



# Meadow Creek Reservoir

Fishery Management Report  
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## Introduction

Meadow Creek Reservoir (MCR) is a small (104 acres) impoundment at an elevation of 9,947 feet approximately ten miles east of Tabernash, CO. The reservoir provides municipal water supply to Front Range cities, and is connected to the Moffat Tunnel Collection system operated by the Denver Water Board. Recreational use of the lake is managed as part of the Arapaho National Recreation Area, administered by Arapaho National Forest. ANRA use fees apply. There is a permit kiosk on the road immediately below the reservoir. By Forest Service regulation, motorized boating is not allowed.

## Regulations

Beginning in 2021, all Tiger Trout less than 18" must be immediately released. The bag and possession limit for Tiger Trout is one fish larger than 18". MCR has hosted an overabundance of stunted Brook Trout for many years. The purpose of the new Tiger Trout regulation is to allow this species to grow to a size at which it will effectively prey on the overpopulation of stunted Brook Trout. Because of this overpopulation, anglers are also encouraged to take advantage of the additional statewide bag limit for Brook Trout, which allows for an additional limit of 10 Brook Trout, 8 inches or less in length.

## Stocking

CPW has always stocked catchable Rainbow Trout in MCR to provide immediate recreational opportunity



Figure 1. Meadow Creek Reservoir. Gillnet sampling locations indicated by red markers.

Table 1. CPW stocking in Meadow Creek Reservoir 2014-2020.

	<b>Rainbow Trout (10")</b>	<b>Tiger Trout (3-4")</b>
<b>2014</b>	5,130	2,042
<b>2015</b>	3,411	
<b>2016</b>	3,260	3,037
<b>2017</b>	3,722	
<b>2018</b>	3,400	2,004
<b>2019</b>	3,856	
<b>2020</b>	3,000	2,326



Figure 2. The largest Tiger Trout from 2017, 17.6", 1.8 lbs.

(Table 1). Prior to 2008, Colorado River Cutthroat Trout were also stocked annually. Sampling in 2007 and subsequent years revealed that no recruitment of these stocked Cutthroat had occurred, so we ceased stocking them. Catchable Rainbow stocking continued, and in 2014 Tiger Trout were stocked for the first time because of their potential to exploit the stunted Brook Trout as a prey base. Tiger Trout are a sterile hybrid cross between Brown Trout and Brook Trout. Sterile predators such as this are highly useful in management of this type of fishery because there is no risk that they will overpopulate and exceed their prey base. However, also due the inability of Tiger Trout to reproduce, in order to maintain the population at a desirable level, regular stocking is necessary.

### Fishery Surveys

CPW conducted gillnet surveys sporadically on MCR before 2015. We have conducted surveys annually the past six years in order to monitor the success of Tiger Trout stocking, fine tune stocking rates, and assess the need for a protective regulation for this species. Surveys consist of setting four 150' standard gillnets overnight for one night in the locations shown in Figure 1 (page 1). All of the surveys discussed here were conducted between the dates of June 18 and July 9 of the given year. In 2020, we did not set a gillnet at the location closest to the dam because of heavy public angling traffic using that area at the time of our survey.

Tiger Trout have averaged 33% of the gillnet catch in the four most recent surveys (Figure 3). Rainbow Trout were also captured in these surveys, however they were obviously stocked that summer and carryover fish from previous years' stocking are rarely seen. Therefore they are not included in Figure 3.

In all years, Brook Trout greater than 11" were rare in

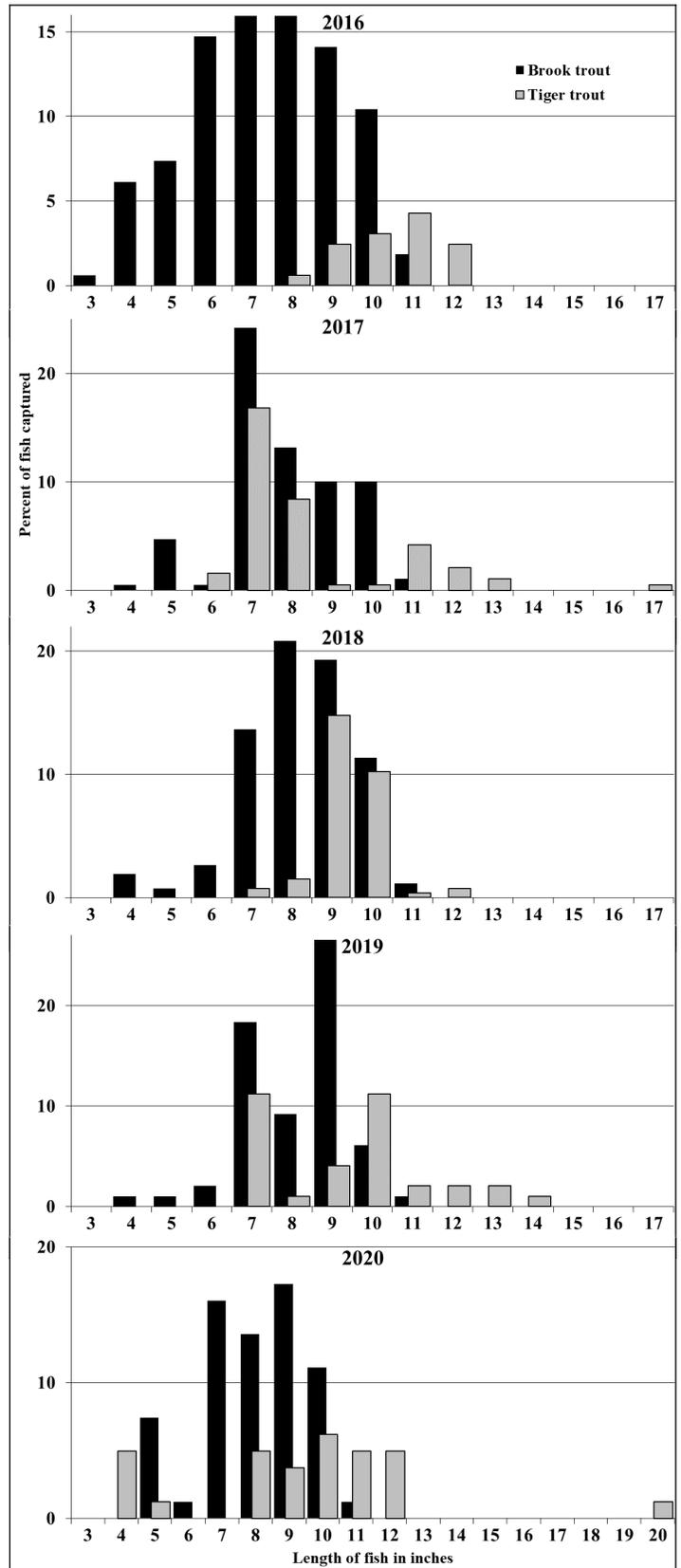


Figure 4. Size distribution of Brook and Tiger Trout captured in gillnet surveys, Meadow Creek Reservoir 2016-2020.

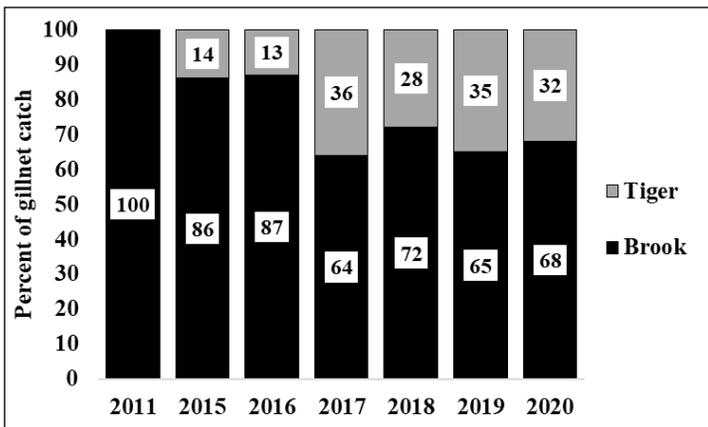


Figure 3. Gillnet catch of Tiger and Brook Trout by percent contribution, 2011-2020. Recently stocked catchable Rainbow Trout were also captured in these surveys but are not included.

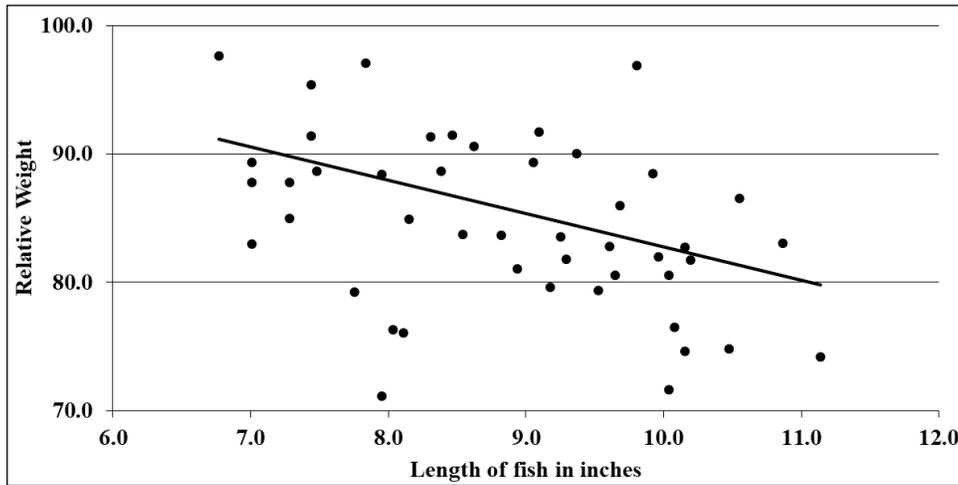


Figure 5. Relationship between Brook Trout size and body condition in Meadow Creek Reservoir, 2020.

our surveys (Figure 4, right) and we have never captured a Brook Trout measuring 12” or larger in MCR.

The first batch of Tiger Trout, stocked in 2014, averaged 3.7” when stocked. The 2015 survey revealed that they had survived, and their average length after one year was 8.0”, with some individuals nearly 10”.

In 2016, the 2014 Tiger Trout averaged 10.8”. This suggested a slower growth rate (2.8” avg.) than their first year in the lake, but this is common among trout species. The largest individual captured in 2016 was 12.4”. Based on stomach contents, we did not yet observe any evidence of Brook Trout predation by Tiger Trout, but we did not expect to see Tiger Trout become predatory until they were larger than 12”.

The 2017 survey was the first to document two year classes of Tiger Trout in MCR — the batch stocked in 2014 and the second batch stocked in 2016. For the first

Table 2. Body condition information for Brook Trout in MCR. Avg. Wr includes Relative Weight for all fish in the sample. The following two columns divide the sample into the fish smaller and larger than the median size, respectively.

	Median Size (in)	Avg. Wr	Avg. Wr for <50%	Avg. Wr for >50%	difference
2015	9.4	84.4	90.0	79.0	-11.0
2016	8.3	84.6	87.0	82.1	-4.9
2017	8.4	75.9	78.3	73.2	-5.1
2018	9.1	88.8	94.5	83.0	-11.5
2019	9.2	81.2	84.5	77.8	-6.7
2020	8.9	85.8	88.0	83.7	-4.3



Figure 6. The largest Tiger Trout that we captured in 2020, measuring 20.3” and weighing 3.3 pounds. This is the largest fish that CPW has ever collected at Meadow Creek Reservoir.

time we observed small Brook Trout in the stomach of one of the larger Tiger Trout, and we captured a 17” Tiger Trout (Figure 2, page 1). This fish had clearly switched to piscivory and had accomplished an exceptional growth rate for a 3-year-old fish. This was also the largest fish that we had captured to date at MCR. The growth rate of the fish stocked in 2016 appeared very similar to the 2014 year class, averaging 7-8” after one year in the lake.

The 2018 results were disappointing in that we did not capture any Tiger Trout from the 2014 plant. The 2017 results seemed to suggest that a healthy number of 2014 fish were poised to make the prey switch and show accelerated growth. The absence of these fish was a clear setback in our attempt to establish this population. The 2016 plant was present in good numbers, averaging 9-10”.

In 2019, we moved the net closest to the dam and set it in the middle of the lake at a depth of 44 feet. The purpose of moving the location of this net was to determine if the 2014 year class was still present but had changed their behavior and distribution to deeper water. That net caught zero fish.

The 2019 Tiger Trout catch followed a similar pattern to the one we observed in 2017 — two year classes present (stocked in 2016 and 2018), with the larger fish appearing to be on the verge of switching diets. However, we did not see any evidence of piscivory and larger fish were relatively rare. Also, in 2019 we confirmed the absence of the 2014 year class, which is a concern.

In 2020, we captured a 20.3” Tiger Trout which weighed 3.3 pounds, a new record for these surveys (Figure 6). We again captured multiple size groups of

Tiger Trout but few fish larger than 12”.

In all of our surveys, the body condition as measured by Relative Weight (“plumpness” on a scale of 100) of the Brook Trout in MCR has declined as the fish get larger (Figure 5 and Table 2, above). The largest 50% of the Brook Trout consistently had poorer body condition than the smallest 50%. This is strongly indicative of overpopulation, stunting and lack of adequate food for larger fish. One measure of success of the Tiger Trout management strategy is if future surveys reveal that this decline no longer occurs. This would indicate that the thinning effect of predation by Tiger Trout has brought the Brook Trout population into better balance with the prey that is available for them. Our 2020 survey revealed that the difference in body condition between the smaller half of the Brook Trout we captured and the larger half was the smallest that we have observed to date.

To date, we have seen a disappointing rate of recruitment of stocked Tiger Trout beyond the 10-12” size range, or their third year in the lake. This is a relatively aggressive and easy to catch species. It appears that the most likely explanation of the disappearance of year classes just as they are reaching a desirable size is that they were harvested by anglers. The historic scarcity of fish in MCR larger than 12” is known to anglers familiar with the lake, thus any fish larger than that size may be especially attractive to harvest. Thus, we believe that a conservative harvest regulation that protects Tiger Trout until they grow beyond the point of switching prey is needed here. This is the reason for the conservative harvest regulation effective in 2021.