Bodie Creek

Mineral County, Nevada

2006 Stream Habitat Survey Report

Prepared By

Humboldt-Toiyabe National Forest, Bridgeport Ranger District

Introduction

Bodie Creek is located in Mineral County, Nevada and Mono County, California. The mainstem of Bodie Creek flows for approximately 17.4 miles in a northeasterly direction starting upstream of Bodie State Park and flowing downstream to its confluence with Rough Creek on Nine Mile Ranch. Bodie Creek flows through several parcels of private land within California and Nevada. Within Nevada, Bodie Creek also occurs on lands managed by the Humboldt-Toiyabe National Forest (HTNF) and within California, Bodie Creek also occurs on lands managed by the Bureau of Land Management (BLM) and the state of California. Approximately 10.1 miles of Bodie Creek were surveyed between the private property/National Forest boundary (1815 meters) that occurs just upstream of the Bodie Creek-Rough Creek confluence (Site 1), and the California-Nevada state boundary (2287 meters) (Site 20).

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 360 miles of stream habitat and 49,400 acres of lake habitat for the native Lahontan Cutthroat Trout (*Oncorhynchus clarki*). Populations of these salmonids within the watershed were interactive and interconnected, and therefore these metapopulations had high genetic diversity and were capable of long-term persistence through adverse conditions.

Currently native LCT occupy only one stream within the entire Walker River basin; however, five additional streams within the Walker River basin have had LCT introduced. Together, LCT within these 6 streams occupy approximately 17 miles of stream habitat, approximately 4.7% of their historical range.

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. Bodie Creek was surveyed on May 31 and June 1, 2006 by Joel Ingram of the Bridgeport Ranger District: Humboldt-Toiyabe National Forest.

Materials and Methods

Forest Service personnel surveyed Bodie Creek by hiking the stream 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 10.1 miles of Bodie Creek were surveyed between the private property/National Forest boundary that occurs just upstream of the Bodie Creek-Rough Creek confluence (Site 1), and the California-Nevada state boundary (Site 20). One seasonal fish barrier was documented at Site 18. The majority of the sites documented were road-stream crossings at Sites 3, 8, 9, 12, 14, 15, 17, & 19. One adjacent road impact was documented at Site 11. Six photo points were documented

where pictures were useful in capturing the stream characteristics of that area (Sites 2, 4, 5, 6, 7, & 10). Two tributaries were noted near the old Del Monte homestead (Sites 13 & 16). The bridge at Site 8 and the culverts at Sites 15 and 17 may be inhibiting fish passage seasonally. The gradient of Bodie Creek between Site 1 and Site 20 is approximately 2.9%.

Discussion

Bodie Creek provides 10.1 miles of potential LCT habitat between Site 1 and Site 20. The 6.4 mile section of stream located between Site 7 and Site 20 offers the most favorable habitat due to the vegetative cover which shades the stream and protects the channel from cattle grazing. An additional 1 mile of potential LCT habitat may exist directly downstream of the surveyed area on the private land between Site 1 and the Bodie Creek-Rough Creek confluence and an additional 6.3 miles of potential LCT habitat may exist directly upstream of the surveyed area on the private, BLM, and California State lands located between Site 20 and Bodie State Park. During the survey only one natural barrier was identified: a seasonal barrier at Site 18. The fish barrier at Site 18 consisted of seven different waterfalls with the largest waterfall measuring 4.9 feet high. This barrier was classified as a seasonal, but may actually be a permanent fish passage barrier. The bridge at Site 8 and the culverts at Sites 15 and 17 may also be inhibiting fish passage seasonally.

Overall, Bodie Creek has a rocky streambed and several pools and deep holes. Bodie Creek currently supports a population of hybridized Lahontan cutthroat trout. A couple of factors may be negatively impacting these fish: first, cattle grazing in the area of Nine Mile Ranch has created numerous cattle trails within the riparian corridor and this may be creating a nutrient influx into the stream, and secondly, historic mining within and around Bodie State Park may also be leading to elevated levels of metals or harmful contaminants in the water. However, fish were sighted while doing the survey. Bodie Creek also has eight different road-stream crossings and one adjacent road impact was documented. These road-stream crossings and the documented adjacent road impact are likely sources of sediment contribution to the stream. A few of the road-stream crossings were bridges. Some of these bridges appeared to be old, falling apart, and may be safety hazards to road users.

Recommendations

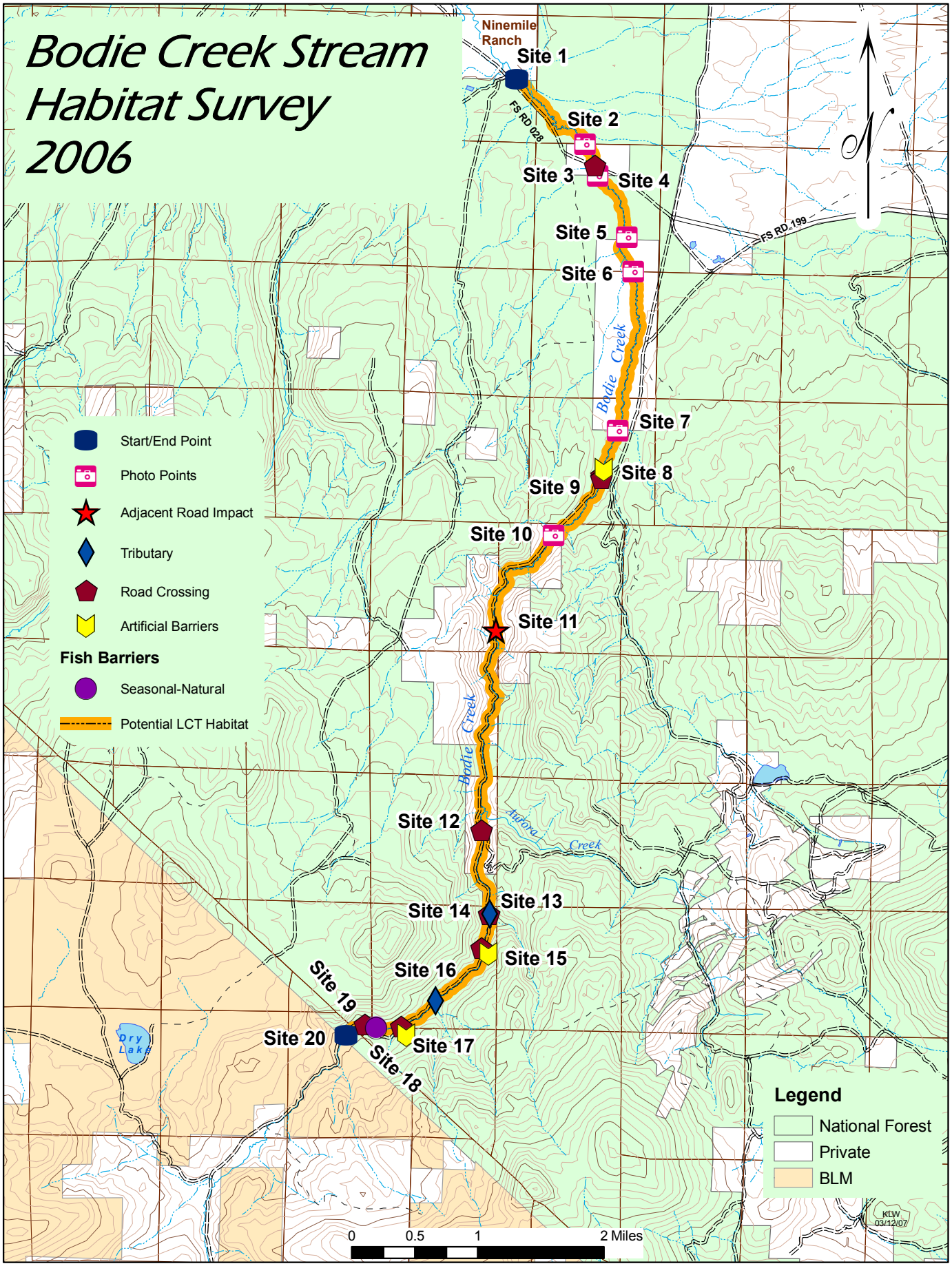
1. Consider the entire 10.1 mile section of Bodie Creek between Site 1 and Site 20 as potential LCT habitat. Consider the 6.4 mile section of Bodie Creek between Site 7 and Site 20 to be the best habitat within that 10.1 mile section. When future review/assessments are conducted to determine which streams within the Walker River watershed are suitable for LCT restoration, consider Bodie Creek a high-priority candidate. Bodie Creek is a tributary to Rough Creek, and Rough Creek is also considered a high-priority candidate for restoration.

2. If permission can be obtained, conduct a stream habitat survey on the 1 mile of Bodie Creek directly downstream of Site 1 and on the 6.3 miles directly upstream of Site 20 to determine if additional LCT habitat exists.

3. Utilize signs and physical barriers to encourage OHV users to stay on designated routes.

4. Further investigate the road-stream crossings that have bridges to determine if the bridges are stable and meet all safety codes.

5. Further investigate the bridge at Site 8 and the culverts at Sites 15 and 17 to determine if fish passage at those locations is being inhibited seasonally.


Bodie Creek Stream Habitat Survey 2006
Ninemile Ranch
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
Site 17
Site 18
Site 19
Site 20
FS RD 028
FS RD 199
Bodie Creek
Aurora Creek
Dry Lake
Start/End Point
Photo Points
Adjacent Road Impact
Tributary
Road Crossing
Artificial Barriers
Fish Barriers
Seasonal-Natural
Potential LCT Habitat
Legend
National Forest
Private
BLM
0
0.5
1
2 Miles
KLW 03/12/07

Site 1: Bodie Creek, Bridgeport Ranger District. Looking upstream at the survey start point at the private property/Forest Service boundary, located just upstream from the confluence with Rough Creek. The stream is approximately 3.5m wide and 0.4 m deep at this site. This site is located at UTM: N: 4249424 & E: 331724, Elevation 1815m.

Site 1 continued: Bodie Creek, Bridgeport Ranger District, looking downstream towards the private property. This site is located at UTM: N: 4249424 & E: 331724, Elevation 1815m.

Site 2: Bodie Creek, Bridgeport Ranger District, a cross-sectional view of the stream and its surrounding vegetation for this area. This site occurs where the stream exits private property and enters public lands. This site is located at UTM: N: 4248599 & E: 332602, Elevation 1827m.

Site 3: Bodie Creek, Bridgeport Ranger District. Photo shows a bridge located on private property. The bridge allows unrestricted flow of Bodie Creek and allows year-round fish passage. This site is located at UTM N: 4248311 & E: 332713, Elevation 1827m.

Site 4: Bodie Creek, Bridgeport Ranger District, looking upstream at where Bodie Creek enters private land. This site is located at UTM N: 4248198 & E: 332759, Elevation 1826m.

Site 5: Bodie Creek, Bridgeport Ranger District. Photo of a braided channel with rocky substrate and heavy riparian vegetation. Fish were seen at this site. This site is located at UTM N: 4247414 & E: 333134, Elevation 1833m.

Site 6: Bodie Creek, Bridgeport Ranger District. Photo showing where the Russian olive trees have begun to appear. This site is located at UTM N: 4246974 & E: 333212, Elevation 1837m.

Site 7: Bodie Creek, Bridgeport Ranger District, looking upstream from the private property/ Forest Service boundary. This section of stream is heavily vegetated with trees instead of brush; Cottonwood, Aspen, Willows, and Russian Olive. Note the stream has better clarity than the reaches downstream of this point. This site is located at UTM N: 4244947 & E: 333012, Elevation 1869m.

Site 7 continued: Bodie Creek, Bridgeport Ranger District, looking downstream at the private property/ Forest Service boundary. This site is located at UTM N: 4244947 & E: 333012, Elevation 1869m.

Site 8: Bodie Creek, Bridgeport Ranger District. Photo shows a large bridge. The cement footings restrict flow and create what may be a small seasonal barrier (max. pool depth 0.8 m). This site is located at UTM N: 4244364 & E: 332802, Elevation 1891m.

Site 8 continued: Bodie Creek, Bridgeport Ranger District. Photo looking downstream from the bridge. This site is located at UTM N: 4244364 & E: 332802, Elevation 1891m.

Site 9: Bodie Creek, Bridgeport Ranger District. Cross-sectional photo of an apparently frequently used ford road crossing. This site is located at UTM N: 4244325 & E: 332797, Elevation 1892m.

Site 10: Bodie Creek, Bridgeport Ranger District. Photo shows the stream characteristics and thick brush typical of this reach. This site is located at UTM N: 4243611 & E: 332195, Elevation 1923m.

Site 11: Bodie Creek, Bridgeport Ranger District. Looking upstream at an adjacent road impact through Del Monte Canyon. Note the road is a source of increased sediment. This site is located at UTM N: 4242405 & E: 31457, Elevation 1983m.

Site 12: Bodie Creek, Bridgeport Ranger District. Photo shows a ford road crossing just upstream from the Del Monte homestead. Note how the stream has widened in this area. This site is located at UTM N: 4239836 & E: 331267, Elevation 2110m.

Site 13: Bodie Creek, Bridgeport Ranger District. Photo shows a small tributary entering Bodie Creek over a waterfall measuring approximately 2m high. This site is located at UTM N: 4238787 & E: 331376, Elevation 2156.

Site 14: Bodie Creek, Bridgeport Ranger District. Photo of an old bridge that has little impact on the stream. This site is located at UTM N: 4238771 & E: 331368, Elevation 2158m.

Site 15: Bodie Creek, Bridgeport Ranger District. Photo of a large culvert that may seasonally inhibit fish passage. The flow of the water through the culvert creates a large pool on the downstream side of the crossing.

Site 16: Bodie Creek, Bridgeport Ranger District. Photo shows a small tributary on river right cascading down a small waterfall before entering Bodie Creek. This site is located at UTM N: 4237682 & E: 330684, Elevation 2225m.

Site 17: Bodie Creek, Bridgeport Ranger District. Looking upstream at a culvert, below which a large deep pool is formed. This culvert may seasonally impede fish passage. This site is located at UTM N: 4237347 & E: 330241, Elevation 2241m.

Site 18: Bodie Creek, Bridgeport Ranger District. Looking upstream at a series of seven waterfalls within a very short distance. These waterfalls are impeding fish passage. The largest of the falls measures 1.4m high and the deepest pool measures 0.9 m. Because the largest waterfall is 4.9 feet high, this site was classified as a seasonal fish barrier, but may actually be a permanent fish barrier. This site is located at UTM N: 4237329 & E: 329928, Elevation 2269m.

Site 18 continued: Bodie Creek, Bridgeport Ranger District. Upstream photo of one of seven waterfalls. This site is located at UTM N: 4237329 & E: 329928, Elevation 2269m.

Site 18 continued: Bodie Creek, Bridgeport Ranger District. Upstream photo of one of seven waterfalls. This site is located at UTM N: 4237329 & E: 329928, Elevation 2269m.

Site 19: Bodie Creek, Bridgeport Ranger District. Looking upstream at a road-stream crossing where a new bridge has been placed over an older bridge, which is beginning to collapse into the stream. This site is located at UTM N: 4237364 & E: 329782, Elevation 2280m.

Site 19 continued: Bodie Creek, Bridgeport Ranger District. Cross-sectional photo of the new bridge on top of the old collapsing bridge. This site is located at UTM N: 4237364 & E: 329782, Elevation 2280m.

Site 20: Bodie Creek, Bridgeport Ranger District. Looking upstream at the survey end point where the stream crosses the California-Nevada state line. The historic town of Bode is located upstream of this site. This site is located at UTM N: 4237235 & E: 329548, Elevation 2287m.

Site 20 continued: Bodie Creek, Bridgeport Ranger District. Looking downstream from the survey end point. This site is located at UTM N: 4237235 & E: 329548, Elevation 2287m.