Trout Population Surveys on the Colorado River, Town of Granby Property

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Introduction

This report summarizes the results of six fish population surveys conducted by Colorado Parks and Wildlife (CPW) aquatics staff, Town of Granby staff, and other local volunteers on two sites on the Colorado River on Town of Granby property adjacent to the Sun Outdoors RV resort near Granby. CPW began surveying these sites shortly after the Town of Granby acquired this parcel and began managing the river section for high-quality recreational fishing. Access for recreational fishing is currently managed by reservation through the Granby Recreation Department website.

The lower survey site is located approximately 1.25 river miles upstream from Windy Gap Reservoir. The two sites are separated by approximately 1,600 linear feet of river, roughly equally spaced upstream and downstream of the bridge over the Colorado River on this property (Figure 1). The lower site, downstream of the bridge, measures 630 feet long and 39.5 feet in average width. The upper site measures 493 feet in length and 57.8 feet in average width. The upstream end of both sites terminates at a steep riffle, in order to minimize the occurrence of fish leaving the reach while the surveys were conducted.

Since the East Troublesome fire in October of 2020, this section of the Colorado River has experienced periodic high-turbidity runoff events originating from Willow Creek Reservoir, which drains much of the burned area. The sediment that has been mobilized into this area appears to be extremely fine, possibly due to the "decanting" effect of water passing through the reservoir prior to flowing into this reach.

In response to the acquisition of this reach for public recreational angling, CPW stocked a total of 190,000 rainbow-cutthroat hybrid fingerlings averaging 3" in length on four separate occasions during the summers of 2017 and 2018. The purpose of stocking these fish was to add diversity to the recreational fishery. Stocking was discontinued after it was determined that recruitment and persistence of these stocked fish was poor (see below).

Methods

The survey crew used a bank-rig electrofishing array of five electrodes. Two-pass depletion estimates were generated by capturing all fish possible while wading the site from downstream to upstream twice. All fish captured on the first pass were held in a net pen while the crew completed a second pass. Species, length, and weight data were recorded for all fish. Beginning in 2020, these surveys were incorporated into the Windy Gap Fish Movement Study which is being carried out by CPW Aquatics Research personnel. Passive Integrated Transponder (PIT) electronic tags were implanted in nearly all fish handled from the 2020-2023 surveys in order to monitor their movements over time. Initial results from that ongoing study can be found in Fetherman et al. 2023. The purpose of this report is to describe population estimates, trends and other observations and does not address the fish movement study.

Figure 1. Locations of two survey reaches.

On all survey occasions, both sites were surveyed on the same day. The calendar dates of the surveys were matched as closely as possible in order to control for the variability of seasonal occupancy and movements. All surveys were completed between the dates of October 3 and October 5.

Results and Discussion

The biomass of brown trout at these sites was among the highest ever documented in any Grand County water (Figures 2Aand 3A). The same is true for the estimates of the density of brown trout greater than 14” (Figures 2B and 3B). These values far exceed the Gold Medal benchmark of at least 60 pounds per surface acre and 12 fish greater than 14” per surface acre. It is possible that much of the adult brown trout population documented in these surveys are seasonal migrants, moving into this reach from points downstream, and possibly from Windy Gap Reservoir, to spawn. In coming years the Windy Gap fish movement study will provide data to support or refute this hypothesis.

The 2023 survey of the upper site produced the lowest estimates to date of biomass and fish per mile, although the reduced estimates still represent an excellent fishery. This may be an effect of multiple years of reduced juvenile brown trout production (Figure 5, next page), possibly as a result of the increase in fine sediment inputs occurring since the East Troublesome fire. These findings correspond with similar observations of poor fry production that we have made in recent years in the Colorado River downstream of Windy Gap (See Fetherman et al. 2023).

The population estimates reveal the fact that rainbow trout have never made a major contribution to this fishery, generally comprising 10% or less of the trout population.

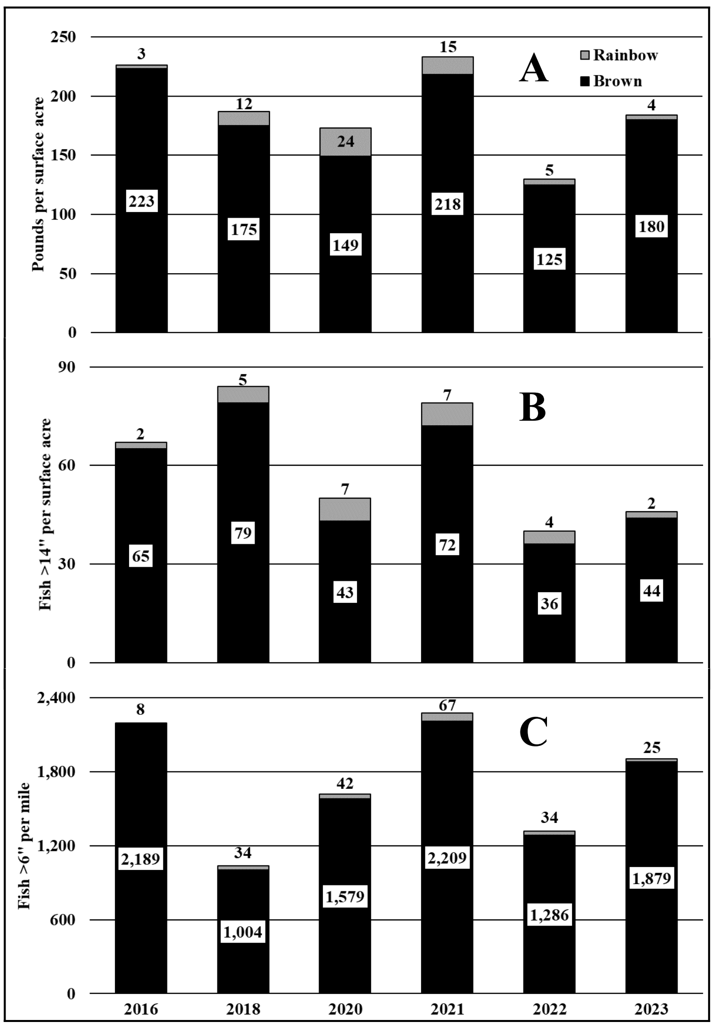

Figure 2. Trout population estimates from the Colorado River, Town of Granby lower site. (A) biomass in pounds of fish >6” per surface acre; (B) density of fish >14” per surface acre; (C) fish >6” per linear river mile.

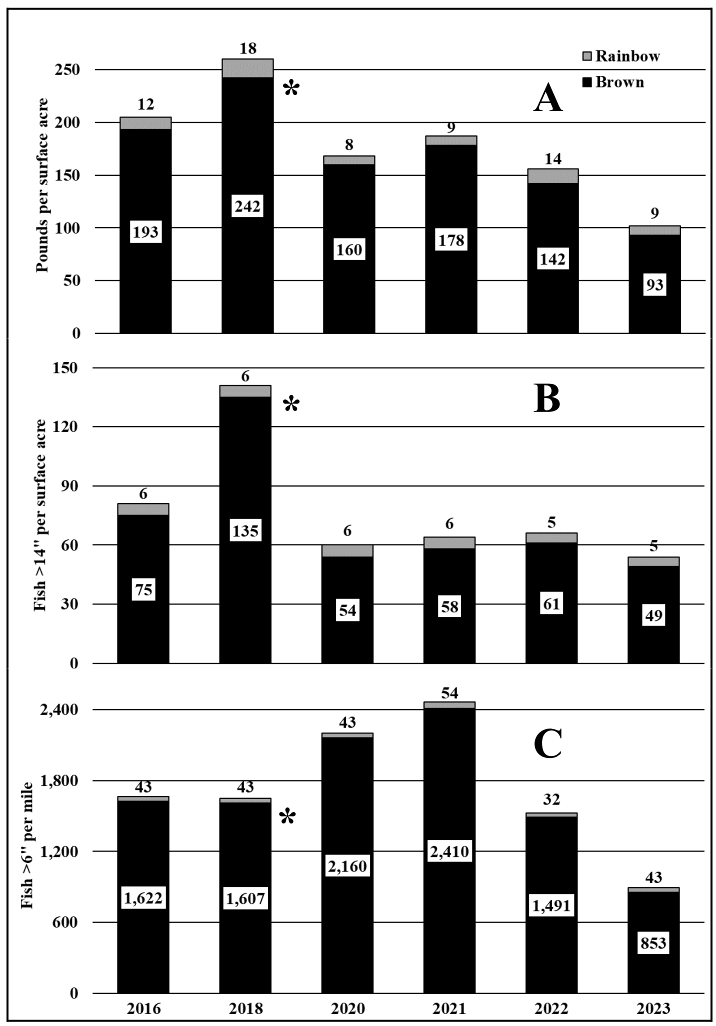

Figure 3. Trout population estimates from the Colorado River, Town of Granby upper site. (A) biomass in pounds of fish >6” per surface acre; (B) density of fish >14” per surface acre; (C) fish >6” per linear river mile. *The 2018 upper site estimates should not be considered reliable due to poor capture probability caused by difficult conditions during the survey.

As discussed above, stocking of this reach was discontinued after 2018 when it became obvious that the stocked fish were not persisting. However if we continue to observe reduced brown trout recruitment, this may present an opportunity to resume stocking of rainbow fingerlings at a time of presumably lower interspecific competition among juvenile trout and predation by adult trout. The small number of rainbow trout that we have captured in these surveys most likely originated as stocked fish in private waters upstream of these sites. We have not observed evidence of successful rainbow trout reproduction.

Sculpin are an important native small-bodied fish that serve as an indicator of good water quality and habitat conditions, in addition to offering an excellent prey source for larger trout. In comparison with our surveys prior to the East Troublesome fire, the three surveys we have completed since the fire captured fewer sculpin (average of 66 sculpin in 2016-2020; average of 30 sculpin 2021-2023, Figure 4). This is in all likelihood an indicator of habitat degradation caused by increased fine sediment inputs since the fire.

CPW intends to continue surveying these sites annually for the duration of the Windy Gap fish movement study and periodically beyond that in order to monitor the health of the fishery.

Acknowlegements

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Literature Cited

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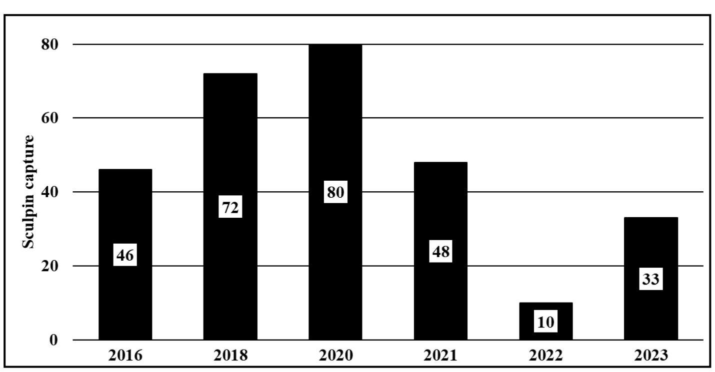

Figure 4. Number of sculpin captured in electrofishing surveys of the Colorado River, Town of Granby property 2018-2023. Capture from upper and lower sites is pooled.

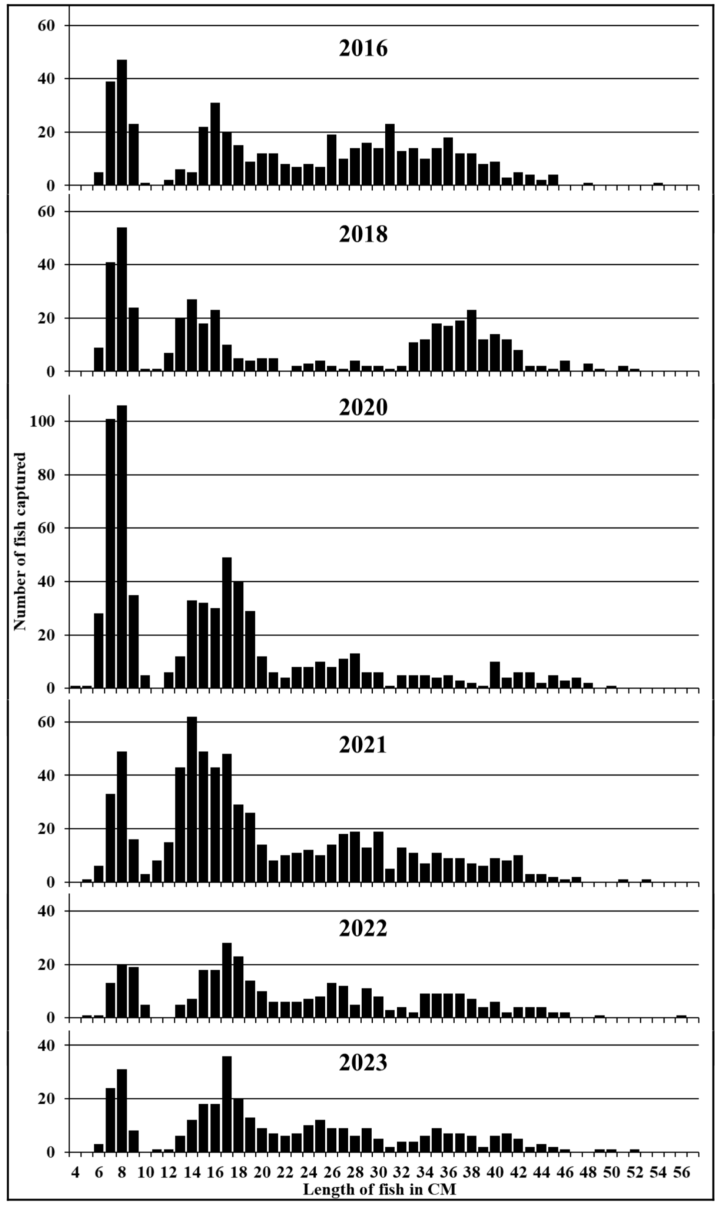

Figure 5. Size distribution of all brown trout captured in electrofishing surveys of the Colorado River, Town of Granby property 2018-2023. Capture from upper and lower sites is pooled.

Figure 6. The largest trout captured in the 2018 survey, a rainbow measuring 25" and 6.7 lbs.