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.

Standard statewide angling regulations apply at MCR. However, this lake has hosted an overabundance of stunt ed Brook Trout for many years. Therefore, anglers are encouraged to take advantage of the additional bag limit for this species, 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. 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 CPW ceased stocking Cutthroat. 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

<table>
<thead>
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<th>Year</th>
<th>Rainbow (10&quot;)</th>
<th>Tiger trout (3-4&quot;)</th>
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<tr>
<td>2014</td>
<td>5,130</td>
<td>2,042</td>
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<tr>
<td>2015</td>
<td>3,411</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>3,260</td>
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<td>2017</td>
<td>3,722</td>
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<td>2018</td>
<td>3,400</td>
<td>2,004</td>
</tr>
<tr>
<td>2019</td>
<td>3,856</td>
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Table 1. CPW stocking in Meadow Creek Reservoir 2014-2019.

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

Figure 2. The largest tiger trout from 2017, 17.6”, 1.8 lbs.
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 outstrip their prey base. However, also due to their inability 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 five 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 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.

Species composition of Brook and Tiger Trout in the gillnet catch is displayed in Figure 3 (below). 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 or nonexistent in 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 in the reservoir 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” on average) than their first year in the lake, but this is common among trout spe-

![Figure 4. Size distribution of Brook and Tiger Trout captured in gillnet surveys, Meadow Creek Reservoir 2015-2019.](image)

![Figure 3. Gillnet catch of Tiger and Brook Trout by percent contribution, 2011-2019. Recently stocked catchable Rainbow Trout were also captured in these surveys but are not included.](image)
cies. The largest individual captured in 2016 was 12.4”. We did not yet observe any evidence of Brook Trout predation by Tiger Trout, but we did not expect to see them become predatory until they were larger than 12”.

The 2017 survey was the first to document two year classes of Tiger Trout in the lake — the batch stocked in 2014 and the second batch stocked in 2016. For the first 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 of any species that we have 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 were 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.

Figure 5 displays the relationship of body condition (“plumpness”) and size of the Brook Trout from the past five surveys. The steep downward decline in body condition as fish get larger is strongly indicative of 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 these trend lines become level, or even reverse their slope upward. This may 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.

Tiger Trout are relatively aggressive and easy to catch. It appears that the most likely explanation of the disappearance of the 2014 year class just as they were 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. We intend to pursue such a regulation which would take effect in 2021.