

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2021 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: 09/30/2021

Is this the final report? Yes _____ No X

Principal Investigator:

Darek Elverud, Fishery Biologist

U.S. Fish and Wildlife Service

Grand Junction FWCO

445 W. Gunnison Ave.

Grand Junction, Colorado, 81501

Phone: (970) 628-7203

Fax: (970) 628-7219

Email: darek_elverud@fws.gov

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 CO/UT stateline) 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.

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

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 2021 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Colorado River

Larval fish sampling on the Colorado River began on 5/18/2021 and ended 7/28/2021. Crews completed all eight of the funded larval sampling passes. The 2021 larval samples were transferred to the Larval Fish Lab at Colorado State University (CSU-LFL) on 11/18/2021. No larval sampling results are available at this time.

Young of year (YOY) sampling on the Colorado River was completed from 09/07/2021 to 09/08/2021. 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 2021 were transferred to the CSU-LFL on 11/18/2021 to determine the species collected.

Endangered fish captures during this project in the Colorado River portion of the study area included one bonytail and fifteen razorback suckers. No other endangered fishes were captured in the Colorado River portion of the study area in 2021. Fourteen of the fifteen razorback suckers and the bonytail captured in 2021 contained a PIT tag when captured. The bonytail was stocked 7/21/2020 approximately eight miles upstream of the 2021 capture location. Stocking year of 4 razorback suckers included: one stocked in 2012, two stocked in 2014, one in 2015, one in 2016, two in 2019, three stocked in 2020, and three stocked in 2021. One razorback sucker captured in 2021 was tagged in 2015 when it was captured in the Colorado River without a PIT tag.

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 2021 catch rates for bluehead sucker, flannelmouth sucker and roundtail chub overlap confidence intervals for all other years.

Electrofishing catch rates of the three most common non-native species (carp, channel catfish and white sucker) are shown in Figures 4-6. The confidence intervals associated with the 2021 catch rates for common carp and channel catfish overlap confidence intervals for all other years. The white sucker catch rate in 2021 is significantly higher than the catch rates in 1995, 2015, 2016, 2017, and 2019 in the Colorado River.

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Gunnison River

Larval fish sampling on the Gunnison River began on 5/18/2021 and ended 7/29/2021. Crews completed all eight of the funded larval sampling passes. The 2021 larval samples were transferred to the CSU-LFL on 11/18/2021. No larval sampling results are available at this time.

Young of year (YOY) sampling on the Gunnison River was completed from 09/014/2021 to 09/15/2021. 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 2021 were transferred to the CSU-LFL on 11/18/2021 to determine the species collected.

Endangered fish captures during the first Gunnison River sampling trip (8/2/21-8/6/21) include one Colorado pikeminnow and 42 razorback suckers. The Colorado pikeminnow captured during the first Gunnison River sampling trip in 2021 was previously captured at Redlands fish passage on 7/17/2020, translocated to Escalante boat ramp (RM 42.7), and released. A PIT tag was implanted when the Colorado pikeminnow was captured at Redlands fish passage. At the time of captured at Redlands fish passage, the total length of the Colorado pikeminnow as 469 mm. When captured in 2021, the total length of this Colorado pikeminnow was 519 mm. The 2021 capture occurred at RM 15.0 near Whitewater, Colorado.

All of the razorback suckers captured during the first Gunnison River sampling trip contained a PIT tag when captured. The origin of the 42 razorback suckers that were captured include: 12 stocked in 2020, 10 stocked in 2019, four stocked in 2018, nine stocked in 2017, three stocked in 2016, two stocked in 2015, one stocked in 2014. The original stocking location for all razorbacks captured during the first sampling trip of 2021 was Delta, Colorado. No stocking or initial captured information was found for one of the 42 razorback suckers.

Endangered fish captures during the second Gunnison River sampling trip (9/27/21-10/1/2021) include one Colorado pikeminnow and 155 razorback suckers. The Colorado pikeminnow captured during the second Gunnison River sampling trip in 2021 was previously captured at Redlands fish passage on 8/4/2020, translocated to Escalante boat ramp (RM 42.7), and released. A PIT tag was implanted when the Colorado pikeminnow was captured at Redlands fish passage. At the time of captured at Redlands fish passage, the total length of the Colorado pikeminnow as 515 mm. When captured in 2021, the total length of this Colorado pikeminnow was 551 mm. The capture of the Colorado pikeminnow during the second Gunnison River sampling trip in 2021 occurred near RM 7.0, four river miles upstream of Redlands Dam.

All 155 of the razorback suckers captured during the second Gunnison River sampling trip contained a PIT tag when captured. Seventy-five of the 155 razorback suckers were likely stocked into the Gunnison River the weeks prior to the sampling trip. Stocking year of the remaining razorback suckers included: 26 stocked in 2020, 19 stocked in 2019, nine stocked in 2018, 13 stocked in 2017, 11 stocked in 2016, one stocked in 2014, and one stocked in 2013. The original stocking location for all razorbacks captured during the second sampling trip of 2021 was Delta, Colorado. Two razorback suckers captured during the second Gunnison River sampling trip were also captured during the first Gunnison River sampling trip in 2021.

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

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 2021 is lower than the catch rate from 1994, but confidence intervals associated with the 2021 catch rates for bluehead sucker overlap confidence intervals for all other years (Figure 7). The mean catch rate of flannelmouth sucker for 2021 is lower than the catch rates from 1992, 1993 and 2011 (Figure 8). Confidence intervals associated with the 2021 catch rates for flannelmouth sucker overlap confidence intervals for all other years (Figure 8). The mean catch rate of roundtail chub in 2021 is higher than the catch rate from 2012, but confidence intervals overlap for years 1992-1995, 2011, and 2013-2020 (Figure 9).

Electrofishing catch rates of the three most common non-native species (carp, white sucker, and white sucker/native sucker hybrids) are shown in Figures 10-12. The confidence intervals associated with the 2021 catch rates for common carp are lower than in years 1993-1994, 2011-2013 and 2018 (Figure 10). The white sucker catch rate in 2021 is higher than the catch rates in 1992-1995, 2012, 2015-2017 and 2020 (Figure 11). The catch rate of white sucker/native sucker hybrids in 2021 is higher than in years 1992-1994 (Figure 12). Confidence intervals for 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 is currently under construction to prevent future releases of this invasive species. In 2021, zero 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 draft 2011-2016 summary report is behind schedule, but has been submitted to Biology Committee members and peer reviewers for comments and will be finalized in December 2021. Data collection for FY 2021 was completed as planned. Larval fish samples collected in 2021 were transferred to the CSU-LFL for analysis on 11/18/2021.

FY 2021 Budget Status

Funds Provided: \$80,083

Funds Expended: \$80,083

Difference: \$0

Percent of the FY 2021 work completed, and projected costs to complete: 100%, \$0

Recovery Program funds spent for publication charges: \$0

Status of Data Submission

Data from the 2021 field season has been entered and has been checked for accuracy. Data will be uploaded to the database in December 2021.

Signed:

Darek Elverud, Principal Investigator, 12/09/2021

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

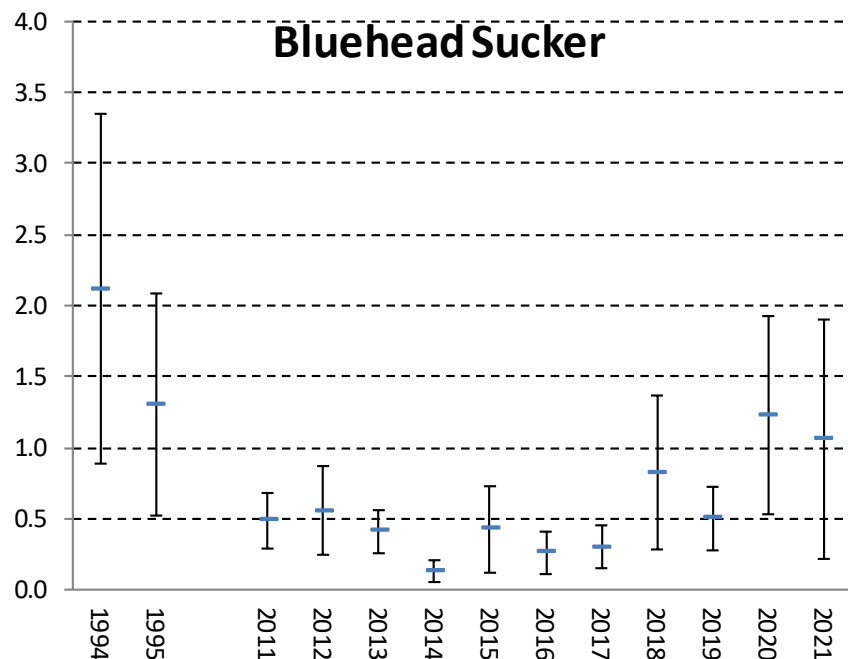


Figure 1. Catch rate of bluehead sucker in the Colorado River portion of the study area (1994-1995, 2011-2021). Error bars represent 95% confidence intervals.

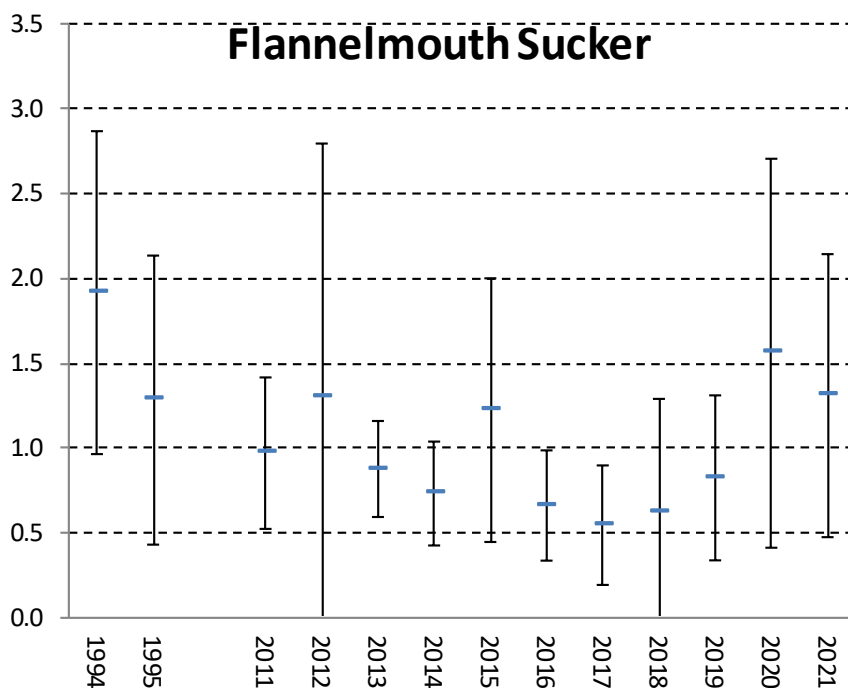


Figure 2. Catch rate of flannelmouth sucker in the Colorado River portion of the study area (1994-1995, 2011-2021). Error bars represent 95% confidence intervals.

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

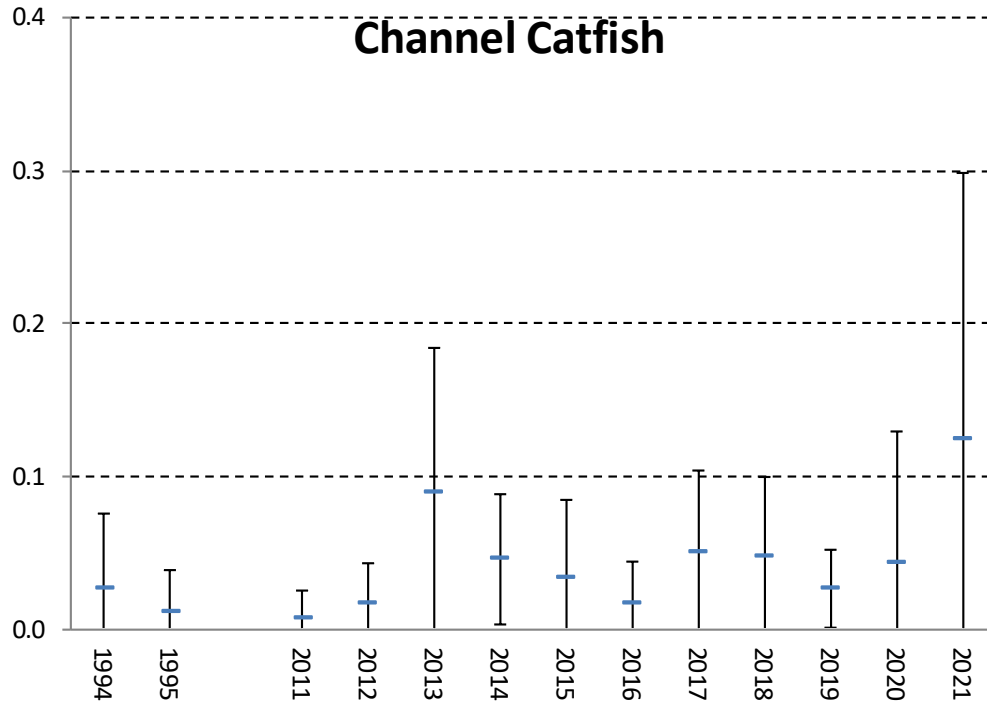


Figure 3. Catch rate of roundtail chub in the Colorado River portion of the study area (1994-1995, 2011-2021). Error bars represent 95% confidence intervals.

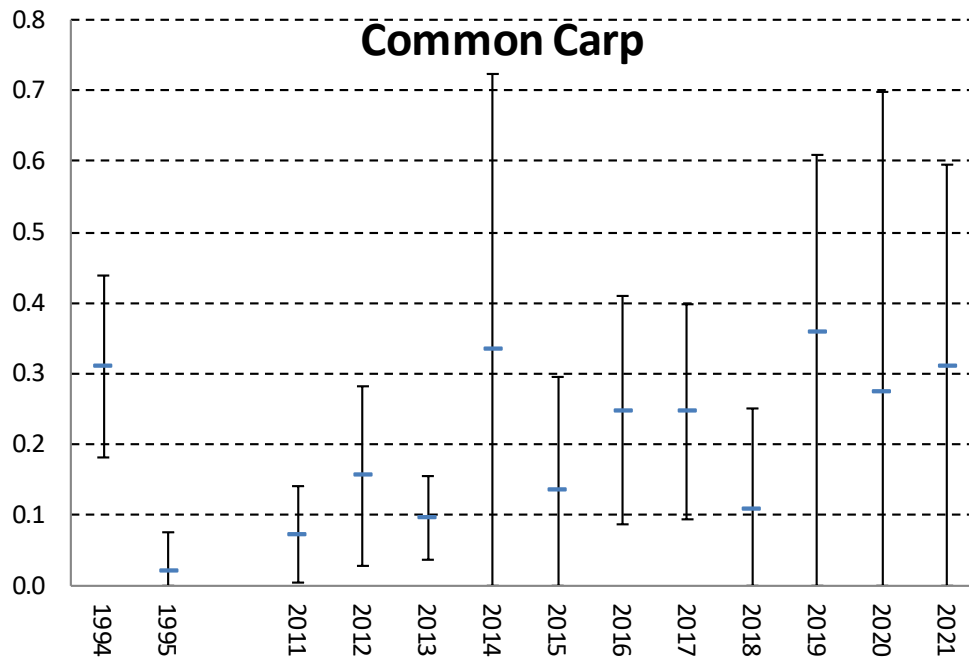


Figure 4. Catch rate of common carp in the Colorado River portion of the study area (1994-1995, 2011-2021). Error bars represent 95% confidence intervals.

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

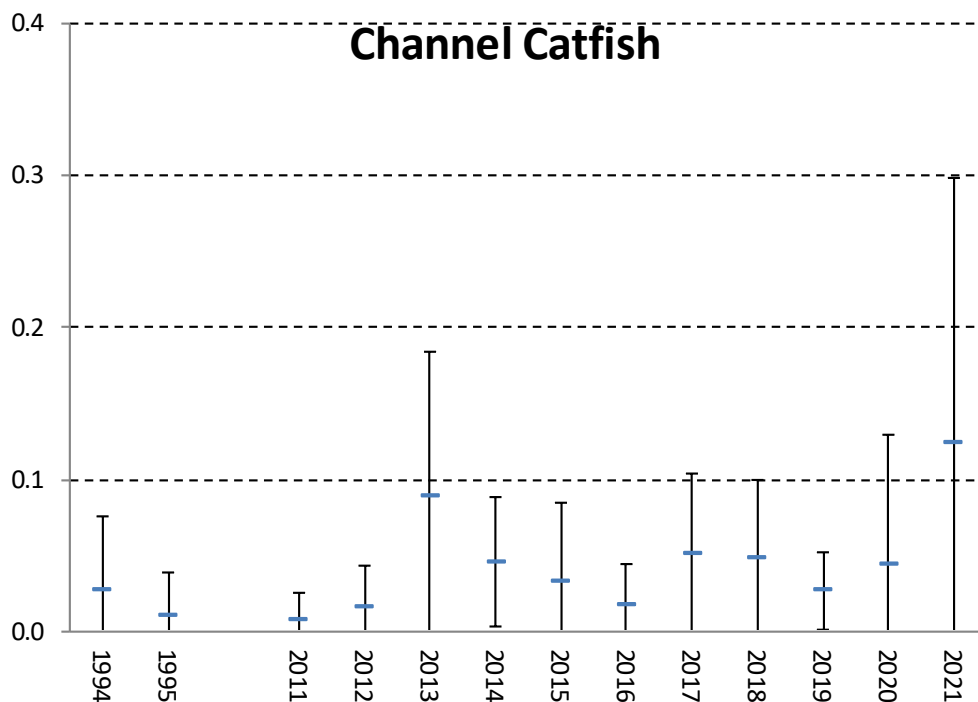


Figure 5. Catch rate of channel catfish in the Colorado River portion of the study area (1994-1995, 2011-2021). Error bars represent 95% confidence intervals.

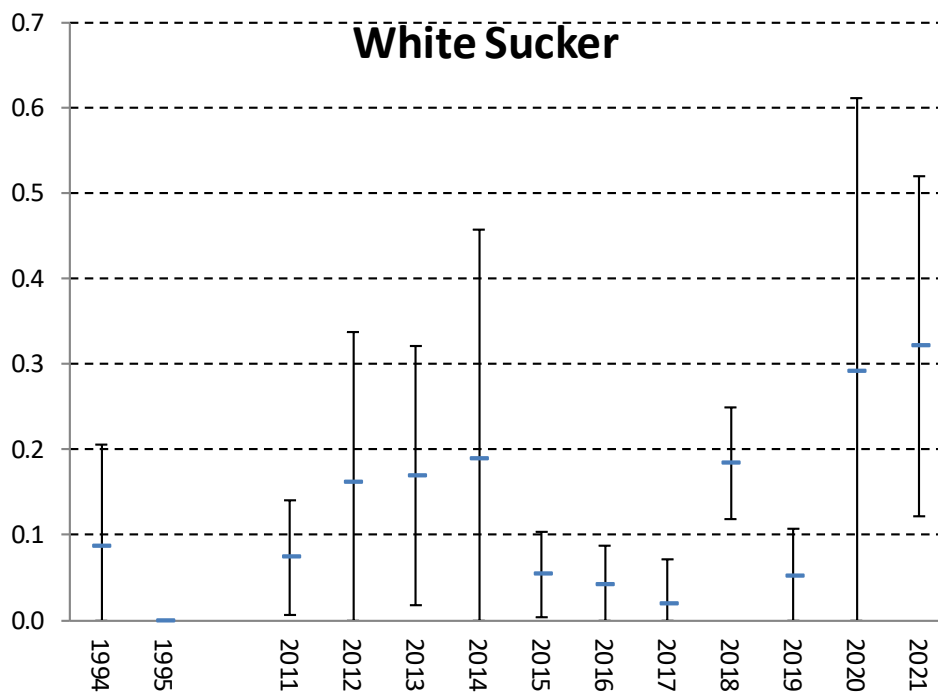


Figure 6. Catch rate of white sucker in the Colorado River portion of the study area (1994-1995, 2011-2021). Error bars represent 95% confidence intervals.

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

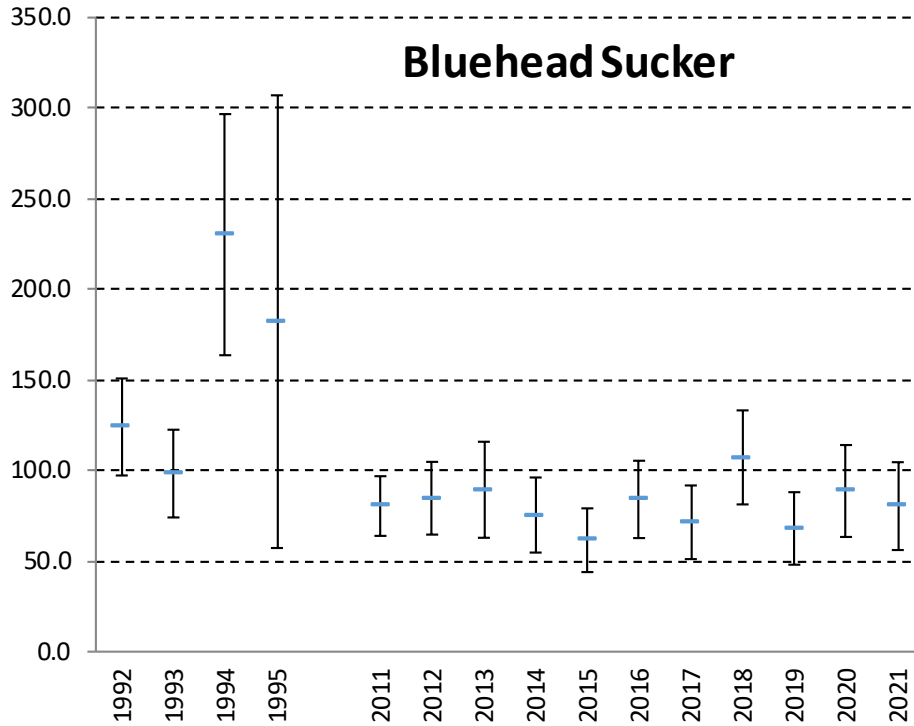


Figure 7. Catch rate of bluehead sucker in the Gunnison River portion of the study area (1992-1995, 2011-2021). Error bars represent 95% confidence intervals.

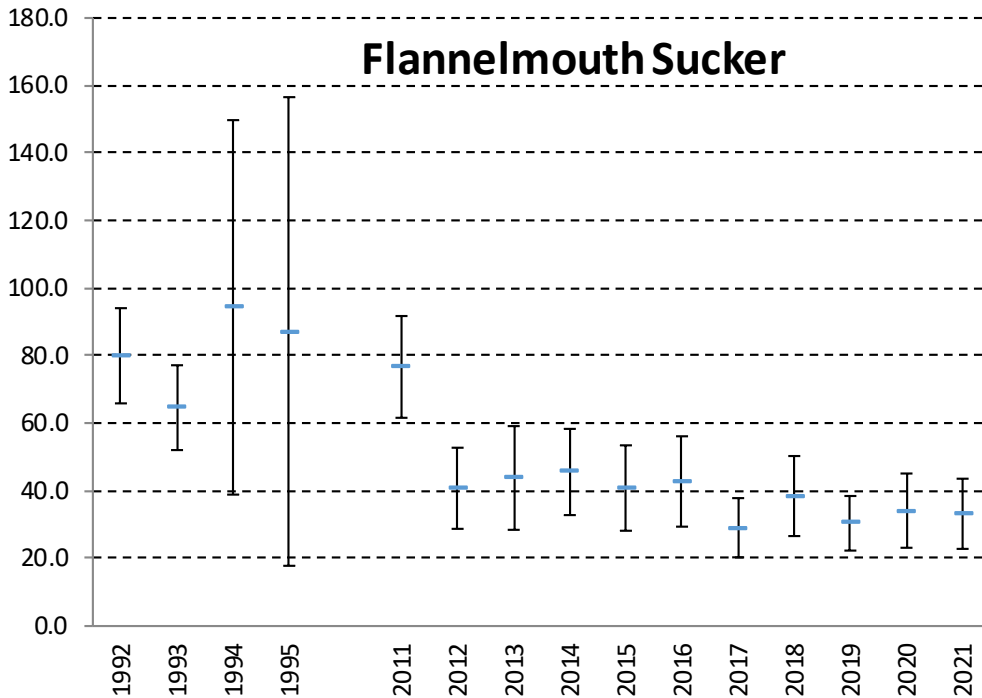


Figure 8. Catch rate of flannelmouth sucker in the Gunnison River portion of the study area (1992-1995, 2011-2021). Error bars represent 95% confidence intervals.

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

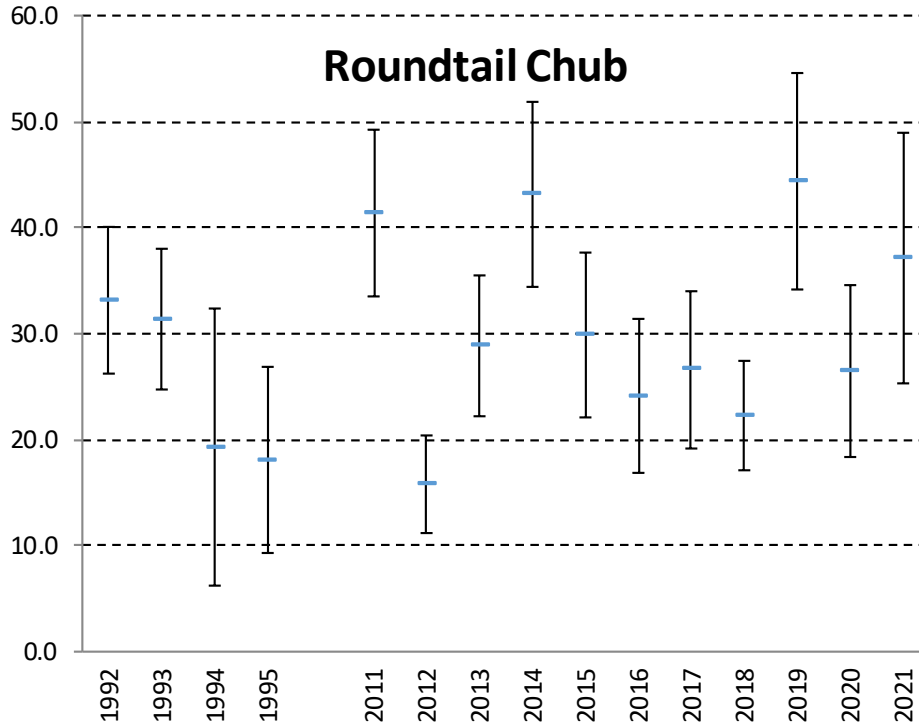


Figure 9. Catch rate of roundtail chub in the Gunnison River portion of the study area (1992-1995, 2011-2021). Error bars represent 95% confidence intervals.

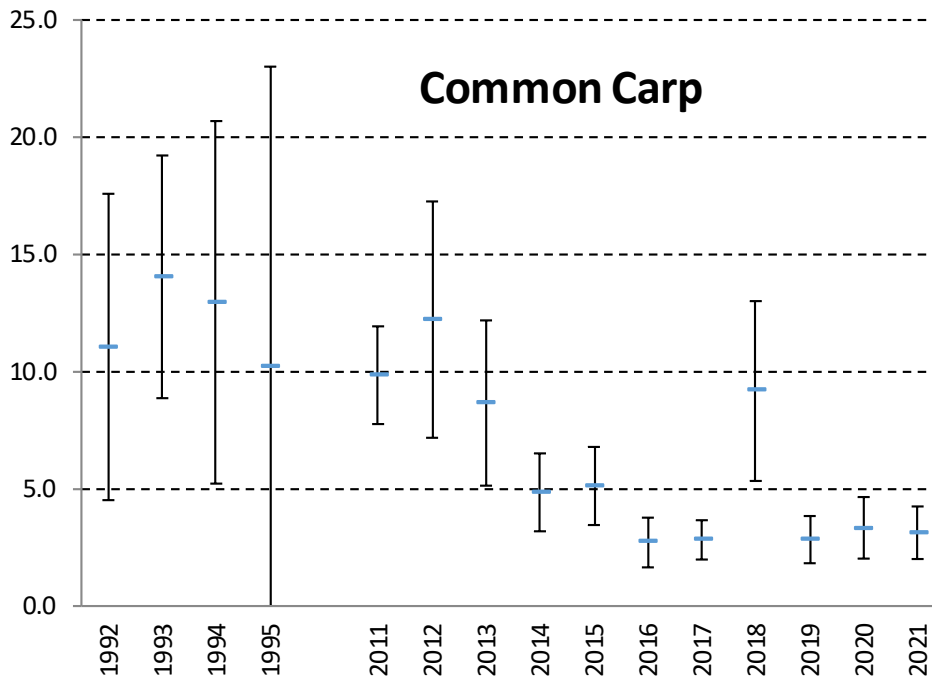


Figure 10. Catch rate of common carp in the Gunnison River portion of the study area (1992-1995, 2011-2021). Error bars represent 95% confidence intervals.

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

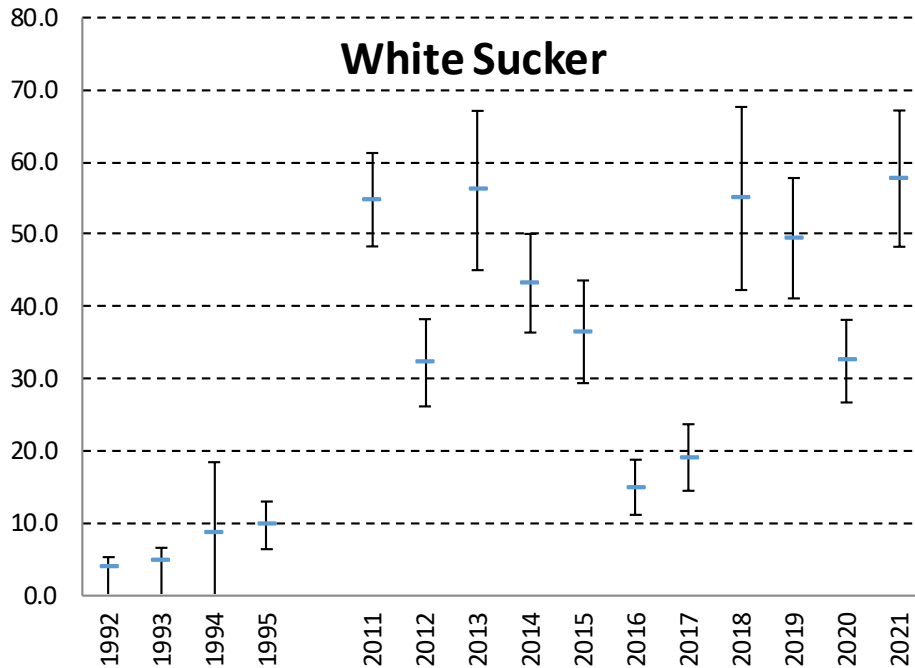


Figure 11. Catch rate of white sucker in the Gunnison River portion of the study area (1992-1995, 2011-2021). Error bars represent 95% confidence intervals.

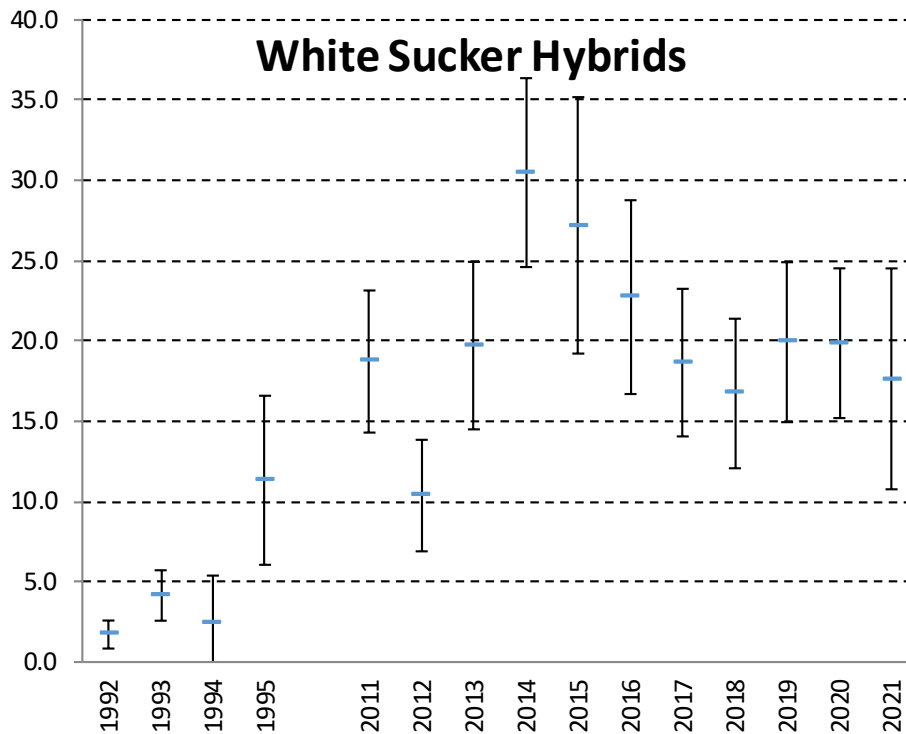


Figure 12. Catch rate of white sucker/native sucker hybrids in the Gunnison River portion of the study area (1992-1995, 2011-2021). Error bars represent 95% confidence intervals.