

State of California
The Resources Agency
Department of Fish and Wildlife

East Fork Carson River 2019 Snorkel Survey



E. Carson River, Jan. 2019 (B. Ewing)

Ben Ewing
District Fisheries Biologist
Alpine, Amador, Calaveras, and Lake Counties
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Introduction

On September 11, 2019, the California Department of Fish and Wildlife (Department) conducted a snorkel survey on the East Fork Carson River (EFCR) in Alpine County. The EFCR is an east slope-draining river, originating in the Carson Iceberg Wilderness in California then flowing northward into Nevada. The Department manages the EFCR as both a “put and take” trout water and a California Fish and Game Commission designated Wild Trout Water. During the 2019 snorkel survey, the designated Wild Trout Water section was from Hangman’s Bridge near Markleeville, extending downstream to the Nevada State line. However, that section was decommissioned in 2021 and moved to the EFCR above the confluence with Wolf Creek and below Carson Falls.

Wild Trout Waters must meet the following criteria: (1) open to public angling; (2) able to support, with appropriate angling regulations, wild trout populations of sufficient magnitude to provide satisfactory trout catches in terms of number or size of fish; and (3) domestic strains of catchable-size trout shall not be planted but suitable hatchery-produced wild or semi-wild strains may be planted in designated waters, but only if necessary to supplement natural reproduction (<https://wildlife.ca.gov/Fishing/Inland/Trout-Waters/Definitions>).

The Department’s hatcheries raise catchable-size Rainbow Trout (RT) (*Oncorhynchus mykiss*), and sub-catchable size Lahontan Cutthroat Trout (LCT) (*Oncorhynchus clarkii henshawi*), which are stocked throughout the EFCR between Hangman’s Bridge and the Wolf Creek confluence. The Department also stocks trophy-size LCT that are collected from the Heenan Lake broodstock. Alpine County also stocks catchable to trophy-sized RT in the EFCR. Historically, LCT and Mountain Whitefish (MWF) (*Prosopium williamsoni*), were the native game fish found in the EFCR. Due to previous Department stocking events, Brook Trout (BK) (*Salvelinus fontinalis*) and Brown Trout (BN) (*Salmo trutta*), can also be found in the EFCR.

Methods

Direct observations were conducted to count all fish observed through snorkeling (Flosi et al. 2010). Observations were done by having two snorkelers evenly spaced across the EFCR, swim upstream (**Figure 1**). The snorkeled section began at 38.722101 N, 119.756775 W and ended at 38.71413 N, 119.76557 W (**Figure 2**). The start time was 09:45 and the end time was 14:30. Water temperature was 48°F at 09:20. Total time actually spent snorkeling by two Department staff was 160 minutes. All observed fish were identified to species and sorted into five total length size classes: < 1 inch (in.) young of the year (YOY); 1 – 5.9 in. (Small); 6 – 11.9 in. (Medium); 12 – 17.9 in. (Large); and ≥ 18 in. (Extra – Large). Any unidentified species and their estimated size classes were recorded under unknown species (Hanson 2018). Department staff

also recorded start and stop times, Global Positioning System (GPS) coordinates, and water temperature. Number of fish observed per minute would be calculated for each sampling section. This information, combined with historical stocking data, will assist the Department with future management decisions.



Figure 1. Looking upstream on the East Fork Carson River within the survey transect conducted on 9/11/2019 (B.Ewing).

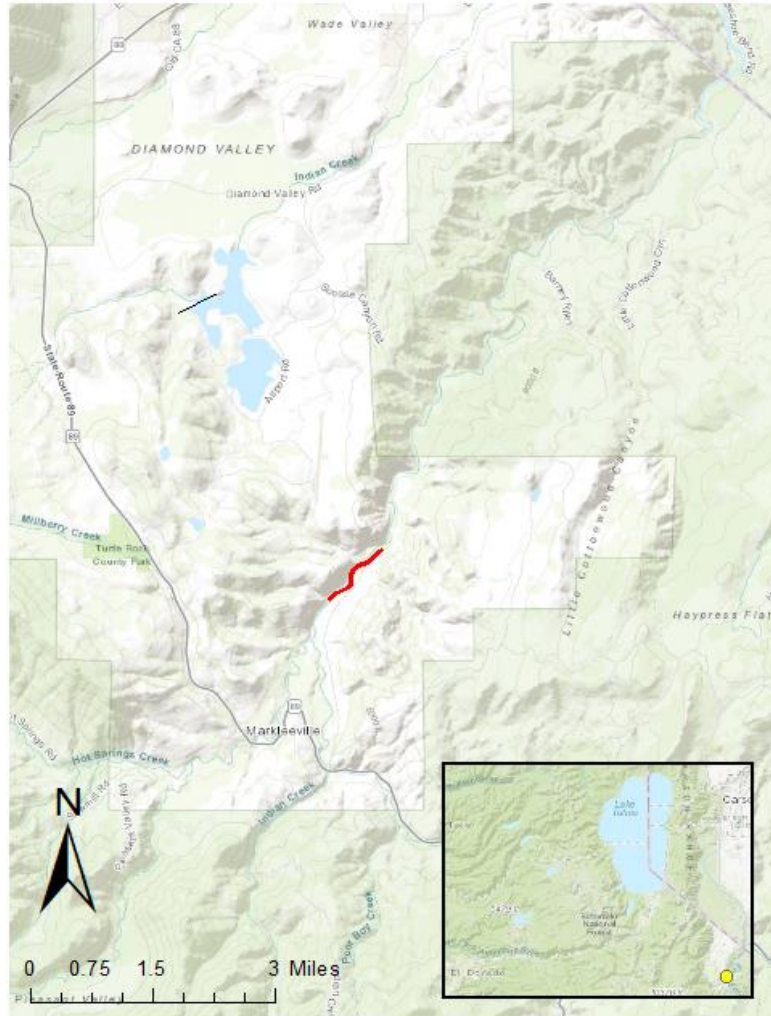


Figure 2. The transect (in red) sampled by snorkeling on the East Fork Carson River (EFCR) on 9/11/2019. The yellow dot shown in the inset map indicates the location of the EFCR snorkel transect in relation to central California.

Results

A total of 154 fish, representing five different species were observed for a 0.96 fish per minute value (**Table 1**). RT represented 84.4% of fish observed. MWF represented 8.4% of fish observed. Sucker and Sculpin species made up 3.9% and 1.9% of fish observed, respectively. BN represented 1.3% of observed fish.

Table 1. Number of species and sizes seen on the East Fork Carson River on September 11, 2019.

	Size Class	RT	MWF	Sucker	Sculpin	BN	
YOY	< 1 in.	4		1			
Small	1-5.9 in.	41	1	2	3		
Med	6 - 11.9	64	4				
Large	12 - 17.9	20	8	3		1	
XL	>18	1				1	Total
Total		130	13	6	3	2	154
Percent of Total Catch		84.4%	8.4%	3.9%	1.9%	1.3%	
Fish per minute		0.96					

Rainbow Trout

RT total length ranged from <1 in. – > 18 in. size classes. The size class with the highest frequency was 6.0 – 11.9 in. (Medium). This indicates they are likely two to three year–old fish (Moyle 2002). The length frequency distribution shows a RT population in which the majority of fish measured were greater than 6 in. (**Figure 3**).

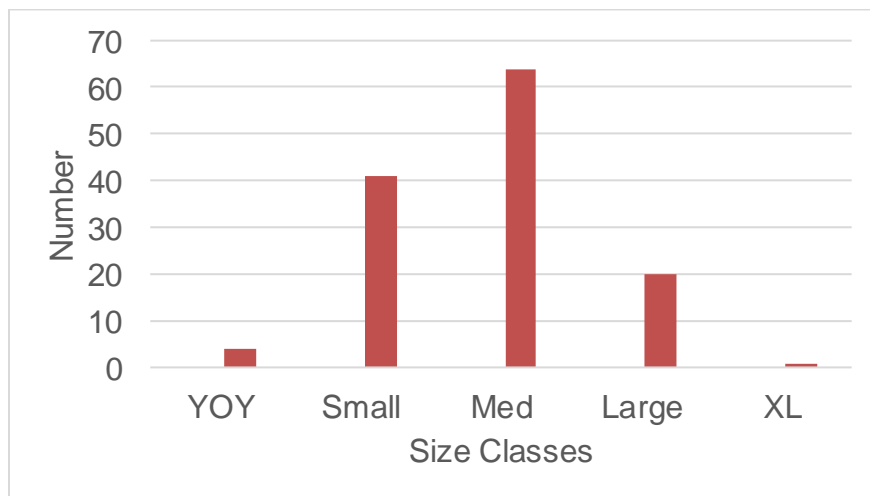


Figure 3. Number and size classes of Rainbow Trout observed during the snorkel survey of East Fork Carson River on 9/11/2019.

Mountain Whitefish

MWF total length ranged from <1 in. – 17.9 in. size classes. The size class with the highest frequency was 12.0 – 17.9 in. (Large) which were likely five to ten year-old

fish (Moyle 2002). The length frequency distribution shows a MWF population in which the majority of fish measured were greater than 6 in. (**Figure 4**).

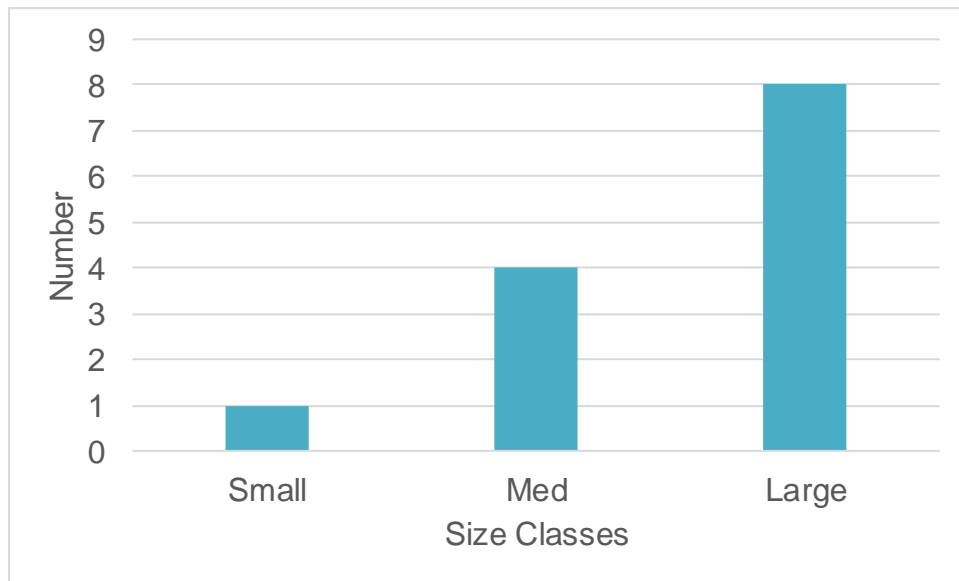


Figure 4. Number and size classes of Mountain Whitefish observed during snorkel survey on East Carson River on 9/11/2019.

Other Species

Six unidentified Sucker species were observed, ranging from the <6 in. – 17.9 in. size classes, with the greatest number collected in the 12.0 in. – 17.9 in. (Large) class.

Three Sculpin species were observed, all in the 1.0 in. – 5.9 in. (Small) size class.

Two BN were observed, one in the 12.0 in. – 17.9 in. (Large) size class and one in the >18.0 in. (Extra Large) size class.

Discussion

Results from the transect sampled in the EFCR indicate a diversity of fish species present, and many different size classes present among those species. The sizes of trout observed indicate successful spawning and rearing occurs, since the Department and the County do not stock small-sized RT and BN have not been stocked for over 25 years.

The low number of BN observed during the snorkel survey suggest that the resident population is very small. The 2019 Angler Survey Box (ASB) data on the EFCR also suggests the population is small, since BN only made up 7.6% (n=31) of total fish caught by anglers (CDFW, Unpublished data).

Historically, angling success on the EFCR between Hangman's Bridge and the Nevada State Line has been heavily reliant on the wild trout population; therefore the Department had a zero-bag limit and artificial lure/fly with barbless hook restrictions at the time of the snorkel survey. In the spring of 2021, the Department removed the Wild Trout Water designation from the section between Hangman's Bridge and the Nevada State Line. The reasoning behind this decision was based on the opinion that the segment above Hangman's Bridge had a heavy influence of "stocked" fish, which would move into the Wild Trout section. Due to this decision, the Department changed the regulations to a two fish bag limit, 14 in. minimum size limit, and artificial lure/fly with barbless hooks which will apply year-round. This new regulation was made to allow take of hatchery fish, which are likely to be over 14 in., but protect many of the wild trout, which are generally under 14 in.

None of the trout observed during the survey appeared to be of hatchery origin. All observed fish had fins with sharp edges and non-rounded faces.

A portion of anglers have let CDFW know during public outreach for the recent regulation changes that a switch to a fishery that would allow take would be extremely detrimental to the local economy since it would deter some catch and release- only anglers. These anglers felt that much of the EFCR's main draw was the large wild trout population with minimal hatchery influence below Hangman's Bridge. The local town of Markleeville depends on the large numbers of anglers and heavy fishing pressure supported by the EFCR. With the 2021 regulation change on the EFCR, anglers are concerned that the fishery will not be able to sustain any harvest.

The Department will continue to monitor the EFCR fishery by both snorkel surveys and ASB analysis due to the importance of this recreational fishery as well as the change in the 2021 regulations. These snorkel surveys and ASB analysis' will be used for yearly comparisons of pre- and post-2021 regulation changes in future reports.

Recommendations

- Continue to monitor the three ASBs along the EFCR below Hangman's Bridge to increase accuracy in angler effort calculations.
- Continue to snorkel EFCR below Hangman's Bridge, preferably in the same transect for consistency on an annual basis.

References

Flosi, G., S. Downie, J. Hopelain, M. Bird, R. Coey, and B. Collins. 2010. California Salmonid Stream Habitat Restoration Manual. 4th Edition. State of California Resources Agency. Department of Fish and Wildlife. Inland Fisheries Division.

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