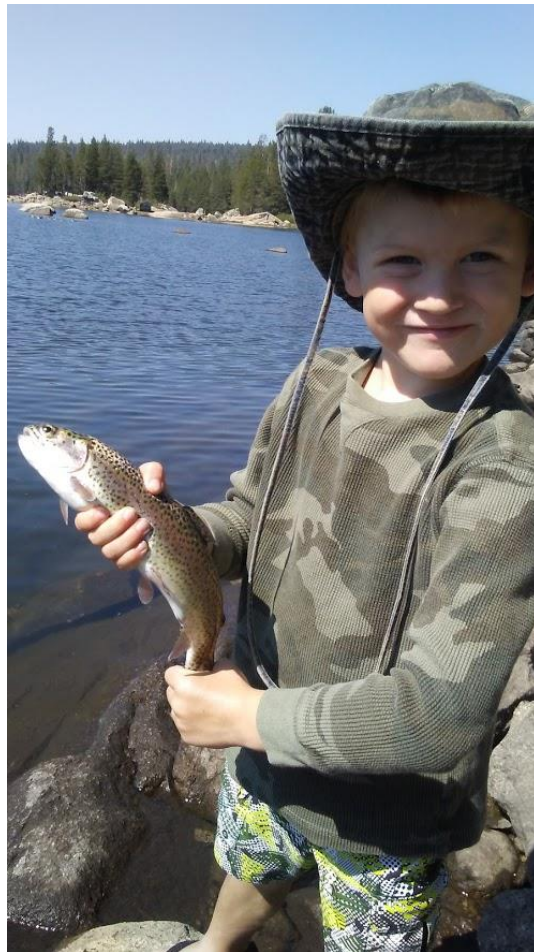


State of California
California Department of Fish and Wildlife
North Central Region

Lake Alpine, Alpine County

2015 – 2018 Angler Survey Box Analysis



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Introduction

Lake Alpine is a Northern California Power Agency (NCPA) managed reservoir. Lake Alpine is located off Highway 4, approximately two miles east of Bear Valley and 31 miles south of Lake Tahoe in Alpine County (Figure 1). At capacity, Lake Alpine encompasses 173 surface acres and is situated at approximately 7,305 feet above mean sea level. Silver Creek is the main source of inflow, which is part of the North Fork Stanislaus River watershed. A portion of the water releases from Lake Alpine are diverted into New Spicer Meadow Reservoir at the North Fork Diversion Dam approximately 2.5 miles downstream of Lake Alpine (NCPA files). Lake Alpine is open all year for fishing and other recreational opportunities, but has limited access during the winter season when Highway 4 is closed.

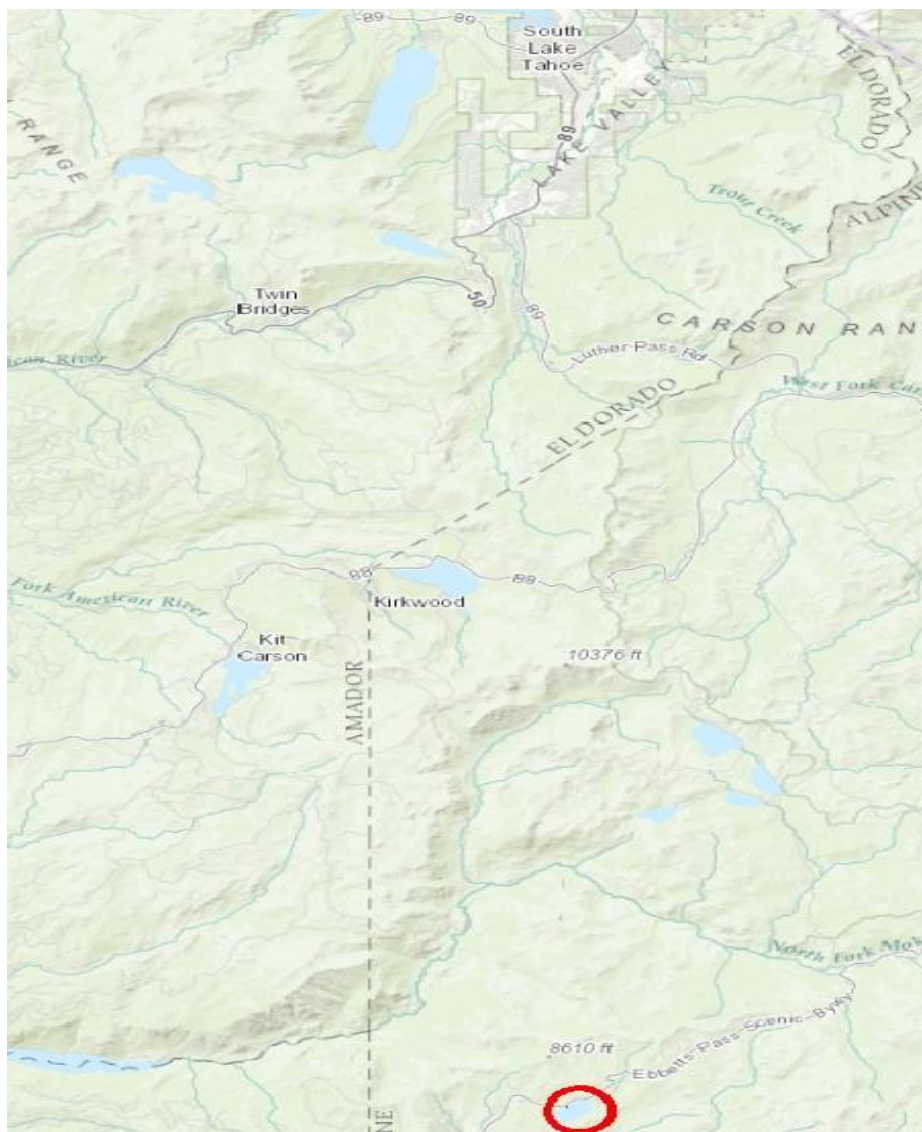


Figure 1. Lake Alpine, Alpine County.

Lake Alpine has been stocked by the California Department of Fish and Wildlife (CDFW) for recreational fishing since 1930 (CDFW Region 2 Fish Files). Historically, Lake Alpine was stocked with rainbow trout (*Oncorhynchus mykiss*) (RT), brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), and Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*). Currently, only RT are stocked in Lake Alpine by CDFW and the Alpine County Fish and Game Commission (ACFG).

To assess the fishery, CDFW installed an angler survey box (ASB) at the public launch ramp prior to the 2015 fishing season (Figure 2). CDFW uses data collected in the ASB to assess angler satisfaction, species composition/sizes, and general angler statistics at the lake. This report covers data collected from Lake Alpine's ASB from 2015 - 2018.



Figure 2. Angler Survey Box location at Lake Alpine, Alpine County.

Methods

Anglers were asked to complete a voluntary survey form about their fishing experience. The survey asked anglers for information regarding hours fished, type of gear used, method of fishing, and the number of landed fish. These responses were used to measure the Catch per Unit of Effort (CPUE) as defined by the number of fish caught per hour and number of fish caught per angler. Anglers were similarly asked the size and species of landed fish and whether

they kept or released their catch. Lastly, 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 was available for anglers to include additional comments (Appendix 2).

Results

In 2018, twelve anglers responded to the survey compared to the 14, 22, and seven that responded in 2017, 2016, and 2015, respectively (Table 1, Ewing 2016, 2017, and 2018). In 2018, sixteen fish were caught over a period of 58.5 hours for a CPUE of 0.27 fish/hour. In 2018, anglers caught 1.33 fish on average per day, a sharp decrease from the 4.36 fish caught per day in 2017, and a decrease from the 3.82 and 2.71 fish caught on average in 2016 and 2015. CPUE was 0.27 fish per hour in 2018, 0.91 in 2017, 1.02 in 2016, and 0.66 in 2015.

Table 1. Collection of average effort and catch statistics recorded from the 2015 - 2018 Angler Survey Box at Lake Alpine, Alpine County.

Year	Anglers	Hours Fished	Fish Landed	Catch per Angler	Fish per Hour	Hours per Angler
2015	7	28.75	19	2.71	0.66	4.11
2016	22	82.00	84	3.82	1.02	3.73
2017	14	67.25	61	4.36	0.91	4.80
2018	12	58.50	16	1.33	0.27	4.88
Total	55	236.50	180			
Average	14	59.13	45			

Anglers used either bait, lures, or flies while fishing Lake Alpine (Table 2). In 2018, zero anglers solely used lures, while five anglers used bait and had a 1.6 catch per angler rate. Three anglers used flies and had a 2.3 catch per angler rate. Three anglers used multiple gear methods, with zero fish caught. Compared to 2017, 2018 observed a decrease in catch per angler for bait anglers (4.6 to 1.6) and those who used multiple methods (5.0 to 0.0). However, there was a rise in catch per angler for anglers using flies (1.0 to 2.3).

Table 2. Results from anglers who recorded their gear method and catch rates in 2015 - 2018.

	2015		2016		2017		2018	
Angling Method	Number of Anglers	Catch per Angler	Number of Anglers	Catch per Angler	Number of Anglers	Catch per Angler	Number of Anglers	Catch per Angler
Bait	2	2.5	15	2.5	10	4.6	5	1.6
Lure	2	4.0	3	3.7	1	4.0	0	NA
Fly	1	2.0	1	6.0	1	1.0	3	2.3
Multiple	2	2.0	3	10.0	2	5.0	3	0.0
Total	7		22		14		11	

***One angler did not record their gear method in 2018.**

In 2018, only RT were reported caught by anglers. In 2018, RT ranged from the 6.0-7.9 in. to the 22.0 - 23.9 in. size classes (Figure 3). The modal size class for 2018, representing 37.5% of all RT caught, was 10.0-11.9 in (n=6) (Table 3). The 10.0-11.9 size class was also modal in 2016 and 2017. However the 2015 modal size class was 8.0-9.9 in. In 2018, three of the sixteen fish caught that were released were less than 12 inches in total length. RT that were less than 18 inches comprised 75% of the fish in 2018, 95% in 2017 and 2015, and 98% in 2016.

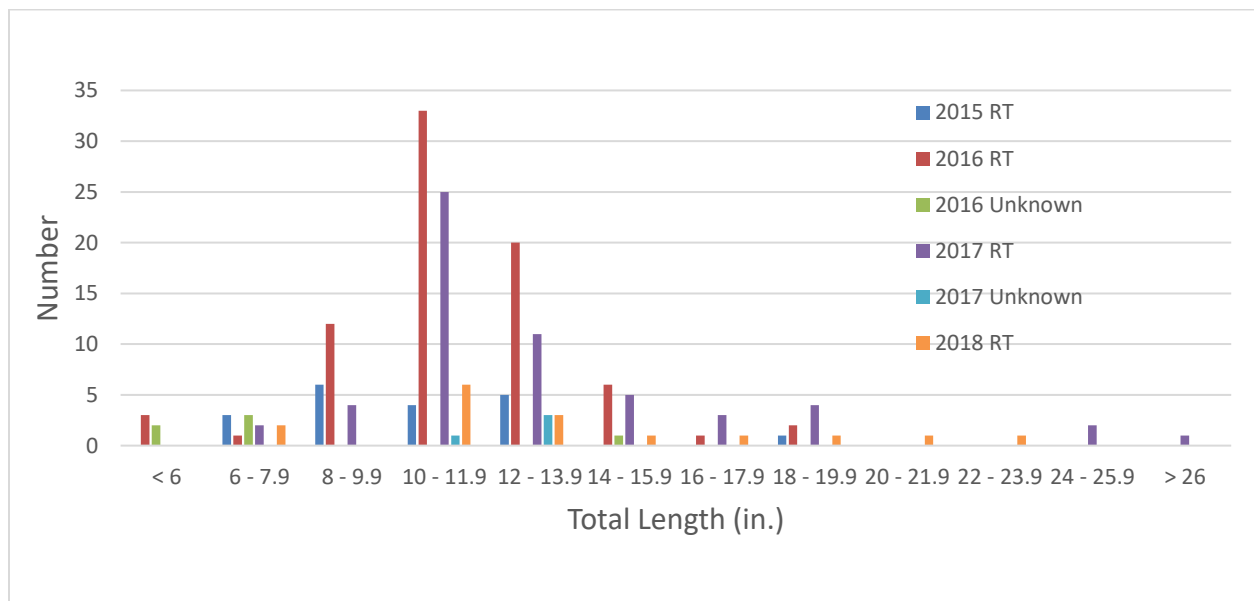


Figure 3. Frequency of rainbow trout in each size class caught at Lake Alpine in 2015 (n=19), 2016 (n=78), 2017 (n=61) and 2018 (n=16).

Table 3. Kept and released fish and the corresponding modal size class at Lake Alpine from 2015 - 2018.

Year	Rainbow trout		Unknown fish		Total Caught	Percent	Modal Size Class
	Kept	Released	Kept	Released		Released	
2015	12	7	0	0	19	36.8	8.0 - 9.9
2016	62	16	1	5	84	25.0	10.0 - 11.9
2017	28	29	1	3	61	52.5	10.0 - 11.9
2018	13	3	0	0	16	18.8	10.0 - 11.9

In 2018, four anglers (33.3%) reported fishing from a boat, which resulted in the best success in terms of catch per angler (3.00 fish/angler) (Table 4). One angler (8.3%) did not report their method of fishing, which resulted in the second best success rate in terms of catch per angler (1.00 fish/angler). Six anglers (50.0%) reported fishing from shore or wading, which resulted in the third best success method in terms of catch per angler (0.50 fish/angler). The one float tube/kayak angler reported no fish caught.

Table 4. The number of anglers and catch per angler based on angling method at Lake Alpine 2016-2018. Method of fishing was not recorded in the 2015 survey.

Method	2016		2017		2018	
	Number of Anglers (%)	Catch per Angler	Number of Anglers (%)	Catch per Angler	Number of Anglers (%)	Catch per Angler
Boat	6 (27.3%)	4.50	5 (35.7%)	6.20	4 (33.3%)	3.00
Float tube/kayak	0 (0.0%)	NA	1 (7.1%)	1.00	1 (8.3%)	0.00
Shore/wading	4 (18.2%)	6.00	1 (7.1%)	0.00	6 (50.0%)	0.50
Not recorded	12 (54.5%)	2.75	7 (50.0%)	4.14	1 (8.3%)	1.00
Total	22		14		12	

In 2017 and 2016, anglers had a negative average response to their overall fishing experience, but in 2018 anglers had a positive overall fishing experience which was not present since 2015 (Table 5). There is a continuing trend since 2015 that angler satisfaction with the number of fish in Lake Alpine has been decreasing, although it is still positive for a fourth consecutive year. Anglers also had a positive experience with the size of fish caught (2018 = 0.80; 2017 = 0.38; 2016 = 0.36; 2015 = 0.60) for a fourth consecutive year (Table 5), with 2018 having the highest positive value on record.

Table 5. Angler satisfaction response averages for Lake Alpine, 2015 - 2018.

Year	Overall angling experience	Size of fish	Number of fish
2015	0.29	0.60	0.60
2016	-0.06	0.36	0.45
2017	-0.27	0.38	0.43
2018	0.33	0.80	0.40

Discussion

The 2018 fishing season had the lowest number of fish landed, the lowest CPUE, and the lowest catch per angler experienced at Lake Alpine compared to the previous three years. In previous years, the CPUE and catch per angler values may have been attributed to the combination of the large sum of fish stocked and lake/shoreline fishing access (Ewing 2017). The decrease in values could be explained by the decrease in stocked RT, since only 5600 lbs. of catchable RT were stocked in Lake Alpine in 2018 compared to 6450lbs. in 2017, 8730 lbs. in 2016, and 9300 lbs. in 2015 (Appendix 1). It should be noted that RT stocked in Lake Alpine were stocked multiple times by CDFW throughout the year in 2017, 2016 and 2015, but only once in 2018. In the winter of 2017/2018, Moccasin Hatchery endured a massive flood which killed the majority of RT. Moccasin Hatchery was the CDFW hatchery responsible for fulfilling Lake Alpine's RT allotment. In response, American River Hatchery became the hatchery responsible for fulfilling the allotment. Due to time and cost issues, fish were only stocked once at Lake Alpine in 2018, which may have contributed to the low catch values.

Catch per angler for anglers using bait was higher than other forms of identified gear in 2018, compared to 2016 and 2017, when using multiple methods had the highest catch per angler. Anglers using lures had the highest catch per angler in 2015. The 2018 bait anglers may have caught more fish per angler because more anglers used only bait to fish compared to lure or fly anglers. Some anglers in 2018 did not record their method of fishing, but boat anglers had the greatest catch per angler. It is possible that the boat anglers in 2018 had better access to the fish than anglers from shore due to various environmental reasons (snow, water levels, vegetation abundance, limited shoreline access, etc.), and therefore able to cover more water via trolling than kayaking or float tubing. For the first time in four years, all fish were identified as RT in 2018, which is consistent with the stocking records (Appendix 1).

Only 12 anglers responded to the survey in the 2018, which is below the four- year average (Table 1). Due to the lower number of stocking events and decrease in RT stocked, fewer anglers may have chosen to fish Lake Alpine. Ideally, the more respondents, the more

feedback it provides CDFW on angler usage and success at the fishery. It is essential CDFW maintain the trend of increasing angler participation in the ASB survey. The goal of increasing angler participation may be accomplished by personal communication in the lake community and with posted signage. Since the ASB at the boat launch was posted in 2015, it is unlikely that anglers are unaware with the ASB program. The lower number of respondents may be caused by anglers not understanding the value that the surveys give CDFW, or simply because there was a decrease in the number of people utilizing this fishery.

In 2018, overall angler satisfaction was the highest in the four years of surveys. There was also an increase in angler satisfaction with the size of the fish from 2017 to 2018. While fewer anglers responded to this survey than in the past years, those that did respond, caught some larger-sized RT. Despite the decreases in CPUE and catch per angler, all of the average satisfaction values were positive. Three of the sixteen fish caught and released were less than 12 inches in total length. RT that were less than 18 inches comprised 75% of the fish in 2018, 95% in 2017 and 2015, and 98% in 2016. This is consistent with the sizes of RT stocked by CDFW and ACFG. ACFG stocked 14,400 lbs. of catchable-size RT into Lake Alpine from 2015 – 2018, while CDFW planted 19,100 from 2014-2018. These were a catchable size, meaning many of these fish weighed approximately a half pound at the time of stocking. It is not certain if the RT caught over 18.0 inches in 2018 were a CDFW or ACFG holdover, or possibly the larger-sized RT that ACFG stocks. It is possible the larger-sized fish have a difficult time overwintering due to a forage base which may not be sufficient to sustain RT survival at Lake Alpine. The larger-sized RT may also be having a difficult time surviving on their own compared to being fed in a hatchery.

Recommendations

- When possible, CDFW should continue encouraging anglers to fill out the ASB forms.
- Collect one more years' worth of ASB. These data will help CDFW better understand the Lake Alpine fishery.

Literature Cited

1. California Department of Fish and Wildlife. Region 2 Fish Files. Lake Alpine Fish Stocking Record.
2. Ewing, B. Lake Alpine 2015 Angler Survey Box Analysis. California Department of Fish and Game; 7/18/2016. [Accessed December 10, 2018]. Available from: <http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=127367>
3. Ewing, B. Lake Alpine 2015 - 2016 Angler Survey Box Analysis. California Department of Fish and Game; 12/27/2017. [Accessed December 10, 2018]. Available from: <http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=152910>

4. Ewing, B. Lake Alpine 2015 - 2017 Angler Survey Box Analysis. California Department of Fish and Game; 3/2/2018. [Accessed December 10, 2018]. Available from: <http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=154933>
5. Northern California Power Agency Hydroelectric Project Referral.

Appendix 1. Stocking history at Lake Alpine since 2014 for CDFW and 2015 for ACFG. ACFG allotment is in red lettering.

Date	Species	Number	Weight (lbs.)	Size-Class
4/24/2014	ELT	3000	2500	Catchable
6/25/2014	ELT	3450	1500	Catchable
7/2/2014	ELT	1800	1000	Catchable
7/28/2014	ELT	1610	700	Catchable
2015	RT		3600	Catchable
4/29/2015	RT	1500	1500	Catchable
6/3/2015	RT	1530	900	Catchable
7/17/2015	RT	2300	1000	Catchable
7/27/2015	RT	4830	2300	Catchable
6/22/2016	ELT	2280	1425	Catchable
7/25/2016	ELT	2850	1425	Catchable
7/8/2016	RT		3600	Catchable
6/23/2017	RT	1710	1425	Catchable
7/24/2017	RT	1568	1425	Catchable
July, 2017	RT		1800	Catchable
September, 2017	RT		1800	Catchable
6/14/2018	RT	3400	2000	Catchable
July, 2018	RT		1800	Catchable
September, 2018	RT		1800	Catchable

Appendix 2. Lake Alpine Angler Survey Box Data Sheet

Lake Alpine

The California Department of Fish and Wildlife is conducting an evaluation of the fishery at Lake Alpine. We request your help in this evaluation by providing the following information in this survey. Please use this form for one day's fishing at Lake Alpine by one angler only.

Date Fished: _____ # Hours Fished: _____
mm/dd/yyyy

Primary gear type used (check one):
☐ Bait

☐

Lure

☐

Fly

Primary method or location (check one):
☐ shore/wading

☐

float tube

☐

boat

Enter the total number of fish caught by species and size class:

Size	Rainbow trout		Other	
	Kept	Released	Kept	Released
Less than 6"				
6"-7.9"				
8"-9.9"				
10"-11.9"				
12"-13.9"				
14"-15.9"				
16"-17.9"				
18"-19.9"				
20"-21.9"				
22"-23.9"				
24"-25.9"				
26" and Greater				

Please indicate your level of satisfaction with the following statements regarding your fishing experience today:

	Least satisfied		Neutral	Most satisfied	
Overall angling experience today:	-2	-1	0	+1	+2
Size of fish:	-2	-1	0	+1	+2
Number of fish:	-2	-1	0	+1	+2

Please use the back of this form for any additional comments. Thank you for helping us manage and protect California's wild trout resources.

