachochytrium dendrobatidis*. *Diseases of Aquatic Organisms* 37: 255-260.

US Fish and Wildlife Service Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog August 2005 Appendix B. Recommended Equipment Decontamination Procedures.

Summary of permitted field methods and activities:

This project empowers Adventure Scientists' volunteer network with the tools, technology, and guidance to collect water quality data across over 13,000 miles of WSRs managed by USFS, BLM, and NPS. Adventure Scientists will leverage its volunteer communities of whitewater rafters and kayakers as well as backpackers, mountain bikers, day-hikers, and trailrunners to collect the necessary data. We will launch the project's first phase as a small-scale nationwide effort, with priority given to the nearly 4000 river miles of unassessed and unknown water quality managed by your agencies. These rivers span 16 of 40 states with WSRs. In the second project phase, Adventure Scientists intends to expand the project scope by prioritizing river segments with significant data gaps as well as those with identified impairments under the CWA. We will also incorporate previously collected data throughout the rivers managed by these three federal agencies.

We will focus on parameters that can be collected via field instruments or observations. Volunteers will deploy Hach probes that monitor dissolved oxygen (DO), pH, temperature, total dissolved solids (TDS), salinity and conductivity. Field equipment will be attended at all times by the volunteer and the volunteer will not be installing or leaving any equipment in the field. While in the field, volunteers will collect both chemical and physical condition data, requiring volunteers to: (1) access pre-selected field sites; (2) mark GPS coordinates and exact time of data collection; (3) deploy a data logger/sensor for the collection of basic parameters (temp, DO, pH, conductivity, TDS, salinity) in situ; and (4) conduct a qualitative habitat assessment and take photos.

Recommended by park staff(name and title):

Research Permit Committee _____

Reviewed by Collections Manager:

Yes No

Approved by park official:

NICOLE ATHEARN

Date Approved:

Digitally signed by NICOLE ATHEARN
Date: 2022.01.20 20:23:32 -08'00'

Title:

Nicole Athearn Chief Resources Management & Science

I Agree To All Conditions And Restrictions Of this Permit As Specified
(Not valid unless signed and dated by the principal investigator)

Michelle Toshack

(Principal investigator's signature)

21 January 2022

(Date)

THIS PERMIT AND ATTACHED CONDITIONS AND RESTRICTIONS MUST BE CARRIED AT ALL TIMES WHILE CONDUCTING RESEARCH ACTIVITIES IN THE DESIGNATED PARK(S)



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