

I. 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.**

II. Bureau of Reclamation Agreement Number(s): R15PG00083

Project/Grant Period: Start date (Mo/Day/Yr): 10/1/2014
End date: (Mo/Day/Yr): 9/30/2019
Reporting period end date: 9/30/2017
Is this the final report? Yes _____ No X

III. Principal Investigator(s): Darek Elverud, Principle Investigator
Dale Ryden, Project Leader
U.S. Fish and Wildlife Service
445 West Gunnison Avenue
Grand Junction, Colorado 81501
Phone: (970) 628-7203
Fax: (970) 628-7217
Email: darek_elverud@fws.gov
dale_ryden@fws.gov
doug_osmundson@fws.gov

IV. 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 (late September-early October) using ISMP methodology (see McAda 1994) in both the Gunnison (Delta, CO to the confluence) and Colorado (Gunnison confluence to CO/UT stateline) rivers. Concurrent with fish community monitoring in the Gunnison River, tissue samples are collected to determine selenium concentrations in fish before and after implementation of the SMP. Muscle plugs are collected from bonytail, Colorado pikeminnow and razorback sucker.

- V. Study Schedule: 2011-2018
Field Work: 2011- ongoing
Juvenile and adult fishes report: 2017
Larval Fishes report: 2017
- VI. 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.
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.
- VII. Accomplishment of FY 2017 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Tasks Accomplished

- Tasks 1-2. Electrofishing community sampling (August and October)
Tasks 3-4. Sample fish larvae (early May to August)
Tasks 5-6. Seine sampling of backwaters (September)
Task 9. Analyze larval samples (Larval Fish Lab)
Task 10. Analyze data
Task 11. Write annual report

Tasks Not Accomplished

Task 12. The final contaminants report (Barb Osmundson) is in progress. This work was not funded by the Bureau of Reclamation through the Recovery Program. However a working draft of the final contaminants report (for informational purposes only) was distributed to members of the Biology Committee and Recovery Program office on 18 October 2017.

Deliverables

Annual report

Accomplishments and Initial Findings

Tasks 1-6 were completed according to planned field schedules.

Two electrofishing trips were completed on the Gunnison River from Delta, Colorado downstream to river mile (RM) 3.9 (approximately 1 mile upstream of the Redlands Dam). Dates for the Gunnison River electrofishing trips were August 7th-11th and October 2nd-6th. Captures from the August sampling trip include twenty-two razorback sucker and one Colorado pikeminnow. The Colorado pikeminnow was initially captured

at the Redlands Fish Ladder and translocated upstream to Escalante boat ramp on July 17, 2017. Captures from the October sampling trip include 39 razorback sucker. Twenty-five of the 39 razorback sucker captured were recently stocked at Delta, Colorado. The remaining 14 razorback sucker had been at large in the Gunnison River from one to five years.

Electrofishing sampling was completed on the Colorado River portion of the study area on September 26th and 27th. One bonytail and four razorback sucker were captured during electrofishing sampling in the Colorado River portion of the study area. All five endangered fish captured in 2017 contained a PIT tag when captured. The bonytail was recently stocked in the Colorado River while the razorback suckers capture had been in the river for one to four years. The 2011-2017 Colorado River electrofishing sampling data have been entered and comparisons with the 1994 and 1995 CPE data are presented in Figure 1.

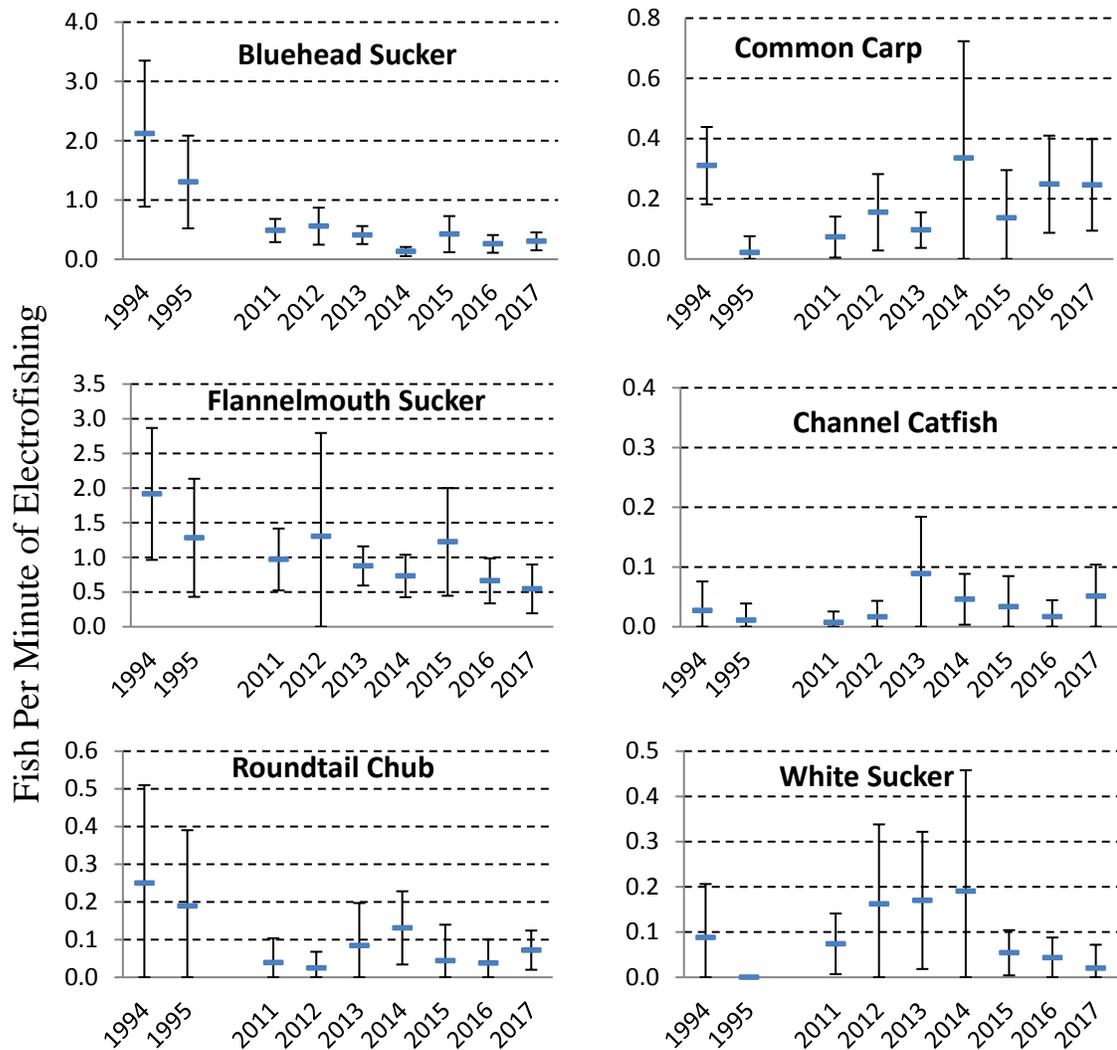


Figure 1. Electrofishing catch rates (mean number of fish caught per minute of electrofishing) of the six most commonly collected species. Errors bars represent 95% confidence intervals.

Catch rate data from electrofishing surveys of the 18-mile reach of the Colorado River downstream of the Colorado River/Gunnison River confluence are presented for the six most common collected species. Study reaches were held constant from the early sampling period (1994-1995). No differences exist in catch rates of common carp, flannelmouth sucker, channel catfish, roundtail chub or white sucker between the recent sampling period (2011-2017) relative to the catch rates during the early sampling period (1994-1995). A significant decrease in the catch rate of bluehead sucker is present between data collected in 2017 relative to data collected during 1994 and 1995. Mean catch rates include all size classes of each species captured by electrofishing.

Larval sampling began May 9th on both the Gunnison River and Colorado River. Sampling continued until July 27th on the Gunnison River and August 3rd on the Colorado River. Larval fish samples collected in 2017 were transferred to the CSU-Larval Fish Lab in October 2017. Seine sampling for young-of-year fishes was completed from September 12th-14th on the Gunnison River and September 18th-19th on the Colorado River. Fishes were either identified in the field or preserved to be identified by the CSU Larval Fish Lab. No endangered fishes were captured during seine sampling in either the Colorado or Gunnison Rivers in 2017.

Tissue samples from bonytail, Colorado pikeminnow, razorback sucker, and razorback sucker/flannelmouth sucker hybrids have been collected in the Gunnison River during previous years. No tissue samples were collected in 2017. Samples from previous years have been analyzed, but a report has not been finalized. See first paragraph under the heading “shortcomings” for an explanation.

While no razorback sucker population estimate has been calculated for the 18-Mile Reach of the Colorado River, preliminary population estimates were generated for razorback sucker in the Colorado River as a whole (from Palisade, CO downstream to its confluence with the Green River), for adult fish > 400 mm TL. Data used to generate razorback sucker population estimates was obtained during the Colorado pikeminnow population estimate studies done in 2005 and 2008-2010. The results are as follows:

| <u>Year</u> | <u>Point Estimate</u> | <u>95% Confidence Intervals</u> |
|-------------|-----------------------|---------------------------------|
| 2005 | 656 | 436-877 |
| 2008 | 2,035 | 1,333-2,738 |
| 2009 | 1,680 | 1,070-2,291 |
| 2010 | 1,637 | 1,179-2,095 |

Data collected during the 2013 to 2015 Colorado pikeminnow population estimate sampling period is sufficient to calculate a riverwide razorback sucker population estimate, but the estimates have not been completed at this time.

Shortcomings

The preparation of the final contaminants report by Barb Osmundson will be funded outside the Recovery Program. Ms. Osmundson, whom retired in spring 2017, has completed a draft of the report (distributed, as discussed above, on 18 October 2017), but

the timeline for her to finalize the report is uncertain. Ms. Osmundson has committed to completing the report regardless of her retirement.

- VIII. Additional noteworthy observations: Smallmouth bass were recently discovered in Ridgeway Reservoir on the Uncompahgre River upstream of its confluence with the Gunnison River. In 2017, no smallmouth bass were collected or observed during electrofishing sampling on the Gunnison River upstream of Redlands Dam.
- IX. 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.
- X. Project Status: Field work and data collection are on track and ongoing. Abundance estimates for razorback sucker riverwide for 2005 and 2008-2010 have been generated. Data collection for the 3 year estimate (2013-2015) for razorback sucker collected via the Colorado pikeminnow abundance estimate project (# 127) has been completed. However, the point estimates themselves have not yet been generated. The draft report for large-bodied and young-of-year fishes is behind schedule, but is progressing.
- XI. FY 2017 Budget Status
 - A. Funds Provided: \$118,365
 - B. Funds Expended: \$118,365
 - C. Difference: \$0
 - D. Percent of the FY 2017 work completed, and projected costs to complete: 100%
 - E. Recovery Program funds spent for publication charges: \$0
- XII. Status of Data Submission: All data have been entered and checked for errors. Data will be submitted to the database manager in November 2017.
- XIII. Signed: Darek Elverud 11/13/2017
Principal Investigator Date