

APPENDIX P:

PERMITTED RESEARCH PROGRAM AND PROCESS

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PERMITTED RESEARCH PROGRAM AND PROCESS

Sequoia and Kings Canyon National Parks (the parks) has a rich history of scientific research that has contributed to the stewardship of the parks, the advancement of science, and the science education of broad audiences. Research in the parks includes studies, inventories, and monitoring conducted by National Park Service (NPS) staff as well as permitted research performed by external scientists from other federal agencies, state and local governments, universities, and non-profit organizations. Some of this permitted research is performed by cooperators working with and sponsored by the NPS through formal agreements. Others are collaborators working closely with NPS staff on scientific questions important to NPS stewardship but are not supported financially by NPS funds nor are part of a formal federal agreement. Additional researchers are independent, and while their studies may be of interest to the parks, they are not working directly with NPS staff nor are they financially supported by the NPS.

Over the past three years, 73% of the parks' permitted research included activities in wilderness. This research covers a wide range of disciplines (figure P-1). The most frequent topics for research in wilderness in the past three years were vascular plants/plant communities, herpetology (amphibians and reptiles), geology, cave/karst, invertebrates, and fire (behavior, ecology and effects).

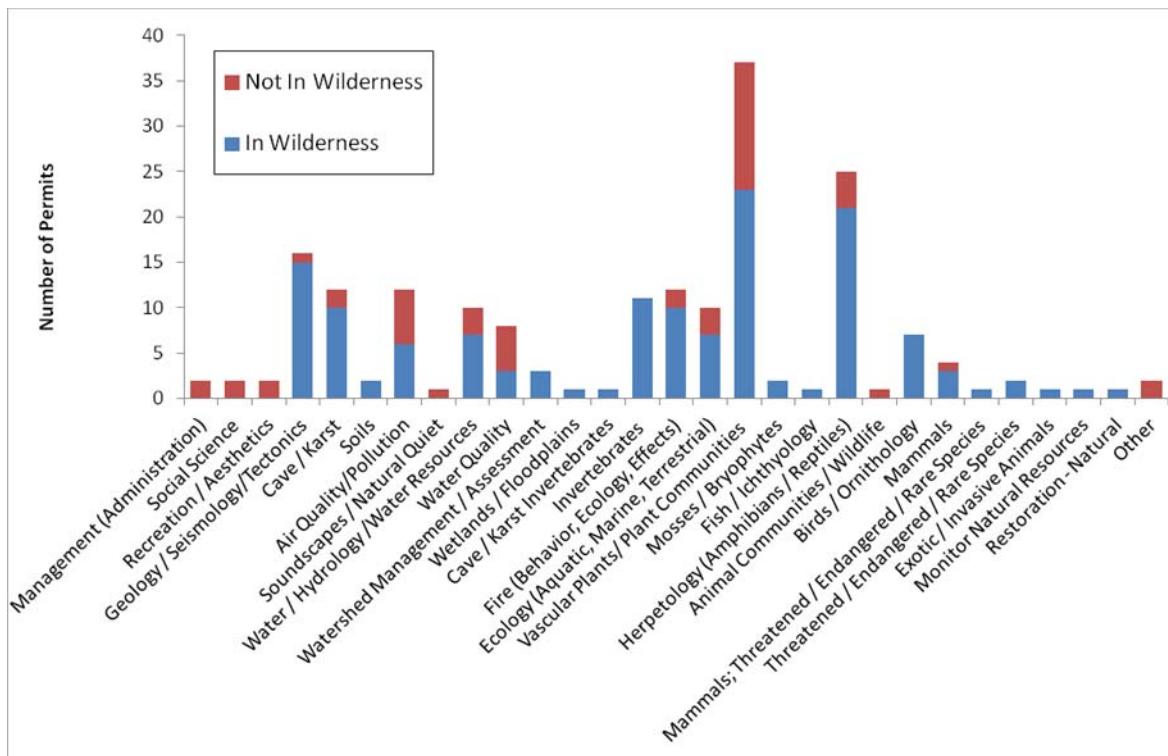


Figure P-1: Permitted Research in 2011-2013 (until 8/30/2013) Includes a Variety of Scientific Disciplines

Some of this research is specifically designed to improve the understanding of the natural quality of wilderness. For example, researchers documented the condition of mountain yellow legged frogs and Yosemite toad populations, which are in dramatic decline. A U.S. Geological Survey long-term study demonstrated that the mortality rate of conifers in wilderness and non-wilderness areas of the parks has increased significantly in recent decades. Additionally, several projects investigate water (hydrology),

water quality, air quality, and various ecological and wildlife topics. Researchers have studied the effects of atmospheric deposition of nutrients on a high elevation watershed for decades and more recently began using the long-term record to understand climatic changes.

APPLICABLE LAWS, EXECUTIVE ORDERS, MOUS, ETC. FOR PERMITTED RESEARCH

"NPS welcomes proposals for scientific studies designed to increase understanding of the human and ecological processes and resources in parks and proposals that seek to use the unique values of parks to develop scientific understanding for public benefit" (NPS 2009).

THE ORGANIC ACT OF THE NATIONAL PARK SERVICE

The Organic Act directs us "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." The 1978 Amendment (a.k.a. Redwoods Act) strengthened the protective functions of the NPS and influenced recent decisions regarding resource impairment. "...the protection, management, and administration of these areas shall be conducted in the light of the high public value and integrity of the NPS and shall not be exercised in derogation of the values and purposes for which these various areas have been established..."

While the Organic Act does not specifically direct the NPS to conduct, facilitate, or allow research in parks, it is now recognized that the mandate to maintain ecological integrity requires the NPS to apply current scientific understanding to stewardship. For example, a National Park Science Committee Report to the National Parks Advisory Board states, "The National Park Service has no choice: mastering the science required to maintain ecological integrity is central to its unimpairment mission" (National Parks Science Committee 2009). More recently, in 2012 the National Park System Advisory Board Science Committee stated, "The NPS needs a specific and explicit policy for park stewardship and decision making based on best available sound science, accurate fidelity to the law, and long-term public interest. Best available sound science is relevant to the issue, delivered at the appropriate time in the decision-making process, up-to-date and rigorous in method, mindful of limitations, peer-reviewed, and delivered in ways that allow managers to apply its findings...Existing policies and procedures must be improved to encourage participation of external scientists, scholars, and students in scientific and scholarly research conducted in national parks, and the expand the use of parks as national laboratories for science" (Knowles and Colwell 2012).

NATIONAL PARKS OMNIBUS MANAGEMENT ACT OF 1998

The National Parks Omnibus Management Act of 1998 directs the Secretary of the Interior "to assure that management of units of the National Park System is enhanced by the availability and utilization of a broad program of the highest quality science and information." It established the framework for fully integrating natural resource monitoring into the management process of the NPS. Section 5934 of the Act requires the Secretary of the Interior to develop a program of "inventory and monitoring of NPS resources to establish baseline information and to provide information on the long-term trends in the condition of the National Park System resources." The message of the Parks Omnibus Management Act of 1998 was reinforced by Congress in the FY 2000 Appropriations bill. In 2001, NPS began the Natural Resource Challenge with the following goals: (1) Increase inventory **and** monitoring capability; (2) Increase support to maintain and restore park natural resources; (3) Increase awareness of parks as "natural laboratories" for use by scientists; (4) Increase science education of visitors, local communities, and general public

about results of research in parks; and (5) Partner with universities, other agencies, and local organizations.

THE WILDERNESS ACT OF 1964

The Wilderness Act directs the Service to manage wilderness areas for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness. Scientific activities are one of the public purposes of wilderness as described in the Act.

NPS MANAGEMENT POLICIES 2006

NPS Management Policies 2006 includes many references to research and permitted research in particular. Some of these policies describe the need for current scientific understanding for stewardship that underlies the rationale for research in the parks, while other references describe the policy for reviewing proposals to conduct research in the parks and parks' wilderness. For example:

2.3.1.4 Science and Scholarship - Decisions documented in general management plans and other planning products, including environmental analyses and documentation, will be based on current scientific and scholarly understanding of park ecosystems and cultural contexts and socioeconomic environment both internal and external to the park. The collection and analysis of information about park resources will be a continuous process that will help ensure that decisions are consistent with park purposes.

4.2.1 NPS-conducted or Sponsored Inventory, Monitoring, and Research Studies – The Service will:

- identify, acquire, and interpret needed inventory, monitoring, and research, including applicable traditional knowledge, to obtain information and data that will help park managers accomplish park management objectives provided for in law and planning documents;
- define, assemble, and synthesize comprehensive baseline inventory data describing the natural resources under NPS stewardship, and identify processes that influence those resources;
- use qualitative and quantitative techniques to monitor key aspects of resources and processes at regular intervals;
- analyze the resulting information to detect or predict changes (including interrelationships with visitor carrying capacities) that may require management intervention and provide reference points for comparison with other environments and time frames; and
- use the resulting information to maintain – and where necessary restore – the integrity of natural systems.

6.3.6 Scientific Activities in Wilderness – The statutory purposes of wilderness include scientific activities, and these activities are encouraged and permitted when consistent with the service's responsibilities to preserve and manage wilderness.

8.10 Natural and Cultural Studies, Research and Collection Activities - Studies, research, and collection activities by non-NPS personnel involving natural and cultural resources will be encouraged and facilitated when they otherwise comport with NPS policies. Scientific activities that involve field work or specimen collection, or that have the potential to disturb resources, the visitor experience, or park operations require a permit issued by the superintendent that prescribes appropriate conditions for protecting park resources, visitors, and operations. Such studies may require additional permits from other jurisdictions.

PERMITTED RESEARCH REVIEW PROCESS

Sequoia and Kings Canyon National Parks' research permit review process is designed to comply with legal mandates, including the Organic Act of 1916 and the Wilderness Act of 1964. The review process incorporates recommendations in *White Paper Guidelines: Scientific Activities and Research in NPS Wilderness, Version 1, January 2011* and *Landres et al. 2010. A framework to evaluate proposals for scientific activities in Wilderness, U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station*. The following steps outline the process.

1. **Submit Permit Application Via Research Permit and Reporting System (RPRS):** Researchers submit applications via <https://irma.nps.gov/rprs/> and are encouraged to do so at least 90 days prior to the start of proposed activities in the parks. Permits are issued on a calendar-year basis and must be renewed annually. The application should include a more detailed study proposal if one has not been submitted in a previous year. Additionally, if the researcher proposes to store specimens in a non-NPS repository, they are required to submit a signed appendix A of the application to provide information about the repository.
2. **NPS Review:** While the parks support research and monitoring activities for their benefit to stewardship and science, it is critical to be intellectually honest and rigorous in analyzing the impact of proposed activities. The parks' science coordination staff conduct an impact-benefit analysis that incorporates input from additional resource management or visitor experience subject matter experts. The current impact-benefit analysis scores the proposed research for 23 metrics to assess impact to wilderness character and for 12 metrics to assess benefit to stewardship and science (table P-1). The metrics may be altered as more is learned about the impacts of rapid and unprecedented climatic change and other stressors. Impact and benefit summary scores are used to determine: 1) if the potential impact is negligible or not and 2) if this impact is an acceptable tradeoff for the benefit of the research. All proposed studies, even those conducted outside wilderness, are assessed for impact and benefit.

Depending on the level of potential impact and if research is proposed within wilderness, wilderness and environmental compliance staff provide additional review, including a minimum requirement analysis (MRA). The review process may result in changes to the research method or location. For example, conditions of an approved permit may require researchers to reduce the number of samples, limit activities to a reduced or different geographical area, or use less impactful methods.

- a. **Wilderness Minimum Requirement Analysis (MRA):** For research in designated or proposed wilderness, a MRA is required if the researcher proposes activities prohibited in Section 4(c) of the Wilderness Act (i.e., installations, use of motorized equipment, or use of mechanical or motorized transportation) or if the activity would have an effect on wilderness character (per Director's Order 41). The MRA and its accompanying instructions lead the researcher through a series of questions to first determine if the research is necessary in wilderness. If the research is determined to be necessary in wilderness, then step 2 determines the minimum activity required to accomplish the research. If NPS reviewers do not agree with the responses provided by the researcher, and/or there is not enough information to make a determination, the researcher is asked to revise the analysis. If the researcher has difficulty understanding the MRA process, they are directed to free online training and may be assisted by NPS staff if workload permits.
- b. **Compliance with Other Federal and State Mandates:** Depending on the research proposed, other steps may be required, such as compliance with the Clean Water Act, Endangered Species Act, National Historic Preservation Act, or Animal Welfare Act. Compliance with all applicable laws could be a substantive step and if not accomplished in a timely manner may justify denial of the permit.

Table P-1: Current Metrics Used in the Impact Benefit Assessment

Impact Assessment		Benefit Assessment	
Wilderness Character	Impact Metrics	Benefits	Benefit Metrics
Untrammeled Quality	Manipulation	Stewardship	Would the results address an <i>urgent</i> stewardship issue?
	Disturbance		How would the results address an <i>important</i> stewardship issue?
Natural Quality	Type of collections	Stewardship	Would the results be applicable <i>immediately</i> to stewardship?
	Quantity of collections		Would the results likely be applicable to <i>future</i> stewardship issues?
	Scarring potential		Would the results allow <i>effective action</i> on a stewardship issue?
	Sound character		Would the results improve stewardship of this <i>local wilderness</i> ?
	Sound continuity		What is the importance of contributions from this research?
	Sound volume		
	Duration of project		
	Risk of unintended effects		
	Scope of manipulation		
	Trampling vulnerability		
Undeveloped Quality	Threat of invasive species	Science	
	Type of transportation		How broad <i>geographically</i> will the results benefit science?
	Volume of transportation		How far over <i>time</i> will the results benefit science?
	Type of equipment		How many different <i>people</i> or types of people will benefit from the results?
	Amount of equipment		How <i>important</i> is the activity to the scientific field of study
	Footprint of equipment		What is the <i>breadth</i> of scientific inquiry?
Solitude or Primitive and Unconfined Quality	Visibility of equipment		
	Duration of installation		
	Group size		
	Person days/season		
	Visitor surveys		

3. **Permit Issued, Cancelled or Denied:** The superintendent has ultimate decision authority, which can be delegated, to approve or deny research and collecting permits. Research may be denied for a variety of reasons, such as: 1) the impact to resources or the visitor experience is too high, 2) the benefit does not justify the level of impact, 3) the research is not deemed necessary to occur in wilderness (and a site outside wilderness is not identified), 4) the researcher does not agree to the minimum activity required to accomplish the research, or 5) the research is considered too risky in terms of safety. Additionally, a research application may be cancelled if the applicant fails to provide adequate information to allow a thorough review.

The NPS reviewer transmits the decision to the researcher via email. If the application is approved, a permit, including required conditions and supplementary materials will be attached to the email. If an application is cancelled or denied, a researcher may start the process over by submitting a new (revised) application to RPRS. It is recommended that researchers discuss required changes with the science coordinator before submitting a new application. A permit subsequently may be cancelled if a researcher fails to comply with safety requirements or any other permit conditions.

4. **Sign Permit and Return Copy:** If the research is approved, the researcher must sign and date the permit and return a copy to the parks' science coordinator.
5. **Conduct the Research:** Researchers must follow the conditions included with their permit. Some permits require that the researcher meet with one or more of the parks' staff prior to conducting the research. Researchers and their field teams must have a copy of the permit on hand while conducting research in the parks.
6. **Submit Spatial Data:** Researchers must submit spatial data for field locations before submitting a new application (even for a different study) or by March 31 of the following year, whichever is earlier. The parks will not approve a new or renewal permit without receiving spatial data.
7. **Submit Investigator Annual Report (IAR) Via the RPRS:** Researchers must submit their IAR before submitting a new application (even for a different study) or by March 31, whichever is earlier. The IAR is submitted directly via the RPRS website. Researchers receive an email from the RPRS coordinator with instructions, usually in January.
8. **Submit Final Report/Publications for Each Study:** The parks require researchers to provide final reports, manuscripts, and journal articles for all their permitted research. The parks encourage researchers to present their results to the parks' staff. In certain cases, the parks will request detailed information (i.e., raw and/or analyzed data).

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