RED LAKE CREEK

Alpine County, California

2006 Stream Habitat Survey Report

Prepared by

Carson Ranger District: Humboldt-Toiyabe National Forest

Introduction

Red Lake Creek is located in Alpine County, California and flows in a northeasterly direction from Red Lake to the West Fork Carson River over a course of approximately 3.0 miles. The elevation at the spillway of Red Lake is approximately 7880 feet and Red Lake Creek descends to an approximate elevation of 7134 feet at the confluence with the West Fork Carson River. The mainstem of Red Lake Creek is partially located within the boundaries of the Humboldt-Toiyabe National Forest, though the stream flows through private land parcels at the upper and lowermost sections of the drainage.

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. Red Lake Creek was surveyed on August 3, 2006 by Brian Hodge of the Carson Ranger District: Humboldt-Toiyabe National Forest.

Materials and Methods

Forest Service personnel surveyed Red 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 2.2 miles of Red Lake Creek were surveyed. One seasonal barrier was identified (Site 3) and one tributary named Crater Lake Creek was documented (Site 8). Two road-stream crossings were identified where Blue Lakes Road and an abandoned dirt road intersect the stream (Sites 2 & 12, respectively). Fish sightings were specifically noted at two locations (Sites 7 & 11), though fish were also sighted at Site 13. In addition, five photo points were recorded where pictures were used to document relevant stream characteristics such as stream sinuosity, riparian vegetation, or stream gradient (Sites 4, 5, 6, 9, &10). The overall gradient of the surveyed reach is approximately 6.7 %.

Discussion

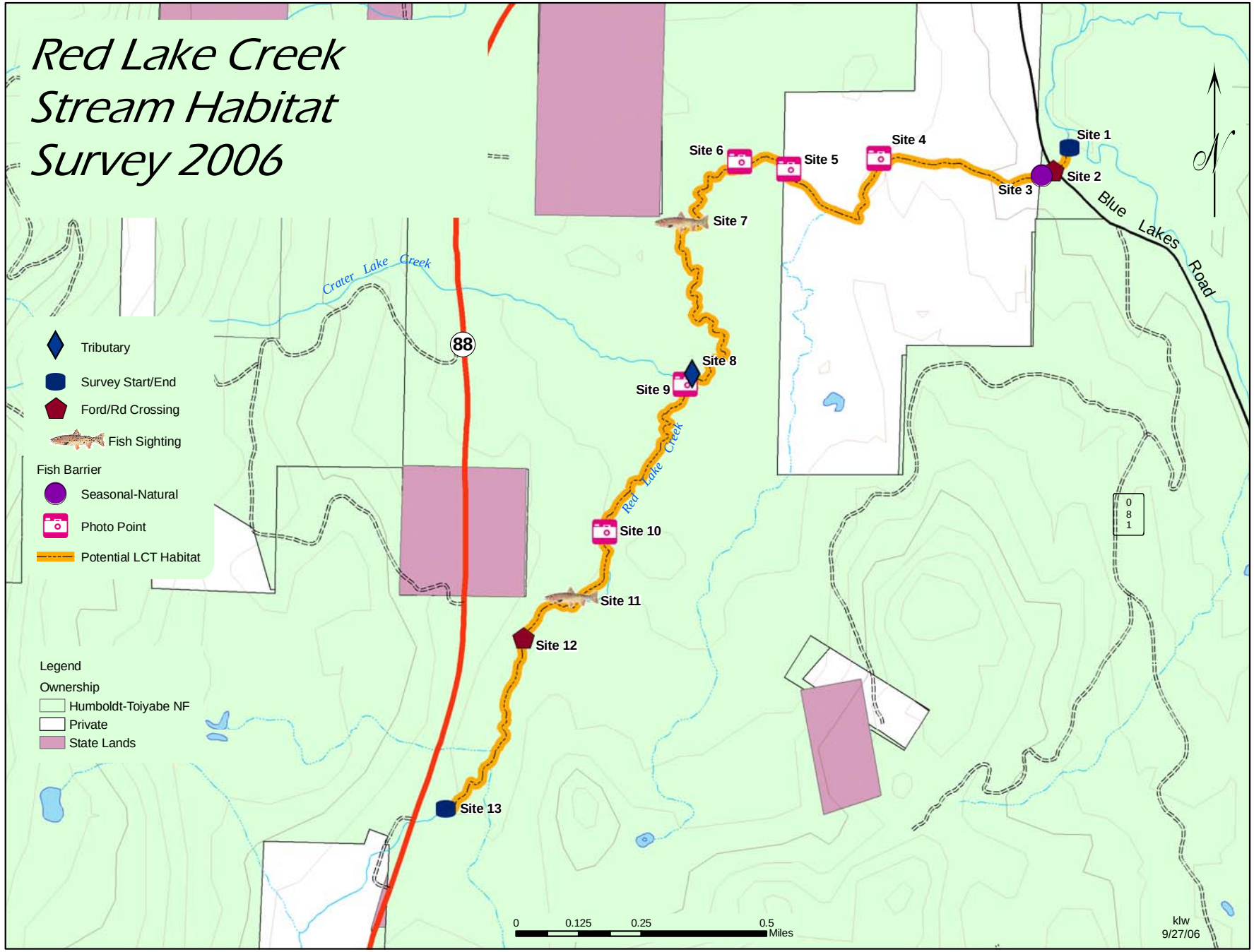
The entire 2.2 mile reach of surveyed stream provides potential LCT habitat. Due to the sinuosity of the stream and the presence of meanders and horseshoe bends in a large meadow, the number of miles surveyed likely exceeds the computer generated value of 2.2 miles. Therefore, the gradient value of 6.7% is likely elevated. In addition, the interconnected lower reach of Crater Lake Creek offers an additional 0.63 miles of LCT habitat. The documented presence of fish at three sites and the identification of a brook trout at Site 13 confirms the ability of Red Lake Creek to sustain fish.

The road-stream crossings do not have any noticeable impact on fish passage. The crossing at Blue Lakes Road (Site 2) utilizes a 10 foot diameter culvert that allows unrestricted flow. A possible reason for low fish sightings could be due in part to the streams proximity to Highway 88. The section of stream between Site 5 and Site 13 is relatively easy to access and anglers may seasonally deplete the non-native populations in Red Lake Creek. The barrier at Site 3 is a small cascade of 3.0 vertical feet with a maximum pool depth of 2.6 feet. Below this cascade is a high velocity waterslide measuring 3-9 longitudinal feet.

Upstream of the surveyed reach, Red Lake Creek flows through private property. Stream characteristics may be similar or different from those documented between Sites 1-13. Upstream of the private parcels, Red Lake is managed by the state of California, and contains a brood stock population of LCT.

Recommendations

1. Consider the 2.2 mile section of Red Lake Creek between Site 1 and Site 13 as potential LCT habitat and consider Red Lake Creek a high candidate for restoration. Red Lake Creek could contribute towards restoring a metapopulation of LCT in the West Fork Carson River watershed (See 2008 Carson River Summary Report).
2. Discuss with private land owners their interest in extending the distribution of LCT from Red Lake into Red Lake Creek.


Red Lake Creek
Stream Habitat
Survey 2006
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
Blue Lakes Road
Crater Lake Creek
Red Lake Creek
88
Tributary
Survey Start/End
Ford/Rd Crossing
Fish Sighting
Fish Barrier
Seasonal-Natural
Photo Point
Potential LCT Habitat
Legend
Ownership
Humboldt-Toiyabe NF
Private
State Lands
0 0.125 0.25 0.5
Miles
klw
9/27/06

Site 1: Red Lake Creek, Carson Ranger District. Downstream view shows confluence of West Fork Carson River (right to left) and Red Lake Creek (near too far). This site is located at UTM: N: 4291036 & E: 245215, Elev. 7134 feet (2175m).

Site 2: Red Lake Creek, Carson Ranger District. Downstream view of upper entry to culvert beneath Blue Lakes Road. The culvert diameter is approx. 10 feet. This site is located at UTM: N: 4290971 & E: 245166, Elev. 7141 feet (2177m).

Site 2: Red Lake Creek, Carson Ranger District. Upstream view from Blue Lakes Road. This site is located at UTM: N: 4290971 & E: 245166, Elev. 7141 feet (2177m).

Site 3: Red Lake Creek, Carson Ranger District. Upstream view of a 3.0 foot barrier. Max pool depth is 2.6 feet. This seasonal barrier is located at UTM: N: 4290944 & E: 245128, Elev. 7190 feet (2192m).

Site 3: Red Lake Creek, Carson Ranger District. Downstream view of a waterslide located just below the rock gabion. This seasonal barrier is located at UTM: N: 4290944 & E: 245128, Elev. 7190 feet (2192m).

Site 4: Red Lake Creek, Carson Ranger District. Downstream view of stream within a forest dominated by lodegpole pines. This site is located at UTM: N: 4291006 & E: 244602, Elev. 7265 feet (2215m).

Site 5: Red Lake Creek, Carson Ranger District. Upstream photo at point where the stream exits meadow and enters forest. This site is located at UTM: N: 4290968 & E: 244315, Elev. 7291 feet (2223 m).

Site 6: Red Lake Creek, Carson Ranger District. Upstream/downstream view of a horseshoe bend illustrates the streams sinuosity. Thick bunches of aquatic plants are present in this reach. This site is located at UTM: N: 4290996 & E: 244154, Elev. 7259 feet (2213m).

Site 7: Red Lake Creek, Carson Ranger District. Photo shows an outside meander bend where a large (>12 inches) fish and 11 small fish of unidentified species were sighted. This site is located at UTM: N: 4290802 & E: 243969, Elev. 7298 feet (2225m).

Site 8: Red Lake Creek, Carson Ranger District. Upstream view of confluence of Crater Lake Creek (river left) and Red Lake Creek. The tributary adds approximately 30-40 % of flow to the total discharge in Red Lake Creek. This site is located at UTM: N: 4290803 & E: 244005, Elev. 7305 feet (2227m).

Site 9: Red Lake Creek, Carson Ranger District. Upstream view of a riffle within the meadow. This site is located at UTM: N: 4290278 & E: 243983, Elev. 7314 feet (2230m).

Site 10: Red Lake Creek, Carson Ranger District. Upstream photo shows a riffle/pool sequence under thick willow cover. This site is located at UTM: N: 4289802 & E: 243725, Elev. 7350 feet (2241m).

Site 11: Red Lake Creek, Carson Ranger District. An 8-10 inch brook trout was sighted in this shallow pool. This site is located at UTM: N: 4289590 & E: 243617, Elev. 7400 feet (2256m).

Site 12: Red Lake Creek, Carson Ranger District. Cross-sectional view of an infrequently used ford road-stream crossing. This site is located at UTM: N: 4289466 & E: 243476, Elev. 7370 feet (2247m).

Site 13: Red Lake Creek, Carson Range District. Upstream view at the survey endpoint. A fish was sighted in this location, which is just downstream from Highway 88 and a private property line. This site is located at UTM: 4288911 & E: 243216, Elev. 7475 feet (2279m).