Restoration of Native Species in High Elevation Aquatic Ecosystems Plan and Final Environmental Impact Statement

Frequently Asked Questions

U.S. Department of the Interior
National Park Service

Sequoia and Kings Canyon
National Parks

California

What is the purpose of the Restoration Plan?
The purpose of the Restoration of Native Species in High Elevation Aquatic Ecosystems Plan and Final Environmental Impact Statement (Restoration Plan/FEIS) is to restore a portion of the high elevation aquatic ecosystems in Sequoia and Kings Canyon National Parks to natural conditions. This would be done by removing nonnative trout from up to 85 remote high elevation lakes, ponds, and marshes, and 31 miles (50 km) of streams, to allow for native species and ecosystems to function naturally. This work would be done to increase the resistance and resilience of native species to ongoing threats, in particular disease and rapidly-changing climatic conditions.

When were nonnative fish stocked, and does fish stocking still occur in the parks?
High elevation lakes in Sequoia and Kings Canyon National Parks were historically fishless. Nonnative trout were introduced to hundreds of high elevation lakes from 1870 to 1988 to draw recreationists and tourists to the area. Stocking was discontinued in 1988 by National Park Service (NPS) policy.

How many lakes and streams currently have nonnative trout in them?
There are approximately 550 high elevation lakes, ponds, and marshes within the parks that contain nonnative trout. Although the parks do not have survey data on nonnative trout populations in many high elevation streams, fish are assumed to be present in most streams. The sites are located in remote settings, and the majority of sites are inaccessible (i.e., not near established recreation trails).

How many lakes, ponds, marshes, and streams would be affected by the project?
If the management-preferred alternative is selected, nonnative trout would be removed from 31 lakes, 49 ponds, and 5 marshes, or about 15% of the parks' lakes, ponds, and marshes that contain nonnative trout. Nonnative trout would also be removed from approximately 31 miles (50 km) of streams, which represents <2% of mapped stream habitat in the parks.

Will I still be able to fish in the parks?
Fishing is a welcomed and popular form of recreation and will continue to be available and promoted throughout the parks. Nonnative trout would remain in 465 lakes, ponds, and marshes and hundreds of miles of streams. We will continue to provide outstanding fishing opportunities suited to a variety of interests and abilities. Lakes, ponds, and marshes proposed for trout removal in this project were selected to avoid most lakes with a reputation for good fishing.

Does this project include closures to recreational activities or access by hikers or stock users?
The Restoration Plan/FEIS does not propose to permanently close areas to recreational activities or access by hikers or stock users. There would be short-term closures (3 to 14 days) associated with each piscicide treatment, if one of the action alternatives that includes piscicide use is selected.

How would this project affect area businesses?
This project would have little to no impacts on area businesses. The number of visitors accessing the parks for fishing is not expected to decrease, and the number of lakes available for recreational fishing would remain plentiful. A total of 465 lakes, ponds, and marshes, including the majority of "destination" areas, would still be available for fishing.

Why are you proposing to take action now when fish were stocked in these areas beginning in the late 1800s?
Recent studies have shown that the widespread introduction and continued presence of nonnative trout causes substantial, cascading adverse impacts on native species and entire ecosystems by reducing biological diversity and disrupting healthy ecosystems. Primarily affected are two species of yellow-legged frogs, *Rana muscosa* and *Rana sierrae*, which are listed as endangered under the federal Endangered Species Act due to effects from nonnative trout and disease (amphibian chytrid fungus). Extensive research has demonstrated that when nonnative fish are removed from lakes, native species (including yellow-legged frogs, aquatic invertebrates, and zooplankton) quickly recover.

How successful is removal of nonnative fish in restoring native species?
Sequoia and Kings Canyon National Parks began eradicating nonnative trout from selected lakes in 2001. By 2013, fish were eradicated from 10 lakes. Yellow-legged frogs in nine of these lakes remained disease-free 3 years after fish removal. During this time, average yellow-legged tadpole density in these 9 lakes increased by 13-fold, while average yellow-legged frog density increased by 14-fold. One lake showed an overall 49-fold increase in yellow-legged frogs. Two of the restored yellow-legged frog populations are now the largest in the Sierra Nevada. These results show that the removal of nonnative fish is feasible and beneficial to native species.

Isn't disease (amphibian chytrid fungus) the primary cause of the yellow-legged frogs' decline? Shouldn't you focus on managing this disease instead of removing fish?
Extensive research since the 1980s in the Sierra Nevada, including in Sequoia and Kings Canyon National Parks, has identified two primary factors for the decline of yellow-legged frogs:

1. Nonnative trout prey on yellow-legged frogs and compete with them for food. In addition, trout restrict the frogs to marginal, shallow habitat, and fragment populations.
2. Chytrid fungus, a recently discovered pathogen, causes a highly infectious disease (chytridiomycosis) in many amphibian species including yellow-legged frogs. Studies indicate the fungus has spread into the Sierra Nevada and has infected nearly all yellow-legged frog populations.

Chytrid fungus is a major factor in accelerating the decline of already stressed populations of yellow-legged frogs throughout the Sierra Nevada. We are working with scientists to conduct experimental treatments using antifungal agents on yellow-legged frogs to promote disease resistance. Unfortunately, treatment of the disease alone won't restore the yellow-legged frogs. The adverse impacts that nonnative trout have on frog habitat and breeding must also be addressed.

What types of methods are being proposed?
The management preferred alternative proposes to eradicate nonnative fish using gill nets, backpack electrofishers, shovels (to disturb fish egg nests), fish traps, and piscicides. Physical treatments would be used where feasible. Piscicide treatment methods include applying extremely low concentrations of the CFT Legumine™ formulation of rotenone to lakes and streams and would be used only where physical methods are infeasible.

How would the proposed use of piscicides affect other species?
CFT Legumine™ is toxic to trout at extremely low concentrations. It can also be toxic to other gill-breathing organisms including aquatic invertebrates, zooplankton and tadpoles. Effects on tadpoles would be mitigated by moving tadpoles to adjacent habitat outside the treatment area. Aquatic invertebrate and zooplankton populations would be reduced immediately after treatment. Studies have shown that most species typically return to pre-treatment levels within 1 year, while a few species take longer (3 to 5 years) to return to pre-treatment levels.

How long will a lake or stream be affected by piscicides?
There would be short-term impacts to surface water quality. Depending on environmental conditions (e.g., solar exposure, lake depth, wind, pH, etc.), most of the chemicals would break down in several days to several weeks. Piscicides applied to stream water would be neutralized at the lower end of the treatment site using potassium permanganate.

Will the use of piscicides affect drinking water?
Human consumption of water within treatment areas and approximately ½ mile downstream of the rotenone neutralization station would be restricted during treatment and for up to 14 days after treatment, in accordance with EPA rotenone label guidelines. Any compounds that remain in the water at the downstream end of a treatment area are neutralized using potassium permanganate, thus there would be no long-term negative effects on water quality. Piscicide treatments would not affect groundwater.

Is this project consistent with the U.S. Fish and Wildlife Service's conservation strategy for yellow-legged frogs?
Yes, the actions proposed within the Restoration Plan/FEIS are also consistent with the nearly completed *Interagency Conservation Strategy for Mountain Yellow-legged Frogs* in the Sierra Nevada, which is expected to be published by the U.S. Fish and Wildlife Service in 2016.

Has climate change been considered in the project alternatives?
This Restoration Plan/FEIS is aligned with the NPS Climate Change Response Program - Natural Resource Adaptation Strategy and enhances the elements identified in the strategy to make natural systems more resilient to climate change.

Are the proposed actions allowed in wilderness?
The proposed actions have been assessed and determined to be the minimum necessary for the protection of the natural quality of wilderness character. Although the proposed action would also impact some qualities of wilderness character (undeveloped, untrammeled, and opportunities for solitude), the overall impact on wilderness character in the long term would be beneficial.

Why not let nature takes its course without interference?
Nonnative trout are not a natural part of Sequoia and Kings Canyon National Parks' high elevation aquatic ecosystems. Their presence causes substantial long-term adverse impacts to native species and ecosystem integrity. NPS *Management Policies 2006* guides parks to remove nonnative species and restore native species and naturally functioning ecosystems when feasible.

What is the estimated cost of this project?
The cost for the preliminary project work conducted since 2001 averaged approximately $125,000 per year. If the management-preferred alternative is selected, considering inflation for the implementation period (25 to 35 years), the average project costs would increase to approximately $225,000 per year.

Can I provide comments on the Restoration Plan/FEIS?
The draft Restoration Plan and Draft EIS was available to the public, federal, state, and local agencies, tribes, and organizations for a 60-day public review period from September 26, 2013 to November 25, 2013. In October 2013, due to an extended shutdown of the federal government, and the unavailability of federal systems that allowed the review of the draft plan, the public review period was extended to December 17, 2013. The NPS received 123 public comment letters from individuals, interest groups, businesses, or government agencies. The Restoration Plan/FEIS is not open for a formal public comment period, but additional comments will be read and considered.

Now that you have a final plan, what are the next steps?
A 30-day "no-action" period will begin on the date the Environmental Protection Agency publishes the notice of availability of the final plan in the Federal Register, which is scheduled to occur on June 10, 2016, after which the NPS will prepare a record of decision (ROD).

Who approves the final plan?
The ROD will be reviewed by the NPS Pacific West Regional Director, who will make the final decision on which alternative will be implemented. The selected plan will be announced via the news media and posted on the PEPC website.

If the plan is approved, when will it be implemented?
If approved, implementation of physical fish eradication treatments and frog restoration activities would start later this summer. Treatments using piscicide would not begin until 2017 or 2018.

Where can I find more information?
The complete Restoration Plan/FEIS along with background materials, is available on the National Park Service's Public Comment and Environmental Compliance website at http://parkplanning.nps.gov/aquatics.