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: 09/30/2020
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.
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 2020 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Colorado River

Larval fish sampling on the Colorado River began on 6/28/2020 and ended 7/28/2020. Due to the pandemic, sampling began approximately seven weeks later than in a typical year. Crews were able to complete six of the nine funded larval sampling passes despite the late start to sampling. Due to the late start and early warming of the river due to low flows, much of the razorback sucker spawning season was not covered by larval sampling in 2020. No results are available from larval sampling at this time as the samples still need to be transferred to the CSU-LFL for processing.

Young of year (YOY) sampling on the Colorado River was completed from 9/15/2020 to 9/17/2020. 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 and will be submitted to the CSU-LFL for processing to determine the species collected.

Endangered fish captures during this project in the Colorado River portion of the study area included seven razorback suckers. No other endangered fishes were captured in the Colorado River portion of the study area in 2020. All seven of the razorback suckers contained a PIT tag when captured. Stocking year of these razorback suckers included: two stocked in 2013, one in 2015, one in 2018, and two were stocked in 2019. The seventh razorback sucker was captured without a PIT tag in 2017 and was tagged at that time.

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 2020 catch rates for flannelmouth sucker and roundtail chub overlap confidence intervals for all other years. The bluehead sucker catch rate in 2020 is significantly higher than the catch rate in 2014, 2016, and 2017 in the Colorado River.

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 2020 catch rates for carp

and channel catfish overlap confidence intervals for all other years. The white sucker catch rate in 2020 is significantly higher than the catch rates in 1995, 2011, 2015, 2016, 2017, and 2019 in the Colorado River.

Gunnison River

Larval fish sampling on the Gunnison River began on 6/22/2020 and ended 7/29/2020. Due to the pandemic, sampling begin approximately seven weeks later than in a typical year. Crews were able to complete six of the nine funded larval sampling passes despite the late start to sampling. Due to the late start and early warming of the river due to low flows, much of the razorback sucker spawning season was not covered by larval sampling in 2020. No results are available from larval sampling at this time as the samples still need to be transferred to the CSU-LFL for processing.

Young of year (YOY) sampling on the Gunnison River was completed from 9/8/2020 to 9/10/2020. 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 and will be submitted to the CSU-LFL for processing to determine the species collected.

Endangered fish captures during the first Gunnison River sampling trip (8/3/20-8/7/20) included 40 razorback suckers. No other endangered fishes were captured during the first Gunnison River sampling trip. Thirty-nine of the 40 razorback suckers contained a PIT tag when captured. The origin of the 39 razorback suckers that were captured with a PIT tag include: 16 stocked in 2019, three stocked in 2018, nine stocked in 2017, five stocked in 2016, three stocked in 2015, two stocked in 2014 and one stocked in 2008.

During the second Gunnison River sampling trip (9/28/20-10/2/2020), 36 razorback suckers were captured. No other endangered fishes were captured in the Gunnison River during the second sampling trip in 2020. All 36 of the razorback suckers contained a PIT tag when captured. Twenty-two of the 36 razorback were stocked the week prior to the sampling trip. Stocking year of the remaining razorback suckers included: 5 stocked in 2019, one stocked in 2018, three stocked in 2017, three stocked in 2016, one stocked in 2015, and one stocked in 2011.

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 2020 is lower than the catch rate from 1994, but confidence intervals associated with the 2020 catch rates for bluehead sucker overlap confidence intervals for all other years (Figure 7). The mean catch rate of flannelmouth sucker for 2020 is lower than the catch rates from 1992, 1993 and 2011 (Figure 8). Confidence intervals associated with the 2020 catch rates for flannelmouth sucker overlap confidence intervals for all other years (Figure 8). Confidence intervals associated with the roundtail chub catch rate in 2020 overlap for all years (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 2020 catch rates for common carp are lower than in years 1993, 1994, 2011-2013 and 2018 (Figure 10). The white sucker catch rate in 2020 is significantly higher than the catch rates in 1992-1995, 2016 and 2017, and is significantly lower than the catch rates from 2011, 2013, 2018 and 2019 (Figure 11). The

catch rate of white sucker/native sucker hybrids in 2020 is higher than in years 1992-1994 and 2012 (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 until a screen can be constructed. In 2020, 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. Larval fish samples collected in 2020 need to be transferred to the CSU-LFL for analysis. Data collection is on schedule.

FY 2020 Budget Status

Funds Provided: $106,713
Funds Expended: $98,072
Difference: $8,641
Percent of the FY 2020 work completed, and projected costs to complete: 92%, $0
Recovery Program funds spent for publication charges: $0

Status of Data Submission

Data from the 2020 field season has been entered, but still needs to be checked for accuracy. Data will be uploaded to the database by mid-December.

Signed:
Darek Elverud
Principal Investigator
11/23/2020

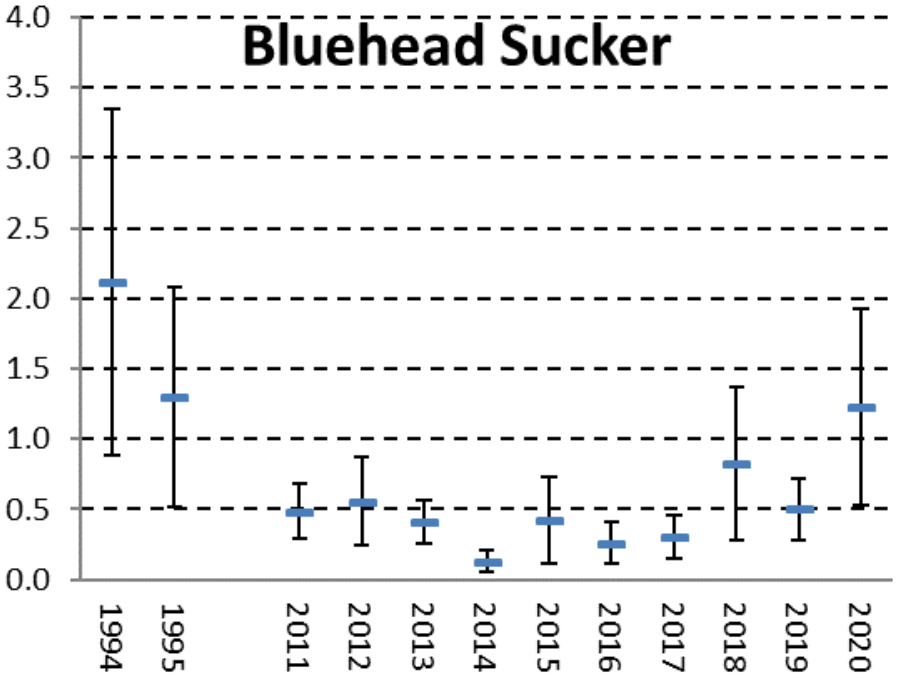

Figure 1.
Catch rate of bluehead sucker in the Colorado River portion of the study area (1994-1995, 2011-2020). Error bars represent 95% confidence intervals.

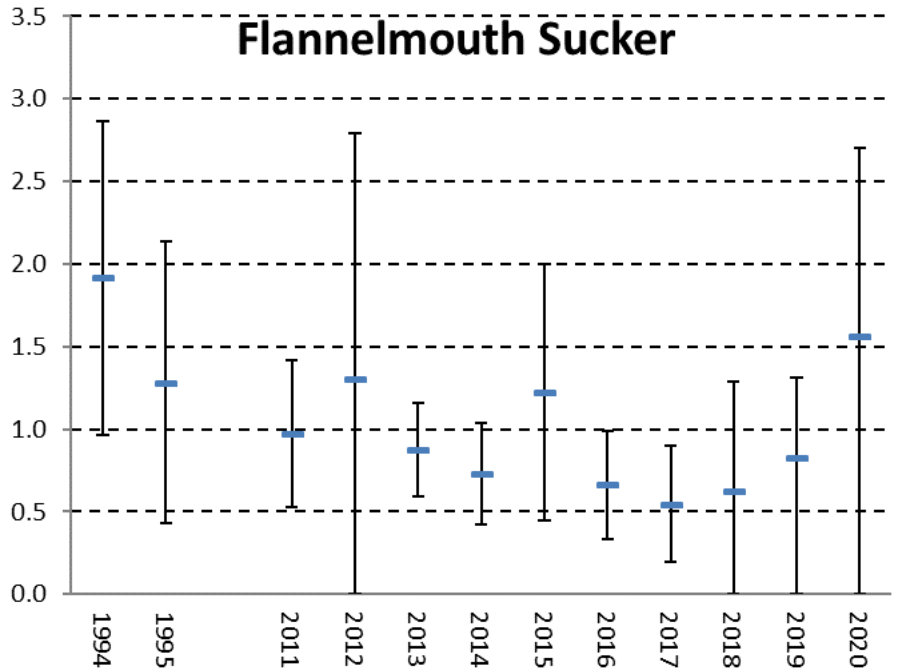

Figure 2.
Catch rate of flannelmouth sucker in the Colorado River portion of the study area (1994-1995, 2011-2020). Error bars represent 95% confidence intervals.

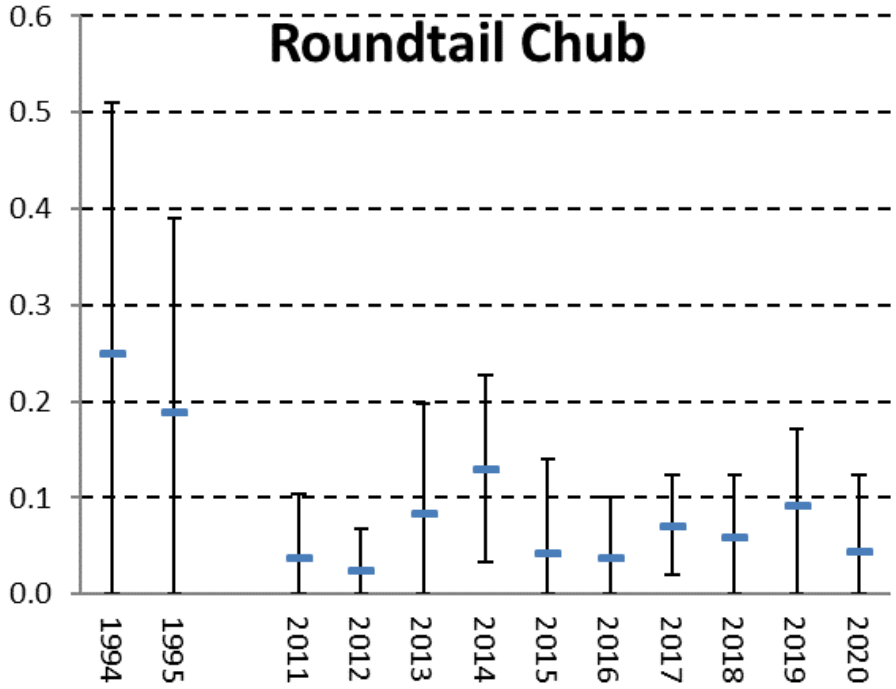

Figure 3.
Catch rate of roundtail chub in the Colorado River portion of the study area (1994-1995, 2011-2020). Error bars represent 95% confidence intervals.

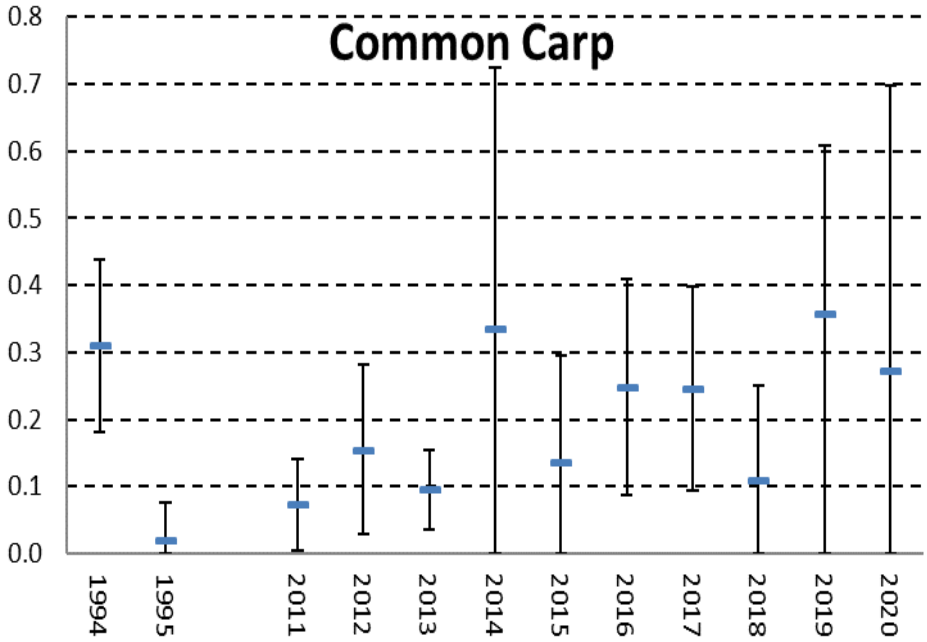

Figure 4.
Catch rate of carp in the Colorado River portion of the study area (1994-1995, 2011-2020). Error bars represent 95% confidence intervals.

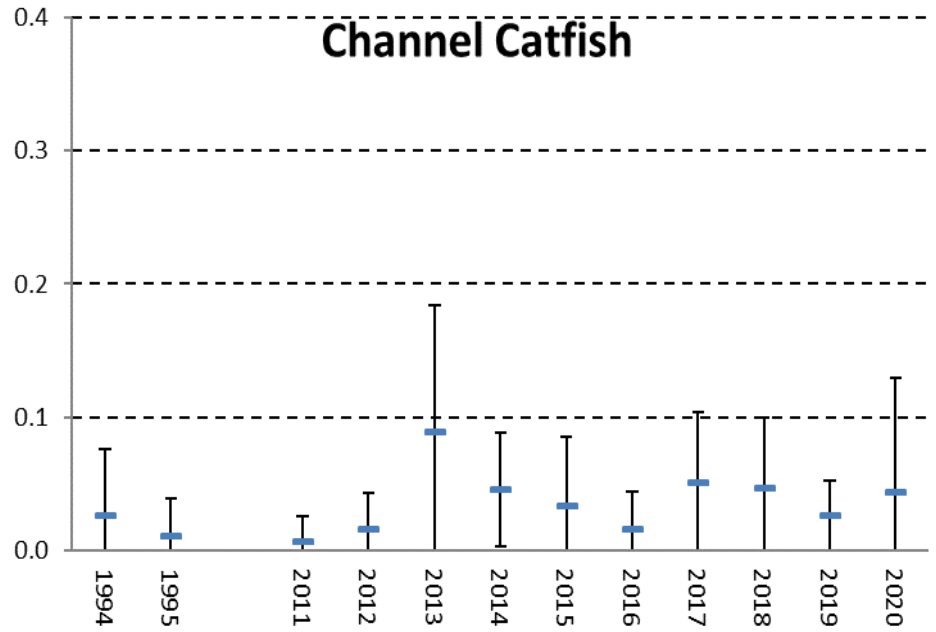

Figure 5.
Catch rate of channel catfish in the Colorado River portion of the study area (1994-1995, 2011-2020). Error bars represent 95% confidence intervals.

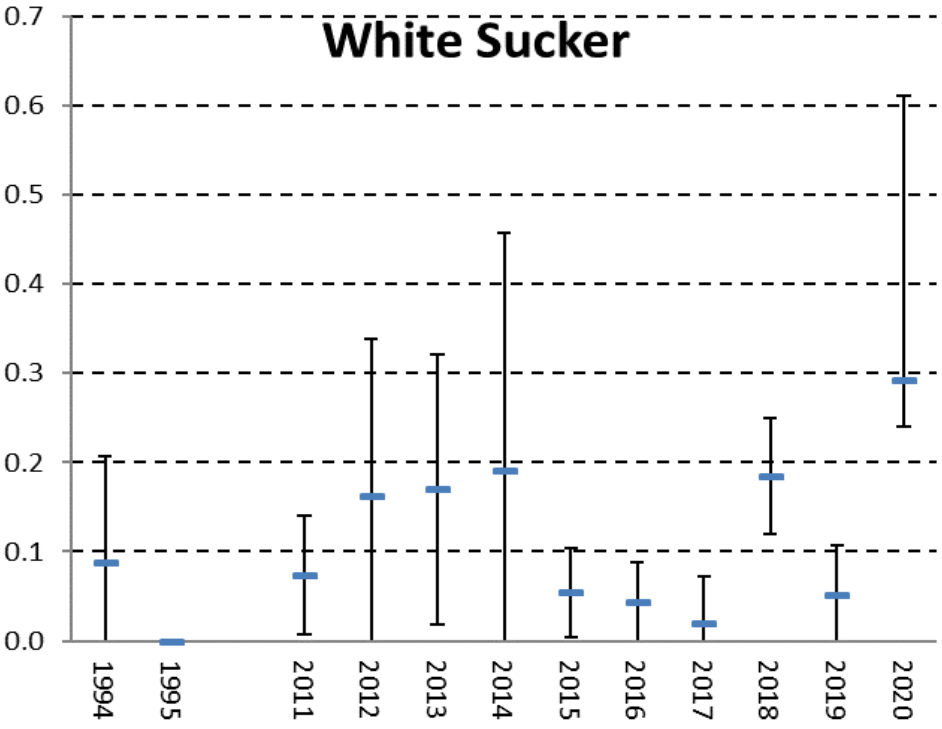

Figure 6.
Catch rate of white sucker in the Colorado River portion of the study area (1994-1995, 2011-2020). Error bars represent 95% confidence intervals.

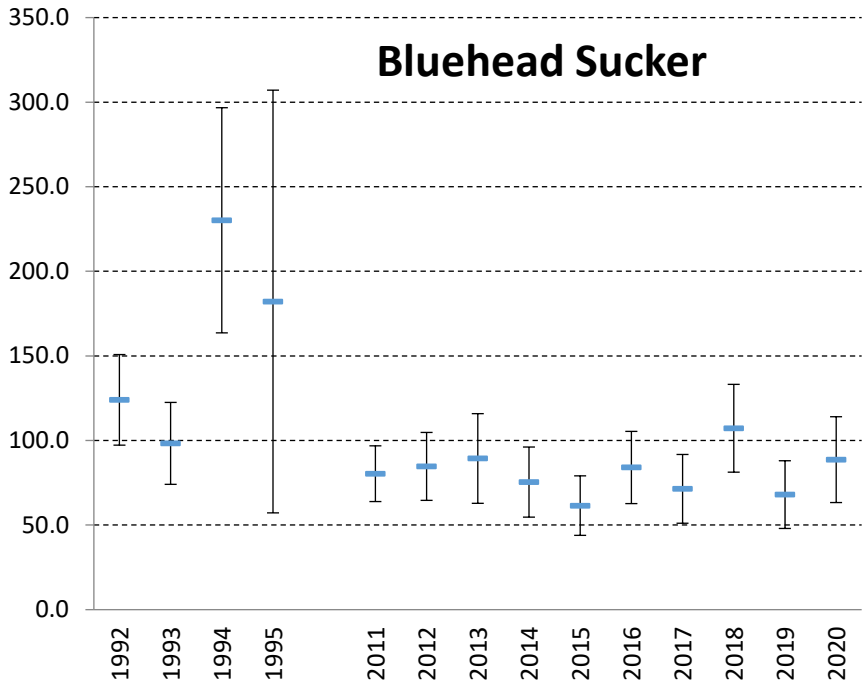

Figure 7.
Catch rate of bluehead sucker in the Gunnison River portion of the study area (1992-1995, 2011-2020). Error bars represent 95% confidence intervals.

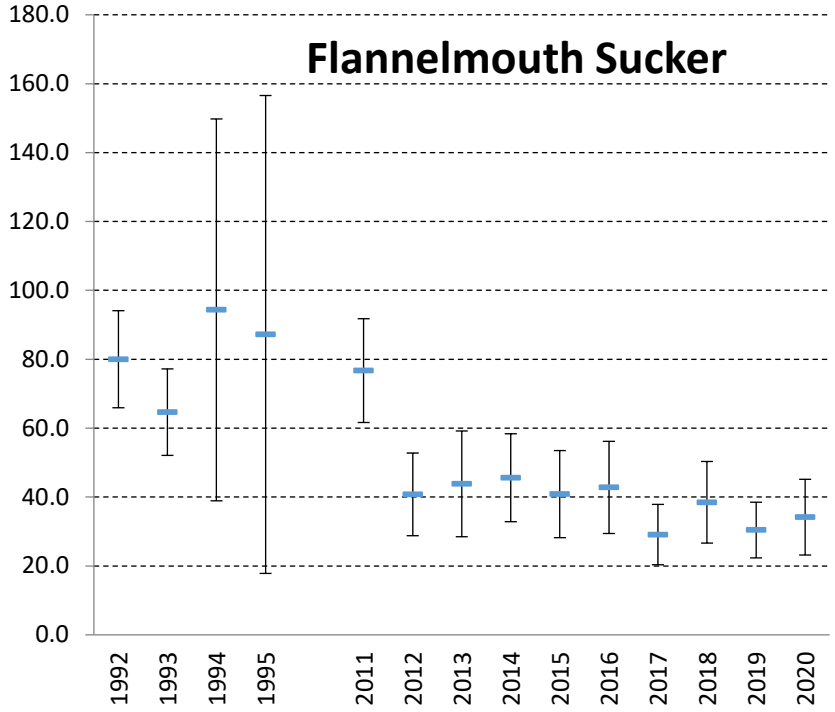

Figure 8.
Catch rate of flannelmouth sucker in the Gunnison River portion of the study area (1992-1995, 2011-2020). Error bars represent 95% confidence intervals.

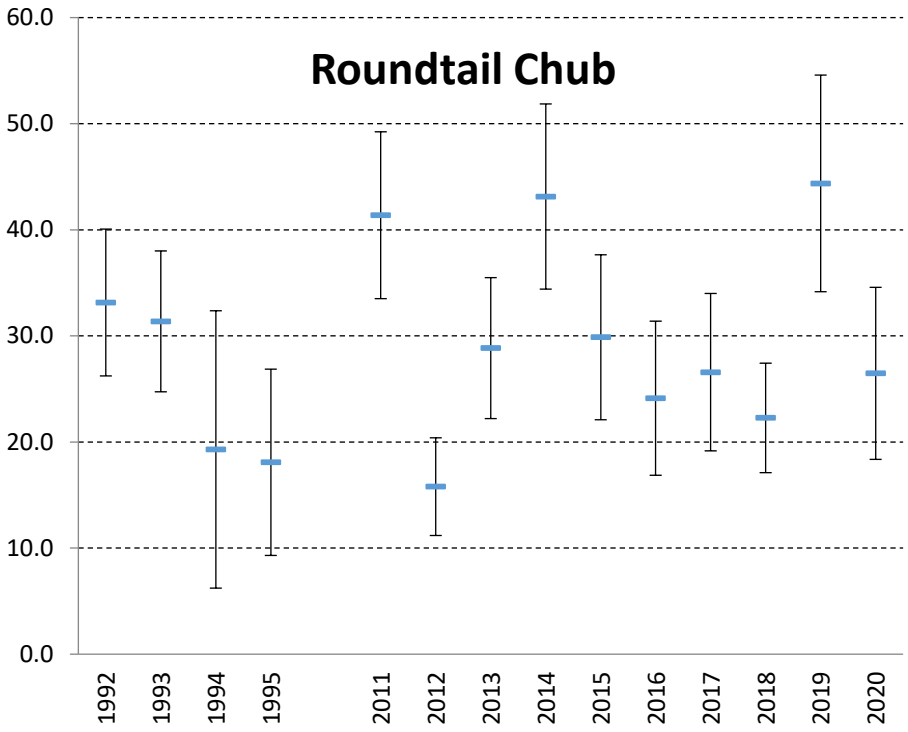

Figure 9.
Catch rate of roundtail chub in the Gunnison River portion of the study area (1992-1995, 2011-2020). Error bars represent 95% confidence intervals.

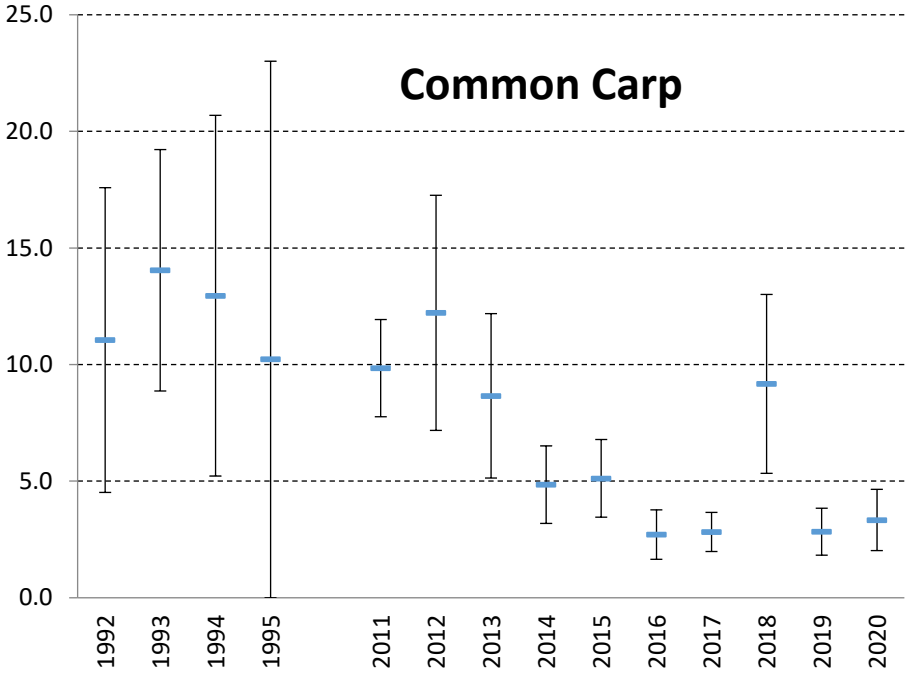

Figure 10.
Catch rate of common carp in the Gunnison River portion of the study area (1992-1995, 2011-2020). Error bars represent 95% confidence intervals.

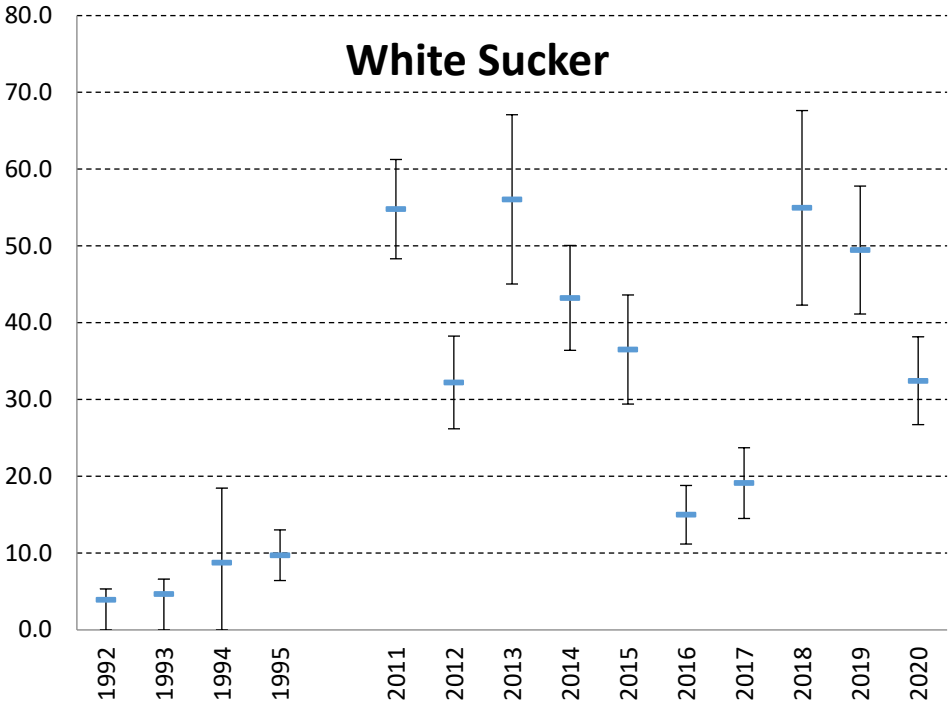

Figure 11.
Catch rate of white sucker in the Gunnison River portion of the study area (1992-1995, 2011-2020). Error bars represent 95% confidence intervals.

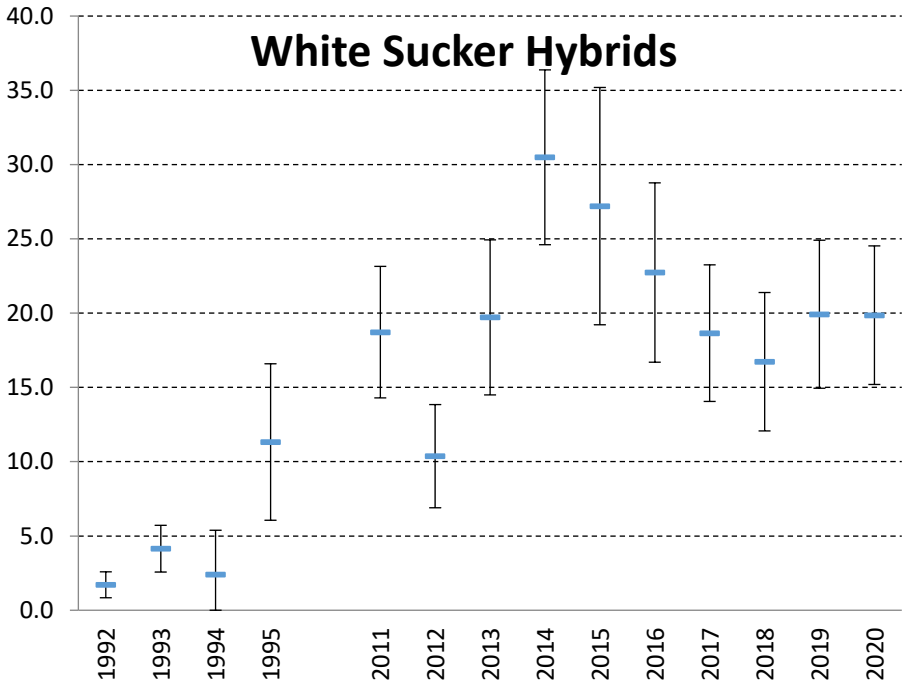

Figure 12.
Catch rate of white sucker/native sucker hybrids in the Gunnison River portion of the study area (1992-1995, 2011-2020). Error bars represent 95% confidence intervals.