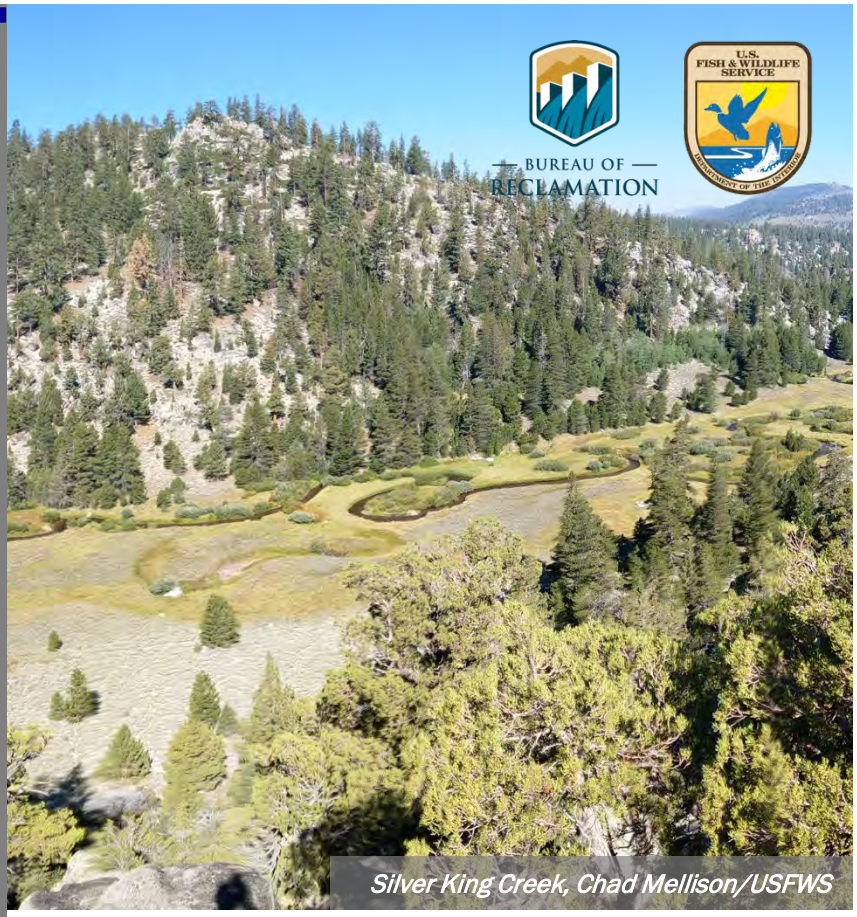
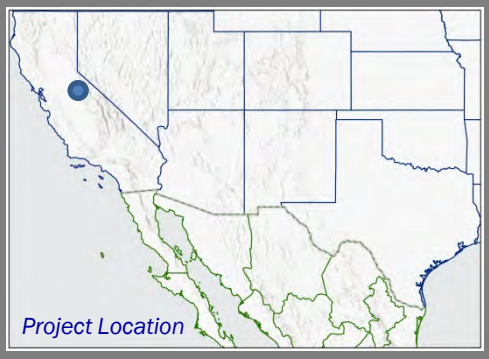
RESTORATION

Native Paiute Cutthroat Trout Restoration in Silver King Creek, California



Silver King Creek, Chad Mellison/USFWS

Paiute cutthroat trout (PCT) are a subspecies of cutthroat trout endemic to a 11.1 mile stretch of cold headwater streams in the Sierra Nevada Mountains of California. They are considered one of the most vulnerable native fishes in California due to competition with introduced non-native trout, loss of genetic diversity, and habitat fragmentation. California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and the U.S. Forest Service partnered to recover this federally listed species through the PCT Restoration Project.



KEY ISSUES ADDRESSED

Paiute cutthroat trout were naturally isolated to a 11.1-mile stretch of Silver King Creek. This secluded and relatively small population was particularly susceptible to both natural and anthropogenic disturbances. Non-native rainbow trout and other fish introduced to Silver King Creek contributed to the decline and eventual extirpation (local extinction) of PCT. The species persisted thanks to translocations to headwater streams by Basque sheepherders at the beginning of the 20th century. Even today, ensuring fish survival during translocation from rugged backcountry presents a logistical challenge. The PCT Restoration Project aims to recover the historic population through non-native fish removal and reintroduction.

PROJECT GOALS

- Eradicate non-native rainbow trout populations from Silver King Creek through rotenone chemical treatment (piscicide)
- Evaluate effectiveness of chemical treatment on non-native fish eradication and monitor side-effects
- Reintroduce PCT from upstream source populations (e.g., Coyote Valley Creek) to their historic habitat in Silver King Creek

COMING BACK HOME

In September 2019 PCT were released by hand back into Silver King Creek after a nearly 100-year absence.

Mules Carry Paiute Cutthroat Trout to Reintroduction Site

PROJECT HIGHLIGHTS

Effective Chemical Treatment: Rainbow trout were completely eradicated by an annual rotenone treatment between 2013 and 2015. This piscicide was restricted to the treatment site by detoxifying the rotenone at a downstream neutralization station, and all fish downstream of the treatment survived.

Long-Term Streamwide Monitoring: In addition to monitoring for rainbow trout, CDFW, USFS, and USFWS collected long-term pre, during, and post treatment data across multiple years on water quality, streamflow, habitat, and other native aquatic species present including macroinvertebrates and amphibians.

Translocation Using Horsepackers: PCT were successfully translocated from an upstream site via fish canisters and pack mules through difficult backcountry conditions.

Monitoring for Genetic Diversity and Habitat Connectivity: Partners identified key habitat and worked with geneticists to collect genetic samples to support diverse PCT populations for recovery.

Collaborators

- California Department of Fish and Wildlife
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- University of California-Davis
- Trout Unlimited (North Bay Chapter)
- California Trout

Funding Partners

- U.S. Fish and Wildlife Service Section 6

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Photos courtesy of US Fish and Wildlife Service

LESSONS LEARNED

Maintaining quality habitat is crucial for PCT. Low-gradient meadow streams provide the best habitat for PCT because the fish prefer deep pools with low velocities. Therefore, it is crucial for managers to minimize grazing impacts while maintaining or increasing the abundance of seasonally inundated meadows connected to streams.

PCT are susceptible to unpredictable environmental events. Upstream populations experienced high mortality during cold, dry winter conditions in 2013 (causing anchor ice formation in streams) and were further limited by high flows and turbidity from a landslide in 2017.

Reintroducing PCT resulted from long-term persistence and collaboration among agencies and non-profit organizations. Project managers made sure to include everyone who wanted to be involved in this process to leverage capacity.

NEXT STEPS

- Continue population augmentation and habitat monitoring in Silver King Creek
- Determine if habitat restoration is needed to build resilience to climate variability, including fire, flood, and drought
- Improve genetic understanding of PCT through continued sampling and working with geneticists
- Continue to provide education to the public to gain support for native fish conservation

PROJECT RESOURCES

For more information on this project, contact Chad Mellison: chad_mellison@fws.gov

For additional project resources and case studies, photograph the QR code below or visit the CCAST website: WWW.DESERTLCC.ORG/RESOURCE/CCAST

Paiute Cutthroat Trout