



# Swan River

## Fishery Survey Report

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Location of lower survey reach

This report summarizes the results of three fish population surveys that CPW staff and Summit County personnel have conducted on the Swan River near Breckenridge, in coordination with the Swan River Restoration Project.

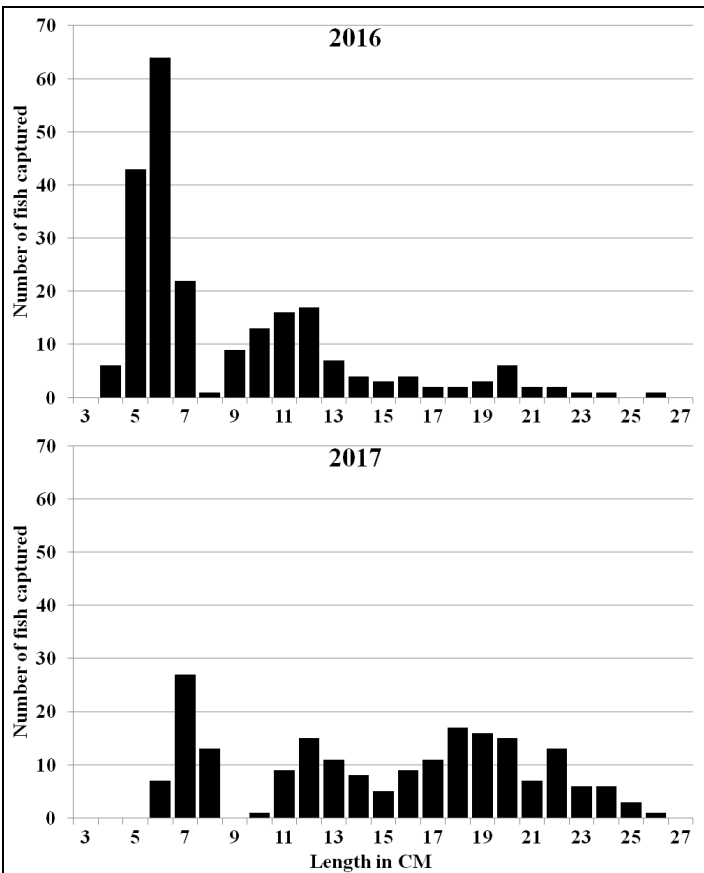
Surveys have been conducted at two sites. The lower reach, pictured at left, is on Summit County Open Space property downstream of the restoration reach. The upstream terminus of this site is approximately 500 feet downstream of the Muggins Gulch Road crossing. This site serves as a “control” reach to compare with the restored section upstream and help to inform reasonable expectations for the biological potential of the restored reach.

The upper site is within the Restoration Project area and lies approximately 0.5 miles upstream of the lower reach (pictured on the following page). Restoration work on this section was completed in November of 2016. This is a unique stream restoration project in the sense that there was no functional stream channel prior to completion of the project. For all three surveys discussed in this report, We used two backpack electrofishers to conduct a two-pass depletion estimate of the fish population within that reach. All fish were measured. A subset of the fish were weighed, and all fish were returned to the water immediately upon completion of data collection. Aside from incidental occurrence of other species (we captured one cutthroat in 2017 on the lower reach) brook trout comprise the entire trout population of these reaches.

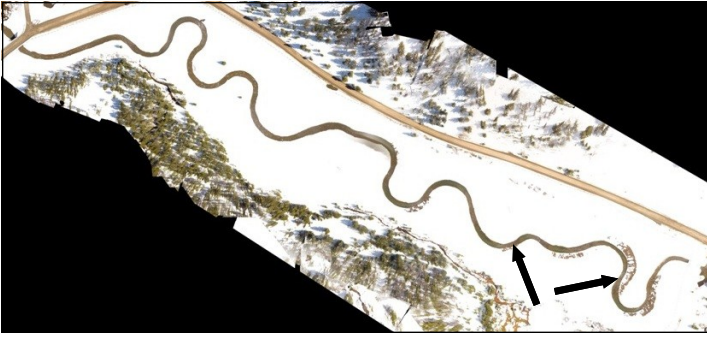
The lower reach measures 464 feet in length and 15.8 feet in average width. This is a free-flowing section bounded on both ends by beaver pond complexes. The upstream terminus of the reach is a beaver dam.

Population estimates for all three surveys are displayed in the table at left. The two estimates derived from the lower reach vary widely. The size distribution of brook trout captured in the lower reach is displayed at left and offers some insight as to why the estimates were so different. In 2016, few adult fish (>15 cm) occupied the reach, while in 2017 adult fish dominated the reach. This is likely a function of the dates of the surveys. Being a fall-spawning fish, adult brook trout probably move upstream out of the nearby beaver ponds in search of spawning habitat. In 2016, the adult fish had probably not made this movement yet, but the 2017 survey took place approximately two weeks later. Based on the condition of the mature females that we handled, it appeared that we visited the site approximately one week prior to the peak of spawn in 2017. In the future, we will place higher priority on conducting the survey on consistent dates in order to produce results that are more comparable.

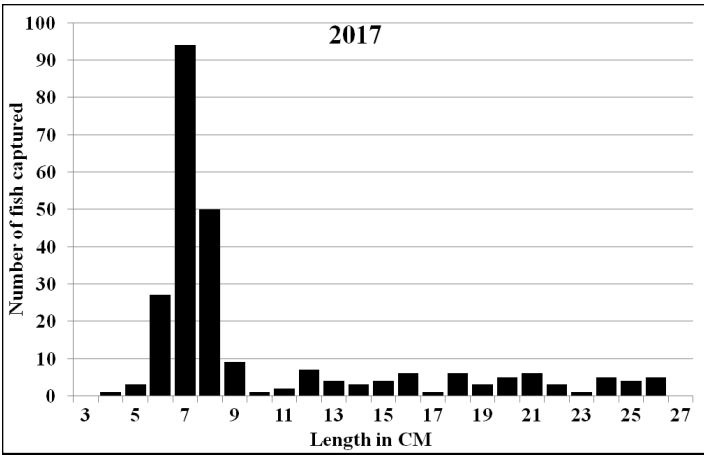
	Date	Brook trout		# sculpin captured
		#>6"/mile	Lbs./surface acre	
Lower reach	9/20/2016	308	31	152
	10/4/2017	1,295	148	73
Upper reach	10/4/2017	505	59	3



Size distribution of brook trout captured in lower reach



Restoration reach with electrofishing station indicated by arrows. Photo by Jeremy Webber.



Size distribution of brook trout captured in the upper reach



Electrofishing crew on the upper reach. Photo by Jason Lederer

It is interesting to note that the 2017 survey at the lower site found significantly fewer small fish—both juvenile brook trout (averaging 5-8 cm) and mottled sculpin. Mottled sculpin are a small native fish species and are an important indicator of stream health. This reach contains the highest density of mottled sculpin that we have found to date anywhere upstream of Dillon Reservoir.

There are two possible reasons for the difference in abundance of these two groups of fish. The first and most likely is that territorial behavior of spawning adult fish in 2017 temporarily displaced the smaller fish out of the survey reach. The second is that the disturbance upstream caused by the restoration project had some stressful effect on the downstream fish population. Future surveys will provide more insight to help answer this question. In addition, this area would be a good candidate for water quality monitoring through Colorado’s River Watch program, if there is interest among a local volunteer group to do so.

The location of the upper reach is displayed at left. The reach that we surveyed is 567 feet in length and averaged 18.9 feet in width. It encompassed multiple newly constructed riffle-pool-run sequences. Population estimates appear on the previous page. Because the restoration project constructed an entirely new channel, all fish occupying this reach had to be migrants from either upstream or downstream. No fish have been stocked. The three sculpin that we captured probably migrated from downstream because the species is not known to occur upstream of this point in the Swan River drainage.

The size distribution of brook trout captured in the upper reach is displayed at left. We captured a wide size range of adult fish up to 268 mm (10.6”) in length. The very prolific juvenile population most likely drifted in from upstream locations during the 2017 runoff season, which is a common dispersion route for young trout. It is unlikely that adult brook trout successfully spawned here in fall 2016 because in-channel construction concluded in early November, and the stream channel was connected at this time — approximately a month later than we estimate the peak of brook trout spawning activity. Regardless, the fish occupying the reach represent the auspicious beginnings of a good recreational brook trout fishery.

CPW plans to continue monitoring these reaches on an annual basis in the immediate future in order to document the success of restoration efforts.