

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

Frog Lake, Winnemucca Lake, Round Top Lake, and Fourth of July Lake, Alpine
County

2018 Angler Survey Box Analysis



Frog Lake



Round Top Lake



Winnemucca Lake



Fourth of July Lake

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Introduction

Frog Lake

Frog Lake is a six-acre lake in Alpine County located at 38° 41' 16.06 N 119° 59' 10.03 W situated at 8,865 feet above mean sea level (Figure 1). The shoreline is a mix of rocks, sand, and conifer forest. The lake bottom appears mostly mud and various sized rock substrate. When Frog Lake spills, water flows into nearby Red Lake and the West Carson River. The lake receives water from rain and snowmelt runoff from the immediate area. The lake historically received fingerling stockings by California Department of Fish and Wildlife (CDFW) of brook trout (*Salvelinus fontinalis*) (BK), rainbow trout (*Oncorhynchus mykiss*) (RT), and Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) (LCT) with the last recorded stocking of RT in 2018. Frog Lake is open all year for fishing and other recreational opportunities, but has limited access during the winter season when there is snow.

Winnemucca Lake

Winnemucca Lake is a 54-acre lake in Alpine County located at 38° 40' 11.56 N 119° 59' 36.46 W situated at 8,995 feet above mean sea level (Figure 1). The shoreline is a mix of rocks and conifer forest. The lake bottom appears mostly mud and various sized rock substrate. When Winnemucca Lake spills, water drains into nearby Woods Lake and the South Fork American River watershed. The lake receives water from rain and snowmelt runoff from the immediate area. The lake historically has received fingerling stockings by CDFW of BK and RT with the last recorded stocking of RT in 2000. Winnemucca Lake is open all year for fishing and other recreational opportunities, but has limited access during the winter season when there is snow.

Round Top Lake

Round Top Lake is a six-acre lake in Alpine County located at 38° 40' 01.84 N 120° 00' 44.46 W situated at 9,358 feet above mean sea level (Figure 1). The shoreline is a mix of rocks, willows, and conifer forest. The lake bottom appears mostly mud and various sized rock substrate. When Round Top Lake spills, water drains into nearby Woods Lake and the South Fork American River watershed. The lake receives water from rain and snowmelt runoff from the immediate area. The lake historically received fingerling stockings by CDFW of golden trout (*Oncorhynchus mykiss aguabonita*), RT, and LCT, with the last recorded stocking of RT in 2018. Round Top Lake is open all year for fishing and other recreational opportunities, but has limited access during the winter season when there is snow.

Fourth of July Lake

Fourth of July Lake is a 15-acre lake in Alpine County located at 38° 38' 58.28 N 120° 01' 02.37 W situated at 8,172 feet above mean sea level (Figure 1). The shoreline is a mix of rocks, willows, and conifer forest. The lake bottom appears mostly mud and various sized rock substrate. When Fourth of July spills, water flows into Summit City Creek, eventually contributing to the Mokelumne River. The lake receives water from rain and snowmelt runoff from the immediate area. The lake historically received fingerling stockings by CDFW of BK, RT, LCT, and kokanee salmon (*Oncorhynchus nerka*) (KS) with the last recorded stocking of KS in 1982. Fourth of July Lake is open all year for fishing and other recreational opportunities, but has limited access during the winter season when there is snow.

In 2018, CDFW installed an angler survey box (ASB) at the Carson Pass trailhead located along the Pacific Crest Trail to evaluate the fisheries (Figure 1). Anglers voluntarily completed a survey sheet after their fishing trip, and deposited it in the box. CDFW uses this data to assess angler satisfaction, species composition/sizes, and general angler statistics at the identified lake. This report covers data collected from Frog, Winnemucca, Round Top, and Fourth of July's ASB in 2018.

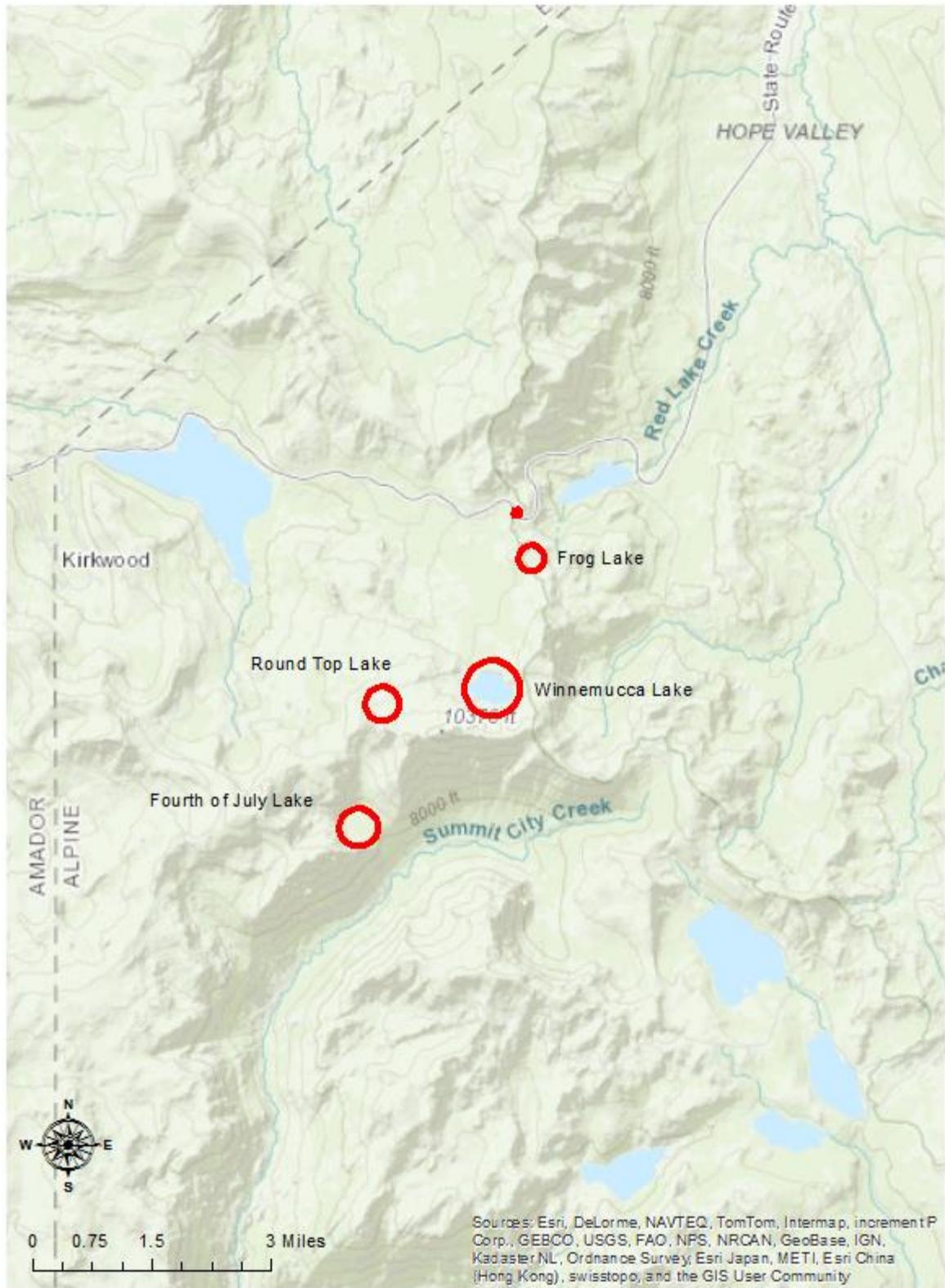


Figure 1. Frog Lake, Winnemucca Lake, Round Top Lake, and Fourth of July Lake (circled in red), while Angler Survey Box location indicated by red dot.

Methods

The survey asked anglers for information regarding lake fished, type of gear used, and the number of landed fish. This information was used to calculate catch per angler. Anglers were also 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 pertained to the level of satisfaction with their overall angling experience, and with the size and number of fish. The back of the survey form was available for anglers to include additional comments (Appendix 1).

Results

In 2018, fourteen anglers responded to the survey (Table 1). Overall, 28 fish were caught between the four lakes. The greatest number of fish were caught at Fourth of July Lake (n=14). Fourth of July Lake also had the highest catch per angler average of 3.5.

Table 1. Collection of average catch statistics and total anglers from the 2018 Angler Survey Box for Frog, Winnemucca, Round Top, and Fourth of July Lakes.

Lake	Fish Landed	Total Anglers	Catch per Angler
Frog	2	4	0.5
Winnemucca	12	5	2.4
Round Top	0	1	0.0
Fourth of July	14	4	3.5
Total	28	14	

Anglers used either bait, lures, or flies while fishing the four lakes (Table 2). At Frog Lake, one angler who did not record their angling method caught two fish. Three anglers at Frog Lake used lures, but caught zero fish. Bait anglers at Winnemucca Lake had the highest catch per angler average (3.0) for any specific gear method. Lure, fly, and no recorded angling method anglers all had a 2.0 catch per angler average at Winnemucca Lake. There was only one angler that fished at Round Top Lake. This angler used bait and caught zero fish. The four anglers that fished Fourth of July Lake all fished using flies, resulting in a 3.5 catch per angler and the highest catch per angler average of the four lakes.

Table 2. The frequency of anglers that used each angling method and their corresponding catch rates from 2018.

	Frog Lake		Winnemucca Lake		Round Top Lake		Fourth of July Lake	
	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	0	NA	2	3.0	1	0.0	0	NA
Lure	3	0.0	1	2.0	0	NA	0	NA
Fly	0	NA	1	2.0	0	NA	4	3.5
Not Recorded	1	2.0	1	2.0	0	NA	0	NA
Total	4		5		1		4	

One hundred percent (n = 28) of the landed fish measured at Frog, Winnemucca, and Fourth of July Lake were less than 14.0 inches (in.) in total length (Figure 2). The modal size class for RT at Frog Lake was both the 10.0 – 11.9 and 12.0 – 13.9 in. size classes (n = 1). The modal size class for both RT and BK at Winnemucca Lake was the 10.0 – 11.9 in. size class (n = 1, RT; n = 4, BK). The modal size class for RT at Fourth of July Lake was the 8.0 – 9.9 in. size class (n = 2). The modal size class for BK at Fourth of July Lake was the 6.0 – 7.9 in. size class (n = 5).

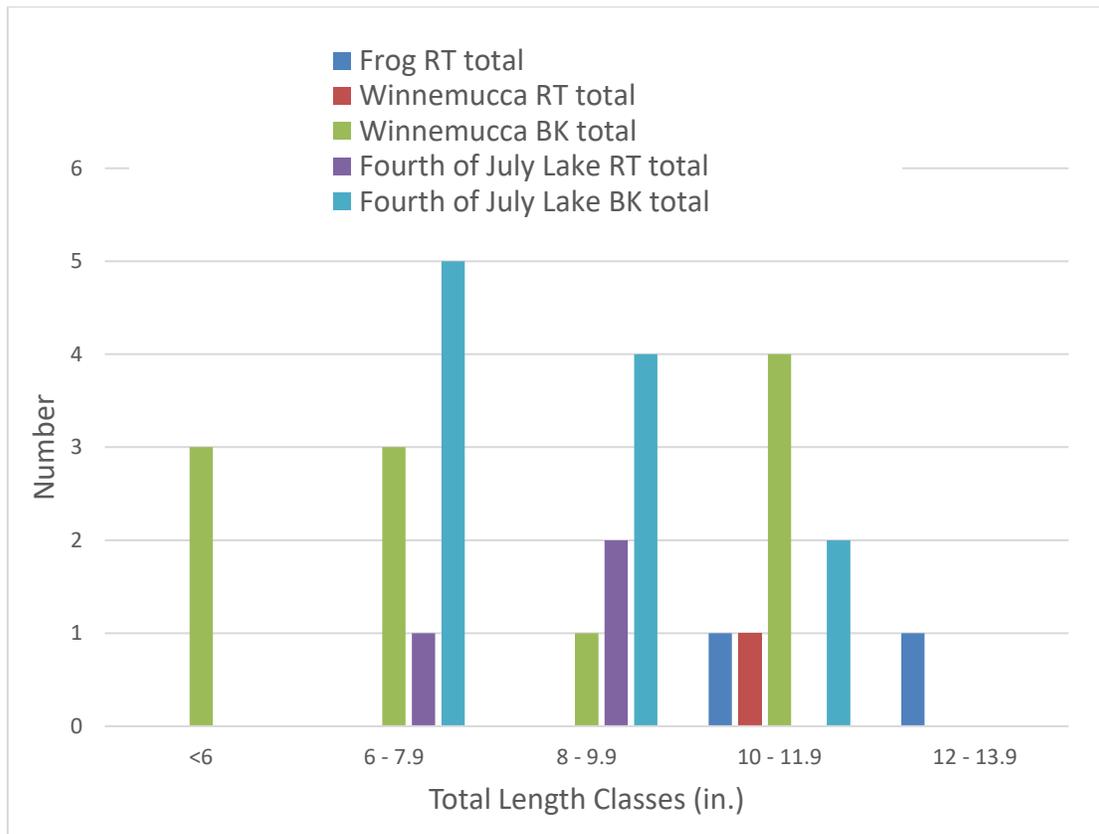


Figure 2. Frequency of fish in each size class that anglers reported landing at Frog, Winnemucca, and Fourth of July Lakes in 2018.

Twenty-eight fish were landed between Frog, Winnemucca, and Fourth of July Lakes. Of all fish landed, 23 (82.1%) were released. Approximately 66.7% of all RT caught were kept, while 4.5% of all BK caught were kept (Table 3).

Table 3. Kept and released fish from Frog, Winnemucca, and Fourth of July Lakes in 2018.

Species	Kept			Released			Total Percent	
	Lake			Lake			Kept	Released
	Frog	Winnemucca	Fourth of July	Frog	Winnemucca	Fourth of July		
RT	0	1	3	2	0	0	66.7%	33.3%
BK	0	1	0	0	10	11	4.5%	95.5%
Total	0	2	3	2	10	11		

Anglers had a positive average response to their overall fishing experience at all four lakes with the highest value (2.00) at Frog Lake (Table 4). Average satisfaction with size and number of fish were also positive for Frog, Winnemucca, and Fourth of July Lakes. Since no fish were reported caught from Round Top Lake, no size and number satisfaction averages were made.

Table 4. Angler satisfaction response averages for Frog, Winnemucca, Round Top, and Fourth of July Lakes in 2018. No average size of fish and number of fish were calculated for Round Top Lake due to no fish being caught.

Lake	Overall angling experience	Size of fish	Number of fish
Frog	2.00	1.00	1.00
Winnemucca	1.80	1.00	1.40
Round Top	1.00	NA	NA
Fourth of July	1.00	0.50	1.25

Discussion

The 2018 ASB results reflect anglers caught a various amount of fish per day, except at Round Top Lake where no fish were caught. The greatest number of fish were caught at Fourth of July Lake (n=14). Fourth of July also had the highest catch per angler value (3.5). Fourth of July has not had a stocking since 1982, when KS were stocked. No RT have been stocked since 1979 and BK since 1964. Between the BK reported caught and an age and growth study by CDFW in 2018 (Ewing 2018) for BK in Fourth of July, it suggests that Fourth of July Lake has a self-sustaining population of RT and BK (High Mountain Lakes (HML) Database). No recent

observations of LCT or KS suggests they are no longer present in Fourth of July Lake. Winnemucca Lake had the second highest number of trout caught (n=12) and second highest catch per angler average. Winnemucca Lake was historically stocked with BK, LCT, and RT and appears to mainly have a self-sustaining BK population; however RT are still present at a low density. Frog and Round Top Lakes had few fish caught in 2018. Frog and Round Top Lakes recently were added to the statewide stocking allotment, receiving aerial fingerling stockings in 2017 and 2018. It is possible that these fish need additional years for to grow to a catchable size for anglers to recognize them as a backcountry sport-fishery.

Catch per angler for anglers using flies was higher than other forms of identified gear at Fourth of July Lake as well as at any other lake in 2018. Fly angling was also the only identified gear used at Fourth of July Lake. Anglers using bait at Winnemucca Lake had the second highest catch per angler value out of the four lakes. The hike to Winnemucca Lake from the Carson Pass trailhead is approximately three miles. This hike may attract the passive, bait angler compared to the longer, steeper hike into Fourth of July, attracting the more active (lure and fly) angler. The ASB survey showed that 79% of all fish caught from all four lakes were BK. This is consistent with the stocking records, however the small number of RT that were caught at the recently stocked Frog and Round Top Lakes may be a concern. Frog and Round Top Lakes appear to be fairly shallow, which may be causing winter kills and inhibiting RT growth. A gillnet survey by CDFW in 2012 measured 2.1 meters in Round Top Lake at the ending spot of the net (HML Database). Future years' of ASB surveys will likely reflect the RT fishery as a whole for these two lakes (Appendix 1).

The greatest number of fish caught from all four lakes were in the 6.0 - 7.9 in. size class. The majority of BK caught were under 10.0 in., which may explain why anglers released 95.5% of their catch in 2018. Approximately 67% of RT caught were kept, although half of the RT kept were under 10.0 inches. It is possible the kept RT suffered hooking injuries in which the angler decided that releasing them would not likely result in their recovery. Winnemucca and Fourth of July Lakes are self-sustaining waters, with no supplemental stockings, and only effective if post-release mortality rates are low (Muoneke and Childress 1994; Noble and Jones 1999; Bartholomew and Bohnsack 2005). One hundred percent of fish caught in 2018 were less than 14.0 inches, which may suggest a stunted population. The trout may be limited to their growth due to population density and biomass, which vary with landscape variables such as surficial geology, catchment area, and land use (Blann 2000, 2004; Nerbonne and Vondracek 2001; Zimmerman et al. 2003). It does not appear that anglers are catching any larger-size trout from Frog and any trout at Round Top Lake. It is possible the fingerling-sized fish are having a difficult time overwintering, the forage base is not sufficient to sustain survival at these high elevation lakes, and/or the fingerling-size fish have a difficult time switching over to surviving on their own compared to being fed in the hatchery.

The primary objective when managing recreational fisheries is often to improve the quality of fishing or optimize human benefit (Pollock et al. 1994; Weithman 1999). Anglers were satisfied with their overall fishing experience, size, and number of fish they were catching at all the lakes surveyed except Round Top, which had no fish caught. The probability of an increase in angler satisfaction rating was positively related to the mean length and number of fish caught (McCormick and Porter 2014). Future data collected from the ASB may help indicate any possible trends with the satisfaction of the size and number of landed trout. Angler trip satisfaction can be influenced by factors other than fishing success (McCormick and Porter 2014), but anglers satisfied with the size and number of trout caught at these four lakes may have played a large role in the positive overall fishing experience value. It is also possible that the anglers' overall fishing experience success with their fishing trip may have been unrelated to the fishing itself, but instead be due to outside factors, such as weather, fishing access, lack of crowds, scenery.

It is possible many anglers are not aware of the recent stocking additions along the Carson Pass Trail and have not fished Frog and Round Top Lakes of late. The number of respondents for all four lakes in 2018 was only 14. Having more respondents in 2019 may provide CDFW with a better representation of the fishery than the number collected in the inaugural year. Ideally, the more respondents, the more feedback it provides CDFW on angler success at the fisheries. 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 around Alpine County. Anglers are likely getting reacquainted with the fisheries and ASB program, especially considering the recent restocking and since 2018 was the first year of an ASB at the Carson Pass.

Recommendations

- When possible, CDFW should continue to encourage anglers to fill out the ASB forms.
- Collect a minimum of five years' worth of ASB data to look at fishery trends over time. Data will help CDFW gather a more accurate information on the Carson Pass Trail fishery.
- Continue to stock Frog and Round Top Lake for the next five years, at least.

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Appendix 1.

The California Department of Fish and Wildlife is conducting an evaluation of the fisheries at Frog, Winnemucca, Round Top, and Fourth of July Lakes. 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 the specific lake by one angler only.

Circle the Lake fished at:

Frog Winnemucca Round Top Fourth of July

Date Fished: _____
mm/dd/yyyy

Primary gear type used (check one):
 Lure Bait Fly

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

Size	Rainbow trout		Brook trout	
	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"				

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

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

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

