

# **DIXON CREEK**

Alpine County, California

## **2006 Stream Habitat Survey Report**



Prepared By:

Carson Ranger District: Humboldt-Toiyabe National Forest

## **Introduction**

Dixon Creek is located in Alpine County, California. The headwaters of Dixon Creek originate at an elevation of approximately 10,000 feet and they converge to form the mainstem at around 8400 feet. The mainstem flows for approximately 1.5 miles in an easterly direction to the confluence with Wolf Creek at an elevation of 6647 feet. Dixon Creek is located 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. Dixon Creek was surveyed on June 29, 2006 by members of the Carson Ranger District of the Humboldt-Toiyabe National Forest. The surveyors were Harrison Davis and Robert Omann.

## **Materials and Methods**

Forest Service personnel surveyed Dixon 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 0.67 miles of Dixon Creek were surveyed between the confluence with Wolf Creek and the point where the survey was terminated due to the absence of potential LCT habitat (Sites 1-16). The gradient of the surveyed reach is approximately 19.0 percent. Two seasonal fish barriers were identified (Sites 3 and 4) and eight permanent fish barriers were documented (Sites 7, 8, 9, 10, 11, 13, 14, & 15). One tributary was noted at Site 12, and a single non-native salmonid was sighted at Site 6. A trail crossing was noted at Site 2 where the Wolf Creek Trail intersects Dixon Creek. One photo point was used to document general stream characteristics (Site 5).

## **Discussion**

Dixon Creek does not provide sustainable LCT habitat. Dixon Creek has a large number of high velocity cascade and riffle sequences, with very few deep pools. The eight permanent barriers range in height from 5.5-20 feet. The high gradient and large number of barriers creates a lack of connectivity within the drainage, and therefore the creek would not support a persistent population of fish. The presence of a non-native salmonid provides evidence that LCT may be able to inhabit certain locations within the stream, but these fish would become physically and genetically isolated.

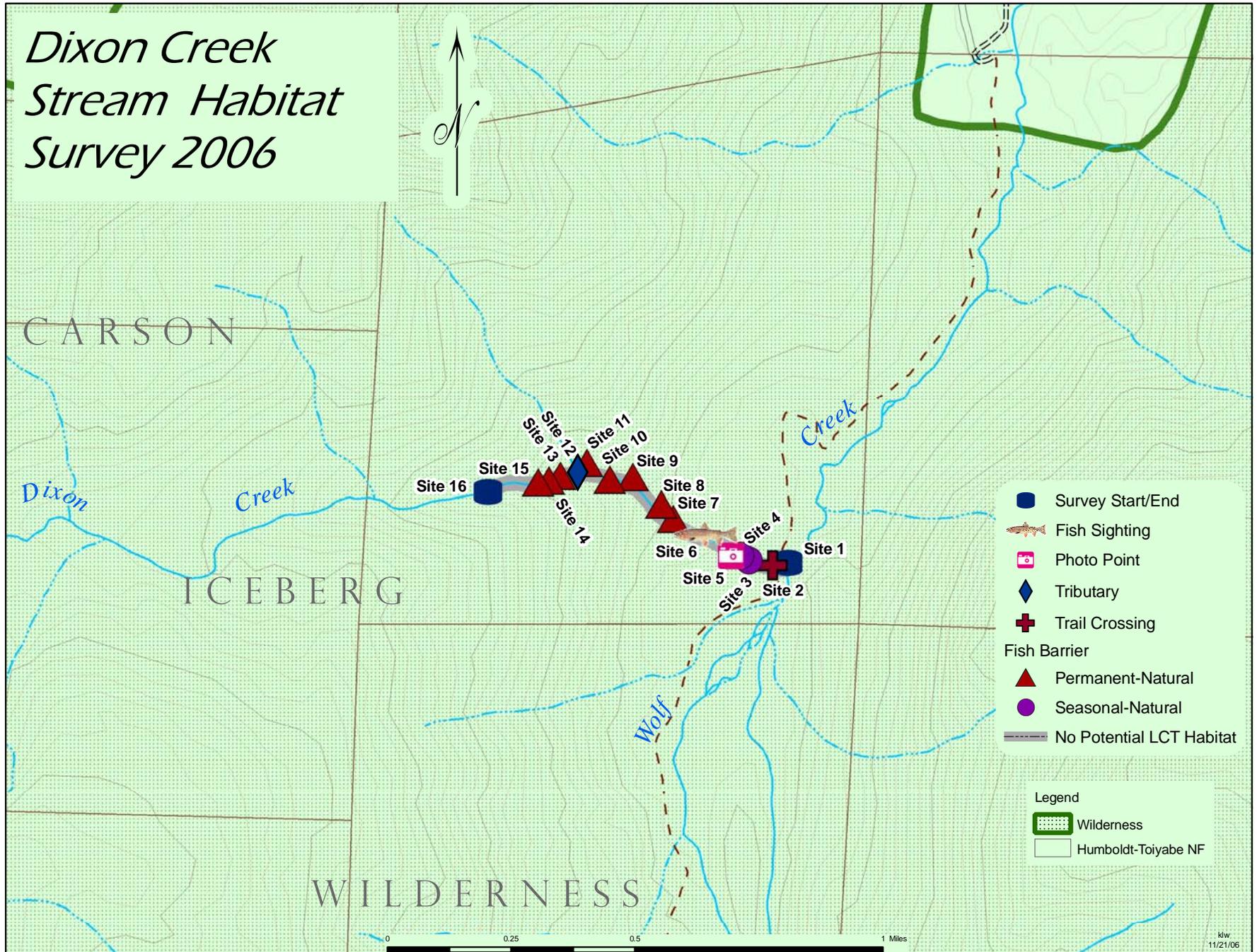
At Site 16 the presence of visible barriers and an assessment of a topo map lead the crew to end the survey as it seemed unlikely that any potential LCT habitat is located upstream of that point.

The Dixon Creek watershed is located entirely within the Carson-Iceberg Wilderness and human impacts on the stream are minimal to non-existent. The only noticeable human interface is at the location where the Wolf Creek Trail crosses Dixon Creek (Site 2). A small amount of sediment may be introduced into Wolf Creek by pack animals during certain times of the year.

## **Recommendations**

1. Consider the 0.67 mile section of Dixon Creek between Site 1 and Site 16 as not having potential LCT habitat.

# Dixon Creek Stream Habitat Survey 2006



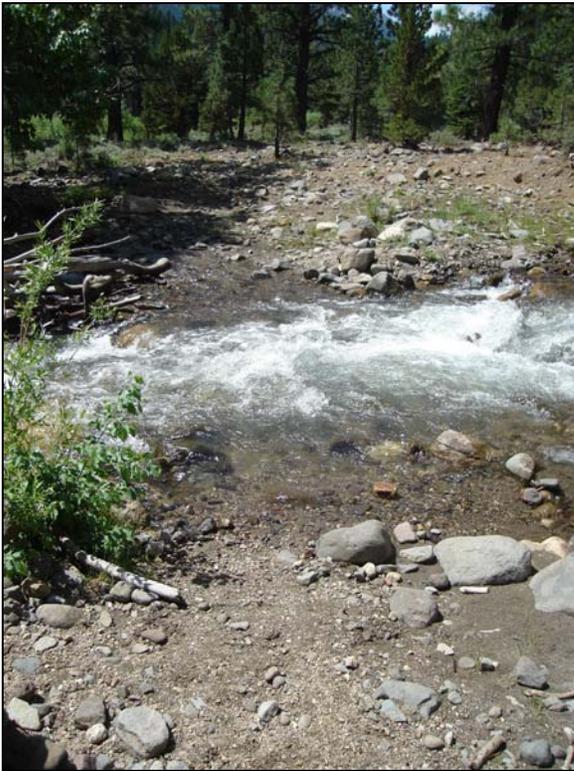
- Survey Start/End
- Fish Sighting
- Photo Point
- ◆ Tributary
- + Trail Crossing
- Fish Barrier
- ▲ Permanent-Natural
- Seasonal-Natural
- No Potential LCT Habitat

- Legend
- Wilderness
  - Humboldt-Toiyabe NF

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**Site 1:** Dixon Creek, Carson Ranger District. Upstream photo of the confluence of Dixon (right) and Wolf Creek (left). This site is located at UTM: N: 4271313 & E: 264440, Elev. 6647 ft (2026 m).



**Site 2:** Dixon Creek, Carson Ranger District. Cross-sectional photo of the intersection of Dixon Creek and the Wolf Creek Trail. This site is located at UTM: N: 4271304 & E: 264391, Elev. 6673 ft (2034 m).



**Site 3:** Dixon Creek, Carson Ranger District. Cross-sectional photo of a seasonal fish barrier formed by large woody debris. The height of the barrier is 3.8 ft, with a max pool depth of 1.6 ft. This site is located at UTM: N: 4271319 & E: 264315, Elev. 6670 (2033 m).



**Site 4:** Dixon Creek, Carson Ranger District. Upstream view of a seasonal fish barrier formed by wood and rock. This site is located at UTM: N: 4271334 & E: 264287, Elev. 6795 ft (2071 m).



**Site 5:** Dixon Creek, Carson Ranger District. Upstream photo of cascades and riffles characteristic of Dixon Creek. This site is located at UTM: N: 4271333 & E: 264256, Elev. 6690 ft (2039 m)



**Site 6:** Dixon Creek, Carson Ranger District. A photo of an eddy where a small salmonid was observed. This site is located at UTM: N: 4241403 & E: 264173, Elev. 6732 ft (2052m).



**Site 7:** Dixon Creek, Carson Ranger District. Upstream photo of a permanent fish barrier. The height of the barrier is 8.0 ft, with a max. pool depth of 1.5 ft. This site is located at UTM: N: 4271405 & E: 264069, Elev. 6795 ft (2071 m).



**Site 8:** Dixon Creek, Carson Ranger District. Upstream photo of a permanent fish barrier with a height of 10.0 ft and a maximum pool depth of 2.5 ft. This site is located at UTM: N: 4271501 & E: 264030, Elev. 6867 ft (2093 m).



**Site 9:** Dixon Creek, Carson Ranger District. Upstream photo of a permanent fish barrier. The height of the barrier is 6.0 ft with a max. pool depth of 2.8 ft. This site is located at UTM: N: 4271591 & E: 262938, Elev. 6952 ft (2119 m).



**Site 10:** Dixon Creek, Carson Ranger District. Upstream photo of a permanent fish barrier with a height of 6.0 ft and a pool depth of 2.5 ft. This site is located at UTM: N: 4271583 & E: 263863.



**Site 11:** Dixon Creek, Carson Ranger District. Upstream photo of a permanent fish barrier. The waterfall has a height of 9.0 ft and a max. pool depth of 2.0 ft. This site is located at UTM: N: 4271612 & E: 263791, Elev. 6982 ft (2128 m).



**Site 12:** Dixon Creek, Carson Ranger District. A cross-stream photo of a tributary entering river left. The tributary contributes less than 1% of flow to Dixon Creek. This site is located at UTM: N: 4271605 & E: 263761.



**Site 13:** Dixon Creek, Carson Ranger District. Upstream photo of a permanent fish barrier. The height of the barrier is 5.5 ft with a max. pool depth of 1.5 ft. This site is located at UTM: N: 4271596 & E: 263703.



**Site 14:** Dixon Creek, Carson Ranger District. Photo shows a permanent fish barrier with a height of 12.0 ft and a maximum pool depth of 3.0 ft. This site is located at UTM: N: 4271580 & E: 263665.



**Site 15:** Dixon Creek, Carson Ranger District. Upstream view of a 20.0 foot waterfall that forms a permanent fish passage barrier. This site is located at UTM: N: 4271574 & E: 263631.



**Site 16:** Dixon Creek, Carson Ranger District. Upstream photo at the survey endpoint. Note that cascades are prevalent upstream. This site is located at UTM: N: 4271543 & E: 263467, Elev. 7323 ft (2232 m).