Deep Creek

Mono County, California

2007 Stream Habitat Survey Report

View of Lobdell Lake

Prepared by:

Carson Ranger District: Humboldt-Toiyabe National Forest

Introduction

Deep Creek begins in Mono County, California on the west side of the Sweetwater Mountains near Lobdell Lake. The stream flows in a northwesterly direction for approximately 9.5 miles until it connects with Cottonwood Creek and eventually into the West Walker River. Most of Deep Creek flows through lands managed by the Humboldt-Toiyabe National Forest, Bridgeport Ranger District. One small parcel of private property occurs near the West Walker River. The survey for this stream started at the confluence with the West Walker River and continued upstream to Lobdell Lake where water levels deemed it unnecessary to continue.

Purpose and Need

The 1995 Lahontan Cutthroat Trout Recovery Plan recommended that an ecosystem management plan be developed for the Walker River Basin in order to both determine objectives for the future desired conditions of the watershed, and to create strategies for achieving these objectives. In 1998 a Walker River Basin Recovery Implementation Team was organized to develop strategies for Lahontan cutthroat trout (LCT) restoration and recovery efforts in the Walker River Basin. In August 2003 the recovery team completed a Short-Term Action Plan for Lahontan Cutthroat Trout Recovery in the Walker River Basin. The short-term action plan outlines specific tasks to be completed within five years. Some of the tasks that were identified include: (1) identifying and evaluating fish passage and existing barriers within the Walker River Basin, (2) developing a watershed analysis of the physical components of the Walker River Basin, and (3) initiating habitat surveys to evaluate potential LCT introduction streams and validating against existing LCT inhabited streams.

The Walker River Basin historically provided an estimated 595 miles of stream habitat (Kling and Mellison 2008) and 49,400 acres of lake habitat 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.

Within the Walker River basin, LCT currently occupy one stream that is within their historic range; By-Day Creek. Lahontan cutthroat trout have also been introduced into the formerly fishless headwaters of five other Walker River basin streams; Wolf Creek, Silver Creek, Mill Creek, Slinkard Creek, and Murphy Creek. Together, LCT within these 6 streams occupy approximately 17 miles of stream habitat, approximately 2.9% 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, (4) reduction of lake levels and concentrated chemical components in natural lakes, and (5) introductions of non-native fish species. The Walker River Basin is primarily inhabited by non-native salmonid species that include but are not limited to:

Rainbow Trout (*Oncorhynchus mykiss*), Brook Trout (*Salvelinus fontinalis*), and Brown Trout (*Salmo trutta*). These competitive and aggressive introduced fish have displaced the endemic LCT. A small native population of LCT can be found in By-Day Creek part of the East Walker River system.

Long term survival and recovery of LCT with the Walker River Basin 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 Walker 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 reintroduce LCT, these surveys can provide baseline information for future management of the fishery. Deep Creek was surveyed on September 27th and October 9th, 2007 by Joel Ingram and Kevin Rybacki of the Carson and Bridgeport Ranger Districts: Humboldt-Toiyabe National Forest.

Methods and Materials

Forest Service personnel surveyed Deep Creek by hiking the watercourse in an upstream manner. Interesting and relevant features were documented, photographed, and recorded into a GPS unit. These features included but were not limited to: road crossings, fish sightings, permanent fish barriers, seasonal fish barriers, tributaries, springs, beaver dams, areas of erosion concern, grazing impacts, 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. Some permanent barriers may actually act as seasonal barriers and some seasonal barriers may actually act as a permanent barrier.

Results

Approximately 6.34 miles of Deep Creek were surveyed between its confluence with the West Walker River and a point near Lobdell Lake. Throughout the surveying of Deep Creek the most prevalent features documented were tributaries and fish barriers. Tributaries were found at Sites 5, 7, and 14 including Cottonwood Creek and Little Deep Creek. Seasonal fish barriers were noted at Sites 8, 9, and 12 and the only permanent barrier was noted at Site 11. Fish were seen only at Site 13 which happens to be upstream of all the barriers. Road crossings were found at Sites 4 and 15. Two beaver dams were found on the creek at Sites 2 and 10. Photo points were taken at Sites 3 and 6 to show characteristics of the stream at their respective locations. No campsites or erosion concerns were found on Deep Creek. Deep Creek has an average stream gradient of 9.6% between Sites 1 and 16.

Discussion

The 6.34 mile stretch of Deep Creek between Sites 1 and 16 should be considered potential LCT habitat. The area upstream of Site 16, although not surveyed due to time constraints, probably provides an additional 2-2 ½ miles of potential LCT habitat. Although there are four barriers present on Deep Creek, only one of them is considered permanent as the others should be passable during higher water flows. The low water level on Deep Creek is evidenced by the fact that all the tributaries with the exception of Cottonwood Creek were dry or had little flow, including Little Deep Creek which is listed as a perennial stream but barely contributed to Deep Creek's flow. The only site where non-native fish were seen was at Site 13, upstream above all the barriers, suggesting that the fish originated from Lobdell Lake.

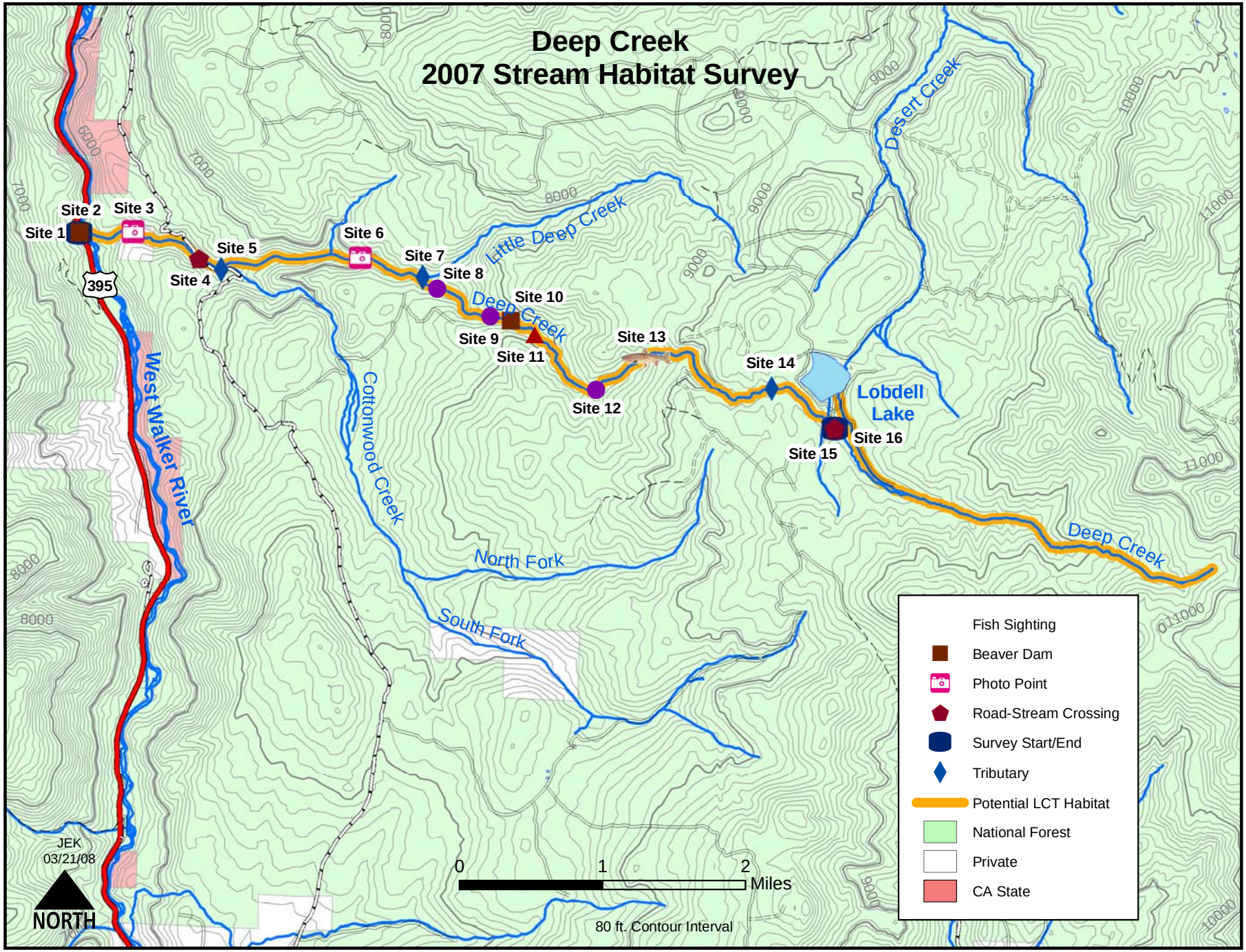
Human impact is not very evident on Deep Creek. The stream is crossed twice by roads with the downstream crossing (Site 4) flowing through a culvert and the upstream crossing (Site 15) by way of a ford that causes widening of the channel and erosion. The downstream crossing is in an area where access to the stream is halted by thick vegetation deterring human activities such as fishing. The upstream crossing is in an area where the stream is already at a point where it is almost too low for fish habitat. The lack of campsites is another reason to believe that recreational human activity on the creek is low.

Although non-native fish were seen upstream of all the barriers at Site 13 and believed to have come from Lobdell Lake, it is not inconceivable to believe that there are more non-natives downstream or that these fish could make their way downstream.

Recommendations

1. Consider the 6.34 mile section of Deep Creek between Sites 1 and 16 as potential LCT habitat and consider Deep Creek a high candidate for restoration. Deep Creek could contribute towards restoring a metapopulation of LCT in the area.

2. Conduct a stream habitat survey on the 2 ½ mile section upstream of Site 16.


Deep Creek
2007 Stream Habitat Survey
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
395
West Walker River
Cottonwood Creek
Little Deep Creek
Deep Creek
North Fork
South Fork
Desert Creek
Lobdell Lake
Deep Creek
Fish Sighting
Beaver Dam
Photo Point
Road-Stream Crossing
Survey Start/End
Tributary
Potential LCT Habitat
National Forest
Private
CA State
0
1
2
Miles
80 ft. Contour Interval
JEK
03/21/08
NORTH

Site 1: Deep Creek, Bridgeport Ranger District. The survey starts at the confluence with the West Walker River. Deep Creek enters the West Walker River on river right downstream of Shingle Mill Day Use Area. This site is located at UTM: N: 4258917 & E: 285422, Elev. 1827m.

Site 2: Deep Creek, Bridgeport Ranger District. Photo depicts a large pool created by a beaver dam just upstream of the creek's confluence with the West Walker River. This site is located at UTM: N: 4258920 & E: 285427, Elev. 1820m.

Site 3: Deep Creek, Bridgeport Ranger District. A photo point is taken to show characteristics of the stream. The stream has had a few small 1-2ft waterfalls usually followed by a deep pool and a steady swift stream. This site is located at UTM: N: 4258930 & E: 286028, Elev. 1874m.

Site 4: Deep Creek, Bridgeport Ranger District. A large, moderately used road crosses the stream with a culvert put in place to direct water running under the road. This site is located at UTM: N: 4258627 & E: 286773, Elev. 1935m.

Site 5: Deep Creek, Bridgeport Ranger District. Photo depicts the confluence of Deep and Cottonwood Creeks where Cottonwood enters Deep Creek on river left side and contributes 70% of the overall flow. This site is located at UTM: N: 4258505 & E: 287020, Elev. 1934m.

Site 6: Deep Creek, Bridgeport Ranger District. This photo point is taken to show typical traits of the stream. Heavily vegetated stream banks make surveying difficult. Many small falls are seen but with deep plunge pools enabling fish to pass. This site is located at UTM: N: 4258635 & E: 288581, Elev. 2087m.

Site 7: Deep Creek, Bridgeport Ranger District. Little Deep Creek enters the creek on river right side and adds less than 5% to the overall flow. This site is located at UTM: N: 4258416 & E: 289283, Elev. 2177m.

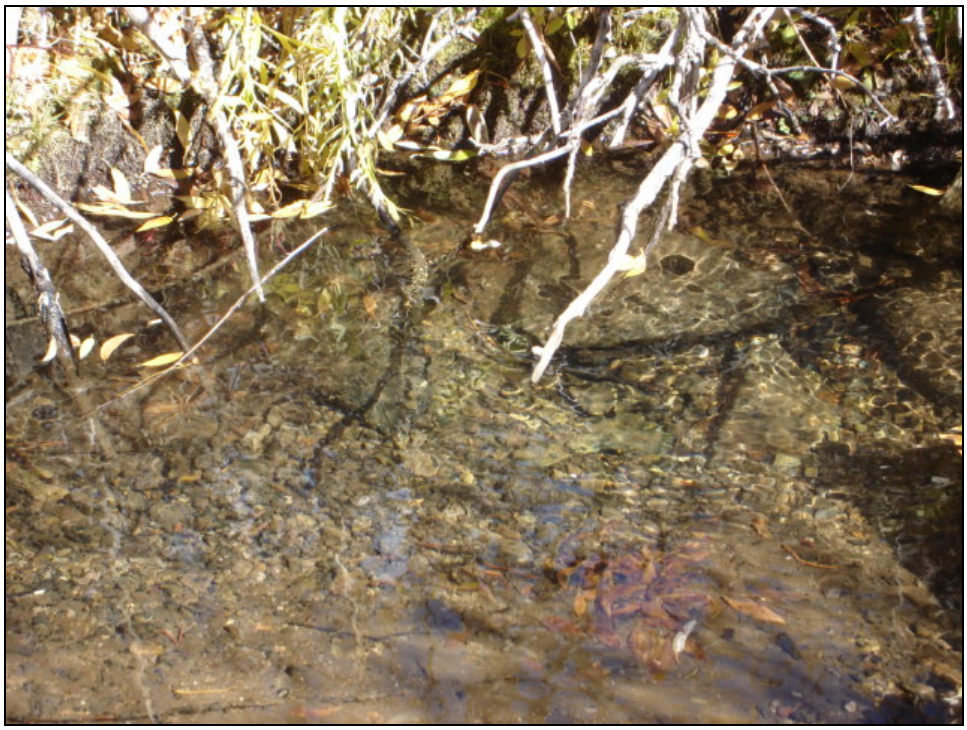
Site 8: Deep Creek, Bridgeport Ranger District. A downed tree spreading across the stream channel creates a small seasonal barrier with a drop of 1.1m and almost no plunge pool whatsoever. This site is located at UTM: N: 4258286 & E: 289449, Elev. 2190m.

Site 9: Deep Creek, Bridgeport Ranger District. This small waterfall over large boulders creates a seasonal barrier for fish passage. The barrier is 1.5m high with a plunge pool of 0.6m deep. Higher water levels will create an alternate route for fish to pass. This site is located at UTM: N: 4257975 & E: 290042, Elev. 2303m.

Site 10: Deep Creek, Bridgeport Ranger District. In an area dense with aspen and willow there is a small beaver dam structure creating a small pool. This site is located at UTM: N: 4257929 & E: 290072, Elev. 2345m.

Site 11: Deep Creek, Bridgeport Ranger District. The waterfall depicted here is a 1.7m high waterfall over two large boulders with a plunge pool of about 0.35m deep. This barrier was classified as a permanent fish barrier. This site is located at UTM: N: 4257766 & E: 290541, Elev. 2373m.

Site 12: Deep Creek, Bridgeport Ranger District. This 1.1m waterfall is listed as a seasonal barrier due to the different routes that will be available at higher flows. This site is located at UTM: N: 4257141 & E: 291231.



Site 13: Deep Creek, Bridgeport Ranger District. Thirteen fish were spotted in this pool. The largest of the fish was approx. 4 inches. These are the first fish seen on Deep Creek. This site is located at UTM: N: 4257514 & E: 291786.

Site 14: Deep Creek, Bridgeport Ranger District. A very small tributary enters the creek on river right and adds 10% to the overall flow which is getting small as we near the end of fish habitat. This site is located at UTM: N: 4257163 & E: 293206, Elev. 2773m.

Site 15: Deep Creek, Bridgeport Ranger District. USFS Road 067 crosses the stream causing stream channel widening along with erosion. The road continues to travel parallel to the stream. This site is located at UTM: N: 4256712 & E: 293913, Elev. 2809m.

Site 16: Deep Creek, Bridgeport Ranger District. Survey ends due to the lack of water for sustained fish habitat. An irrigation ditch is found feeding from Lobdell Lake which also has low water levels. This site is located at UTM: N: 4256713 & E: 293913, Elev. 2809m.