

Wolf Creek Fishery Management Guidelines

State of California
Department of Fish and Wildlife
Heritage and Wild Trout Program
Region 6



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Executive Summary

Wolf Creek was designated as a Heritage Trout Water by the California Fish and Game Commission in 2020. It supports a restored, self-sustaining population of Walker-strain Lahontan Cutthroat Trout (LCT) within its native range of the Walker Basin.

Wolf Creek provides anglers with the opportunity to interact with a native trout in a pristine environment comprised of both meadows and forests. Stressors impacting the fishery include grazing, wildfires, pollutants, drought, and angling-related fish mortality. Population demographics and habitat are monitored on average every five years. Future management objectives include maintaining the fast action nature of the fishery and improving the overall health of the system by introducing a native fish assemblage.

This document provides an overview of current characteristics and survey information of the Wolf Creek fishery for management purposes.

Designation Background

California Fish and Game Code (Chapter 7.2, Section 1726.4 (b)) states that it is the intent of the Legislature that “the department [specifically, the California Department of Fish and Wildlife (CDFW) Heritage and Wild Trout Program (HWTP)], in administering its existing [heritage and] wild trout program, shall maintain an inventory of all California trout streams and lakes to determine the most suitable angling regulations for each stream or lake. The department shall determine for each stream or lake whether it should be managed as a wild trout fishery, or whether its management should involve the temporary planting of native trout species to supplement wild trout populations that is consistent with this chapter.” Section 1726.4 (b) additionally states that “biological and physical inventories prepared and maintained for each stream, stream system, or lake shall include an assessment of the resource status, threats to the continued well-being of the fishery resource, the potential for fishery resource development, and recommendations, including necessary changes in the allowed take of trout, for the development of each stream or lake to its full capacity as a fishery.”

Furthermore, California Fish and Game Code (Chapter 7.2, Section 1727 (d)) requires that the CDFW “shall prepare and complete management plans for all wild trout waters not more than three years following their initial designation by the commission, and to update the management plan every five years following completion of the initial management plan.” For clarification, wild trout waters, as stated above, represent waters that have been formally designated

by the California Fish and Game Commission as Heritage and/or Wild Trout Waters.

Wild Trout Waters are those that support self-sustaining trout populations, are aesthetically pleasing and environmentally productive, provide adequate catch rates in terms of numbers or size of trout, and are open to public angling. Wild Trout Waters may not be stocked with catchable-sized hatchery trout. Heritage Trout Waters are a sub-set of Wild Trout Waters that highlight wild populations of native California trout found within their historic drainages.

In an effort to comply with existing policy and mandates, the HWTP has prepared these fishery management guidelines. These guidelines are intended largely for internal planning purposes and to communicate management direction to the public, other agencies, and trout angling organizations. This document is intended to provide direction and list actions necessary to sustain the recreational fishery for the benefit and enjoyment of the angling public. However, actions associated with these guidelines are initiated independently, thus any environmental review/permits needed to implement the actions are separate from this guidance document.

Resource status

Area description

Wolf Creek is a tributary of the West Walker River, north of State Route 108 near the Mountain Warfare Training Center in Mono County. The Wolf Creek drainage originates from the outflow of Wolf Creek Lake (10,108ft) and ends at its confluence with the West Walker River (6,827ft). The designation includes the upper 4 miles of stream habitat, ending at its crossing with Forest Service Road 32062.

The designated reach of Wolf Creek is within a tertiary glacial moraine outwash. The change in elevation along the creek follows a step-like pattern; the drainage is comprised of alternating low-gradient meadows above moraine piles and steeper reaches when the creek flows down a moraine. Sediment in the watershed is predominantly granite and granodiorite, although some andesitic lahars are present along the northwestern rim of the drainage. Wolf Creek is separated from the West Walker River by a high gradient waterfall/cascade formed by a well indurated lahar flow around 7,500 ft, which prevents upward movement of non-native species.

Located within the Humboldt Toiyabe National Forest, Wolf Creek can be accessed by Forest Service Road 32042, which parallels the creek for the lower

half of the designated area. The upper 2 miles of Wolf Creek is accessed via an unmaintained trail.

Land ownership/administration

- | | | |
|---|--|----------------------------------|
| <input checked="" type="checkbox"/> U.S. Forest Service | <input type="checkbox"/> Bureau of Land Management | <input type="checkbox"/> Private |
| <input type="checkbox"/> State Parks | | <input type="checkbox"/> Other |
| <input type="checkbox"/> National Parks | <input type="checkbox"/> CDFW | |

Public access

- | | | |
|--|--|-------------------------------|
| <input checked="" type="checkbox"/> Roadside | <input checked="" type="checkbox"/> Remote/hike-in | <input type="checkbox"/> Boat |
|--|--|-------------------------------|

Designations

- | | |
|--|-------------------------------------|
| <input type="checkbox"/> Wild Trout Water | <input type="checkbox"/> Wilderness |
| <input checked="" type="checkbox"/> Heritage Trout Water | <input type="checkbox"/> Other |
| <input type="checkbox"/> Federal Wild and Scenic River | |

Area map

Wolf Creek Designated Heritage and Wild Trout Water - 2020



Figure 1. Map of Wolf Creek designation area.

Fishery description

Wolf Creek is a high elevation (6,800ft-10,100ft), cold-water system. It flows through a variety of riparian habitats, mostly alternating between forests and small meadows. Typically, Wolf Creek is inaccessible due to snow between December and March. Spring runoff causes high flows between mid-March and July.

Currently, the creek supports a fast action fishery of Lahontan Cutthroat Trout (LCT) in its native range of the Walker Basin. This proximity provides a unique angling opportunity close to the West Walker River, a popular non-native trout fishing destination. The combination of roadside access and remote off trail access allows for a tailored fishing experience based on individual preference.

Water source(s)

- Spring Rain Snow Tailwater

Gradient

- Low (< 2%) High (>4%)
 Medium (2-4%) N/A

Fish species

Wolf Creek contains one species of native trout: Lahontan Cutthroat Trout.

Table 1. Fish species present in Wolf Creek.

Common name	Scientific name	Native (Y/N)	Listing status
Lahontan Cutthroat Trout	<i>Oncorhynchus clarkii henshawi</i>	Y	Federal Threatened, California Species of Special Concern

Other aquatic species

Table 2. Aquatic species in Wolf Creek watershed.

Common name	Scientific name	Native (Y/N)	Listing status
Sierra Nevada Yellow-Legged Frog	<i>Rana sierrae</i>	Y	Federal Endangered, State Threatened

Common name	Scientific name	Native (Y/N)	Listing status
Yosemite Toad	<i>Anaxyrus canorus</i>	Y	Federal Threatened, California Species of Special Concern
Sierran Treefrog	<i>Pseudacris sierra</i>	Y	None

Fisheries and habitat assessments

The most recent extensive survey of Lahontan Cutthroat Trout population size and habitat availability was conducted by Trout Unlimited in 2018, funded by CDFW. This survey found that LCT primarily occupied pool habitats and witnessed individuals dispersing to multiple different pools through riffle habitat (Table 3 and Table 4). Trout Unlimited hypothesized that winter conditions limit LCT distribution and deeper pools provide overwintering refuges from ice (Barnes, 2018). Three to four size classes of LCT are present in Wolf Creek, with the largest size class as the most abundant (Figure 2). Scales collected from Wolf Creek in 2020 indicate at least four age classes are present and growth slows after the second year (Figure 4). In 2022, CDFW conducted a less extensive multiple-pass electrofishing survey and found that densities at the two sites had increased from 2018, but the observed weight of larger fish was lower than expected (Figure 3). Expected standard weights were calculated using the “lotic” standard weight equation for Interior Cutthroat Trout derived in Kruse and Hubbert 1997. This suggests the LCT size and population is likely limited by food availability. Therefore, the Wolf Creek LCT population might benefit from an expansion of the food web to include other native fish species that LCT historically predated upon.

Table 3. 2018 population estimate of LCT in Wolf Creek.

Population Estimate	Upper Confidence Interval (80%)	Lower Confidence Interval (80%)
1,248	1,331	1,167

Table 4. Habitat distribution across 2018 survey locations of Wolf Creek.

% Pool	% Riffle	% Run
45	45	10

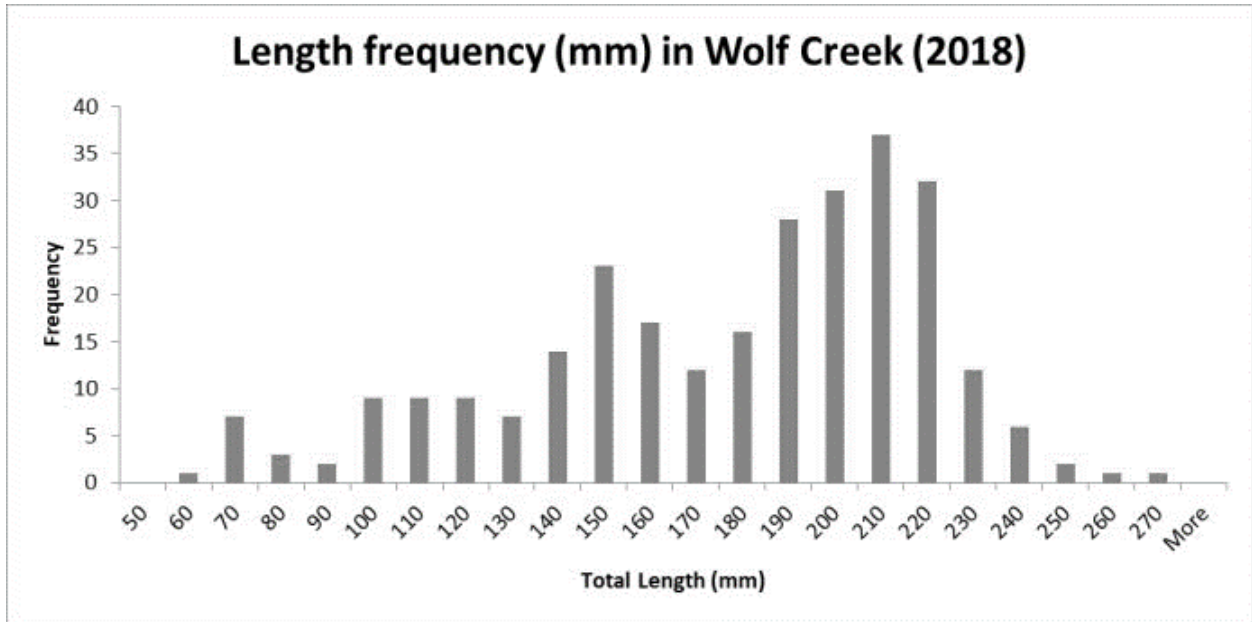


Figure 2. Length frequency of LCT in Wolf Creek across all 2018 survey sites. Fish lengths ranged between 2" and 11".

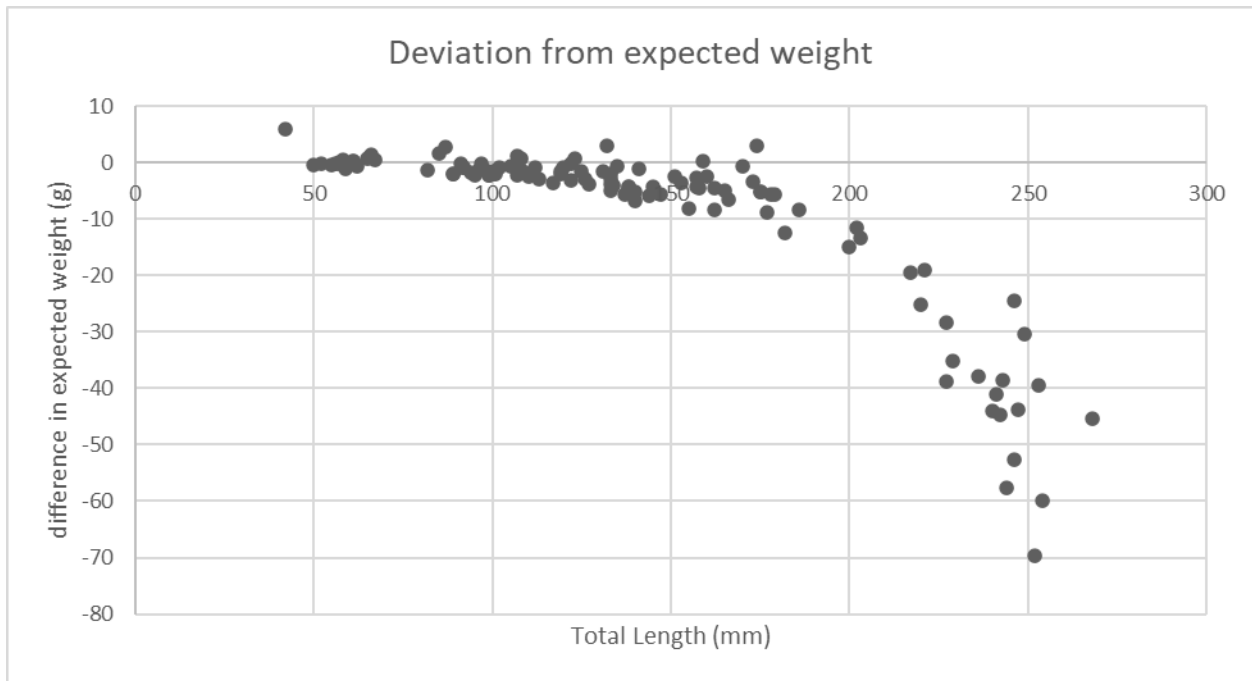


Figure 3. Deviation of observed LCT weights from expected weight in 2022 at Wolf Creek. Values were calculated by subtracting each measured weight from the expected weight according to Kruse and Hubert's 1997 proposed standard weight equation.

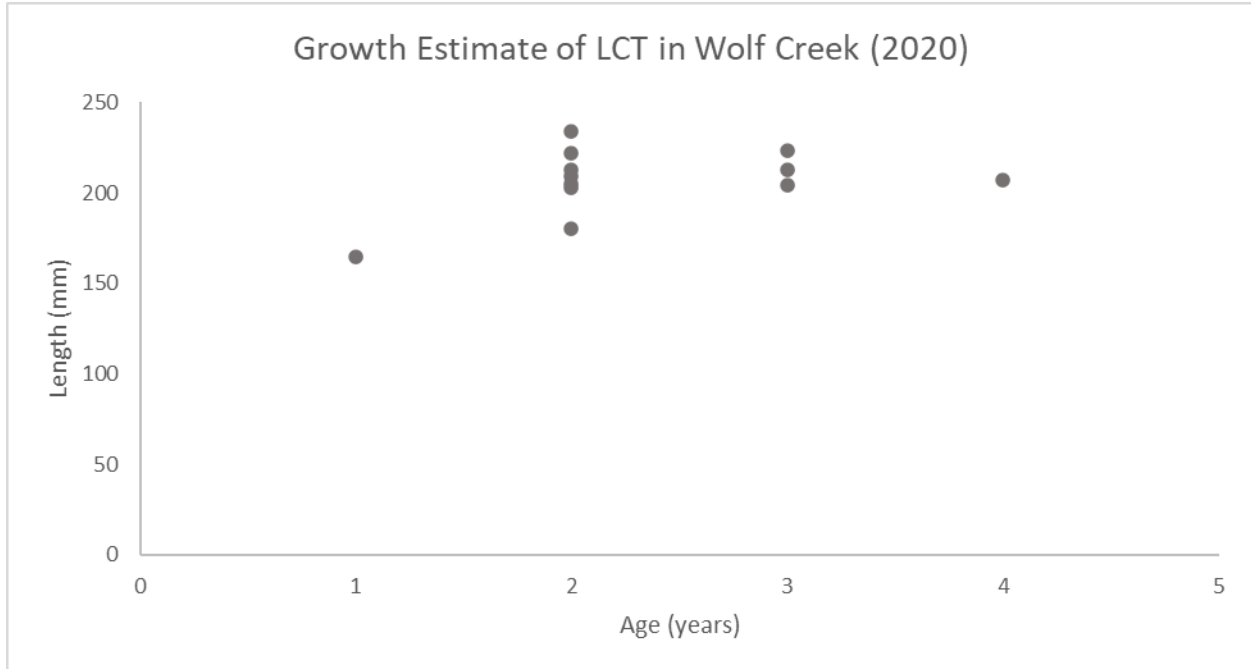


Figure 4. Lahontan Cutthroat Trout growth estimate from aging scales collected in 2020 from Wolf Creek.

Angler survey data

Table 5. 2022 Angler survey box data.

# Forms	Fish caught per hour	Species composition- Cutthroat Trout	Species composition- Other
43	4.25	100%	0%

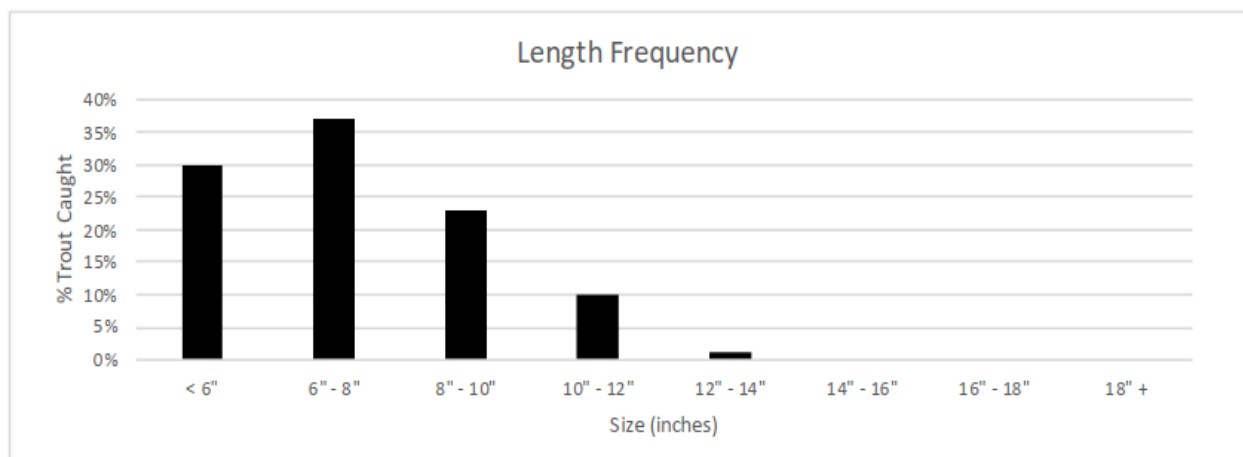


Figure 5. Size class of LCT caught by anglers at Wolf Creek in 2022.

Table 6. 2022 Angler satisfaction survey: -2 (low) to 2 (high).

Average angler experience	1.7
Average angler rating of fish size	1.6
Average angler rating of fish number	1.7

Angling regulations

Table 7. Angling regulations in 2023.

Body of Water	Open Season and Special Restrictions	Daily Bag and Possession Limit
(165) Wolf Creek and tributaries (tributary to West Walker River) (Mono Co.).	All year. Only artificial flies with barbless hooks may be used.	0 trout

Known stressors

- Angling-related injury and mortality
- Grazing
- Fire
- Pollutants
- Water quantity during drought years

Management

Management goals and objectives

- Fast action (catch rates \geq 2 fish/hour)
 Heritage trout
- Trophy (trout \geq 18 inches)
 Other

Wolf Creek will continue to be managed as a Lahontan Cutthroat Trout recovery water and fast action heritage trout fishery. Future management objectives include restoring a native fish assemblage to the creek. The goal of this action is to expand Wolf Creek's food web and increase LCT biomass to improve fish health and angler satisfaction.

Monitoring

Multiple monitoring strategies are used to properly manage Wolf Creek as a recreational fishery and a restored population of Lahontan Cutthroat Trout.

- Multiple-pass electrofishing: Wolf Creek is a smaller sized creek, which makes this an effective strategy to estimate the population of LCT in Wolf Creek. Approximately, every 5 years, multiple sites are surveyed throughout the creek to accurately estimate the population size and fish condition.
- Angler Survey Box (ASB): There is a box at the lower extent of the designated area and at the end of the road paralleling Wolf Creek. Compiling results from self-reported surveys deposited in the ASB, allows for an annual evaluation of angling pressure and satisfaction with the Wolf Creek fishery.

Angling regulations

Current angling regulations for the Wolf Creek fishery were proposed and adopted to provide protection for the trout population while maintaining management goals and objectives. The Department shall monitor the fishery along with angler satisfaction/preferences to guide and direct any future regulatory changes if warranted. Regulations will be used in an adaptive manner to enhance angler opportunities while adhering to the management goals/objectives set forth in these guidelines.

Addressing stressors

Wolf Creek is a catch and release fishery and has maintained its fast action status in the past 3 years, according to Angler Survey Box data, suggesting angling pressure is light. There is a potential for angling-related mortality especially during spawning season because the fishery is open year-round. No noticeable angling impacts have been observed to date.

Wolf Creek has been threatened by past wildfire events but remains unburned. Lightning strikes in the Wolf Creek drainage pose a fire risk; however, the Marine Warfare Training Center staff usually respond to fire threats in the area.

The US Forest Service has livestock grazing leases in the meadow sections surrounding Wolf Creek. Grazing of sheep occurs on a semiannual basis. The trampling of meadow areas by livestock has the potential to decrease floodplain habitat and increase bedload scour and alter streambed channel

characteristics. Wolf Creek appears to have little floodplain habitat potentially due to grazing, but no extensive negative impacts have been recorded.

Wolf Creek is used as a US Marine training ground and often plastic and human waste are observed in the creek and its surrounding areas, mostly in the form of “MRE’s” and “WAG bags”. Communication with the Marine Warfare Training Center is ongoing to mitigate these pollutants and their impacts on the system.

During drought years, Wolf Creek maintains healthy water temperature and water chemistry, but the water quantity in the creek is diminished. This most likely decreases the habitat available to LCT in the creek, but no population-level impacts have been observed.

Adaptive strategies

This document provides guidance and management direction for wild trout resources in the Wolf Creek fishery. These management recommendations are based on existing conditions and should be used in accordance with updated information over time. Long-term monitoring of the fishery and associated angler preferences will play a critical role in future management prescriptions. Any changes to the prescribed management goals and objectives will be based on updated quantifiable data, stakeholder input, HWTP Policy (Bloom and Weaver 2008), the Strategic Plan for Trout Management (CDFW 2022), and collaborative (CDFW Headquarters and Regional) HWTP review.

References

- Barnes, J. (2018). *2018 Walker Basin LCT Stream Survey Report*. Mono County, CA: Trout Unlimited.
- Bloom, R. and J. Weaver. 2008. *The California Heritage and Wild Trout Program Handbook (Draft)*. State of California Natural Resources Agency. Department of Fish and Wildlife. Heritage and Wild Trout Program. Sacramento, CA.
- California Department of Fish and Wildlife (CDFW). 2022. *Strategic plan for trout management: 2022 update*. State of California Resources Agency. Sacramento, CA.
- Kruse, C.G. and Hubert, W.A. 1997. Proposed Standard Weight (Ws) Equations for Interior Cutthroat Trout. *North American Journal of Fisheries Management*. 17:784-790.