

NEVADA DEPARTMENT OF WILDLIFE  
STATEWIDE FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORT  
F-20-50  
2014

LAHONTAN CUTTHROAT TROUT STUDY  
WESTERN REGION



**NEVADA DEPARTMENT OF WILDLIFE, FISHERIES DIVISION  
ANNUAL PROGRESS REPORT**

Table of Contents

SUMMARY .....	1
BACKGROUND .....	1
OBJECTIVES.....	1
PROCEDURES.....	2
FINDINGS .....	3
MANAGEMENT REVIEW .....	5
RECOMMENDATIONS.....	7

**NEVADA DEPARTMENT OF WILDLIFE, FISHERIES DIVISION  
ANNUAL PROJECT REPORT**

**State:** Nevada  
**Project Title:** Statewide Fisheries Program  
**Job Title:** Lahontan Cutthroat Trout Study  
**Period Covered:** January 1, 2014 through December 31, 2014

**SUMMARY**

Monitoring surveys on LCT populations were completed on Crowley Creek and Pole Creek in the Montana Mountains. General Aquatic Wildlife Survey (GAWS) stream surveys were completed on Kings River, Cold Springs Creek, Log Cabin Creek, Raster Creek, Rodeo Creek, House Creek, Singas Creek, and Crowley Creek.

**BACKGROUND**

Lahontan cutthroat trout (LCT) *Oncorhynchus clarkii henshawi* is the only native salmonid occurring in the Lahontan Basin. LCT were distributed in the drainages of ancient Lake Lahontan and, as conditions became more arid during the last 5,000 to 12,000 years, they survived as small populations in isolated headwater streams of many mountain ranges throughout Nevada, Oregon, and California.

The settlement of the Great Basin resulted in significant loss of LCT as livestock grazing, urban development, mining, water diversions, and hybridization and competition with non-native trout led to significant declines in the range and numbers of this unique trout species. In response to these declines, Lahontan cutthroat trout were listed as endangered in 1970, but reclassified as threatened in 1975. In January of 1995, the USFWS released a recovery plan for the Lahontan cutthroat trout.

Lahontan cutthroat trout were historically common in the Quinn River, Blackrock, and Little Humboldt sub-basins of the Humboldt River system. The Blackrock Drainage may have had as many as 46 streams occupied by LCT. Presently, LCT are thought to occupy only 15% of their historic stream habitat in the Quinn River-Blackrock drainages. Populations have suffered from habitat loss, hybridization with nonnative salmonids, and extended droughts. Recovery action in the Quinn River drainage is the priority in the USFWS Lahontan Cutthroat Trout Recovery Plan.

The final draft of the LCT Species Management Plan was completed in 1999. This plan, written under the umbrella of the U.S. Fish and Wildlife LCT Recovery Plan, contains management strategies and objectives that outline the processes that will be used to guide future activities. Nevada Department of Wildlife (NDOW) and the Quinn-Blackrock Geographic Management Unit (GMU) Team have used the plan to guide recovery efforts since its signing.

**OBJECTIVES**

- Perform GAWS Level III stream surveys (75 stations) on each of the following streams: Kings River, Cold Springs Creek, Log Cabin Creek, Raster Creek, Rodeo Creek, House Creek, and Crowley Creek.

- Continue to work with ODFW to sample 30 miles of stream within the McDermitt Basin for hybridization with non-native rainbow trout.
- Augment the Sage Creek population of LCT with at least 50 fish from the North Fork of Battle Creek.
- Perform spot shocking surveys over the upper 2.5 miles of Crowley Creek to monitor and document the expansion of the headwater population.
- Perform a population survey over the entire wetted portion of Pole Creek to monitor the reestablishment of LCT in the drainage.
- Work with the NWGMU to complete the planning process and install a riparian fence on the headwaters of Crowley Creek.
- Conduct mechanical removal of brook trout in the upper one mile of Abel Creek.

## PROCEDURES

**Perform GAWS Level III stream surveys (75 stations) on each of the following streams: Kings River, Cold Springs Creek, Log Cabin Creek, Raster Creek, Rodeo Creek, House Creek, and Crowley Creek.** General Aquatic Wildlife System (GAWS) level III transect surveys were completed in 2014 on Kings River during July and October, Cold Springs Creek during July, Log Cabin Creek during June, Raster Creek during June, Rodeo Creek during June, House Creek during June, and Crowley Creek during June using methodologies outlined in the USFS Fisheries Habitat Surveys Handbook. In conjunction with the GAWS habitat surveys, single pass electroshocking surveys were performed on both streams at each survey station. Sampling sites occurred approximately every half mile along the surveyed portion of the stream, electroshocking 100 feet at each site using ETS model AbP-3 backpack electroshocker.

**Continue to work with ODFW to sample 30 miles of stream within the McDermitt Basin for hybridization with non-native rainbow trout.** Due to the vacancy of the primary biologist position for ODFW an intensive survey effort was not completed in the McDermitt Basin. On July 1, 2014, the lower section of Sage Creek upstream of the fish barrier was electroshocked using a Smith-Root LR-20B backpack electroshocker.

**Augment the Sage Creek population of LCT with at least 50 fish from the North Fork of Battle Creek.** Due to extremely low water flows and high water temperatures, conditions were not suitable in Sage Creek for LCT augmentation.

**Perform spot shocking surveys over the upper 2.5 miles of Crowley Creek to monitor and document the expansion of the headwater population.** On July 29 and 30, 2014, the upper 3.5 miles of Crowley Creek was surveyed to monitor LCT populations. Smith-Root LR-20B backpack electrofisher and ETS model AbP-3 backpack electroshockers were used for the survey. Fin clips from captured LCT were collected for genetic analysis.

**Perform a population survey over the entire wetted portion of Pole Creek to monitor the reestablishment of LCT in the drainage.** On July 1, 2014, the wetted

stream channel in Pole Creek was electroshocked to monitor LCT populations. A Smith-Root LR-20B backpack electroshocker was used for the survey.

**Work with the NWGMU to complete the planning process and install a riparian fence on the headwaters of Crowley Creek.** The Crowley Creek headwaters fencing project was discussed during GMU meetings throughout the year. Coordination also occurred between NDOW, United State Fish and Wildlife Service (FWS), and Bureau of Land Management (BLM) staff to complete necessary requirements to construct the fence.

**Conduct mechanical removal of brook trout in the upper one mile of Abel Creek.** On June 24-25 and August 12, 2014, the upper one mile of Abel Creek in the Santa Rosa Range was intensively electroshocked. Block nets were placed at the lower extent of the electroshocking reach and crews worked upstream removing all brook trout captured. All captured LCT were measured and returned to the habitat in which they were sampled. The first fifty brook trout captured were measured. Extra care was taken not to injure any sampled LCT. ETS model AbP-3 backpack electroshockers were used during the removal effort.

## FINDINGS

**Perform GAWS Level III stream surveys (75 stations) on each of the following streams: Kings River, Cold Springs Creek, Log Cabin Creek, Raster Creek, Rodeo Creek, House Creek, and Crowley Creek.** GAWS Level III stream surveys were completed on Kings River, Cold Springs Creek, Log Cabin Creek, Raster Creek, Rodeo Creek, House Creek, and Crowley Creek. The August 2012 Holloway Fire impacted the majority of the Bilk Creek, Kings River, Cold Springs Creek, Log Cabin Creek, Raster Creek, House Creek, and Rodeo Creek drainages. In July 2012, the Hanson Fire impacted the majority of the Singas Creek drainage. The August 2012 Long Canyon Fire impacted the majority of the lower Crowley Creek drainage, the majority of the stream channel was dry during the survey period. Table 1 displays the Habitat Condition Index (HCI) scores and estimated salmonid densities.

**Table 1.** Habitat Condition Index (HCI) for Surveyed Streams.

Stream	Mountain Range	Pre-Fire			Post-Fire		
		Year	HCI	Fish Density (fish/mile)	Year	HCI	Fish Density (fish/mile)
Bilk Creek	Bilk Creek	2007	57	479	2014	44	0
Kings River	Trout Creeks	2008	67	1848	2014	51	53
Cold Springs	Trout Creeks	2008	62	409	2014	54	26
Log Cabin	Bilk Creeks	2008	49	57	2014	46	95
Raster	Bilk Creeks	2010	50	23	2014	41	44
House	Bilk Creeks	2009	50	35	2014	42	0
Rodeo*	Bilk Creeks	2008	51	-	2014	39	-
Singas	Santa Rosas	2012	71	BK: 449, RB: 92	2014	48	BK: 18, RB: 6
Crowley	Montanas	2009	48	0**	2014	37	0

\*Rodeo Creek was chemically treated in 1997 to remove non-native salmonids

\*\*2009 fish density is only for stations surveyed in 2014

**Continue to work with ODFW to sample 30 miles of stream within the McDermitt Basin for hybridization with non-native rainbow trout.** On July 1, 2014, the lower section of Sage Creek within the McDermitt Basin was electroshocked to monitor the presence of any salmonids. Speckled dace *Rhinichthys osculus* was the only fish species observed.

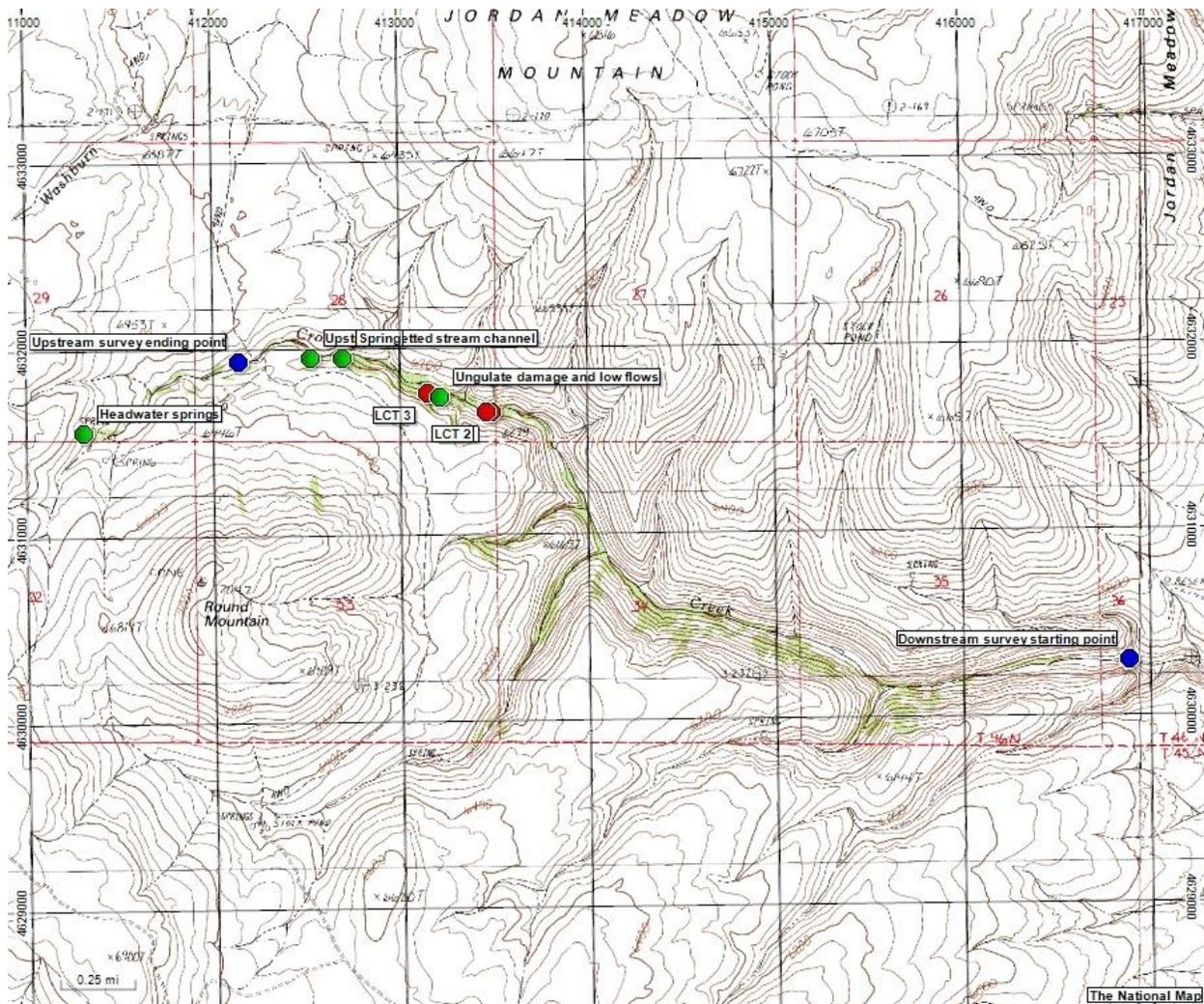
**Augment the Sage Creek population of LCT with at least 50 fish from the North Fork of Battle Creek.** On July 1, 2014, the water temperature at Sage Creek was measured at 68°F. It was determined that the high water temperature and low water conditions would be too stressful to move LCT.

**Perform spot shocking surveys over the upper 2.5 miles of Crowley Creek to monitor and document the expansion of the headwater population.** On July 29 and 30, 2014, the upper 3.5 miles of Crowley Creek was surveyed to monitor LCT populations. During this survey period, six LCT were documented, three LCT were captured, and three were observed but not captured. All LCT were located in approximately 0.25 miles of stream habitat in the upper section of Crowley Creek. One LCT was a recapture with a previously fitted PIT tag that was found in the same pool as previous capture events. The total length of LCT captured was 180 mm, 190 mm, and 225 mm and average total length was 198 mm.

Figure 1 displays the distribution of LCT within Crowley Creek, along with the surveyed section of stream and locations of important habitat features. The distribution was severely limited due to inadequate water flows that resulted from unauthorized ungulate use on springs located within riparian exclosures. In addition, there was an unauthorized spring box and water troughs capturing and diverting water from the stream channel at the headwater springs.

**Perform a population survey over the entire wetted portion of Pole Creek to monitor the reestablishment of LCT in the drainage.** On July 1, 2014, the wetted stream channel on Pole Creek measured approximately 0.75 miles. This entire length was electroshocked to determine the presence and abundance of LCT. One LCT was visually observed but not captured. This fish was located in a small pool where LCT has been documented during previous monitoring efforts.

**Work with the NWGMU to complete the planning process and install a riparian fence on the headwaters of Crowley Creek.** Throughout 2014, coordination occurred between NDOW and BLM staff to move forward with this project. Funding for the project was secured in October 2014 with approval of the Crowley Creek Headwater Sage Grouse Habitat Enhancement Project, which utilizes Ruby Pipeline mitigation funds. In August and September 2014, NDOW and USFWS provided documentation to BLM regarding the continued need to erect the exclosure fence and prevent habitat degradation at the headwaters of Crowley Creek.



**Figure 1.** Distribution of LCT in Crowley Creek.

**Conduct mechanical removal of brook trout in the upper one mile of Abel Creek.** During electroshocking efforts to remove brook trout on June 24-25, 2014 and August 12, 2014, 1,112 brook trout at an average total length of 142 mm were removed from Abel Creek. There were 27 LCT captured during the removal effort and LCT young-of-the-year were observed at three locations.

### MANAGEMENT REVIEW

**Perform GAWS Level III stream surveys (75 stations) on each of the following streams: Kings River, Cold Springs Creek, Log Cabin Creek, Raster Creek, Rodeo Creek, House Creek, and Crowley Creek.** The aforementioned streams all had a lower HCI score when riparian habitat conditions were measured in 2014 compared to the previous HCI scores which represented pre-fire conditions. The decline in riparian habitat conditions combined with low water conditions due to extended drought periods also resulted in declines in estimated fish densities in Bilk Creek, Kings River, Cold Springs Creek, and House Creek. Future land management

actions should be focused on improving the riparian condition to provide suitable habitat for salmonid populations.

**Continue to work with ODFW to sample 30 miles of stream within the McDermitt Basin for hybridization with non-native rainbow trout.** Due to workloads being focused on other projects and the vacancy of the ODFW primary fisheries biologist, this management objective was not completed in 2014. It is recommended that management goals for the McDermitt Basin be reevaluated and a basin wide management plan developed.

**Augment the Sage Creek population of LCT with at least 50 fish from the North Fork of Battle Creek.** During 2014, this management objective was not completed due to the high water temperatures and low flows in Sage Creek. The snowpack during the 2014/2015 season has been below normal, which may result in unsuitable conditions for moving LCT again in 2015. If water conditions are suitable in Sage Creek and an adequate source stock is still available in North Fork of Battle Creek, this management objective should be included in future LCT recovery efforts.

**Perform spot shocking surveys over the upper 2.5 miles of Crowley Creek to monitor and document the expansion of the headwater population.** Water flows in Crowley Creek were extremely low in 2014. During the survey period, water flow was measured at 0.4 cfs in the upper section of Crowley Creek where it was believed LCT might be present. After the population survey was completed, two water troughs and a developed spring box were discovered at the Crowley Creek headwater springs. This resulted in almost 0.75 miles of dry stream channel. Ungulate use was also documented within the riparian enclosure and the resulting hoof trampling on streamside springs limited water flow into the stream channel. These conditions were documented and provided to BLM.

**Perform a population survey over the entire wetted portion of Pole Creek to monitor the reestablishment of LCT in the drainage.** Due to extremely low flows in Pole Creek during the survey period, LCT were confined to one pool in the stream. Evidence of heavy ungulate utilization of the riparian corridor was observed along with sediment suspended in the water. Regular monitoring and coordination with BLM and FWS will be necessary to prevent over utilization by ungulates from having a negative impact on the riparian habitat within the Pole Creek drainage.

**Work with the NWGMU to complete the planning process and install a riparian fence on the headwaters of Crowley Creek.** While progress was made towards completing the fence protecting the headwater springs, this project was not finalized during 2014. The Crowley Creek Headwaters Project has been identified as a priority for LCT recovery effort and must be completed to ensure the continued survival of LCT in Crowley Creek.

**Conduct mechanical removal of brook trout in the upper one mile of Abel Creek.** The mechanical removal of brook trout continued to reduce competition for

resources within Abel Creek, benefiting the native LCT population. The number and average size of LCT has remained stable over the last two years (26 LCT in 2013 averaging 171 mm total length and 27 LCT in 2014 averaging 172 mm total length). Since the average total length of brook trout removed was 142 mm, this indicates that a variety of size classes is still represented in the population. While mechanical eradication efforts may temporarily relieve stresses on the LCT population, it is not a feasible long-term solution to protect and expand the Abel Creek LCT population.

### **RECOMMENDATIONS**

- Complete GAWS Level III stream surveys on Colman Creek, Snow Creek, Long Canyon Creek, and North Fork Little Humboldt (on US Forest Service administered lands).
- Coordinate with ODFW to complete surveys monitoring the expansion of non-native fish within the McDermitt Basin.
- Install a pipe-rail fence protecting the headwaters of Crowley Creek.
- Complete population monitoring surveys on Washburn Creek, Riser Creek, Crowley Creek, Pole Creek, North Fork Battle Creek, Threemile Creek, Eightmile Creek, and South Fork Indian Creek.
- Conduct mechanical removal of brook trout in the upper one mile of Abel Creek.
- Collect genetic samples from LCT populations throughout the Quinn-Black Rock GMU as available.
- Install a fish barrier on the North Fork Little Humboldt River and Long Canyon Creek system.

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