NEVADA DEPARTMENT OF WILDLIFE
STATEWIDE FISHERIES MANAGEMENT

FEDERAL AID JOB PROGRESS REPORTS

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2013

LAKE TAHOE
WESTERN REGION

NEVADA DEPARTMENT OF WILDLIFE, FISHERIES DIVISION
ANNUAL PROGRESS REPORT

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ANNUAL PROGRESS REPORT

State: *Nevada*
Project Title: *Statewide Fisheries Program*
Job Title: *Lake Tahoe*
Period Covered: *January 1, 2013 through December 31, 2013*

SUMMARY

General Management

A total of 40 volunteer angler surveys from the drop-boxes were received in 2013. During the months when surveys were received, 42 anglers fished for 190 hrs and caught 161 fish consisting of 127 rainbow trout, 24 lake trout, 7 kokanee, and 3 brown trout. Catch rates combining all fish were 3.83 fish per angler and 0.85 fish per hour.

The Mail-in Angler Questionnaire Survey estimated use at 1,707 anglers and 6,771 angler days in 2012. Total catch was 24,307 fish and the success rate was 3.59 fish per angler day. Most estimates from the angler survey are on par with results found in recent years. One exception is the number of fish per day, which represents an all time high for the lake.

Lake Tahoe was stocked on six occasions in 2013. From May through August, the lake received 19,588 catchable, triploid rainbow trout.

Five TBRIT (Tahoe Basin Recovery Implementation Team) meetings were attended in 2013 to provide input to and coordinate recovery and restoration of LCT in the Lake Tahoe Basin.

Study Specific

No progress was completed on this approach in 2013 due to a unexpected workload and priorities needed elsewhere.

BACKGROUND

Lake Tahoe is located in the eastern portion of the Sierra Nevada Mountains 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 SA. The lake holds 122,160,280 acre-ft of water and has a maximum depth of 1,645 ft. Average depth is of 989 ft. A natural rim occurs at 6,223.0 ft above 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, warmer portions of the lake such as the Tahoe Keys Marina. Lake Tahoe also contains populations of native non-game fish including speckled dace, Lahontan redsides, 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. 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 Quality Coldwater 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.
- 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.

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 or 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. No opportunistic angler contacts were made in 2013.

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.

Angler use and success at Lake Tahoe was also assessed through the Department's Mail-In Angler Questionnaire Survey. Angler questionnaire data was derived from a survey mailed to about 10% of 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 spent researching and surveying for New Zealand mud snails in the Truckee River, as well as assisting other Western Region biologists in various projects, no progress was completed on this approach in 2013.

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. When scheduled, TBRIT meetings were attended to provide input and to coordinate efforts related to the recovery and restoration of LCT 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. Due to efforts spent researching and surveying for New Zealand mud snails in the Truckee River, as well as assisting other Western Region biologists in 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. Anglers reported tagged fish by calling a phone number placed on the tag or recording the tag number on the drop-box survey forms.

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 opportunistic angler contacts were made at Lake Tahoe in 2013.

A total of 40 volunteer angler, drop-box surveys was received in 2013. During the months when surveys were received, 42 anglers fished for 190 hrs and caught 161 fish consisting of 127 rainbow trout, 24 lake trout, 7 kokanee, and 3 brown trout. Catch rates combining all fish were 3.83 fish per angler and 0.85 fish per hour. Of the 161 fish reported, 27.3% were harvested while the remaining 72.7% were reported as released. Species composition for 2013 was 78.9% rainbow trout, 14.9% lake trout, 4.3% kokanee, and 1.9% brown trout (Figure 1).

A length frequency analysis of fish reported through the drop-box survey shows that over 50% of rainbow trout were in the 10.0-11.9 in bracket while the remainder was somewhat equally distributed among the size brackets (Figure 2). While a majority of lake trout was less than 14.0 in, more than 45% were greater than 20.0 in. The 3 brown trout were 10.0-11.9 in and the 7 kokanee were represented by the 10.0-11.9 in and 12.0-13.9 in brackets.

Anglers fishing from shore totaled 54.8%, while the remaining 45.2% fished from boats. A vast majority of anglers fished with bait (40.5%) or lures (54.8%) while less than 5% reported to have been fly-fishing. 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 averaging 1.12 for total fishing experience, 0.87 for size of fish, and 0.57 for number of fish. A rough relationship can be made between angler success and satisfaction (Figure 3). This means that an increase in angling success generally leads to an increase in angler satisfaction and vice versa.

The Mail-in Angler Questionnaire Survey estimated use at 1,707 anglers and 6,771 angler days in 2012. Total catch was 24,307 fish and the success rate was 3.59 fish per angler day. Most estimates from the angler survey are on par with results found in recent years. One exception is the number of fish per day, which represents an all time high for the lake.

Figure 1.

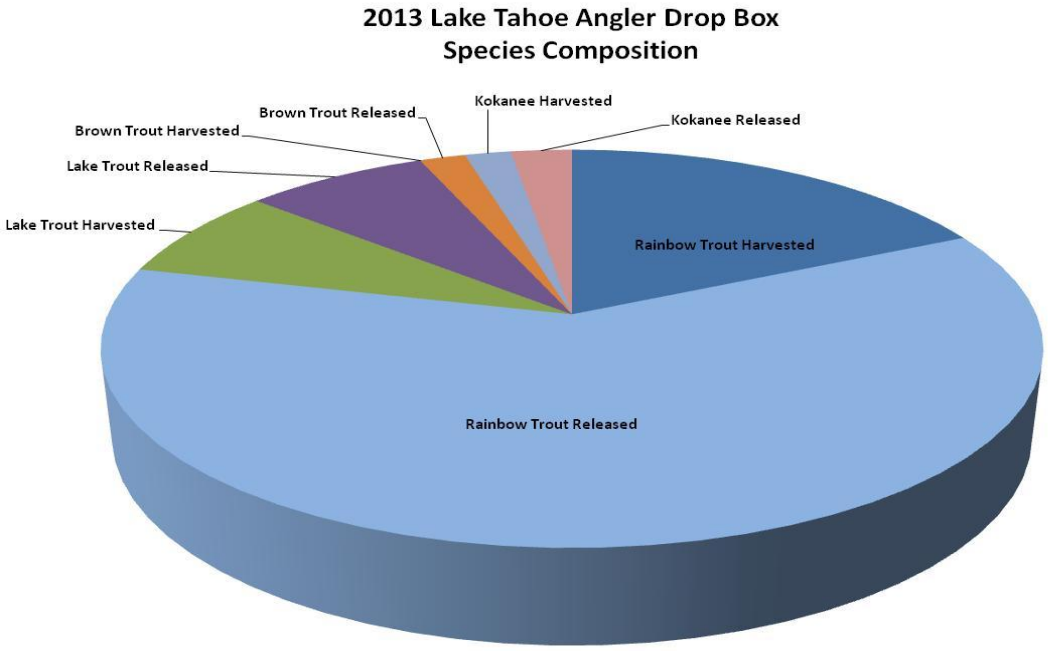
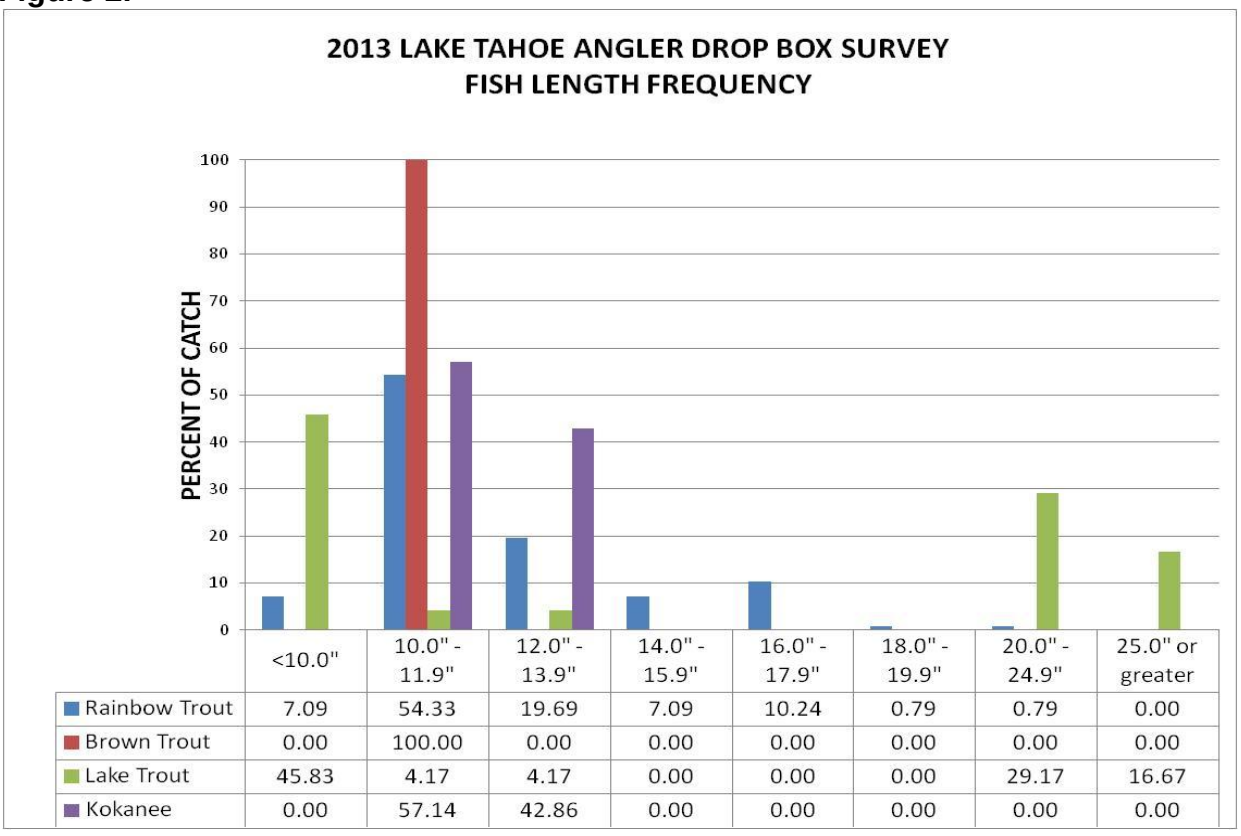
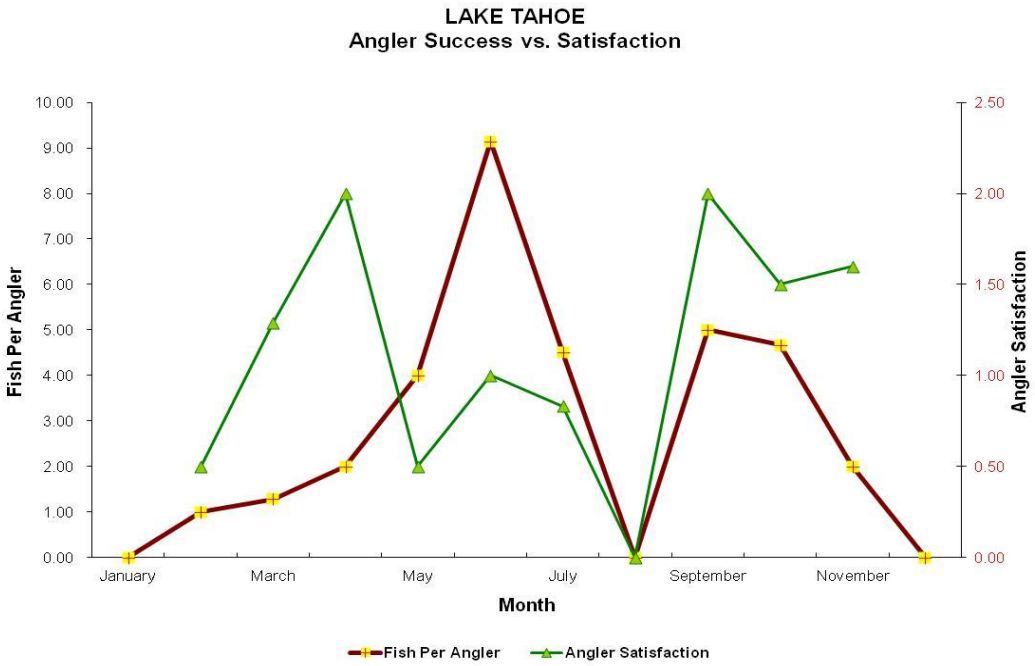


Figure 2.



	<10.0"	10.0" - 11.9"	12.0" - 13.9"	14.0" - 15.9"	16.0" - 17.9"	18.0" - 19.9"	20.0" - 24.9"	25.0" or greater
Rainbow Trout	7.09	54.33	19.69	7.09	10.24	0.79	0.79	0.00
Brown Trout	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Lake Trout	45.83	4.17	4.17	0.00	0.00	0.00	29.17	16.67
Kokanee	0.00	57.14	42.86	0.00	0.00	0.00	0.00	0.00

Figure 3.



Stocking Program

Lake Tahoe was stocked on six occasions in 2013 (Table 1). From May through August, the lake received 19,588 catchable, triploid rainbow trout.

Table 1. Lake Tahoe Stocking Summary – 2013

Date	Species	Number	Size (in.)	Strain
5/1/13	Rainbow	3,696	10.3	Triploid
5/9/13	Rainbow	4,122	10.3	Triploid
7/13/13	Rainbow	3,536	10.4	Triploid
7/26/13	Rainbow	3,664	10.3	Triploid
8/14/13	Rainbow	3,055	9.9	Triploid
8/14/13	Rainbow	1,515	10.7	Triploid
Total (All Fish)		**19,588**		

Table 2. Lake Tahoe Stocking History 2008 – 2012

Year	Species	Number	Size Range (in.)
2008	Rainbow	42,101	1.9 - 10.6
2008 Total		**42,101**	
2009	Rainbow	46,076	9.1 – 10.1
2009 Total		**46,076**	
2010	Rainbow	31,031	9.3 – 10.0
2010 Total		**31,031**	
2011	Rainbow	27,000	2.3 – 10.5
	Lahontan Cutthroat	21,838	9.2 – 9.8
2011 Total		**48,838**	
2012	Rainbow	43,886	9.3 – 10.5
2012 Total		**43,886**	
Total		**211,932**	

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. Five TBRIT meetings were scheduled and attended in 2013 to provide input and to coordinate efforts related to the recovery and restoration of LCT 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. Due to efforts spent researching and surveying for New Zealand mud snails in the Truckee River as well as assisting other Western Region biologists in 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 opportunistic angler contacts or from drop-box surveys.

MANAGEMENT REVIEW

General Management Objectives:

An angler success rate of 0.85 fish per hour documented in the Angler Drop-box Survey met the guidelines prescribed for a Coldwater General Fishery Management Concept, while the success rate of 3.59 fish per angler day from the mail-in questionnaire exceeded the prescribed rate of 2.0–3.5 fish per angler day.

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 no progress made with the Third and Incline creeks study in 2013 due to efforts spent researching and surveying for New Zealand mud snails in the Truckee River as well as assisting other Western Region biologists in various 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.
- Collect and spawn wild rainbow trout from Third and Incline creeks through two days of electroshocking. Progeny will be stocked into Marlette Lake.

- 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.

Study Specific Objectives:

- Concurrent with the spawning operation at Incline and Third creeks and other streams in the basin, measure length, weigh, check for Floy tags, and Floy tag all non-tagged spawning rainbow trout.
- Assess angler catch rate and harvest or catch location of tagged rainbow trout through opportunistic angler contacts and return of angler drop-box data.

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