

Noble Creek

Alpine County, California

2006 Stream Habitat Survey Report



Prepared by:

Carson Ranger District: Humboldt-Toiyabe National Forest

Introduction

Noble Creek is located in Alpine County, California and runs in a northerly direction from Tryon Peak to the confluence with Silver Creek near Highway 4. The stream originates at an elevation above 9400 feet, where snow drifts may last through September, and descends to approximately 6500 feet upon feeding into Silver Creek. Noble Creek is located almost entirely within the boundaries of the Humboldt-Toiyabe National Forest. The stream flows through one private parcel near the confluence with Silver Creek. (SEE MAP)

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. Noble Creek was surveyed on September 25 and 26 by members of the Carson Ranger District of the Humboldt-Toiyabe National Forest. The surveyors were Brian Hodge and Robert Omann.

Materials and Methods

Forest Service personnel surveyed Noble Creek by hiking the watercourse in a downstream 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 4.6 miles of Noble Creek were surveyed. The overall gradient of the surveyed reach is approximately 5.9 percent. Eleven fish passage barriers were identified: five permanent barriers (Sites 6, 7, 8, 9, & 30), and six seasonal barriers (Sites 3, 4, 11, 12, 21, & 28). Seven tributaries were documented throughout the survey (Sites 5, 18, 19, 20, 23, 24, & 26). Three campsites were noted (Sites 16, 17, & 22). Two trail-stream crossings were documented where a foot-trail intersected the stream (Sites 13 & 29). One specific fish sighting was documented at Site 27, though two fish were also noted just below Site 13. Photo points were used to document characteristics of the stream at three locations (Sites 10, 15, & 25). In addition, other noted features included grazing impacts (Site 14) and a barbed-wire fence, presumably a property line (Site 2).

Discussion

Approximately 4.4 miles of Noble Creek provide potential LCT habitat (Sites 1-6 & Sites 9-30). Much of Noble Creek is characterized by a moderate gradient, cobble substrate, and a riffle dominated channel. Pools and sections of gravel substrate are limited. The entrenched channel is visibly subject to high intensity flows and fish are likely required to expend large amounts of energy to occupy the majority of the stream.

Between Sites 1-6 the stream contains two seasonal barriers and several piles of large woody debris. The barrier at Site 4 is 4.25 feet high with a maximum pool depth of 2.5 feet. Between Site 6 and Site 9 the stream is steep, consisting of multiple permanent barriers in the form of waterfalls, cascades, and slides. The barriers between Sites 6-9 range in height from 5.0 feet to 25 feet and make natural fish passage impossible. Between Sites 9-28 the stream is continuous (fish size and stream flow dependent), containing several small seasonal barriers ranging in height from 1 to 2.2 feet. The seasonal barrier at Site 28 is 3.5 feet high.

Camping locations along Noble Creek were limited due to a lack of flat ground and the confining walls of the canyon. Most campsites are located within a short distance of one another, though reasonably separated from the stream considering the topography. Campsites have a negligible impact on Noble Creek.

Grazing impacts were noticed throughout Noble Canyon, though recent activity was limited to the lower half of the surveyed reach (below Site 15). The stream banks and riparian vegetation have been slightly impacted, though the number of animals appears small. The only feed for cattle is found directly adjacent to the stream and that acreage is finite.

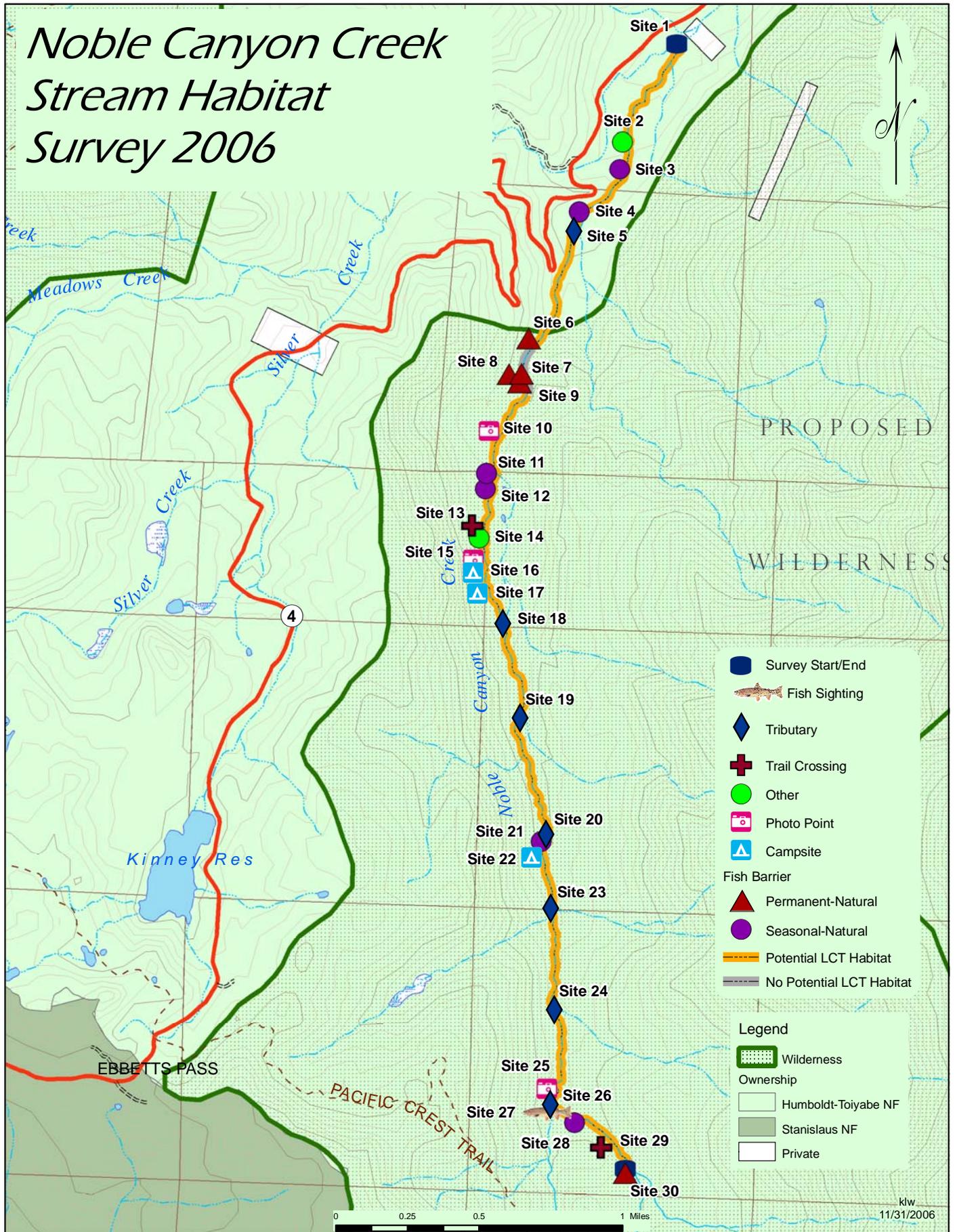
Fish sightings were infrequent and human based impacts were minimal. Noble Creek provides potential LCT habitat, and the most favorable habitat is located between Site 9 and Site 28. The stream is not optimal for sustaining a long term population of LCT for the following reasons: naturally occurring barriers create discontinuity between the

bottom and the top of the watershed, and the topography and geology of the watershed form a stream that is limited in the quantity of spawning gravel.

Recommendations

1. Consider the 4.4 miles of Noble Creek located in the sections between Sites 1-6 and between Sites 9-30 as potential LCT habitat. Consider Noble Creek a medium candidate for restoration.
2. Discuss with the current livestock manager possible alternative easement plots that will benefit both livestock owners and the Noble Creek ecosystems.
3. Work with Forest Service personnel to disassemble campsites within 100 feet of the stream, leaving intact the well established campsites outside the riparian corridor.

Noble Canyon Creek Stream Habitat Survey 2006





Site 1: Noble Creek, Carson Ranger District. Upstream view of confluence of Silver Creek (right) and Noble Creek (left). The flow in Silver Creek is nearly doubled by the addition of Noble Creek. This site is located at UTM: N: 4275523 & E: 258015, Elev. 6511 feet (1985m).



Site 2: Noble Creek, Carson Ranger District. Photo shows a barbed-wire fence that runs perpendicular to the stream, indicating a property boundary line. This site is located at UTM: N: 4274954 & E: 257725, Elev. 6629 feet (2021m).



Site 3: Noble Creek, Carson Ranger District. Upstream photo of large-woody-debris (LWD) that creates a small and complex seasonal fish barrier (ht. 2.0 feet). This site is located at UTM: N: 4274802 & E: 257729, Elev. 6760 feet (2061 m).



Site 4: Noble Creek, Carson Ranger District. A large seasonal barrier, measuring 4.25 vertical feet inhibits fish passage (pool depth 2.5 feet). This site is located at UTM: N: 4274576 & E: 257508, Elev. 6793 feet (2071m).



Site 5: Noble Creek, Carson Ranger District. Photo shows a tributary that enters river right and contributes an additional 20 percent of flow to Noble Creek. This site is located at UTM: N: 4274488 & E: 257442, Elev. 6855 feet (2090m).



Site 6: Noble Creek, Carson Ranger District. Upstream photo of several consecutive permanent barriers ranging in height from 5-20 feet. This site is located at UTM: N: 4273862 & E: 257268, Elev. 6996 feet (2133m).



Site 7: Noble Creek, Carson Ranger District. Partially hidden by the alder in photo left is a 5.5 foot waterfall. This site is located at UTM: N: 4273651 & E: 257137, Elev. 7062 feet (2153m).



Site 8: Noble Creek, Carson Ranger District. Upstream view of a 15-16 foot waterfall, which creates a permanent fish barrier. This waterfall is located at UTM: N: 4273654 & E: 257132, Elev. 7006 feet (2136m).



Site 9: Noble Creek, Carson Ranger District. Photo shows the uppermost permanent fish barrier in the sequence, created by a 25-foot waterfall. This site is located at UTM: N: 4273612 & E: 257185, Elev. 7150 feet (2180m).



Site 10: Noble Creek, Carson Ranger District. Upstream photo of stream before it descends into the narrow canyon of Sites 6-9. This site is located at UTM: N: 4273335 & E: 257042, Elev. 7265 feet (2215m).



Site 11: Noble Creek, Carson Ranger District. A small seasonal barrier measuring 2.2 feet high, with a longitudinal distance of 2.5 feet, provides an obstacle to juvenile and YOY fish only. This site is located at UTM: N: 4273082 & E: 256982, Elev. 7308 feet (2228m).



Site 12: Noble Creek, Carson Ranger District. Photo shows another small seasonal barrier with height 2.2 feet (max pool depth 1.0 foot). This site is located at UTM: N: 4273932 & E: 256974, Elev. 7308 feet (2228m).



Site 13: Noble Creek, Carson Ranger District. Cross-sectional view of a trail-stream intersection open to foot and stock traffic only. This site is located at UTM: N: 4272805 & E: 256954, Elev. 7344 feet (2239m).



Site 14: Noble Creek, Carson Ranger District. View of right bank where recent grazing and livestock activity has left the ground bare. This site is located at UTM: N: 4272720 & E: 256940, Elev. 7334 feet (2236m).



Site 15: Noble Creek, Carson Ranger District. Upstream photo captures the typical reach of Noble Creek: large substrate, moderate gradient, and riffle dominant. This site is located at UTM: N: 4272620 & E: 256963, Elev. 7406 feet (2258m).



Site 16: Noble Creek, Carson Ranger District. A campsite is located 7m from the stream on river right. Campsite dimensions are approximately 10m x 10m. This site is located at UTM: N: 4272545 & E: 256957, Elev. 7364 feet (2245m).



Site 17: Noble Creek, Carson Ranger District. A 20m x 20m campsite is located approximately 15m from stream. This site is located at UTM: N: 4272427 & E: 256987, Elev. 7396 feet (2255m).



Site 18: Noble Creek, Carson Ranger District. A small trib. (1 percent of flow) enters on river right. This site is located at UTM: N: 4272109 & E: 257065, Elev. 7455 feet (2273m).



Site 19: Noble Creek, Carson Ranger District. Upstream photo of tributary entering on river right. The tributary adds an additional 2.0 percent to the total flow in Noble Creek. This confluence is located at UTM: N: 4271580 & E: 257161, Elev. 7521 feet (2293m).



Site 20: A tributary enters on river right, just below the barrier at Site 21. This site is located at UTM: N: 4271063 & E: 257279, Elev. 7583 feet (2312m).



Site 21: Noble Creek, Carson Ranger District. Upstream photo of a complex seasonal barrier created by LWD. Passage is possible (size and flow dependent) through a side channel where the maximum height per step pool is 1.0 foot (max. depth .6 feet). This site is located at UTM: N: 4271050 & E: 257268, Elev. 7629 feet (2326m).



Site 22: Noble Creek, Carson Ranger District. Photo of a campsite located on river right, approximately 10m from the water edge. This site is located at UTM: N: 4270944 & E: 257291, Elev. 7603 feet (2318m).



Site 23: Noble Creek, Carson Ranger District. A tributary enters river right and adds an additional 7.5 percent to the discharge in Noble Creek. This site is located at UTM: N: 4270737 & E: 257304, Elev. 7648 feet (2332m).



Site 24: Noble Creek, Carson Ranger District. Upstream photo of a tributary entering on river right. The addition of the tributary doubled the flow in Noble Creek. This site is located at UTM: N: 4270089 & E: 257326, Elev. 7813 (2382m).



Site 25: Noble Creek, Carson Ranger District. Photo looking down into Noble Canyon, where the stream is entrenched and the banks are lined with brush. This site is located at UTM: N: 4269639 & E: 257368, Elev. 7892 feet (2406m).



Site 26: Noble Creek, Carson Ranger District. Upstream photo of confluence of two headwater branches: photo left from Noble Lake (65%) and photo right from Tryon Peak (35%). This site is located at UTM: N: 4269548 & E: 257299, Elev. 7915 feet (2413m).



Site 27: Noble Creek, Carson Ranger District. Two fish, 5-7 inches in total length, were sighted in this pool. This site is located at UTM: N: 4269512 & E: 257369, Elev. 7938 feet (2420m).



Site 28: Noble Creek, Carson Ranger District. Upstream photo of a seasonal fish barrier with height 3.5 feet and maximum pool depth of 1.4 feet. This site is located at UTM: N: 4269449 & E: 257519, Elev. 7984 feet (2434m).



Site 29: Noble Creek, Carson Ranger District. Cross-sectional view of trail-stream intersection. This site is located at UTM: N: 4269316 & E: 257675, Elev. 8039 feet (2451m).



Site 30: Noble Creek, Carson Ranger District. Upstream photo of a permanent fish barrier taken from the survey end point. The survey was ended here due to an increase in gradient and the presence of barriers, as well as a progressive decrease in stream flow. This site is located at UTM: N: 4269170 & E: 257764, Elev. 8069 feet (2460m).