

# UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2023 ANNUAL REPORT

PROJECT: 163

## **Project Title**

Monitoring multi-life stages of the fish community in the lower Gunnison and upper Colorado Rivers, with emphasis on Colorado pikeminnow and razorback sucker populations, in response to reoperation of the Aspinall Unit and implementation of the Selenium Management Plan.

## **Bureau of Reclamation Agreement Number:**

R20PG00024

## **Project/Grant Period:**

Start date: 10/01/2019

End date: 09/30/2024

Reporting period end date: 09/30/2023

Is this the final report? Yes  No

## **Principal Investigator:**

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## **Abstract:**

The Programmatic Biological Opinion (PBO) for Gunnison River Basin water depletions (USFWS 2009) stipulates that endangered fishes and the sympatric fish community be monitored to determine their status before and after the Selenium Management Plan (SMP) is implemented and following reoperation of the Aspinall Unit reservoirs. The PBO specifies multi-life stage monitoring and density estimates of Colorado pikeminnow and razorback sucker in the Gunnison and Colorado rivers. The entire fish assemblage is monitored using electrofishing catch-per-effort (CPE) to track trends in species relative abundance both in the Gunnison River and the 18-mile reach of the Colorado River downstream of the Gunnison River confluence. Larval seining conducted in both rivers provides an index of reproductive success using CPE (mean number per sample) of endangered fish larvae. For young-of-the-year and small-bodied fish monitoring, seining is conducted during fall (mid-September) using ISMP methodology (see McAda 1994) in both the Gunnison (Delta, CO to the confluence) and Colorado (Gunnison confluence to the CO/UT state line) rivers.

## **Study Schedule:**

2011-Ongoing

## **Relationship to RIPRAP:**

Gunnison River Action Plan: Gunnison River Mainstem

V. Monitor populations and habitat and conduct research to support recovery actions.

V.A. Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.

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V.A.3. Conduct a fish community monitoring study in Gunnison River main channel and floodplain habitats to evaluate the effects of changing flows from the Aspinall Unit

Colorado River Action Plan: Colorado River Mainstem

V. Monitor populations and habitat and conduct research to support recovery actions.

V.A. Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.

### **Accomplishment of FY 2023 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:**

#### Colorado River

Larval fish sampling on the Colorado River began on 6/13/2023 and ended 8/14/2023. Crews completed all five of the funded larval sampling passes along with an additional pass for a total of six passes. The 2023 larval samples will be transferred to the Colorado State University Larval Fish Lab (CSU-LFL) at the earliest convenience. No larval sampling results are available currently. Results from larval fish sampling will be available in the final report.

Young of year (YOY) sampling on the Colorado River was completed from 09/19/2023 to 09/21/2023. No known endangered fishes were captured during YOY sampling. Due to the small size of some of the fishes collected during YOY sampling, specimens were preserved from some sampled habitats. Samples preserved during YOY sampling in 2023 will be transferred to the CSU-LFL to determine the species collected.

Endangered fish captures during this project in the Colorado River portion of the study area included 13 razorback suckers (Table 1). No other endangered fishes were captured in the Colorado River portion of the study area in 2023. All 13 razorback suckers captured in 2023 contained a PIT tag when captured (Table 2). Five of the 13 razorback suckers captured in 2023 were recently stocked into the Colorado River by the Ouray National Fish Hatchery – Grand Valley Unit. Six of the eight remaining razorback suckers contained a PIT when stocked into the Colorado River. The stocking years included: one stocked in 2014, two stocked in 2020, and three stocked in 2022. Two of the razorback suckers were tagged when captured in the Colorado River prior to being captured in this study.

Electrofishing catch rates of three non-endangered native species (bluehead sucker, flannelmouth sucker and roundtail chub) are shown in Figures 1-3. The confidence intervals associated with the 2023 catch rates for bluehead sucker overlap for all years except 1994 with the 2023 catch rate being lower than the 1994 catch rate (Figure 1). The confidence intervals associated with the 2023 catch rates of flannelmouth sucker and roundtail chub overlap for all years (Figures 2 and 3).

Electrofishing catch rates of the three most common non-native species (common carp, channel catfish and white sucker) are shown in Figures 4-6. The confidence intervals associated with the 2023 catch rates for common carp and channel catfish overlap confidence intervals for all other years (Figures 4 and 5). The confidence intervals for the white sucker mean catch rate in 2023 are below confidence intervals for the catch rates of white sucker in 2018 and 2021, but confidence intervals overlap for all other years (Figure 6).

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### Gunnison River

Larval fish sampling on the Gunnison River began on 6/13/2023 and ended 8/16/2023. Crews completed all five of the funded larval sampling passes along with an additional pass for a total of six passes. The 2023 larval samples were transferred to the CSU-LFL at the earliest inconvenience. No larval sampling results are available currently. Results from larval fish sampling will be available in the final report.

Young of year (YOY) sampling on the Gunnison River was completed from 09/13/2023 to 09/15/2023. No known endangered fishes were captured during YOY sampling. Due to the small size of some of the fishes collected during YOY sampling, specimens were preserved from some sampled habitats. Samples preserved during YOY sampling in 2023 will be transferred to the CSU-LFL to determine the species collected.

Endangered fish captures during the first Gunnison River sampling trip (8/7/23-8/11/23) include one Colorado pikeminnow and 47 razorback suckers (Table 1). The Colorado pikeminnow was captured at Redlands Fish Ladder (RFL) on 7/31/2023 and transported upstream. This Colorado pikeminnow was first encountered at RFL in 2020 when it received a PIT tag and was transported upstream for release approximately 40 miles upstream from RFL. Unfortunately, this Colorado pikeminnow was subsequently found deceased on the upstream grates at RFL on 9/01/2023.

All 47 of the individual razorback suckers captured during the August Gunnison River sampling trip contained a PIT tag when captured (Table 2). The origin of the razorback suckers include: one stocked in 2012, one stocked in 2014, three stocked in 2016, six stocked in 2017, two stocked in 2018, nine stocked in 2019, 13 stocked in 2020, three stocked in 2021, and eight stocked in 2022. No stocking or tagging data was found for one of the 47 razorbacks that was captured with a PIT tag during the August electrofishing trip. The original stocking location for all razorbacks captured during the August sampling trip of 2023 was Delta, Colorado. One of the 47 razorback suckers captured during the August sampling trip at RM 54.0 was captured at RFL on 7/31/2023 and released at Escalante Bridge (RM 42.7).

Endangered fish captures during the October Gunnison River electrofishing sampling trip (10/2/23-10/6/2023) include 59 razorback suckers (Table 1). No other endangered fishes were captured during the October electrofishing sampling trip. Fifty-eight of the 59 razorback suckers captured during the October Gunnison River electrofishing sampling trip contained a PIT tag when captured (Table 2). Thirty-four of the 58 razorback suckers that contained a PIT tag when captured were stocked into the Gunnison River in the weeks prior to the sampling trip. Stocking year of the remaining razorback suckers, all of which were stocked into the Gunnison River, included: two stocked in 2016, three stocked in 2017, one stocked in 2018, five stocked in 2019, six stocked in 2020, six stocked in 2021, and one stocked in 2022. None of the razorback suckers captured in the Gunnison River in 2023 were captured during both sampling trips. Additionally, none of the razorback suckers captured in October had been captured at RFL.

Electrofishing catch rates of three non-endangered native species (bluehead sucker, flannelmouth sucker and roundtail chub) are shown in Figures 7-9. The mean catch rate of bluehead sucker for 2023 is lower than the catch rate from 1992, 1994, and 2018, but confidence intervals associated with the 2023 catch rates for bluehead sucker overlap confidence intervals for all other years (Figure 7). The mean catch rate

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of flannemouth sucker for 2023 is lower than the catch rates from 1992 and 2011 (Figure 8). Confidence intervals associated with the 2023 catch rates for flannemouth sucker overlap confidence intervals for all other years (Figure 8). The mean catch rate of roundtail chub in 2023 is lower than the catch rate in 2014 and 2019, but confidence intervals overlap for all other years (Figure 9).

Electrofishing catch rates of the three most common non-native species (common carp, white sucker, and white sucker/native sucker hybrids) are shown in Figures 10-12. The confidence intervals associated with the 2023 catch rates for common carp are lower than in years 1992-1994, 2011-2013, and 2018 (Figure 10). The white sucker catch rate in 2023 is higher than the catch rates in 1992-1995, 2016, and 2017 and lower than catch rates in 2011, 2013, 2018, 2019, and 2021 (Figure 11). The catch rate of white sucker/native sucker hybrids in 2023 is higher than in years 1992-1994 and 2012 (Figure 12). Confidence intervals for the 2023 white sucker/native sucker hybrid catch rate overlap for all other years (Figure 12).

### **Additional noteworthy observations:**

Smallmouth bass are present in Ridgway Reservoir on the Uncompahgre River upstream of its confluence with the Gunnison River. A permanent spillway screen was completed to prevent future releases of this invasive species. In 2023, no smallmouth bass were collected or observed during electrofishing sampling on the Gunnison River upstream of Redlands Dam.

### **Recommendations:**

Continue utilizing catch rate data for monitoring in the Gunnison River as the number of endangered fishes collected in the Gunnison River is currently insufficient for mark-recapture abundance estimates.

If funding becomes available, consider adding larval passes that were eliminated due to lack of funding.

### **Project Status:**

Data collection for FY 2023 was completed as planned. Larval and YOY fish samples collected in 2023 will be transferred to the CSU-LFL for analysis. Once the Project 127 summary report is completed, work will begin on the summary report for this project.

### **FY2023 Budget Status**

Funds Provided: \$95,310

Funds Expended: \$95,310

Difference: \$0

Percent of the FY 2023 work completed, and projected costs to complete: 100%, \$0.

### **Status of Data Submission**

Submission pending – expected data for data submission is prior to 11/21/2023.

### **Signed:**

Darek Elverud

Principal Investigator

11/09/2023

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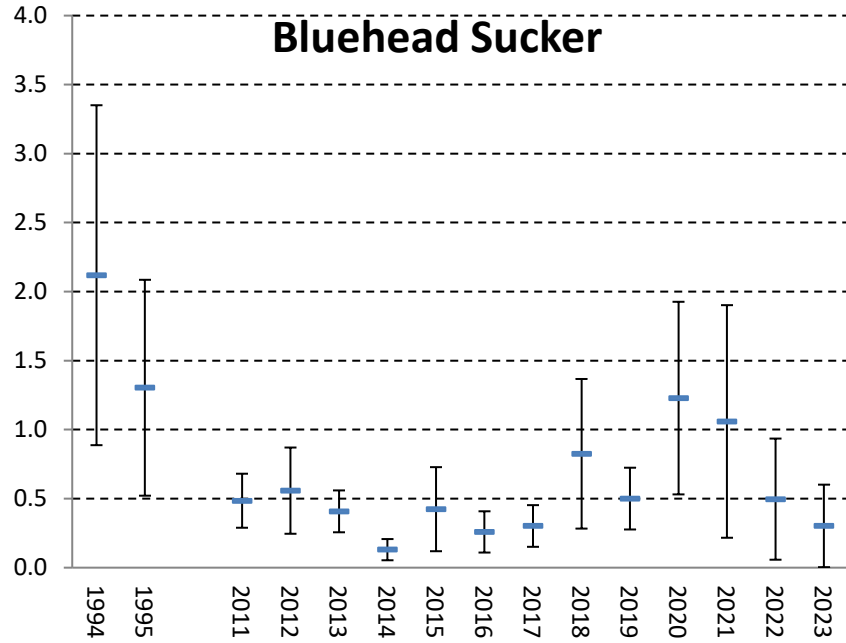
**Table 1.** Number of unique endangered fishes captured by species, river, and pass in 2023.

Species	Colorado River	Gunnison River	
	Pass 1 (9/27/23-9/28/23)	Pass 1 (8/7/23-8/11/23)	Pass 2 (10/2/23-10/6/23)
Colorado pikeminnow	0	1	0
Razorback sucker	13	47	59

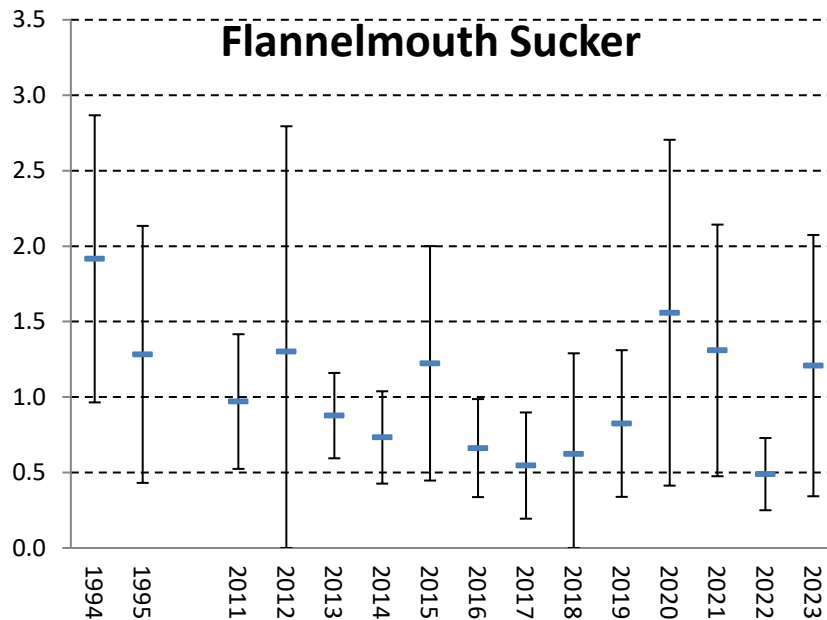
**Table 2.** Number of Razorback suckers captured in 2023 during project 163 by origin or previous encounter.

Origin or Previous Encounter	Colorado River	Gunnison River	
	Pass 1 (9/27/23-9/28/23)	Pass 1 (8/7/23-8/11/23)	Pass 2 (10/2/23-10/6/23)
Stocked in river of capture in 2023	5	0	34
Stocked in river of capture prior to 2023	6	47	24
Tagged in wild prior to 2023	2	0	0
Untagged when captured in 2023	0	0	1
No tagging record found	0	1	0
Captured at Redlands Fish Ladder in 2023	0	1	0

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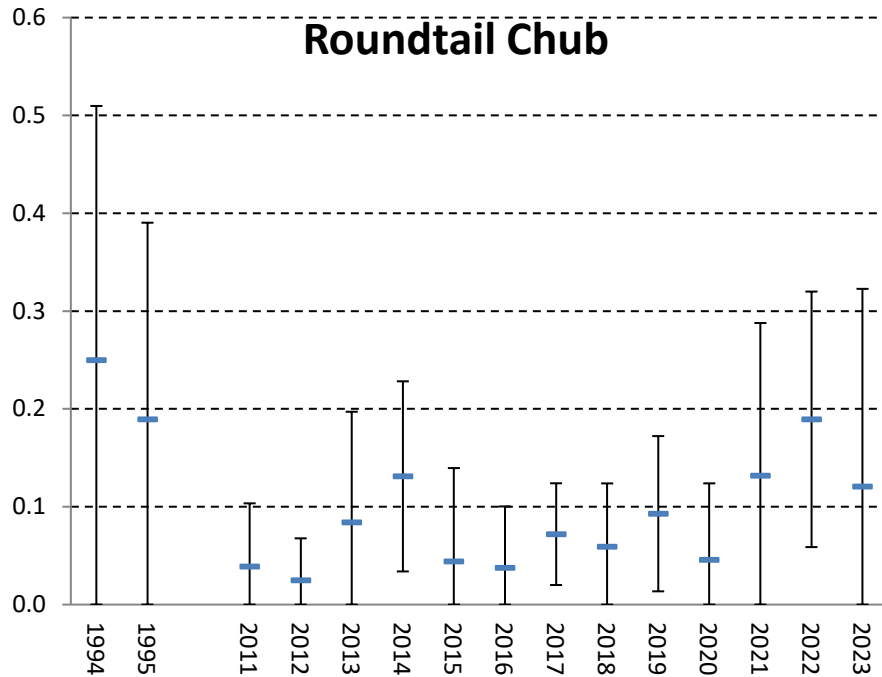


**Figure 1.** Catch rate of bluehead sucker in the Colorado River portion of the study area (1994-1995, 2011-2023). Error bars represent 95% confidence intervals.

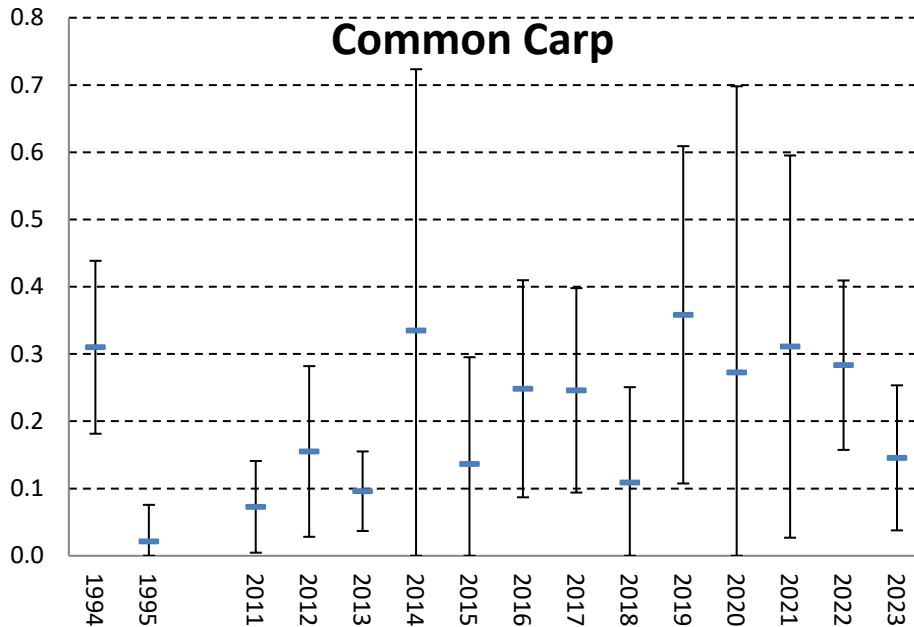


**Figure 2.** Catch rate of flannelmouth sucker in the Colorado River portion of the study area (1994-1995, 2011-2023). Error bars represent 95% confidence intervals.

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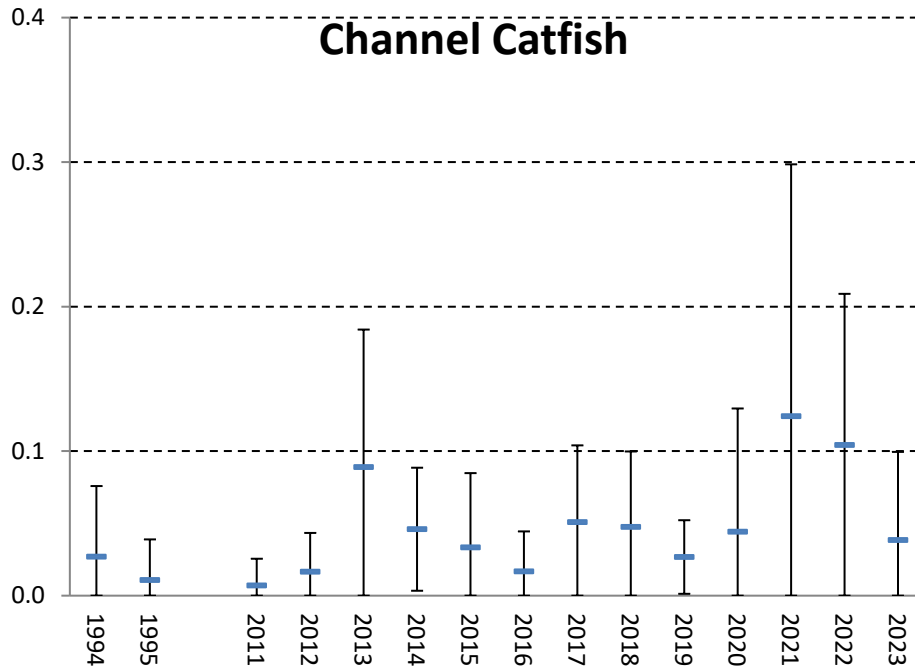


**Figure 3.** Catch rate of roundtail chub in the Colorado River portion of the study area (1994-1995, 2011-2023). Error bars represent 95% confidence intervals.

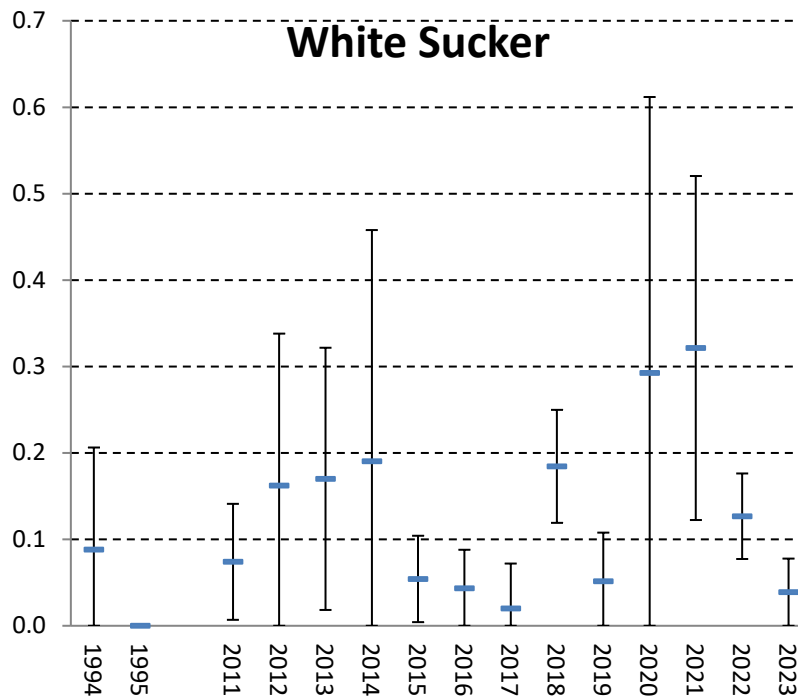


**Figure 4.** Catch rate of common carp in the Colorado River portion of the study area (1994-1995, 2011-2023). Error bars represent 95% confidence intervals.

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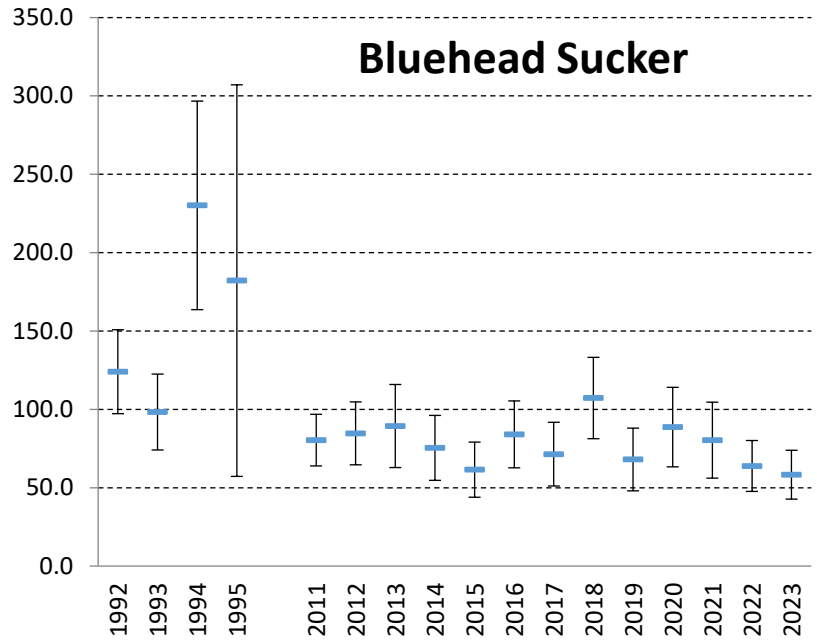


**Figure 5.** Catch rate of channel catfish in the Colorado River portion of the study area (1994-1995, 2011-2023). Error bars represent 95% confidence intervals.

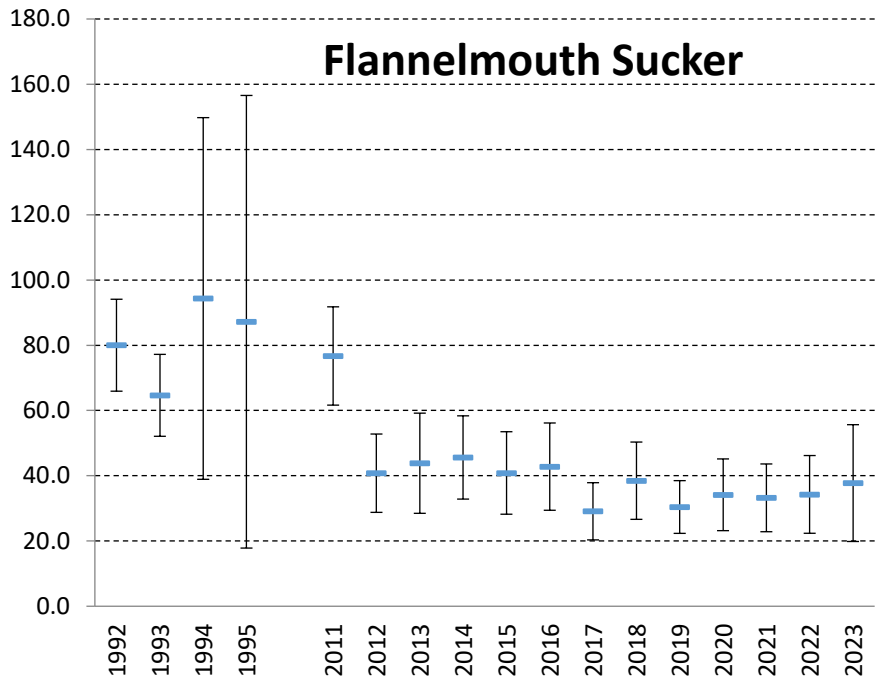


**Figure 6.** Catch rate of white sucker in the Colorado River portion of the study area (1994-1995, 2011-2023). Error bars represent 95% confidence intervals.



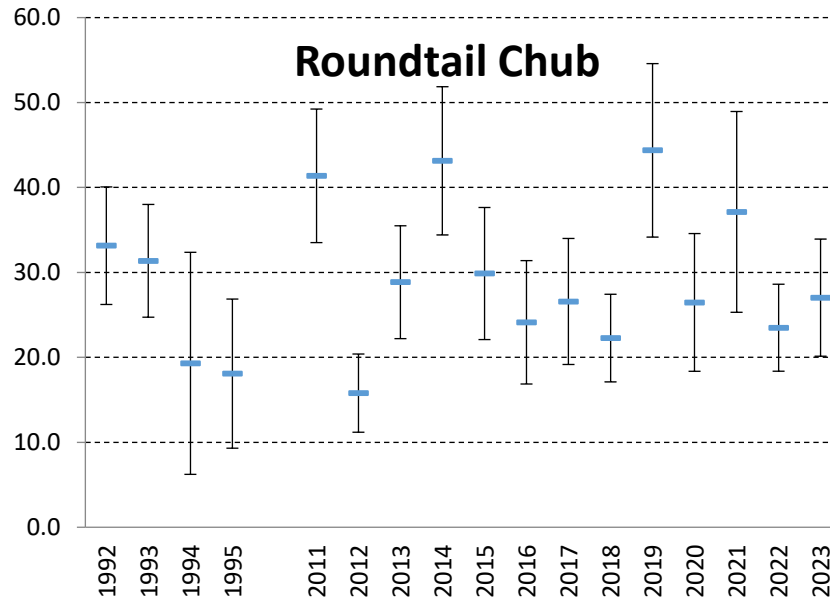


**Figure 7.** Catch rate of bluehead sucker in the Gunnison River portion of the study area (1992-1995, 2011-2023). Error bars represent 95% confidence intervals.

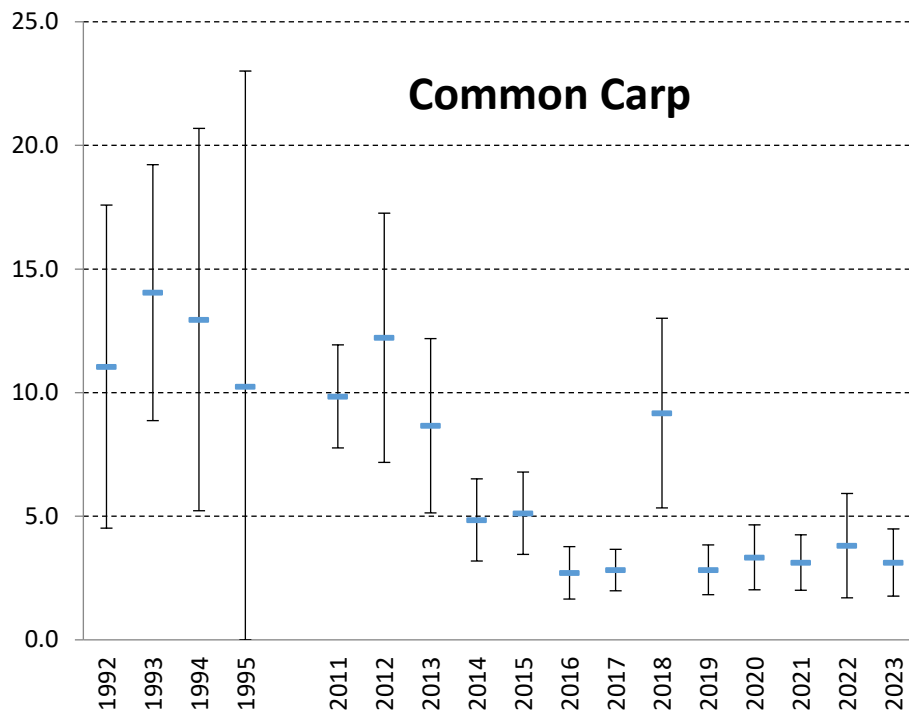


**Figure 8.** Catch rate of flannelmouth sucker in the Gunnison River portion of the study area (1992-1995, 2011-2023). Error bars represent 95% confidence intervals.

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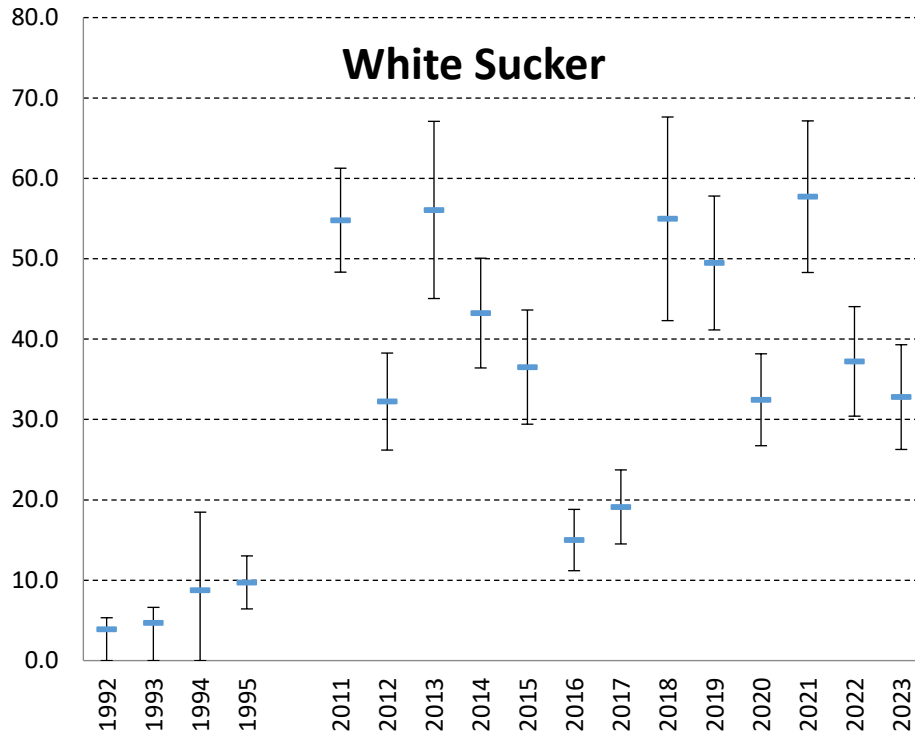


**Figure 9.** Catch rate of roundtail chub in the Gunnison River portion of the study area (1992-1995, 2011-2023). Error bars represent 95% confidence intervals.

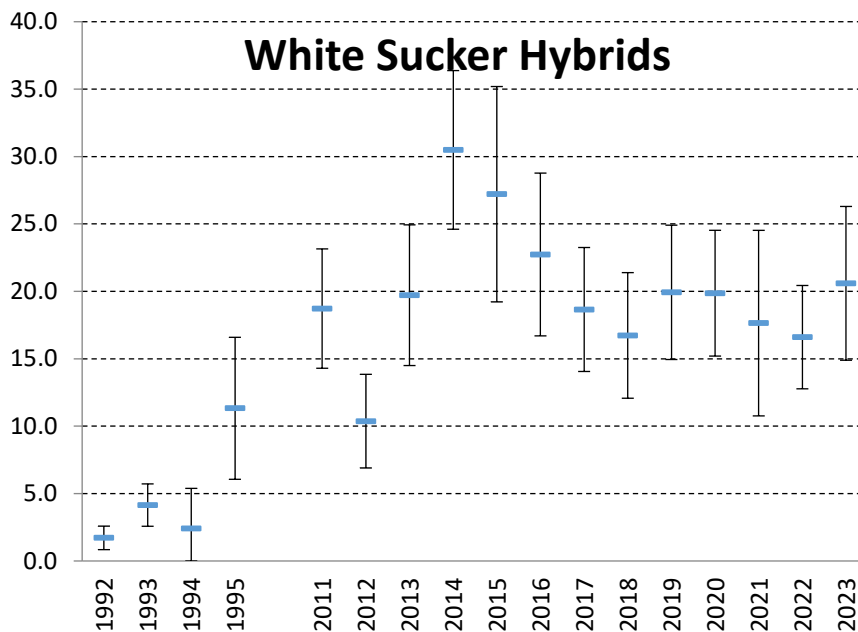


**Figure 10.** Catch rate of common carp in the Gunnison River portion of the study area (1992-1995, 2011-2023). Error bars represent 95% confidence intervals.

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**Figure 11.** Catch rate of white sucker in the Gunnison River portion of the study area (1992-1995, 2011-2023). Error bars represent 95% confidence intervals.



**Figure 12.** Catch rate of white sucker/native sucker hybrids in the Gunnison River portion of the study area (1992-1995, 2011-2023). Error bars represent 95% confidence intervals.