

Molybdenite Creek

Mono County, California

2006 Stream Habitat Survey Report



Prepared By:

Humboldt-Toiyabe National Forest, Bridgeport Ranger District

Introduction

Molybdenite Creek is located in Mono County, California. The mainstem of Molybdenite Creek flows approximately 8.9 miles in a northerly direction from a location near Ink Rocks in the Hoover Wilderness to its confluence with the Little Walker River. The entire length of Molybdenite Creek lies within the boundaries of the Humboldt-Toiyabe National Forest, and the upper reaches are found within the Hoover Wilderness. Approximately 7.1 miles of Molybdenite Creek were surveyed starting from the Little Walker River (Site 1, 2290 meters) upstream to a point in which the presence of snow prevented any further survey (Site 17, 2800 meters).

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. Molybdenite Creek was surveyed on June 19-21, 2006 by Joel Ingram of the Bridgeport Ranger District: Humboldt-Toiyabe National Forest.

Methods and Materials

Forest Service personnel surveyed Molybdenite 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 7.1 miles of Molybdenite Creek were surveyed from the Little Walker River up to a point in which the presence of snow prevented any further survey (Sites 1-17). No natural fish barriers were documented. The culvert at Site 3 is an artificial fish barrier probably inhibiting fish passage seasonally. Five photo points were used to document stream characteristics (Sites 2, 4, 8, 10, and 14). Five tributaries were noted (Sites 5, 7, 9, 11, and 16). Beaver activity was documented at Sites 13 and 15. One road-stream crossing was documented at Site 3 (Little Walker River Road near the Obsidian Campground), and one trail crossing was documented at Site 6. Fish were sighted at Sites 12, 13, and 15. A campsite was also documented at Site 13. The average stream gradient of Molybdenite Creek between Site 1 and Site 17 is 4.5%.

Discussion

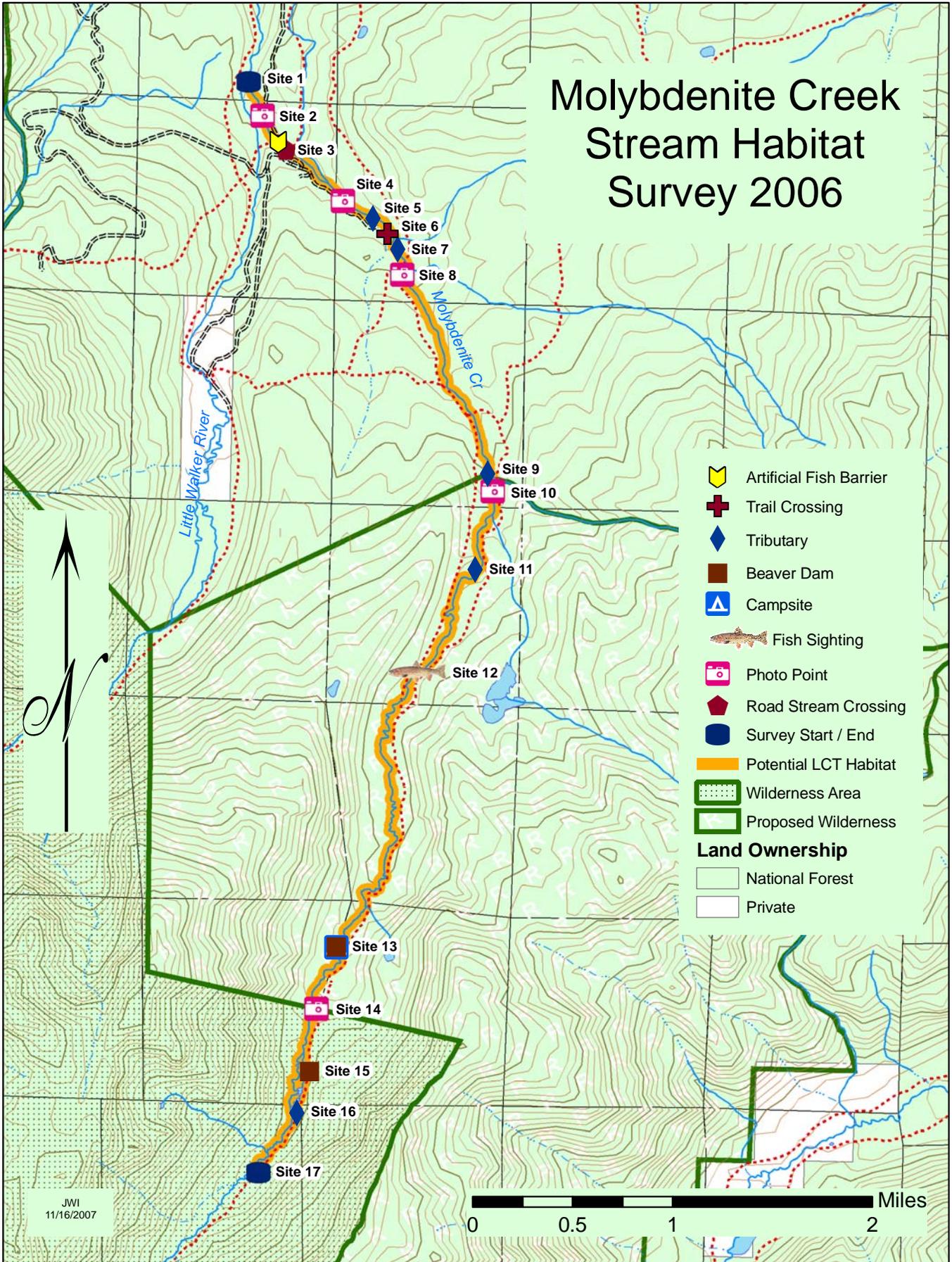
Molybdenite Creek offers 7.1 miles of potential LCT habitat between Site 1 and Site 17. Up to an additional 1.8 miles of potential LCT habitat may exist directly upstream of Site 17. This area was not surveyed due to the abundance and depth of snow at the time of the survey. Molybdenite Creek provides several different types of habitat which would be suitable for LCT. Between Site 1 and Site 3 the stream is moving extremely fast with few pools as the stream flows through a small canyon. The culvert at Site 3 is an artificial fish barrier probably inhibiting fish passage seasonally. The culvert at Site 3 channels water under a major road before dropping 2.6 feet (under high flows) on the downstream end of the culvert. Upstream of Site 3 the stream has a lower gradient and a large amount of stream cover. Beaver ponds are present in a large meadow between Sites 13 and 15. Fish were also sighted swimming in the slow deep water of the beaver ponds.

Molybdenite Creek is a tributary to the Little Walker River. The Little Walker River offers an additional 10.4 miles of potential LCT habitat and it allows for the possibility of restoring a metapopulation of LCT within the Little Walker River and Molybdenite Creek watersheds.

Recommendations

1. Consider the entire 7.1 miles (Sites 1-17) of Molybdenite Creek as potential LCT habitat and consider Molybdenite Creek a high candidate for restoration. Molybdenite Creek could contribute towards restoring a metapopulation of LCT in the area.
2. At a different time of year when the snow has melted, consider conducting a stream habitat survey on the 1.8 miles of Molybdenite Creek directly upstream of Site 17 to determine if additional LCT habitat exists.
3. Further evaluate the culvert at Site 3 to determine if it prohibits fish passage seasonally. If the culvert is inhibiting fish passage, alter the site to accommodate fish passage.
4. Evaluate if impacts to the stream, as a result of the Obsidian Campground, are occurring.

Molybdenite Creek Stream Habitat Survey 2006



JWI
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0 0.5 1 2 Miles



Site 1: Molybdenite Creek, Bridgeport Ranger District, looking downstream at the confluence of Molybdenite Creek (picture right) and the Little Walker River (picture left). The confluence and survey start point are northeast of the Obsidian Campground. This site is located at UTM N: N: 4242066 & E: 285708, Elevation 2290m.



Site 1 continued: Molybdenite Creek, Bridgeport Ranger District, looking upstream at Molybdenite Creek from the confluence. This site is located at UTM N: 4242066 & E: 285708, Elevation 2290m.



Site 2: Molybdenite Creek, Bridgeport Ranger District, looking upstream at the moderate gradient and swift water typical of this reach. This site is located at UTM N: 4241791 & E: 285821, Elevation 2324m.



Site 2 continued: Molybdenite Creek, Bridgeport Ranger District, looking downstream at the moderate stream gradient and swift water typical of this reach. This site is located at UTM N: 4241791 & E: 285821, Elevation 2324m.



Site 3: Molybdenite Creek, Bridgeport Ranger District, looking upstream at a culvert beneath Little Walker River Road near the Obsidian Campground. The water spills out of the culvert and drops 0.8m (2.6ft) to the pool below. This artificial fish barrier is probably inhibiting fish passage seasonally and not permanently. This site is located at UTM N: 4241518 & E: 286007, Elevation 2348m.



Site 3: Molybdenite Creek, Bridgeport Ranger District. Photo of Little Walker River Road above the culvert. This site is located at UTM N: 4241518 & E: 286007, Elevation 2348m.



Site 4: Molybdenite Creek, Bridgeport Ranger District, looking upstream at where a few pools and slower water provide better fish habitat than the reach downstream. This site is located at UTM N: 4241103 & E: 286467, Elevation 2395m.



Site 5: Molybdenite Creek, Bridgeport Ranger District, looking at a small tributary that enters on river right and contributes approximately 5% to the overall flow. This site is located at UTM N: 4240961 & E: 286713, Elevation 2412m.



Site 5 continued: Molybdenite Creek, Bridgeport Ranger District, looking upstream at Molybdenite Creek from its confluence with the tributary. This site is located at UTM N: 4240961 & E: 286713, Elevation 2412m.



Site 6: Molybdenite Creek, Bridgeport Ranger District, cross-sectional (east to west) view of a high use trail-crossing that may introduce some sediment into the stream. This site is located at UTM N: 4240837 & E: 286837, Elevation 2404m.



Site 7: Molybdenite Creek, Bridgeport Ranger District. A small tributary braids as it enters Molybdenite Creek from the river right side and contributes 10% to the stream's flow. This site is located at UTM N: 4240714 & E: 286913, Elevation 2419m.



Site 8: Molybdenite Creek, Bridgeport Ranger District. Photo shows dead and downed trees which have created habitat complexity in the stream. This site is located at UTM: N: 4240509 & E: 286945, Elevation 2437m.



Site 9: Molybdenite Creek, Bridgeport Ranger District, looking downstream at a point where several small tributaries enter Molybdenite Creek from the river right side. This site is located at UTM N: 4238905 & E: 287638, Elevation 2572m.



Site 9 continued: Molybdenite Creek, Bridgeport Ranger District, looking upstream at the convergence of the tributaries. This site is located at UTM N: 4238905 & E: 287638, Elevation 2572m.



Site 10: Molybdenite Creek, Bridgeport Ranger District, looking upstream at the swift water, lack of pools, and downed trees typical of this reach. This site is located at UTM N: 4238766 & E: 287674, Elevation 2578m.



Site 11: Molybdenite Creek, Bridgeport Ranger District, looking upstream at a tributary that enters on river right side and contributes about 10% to the overall flow. Upstream of this point the mainstem has a lower gradient and contains more pools. This site is located at UTM N: 4238135 & E: 287537, Elevation 2631m.



Site 11 continued: Molybdenite Creek, Bridgeport Ranger District, looking upstream at Molybdenite Creek from its confluence with the tributary. This site is located at UTM N: 4238135 & E: 287537, Elevation 2631m.



Site 12: Molybdenite Creek, Bridgeport Ranger District, looking upstream at where Molybdenite Creek flows through a meadow. Three 6-inch fish were also sighted in a pool near this location. This site is located at UTM N: 4237319 & E: 287065, Elevation 2647m.



Site 12 continued: Molybdenite Creek, Bridgeport Ranger District, view looking downstream from where the fish were seen. This site is located at UTM N: 4237319 & E: 287065, Elevation 2647m.



Site 13: Molybdenite Creek, Bridgeport Ranger District, looking upstream at one of several large pools formed by multiple beaver dams. Several fish sightings and several campsites were also noted at this site. This site is located at UTM N: 4235092 & E: 286418, Elevation 2734m.



Site 13 continued: Molybdenite Creek, Bridgeport Ranger District, cross-sectional photo of one of the campsites locate near the beaver ponds. This site is located at UTM N: 4235092 & E: 286418, Elevation 2734m.



Site 14: Molybdenite Creek, Bridgeport Ranger District, looking upstream at the narrower stream channel. This site is located at UTM N: 4234537 & E: 286255, Elevation 2783m.



Site 15: Molybdenite Creek, Bridgeport Ranger District, looking upstream at multiple beaver dams that create large ponds that span the valley, and offer refuge to several fish that were sighted. This site is located at UTM N: 4234093 & E: 286099, Elevation 2804m.



Site 15 continued: Molybdenite Creek, Bridgeport Ranger District, an overview of the entire pond system. This site is located at UTM N: 4234093 & E: 286099, Elevation 2804m.



Site 16: Molybdenite Creek, Bridgeport Ranger District, looking at a small seasonal tributary that enters the beaver pond system that was identified at Site 15. This site is located at UTM N: 4233758 & E: 286099, Elevation 2808m.



Site 17: Molybdenite Creek, Bridgeport Ranger District, looking upstream from the survey end point. The survey ended at this site due to the abundance and depth of snow upstream. This site is located at UTM N: 4233278 & E: 285790.