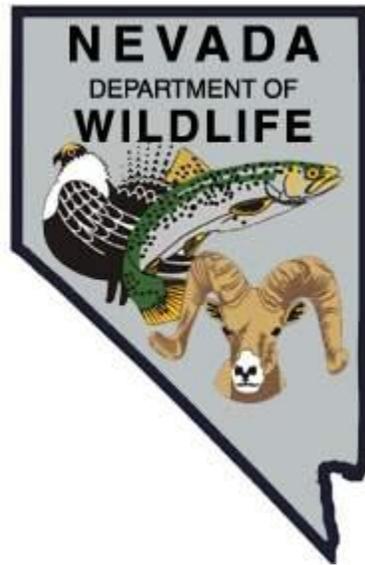


# NEVADA DEPARTMENT OF WILDLIFE STATEWIDE FISHERIES MANAGEMENT



## FEDERAL AID JOB PROGRESS REPORT

F-20-50  
2014

## TRUCKEE RIVER WESTERN REGION



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

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

**State:** Nevada  
**Project Title:** Statewide Fisheries Program  
**Job Title:** Truckee River  
**Period Covered:** January 1, 2014 through December 31, 2014

**SUMMARY**

On April 1, 2014, the designated end of measuring seasonal snowpack, the Truckee River Basin stood at 34% of average snow pack. This is the third consecutive year at or below 69% of average. This year's drought was more prevalent than it has over the past two years due to depletion of upstream storage. Recorded flow rates for the Truckee River were some of the lowest in recent history.

Due to low flows, annual population sampling was cancelled. It was determined that electroshocking during the normal in late summer sampling time would place too much stress on fish populations.

There were 61 volunteer angler surveys received from two drop-boxes along the river in 2014. Anglers fished for 164 hrs and caught 76 fish consisting of 61 rainbow trout, 8 brown trout, 6 cutthroat trout, and 1 brook trout. Resulting catch rates (all fish) were 1.25 fish per angler and 0.46 fish per hour. All but one rainbow trout was released. Species composition was 80.3% rainbow trout, 10.5% brown trout, 7.9% cutthroat trout, and 1.3% brook trout.

The Mail-in Angler Questionnaire Survey estimated Truckee River use at 8,436 anglers and 59,434 angler use days in 2013. There was an estimated 93,778 fish caught with a success rate of 1.58 fish per day. These were all lower than found in 2012 and were below the 33-year average.

From February through early July, the Truckee River received 41,029 triploid rainbow trout on 10 separate stockings. Stocking efforts were suspended in July due to low flow rates in the river.

Five transects on the Truckee River were surveyed for the presence of New Zealand mud snails (*Potamopyrgus antipodarum*). No mud snails were detected and, therefore, not believed the distribution has changed from 2013 surveys.

**BACKGROUND**

The Truckee River formerly supported tremendous spawning runs of cui-ui that lived in Pyramid Lake and lacustrine/ad-fluvial Lahontan cutthroat trout (LCT) that inhabited Lake Tahoe and Truckee River basins. It is generally accepted there were two spawning runs (winter and spring) of LCT from Pyramid Lake that would ascend the Truckee River to reach spawning habitat in the main stem and tributaries. The cui-ui is

believed to have had an upstream limit near East McCarran Boulevard while LCT is believed to have moved throughout the Lake Tahoe-Truckee River-Pyramid Lake watershed.

The influx of European settlers to the Truckee River basin brought with it a number of anthropogenic changes to the system including water diversions (fish passage barriers) for municipal and agricultural use (i.e., Derby Dam), over-harvest of fish, habitat alteration, reduced water quality and quantity, and introduction of non-native fishes. The Pyramid Lake LCT population began dwindling in the early 1900s and eventually was extirpated around 1940. Fortunately, the cui-ui was able to persist in limited numbers due to the longevity of the species.

Historically, LCT was successfully reintroduced into Pyramid Lake by the Nevada Department of Wildlife (NDOW), with stocks coming from a number of genetic strains including Summit Lake and the Carson River Basin. Further advancements by the Pyramid Lake Paiute Tribe (PLPT) and USFWS have produced a quality fishery. Pyramid Lake is within the boundaries of the Pyramid Lake Paiute Reservation and the PLPT currently manages the lake's LCT fishery, which is maintained by hatchery stocking.

Subsequent to the collapse of the LCT fishery in the Truckee River, non-native salmonids such as rainbow trout and brown trout were introduced for sport fishing. These species soon established self-sustaining populations, which continue to persist. In an effort to meet angler demand, wild trout in the Truckee River are annually augmented with hatchery-reared trout.

In 2013, an angler presented a petition to the Nevada Board of Wildlife Commissioners recommending changing the harvest limit to a three fish for the entire section of river in Nevada as well removing the tackle restrictions in the Trophy Section upstream of Crystal Peak Park to the NV/CA border. The Washoe County Advisory Board to Manage Wildlife also recommended these changes as presented in the petition at a September 2013 commission meeting. The Nevada Board of Wildlife Commissioners enacted the three fish limit, but did not have authority to act upon the tackle restriction. Per NDOW's recommendation, the tackle restriction was subsequently eliminated from the river through passing by the Nevada Legislature in early 2014. This new regulation made the entire Nevada portion of the Truckee River a 3-fish limit with no tackle restrictions.

NDOW and the PLPT signed a 5-year Memorandum of Agreement (MOA) in 2002, which coordinates efforts to restore LCT in the Truckee River. Upon the expiration of this agreement, NDOW and the PLPT met again in late 2014 to reenact the agreement and include the USFWS as an additional party. The main objectives were to 1) Work toward the reestablishment of a natural LCT spawning run in the Truckee River and 2) To utilize LCT in the maintenance of recreational fishing in the Truckee River. Due to improved habitat conditions for salmonid spawning and rearing, all parties were optimistic that some degree of restoration could be possible. In addition, through the

work of the Fish Passage Team, several fish passage barriers will be under evaluation in the hope that future modification allows fish to move naturally throughout the system.

In April of 2013, the Department of Wildlife was informed by the Nevada Division of Environmental Protection (NDEP) that a substrate sample collected in August of 2012 from the Truckee River confirmed a single New Zealand mud snail (*Potamopyrgus antipodarum* - NZMS). The single NZMS was collected near East McCarran Bridge in Sparks, representing the first confirmed occurrence in the Truckee River/Lake Tahoe Basin. Subsequent NZMS surveys conducted in 2013 and 2014 defined its distribution from Mayberry Park downstream to the Mustang exit.

## OBJECTIVES

### General Management Objectives:

- Monitor water quantity (discharge) through USGS Stream Flow data.
- Monitor fish populations by conducting tote-barge electroshocking surveys at 11 traditional transects during three days in the fall.
- Collect fin samples from rainbow trout and LCT for genetic analysis during electroshocking surveys for genetic analysis by the University of Nevada Genetics Lab.
- Conduct a general assessment of angler use, success, and harvest through opportunistic angler contacts, return of angler drop-box surveys, and mail-in angler questionnaire data.
- Maintain the angler information center and angler drop-boxes.
- Conduct four days of presence/absence surveys for NZMS at suitable locations upstream and downstream of the area they are presently known to occupy.

## PROCEDURES

### General Management Objectives

**Monitor water quantity (discharge) through USGS Stream Flow data.** Natural Resource Conservation Service (NRCS) and US Geological Service (USGS) data were used to assess water quantity in the Truckee River throughout the year. Annual snowpack data was derived from NRCS SNOTEL sites in the Truckee River Basin while river discharge was obtained from USGS gages located at Reno and Derby Dam.

**Monitor fish populations by conducting tote-barge electroshocking surveys at 11 traditional transects during three days in the fall.** Annual fish population surveys were not completed during 2014. Extremely low flow conditions coupled with warm water temperatures placed severe stress upon fish inhabiting the river. Due to this and the inability to effectively navigate the river with the tote-barge, the surveys were cancelled.

**Collect fin samples from rainbow trout and LCT for genetic analysis during electroshocking surveys for genetic analysis by the University of Nevada Genetics Lab.** This objective was not completed as the electroshocking survey was cancelled.

**Conduct a general assessment of angler use, success, and harvest through opportunistic angler contacts, return of angler drop-box surveys, and mail-in angler questionnaire data.** Visits were made to the Truckee River throughout the year for collecting creel survey data at times to contact the greatest number of anglers. Information on angler harvest, effort, and origin were recorded. Harvested fish were identified to species and measured to fork length in millimeters.

During the course of other duties throughout the year, two volunteer angler drop-boxes on the Truckee River were periodically monitored and restocked. At the end of the calendar year, data was summarized.

Angler use and success was also assessed through the Department's Mail-in Angler Questionnaire Survey. Angler questionnaire data was summarized from a survey that was mailed to about 30,000 license purchasers from the previous calendar year.

**Maintain the angler information center and angler drop-boxes.** The angler information center and drop-boxes were visually inspected and restocked on a regular basis.

**Conduct four days of presence/absence surveys for New Zealand mud snails at suitable locations upstream and downstream of the area they are known to occupy.** A modified zigzag technique was used to survey four transects on the Truckee River to identify the presence/absence of NZMS on July 15 and 17, 2014. These surveys were used to monitor any change in distribution from 2013 surveys.

Three surveyors were utilized per transect, which was a modification from two used during the 2013 surveys. At each transect, a midpoint was delineated. From here, a length of 100 ft was measured and marked both upstream and downstream. Beginning at the midpoint, one surveyor completed a "zig" by first walking perpendicular to the bank to a point halfway across the river. At the completion of every other step, two to three rocks or substrate material was picked up from the river bottom and thoroughly examined for the presence of snails. A corresponding "zag" was accomplished by walking at a 45-degree angle back to the same bank, checking the substrate accordingly at every other step.

Zigs and zags were completed by one surveyor moving upstream and another surveyor downstream to each corresponding 100-ft marker. At most transects this equated to four zigzags upstream and an additional four zigzags downstream. In some cases, the halfway point of the river could not be safely reached during the zig due to depth or high flow. In these instances, a returning zag was initiated from the furthest,

safest location that could be reached. In addition, some transects did not allow for a complete 100-ft transect upstream or downstream from the initial midpoint. In such cases, the longest attainable distance was completed. Gastropods collected were preserved in ethyl alcohol. Notes were taken at each transect depicting the actual location and cataloguing what was sampled. An additional modification from the 2013 survey was a third surveyor, whom was a “rover” that focused on areas that appeared to be from the best snail habitat. Areas were chosen based on previous knowledge of quality snail habitat gained during the 2013 survey. All gastropods found were collected and preserved in plastic vials until a transect was completed.

## FINDINGS

### General Management Objectives

**Visually monitor water quantity (discharge) through USGS Stream Flow data.** On April 1, 2014, the designated end of the snow-measuring season, the Truckee River Basin snow pack stood at 34% of average. This is the third consecutive year where the average has been at or below 69%. The effects of this drought were more prevalent than they have been over the past two years because upstream reservoir storage had been depleted. Outside of a few precipitation events during late July and August, the Truckee River (at the Reno, NV USGS gage) remained below the 90 year average for the majority of 2014 (Figure 1). From late July to early December, the river dropped drastically below the 90-year average discharge. This substantial decrease was attributed to Lake Tahoe falling below its natural rim, which eliminated the main flow for the Truckee River. This gage was a general representation of water conditions throughout the Truckee Meadows downstream to Derby Dam.

Discharge at the USGS gage on the Truckee River near Wadsworth (Figure 2) mirrored upstream discharge until mid- to late June. While the upper river began a substantial decline in flow, the lower river had a higher discharge than the 90-year average. This was partly attributed to the closure of the TCID canal that provided irrigation water to Lahontan Valley. At this point, it is unknown what affect the low flows and drought have had on fish populations within the Truckee River.

**Monitor fish populations by conducting tote-barge electroshocking surveys at 11 traditional transects during three days in the fall.** Annual fish population surveys were not completed during the 2014 field season. Extremely low flow conditions coupled with warm temperatures in the Truckee River placed severe stress upon fish populations. Due to this and the inability to effectively navigate the river with the tote-barge, surveys were cancelled for 2014.

**Collect fin samples from rainbow trout and LCT for genetic analysis during electroshocking surveys for genetic analysis by the University of Nevada Genetics Lab.** This objective was not completed since the electroshocking survey was cancelled.

Figure 1. USGS Gage - Truckee River at Reno – 2014 Discharge Summary.

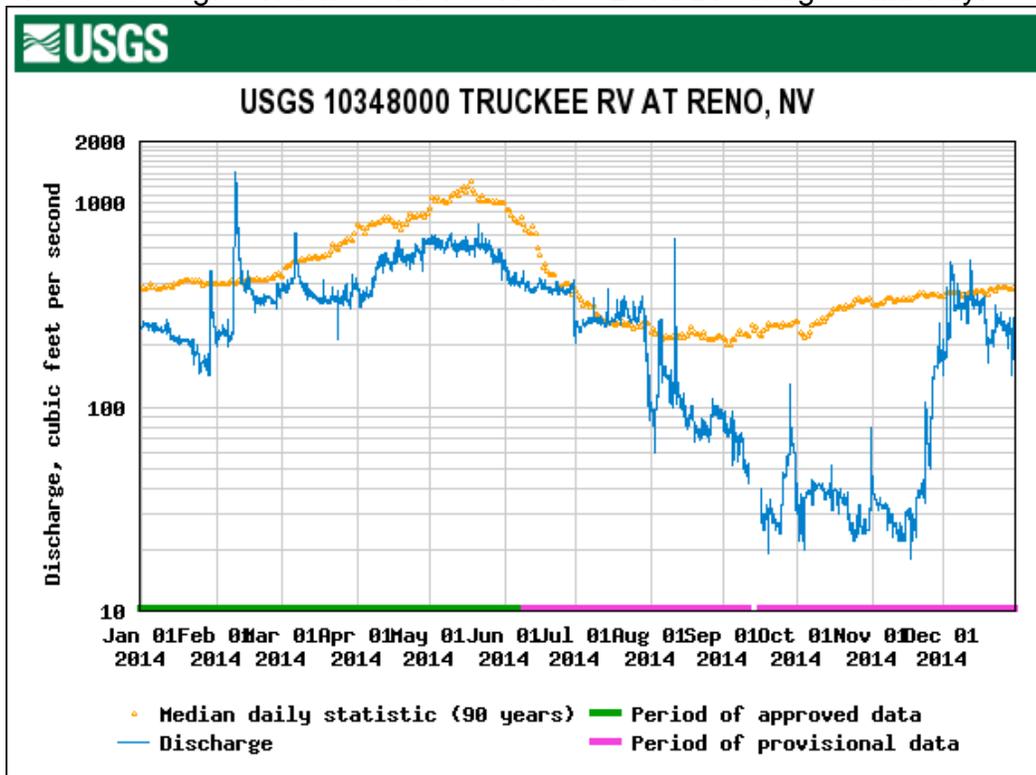
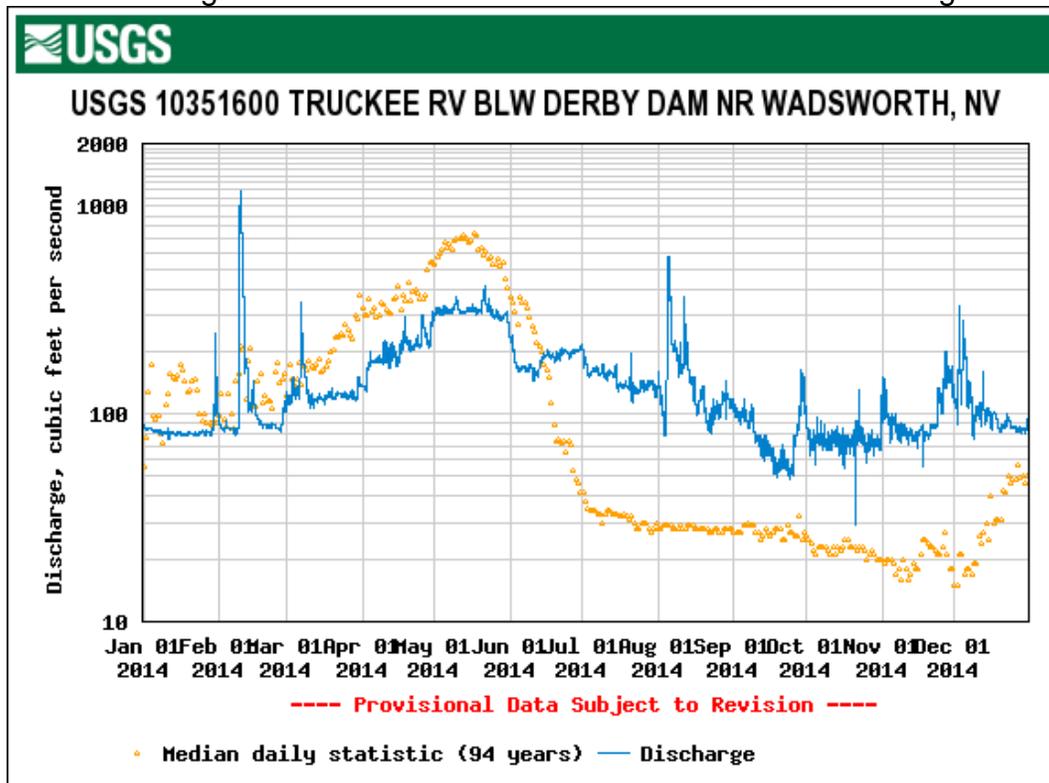


Figure 2. USGS Gage – Truckee River Near Wadsworth – 2014 Discharge Summary.

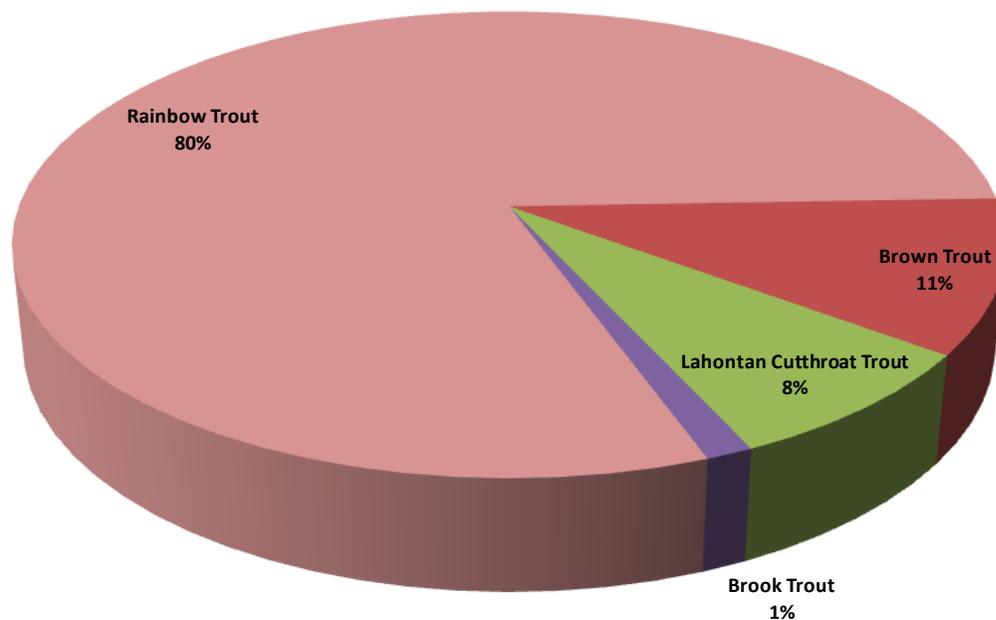


**Conduct a general assessment of angler use, success, and harvest through opportunistic angler contacts, return of angler drop-box surveys, and mail-in angler questionnaire data.** Opportunistic angler contacts were attempted during two days, but no anglers were contacted.

A total of 61 volunteer angler surveys were received from the two drop-boxes along the Truckee River in 2014. Anglers fished for 164 hrs and caught 76 fish consisting of 61 rainbow trout, 8 brown trout, 6 cutthroat trout, and 1 brook trout. Resulting catch rates (all fish) were 1.25 fish per angler and 0.46 fish per hour. Of the fish reported, all but one rainbow trout was released. Species composition was 80.3% rainbow trout, 10.5% brown trout, 7.9% cutthroat trout, and 1.3% brook trout (Figure 3).

Figure 3.

### 2014 Truckee River - Angler Drop Box Species Composition



An examination of lengths from drop-box data showed rainbow trout occurred in all but one of the eight size categories (Figure 4). The majority of rainbow trout reported occupied the smallest size (<10.0 in), while all but the largest size (>25.0 in) had some representation. Lahontan cutthroat trout were most heavily represented in the upper size brackets (>16.0 in), but have limited representation of the smaller sizes. Brown trout were sporadically represented with the majority ranging from 18.0 to 24.9 in. The lone brook trout reported was represented in the smallest size bracket.

Angler satisfaction fishing the Truckee River was rated on a scale from -2 to +2, with -2 being unsatisfied and +2 representing satisfaction. Average ratings were positive at 0.76 for total fishing experience, 0.35 for size of fish, and 0.21 for number of fish. As expected, angler success corresponded with angler satisfaction (Figure 5).

Figure 4.

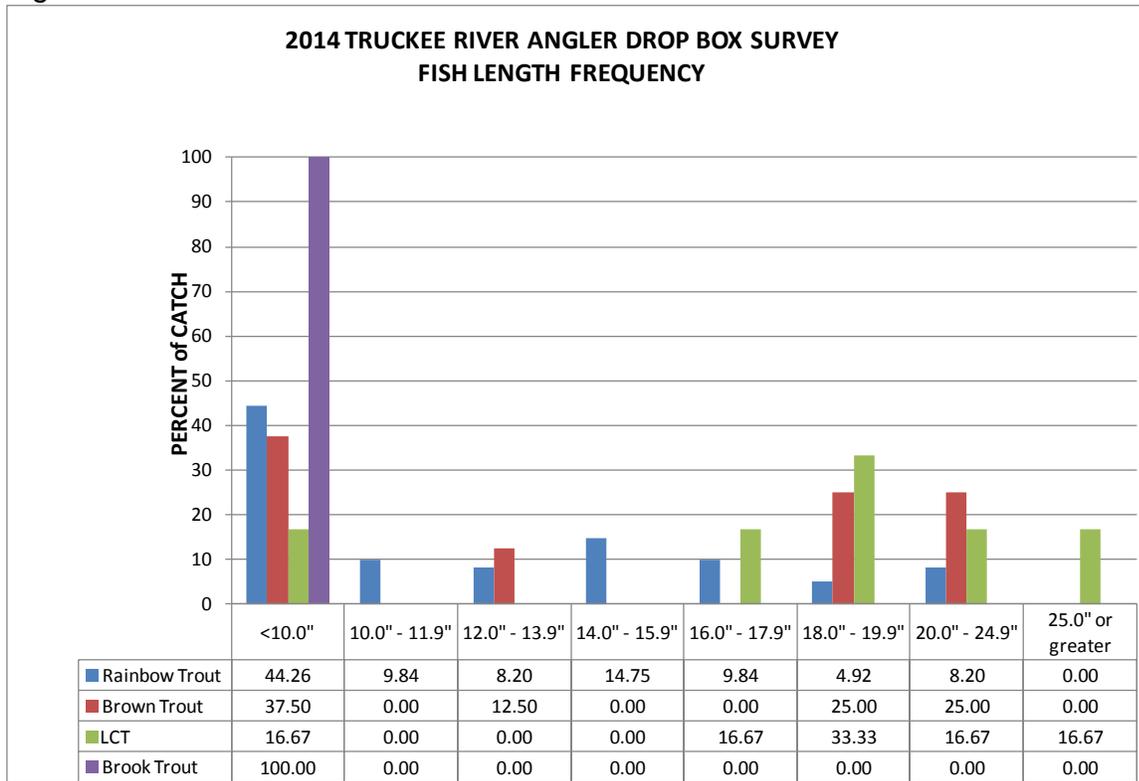
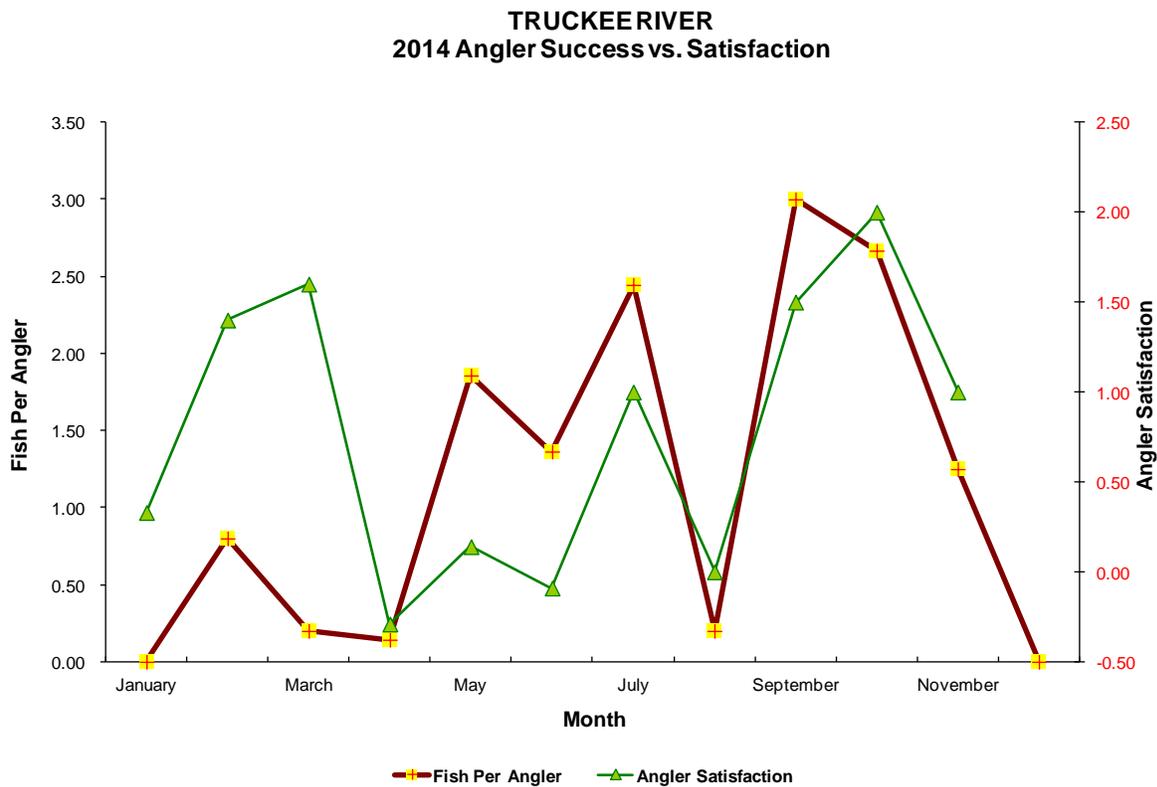


Figure 5.



The Mail-in Angler Questionnaire Survey estimated use at 8,436 anglers and 59,434 angler use days in 2013. There was an estimated 93,778 fish caught for an angler success rate of 1.58 fish per day. These were lower than in 2012, and below the 33-yr average.

From February through early July, the Truckee River received 41,029 triploid rainbow trout on 10 occasions (Table 1). Efforts between NDOW, USFWS, and PLPT in recent years have implemented a stocking strategy that facilitates LCT recovery in the Truckee River (Table 2), while still maintaining a quality sport fishery. LCT and triploid rainbow trout, therefore, have been stocked in nearly equal numbers. However, due to a shortage of hatchery LCT, none was stocked since 2011. Stocking efforts in the Truckee River were suspended in July of 2014 due to a combination of low average water flow and warm temperatures. The decision was based on the limited amount of quality habitat. With the river inhabited by healthy, wild salmonid populations, increasing the biomass may have led to a loss of both wild and stocked fish.

Table 1. Truckee River Stocking Summary – 2014.

Date	Species	Number	Size (in.)
2/13/2014	Rainbow	1,550	9.3
2/20/2014	Rainbow	3,108	9.5
3/3/2014	Rainbow	6,520	9.2
3/13/2014	Rainbow	4,125	9.7
3/20/2014	Rainbow	6,200	9.3
4/9/2014	Rainbow	5,741	9.7
4/14/2014	Rainbow	5,620	9.6
4/24/2014	Rainbow	5,840	9.5
6/20/2014	Rainbow	1,290	9.9
7/11/2014	Rainbow	1,035	9.0
<b>Total</b>		<b>41,029</b>	

Table 2. Truckee River Stocking History 2009 – 2013.

Year	Species	Number	Size Range (in.)
2009	Rainbow	39,999	8.5 – 10.8
	Lahontan Cutthroat	40,465	8.4 – 12.1
<b>2009 Total</b>		<b>80,464</b>	
2010	Rainbow	33,501	2.8 – 10.6
	Lahontan Cutthroat	55,115	6.4 – 9.5
<b>2010 Total</b>		<b>88,616</b>	
2011	Rainbow	24,586	9.7 – 10.8
	Lahontan Cutthroat	15,736	2.0 – 9.5
<b>2011 Total</b>		<b>40,322</b>	
2012	Rainbow	71,130	2.1 – 10.2
<b>2012 Total</b>		<b>71,130</b>	
2013	Rainbow	76,845	9.1 -- 10.8
<b>Total</b>		<b>336,092</b>	

**Maintain the angler information center and angler drop-boxes.** Angler drop-boxes were restocked on a regular basis. The angler information center on the upper river was vandalized and plans to repair and replace it have been made for 2015.

**Conduct 4 days of presence/absence surveys for New Zealand mud snails at suitable locations upstream and downstream of the area they are known to occupy.** A total of five transects were surveyed during 2014, which was substantially less than the 26 completed in 2013. The intent of the 2014 survey was to map changes in the distribution of NZMS in the Truckee River and the 2013 survey functioned to collect baseline information. It was assumed that if mud snails were present in 2013, they would continue to occupy that same reach in 2014. Therefore, in 2014, three sites were chosen immediately upstream of the highest occupied reach (Mayberry Park) and two were placed immediately downstream of the lowest occupied reach (Mustang).

No NZMS were found at any of the 2014 transects, assuming, then, that their distribution in the Truckee River remained the same as in 2013. This was probably a function of the extremely low water flows resulting in the less likelihood of downstream migration, and better public outreach regarding necessary precautions needed in order to prevent spreading aquatic invasive species. The results of the 2014 NZMS Distribution Survey are presented in Table 3.

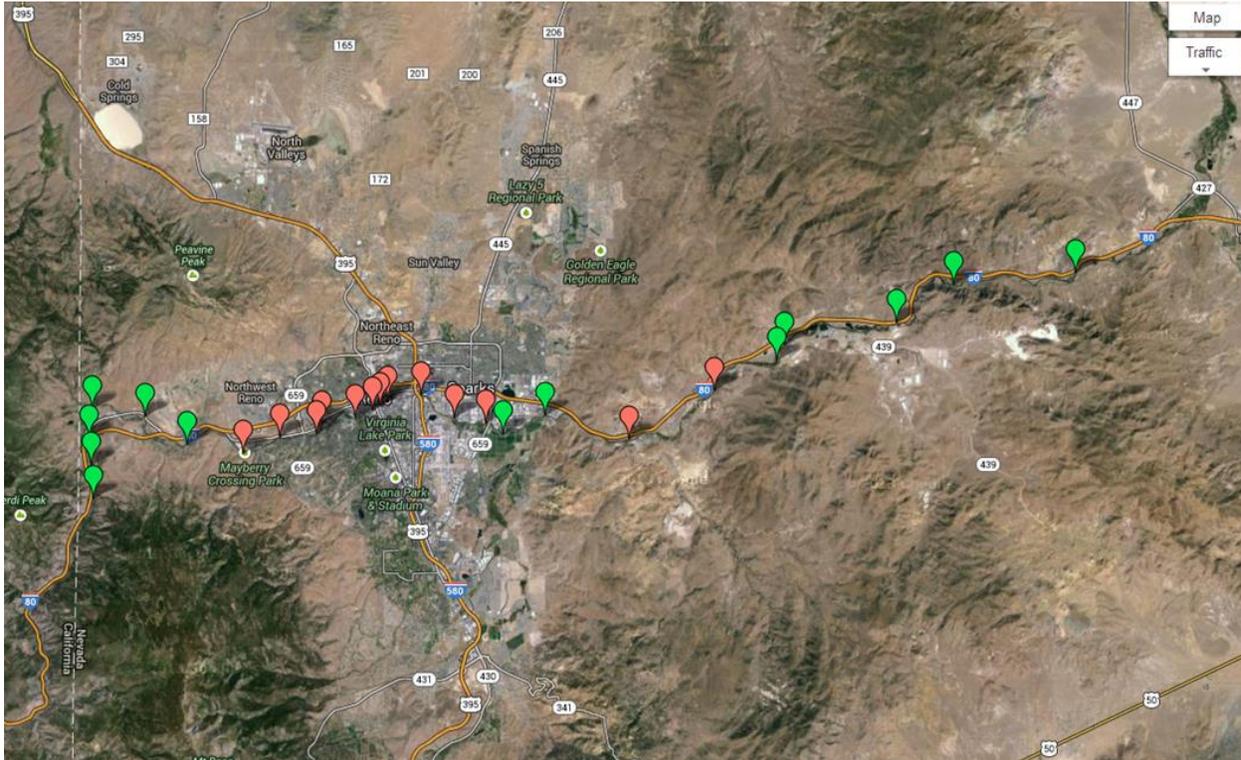
Table 3. 2014 NZMS Distribution Survey.

Date	Location	# NZMS	# Bladder Snails	# Lymnaeidae
7/15/2014	Washoe Power	0	1	0
7/15/2014	River Bend	0	1	0
7/15/2014	Dog Valley	0	2	71
7/17/2014	McCarren Ranch	0	2	0
7/17/2014	Waltham Bridge	0	32	0

Based on results of the survey, current NZMS distribution spans from Mustang upstream to Mayberry Park, a distance of approximately 18 mi (Figure 6). Although NZMS were not found at Cottonwood Park and Sparks Treatment Plant, it was speculated they were likely present there since NZMS were found upstream and downstream of these transects. A quantitative assessment of density was not completed, however, it was noted that roughly 94% of NZMS collected occurred at four transects that encompassed a 3.5-mi section of river from Oxbow Nature Area upstream to Mayberry Park.

During the 2014 survey, it was noted that all species of snails had occupied similar habitats as found with NZMS in 2013. The inside of bends within five feet of the shoreline in slow moving stagnant water is where the majority of the snails were observed. It was also noted that snails appeared to follow the water line on rocks within these habitats. This information will be useful to streamline future presence/absence surveys.

Figure 6. Current Distribution of NZMS in the Truckee River.



Research suggests that the eradication of New Zealand mud snails from a river system similar to the Truckee River is unattainable. At this juncture, a concerted effort should be to inform the public form the dangers of NZMS and educate river users on decontamination protocols and how to prevent their spread to other waters.

## MANAGEMENT REVIEW

### General Management Objectives

In 2014, the Truckee River suffered from a third consecutive year of drought. With upstream storage of water exhausted, some of the lowest flow rates recorded in recent history were realized. It is difficult to assess what impacts this drought has had on fish populations and assemblages within the river, and they may not be truly understood for years. Provided that flows return to normal in 2015, an annual population survey will be conducted to understand effects of three years of drought.

Angler success rates documented through opportunistic angler contacts, angler drop-box surveys, and the Mail-in Angler Questionnaire Survey are on par with long-term averages and currently meet the guidelines prescribed in a coldwater General Fishery Management Concept.

LCT recovery on the Truckee River continues to prove challenging. With the enhanced spawning run of LCT in Marlette Lake in 2014, LCT may become available for

stocking in the river in the near future. A number of other issues must be addressed if a successful LCT spawning run will occur in the Truckee River, but steps are continuing in the right direction.

### **RECOMMENDATIONS**

- Monitor water quantity (discharge) through USGS Stream Flow data.
- Monitor fish populations by conducting tote-barge electroshocking surveys at 9 transects during three days in the fall.
- Coordinate LCT recovery/restoration activities with the Truckee River Recovery Implementation Team.
- Collect fin samples from rainbow trout and LCT during electroshocking surveys for genetic analysis by the University of Nevada Genetics Lab.
- Conduct a general assessment of angler use, success, and harvest through opportunistic angler contacts, return on angler drop-box surveys, and mail-in angler questionnaire data.
- Maintain the angler information center and angler drop-boxes.
- Conduct 2 days of presence/absence surveys for New Zealand mud snails at suitable locations upstream and downstream of the area they are known to occupy.

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Date: January 28, 2015