

Sierra Nevada Conservancy-Progress Report

**Sierra Nevada Conservancy Grant Program
Safe Drinking Water, Water Quality and Supply, Flood Control
River and Coastal Protection Act of 2008 (Proposition 84)**

Grantee Name: Sequoia and Kings Canyon National Parks

Project title: Restoration of Mountain Yellow-legged Frogs and Aquatic Ecosystems in Sequoia and Kings Canyon National Parks (SEKI): Pre-Project Due Diligence

SNC Reference Number: SNC 080226 **Submittal Date:** Dec 27, 2012

Report Preparers: Danny Boiano **Phone #:** 559-565-4273
Erik Meyer 559-565-3127
Isaac Chellman 559-565-4274

Check one:

6-Month Progress Report
 Final Report

6-Month Progress Reports should reflect the previous six months. **Final Reports** should reflect the entire grant period.

A. Progress Report Summary: (Please provide a general description of work completed during this reporting period.)

This report covers the entire period of work conducted with Sierra Nevada Conservancy (SNC) funding, beginning in January 2010 and ending in November 2012. During the funding period, we completed fieldwork for 13 site assessments, and produced 7 site assessment reports detailing restoration potential in 8 different high elevation basins. Each assessment report included site-specific information detailing the proposed site, restoration methods, lake and stream characteristics, mountain yellow-legged frog (MYLF; *Rana muscosa*, *R. sierrae*) distribution, crew accessibility, camp location, and safety hazards. Also integrated in each report are 2-4 Geographic Information System (GIS) maps that spatially present the above information.

In addition to the site assessments, SNC funding was used to complete many planning/NEPA/CEQA related tasks for the Restoration of Native Species in High Elevation Aquatic Ecosystems Plan / Draft Environmental Impact Statement (Restoration Plan/DEIS) for Sequoia and Kings Canyon National Parks (SEKI). These include: generating GIS maps and preparing documents for public meetings; entering hundreds of public comments into the Planning, Environment, and Public Comment (PEPC) database; reviewing and commenting on public presentations; gathering and analyzing historic SEKI aquatic restoration data for use in the Restoration Plan/DEIS and public and professional presentations;

writing several impact topics for the Restoration Plan/DEIS; and gathering and synthesizing relevant documents pertaining to the Restoration Plan/DEIS administrative record. A complete draft of the Restoration Plan/DEIS was submitted to the SEKI Resources Management and Science Chief and the National Park Service (NPS) Pacific West Region chief scientist for review and comments.

B. Deliverables or Outcomes completed during this Reporting Period or Milestones Achieved: (Include specific information, such as public meetings held, agency participation, partnerships developed, or acres mapped, treated or restored.)

Deliverables completed include:

- A complete draft of the Restoration Plan/DEIS, submitted to the SEKI Resources Management and Science Chief and the NPS Pacific West Region chief scientist for review and comments.
- Completion of 7 detailed site assessment reports in 8 proposed restoration basins. In total, restoration prescriptions were made from field data collected from 28 lakes (totaling 345 acres) and over 12 miles of associated stream habitat. Twenty-three GIS maps were generated for the site assessment reports. Field data were collected by National Park Service staff in the summers of 2008, 2009, 2010, and 2012.
- Field assessments were conducted for a total of 13 proposed restoration basins, including the 8 basins for which site assessment reports were completed (described above), plus 5 additional basins visited during the summer of 2012. During the 2012 fieldwork, data were collected from 23 lakes (totaling 359 acres) and 6.9 miles of associated stream habitat. GIS maps will be created for these sites when the site assessment reports are prepared in the near future using other funds.
- GIS map document of all proposed restoration basins, including maps for each proposed alternative in the Restoration Plan/DEIS.
- Linked to the GIS maps is a spatial database, which is in turn linked to a series of Excel worksheets summarizing data in the Restoration Plan/DEIS.
- Presentations were made to the public and NPS staff at the following venues:
 - Three Rivers, CA conceptual alternatives town hall meeting, February 2010
 - Three Rivers, CA conceptual alternatives open house, February 2010
 - Bishop, CA conceptual alternatives meeting, March 2010
 - SEKI All Employee Meeting, April 2010
 - Kaweah Fly Fishers meeting, June 2010
 - NPS Pacific West Region work session, September 2012
- Entered approximately 750 public scoping comments into the SEKI PEPC database. Once in PEPC, they were available to the public for viewing.

C. Challenges or Opportunities Encountered: (Please describe what has worked and what hasn't; include any solutions you initiated to resolve problems. If your project is not on schedule, please explain why here.)

With ongoing restoration efforts and other program commitments, it was difficult to consistently work on developing a complete draft of the Restoration Plan/DEIS for internal review. However, we were able to develop a complete draft of the Restoration Plan/DEIS for internal review before this SNC grant expires on March 1, 2013.

D. Unanticipated Successes Achieved: (Please describe any additional successes beyond completing scheduled tasks or meeting scheduled milestones.)

Despite the challenges described above, a complete draft of the Restoration Plan/DEIS for internal review was completed several months in advance of the SNC grant deadline.

Additional successes include being able to complete more field site assessments than originally anticipated, and formulating a standardized protocol and data sheet for site assessments.

E. Compare Actual Costs to Budgeted Costs: (Please refer to your grant agreement to list your deliverables/budget categories and budgeted costs compared to actual costs incurred during this reporting period in the table below.)

PROJECT BUDGET CATEGORIES	Budgeted SNC Dollars	Actual Dollars
Complete planning/NEPA/CEQA environmental documents	19,960.00	19,960.00
Process field assessments/create restoration prescriptions	19,960.00	19,960.00
Conduct field assessments	9,980.00	9,980.00
GRAND TOTAL	49,900.00	49,900.00

F. Do you have information to report on the project-specific Performance Measures for your project? (If so, please list the Performance Measures below and describe your progress.)

Not Applicable

G. Were there any other relevant materials produced under the terms of this Agreement that are not a part of the budgeted deliverables? If so, please attach copies. (Include digital photos, maps, media coverage of project, or other work products.)

No. All relevant materials are included in the complete draft of the Restoration Plan/DEIS.

H. Next Steps: (Work anticipated in the next 6 months, including location and timing of any scheduled events related to the project.)

The next major steps in the work that was involved in this grant include 1) following internal NPS review, complete a Restoration Plan/DEIS for release for public comment, 2) completing site assessments and associated reports and restoration prescriptions for all basins proposed for restoration in the Restoration Plan/DEIS, and 3) if one of the action alternatives in the Restoration Plan/DEIS is approved, continuing efforts to restore and conserve native species and natural processes in high elevation aquatic ecosystems in SEKI.

Capacity-Building Results and Collaboration and Cooperation with Stakeholders: (What partnerships did you initiate or strengthen as a result of this project? How did they affect the project outcome? If applicable, how did this grant increase your organization's capacity? What is your plan to sustain this increase?)

Work funded in part by this grant is connected with the Mountain Yellow-legged Frog Conservation Strategy, a formal multi-agency effort to develop a plan for conserving two species of MYLFs, which will be folded into a recovery plan if the species become federally listed. Participating agencies include U.S. Fish and Wildlife Service, U.S. Forest Service, and California Department of Fish and Game, along with the NPS.

Description of Project Accomplishments:

1. Most Significant Accomplishment

Describe in one concise, well-written paragraph, the most significant accomplishment that resulted from this grant.

Completing a full draft the Restoration Plan/DEIS for internal NPS review is the most significant accomplishment from efforts funded, in part, by this grant. Development of the Restoration Plan/DEIS has been a huge effort, involving multiple funding sources and assistance from numerous staff, collaborators, and the public. Funding provided by the SNC was instrumental in completing a full draft of the Restoration Plan/DEIS more quickly than would have otherwise been possible. Completion of a full draft of the Restoration Plan/DEIS is a major milestone toward continuing vital restoration work in high elevation aquatic ecosystems in SEKI.

2. WOW Factor

If applicable, please describe anything that happened as a result of the project or during the project that is particularly impressive.

Funding provided by this grant was used specifically for working toward the goal of completing a full draft of the Restoration Plan/DEIS for internal NPS review.

However, the preliminary restoration work, of which the Restoration Plan/DEIS is proposing to expand, has been an incredible success. MYLFs [*Rana muscosa* (state endangered), and *R. sierrae* (state threatened)], both of which are expected to be proposed for listing under the federal U.S Endangered Species Act in 2013, are species of concern that directly benefit from these restoration activities. For example, at the Upper LeConte Canyon restoration site in SEKI from 2001 (when fish removal efforts began) to 2011 (after fish removal was completed), MYLF populations in 3 fish removal lakes increased dramatically: average frog abundance increased from 115 to 1400, 19 to 845, 0 to 71 per survey, respectively. Similarly large increases in tadpole abundance occurred in 2 lakes.

3. Design and Implementation

When considering the design and implementation of this project, what lessons did you learn that might help other grantees implement similar work?

A vital component of fish eradication efforts is conducting a thorough site assessment to ensure restoration success. The assessments allow us to accurately determine the long-term feasibility of restoring basins to a natural condition. Without an in-depth examination of each site, ensuring that adequate barriers exist to prevent future fish immigration into the site, restoration efforts would be futile. Additionally, on-site observation of characteristics specific to each location provides the opportunity to plan accordingly for a number of important considerations, including the number of gill nets required at each water body, how nets will need to be oriented, what fish densities are present, what challenges are likely to be encountered in stream sections requiring electrofishing, where to best place the crew camp, and what is the safest hiking access routes for field crews.

4. Indirect Impact

Please describe any indirect benefits of the project such as information that has been developed as a result of the project is being used by several other organizations to improve decision-making, or a conservation easement funded by this grant that encouraged other landowners in the area to have conservation easements on their property.

In completing a full draft of the Restoration Plan/ DEIS, we have provided a “one stop shopping” of protocols, background information, relevant literature, and potential effects of restoration techniques. The Restoration Plan/DEIS will provide a valuable reference for other organizations planning to conduct similar restoration efforts in ecosystems they manage. Given the relatively straightforward process involved with many of these restoration techniques, other organizations have adopted these methods for eradication efforts. What began as research into a potential nonnative fish eradication technique has proven consistently successful at providing the ability to restore aquatic habitats to their natural condition, provided target water bodies have the appropriate conditions (i.e., effective, long-term fish barriers). Although labor intensive and requiring a multi-year commitment at each site, the benefits are clear and quantifiable. In

many states across the U.S., fish removal efforts have been undertaken by the NPS, U.S. Forest Service, U.S. Geological Survey, and state fish and game agencies including the California Department of Fish and Game.

5. Collaboration and Conflict Resolution

If you worked in collaboration or cooperation with other organizations or institutions, describe those arrangements and their importance to the project. Also, describe if you encountered conflict in the project and how you dealt with it, or if there was conflict avoided as a result of the project.

Work funded in part by this grant is connected with the Mountain Yellow-legged Frog Conservation Strategy, a formal multi-agency effort to develop a plan for conserving two species of MYLFs, which will be folded into a recovery plan if the species become federally listed. Participating agencies include U.S. Fish and Wildlife Service, U.S. Forest Service, and California Department of Fish and Game, along with the NPS.

Partnership with Yosemite National Park aquatic ecologist Heather McKenny was initiated for assistance with writing and editing portions of the Restoration Plan/DEIS. Heather's help was instrumental, especially given her expertise with Sierra Nevada aquatic ecosystems and drafting similar environmental documents. The Restoration Plan/DEIS was completed more quickly and thoroughly because of Heather's assistance.

Additional partnerships were fostered and encouraged by collaborating on grant proposals and maintaining positive contact with other government agencies and researchers, including:

- Matthew Brooks of the U.S. Geological Survey for several projects related to MYLFs and Yosemite toads.
- Roland Knapp of UC Santa Barbara for several projects related to MYLFs.
- David Herbst of UC Santa Barbara and Jeff Holmquist of UCLA for several projects related to aquatic invertebrates.

No major conflicts were encountered during the implementation of this project. However, in the public meetings, some attendees expressed disagreement with some of the proposed elements of the project. This "conflict" was addressed by patiently answering questions in person during public presentations and through follow-up communications.

6. Capacity-Building

SNC is interested in both the capacity of your organization, as well as local and regional capacity. Please describe the overall health of your organization including areas in need of assistance. SNC is interested in the strength and involvement of your board, significant changes to your staff, size and involvement of membership. In addition, describe how your project improved capabilities of partners, or the larger community.

Funding provided by the SNC allowed two SEKI staff (lead biological science technicians Erik Meyer and Isaac Chellman) to work on a higher level strategic plan. The experience was incredibly valuable for career development and learning the process involved with researching, assembling, and reviewing a major environmental document. This assistance and capacity-building would have been more difficult to achieve without funding provided by the SNC.

7. Challenges

Did the project face internal or external challenges? How were they addressed? Describe each challenge and any actions that you took to address it. Was there something that SNC did or could have done to assist you? Did you have to change any of your key objectives in response to conditions “on the ground”?

Site assessments: No major challenges occurred during most site assessments field trips. However, the first attempt at completing fieldwork for the Upper Evolution site assessment was cut short by poor weather conditions. The necessary remaining on-site information was collected during a follow-up trip in August 2012. Field staff encountered heavy rains and hail during several site assessment trips in 2012, but they were still able to collect the information necessary to develop site assessment reports.

Restoration Plan/DEIS: This project was conducted with the assistance of several NPS staff members, all of whom had multiple additional projects in their overall workload. Competing priorities among project partners were difficult to manage. However, we were able to coordinate research, analyses, writing, and reviewing effectively so our deadlines would ultimately be met.

8. Photographs

Grantees are strongly encouraged to submit photos, slides or digital images whenever possible. These images will be used for SNC publications such as annual reports or on the website. Please make sure you clearly identify location, activity, and your project with each submitted image. Images will be credited to the submitting organization, unless specified otherwise.

A collection of photos from work completed during site assessments field trips will be provided on a DVD. We will mail this DVD to Bobby Kamansky, Mt. Whitney Area Project Consultant.

9. Post Grant Plans

What are the post-grant plans for the project if it does not conclude with the grant? Include a description of the following (if applicable): (1) Changes in operations or scope; (2) Replication or use of findings; (3) Names of other organizations you expect to involve; (4) Plans to support the project financially, and; (5) Communication plans?

1. Once internal reviews have been conducted, including reviews by both the SEKI Resources Management and Science chief and NPS Pacific West Region chief scientist, the Restoration Plan/DEIS will be submitted to the Pacific West Region for final review before releasing for public comment. If the scheduled review process goes as planned, we hope to have the Restoration Plan/DEIS published and publicly available by summer 2013.

Several action alternatives are proposed in the Restoration Plan/DEIS. Future restoration plans would depend on which alternative is selected and the amount of funding received from many sources. Once all of the current (previously approved) restoration basins have been completed, we would begin restoration efforts at any newly approved locations. We hope to continue returning a subset of high elevation waters in SEKI to their naturally fishless condition, thus improving these aquatic ecosystems for myriad native organisms in those areas.

2. The first use of findings directly relevant to work efforts completed using funds from this grant will be completing site assessment reports for the final basins visited during the 2012 field season. Before the 2013 summer field season, reports will be completed for a total of 5 proposed restoration basins, including Barrett, Brewer, McGee, South Milestone, and Vidette. These reports will be completed in winter/spring 2013 and would be used to direct restoration activities in these basins if approved for restoration through the Restoration Plan/DEIS.

Upcoming restoration efforts in many basins would involve the same physical fish eradication techniques (i.e., gill netting and electrofishing) that have been used successfully for many years. However, if selected in the Restoration Plan/DEIS, piscicide methods would also be utilized in certain locations. Findings from implementing these methods would directly influence future restoration techniques, allowing continued refinement of the project through an adaptive management strategy. Results from using these techniques would also provide useful information for the restoration efforts of other organizations.

3. Some of the other organizations we hope to involve with these efforts include other national parks (e.g., Yosemite) and other organizations managing aquatic species of concern threatened by nonnative fish populations.
4. Funding for these restoration efforts have been provided by a variety of sources in the past. Similar federal funding sources would also be sought in the future. Proposals have already been submitted to compete for SEKI base funds and park entrance fees, and NPS resources management soft funds.

5. We will continue communication with fellow managers, scientific researchers, and the public to provide feedback on restoration progress, key findings, new proposed techniques, and future goals.

10. Post Grant Contact

Who can be contacted a few years from now to follow up on the project? Please provide name and contact information.

You may contact:

Danny Boiano
Aquatic Ecologist
Sequoia and Kings Canyon National Parks
47050 Generals Highway
Three Rivers, CA 93271
Danny_Boiano@nps.gov
(559) 565-4273

SNC-approved Performance Measures: (Please list each Performance Measure for your Project, as identified in your Grant Agreement, and the results/outcomes.)

1. Number of People Reached

This grant paid for tasks undertaken by the GS-7 lead biological science technician (first Erik Meyer, then Isaac Chellman), including various tasks for the Restoration Plan/DEIS, conducting field site assessments, and creating site assessment reports (restoration prescriptions) using the data collected during the field site assessments. SNC funding represented a relatively small percentage of the total funds spent on drafting the Restoration Plan/DEIS and aquatic restoration fieldwork undertaken by the SEKI Aquatic Ecosystems program. Within that effort, several products have been established to educate the staff, collaborators, and the public.

Web pages have been created, including:

<http://www.nps.gov/seki/parkmgmt/rheae.htm> (SEKI page outlining the Restoration Plan/DEIS)

<http://www.nps.gov/seki/naturescience/mountain-yellow-legged-frogs.htm> (SEKI page discussing MYLF restoration)

<http://inside.nps.gov/index.cfm?handler=viewnpsnewsarticle&type=Announcements&id=11542> (Link to internal InsideNPS article about MYLFs)

Two high quality videos were filmed to emphasize the importance of restoring aquatic ecosystems. One production, a five-minute educational video created by the U.S. Fish and Wildlife Service, has been completed. Another professional video, produced by Bristlecone Media, is in-progress, with film footage acquired in 2012 and final video products expected to be completed in late 2013. Both videos are intended to raise awareness and increase understanding of how aquatic restoration benefits high elevation aquatic ecosystems in SEKI.

Members of the public were also reached directly through meetings and presentations, including conceptual alternative meetings for the Restoration Plan/DEIS. Park employees remained informed through internal reports, seminars, and an All Employee Meeting presentation.

2. Dollar Value of Resources Leveraged for the Sierra Nevada

In addition to this grant, project expenses have been covered by SEKI base funds that covered salaries for the aquatic ecologist and environmental protection specialist to work on developing the Restoration Plan/DEIS. For the period of work included in this grant, SEKI base funds have provided approximately 70% of the total project cost, while the SNC provided approximately 30% of the total project cost. This works out to approximately \$120,000 being provided by SEKI in the form of direct work time on this project by the aquatic ecologist and the environmental protection specialist, and \$49,900 being provided by the SNC to

fund one year of time (over the course of 3 years) for the GS-7 lead aquatic biotech to conduct the work described above.

3. Number and Type of Jobs Created

This project directly provided funds for a total of 1 year of work time (over the course of 3 years) for the GS-7 lead aquatic biotech to assist with critical tasks needed to complete a full draft of the Restoration Plan/DEIS for internal NPS review. However, if long-term restoration proposed in the Restoration Plan/DEIS is approved (the results of preliminary restoration show there is substantial justification for it to be approved), SEKI is hoping to receive permanent funding for a GS-7 lead aquatic biotech, and additional funding for fieldwork support in the form of several GS-5 biotechs for three months each summer during which the restoration work takes place.

4. Number of New, Improved, or Preserved Economic Activities

The aquatic restoration project has improved the health of native aquatic ecosystems in the SEKI portion of the high Sierra Nevada. Visitors that wish to experience restored aquatic ecosystems will be provided with the opportunity when traveling to SEKI and visiting restored sites. As virtually all proposed restoration sites are in beautiful wilderness areas, travel will require several days of time, and thus will attract significant tourism spending over years to come.

5. Percent of Pre-project and Planning Efforts Resulting in Project Implementation

One hundred percent of 26 lakes, ponds, and marshes (waters) in preliminary (previously approved) restoration areas are anticipated to be fully restored. Another 56%, or 49, of long-term (proposed) restoration waters are identified for additional restoration using physical methods. The remaining 44%, or 38, of long-term (proposed) restoration waters are identified for additional restoration using piscicides, due to their size and difficulty of terrain requiring alternative restoration methods. Up to 41 miles of stream are also planned for restoration. Approximately 34% of this stream habitat (nearly 14 miles) is identified for additional restoration using physical methods, while the remaining 66% of this stream habitat (nearly 27 miles) is identified for additional restoration using piscicides, since difficult terrain, size, and complexity prevent the use of physical restoration methods.

6. Environmental Setting and Impacts

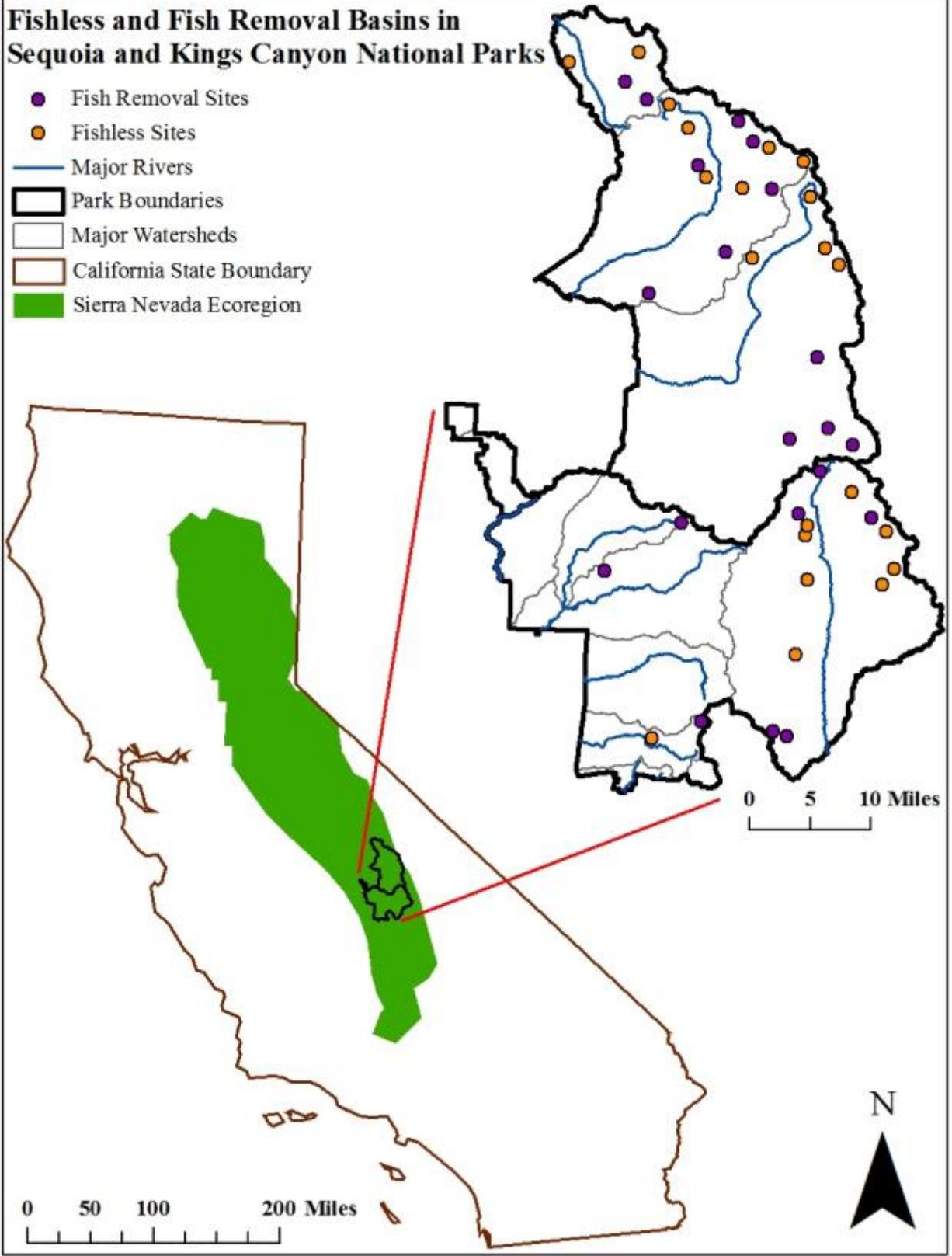
This project is located in Sequoia and Kings Canyon National Parks (SEKI). The NPS has exclusive jurisdiction of wildlife management within its boundary. This work is in aquatic habitat in remote wilderness. Sensitive species occur in project locations, including MYLFs for which this project is targeted to benefit. Some

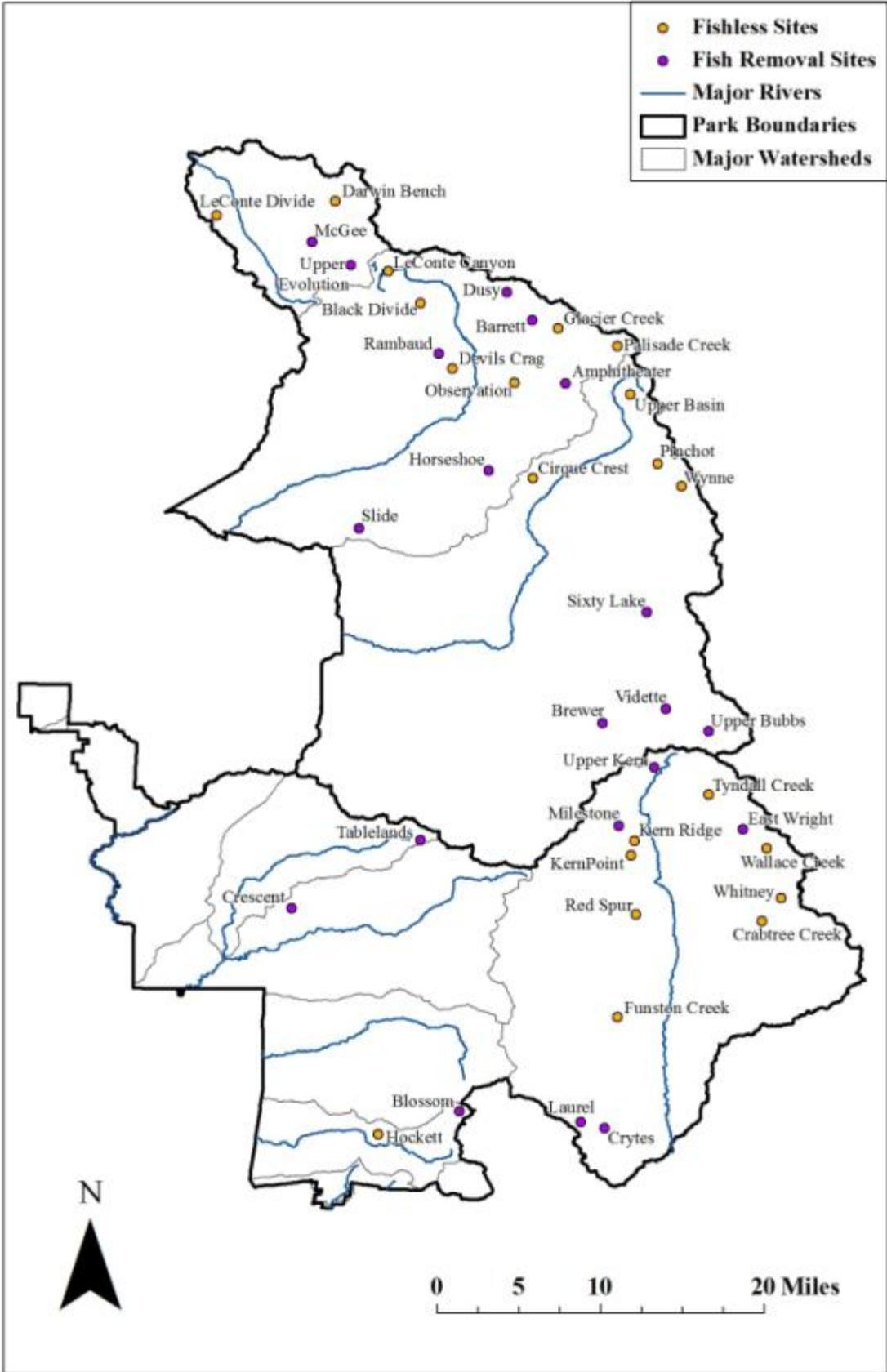
lakes may contain trout forms of conservation value, such as the Little Kern golden trout (*Oncorhynchus mykiss gilberti*), that have been transplanted into naturally fishless waters outside of their historic range. If genetic analyses identify a trout population of conservation value, SEKI has intends to work with the California Department of Fish and Game to transfer these fish to more appropriate waters outside of SEKI and within the natural range of the taxa.

7. Project Location Map

Fishless and Fish Removal Basins in Sequoia and Kings Canyon National Parks

- Fish Removal Sites
- Fishless Sites
- Major Rivers
- ▭ Park Boundaries
- ▭ Major Watersheds
- ▭ California State Boundary
- ▭ Sierra Nevada Ecoregion





8. Photos of the Project Site

A collection of photos from work completed during field site assessments will be provided to SNC on a DVD, mailed to Bobby Kamansky, Mt. Whitney Area Project Consultant.

9. Land Tenure

Both Sequoia and Kings Canyon National Parks have exclusive jurisdiction for wildlife management within the boundary of the parks.

10. California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) Compliance

The Preliminary Restoration of Mountain Yellow-legged Frogs in Sequoia and Kings Canyon National Parks was approved through NEPA in 2001. The comprehensive Restoration Plan/DEIS that is proposing long-term aquatic restoration in SEKI has been submitted for internal NPS review. Once final reviews and editing are complete, the Restoration Plan/DEIS will be released for public comment. After analyzing the public comments, an alternative will be selected in Restoration Plan / Final Environmental Impact Statement and subsequent Record of Decision. If one of the action alternatives is selected and approved, SEKI would complete CEQA requirements for this project, and would request the SNC, California Department of Fish and Game, or other state agency to be the lead state agency to review and approve our CEQA documents. The ultimate goal is to complete implementation of the preliminary restoration work and then begin implementation of long-term restoration work if selected and approved through the Restoration Plan / Final Environmental Impact Statement and subsequent Record of Decision.

11. Leases or Agreements

Work specifically conducted using funds in this grant did not require any leases or agreements. If one of the action alternatives is selected and approved in the Restoration Plan / Final Environmental Impact Statement and subsequent Record of Decision, no leases or agreements would be required as SEKI has exclusive jurisdiction for wildlife management within the boundary of the parks.

12. Regulatory Requirements

Work specifically conducted using funds in this grant did not have any regulatory requirements. If one of the action alternatives is selected and approved in the Restoration Plan / Final Environmental Impact Statement and subsequent Record of Decision, SEKI has exclusive jurisdiction for wildlife management within the boundary of the parks. However, the following regulatory requirements would apply depending on which action alternative is approved.

If an alternative involving piscicide use is approved, then SEKI would need to obtain a National Pollutant Discharge Elimination System permit under the Clean Water Act; and staff managing piscicide applications would need to be state-certified as pesticide applicators.

If an alternative involving blasting rock to create vertical fish barriers is approved, then SEKI would need to obtain a 401 permit under the Clean Water Act.

13. Demonstrations of Support

California Fish and Game has provided a letter of support for this project.

14. Executive Officer Authorization Request Form:

This is not applicable.