

**State of California
California Department of Fish and Wildlife
North Central Region**

Silver Lake, Amador County

2016 Angler Survey Box Analysis



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Introduction

Silver Lake is an El Dorado Irrigation District (E.I.D.) managed reservoir in Amador County. At full capacity it covers 385 surface acres and is situated at approximately 7275 feet above mean sea level. It is located off Highway 88, approximately eight miles west of the Carson Pass and 20 miles southwest of Lake Tahoe (Figure 1). The Silver Fork American River is the main source of inflow and outflow for the lake and is a part of the South Fork American River watershed. Silver Lake is open all year to the public with a five trout daily take and a 10 in possession bag limit regulation.



Figure 1. Silver Lake (Amador County).

California Department of Fish and Wildlife (CDFW) fish files indicate Silver Lake has been stocked since 1930 by CDFW for recreational fishing. Historically, Silver Lake has been planted with rainbow trout (*Oncorhynchus mykiss*) (RT), Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) (CT-L), brook trout (*Salvelinus fontinalis*) (BK), brown trout (*Salmo trutta*) (BN), and lake trout (*Salvelinus namaycush*) (LT). Currently only RT and BN are planted in Silver Lake by CDFW and E.I.D (Appendix 1).

In order to assess the fishery, CDFW installed an angler survey box (ASB) at the public launch ramp along Highway 88 in 2015 (Figure 2). Anglers voluntarily fill out a survey sheet after they complete their fishing trip, and deposit it in the box. CDFW uses the data collected to assess angler satisfaction, species composition, and general angler statistics at the lake. This report covers the data collected from Silver Lake's ASB for 2015 - 2016.



Figure 2. Silver Lake ASB location.

Methods

Anglers were asked to fill out a voluntary survey form about their fishing experience for that day. The survey asks anglers for information regarding hours fished, type of gear used, and the number of landed fish. They were also asked the size and species of the fish landed and whether they kept or released their catch. Finally, anglers were asked three questions, and their answers were recorded on a scale of -2 to 2, with “2” representing most satisfied and “-2” representing least satisfied. The questions pertain to satisfaction of overall angling experience, size, and number of fish. The back of the survey form is reserved for anglers who have any additional comments.

Results

A total of 36 anglers responded to the survey (Table 1). Cumulatively, these anglers reported 92 fish landed, but only 79 had measurements reported. The average catch per angler and hours per angler was 2.56 and 3.85, respectively. One hundred and thirty-eight hours of fishing were documented for an average catch per hour of 0.66.

Table 1. Collection of average effort and catch statistics recorded from the 2015 and 2016 ASB at Silver Lake.

<u>Year</u>	<u>Respondents</u>	<u>Hours Fished</u>	<u>Fish Landed</u>	<u>Catch per angler</u>	<u>Catch per hour</u>	<u>Hours per angler</u>
2015	12	47	25	2.08	0.36	4.27
2016	36	138.5	92	2.56	0.66	3.85

Anglers reported using bait and lures while fishing at Silver Lake (Table 2). Bait fishing had the highest method of take (3.28 fish/angler). Eight (22%) anglers used lures and landed 28 fish. Nine (25%) anglers used multiple gear types and landed three fish. Zero anglers recorded fly fishing as an angling method.

Table 2. The frequency of anglers that used each angling method and their corresponding catch rates in 2015 and 2016.

<u>Angling method</u>	2015		2016	
	<u>Number of anglers</u>	<u>Catch per angler</u>	<u>Number of anglers</u>	<u>Catch per angler</u>
Bait	2	2.00	18	3.28
Lure	2	4.00	8	3.25
Fly	0	0.00	0	0.00
Multiple	6	0.83	9	0.33
Not recorded	2	4.00	1	0.00

Fifty-two percent of fish landed were RT in 2016, a decrease from 84% in 2015. Lake trout made up 39% of fish landed in 2016 while brook trout and LT each made up 8% of the total catch in 2015 (Figure 3).

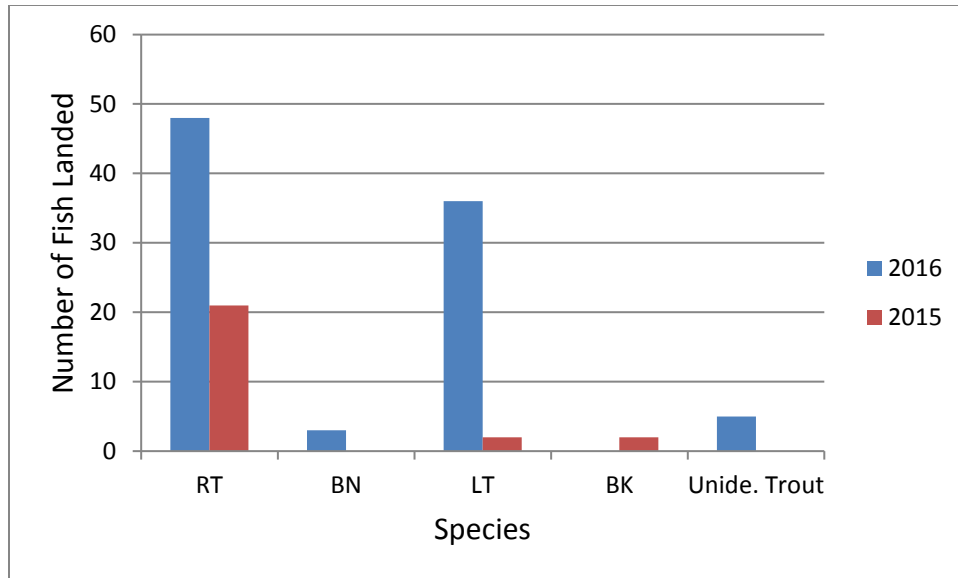


Figure 3. Number of each species of fish caught from Silver Lake in 2015 and 2016.

Anglers reported 44 (56%) fish measured less than 14.0 inches in total length. In 2015, anglers reported 13 (65%) fish measured were less than 14.0 inches in total length in 2015 (Figure 4) (Ewing 2016). Anglers reported landing four (5%) fish greater than 25.9 inches, and 31 (39%) of fish caught were between 14.0 and 25.9 inches. The modal size class for RT (15 fish) was in the 10.0 - 11.9 inch size class (Table 3). The modal size class for LT (12 fish) was in the 20.0 - 21.9 inch size class while two of the three BN were in the 24.0 – 25.9 inch size class.

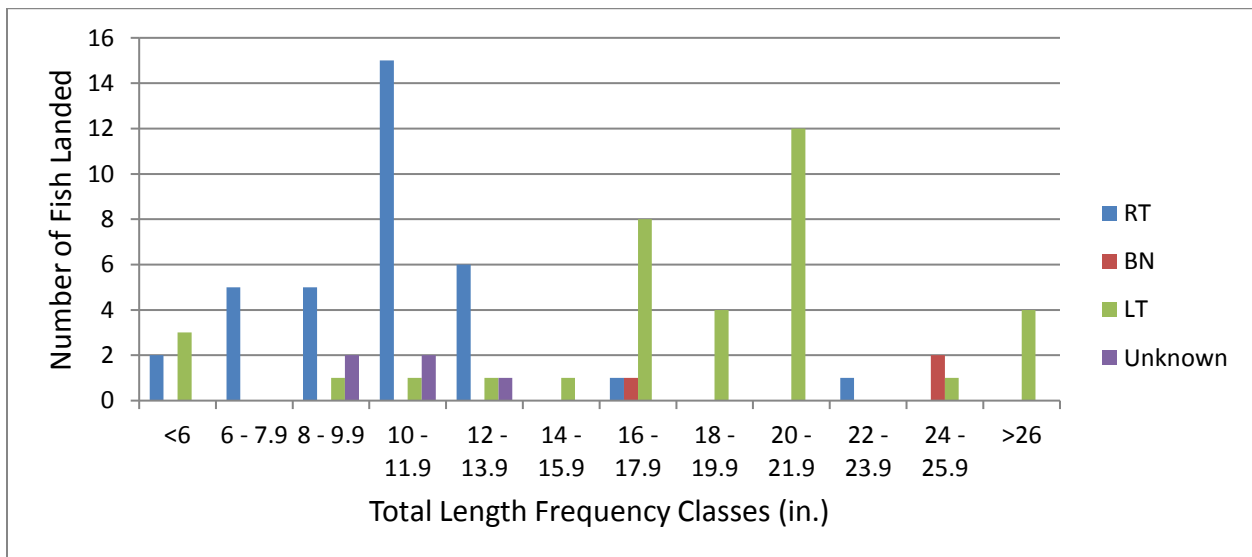


Figure 4. Frequency of fish in each size class that anglers reported landing at Silver Lake in 2016.

Table 3. Data on kept and released fish at Silver Lake in 2015 and 2016.

Year	Species	Kept	Released	Total Caught	Percent of Total Catch	Percent Released	Modal Size Class
2015	BK	0	2	2	10%	10%	16.0 - 17.9
	RT	11	6	17	85%	30%	12.0 - 13.9
	LT	1	0	1	5%	0%	> 26.0
Total		12	8	20			

Year	Species	Kept	Released	Unknown disposition	Total Caught	Percent of Total Catch	Percent Released	Modal Size Class
2016	BN	3	0	0	3	3%	0%	24.0 - 25.9
	RT	30	5	13	48	52%	14%	10.0 - 11.9
	LT	20	16	0	36	39%	44%	20.0 - 21.9
	Unknown	5	0	0	5	5%	NA	NA
Total		58	21	13	92			

In 2016, anglers reported being satisfied with the fishery in regards to overall satisfaction (0.53), the size of the fish they caught (1.0), and the numbers of fish they caught (0.89).

Discussion

The data gathered from the Silver Lake ASB has shown anglers to have caught over two and a half fish on average. This is an increase from the 2.08 catch per angler in 2015. Catch per unit effort was 0.66, which was an increase from the 0.36 fish/hour in 2015. The number of respondents in the 2015 survey was only 12, which may have not provided CDFW a true representation of the fishery compared to the 38 surveyed in 2016. It is essential CDFW maintain the trend of increasing angler participation in the ASB survey. With the Silver Lake ASB in the second year of fruition, it is possible that more anglers are aware of the boxes.

Catch rates for anglers using bait was higher than other forms of identified gear in 2016 while lure fishing had the highest catch rates in 2015.

The ASB survey showed the majority of fish caught by anglers were RT, which is consistent with the stocking records. Thirty-nine percent of fish caught by anglers were LT, which is surprising since LT have not been planted in Silver Lake in over 18 years and is strictly a self-sustaining fishery. There have been 10 – 20 lb. LT caught recently in Silver Lake and it is possible that with the smaller-sized RT that are being planted into Silver that the LT are consuming them. Only three BN were reported caught in 2016 compared to none reported in 2015. Although only three were caught, two of them were reported to be between 24.0 – 25.9 inches. In 2016, CDFW planted 35,000 BN fingerlings into BN. Future monitoring will determine the amount of success this BN plant.

Ninety-four percent of RT caught in Silver Lake measured less than 14 inches in total length. This corresponds with stocking data, as likely 100% of fish stocked by CDFW were less than 14 inches in length (Appendix 1). Anglers were satisfied with the size of fish they were catching compared to not being satisfied in 2015. E.I.D. planted approximately 1,790 lbs. of 2.5 lb. and greater RT into Silver Lake from 2014 - 2016 and anglers have caught trout in the 30 inch range at Silver Lake. Only one RT was reported caught over 22 inches and it is not known whether the one RT caught over 22 inches was a holdover or an E.I.D. stocked trophy.

Anglers were also satisfied with the number of fish they were catching compared to not being satisfied with the number of fish caught in 2015. The average fish per angler went from 2.08 in 2015 to 2.56 in 2016, a 23% increase which may have been because of the increase in the CDFW and E.I.D. RT plants compared to 2014 and 2015. It was a surprise to see LT as the greatest number of specie caught in 2016. It is possible with the lack of good shoreline access to Silver Lake that anglers fishing from shore would have a more difficult time targeting RT. The majority of anglers reported fishing from a boat which may have contributed to more of the pelagic LT being caught than RT. Lake trout can also successfully spawn in lakes combined with the large forage fish base, which might indicate why this specie appears to be subsisting well in Silver Lake. The lack of BN being caught could be entirely related to the time of year anglers reported their fishing experience since BN generally can be targeted in reservoirs in the fall when water temperatures are cooler and BN occupy shallower depths to feed and spawn. It is also possible that many of the BN fingerlings that were planted in 2014 and prior are being predated on and not able to survive in Silver Lake to catchable-size.

The overall fishing experience for anglers was also positive at Silver Lake in 2016 compared to 2015. With 54% of the fish caught over 12 inches in length, a CPUE of 0.66 fish per hour, and a catch per angler of 2.56 in 2016, it is clear to see why anglers were satisfied with their overall fishing experience.

Recommendations

- CDFW staff should install a species identification board on or near the ASB at Silver Lake, in order to minimize species misidentification by anglers.
- To maintain satisfaction with the fishery, CDFW could attempt to increase the average size of trout in the lake by decreasing the number of trout planted if future years' data indicates larger-size fish are rare or absent from the anglers' catch. A decreased volume of planted trout could reduce competition for resources and provide more space for the trout to grow.
- Collect more years' worth of data and have more respondents to the survey in order to help CDFW gather more reliable information on the Silver Lake fishery.
- Add question pertaining to angler expectation on survey sheet.
- Add more ASB locations around Silver Lake.

References

Ewing, B. 2016. Silver Lake, Amador County 2015 Angler Survey Box Analysis. Region 2 California Fish and Wildlife Fish Files. Unpublished.

Appendix 1. Stocking history at Silver Lake since 2014.

CDFW				
Date	Species	Weight (lbs.)	Number	Size
4/16/2014	BN	39.6	25000	Fingerling
4/18/2014	BN	39.6	25000	Fingerling
5/12/2014	RT	3000	6300	Catchable
6/3/2014	RT	415	125,330	Fingerling
6/13/2014	RT	3,000	9900	Catchable
6/18/2014	RT	5000	10000	Catchable
4/15/2015	RT	5000	10000	Catchable
6/1/2015	ELT	2000	8000	Catchable
6/26/2015	RT	1100	2420	Catchable
6/29/2015	RT	429.8	89400	Fingerling
7/13/2015	ELT	2000	6000	Catchable
7/22/2015	ELT	453.5	69975	Fingerling
5/24/2016	BN	54.7	35000	Fingerling
6/23/2016	RT	1200	3,840	Catchable
7/20/2016	RT	434.8	2,000	Catchable
8/12/2016	RT	2000	3,400	Catchable
9/15/2016	RT	255	1,020	Catchable

E.I.D.				
Date	Species	Weight (lbs.)	Number	Size
2014	RT	1336.5	2673.0	Catchable
2014	RT	688.5	275.4	Trophy
2015	RT	980.1	1960.2	Catchable
2015	RT	504.9	202.0	Trophy
2016	RT	1158.3	2316.6	Catchable
2016	RT	596.7	238.68	Trophy