

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2020 ANNUAL REPORT

PROJECT: 160

Project Title

Assessment of Stocked Razorback Sucker Reproduction in the Lower Green and Lower Colorado Rivers

Bureau of Reclamation Agreement Number:

R19AP00059

Project/Grant Period:

Start date: 10/01/2018

End date: 09/30/2023

Reporting period end date: 09/30/2020

Is this the final report? No

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Abstract:

Determining the location, timing, extent, and success of razorback sucker spawning is essential for evaluating the effectiveness of the stocking program, identifying recruitment, and guiding future management. This study was designed to determine the spawn timing as well as presence/absence and distribution of larval, young-of-year (YOY) and age-1+ razorback suckers in the Green River downstream from the town of Green River and in the Colorado River downstream of Cisco. The study was prompted by increasing razorback sucker encounters, the presence of multiple age classes, and congregations of ripe razorback suckers (2001 – 2003 and 2006 – 2008; Bestgen et al 2012, UDWR unpublished data) during Colorado pikeminnow surveys. With the exception of 2020, total number of larvae captured annually by light trapping has increased significantly on both the Green and Colorado Rivers since sampling began in 2009 and 2014, respectively. In 2020, seine sampling for YOY and age-1+ razorback suckers was conducted as usual in July and August once overnight field work resumed. One young-of-year razorback was collected from the lower Green River in 2020 during seine sampling. Additionally, several other possible razorbacks were collected from both the Green and Colorado Rivers and sent to CSU LFL for identification confirmation. If confirmed, young-of-year razorback suckers will have been encountered during seining efforts on the lower Green and Colorado Rivers consistently since 2017.

Study Schedule:

Initial year 2009 – Ongoing

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Relationship to RIPRAP:

GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN

- V. Monitor populations and habitat and conduct research to support recovery actions (research, monitoring, and data management).
- V.A. Measure and document population and habitat parameters to determine status and biological response to recovery actions.
- V.B.2. Conduct appropriate studies to provide needed life history information.

GREEN RIVER ACTION PLAN: MAINSTEM

- V. Monitor populations and habitat and conduct research to support recovery actions (research, monitoring, and data management).
- V.D.1. Implement razorback sucker monitoring plan.

COLORADO RIVER ACTION PLAN: MAINSTEM

- V. Monitor populations and habitat and conduct research to support recovery actions (research, monitoring, and data management).
- V.E. Implement razorback sucker monitoring plan.

Accomplishment of FY 2020 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Task 1: Lower Green River light trap sample collection:

Larval light trap samples were not collected due to the suspension of overnight field operations as a result of the COVID-19 pandemic.

Task 2: Lower Green River sampling for YOY and age 1+ razorback sucker:

Seine samples were collected between the confluence (river mile 0) and river mile 119.7 (near Saleratus wash) during two sampling passes. The first pass was conducted 7/11/2020 – 7/13/2020. The second pass was conducted 8/11/2020 – 8/13/2020. During both sampling passes, an estimated total of 6,414 m² was seined in 128 seine hauls within 74 unique habitats. These habitats included backwaters, which constituted 71.6% of all habitats sampled, embayments (9.5%), side channels (6.8%), isolated pools (6.8%) and shorelines (5.4%). The estimated area of individual habitats ranged from 68 m² to 10,710 m² with an average habitat area of 1,470 m² ± 236 m². The maximum depth of sampled habitats ranged from 0.28 meters to over a meter deep with 42% of the habitats having a maximum depth of one meter or greater.

During sampling, main channel water temperatures ranged from 21 °C to 28 °C with an average temperature of 24.4 °C. Main channel Secchi disk measurements ranged from 380 mm to 650 mm with an average Secchi of 520 mm ± 9 mm. Habitat water temperatures ranged from 18 °C to 32 °C with an average temperature of 25.8 °C. Habitat Secchi disk measurements ranged from 120 mm to 752 mm with an average Secchi of 471 mm ± 27 mm.

During seine sampling on the lower Green River, there was one YOY razorback sucker captured, photographed, and released alive (Figure 1). This razorback was captured during the second sampling pass (on 8/11/2020) at river mile 105.2. This fish measured 61 mm in total length and appeared to have *Lernaea* attached to it. Other possible razorbacks captured were preserved and sent to CSU LFL for identification. There were 15 samples preserved (all taken on the first pass of sampling in July) and sent to the CSU LFL for fish identification. There were no juvenile (age-1+) razorback suckers captured during seining.

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Additional native and non-native species captured during 2020 seining efforts on the lower Green River can be found in Table 1 and Table 2, respectively. Other non-native fish captured (not reported in Table 2) include: red shiner, sand shiner, and fathead minnow.

Task 3: Lower Colorado River light trap sample collection:

Larval light trap samples were not collected due to the suspension of overnight field operations as a result of the COVID-19 pandemic.

Light trap samples were collected near Moab at the inlet of the Matheson Wetland as part of project 176. Samples were sent to the LFL for identification, but from initial review of preserved specimens it appears that razorback sucker larvae were likely present.

Task 4: Lower Colorado River sampling for YOY and age 1+ razorback sucker:

Seine samples were collected between river miles 3.5 and 110.2 (near the Cisco boat ramp) during two sampling passes. The first pass was conducted 7/14/20 – 7/22/20. The second pass was conducted 8/14/2020 – 8/20/2020. During both sampling passes, an estimated total of 7,479 m² was seined in 137 seine hauls within 100 unique habitats. These habitats included backwaters, which constituted 65% of all habitats sampled, embayments (11%), side channels (5%), isolated pools (14%) and shorelines (3%). The estimated area of individual habitats ranged from 18 m² to 17,000 m² with an average habitat area of 1,849 m² ± 288 m². The maximum depth of habitats ranged from 0.08 meters to over a meter deep. 34% of the habitats sampled had a maximum depth of one meter or greater.

During sampling, main channel water temperatures ranged from 22 °C to 26 °C with an average temperature of 23.6 °C. Main channel Secchi disk measurements ranged from 380 mm to 1020 mm with an average Secchi of 765 mm ± 19 mm. Habitat water temperatures ranged from 19 °C to 30 °C with an average temperature of 24.2 °C. Habitat Secchi disk measurements ranged from 240 mm to 900 mm with an average Secchi of 502 mm ± 28 mm.

During seining on the Colorado River, there were 27 samples of unidentifiable fish preserved (with 24 samples taken on the first pass and 3 samples taken on the second pass). There were no juvenile (age-1+) razorback suckers captured during seining. There was, however, one adult razorback sucker captured that measured 520 mm in total length. We did not detect a 134 Hz PIT tag on this fish, although we did not have a PIT tag scanner compatible to scan for an old 400 Hz tag. We did not PIT tag this fish since the fish appeared stressed, and we suspected that further handling and insertion of a PIT tag would have caused mortality.

Additional native and non-native species captured during 2020 seining efforts on the Colorado River can be found in Table 1 and Table 2, respectively. Other non-native fish captured (not reported in Table 2) include: red shiner, sand shiner, and fathead minnow.

Task 5: Preliminary sample identification, data entry, analysis and reporting:

All data has been entered. Collected samples have been submitted to CSU LFL for identification. This annual report will be updated and resubmitted upon completion of fish identification.

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Additional noteworthy observations:

Young-of-Year Colorado pikeminnow abundance on the Lower Green and Colorado Rivers:

During 2020 seine sampling for project 160, a total of 236 and 203 YOY Colorado pikeminnow were captured on the lower Green and Colorado Rivers, respectively. An effort was made to release all captured pikeminnow alive, however five mortalities occurred during processing in the field. The catch per unit effort was 3.7 pikeminnow caught per 100 m² and 2.7 pikeminnow caught per 100 m² on the lower Green and Colorado, respectively.

Recommendations:

- Continue seining in both the Colorado and Green Rivers (July-September) to determine successful recruitment of YOY and juvenile razorback suckers.
- Continue sampling via light trapping for larval razorback sucker in both the Colorado and Green Rivers (May-June) to determine the annual success and timing of reproduction.
- Consider using alternative sampling methods to document recruitment success in areas that are difficult to sample via seine. Alternative methods may include boat electrofishing and using a trawl to sample cobble bars and higher velocity habitats.
- Consider conducting further research to help determine what conditions contribute to high YOY razorback captures in our study area. This may then aid in developing a hypothesis for what conditions support survival of razorback sucker from larval to early juvenile stages.

Project Status:

On track and ongoing

FY 2020 Budget Status

Funds Provided: \$52,525

Funds Expended: \$39,777

Difference: \$12,748

Percent of the FY 2020 work completed, and projected costs to complete: 75%, \$0

Recovery Program funds spent for publication charges: \$0

Status of Data Submission

All data will be submitted upon completion of fish identification by CSU LFL.

Signed:

Karen Burke

Principal Investigator

November 9th, 2020

Literature Cited:

Bestgen, K.R., Zelasko, K.A., White, G.C. 2012. Monitoring reproduction, recruitment, and population status of razorback sucker in the upper Colorado River basin. Final report of Colorado State University Larval Fish Laboratory to Upper Colorado River Endangered Fish Recovery Program, Denver, CO.

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Table 1.

Counts of identifiable native fish captured via seining on the lower Green and Colorado Rivers (n represents the number of seine hauls). This table does not include any fish that were preserved for identification by CSU LFL. Species abbreviations are as follows: RZ = razorback sucker; CS = Colorado pikeminnow; CH = unknown chub; FM = flannelmouth sucker; BH = bluehead sucker; SU = unknown sucker; SD = speckled dace.

Reach	RZ	CS	CH	FM	BH	SU	SD
Green River (RM 0-119.7) n=128	1	236	3	13	8	3	1
Colorado River (RM 3.5-110.2) n=137	1	203	16	6	91	3	7
Total	2	439	19	19	99	6	8

Table 2.

Counts of non-native fish captured via seining on the lower Green and Colorado Rivers (n represents the number of seine hauls). This table does not include any fish that were preserved for identification by CSU LFL. Species abbreviations are as follows: BB = black bullhead; CC = channel catfish; CP = common carp; GA = western mosquito fish; GS = green sunfish; GZ = gizzard shad; LG = largemouth bass; SM = smallmouth bass; WS = white sucker.

Reach	CP	GS	GZ	GA	SM	BB	WS	LG	CC
Green River (RM 0-119.7) n=128	31	109	4	0	0	0	3	0	5
Colorado River (RM 3.5-110.2) n=137	40	157	547	292	22	80	3	2	4
Total	71	266	551	292	22	80	6	2	9

Figure 1.

Young-of-year razorback sucker captured on the Lower Green River during the second sampling pass at river mile 105.2.

