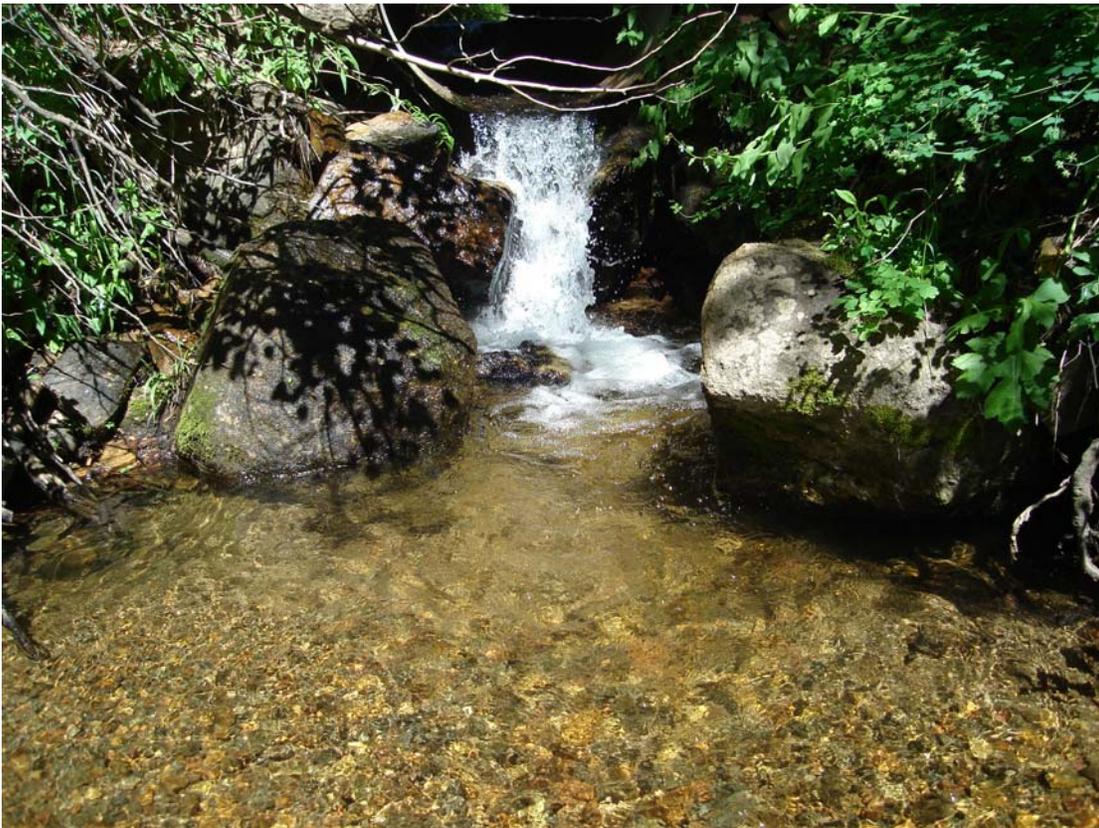


HAWKINS CREEK

Alpine County, California

2006 Stream Habitat Survey Report



Prepared By:

Carson Ranger District: Humboldt-Toiyabe National Forest

Introduction

Hawkins Creek is located in Alpine County, California. The mainstem of Hawkins Creek is approximately three miles long, and flows in a westerly direction from the base of Hawkins Peak at an elevation of 8200 feet, down to the confluence with the West Fork Carson River in Hope Valley, CA (Elev. 7116 feet). The entire watershed is located within the boundaries of the Humboldt-Toiyabe National Forest (HTNF).

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. Hawkins Creek was surveyed on July 26 and August 16, 2006 by members of the Carson Ranger District of the Humboldt-Toiyabe National Forest. The surveyors were Brian Hodge and Harrison Davis

Materials and Methods

Forest Service personnel surveyed Hawkins 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 2.45 miles of Hawkins Creek were surveyed. Ten fish passage barriers were identified (Sites 4, 5, 6, 7, 8, 9, 12, 13, 15, & 17). Five of these ten barriers were classified as permanent barriers (Sites 6, 7, 8, 9, & 17), and the remaining five were classified as seasonal barriers. One tributary was noted in the upper section of the surveyed reach (Site 16). One road-stream crossing (which is also a seasonal barrier: Site 15) was recorded where Burnside Road crosses Hawkins Creek (Site 14). An inactive fence line was noted as Site 3. A fish sighting was recorded at Site 10, though several trout were also seen near the barriers at Site 13 and Site 14. In addition, photo points were used to document specific characteristics of the stream in two locations (Sites 2 & 11). The overall gradient of Hawkins Creek is approximately 9.1 percent. From Site 4 to Site 9 the gradient is approximately 17.0 percent. At the confluence with the West Fork Carson River, Hawkins Creek is narrow and shallow (2.3 ft wide and 0.15 ft deep). Discharge was estimated at around 0.93 cfs (cubic feet/second) after making a rough calculation of the average water velocity (2.82 ft/sec).

Discussion

Approximately 1.3 miles of Hawkins Creek provide potential LCT habitat: the 0.34 mile section between Site 1 and Site 4, and the 0.98 mile section between Site 9 and Site 14. The reach between Site 1 and Site 4 is a low gradient meandering channel with little to no cover. The one mile section of stream between Site 9 and Site 14 offers the most favorable fish habitat in Hawkins Creek. Sequences of riffles, runs, and pools offer complexity of habitat. Overhanging vegetation and large woody debris provide cover. Two seasonal barriers of roughly 3.0 feet in height are present in this reach.

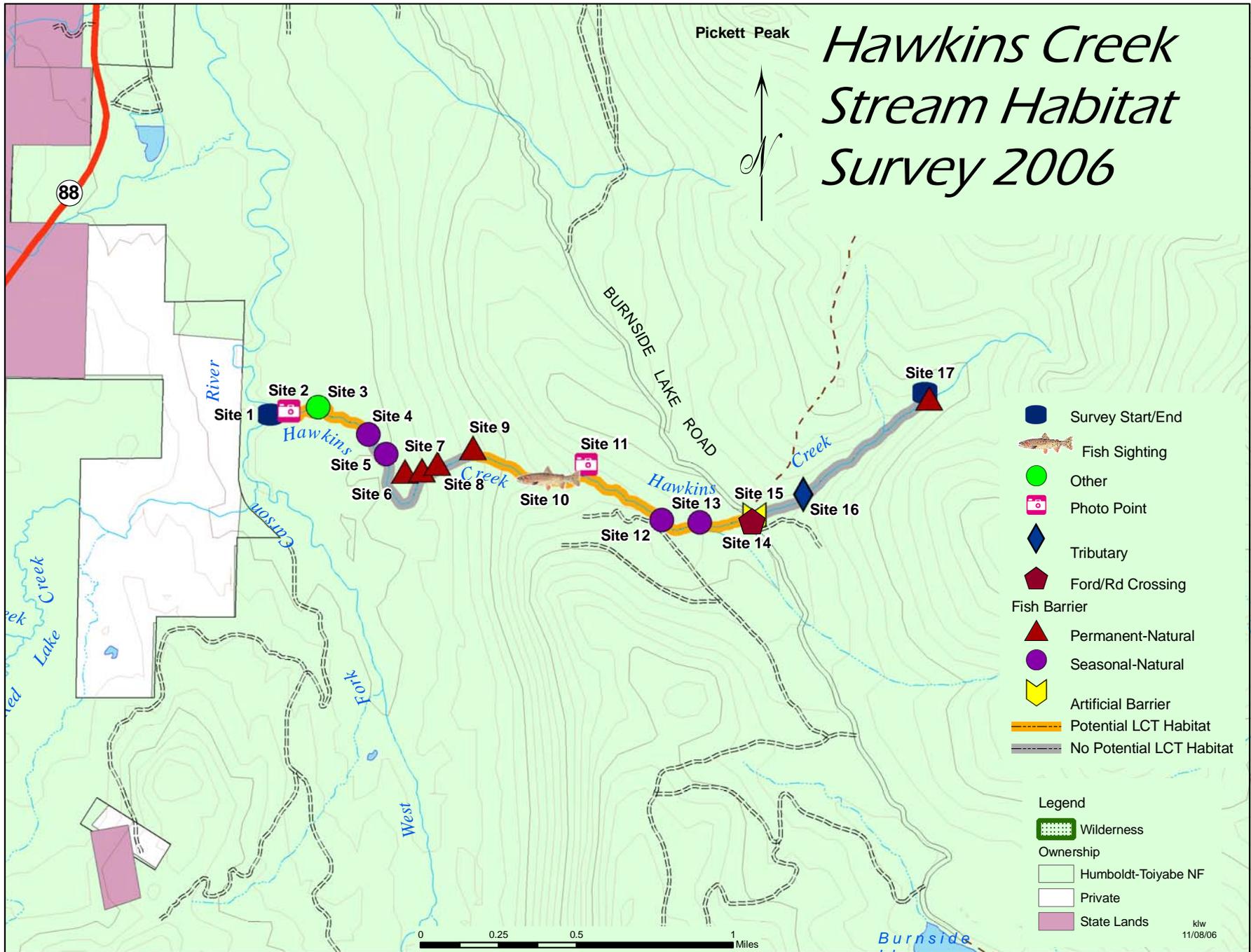
The sections of stream between Site 4 and Site 9 and upstream of Site 15 do not provide sustainable fish habitat. Between Site 4 and Site 9 the stream has a very high gradient and this section does not allow for passage, nor does it contain favorable places of refuge. Sites 4-9 are all fish barriers ranging in height from 2.5 to 5.0 feet. Upstream of Burnside Road 9 (Site 14) the stream consists of mostly shallow riffles at low flow levels. Following a dry winter this section of stream is likely minimal to non-existent.

Brook trout were positively identified in a pool below the barrier at Site 14, and unidentified species of trout were also seen in other locations that could provide LCT habitat. Hawkins Creek can sustain salmonids; however, the size and durability of the population are likely limited. No fish were sighted upstream of the road-stream crossing (Site 14). The culvert height of 2.9 feet and the water depth of only 0.1 foot inside the culvert, create a challenging obstacle for fish passage. One mile of stream

may sustain LCT for a short period of time; however, Hawkins Creek does not appear suitable for long-term persistence.

Recommendations

1. Consider the 0.34 mile section between Site 1 and Site 4 and the 0.98 mile section of Hawkins Creek between Site 9 and Site 14 as potential LCT habitat and consider Hawkins Creek a high candidate for restoration. The lower section of Hawkins Creek could contribute towards restoring a metapopulation of LCT in the West Fork Carson River watershed (See 2008 Carson River Summary Report).
2. Conduct a more thorough evaluation of fish passage at Site 15.





Site 1: Hawkins Creek, Carson Ranger District. Upstream photo taken at the survey start point shows the confluence of Hawkins Creek and the West Fork Carson River. This site is located at UTM: N: 4291458 & E: 245371, Elev. 7127 feet (2173m).



Site 1: Hawkins Creek, Carson Ranger District. Upstream photo of Hawkins Creek. Hawkins Creek is small at the confluence: 2.3ft wide and 0.15ft deep, with an estimated discharge of 0.97 cfs. This site is located at UTM: N: 4291458 & E: 245371, Elev. 7127 feet (2173m).



Site 2: Hawkins Creek, Carson Ranger District. Upstream photo shows stream meandering through a very low gradient meadow. This site is located at UTM: N: 4291458 & E: 245371, Elev. 7127 feet (2173m).



Site 2: Hawkins Creek, Carson Ranger District. Upstream photo shows natural erosion on the banks. This site is located at UTM: N: 4291458 & E: 245371, Elev. 7127 feet (2173).



Site 3: Hawkins Creek, Carson Ranger District. Photo of a decommissioned fence. No evidence of livestock was present during the survey. This site is located at UTM: N: 4291480 & E: 245523, Elev. 7137 feet (2176m).



Site 4: Hawkins Creek, Carson Ranger District. Upstream photo of a seasonal waterfall with a height of 2.5 ft and a max. pool depth of 1.05ft. This point marks the edge of the Hope Valley floor. This site is located at UTM: N: 4291480 & E: 245782, Elev. 7154 feet (2181m).



Site 5: Hawkins Creek, Carson Ranger District. Bird's eye view of a seasonal fish barrier formed by a waterfall that is 3.2ft high and has a pool depth of 1.2ft. The stream is moderately steep, and has heavy vegetation cover. This site is located at UTM: N: 4291239 & E: 245870, Elev. 7219 feet (2201m).



Site 6: Hawkins Creek, Carson Ranger District. Photo shows a 10.0 foot long waterslide which is followed by another 5.0 foot slide. Together they form a permanent barrier. This site is located at UTM: N: 4291150 & E: 245970, Elev. 7252 feet (2211m).



Site 7: Hawkins Creek, Carson Ranger District. An upstream view of a waterslide which measures 5.0 vertical feet and 10+ longitudinal feet. Several tiers of similar barriers make this reach impassible. This site is located at UTM: N: 4291158 & E: 246057, Elev. 7311 feet (2229m).



Site 8: Hawkins Creek, Carson Ranger District. Upstream view of water flowing in a thin sheet over a large boulder with height 5.0 feet and a max. pool depth of 1.15 feet. This permanent barrier is located at: UTM: N: 4291192 & E: 246137, Elev. 7393 feet (2254m).



Site 9: Hawkins Creek, Carson Ranger District. Upstream view of a 5.1 foot permanent barrier with a max. pool depth of 1.6 feet. This site is located at UTM: N: 4291273 & E: 246318, Elev. 7521 feet (2293m).



Site 10: Hawkins Creek, Carson Ranger District. View looking down onto a 3-foot deep pool, where one fish was sighted. This site is located at UTM: N: 4291116 & E: 246704, Elev. 7728 feet (2356m).



Site 11: Hawkins Creek, Carson Ranger District. Upstream photo of a low to medium-gradient reach with riffles and small pools. This site is located at UTM: N: 4292331 & E: 247457.



Site 12: Hawkins Creek, Carson Ranger District. Upstream photo of a seasonal barrier with a height of 3.2 feet, and a max. pool depth of 2.0 feet. This site is located at UTM: N: 4290899 & E: 247289.



Site 13: Hawkins Creek, Carson Ranger District. Upstream photo of a seasonal barrier measuring 3.3 feet high, with a maximum pool depth of 1.3 feet. This site is located at UTM: N: 4290885 & E: 247484, Elev. 7944 feet (2422m).



Site 14: Hawkins Creek, Carson Ranger District. Upstream view of the crossing of Burnside Road. Five or more brook trout were present in the plunge pool. This site is located at UTM: N: 4290887 & E: 247752, Elev. 8013 feet (2443m).



Site 15: Hawkins Creek, Carson Ranger District. Looking through the culvert under Burnside Road. The long culvert creates a seasonal fish passage barrier. This site is located at UTM: N: 4290887 & E: 247752, Elev. 8013 feet (2443m).



Site 15 cont. Photo of the upstream end of the culvert. The water depth within the culvert is approximately 0.1 feet. This site is located at UTM: N: 4290887 & E: 247752, Elev. 8013 feet (2443m).



Site 16: Hawkins Creek, Carson Ranger District. Photo shows a small tributary that enters on river right and contributes 1% of flow. This site is located at UTM: N: 4291030 & E: 248017.



Site 17: Hawkins Creek, Carson Ranger District. Upstream view of the survey end point. Photo shows a 5.0 foot barrier on a small headwater tributary which contributes 30-40 % of flow. Above this point the stream is small, shallow, and unsuitable for sustained fish habitat. This site is located at UTM: N: 4291567 & E: 248730, Elev. 8395 feet (2532m).



Site 17: Hawkins Creek, Carson Ranger District. Upstream view of the survey end point and the river left headwaters. Above this 5.0 foot barrier Hawkins Creek is small, shallow, and unsuitable for sustained fish habitat. This site is located at UTM: N: 4291567 & E: 248730, Elev. 7715 feet (2532m).