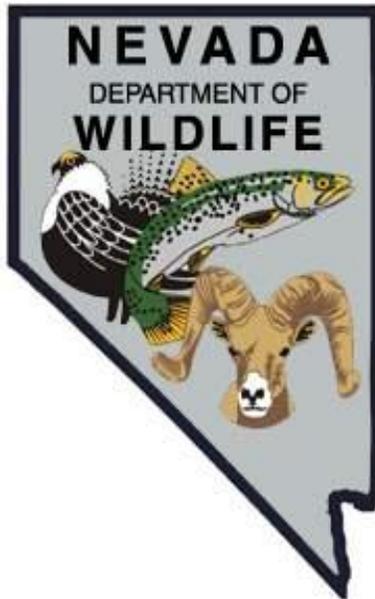


NEVADA DEPARTMENT OF WILDLIFE  
STATEWIDE FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORTS

F-20-50  
2014

LAKE TAHOE  
WESTERN REGION



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

Table of Contents

<u>Contents</u>	<u>Page</u>
SUMMARY .....	1
BACKGROUND .....	1
OBJECTIVES.....	2
PROCEDURES.....	3
FINDINGS .....	4
MANAGEMENT REVIEW .....	7
RECOMMENDATIONS.....	7

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

List of Figures

<u>Number</u>	<u>Title</u>	<u>Page</u>
1	2014 Lake Tahoe Angler Drop Box – Species Composition .....	4
2	2014 Lake Tahoe Angler Drop Box - Fish Length Frequency .....	5

List of Tables

<u>Number</u>	<u>Title</u>	<u>Page</u>
1	Lake Tahoe Stocking Summary - 2014.....	6
2	Lake Tahoe Stocking History 2009 - 2013.....	6

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

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

**SUMMARY**

General Management Objectives

A total of 18 volunteer angler surveys from the drop-box were received in 2014. During the months when surveys were received, 15 anglers fished for 54 hrs and caught 35 fish consisting of 10 rainbow trout, 17 lake trout, and eight kokanee. Catch rates combining all fish were 2.33 fish per angler and 0.65 fish per hour. Of the 35 fish reported, 80% were harvested while the remaining 20% were reported as released. Species composition for 2014 was 28.6% rainbow trout, 48.6% lake trout, and 22.9% kokanee.

The Mail-in Angler Questionnaire Survey estimated use at 1,659 anglers and 6,669 angler days in 2013. Total catch was 10,186 fish and the success rate was 1.53 fish per angler day. Most estimates from the angler survey were on par with results found in recent years.

Lake Tahoe was stocked on six occasions in 2014. From March through August, the lake received a total of 31,708 catchable triploid rainbow trout.

Study Specific Objectives

Due to efforts spent on other projects and less than ideal flow conditions, limited progress was made on this objective in 2014.

**BACKGROUND**

Lake Tahoe is located in the eastern portion of the Sierra Nevada's at an elevation of approximately 6,224 ft. Situated along the California border, approximately 30% of the lake lies within Nevada. It is 22 mi long, 12 mi wide, and has 123,300 surface acres. The lake holds 122,160,280 acre-ft of water and has a maximum depth of 1,645 ft. Average depth is 989 ft. A natural rim occurs at 6,223.0 ft above mean sea level (MSL), but a permanent concrete dam built in 1913 extends the lake elevation to 6,229.1 ft above MSL. The lake is fed predominantly by snowmelt from 63 streams, but the Truckee River is the only natural outlet from Lake Tahoe.

Lake Tahoe was discovered in the 1840's and supported robust populations of Lahontan cutthroat trout, mountain whitefish, and a number of other native non-game

species. A number of factors including habitat disturbance, competition and/or predation from introduced fish species, loss of spawning habitat, and commercial harvest led to the extirpation of LCT by the 1940's.

Lake Tahoe supports self-sustaining, wild populations of lake trout, rainbow trout, brown trout, and kokanee salmon, which represent the bulk of the current sport fish community. Densities of introduced, non-native fish species such as largemouth bass, bluegill, and crappie have shown marked increases in recent years. These populations are generally associated with shallow, warm portions of the lake such as the Tahoe Keys Marina. Lake Tahoe also contains populations of native non-game fish including speckled dace, Lahontan reidsides, tui chub, Tahoe suckers, and Lahontan mountain suckers. Tributary streams provide permanent, spawning, and rearing habitat for species such as brook trout, brown trout, rainbow trout, and kokanee salmon. Hatchery reared rainbow trout are stocked each year to augment wild populations and enhance sport fishing opportunities.

Several of Nevada's tributaries are crucial to lacustrine rainbow trout, which are collected, artificially spawned, and released back into the tributaries. Eggs collected are hatched and reared at Mason Valley Hatchery. The progeny from these artificial spawning efforts are subsequently used to enhance the genetic diversity of the broodstock in Marlette Lake.

Signal crayfish were introduced in the 1930's in an effort to provide an additional food source for trout. To further supplement the food base of trout, mysis shrimp were introduced to Lake Tahoe beginning in 1963. This species is linked to declining populations of native plankton, which has changed the food web structure and forage base for many game fish.

Lake Tahoe is managed under the Coldwater, Quality Fishery Management Concept, which establishes an objective for angler success rates of 0.30-1.25 fish per hour and 2.0-3.5 fish per angler day.

## **OBJECTIVES**

### General Management Objectives:

- 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.
- Collect and spawn wild rainbow trout from Third and Incline creeks through two days of electroshocking and stock progeny into Marlette Lake.
- Participate in quarterly meetings with the Tahoe Basin Recovery Implementation Team to determine and implement measures that work toward restoration of Lahontan cutthroat trout in the Lake Tahoe Basin.

### Study Specific Objectives:

- Concurrent with the spawning operation at Third and Incline creeks and other streams in the basin, measure length, weigh, check for Floy tags, and Floy tag all

spawning rainbow trout.

- Assess angler catch rate and harvest and catch location of tagged rainbow trout through opportunistic angler contacts and return of angler drop-box data.

## PROCEDURES

### General Management Objectives:

**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.** During the course of other duties throughout the year, volunteer angler survey boxes at Lake Tahoe (Sand Harbor and Cave Rock) were periodically maintained and restocked. At the end of the year, data was summarized. No anglers were contacted on any of these trips.

Angler use and success at Lake Tahoe was also assessed through the Department's Mail-In Angler Questionnaire Survey data. Angler questionnaire data was derived from a survey mailed to 30,000 fishing license purchasers from the previous year.

**Collect and spawn wild rainbow trout from Third and Incline creeks through two days of electroshocking and stock progeny into Marlette Lake.** Due to efforts and resources being utilized on other fisheries projects this objective was not completed during 2014.

**Participate in quarterly meetings with the Tahoe Basin Recovery Implementation Team to determine and implement measures that work toward restoration of Lahontan cutthroat trout in the Lake Tahoe Basin.** No TBRIT meetings were held during 2014. Communication with members of the team was conducted on a one on one basis and several issues regarding Lahontan cutthroat trout recovery within the Tahoe basin were discussed.

### Study Specific Objectives:

**Concurrent with the spawning operation at Third and Incline creeks and other streams in the basin, measure length, weigh, check for Floy tags, and Floy tag all spawning rainbow trout.** Due to efforts and resources being utilized on other fisheries projects this objective was not completed during 2014. However, in conjunction with completion of general management objectives for Third and Incline creeks, data was collected on the presence of spawning rainbow trout within both creeks.

**Assess angler catch rates and harvest or catch location of tagged rainbow trout through opportunistic angler contacts and return of angler drop-box surveys.** No anglers reported catching tagged fish during 2014.

## FINDINGS

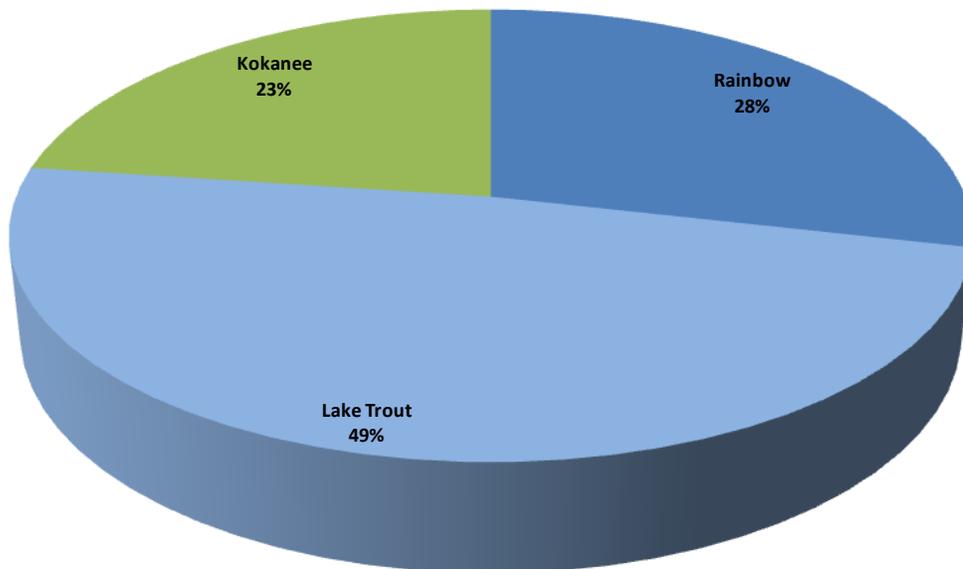
### General Management Objectives:

**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.** Although a number of visits were made, no angler contacts were made at Lake Tahoe in 2014.

A total of 18 volunteer angler surveys from the drop-box were received in 2014. During the months when surveys were received, 15 anglers fished for 54 hrs and caught 35 fish consisting of 10 rainbow trout, 17 lake trout, and eight kokanee. Combined catch rates were 2.33 fish per angler and 0.65 fish per hour. Of the 35 fish reported, 80 percent were harvested while the remaining 20 percent were reported as released. Species composition for 2014 was 28.6 percent rainbow trout, 48.6 percent lake trout, and 22.9 percent kokanee (Figure 1).

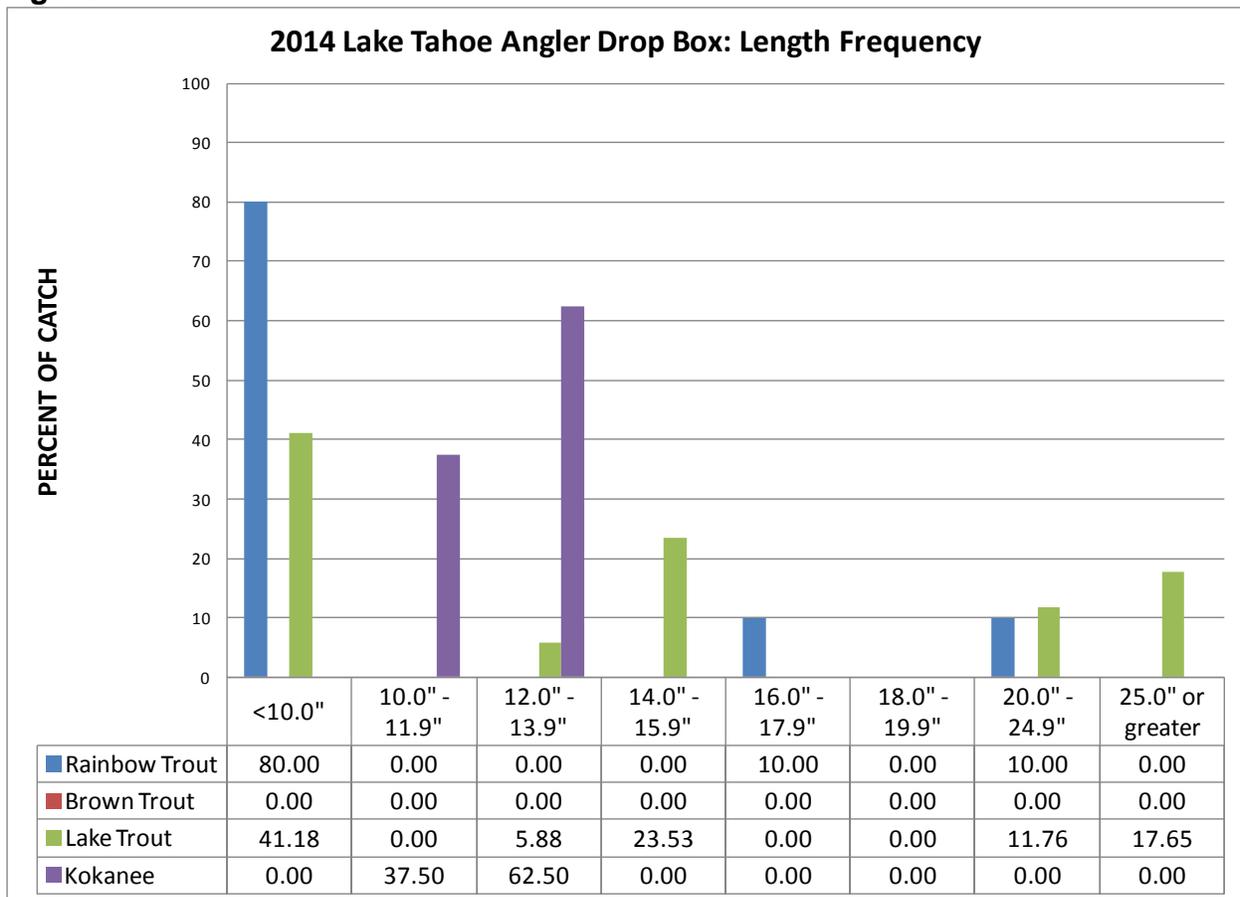
**Figure 1.**

**2014 Lake Tahoe Angler Drop Box  
Catch Composition**



A length frequency analysis of fish reported through the drop-box survey shows that 80 percent of rainbow trout were less than 10.0 in bracket while 10 percent were in the 16.0-17.0 in bracket and the remaining 10 percent was in the 20.0-24.9 in bracket (Figure 2). Approximately 29 percent of the lake trout caught were greater than 20.0 in and the remaining 71 percent were 15.9 in or smaller. All kokanee caught fell between 10.0 and 13.9 inches. Note that species identification by anglers is somewhat questionable and some misidentification is expected in the angler drop-box data.

**Figure 2.**



Anglers fishing from shore totaled 60 percent, while the remaining 40 percent fished from boats. All 2014 anglers fished with bait (40 percent) or lures (60 percent). Angler satisfaction was rated on a scale of -2 to +2 with -2 being unsatisfied and +2 representing satisfaction. Average ratings were all in the positive range with 0.47 for total fishing experience, 0.49 for size of fish, and 0.62 for number of fish.

The Mail-in Angler Questionnaire Survey estimated use at 1,659 anglers and 6,669 angler days in 2013. Total catch was 10,186 fish and the success rate was 1.53 fish per angler day. Most estimates from the angler survey are on par with results found in recent years.

### **Stocking Program**

Lake Tahoe was stocked on six occasions in 2014 (Table 1). From March through August, the lake received a total of 31,708 catchable triploid rainbow trout.

**Work with the Tahoe Basin Recovery Implementation Team to determine and implement measures that work towards restoration of Lahontan cutthroat trout in the Lake Tahoe basin.** No TBRIT meetings were held during 2014. Communication with members of the team was conducted on a one on one basis and

several issues regarding Lahontan cutthroat trout recovery within the Tahoe basin were discussed.

**Table 1.** Lake Tahoe Stocking Summary – 2014.

Date	Species	Number	Size (in.)	Strain
3/19/2014	Rainbow	4,548	10.0	Triploid
5/27/2014	Rainbow	6,113	9.2	Triploid
6/24/2014	Rainbow	4,928	9.9	Triploid
7/11/2014	Rainbow	6,479	9.9	Triploid
8/13/2014	Rainbow	4,505	9.7	Triploid
8/25/2014	Rainbow	5,135	9.2	Triploid
<b>Total (All Fish)</b>		<b>31,708</b>		

**Table 2.** Lake Tahoe Stocking History 2009 – 2013.

Year	Species	Number	Size Range (in.)
2009	Rainbow	46,076	9.1 – 10.1
<b>2009 Total</b>		<b>46,076</b>	
2010	Rainbow	31,031	9.3 – 10.0
<b>2010 Total</b>		<b>31,031</b>	
2011	Rainbow	27,000	2.3 – 10.5
	Lahontan Cutthroat	21,838	9.2 – 9.8
<b>2011 Total</b>		<b>48,838</b>	
2012	Rainbow	43,886	9.3 – 10.5
<b>2012 Total</b>		<b>43,886</b>	
2013	Rainbow	19,588	9.9 – 10.7
<b>2013 Total</b>		<b>19,588</b>	
<b>Total</b>		<b>189,419</b>	

Study Specific Objectives:

**Concurrent with the spawning operation at Third and Incline creeks and other streams in the basin, measure length, weigh, check for Floy tags, and Floy tag all spawning rainbow trout.** Due to efforts spent researching and surveying for New Zealand mud snails in the Truckee River as well as assisting other Western Region biologists with various projects, no progress was completed on this approach in 2013.

**Assess angler catch rates and harvest or catch location of tagged rainbow trout through opportunistic angler contacts and return of angler drop-box surveys.** No reports of angler caught tagged rainbow trout were provided either through angler contacts or from drop-box surveys.

## **MANAGEMENT REVIEW**

### General Management Objectives:

An angler success rate of 0.65 fish per hour documented in the Angler Drop-box Survey and the success rate of 1.53 fish per angler day obtained from the mail-in questionnaire both met the guidelines prescribed for a Coldwater, General Fishery Management Concept.

### Study Specific Objectives:

No reports of angler caught tagged rainbow trout were provided either through opportunistic angler contacts or from drop-box surveys.

There was limited progress made with the Third and Incline creeks study in 2014 due to efforts spent on other projects.

## **RECOMMENDATIONS**

### General Management Objectives:

- 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.
- Work with the Tahoe Basin Recovery Implementation Team to determine and implement measures that work towards restoration of Lahontan cutthroat trout in the Lake Tahoe basin.

Prepared By: Travis Hawks  
Biologist III, Western Region

Date: January 28, 2015