CRATER LAKE CREEK

Alpine County, California

2006 Stream Habitat Survey Reports

Prepared by:

Carson Ranger District, Humboldt-Toiyabe National Forest

Introduction

Crater Lake Creek is located in Alpine County, California. The headwaters of Crater Lake Creek fill Crater Lake (Elev. 8594 feet), from which point the mainstem runs in an easterly direction to its confluence with Red Lake Creek (Elev. 7298 feet). The entire watershed is located within the boundaries of 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. Crater Lake Creek was surveyed on August 3 and August 16, 2006 by Brian Hodge of the Carson Ranger District: Humboldt-Toiyabe National Forest.

Materials and Methods

Forest Service personnel surveyed Crater Lake 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 1.7 miles of Crater Lake Creek were surveyed (Sites 1-16). One tributary was identified entering river right (Site 3). Two road stream crossings were documented: Site 4 where Highway 88 crosses the stream and Site 12 where a dirt road leading to the Alhambra and Alpine Mines crosses Crater Lake Creek. Two campsites were documented: one on the stream bank (Site 8), and the other on the edge of Crater Lake (Site 15). At two locations evidence of recent or current grazing was noted (Sites 5 & 6). Four fish passage barriers were recorded, though in some instances one site number was used to reference several consecutive barriers. Three permanent barriers (Sites 7, 11, & 13) and one seasonal barrier were documented (Site 10). In addition, photos were taken where a picture would effectively illustrate the characteristics of the stream (Sites 2, 9, & 14). The overall gradient of Crater Lake Creek is 14.6 percent, and the gradient between Site 6 and Site 16 is approximately 22 percent.

Discussion

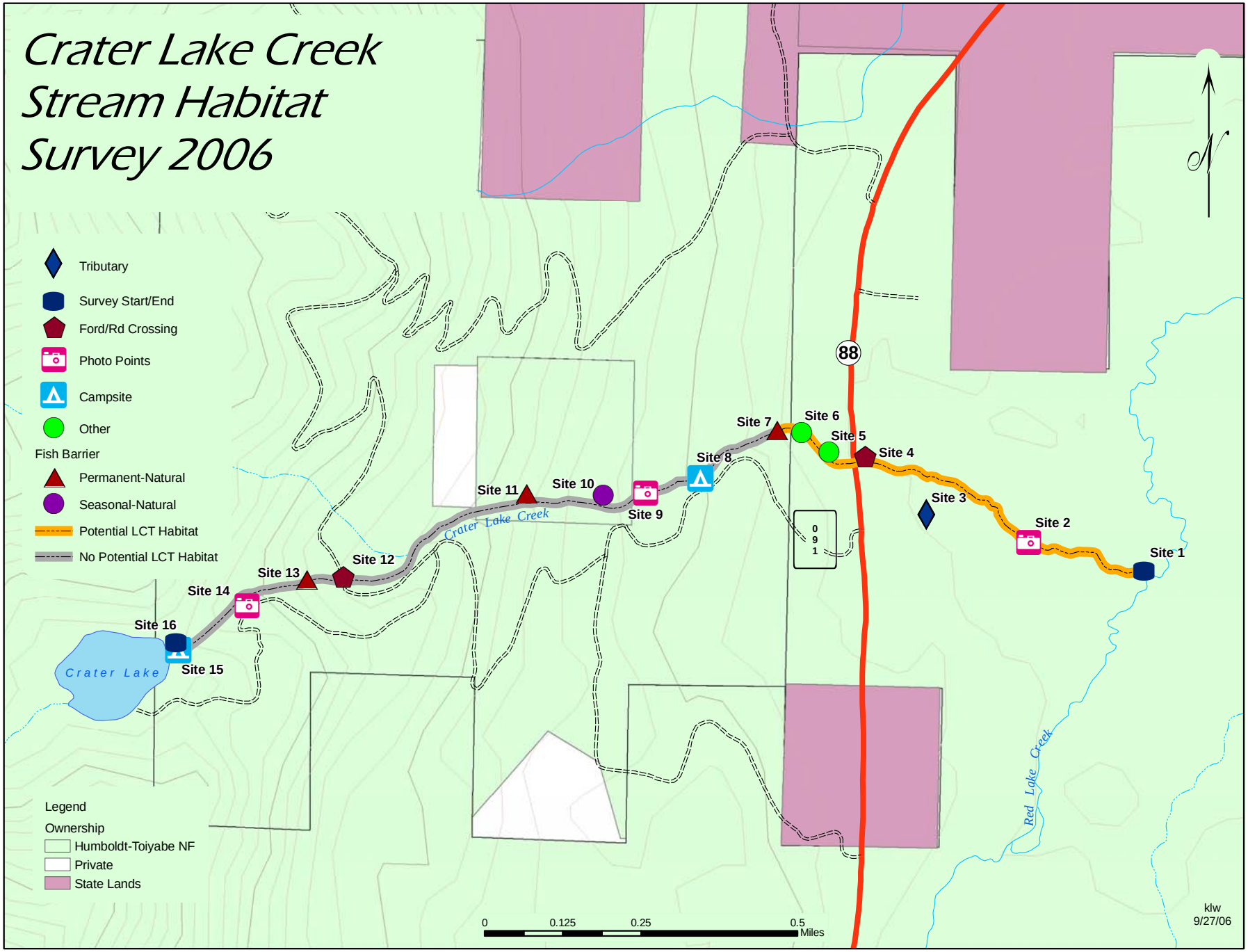
Crater Lake Creek has a length of 0.63 miles of stream suitable for LCT. Much of this section is marshy and consists of narrow uniform channels. Individually, the 0.63 miles of potential LCT habitat is limited in length, and would not allow for long-term restoration or recovery. The value of Crater Lake Creek for LCT habitat would be in adding river mileage to Red Lake Creek and adding mileage towards restoration of an LCT metapopulation in the West Fork Carson River watershed (See 2008 Carson River Summary Report).

Between Site 6 and Site 16 the stream has multiple waterfalls ranging from 10 feet to 100 feet in height. Though scenic, this section of stream is far too steep to provide favorable fish habitat and the numerous waterfalls prohibit migration or fish passage.

Recent cattle activity was evident because of the presence of hoof marks in the streambed and because of the abundance of cattle trails and disturbed bank vegetation between Sites 5 and 6. The water quality and health of the riparian zone would benefit by creating a buffer that limits the number of cattle crossings and access points to stream banks. The two documented campsites were both located within several meters of the stream/lake.

Recommendations

1. Consider the 0.63 mile section of Crater Lake Creek between Site 1 and Site 6 as potential LCT habitat and consider Crater Lake Creek a high candidate for restoration. Crater Lake Creek could contribute towards restoring a metapopulation of LCT in the area (See 2008 Carson River Summary Report).
2. Work with livestock owners and other Forest Service personnel to minimize the effects of cattle on the stream banks and the streambed near Sites 5 and 6.
3. Utilize signs and physical barriers to discourage/prevent people from parking and camping adjacent to Crater Lake Creek.
4. Decommission and disassemble those campsites found within 100 feet of water.


Crater Lake Creek
Stream Habitat
Survey 2006
Tributary
Survey Start/End
Ford/Rd Crossing
Photo Points
Campsite
Other
Fish Barrier
Permanent-Natural
Seasonal-Natural
Potential LCT Habitat
No Potential LCT Habitat
Site 1
Site 2
Site 3
Site 4
Site 5
Site 6
Site 7
Site 8
Site 9
Site 10
Site 11
Site 12
Site 13
Site 14
Site 15
Site 16
Crater Lake Creek
Crater Lake
Red Lake Creek
88
0 9 1
Legend
Ownership
Humboldt-Toiyabe NF
Private
State Lands
0
0.125
0.25
0.5
Miles
klw
9/27/06

Site 1: Crater Lake Creek, Carson Ranger District. Downstream view of Red Lake Creek where Crater Lake Creek enters on river left. This site is located at UTM: 4290311 & E: 243999, Elev. 7231 feet (2225m.)

Site 1: Crater Lake Creek, Carson Ranger District. Upstream view of Crater Lake Creek just above the confluence with Red Lake Creek. This site is located at UTM: 4290311 & E: 243999, Elev. 7231 feet (2225m.)

Site 2: Crater Lake Creek, Carson Ranger District. Upstream photo shows where a braid of the stream re-enters on river left in a large marshy area. This site is located at UTM: N: 4290386 & E: 243702, Elev. 7321 feet (2232m).

Site 3: Crater Lake Creek, Carson Ranger District. A tributary enters on river right, contributing 15-20% of total flow in the creek. This site is located at UTM: N: 4290453 & E: 243437, Elev. 7318 feet (2231m).

Site 4: Crater Lake Creek, Carson Ranger District. Upstream view of a box-culvert beneath Highway 88. The culvert does not impede fish passage. This site is located at UTM: 4290602 & E: 243283, Elev. 7389 feet (2250m).

Site 5: Crater Lake Creek, Carson Ranger District. Upstream view at the river left braid near a fenceline. This site is located at UTM: N: 4290615 & E: 243191, Elev. 7380 feet (2250m).

Site 5: Crater Lake Creek, Carson Ranger District. Upstream of a taught barbed-wire fence. This site is located at UTM: N: 4290615 & E: 243191, Elev. 7380 feet (2250m).

Site 6: Crater Lake Creek, Carson Ranger District. Photo shows fresh hoof-prints in the streambed. This site is located at UTM: N: 4290664 & E: 243102, Elev. 7308 feet (2228m).

Site 6: Crater Lake Creek, Carson Ranger District. Photo shows a cattle crossing on the river right bank. This site is located at UTM: N: 4290664 & E: 243102, Elev. 7308 feet (2228m).

Site 7: Crater Lake Creek, Carson Ranger District. Upstream view of a permanent fish passage barrier. The waterfall has a total height of approximately 35-40 feet. This site is located at UTM: 4290668 & E: 243055, Elev. 7472 feet (2278m.)

Site 7: Crater Lake Creek, Carson Ranger District. Close-up view of a "hydraulic cannon". This site is located at UTM: 4290668 & E: 243055, Elev. 7472 feet (2278m.)

Site 7: Crater Lake Creek, Carson Ranger District. Photo shows another permanent fish barrier found just upstream of the first.

Site 7: Crater Lake Creek, Carson Ranger District. A third permanent fish passage barrier is located upstream of those shown in photos above.

Site 8: Crater Lake Creek, Carson Ranger District. A campsite is located approximately 1m from the stream on river right. Campsite dimension is roughly 30 square meters. This site is located at UTM: 4290543 & E: 242859, Elev. 7580 feet (2311m).

Site 9: Crater Lake Creek, Carson Ranger District. Upstream photo shows cascades characteristic of this reach. This site is located at UTM N: 4290505 & E: 242723.

Site 10: Crater Lake Creek, Carson Ranger District. Upstream photo shows one of several seasonal barriers found in succession. This barrier measures approximately 4.0 feet in height, with a maximum pool depth of 1.5 feet. This site is located at UTM: N: 4290481 & E: 242615, Elev. 7688 feet (2344m).

Site 11: Crater Lake Creek, Carson Ranger District. Several 10 foot rock gabions are located in sequence. Photo shows one of the several barriers. This site is located at UTM: N: 4290512 & E: 242413, Elev. 7774 feet (2370m).

Site 11: Crater Lake Creek, Carson Ranger District. An upstream view of a rocky waterfall. This site is located at UTM: N: 4290512 & E: 242413, Elev. 7774 feet (2370m).

Site 11: Crater Lake Creek, Carson Ranger District. Distant photo captures the steep canyon walls and steep stream gradient. This section in unsuitable for habitat or fish passage. This site is located at UTM: N: 4290512 & E: 242413, Elev. 7774 feet (2370m).

Site 12: Crater Lake Creek, Carson Ranger District. Cross-sectional view of a road-stream crossing. Road use has widened the channel by 5 feet on both banks. This intersection is located at UTM: N: 4290300 & E: 241926, Elev. 8088 feet (2466m).

Site 13: Crater Lake Creek, Carson Ranger District. Upstream photo shows only a short section of a 100 foot waterfall. This permanent fish passage barrier is located at UTM: N: 4290269 & E: 241844, Elev. 8170 feet (2491m).

Site 13: Crater Lake Creek, Carson Ranger District. Downstream (eastern) view from atop the falls. This permanent fish passage barrier is located at UTM: N: 4290269 & E: 241844, Elev. 8170 feet (2491m).

Site 14: Crater Lake Creek, Carson Ranger District. Upstream photo shows the presence of a residual snow pack and another waterfall. This site is located at UTM: N: 4290219 & E: 241693, Elev. 8430 feet (2570m).

Site 15: Crater Lake Creek, Carson Ranger District. A campsite is located approximately 4 meters from the edge of Crater Lake. This site is located at UTM: N: 4290108 & E: 241523, Elev. 8610 feet (2625m).

Site 16: Crater Lake Creek, Carson Ranger District. Upstream view of the spillway where the lake feeds Crater Lake Creek. This site is located at UTM: N: 4290121 & E: 241509, Elev. 8594 feet (2620m).

Site 16: Crater Lake Creek, Carson Ranger District. Photo of Crater Lake. This site is located at UTM: N: 4290121 & E: 241509, Elev. 8594 feet (2620m).