

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

Lake Alpine, Alpine County

2015 – 2019 Angler Survey Box Analysis



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Introduction

Lake Alpine is located off Highway 4, approximately one mile west of Bear Valley and 31 miles south of Lake Tahoe in Alpine County (**Figure 1**). Lake Alpine encompasses 173 surface acres at capacity and is 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. Lake Alpine is a Northern California Power Agency (NCPA) managed reservoir. NCPA diverts a portion of the water releases from Lake Alpine 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.

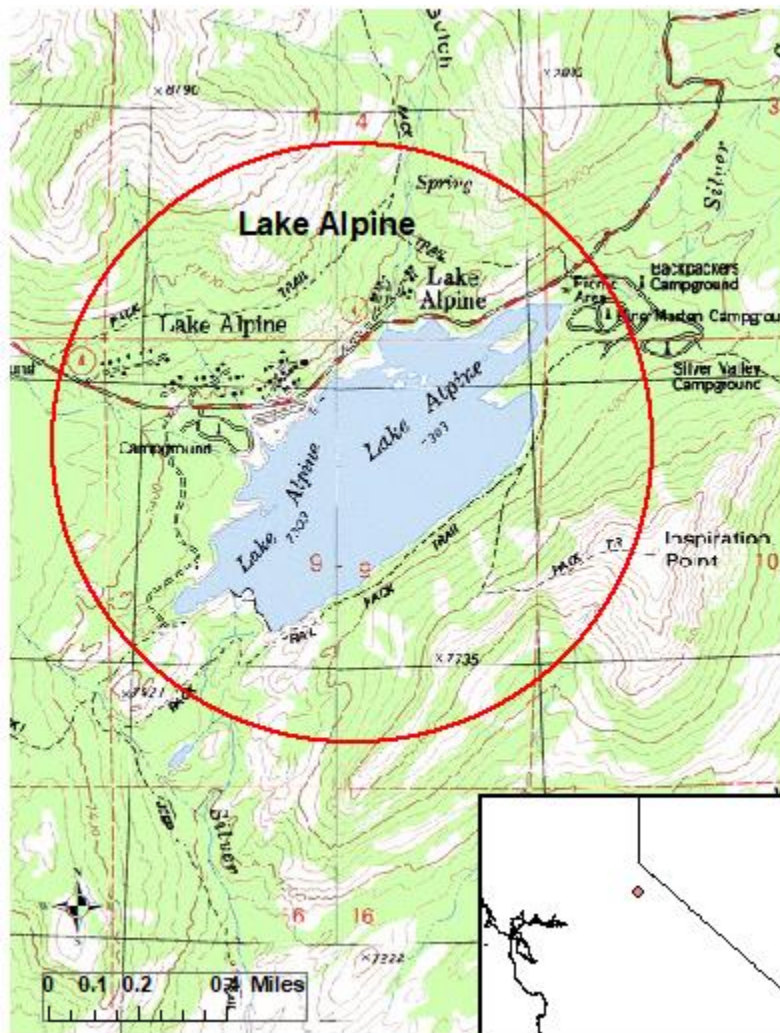


Figure 1. Lake Alpine, Alpine County. Lake Alpine is also indicated by beige dot in smaller data frame in relation to California.

California Department of Fish and Wildlife (CDFW) has stocked Lake Alpine for recreational fishing since 1930 (CDFW Region 2 Fish Files). Historically, CDFW stocked Lake Alpine with Rainbow Trout (*Oncorhynchus mykiss*) (RT), Brook Trout (*Salvelinus fontinalis*), Brown Trout (*Salmo trutta*), and Lahontan Cutthroat Trout (*Oncorhynchus clarkii henshawi*). Currently, CDFW and the Alpine County Fish and Game Commission (ACFG) only stock RT into Lake Alpine.

CDFW installed an angler survey box (ASB) at the public launch ramp prior to the 2015 fishing season to assess the fishery (**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 - 2019.



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

Methods

Anglers voluntarily complete a survey form regarding 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 2019, ten anglers responded to the survey compared to 12 (2018), 13 (2017), 22 (2016), and seven (2015), respectively (**Table 1**, Ewing 2016, 2017, 2018; Harris 2019). In 2019, 91 fish were caught over a period of 36 hours for a CPUE of 2.53 fish/hour compared to 0.27 in 2018, 0.91 in 2017, 1.02 in 2016, and 0.66 in 2015. In 2019, anglers caught 9.10 fish on average per angler, a sharp increase from the 1.33 catch per angler in 2018, and an increase from 2017 (n = 4.36), 2016 (n = 3.82) and 2015 (n = 2.71).

Table 1. Collection of average effort and catch statistics recorded from the 2015 - 2019 Angler Survey Box at Lake Alpine.

Year	Anglers	Hours Fished	Fish Landed	Catch per Angler	Catch 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
2019	10	36.00	91	9.10	2.53	3.60
Total	65	272.50	271			
Average	13	54.50	54			

Anglers have used either bait, lures, or flies while fishing Lake Alpine (**Table 2**). In 2019, there were zero fly anglers, while six anglers used bait and had an 11.7 catch per angler rate. This was also the highest catch per angler rate of any gear method since the ASB was installed. Two anglers used lures and had a 6.0 catch per angler rate, which was the highest value for lure anglers in five years. Two anglers used multiple gear methods and had a 4.5 catch per angler rate. This was an increase from the 0.0 value in 2018, but was a decrease from 2016 (10.0) and 2017 (5.0).

Table 2. Anglers that used each angling method and their corresponding catch rates in 2015 - 2019. Number of anglers are in parenthesis.

	2015	2016	2017	2018	2019
Angling Method	Catch per Angler	Catch per Angler	Catch per Angler	Catch per Angler	Catch per Angler
Bait	2.5 (2)	2.5 (15)	4.6 (10)	1.6 (5)	11.7 (6)
Lure	4.0 (2)	3.7 (3)	4.0 (1)	NA	6.0 (2)
Fly	2.0 (1)	6.0 (1)	1.0 (1)	2.3 (3)	NA
Multiple	2.0 (2)	10.0 (3)	5.0 (2)	0.0 (3)	4.5 (2)
Total Anglers	7	22	14	11	10

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

In 2019, anglers reported only RT caught for a second consecutive year. In 2019, RT caught ranged from the 6.0 - 7.9 inch (in.) to the 14.0 - 15.9 in. size classes (**Figure 3**). The modal size class for 2019, representing 45.1% of all RT caught, was 10.0-11.9 in. (n = 41) (**Table 3**). The 10.0 - 11.9 size class was also modal in 2016, 2017, and 2018 while the 2015 modal size class was 8.0 - 9.9 in. RT that were less than 18 inches comprised 100% of the fish caught in 2019, 81% of the fish in 2018 and 2017, 97% in 2016, and 95% in 2015.

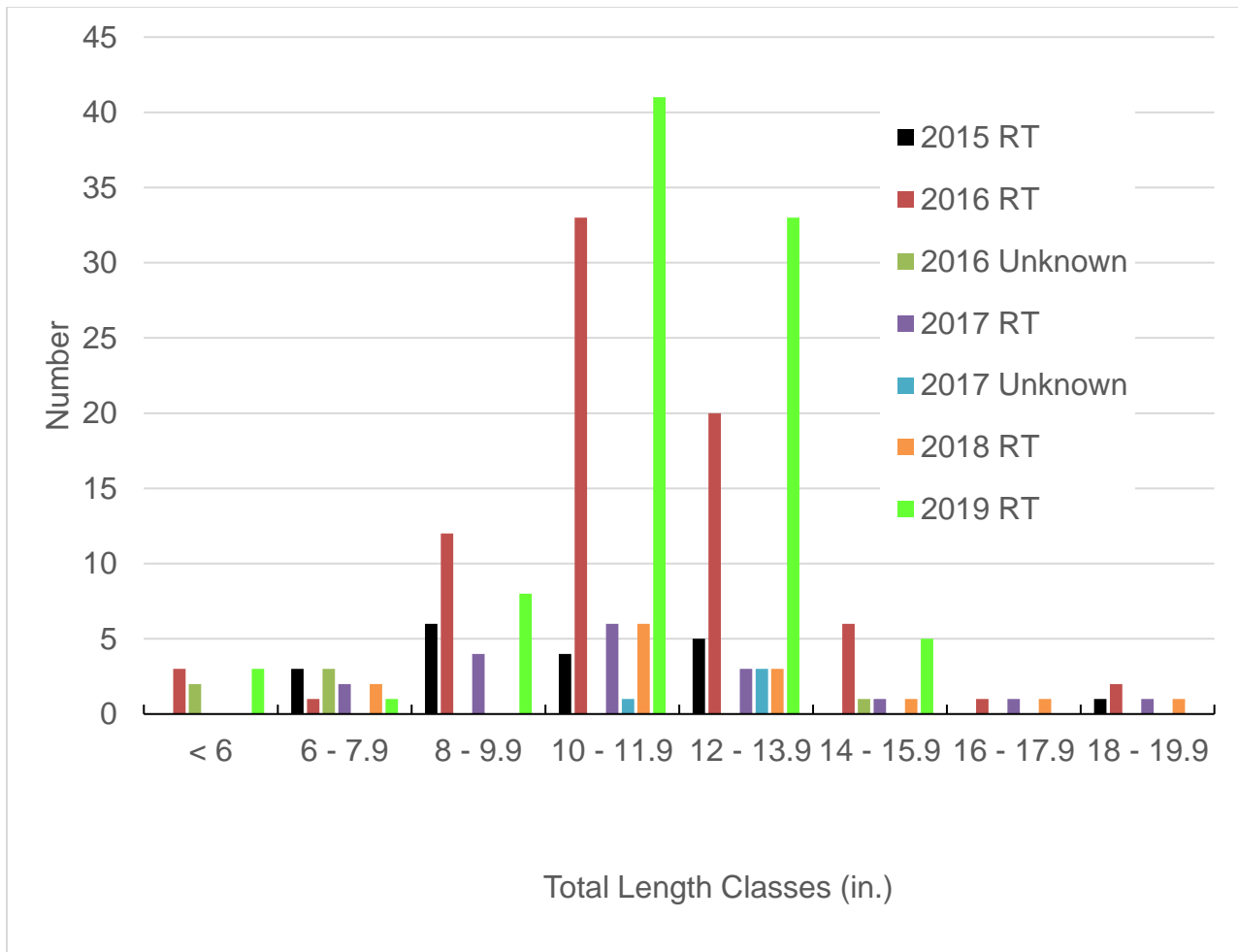


Figure 3. Number of fish caught in each size class at Lake Alpine (2015 – 2019). In 2018 and 2017, some RT were not included in Figure 3 to assist in scale formatting. In 2018, one RT in the 20.0 – 21.9 in. and 22.0 – 23.9 in. length class were not included in Figure 3. In 2017, one RT in the 20.0 – 21.9 in., 24.0 – 25.9 in. and > 26 in. length class were not included in Figure 3.

Table 3. Kept and released fish and the corresponding modal size class at Lake Alpine from 2015 - 2019.

Year	Rainbow Trout		Unknown fish		Total Caught	Percent Released	Modal Size Class
	Kept	Released	Kept	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	71	20	1	3	95	52.5	10.0 - 11.9
2018	13	3	0	0	16	18.8	10.0 - 11.9
2019	71	20	0	0	91	22.0	10.0 - 11.9

In 2019, five anglers (50.0%) reported fishing from a boat, which resulted in the best success in terms of catch per angler (11.80) (**Table 4**). Four anglers (40.0%) did not report their method of fishing, which resulted in the second-best success rate in terms of catch per angler (7.00). One angler (10.0%) reported fishing from a float tube/kayak, which resulted in the third best success method in terms of catch per angler (4.00). Anglers did not report fishing from shore or wading.

Table 4. The number of anglers and catch per angler based on angling method at Lake Alpine 2017 - 2019.

Method	2017		2018		2019	
	Number of Anglers (%)	Catch per Angler	Number of Anglers (%)	Catch per Angler	Number of Anglers (%)	Catch per Angler
Boat	5 (35.7%)	6.20	4 (33.3%)	3.00	5 (50.0%)	11.80
Float tube/kayak	1 (7.1%)	1.00	1 (8.3%)	0.00	1 (10.0%)	4.00
Shore/wading	1 (7.1%)	0.00	6 (50.0%)	0.50	NA	NA
Not recorded	7 (50.0%)	4.14	1 (8.3%)	1.00	4 (40.0%)	7.00
Total	14		12		10	

In 2019, anglers reported a positive overall fishing experience for a second consecutive year following two consecutive years with a negative overall angling experience (**Table 5**). In 2019, anglers reported the highest average satisfaction (1.71) with their number of fish landed over the five years of surveys. It was also the fifth consecutive year that the average satisfaction with the number of fish landed was positive. Anglers also had a positive experience with the size of fish caught (2019 = 0.43; 2018 = 0.80; 2017 = 0.43; 2016 = 0.45; 2015 = 0.60) for a fifth consecutive year (**Table 5**).

Table 5. Angler satisfaction response averages for Lake Alpine, 2015 - 2019.

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
2019	1.83	0.43	1.71

Discussion

The 2019 fishing season had the highest number of fish landed, CPUE, and catch per angler values at Lake Alpine compared to the previous four 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 same values may have also been had by the large concentration of stocked fish by the shoreline, likely giving shore anglers great opportunities to catch fish. In 2019, 9100 lbs. of RT were stocked compared to 5600 lbs. in 2018, 6450 lbs. in 2017, 8730 lbs. in 2016, and 9300 lbs. in 2015 (**Appendix 1**). In 2015, 2016, and 2017, RT were stocked in Lake Alpine multiple times annually by CDFW, but only once in 2018. In 2019, CDFW reconvened multiple stockings. In the winter of 2017/2018, Moccasin Hatchery, which fulfills the Lake Alpine RT allotment endured a massive flood which killed most RT at the hatchery. In response, American River Hatchery became 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 that year. In 2019, Moccasin Hatchery was still not at full operation and American River Hatchery again was responsible for fulfilling the allotment. However, in 2019, American River Hatchery had more time when compared to 2018, to prepare and schedule multiple trout stockings for Lake Alpine.

Catch per angler was higher for bait anglers in 2019 and 2018, compared to 2017 and 2016, in which anglers using multiple methods had the highest catch per angler value. Anglers using lures had the highest catch per angler in 2015. Comparable to 2018, bait anglers in 2019 may have caught more fish per angler because more anglers used only bait to fish compared to lure or fly anglers. In 2019, boat anglers had the greatest catch per angler for a third consecutive year. It is possible that the boat anglers in 2019 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, were able to cover more water via trolling than kayaking or float tubing.

For the third time in five years, anglers identified all fish as RT in 2019, which is consistent with the stocking records (**Appendix 1**).

Only 10 anglers responded to the survey in 2019, which is below the five - year average (**Table 1**). When CDFW staff had collected ASB sheets in 2019, staff noticed the ASB had been knocked down from its attachment pole. The ASB was reduced to ground level, which may have prevented anglers from seeing the box. CDFW staff returned later in 2019 and placed the ASB back to the appropriate level. The lower number of respondents may also have been caused by anglers not understanding the informational value of the surveys, or simply because there was a decrease in the

number of people utilizing this fishery. Ideally, the more respondents, the more feedback it provides CDFW on angler usage and success at the fishery. Since the ASB has been located at the boat launch since 2015, it is likely that many Lake Alpine anglers are aware of the ASB program.

In 2019, overall angler satisfaction was the highest out of five years of surveys. Although there was a decrease in angler satisfaction with the size of fish from 2018 to 2019, the average response in 2019 was still positive. While fewer anglers responded to this survey than average, those that did respond, caught the most numbers of RT among ASB respondents during the last five years. Despite the decrease in the size satisfaction value, all the average satisfaction values were positive for a second consecutive year. Anglers have kept over 62% of the fish caught four of the last five years. This suggests why anglers are satisfied with the size of fish caught and that the “put and take” stocking strategy at Lake Alpine is successful.

RT that were less than 18 inches comprised 100% of fish caught in 2019, 75% 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 18,000 lbs. of catchable-size RT into Lake Alpine from 2015 – 2019, while CDFW stocked 24,600 lbs. from 2014 - 2019. It is possible the larger-sized fish have a difficult time overwintering due to an insufficient forage base.

Recommendations

- The Lake Alpine ASB will be removed in 2020 due to the five years of informative data. The ASB will be moved to obtain angler data at another waterbody.
- CDFW and ACFG should continue the same RT stocking allotment of RT at Lake Alpine.

Literature Cited

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

4. Ewing, B. 2018. Lake Alpine 2015 - 2017 Angler Survey Box Analysis. California Department of Fish and Game. Available from:
<http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=154933>
5. Harris, S. 2019. Lake Alpine 2015 - 2018 Angler Survey Box Analysis. California Department of Fish and Game. Available from:
<http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=168277>
6. 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
6/26/2019	RT	3600	2000	Catchable
7/19/2019	RT	4400	2000	Catchable
9/13/2019	RT	1700	850	Catchable
9/13/2019	RT	1300	650	Catchable
July, 2019	RT		1800	Catchable
September, 2019	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.