Aquatic Ecosystem Restoration Project
Public Informational Meeting

National Park Service
U.S. Department of the Interior

Sequoia & Kings Canyon National Parks
California

Frequently Asked Questions

What's happening to the frogs?
Mountain yellow-legged frogs were historically the most abundant amphibian in high Sierra Nevada lakes and streams. These frogs only occur in the high elevations of the Sierra Nevada and southern California and are an important species in these aquatic ecosystems, functioning as predators, prey, and critical agents of nutrient and energy cycling. By 1915, mountain yellow-legged frogs had generally gone extinct from lakes containing non-native trout, but were still common to abundant in most fishless lakes. Studies in the past decade have determined that frog populations have disappeared from approximately 94% of their historic sites in the Sierra Nevada. This decline has largely been attributed to the introduction of non-native trout and the recent emergence of an infectious pathogen.

How were fish introduced to the lakes and streams?
In Sequoia and Kings Canyon National Parks, fish were naturally restricted in distribution to lower elevation waters by waterfalls and cascades created by recent glaciation. Stocking of non-native trout began in the 1860s and continued through 1988, when all stocking was terminated. Although stocking no longer occurs, non-native trout have established populations in approximately 560 water bodies and hundreds of miles of stream.

How does the removal of non-native trout benefit the restoration of the aquatic ecosystem?
Non-native trout impact the mountain yellow-legged frog by predating on eggs, tadpoles, and young frogs, competing with young and adult frogs for food, and severely reducing or eliminating reproduction. In turn, the presence of non-native trout in lakes and streams has fragmented remaining frog populations, drastically reducing the frog's ability to re-establish populations that go extinct. Non-native trout typically cause severe reductions in distribution and abundance, or extinction, of frog populations. Additionally, non-native trout impact predators such as the mountain garter snake, which preys primarily on amphibians such as the mountain yellow-legged frog, and the rosy finch, which competes with trout for food. Collectively, these processes result in a strong negative effect by non-native trout on both aquatic and terrestrial ecosystems.

What has been done so far?
In 2001, the parks began eradicating non-native trout from 11 naturally fishless lakes and adjacent streams to assess the feasibility of restoring aquatic habitat for native species using gill-netting and electrofishing techniques. By 2008, the parks had removed more than 23,000 trout, and fully or nearly eradicated trout from all 11 lakes. Frog densities in these 11 lakes showed an average 16-fold increase between 2001 and 2008, while one lake showed a 72-fold increase. Several of these populations are now among the largest in the Sierra Nevada, showing that eradicating non-native trout is feasible and highly beneficial to mountain yellow-legged frogs.

I've heard that you are considering using a toxin as an alternative. Why is that the best management choice, and how does it affect organisms besides non-native trout?
While we have eradicated trout from some lakes and streams using gill nets and electrofishers, these methods only work in small-to-medium size habitats. Some lakes are too large and/or their adjacent streams are too long to eradicate fish using gill nets and electrofishers. We plan to continue using gill nets and electrofishers where eradication can be achieved using these methods. But we have learned that many streams cannot be eradicated of trout using only electrofishers. Piscicides, or fish toxicants, have been used with good success in many other fish removal projects, including some in national parks. The piscicide that is being considered for use is *rotenone*, a natural substance produced by plants. Rotenone is toxic to trout and other gill-breathing organisms at extremely low concentrations, while having only slight effects on birds and mammals. Rotenone has been used by humans for centuries to capture fish for food, and for more than 150 years commercially. Rotenone degrades rapidly into water-soluble components, all of which are harmless to people and other mammals in the low concentrations that are effective in killing fish and have only moderate short-term impact and minimal long-term impact on aquatic systems.

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Why are we having an informational meeting?
We are here to provide you with our goals related to the park's aquatic ecosystem restoration and to discuss preliminary issues and alternatives. Each person has an important perspective on the future of these high elevation lakes and can make a unique contribution to the planning process.

What are we proposing and what is the scope?
The purpose of this project is to provide for the restoration of between 30 and 85 lakes and ponds within Sequoia and Kings Canyon National Parks. There are approximately 560 lakes and ponds within the parks that contain introduced trout, and the parks are considering the removal of all introduced trout from up to 15% of these sites. This project will create clusters of fishless habitat in several areas in an attempt to preserve and restore aquatic habitats and populations of native species, including mountain yellow-legged frogs in high elevation lakes and streams. This project will also create new opportunities for visitors to experience the wildlife of pristine wilderness lakes and streams, while continuing to provide ample opportunities for recreational fishing.

Why is an Environmental Impact Statement necessary for the Aquatic Ecosystem Restoration?
Public scoping for this project was initially conducted in early 2007, and it was anticipated an Environmental Assessment (EA) would be prepared to analyze the project. During that time, the parks received comments from over 30 different sources. As staff began the environmental analysis and re-examined information provided by the public, it became clear that the project had the potential for significant impacts on the human environment. There was a level of controversy associated with the proposal, potential for uncertainty and both adverse and beneficial consequences, and unique and unforeseeable environmental impacts. For these reasons, we determined that an Environmental Impact Statement (EIS) would be prepared. An EIS is a more comprehensive document that is prepared when a federal action may result in a significant impact on the human environment.

What kinds of input are we looking for?
We'd appreciate your comments, concerns, and suggestions related to our project goals. The most useful types of comments include options for accomplishing project goals, information that needs to be considered in the EIS, such as related research and other projects, and how the project might affect your use of the area.

Your comments can make a difference.

How do I comment?
Your comments may be submitted online at the NPS Planning, website, http://parkplanning.nps.gov/seki, or by email to seki_planning@nps.gov. You may also mail or hand-deliver your comments to:

Superintendent
Sequoia and Kings Canyon National Parks
Attn: Aquatic Ecosystem Restoration Project
47050 Generals Highway
Three Rivers, CA 93271

All comments must be received by November 21, 2009.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. We will always make submissions from organizations or businesses, and from individuals identifying themselves as representatives of or officials of organizations or businesses, available for public inspection in their entirety. Anonymous comments will not be accepted.