

ELDER CREEK

Alpine County, California

2006 Stream Habitat Survey Report



Prepared by:

Carson Ranger District: Humboldt-Toiyabe National Forest

Introduction

Elder Creek is located in Alpine County, California near the topographical divide between the eastern and western slopes of the Sierra Nevada. The headwaters of the stream leave Asa Lake at an approximate elevation of 8600 feet, and the mainstem descends in an easterly direction down to 7720 feet at the confluence with Wolf Creek. Elder Creek lies entirely within the boundaries of the Carson-Iceberg Wilderness and the Humboldt-Toiyabe National Forest.

Purpose and Need

The 1995 Lahontan Cutthroat Trout Recovery Plan requires that ecosystem management plans be developed for the Truckee and Walker River basins in order to both determine objectives for the future desired conditions of these watersheds, and to create strategies for achieving these objectives. Similar management plans are recommended for the Carson and Humboldt River basins. In 1998 Truckee and Walker River Basin Recovery Implementation Teams were organized to develop strategies for Lahontan cutthroat trout (LCT) restoration and recovery efforts in the Truckee and Walker River basins. In August 2003 both recovery teams completed Short-Term Action Plans for Lahontan Cutthroat Trout Recovery in the Truckee and Walker River Basins. The short-term action plans outline specific tasks to be completed within five years. Many of the short-term tasks identified in the Truckee and Walker River Basin Short-Term Action Plans are similar to one another and are applicable to recovery of LCT in the Carson River basin. The Carson Ranger District adopted some of the short-term tasks identified in the Truckee and Walker River Basin Short-Term Action Plans and began implementing these actions under an informal plan for the Carson River basin. These tasks include: (1) identifying and evaluating fish passage and existing barriers within the Carson River basin, (2) developing a watershed analysis of the physical components of the Carson River basin, and (3) initiating habitat surveys to evaluate potential LCT introduction streams and validating against existing LCT inhabited streams.

The Carson River watershed historically provided an estimated 405 miles of stream habitat (Kling and Mellison 2008) for the native Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*). Populations of these salmonids within the watershed were interactive and interconnected, and therefore these metapopulations likely had high genetic diversity and were capable of long term persistence through adverse conditions.

At present, no self-sustaining populations of genetically pure LCT are known to occupy historic habitat within the Carson River basin and since all of the drainage has been surveyed it is doubtful that any such populations remain to be discovered. The introduction of nonnative trout before the turn of the century is believed to be largely responsible for the extirpation of LCT within the Carson River drainage.

Although naturally occurring Lahontan cutthroat trout populations have been eliminated from the Carson River drainage, small populations have been established in the formerly fishless headwaters of the East Fork Carson River above Carson Falls and in the

tributaries Murray Canyon Creek, Golden Canyon Creek, and Poison Flat Creeks above impassible barriers. Pure populations of LCT also occur in Red Lake, Heenan Lake, Heenan Creek, and possibly in Raymond Meadows Creek. Hybridized populations of LCT occur in Jeff Davis Creek and in Leviathan Creek upstream of Leviathan Mine. The artificially established pure populations of LCT in the East Fork Carson River watershed occupy about 17 miles of stream habitat: approximately 4.2% of the total miles that LCT presumably occupied historically.

The primary causes for the decline of LCT include: 1) reduction and alteration of stream discharge; 2) alteration of stream channels and morphology; 3) degradation of water quality; and 4) introductions of non-native fish species. The Carson River watershed downstream of Carson Falls is primarily inhabited by non-indigenous salmonids which include, but are not limited to: rainbow trout (*Oncorhynchus mykiss*), brook trout (*Salvelinus fontinalis*), and brown trout (*Salmo trutta*). These competitive and aggressive introduced fishes have displaced the endemic Lahontan cutthroat trout.

Long term survival and recovery of LCT within the Carson River watershed will require sustained cooperation and effort from multiple federal and state agencies, including the Forest Service and personnel of the Humboldt-Toiyabe National Forest. Gaining information through immediate action can aid in prioritizing future objectives for the restoration of LCT. The 2006 Carson River watershed surveys are being conducted to gain information about streams in the basin, and furthermore to provide an inventory of potential fish habitat for LCT. The surveys include the tasks of identifying potential fish passage barriers and evaluating physical characteristics that pertain to the success of the native LCT. Should recommendations be made to re-introduce LCT, these surveys can provide baseline information for future management of the fishery. Elder Creek was surveyed on August 31, 2006 by members of the Carson Ranger District of the Humboldt-Toiyabe National Forest. The surveyors were Brian Hodge and Robert Omann.

Materials and Methods

Forest Service personnel surveyed Elder Creek by hiking the watercourse in an upstream manner. Interesting and relevant features were documented, photographed, and recorded into a Trimble GPS unit. These features included but were not limited to: road crossings, trail crossings, fish sightings, permanent fish barriers, seasonal fish barriers, tributaries, springs, beaver dams, areas of erosion concern, grazing impacts, dispersed campsites, etc.

Fish passage barriers were noted and categorized into one of four categories: natural-permanent, natural-seasonal, artificial-permanent, and artificial-seasonal. A permanent barrier is categorized as an obstacle, waterfall, or drop in excess of 5ft that would prevent passage of fish year-round (specifically LCT). A stadia rod was used to measure barriers where applicable. Barriers categorized as permanent barriers may actually be seasonal barriers, and some seasonal barriers may actually act as a permanent barrier.

Results

Approximately 1.62 miles of Elder Creek were surveyed (Sites 1-17). The overall gradient of the surveyed reach is 7.9 percent. Six fish passage barriers were identified throughout the stream: four barriers were noted as seasonal (Sites 3, 6, 9, & 12), and two barriers were documented as permanent (Sites 4 & 15). Tributaries were documented at Sites 11 and 14, and one fish sighting was documented at Site 7 (though fish were sighted at other locations). Photos were taken to capture stream characteristics at Sites 5 & 8. Trail crossings for foot and stock traffic were identified at three locations (Sites 2, 10, & 16). In addition, cattle were sighted near the stream at one point (Site 13).

Discussion

One and one-half miles of Elder Creek provide potential LCT habitat (Sites 1-15). One permanent barrier divides this reach into two sections, both of which contain seasonal barriers that range in height from 2.2 to 3.0 feet. The most favorable section of stream is the 0.75 mile stretch located between Site 6 and Site 12, which includes a low-gradient meadow where abundant brook trout were sighted underneath cut-banks and woody debris. Between Sites 15 and 16 two headwater branches converge: one branch from Asa Lake and the other from a nearby meadow. Only the branch from Asa Lake was carrying water during the time of the survey, and therefore the survey progressed towards the lake to Site 17, above which point the stream is extremely narrow and steep.

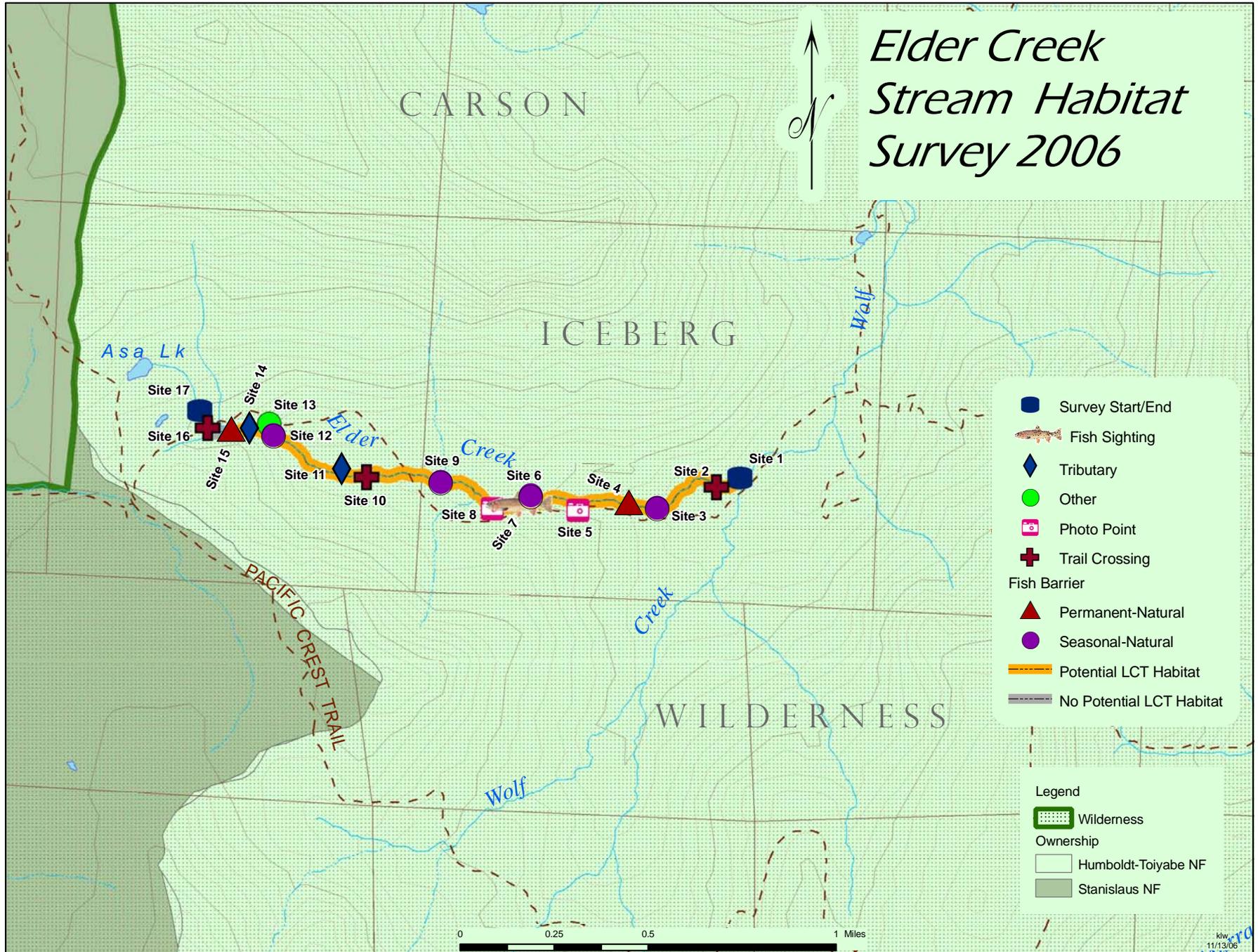
A small group of cattle was sighted in the Elder Creek drainage (Site 13), though livestock impacts were negligible. In addition, evidence of human presence or activity was limited to the existence of a trail and the presence of one fire ring located away from the stream.

Elder Creek feeds into Wolf Creek within a reach of that stream that provides potential LCT habitat. Therefore, individually Elder Creek provides a small amount of potential LCT habitat; however, Elder Creek does fall within a larger watershed that cumulatively offers 14.2 miles of potential LCT habitat.

Recommendations

1. Consider the 1.5 mile section of Elder Creek between Site 1 and Site 15 as potential LCT habitat and consider Elder Creek a medium candidate for restoration.
2. Monitor the impact of grazing in the area to maintain the existing integrity of the riparian corridor.

Elder Creek Stream Habitat Survey 2006



- Survey Start/End
- Fish Sighting
- ◆ Tributary
- Other
- Photo Point
- + Trail Crossing
- Fish Barrier**
- ▲ Permanent-Natural
- Seasonal-Natural
- Potential LCT Habitat
- No Potential LCT Habitat

- Legend**
- Wilderness
 - Ownership**
 - Humboldt-Toiyabe NF
 - Stanislaus NF

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Site 1: Elder Creek, Carson Ranger District. An upstream photo of Elder Creek at the confluence with Wolf Creek. Note that each stream contributes 50% of the flow. This site is located at UTM: N: 4264625 & E: 261092, Elev. 7720 ft (2353 m).



Site 2: Elder Creek, Carson Ranger District. A cross-section of Elder Creek showing a trail crossing on the right bank. This site is located at UTM: N: 264585 & E: 261001, Elev. 7789 ft (2374 m).



Site 3: Elder Creek, Carson Ranger District. An upstream photo of a seasonal fish barrier measuring 3.0 ft tall with a max pool depth of 1.8 ft. Note the complex LWD. This site is located at UTM: N: 4264493 & E: 260750, Elev. 7848 ft (2392 m).



Site 4: Elder Creek, Carson Ranger District. Upstream photo of a permanent fish barrier: a natural waterfall 12.0 ft high, with a max pool depth of 2.0 ft (estimated for safety reasons). This site is located at UTM: N: 4264515 & E: 260629, Elev. 7880 ft (2402 m).



Site 5: Elder Creek, Carson Ranger District. An upstream photo showing characteristic habitat of this reach. This site is located at UTM: N: 4264483 & E: 260420, Elev. 7940 ft (2420 m).



Site 6: Elder Creek, Carson Ranger District. An upstream photo showing a seasonal barrier formed by a 3.0 ft rocky cascade with a max pool depth of 1.3 ft. This site is located at UTM: N: 4264546 & E: 260208, Elev. 7972 ft (2430 m).



Site 7: Elder Creek, Carson Ranger District. Cross-sectional photo of a pool where a small salmonid was sighted. This site is located at UTM: N: 4264515 & E: 260152, Elev. 8054 ft (2455 m).



Site 8: Elder Creek, Carson Ranger District. An upstream photo showing a meadow with undercut banks and favorable LCT habitat. This site is located at UTM: N: 4264491 & E: 260042, Elev. 8071 ft (2460 m).



Site 9: Elder Creek, Carson Ranger District.. Upstream photo of a seasonal fish barrier formed by large woody debris. Maximum barrier height is 2.2 feet with a max pool depth of 2.1 ft. This site is located at UTM: N: 42646509 & E: 259798, Elev. 8123 ft (2476 m).



Site 10: Elder Creek, Carson Ranger District. A cross-sectional photo showing a trail crossing on the right bank. This trail is for foot traffic and stock animals. This site is located at UTM: N: 4264630 N & E: 259512, Elev. 8068 ft (2459 m).



Site 11: Elder Creek, Carson Ranger District. A small tributary contributing 1% of flow is located on the left bank. This site is located at UTM: N: 4264658 & E: 259402, Elev. 8123 ft (2476 m).



Site 12: Elder Creek, Carson Ranger District. An upstream photo showing a small seasonal fish barrier formed by large woody debris. The height of the barrier is 2.2 ft with a max pool depth of 1.3 ft. This site is located at UTM: N: 4264805 & E: 259111, Elev. 8209 ft (2502 m).



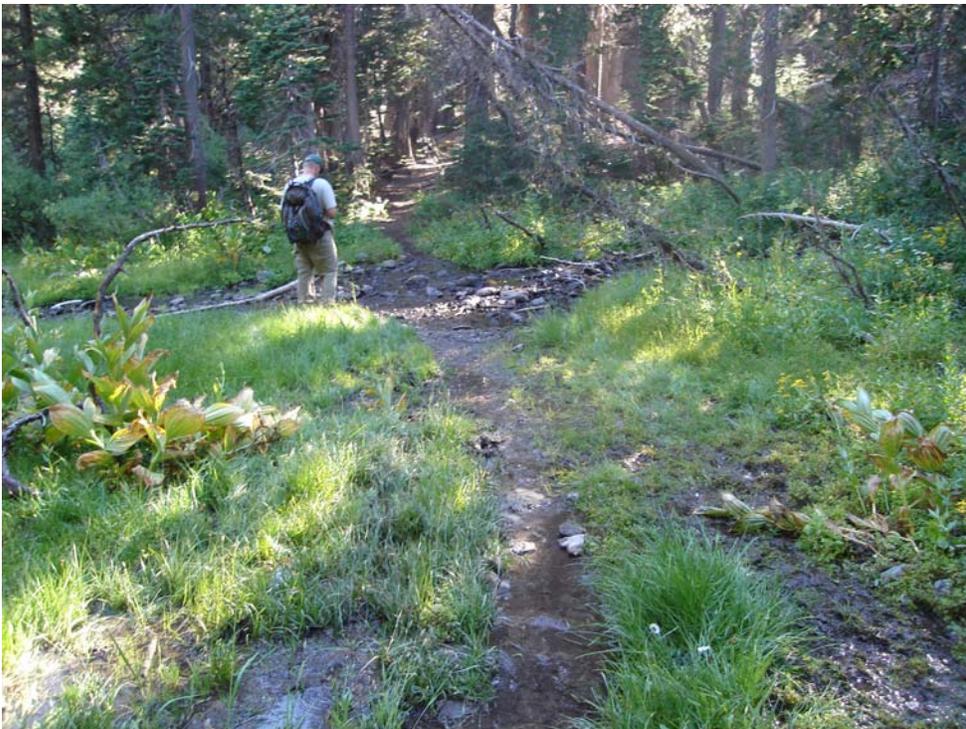
Site 13: Elder Creek, Carson Ranger District. Note: cattle were seen at Site 13 earlier in the day, though were not present during the survey. This photo shows the small herd that was previously sighted at Site 13. This site is located at UTM: N: 4264856 & E: 259102, Elev. 8235 ft (2510 m).



Site 14: Elder Creek, Carson Ranger District. Upstream photo of a tributary found on the left bank. This tributary contributes 10% flow and was found to be 3 ft wide and .5 ft deep. This site is located at UTM: N: 4264850 & E: 259006, Elev. 8238 ft (2511 m).



Site 15: Elder Creek, Carson Ranger District. Upstream photo of a permanent fish barrier formed by a 10-foot high rock waterfall with a max. pool depth of 0.8 feet. This site is located at UTM: N: 4264838 & E: 258919, Elev. 8245 ft (2513 m).



Site 16: Elder Creek, Carson Ranger District. Cross-sectional photo showing a trail-stream intersection. This site is located at UTM: N: 4264849 & E: 258847, Elev. 8350 ft (2545 m).



Site 17: Elder Creek, Carson Ranger District. Upstream photo taken at the survey end point. Above this point the stream lacks sustainable fish habitat. This site is located at UTM: N: 4264917 N & E: 258793, Elev. 8396 ft (2559 m).