

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2022 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: 09/30/2022

Is this the final report? Yes _____ No X

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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.

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

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 2022 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Colorado River

Larval fish sampling on the Colorado River began on 6/6/2022 and ended 8/2/2022. Crews completed all five of the funded larval sampling passes. The 2022 larval samples were transferred to the Colorado State University Larval Fish Lab (CSU-LFL) on 11/16/22. 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 09/16/2022 to 09/20/2022. 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 2022 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 one Colorado pikeminnow and 20 razorback suckers. No other endangered fishes were captured in the Colorado River portion of the study area in 2022. The Colorado pikeminnow and all 20 razorback suckers captured in 2022 contained a PIT tag when captured. The Colorado pikeminnow was first tagged on 5/6/1998 near Moab, Utah. The Colorado pikeminnow was recaptured in the Grand Valley once each in 2003, 2005, 2010, and 2016, and twice in 2013. Twelve of the 20 razorback suckers captured in 2022 were recently stocked into the Colorado River by the Ouray National Fish Hatchery – Grand Valley Unit. Stocking year of the eight remaining razorback suckers included: one stocked in 2014, one stocked in 2015, one in 2019, two in 2020, and three stocked in 2021.

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 2022 catch rates for bluehead sucker and roundtail chub overlap for all years. The confidence intervals associated with the 2022 catch rate of flannelmouth sucker overlap for all years with the exception of 1994.

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 2022 catch rates for channel catfish overlap confidence intervals for all other years. The confidence intervals associated with the 2022 catch rates for common carp overlap confidence intervals for all years except 1995 and 2013 which had lower mean catch rates of common carp. The white sucker mean catch rate in 2022 is higher than the catch rates in 1995 and 2017, but confidence intervals overlap for all other years.

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Gunnison River

Larval fish sampling on the Gunnison River began on 6/6/2022 and ended 8/3/2022. Crews completed all five of the funded larval sampling passes. The 2022 larval samples were transferred to the CSU-LFL. 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 09/013/2022 to 09/15/2022. 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 2022 will be transferred to the CSU-LFL to determine the species collected.

Endangered fish captures during the first Gunnison River sampling trip (8/8/22-8/12/22) include 46 razorback suckers. No other endangered fishes were captured during the August electrofishing trip. Forty-four of the 46 razorback suckers captured during the August Gunnison River sampling trip contained a PIT tag when captured. The origin of the 44 razorback suckers that contained a PIT tag when captured include: one stocked in 2014, two stocked in 2015, six stocked in 2016, three stocked in 2017, one stocked in 2018, 11 stocked in 2019, 14 stocked in 2020 and four stocked in 2021. No stocking or tagging data was found for two of the 44 razorbacks that were captured with a PIT tag during the August electrofishing trip. The original stocking location for all razorbacks captured during the August sampling trip of 2022 was Delta, Colorado.

Endangered fish captures during the October Gunnison River electrofishing sampling trip (10/3/22-10/7/2022) include 72 razorback suckers. No other endangered fishes were captured during the October electrofishing sampling trip. Seventy-one of the 72 razorback suckers captured during the October Gunnison River electrofishing sampling trip contained a PIT tag when captured. One razorback was accidentally dropped into the river before it was scanned for a PIT tag. Twenty-seven of the 71 razorback suckers that contained a PIT tag when captured were likely stocked into the Gunnison River in the weeks prior to the sampling trip. Stocking year of the remaining razorback suckers included: one stocked in 2014, one stocked in 2015, two stocked in 2016, three stocked in 2017, three stocked in 2018, 16 stocked in 2019, six stocked in 2020, and eleven stocked in 2021. No stocking or tagging record could be located for one of the 71 razorbacks that contained a PIT tag. Three razorback suckers captured during the October Gunnison River sampling trip were also captured during the August Gunnison River sampling trip in 2022.

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 2022 is lower than the catch rate from 1992 and 1994, but confidence intervals associated with the 2022 catch rates for bluehead sucker overlap confidence intervals for all other years (Figure 7). The mean catch rate of flannelmouth sucker for 2022 is lower than the catch rates from 1992, 1993 and 2011 (Figure 8). Confidence intervals associated with the 2022 catch rates for flannelmouth sucker overlap confidence intervals for all other years (Figure 8). The mean catch rate of roundtail chub in 2022 is lower than the catch rate in 2011, 2014, and 2019, but confidence intervals overlap for all other years (Figure 9).

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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 2022 catch rates for common carp are lower than in years 1994, 2011, and 2012 (Figure 10). The white sucker catch rate in 2022 is higher than the catch rates in 1992-1995, 2016, and 2017 and lower than catch rates in 2011, 2013, and 2021 (Figure 11). The catch rate of white sucker/native sucker hybrids in 2022 is higher than in years 1992-1994 and lower than in 2014 (Figure 12). Confidence intervals for the 2022 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. Water managers are currently preventing water from exiting the reservoir over the spillway to contain the population, and a permanent spillway screen has now been constructed to prevent future releases of this invasive species. In 2022, 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.

Project Status:

The 2011-2016 summary report was finalized in January 2022. Data collection for FY 2022 was completed as planned. Larval and YOY fish samples collected in 2022 will be transferred to the CSU-LFL for analysis.

FY2022 Budget Status

Funds Provided: \$73,845

Funds Expended: \$73,845

Difference: \$0

Percent of the FY 2022 work completed, and projected costs to complete: 100%, \$0

Recovery Program funds spent for publication charges: \$0

Status of Data Submission

(Where applicable): Data from the 2022 field season has been entered and has been checked for accuracy. Data will be uploaded to the database in December 2022.

Signed:

Darek Elverud

Principal Investigator

11/18/2022

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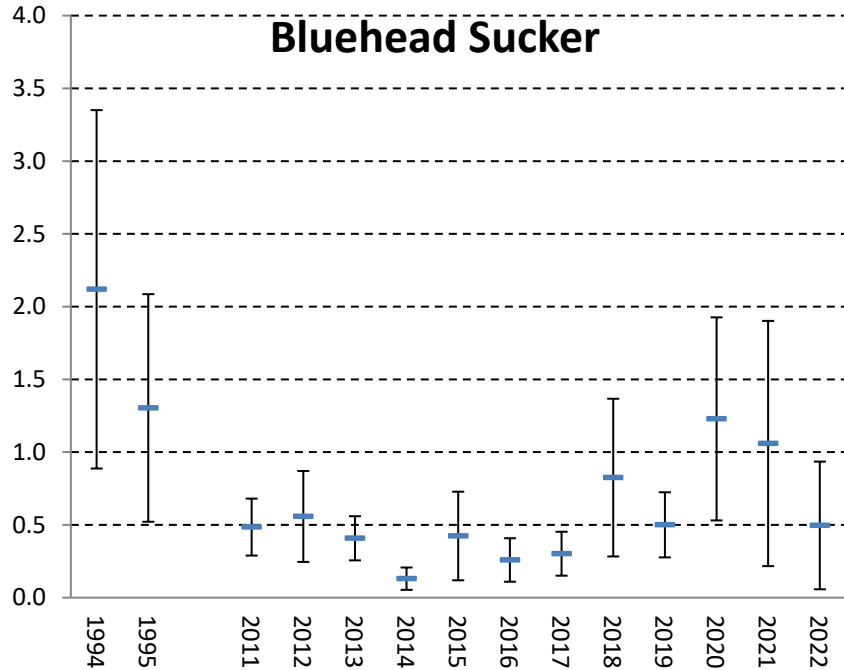


Figure 1. Catch rate of bluehead sucker in the Colorado River portion of the study area (1994-1995, 2011-2022). Error bars represent 95% confidence intervals.

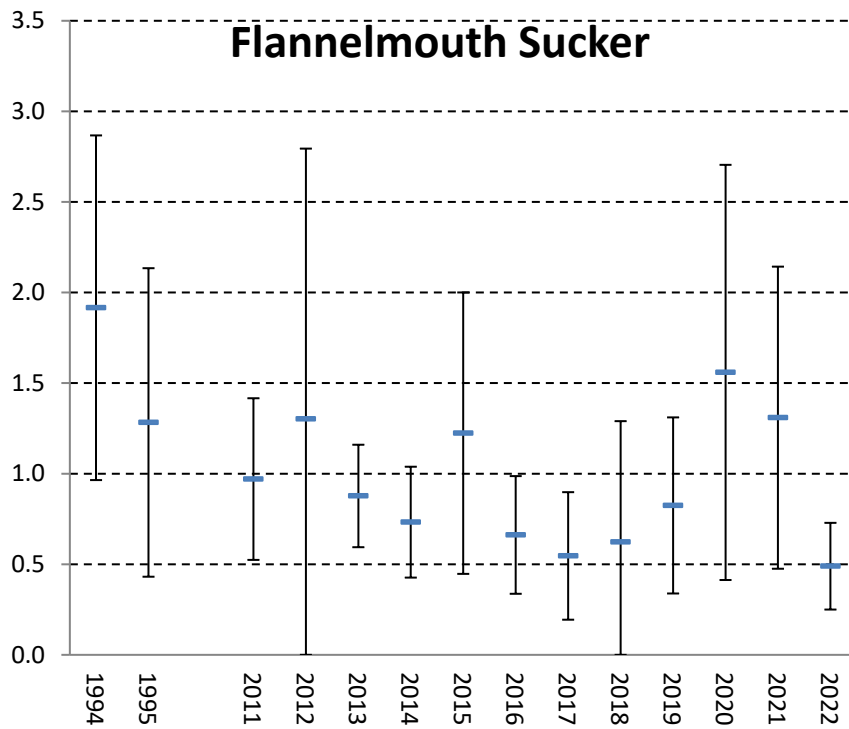


Figure 2. Catch rate of flannelmouth sucker in the Colorado River portion of the study area (1994-1995, 2011-2022). Error bars represent 95% confidence intervals.

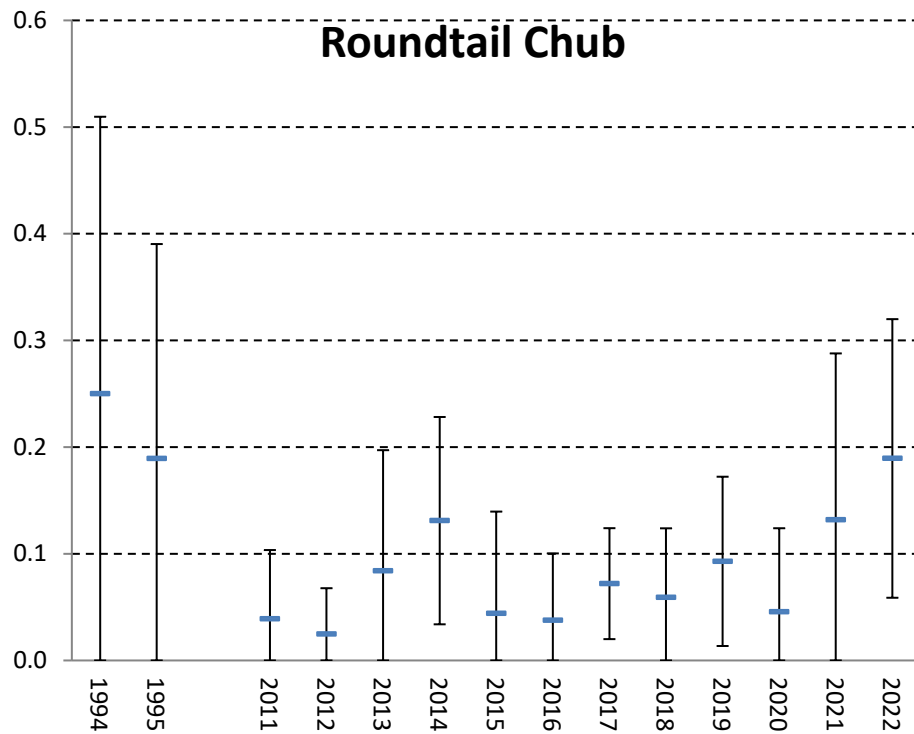


Figure 3. Catch rate of roundtail chub in the Colorado River portion of the study area (1994-1995, 2011-2022). Error bars represent 95% confidence intervals.

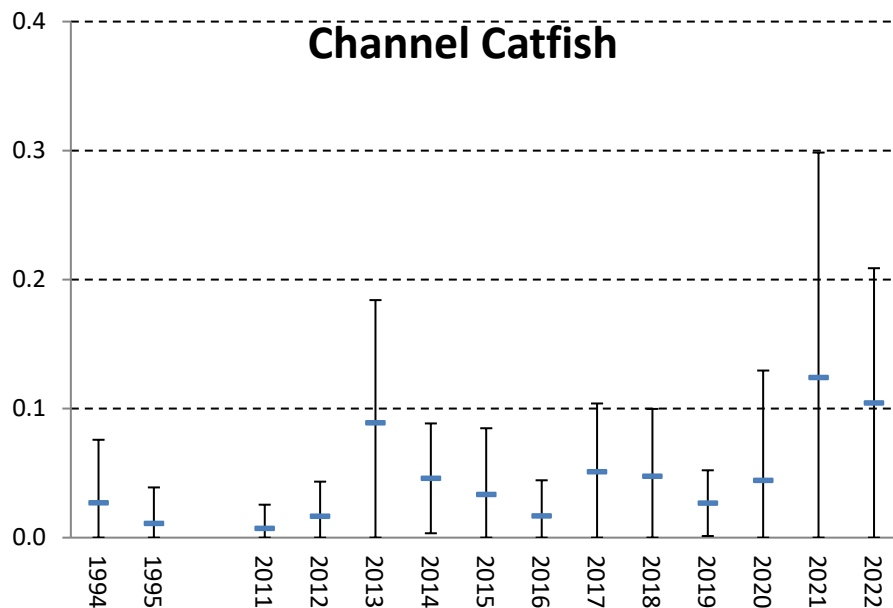


Figure 4. Catch rate of common carp in the Colorado River portion of the study area (1994-1995, 2011-2022). Error bars represent 95% confidence intervals.

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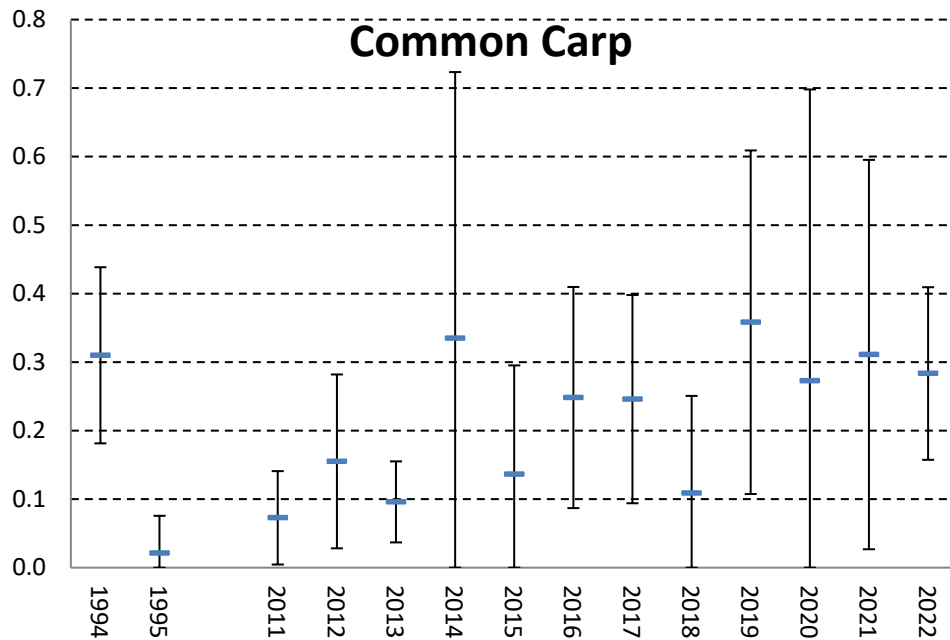


Figure 5. Catch rate of channel catfish in the Colorado River portion of the study area (1994-1995, 2011-2022). Error bars represent 95% confidence intervals.

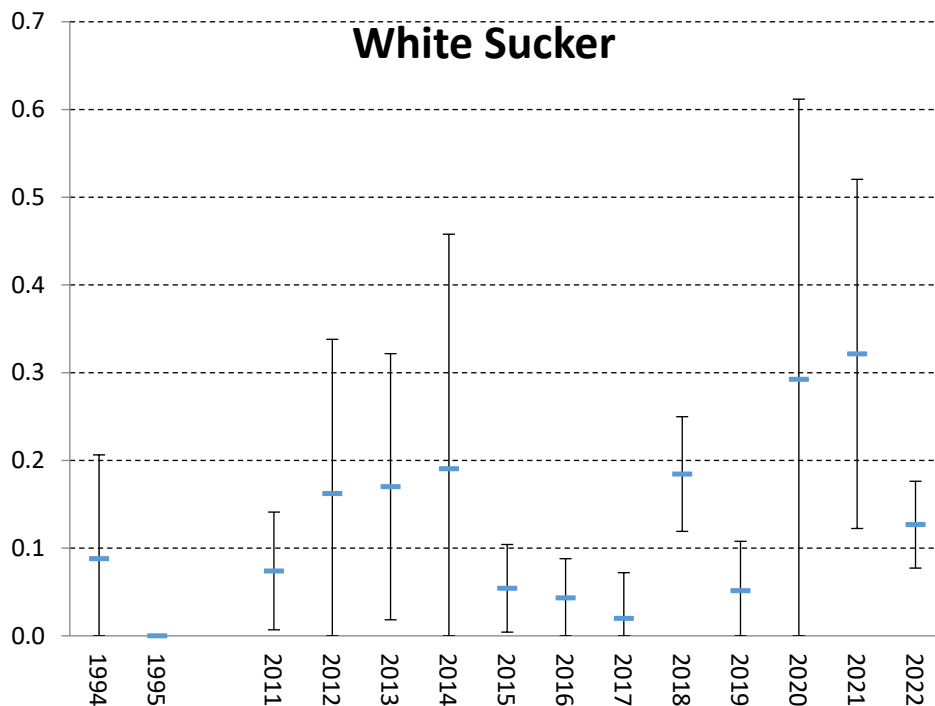


Figure 6. Catch rate of white sucker in the Colorado River portion of the study area (1994-1995, 2011-2022). Error bars represent 95% confidence intervals.

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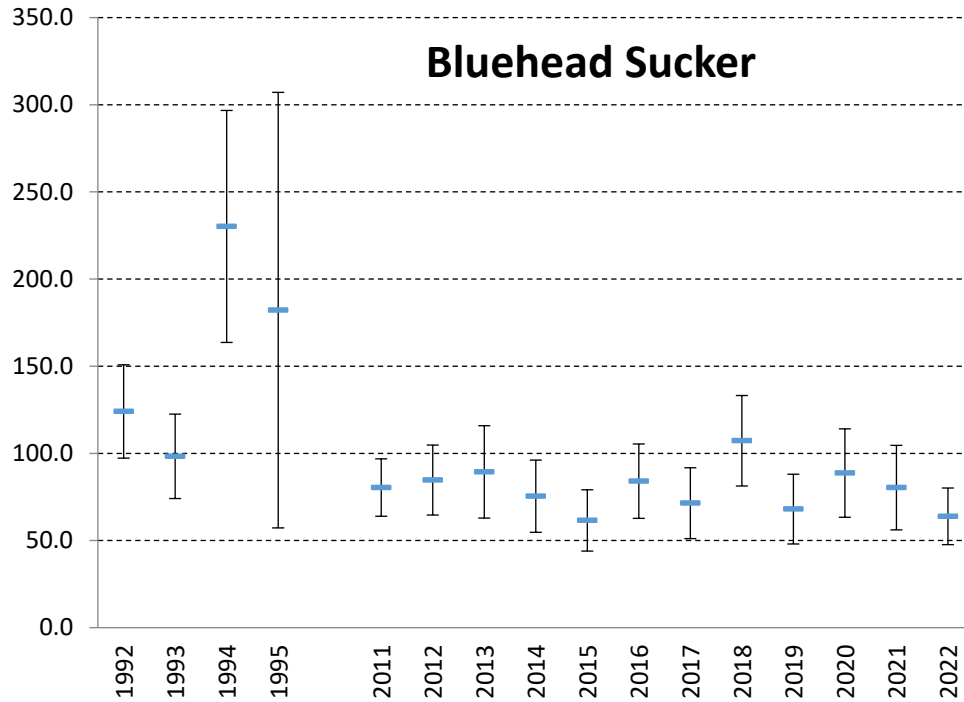


Figure 7. Catch rate of bluehead sucker in the Gunnison River portion of the study area (1992-1995, 2011-2022). Error bars represent 95% confidence intervals.

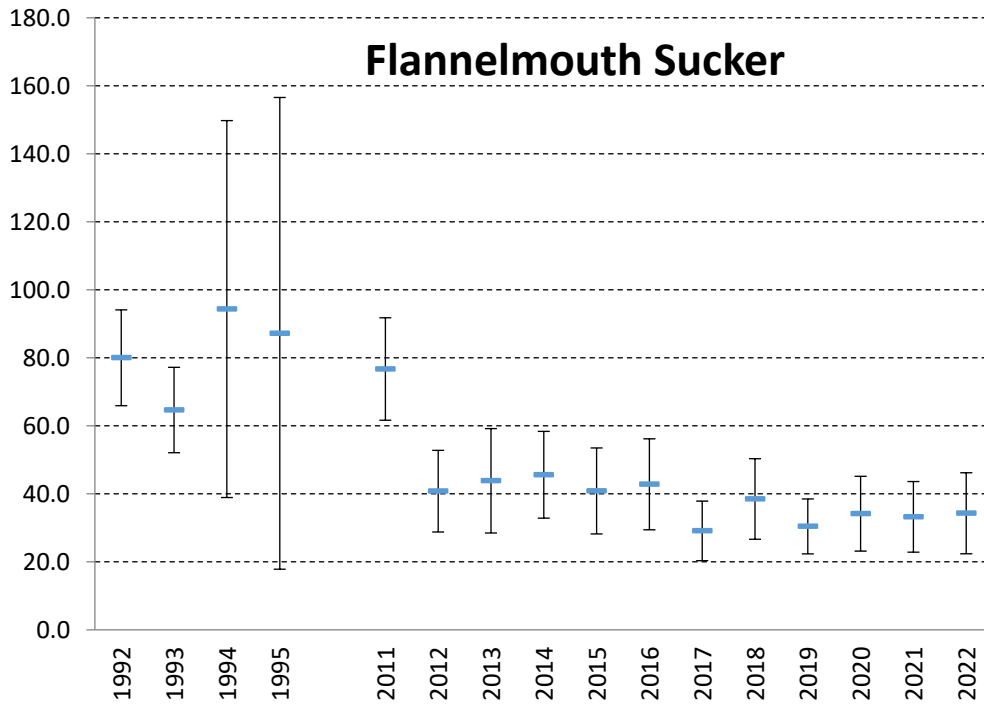


Figure 8. Catch rate of flannelmouth sucker in the Gunnison River portion of the study area (1992-1995, 2011-2022). Error bars represent 95% confidence intervals.

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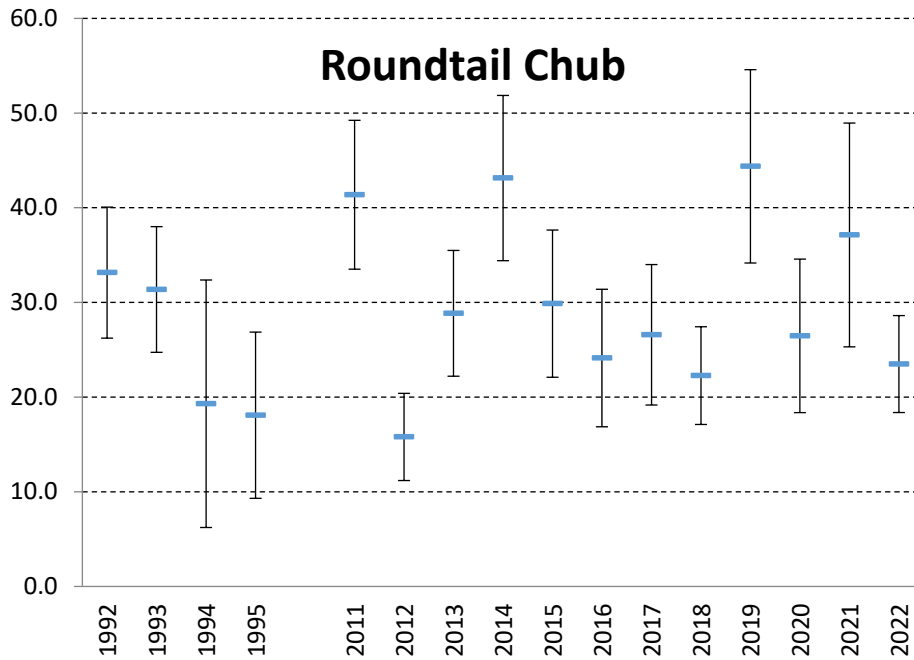


Figure 9. Catch rate of roundtail chub in the Gunnison River portion of the study area (1992-1995, 2011-2022). Error bars represent 95% confidence intervals.

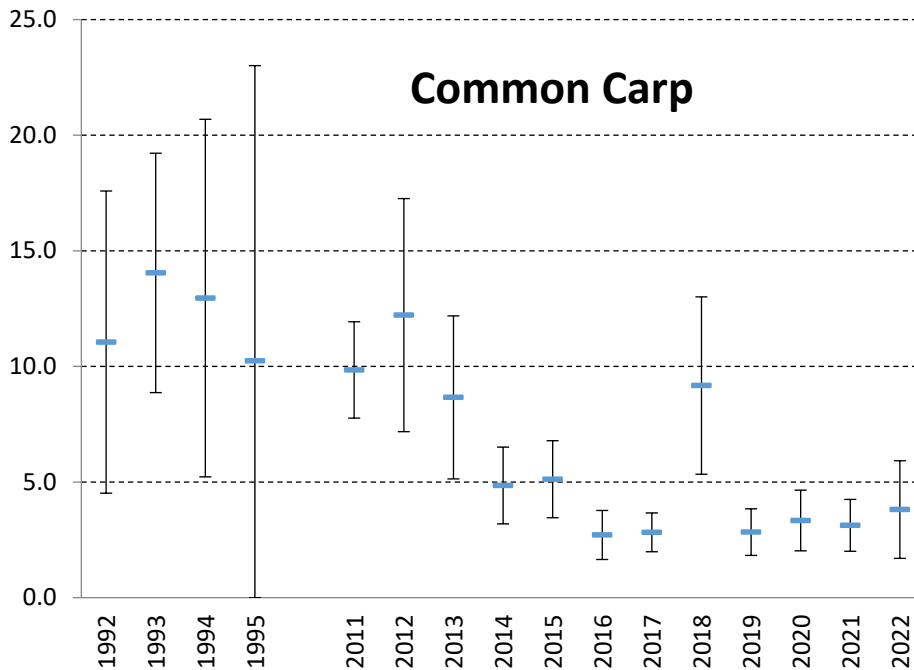


Figure 10. Catch rate of common carp in the Gunnison River portion of the study area (1992-1995, 2011-2022). Error bars represent 95% confidence intervals.

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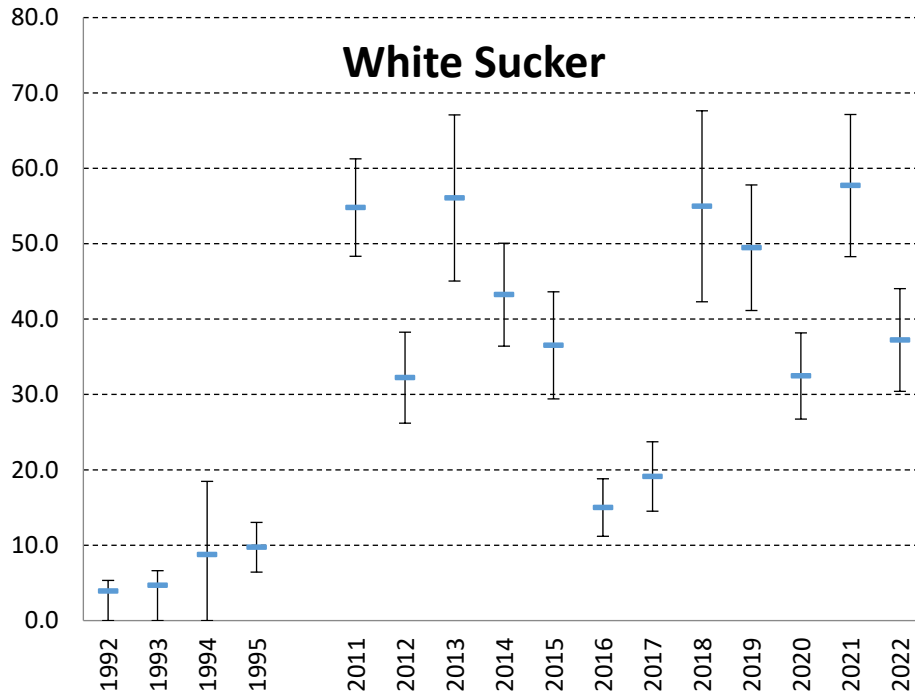


Figure 11. Catch rate of white sucker in the Gunnison River portion of the study area (1992-1995, 2011-2022). Error bars represent 95% confidence intervals.

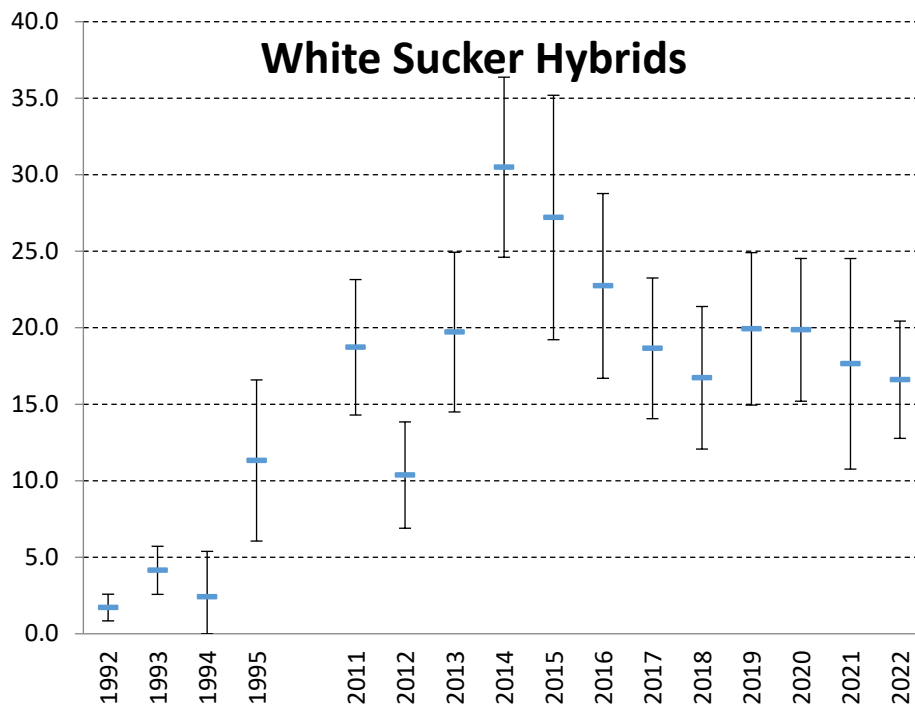


Figure 12. Catch rate of white sucker/native sucker hybrids in the Gunnison River portion of the study area (1992-1995, 2011-2022). Error bars represent 95% confidence intervals.