

NEVADA DEPARTMENT OF WILDLIFE  
STATEWIDE FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORTS

F-20-52  
2016

BOULDER RESERVOIR  
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 .....	2
FINDINGS .....	3
MANAGEMENT REVIEW .....	5
RECOMMENDATIONS .....	6

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

**State:** *Nevada*  
**Project Title:** *Statewide Fisheries Program*  
**Job Title:** *Boulder Reservoir*  
**Period Covered:** *January 1, 2016 through December 31, 2016*

**SUMMARY**

A total of 24 volunteer angler surveys were received from Boulder Reservoir in 2016 from March through July. Twenty anglers reported fishing for 136.8 hrs and caught 546 rainbow trout. The Mail-in Angler Questionnaire Survey for 2015 estimated 174 anglers fished 349 days, which are lower than the 35-year average of 206 anglers fishing 549 days. This is not surprising, as the Boulder Reservoir Enhancement Project was completed in late 2014 and a majority of anglers may not have been aware that the reservoir was fishable once again.

A total of 3,159 catchable rainbow trout was stocked into Boulder Reservoir in 2016 consisting of three strains, Tahoe, Eagle Lake, and Incline.

General habitat conditions were observed and documented when present at the reservoir. Habitat assessment was based on visual observations of lake level and clarity during a walk around the reservoir.

**BACKGROUND**

Boulder Reservoir is located 190 miles north of Reno in Washoe County. It is situated at an elevation of 5,755 ft and is predominantly surrounded by sagebrush-steppe habitat. The reservoir covers approximately four acres with a maximum depth of 10 ft. The reservoir is fed by spring snowmelt runoff and a perennial spring located at the reservoir's southwest corner.

Boulder Reservoir was constructed as an irrigation storage reservoir in 1950. It has been owned or managed by the Harris, Groves, Cockrell, and Jaksick families in the past. The reservoir has had a long history with riser structures and spillways washing out during periods of high water. Throughout much of the past, verbal agreements between NDOW and landowners have allowed public access in exchange for routine hatchery stocking.

In 2009, Boulder Reservoir, surrounding acreage, and associated water rights were acquired by BLM through Southern Nevada Public Lands Management Act (SNPLMA) funding. In cooperation between NDOW and BLM, a comprehensive recreation enhancement project was developed and construction was completed during the summer and fall of 2014. Among others, components of the project included dam repair, dredging, riparian fencing, off site watering for livestock, as well as construction of picnic facilities and camping spots.

Boulder Reservoir supports a hatchery maintained population of rainbow trout and, as the fishery rebuilds, it should support bowcutt trout as well. On occasion, low water coupled with siltation and an abundance of aquatic vegetation has led to late summer/early fall fish kills, but as a newly dredged and improved impoundment this may no longer be an issue. Boulder Reservoir is managed under the Coldwater Quality Fishery Management Concept, having objectives for angler success rates of 0.30-1.25 fish per hour and 2.0-3.5 fish per angler day.

## OBJECTIVES

- Conduct a general assessment of angler use, success, and harvest through opportunistic angler contacts and mail-in angler questionnaire data.
- Conduct a general habitat assessment through visual observations of water quantity (lake level), water quality (clarity), aquatic vegetation, and upland vegetation (cattle use) when on site.
- Set gill nets for two net nights in the fall.

## PROCEDURES

**Conduct a general assessment of angler use, success, and harvest through opportunistic angler contacts and mail-in angler questionnaire data.** Several opportunistic visits were made to Boulder Reservoir in 2016 to collect creel survey data among other things.

Angler use and success at Boulder Reservoir was also assessed through a volunteer Angler Drop-box Survey and the Department's Mail-in Angler Questionnaire Survey. Angler questionnaire data is derived from a survey that is mailed to 30,000 license purchasers from the previous year.

**Conduct a general habitat assessment through visual observations of water quantity (lake level) and water quality (clarity), aquatic vegetation, and upland vegetation (cattle use) when on site.** General habitat conditions were observed and documented when present at the reservoir. Habitat assessment was based on visual observations of lake level and clarity during a walk around the reservoir.

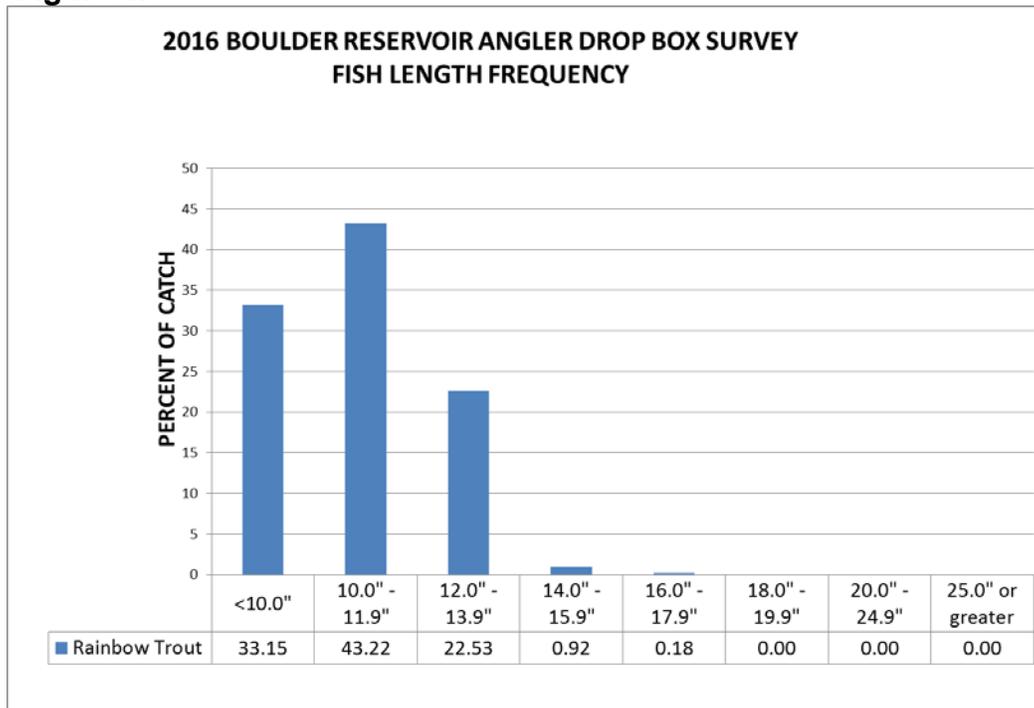
**Set gill nets for two net nights in the fall.** Based on an excessive amount of aquatic vegetation, the decision was made to set one gill net for one night. A 150 ft x 6 ft experimental mesh gill net was set at 1800 hrs on September 21. The net consisted of 1/2, 3/4, 1, 1 1/2, and 2 in mesh panels. The net was set along the western shoreline at a depth ranging from approximately 2.0 ft (0.6 m) at the shoreline to 10 ft (3.0 m) at the end of the net. The net was pulled at 0800 hrs on September 22. All fish captured were identified, measured to fork length, and weighed with a certified battery powered scale. Live fish were returned to the reservoir after processing.

## FINDINGS

**Conduct a general assessment of angler use, success, and harvest through opportunistic angler contacts and mail-in angler questionnaire data.** Despite several trips to Boulder Reservoir during 2016, only a single angler contact was made. The angler reported to have fished a total of three hours and caught around 15 rainbow trout. He released all fish and used a lure.

A total of 24 voluntary angler surveys were received from Boulder Reservoir in 2016 from March through July. Twenty anglers reported to have fished for 136.8 hrs and caught 546 rainbow trout. Resulting catch rates were 27.3 fish per angler and 4.0 fish per hour. Of the 546 rainbow trout, 90 percent (491) were reported as released. An analysis of the reported lengths of the rainbow trout harvested reveals that the majority (43.2 percent) of the fish caught were in the 10.0 in to 11.9 in range (Figure 1). A fair number of fish were reported in size brackets over 12 inches (23.6 percent) while the remainder of the catch was reported to be less than 10 inches. An increase in the upper size limit was seen in 2016 with a few fish being reported over 14 inches (only one in 2015). This is a positive indicator that some fish are overwintering and growing in the reservoir.

**Figure 1.**



The Mail-in Angler Questionnaire Survey estimated use at 174 anglers and 349 angler days in 2015, both of which were lower than the 35 year average of 206 anglers and 549 angler days. This is not unexpected as the Boulder Reservoir Enhancement Project was completed late in 2014 and a majority of anglers may not have been aware that the reservoir was fishable once again. Total catch was estimated at 3,807 fish with

a success rate of 10.9 fish per angler day, more than double the 35-year average of 4.3 fish per angler day.

**Stocking Program.** A total of 3,159 catchable rainbow trout was stocked into Boulder Reservoir in 2016 (Table 1).

**Table 1.** Boulder Reservoir Stocking History - 2014 – 2016.

Date	Species	Number	Size (in.)	Strain
10/15/2014	Rainbow	3,070	9.3	Tahoe
<b>2014 Total</b>		<b>3,070</b>	<b>9.3</b>	
10/13/2015	Rainbow	1,176	9.5	Tahoe
4/10/2015	Rainbow	3,091	9.1	Triploid
<b>2015 Total</b>		<b>4,267</b>	<b>9.1 - 9.5</b>	
3/4/2016	Rainbow	1,958	9.5	Eagle Lake
9/27/2016	Rainbow	601	9.8	Incline
9/27/2016	Rainbow	600	10.1	Tahoe
<b>2016 Total</b>		<b>3,159</b>	<b>9.5 - 10.1</b>	
<b>Total (All Fish)</b>		<b>10,496</b>		

**Conduct a general habitat assessment through visual observations of water quantity (lake level) and water quality (clarity), aquatic vegetation, and upland vegetation (cattle use) when on site.** Several trips were made to the reservoir over the course of the year for numerous reasons. During each trip, the visual habitat assessments were made. The reservoir was noted to be near capacity during a July trip and maintained that level throughout the year.

Upland vegetation around the reservoir appears to be doing well in the absence of ungulate use. Aquatic vegetation was severe during the July trip to the reservoir and the majority of the near shore area was covered with floating and rooted vegetation. Angling from the shore during this time of the year was extremely difficult. The vegetation was less severe during the late September trip and shoreline angling was much easier.

**Set gill nets for two net nights in the fall.** A gill net survey was conducted the night of September 21. A total of 14 rainbow trout was captured for a catch rate of 14 fish per net-night.

Rainbow trout ranged in length from 9.1 in (232 mm) to 12.8 in (324 mm) with an average fork length of 10.4 in (262 mm). Weight averaged 0.5 lbs (206 g). The average K-factor for rainbow trout was 1.1, suggesting a fair body condition.

**Table 2.** Gill Net Rainbow Trout Data.

Total Rainbow		14		
	Length (mm)	K Factor	Weight (g)	
Average	262	1.13	206	
Range				
High	324	1.28	380	
Low	232	0.97	150.0	

With only 14 individual fish being captured a length frequency analysis is difficult. The lengths of the fish captured correspond loosely with stocking dates in 2015 and 2016. Further monitoring is needed.

The rainbow trout, at the most, have been in the reservoir for two years with the majority having been stocked in 2015 and 2016. Growth rates appeared to be limited in the reservoir. The “Incline Strain Rainbow Trout Study” utilizes Boulder Reservoir to examine the growth rate of individual fish of traditional Tahoe strain and Incline strain rainbow trout. This data will provide valuable information on growth rates of rainbow trout within Boulder Reservoir. Starting in 2017, annual gill netting surveys will be conducted, targeting tagged rainbow trout. The growth rates of each strain within Boulder Reservoir will be compared to growth rates of the same strains in other waters. This initial gill netting survey will provide baseline information.

### **MANAGEMENT REVIEW**

Due to its remote nature, Boulder Reservoir does not receive a high level of angler use. However, it is a popular fishery for those anglers willing to make the trip. This fishery is generally popular with anglers for producing suitable catch rates and an opportunity to fish in a semi-remote setting. Additionally, the area provides opportunities for dispersed camping, hunting, and wildlife viewing. The mail-in questionnaire and drop-box data suggest that the reservoir is currently far exceeding the requirements prescribed for the Coldwater Quality Fishery Management Concept. As the fish currently in the reservoir continue to age and grow, the satisfaction of anglers with the size of fish should continue to increase. The stocking of a different strain of rainbow trout (Incline strain) may also provide larger than average sized fish as they grow in the reservoir.

The Boulder Reservoir Fisheries and Recreation Enhancement Project have proven to be a tremendous success and compliments were commonly noted on several angler drop-box forms.

### **RECOMMENDATIONS**

- Conduct a general assessment of angler use, success, and harvest through opportunistic angler contacts and mail-in angler questionnaire data.
- Conduct a general habitat assessment through visual observations of water quantity (lake level), water quality (clarity), aquatic vegetation, and upland vegetation (cattle

use) when on site.

- Set gill nets for two net nights in the fall.

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