COLORADO RIVER RECOVERY PROGRAM
FY 2017 ANNUAL PROJECT REPORT

RECOVERY PROGRAM
PROJECT NUMBER: 160

I. Project Title: **Assessment of Stocked Razorback Sucker Reproduction in the Lower Green and Lower Colorado Rivers**

II. Bureau of Reclamation Agreement Number: R14AP00007

Project/Grant Period: Start Date: 05/01/2014
End date: 09/30/2018
Reporting period end date: 09/30/2017
Is this a final report? Yes____ No__X__

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IV. 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 presence/absence, distribution, and spawn timing of young-of-year (YOY) razorback sucker in the Green River downstream from the town of Green River and in the Colorado River downstream of Moab. 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of multiple age classes, and congregations of ripe razorback suckers (2001-2003 and 2006-2008; Bestgen et al 2012, UDWR unpublished data) encountered during Colorado pikeminnow surveys. Larval razorbacks have been successfully collected since the beginning of the project by either light trapping and/or seining.

V. Study Schedule: Initial year 2009, final year ongoing. It is anticipated that a comprehensive razorback monitoring plan will be developed based on this study.

VI. 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.A. Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.
V.D. Complete monitoring plan in FY 11 (based, in part, on recommendations from evaluation of stocked razorback report).

COLORADO RIVER ACTION PLAN: MAINSTEM

V. Monitor populations and habitat and conduct research to support recovery actions (research, monitoring, and data management).
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:

Task 1: Lower Green River light trap sample collection: Larval light trap samples were collected at sites between river miles 199.6 (Saleratus Canyon) and 4.2 (Shot Canyon). Three sampling events occurred in conjunction with Green River Colorado pikeminnow estimates (Project #128) from 5/4/2017-6/16/2017. A total of 126 light trap samples were collected and of those, 112 samples were sent to the Colorado State University Larval Fish Laboratory (CSU larval fish lab) for identification. During the study, main channel temperatures ranged from 13.0°C to 21.0°C with a median temperature of 18.0°C. Habitat temperatures ranged from 14.5°C to 26.0°C with a median temperature of 19.0°C.

A total of 112 light trap samples were taken in 2016 and 99 were sent to CSU larval fish lab for identification. The 2016 sample results have been received from the CSU larval fish lab; analysis and resubmission of the 2016 report will occur during the winter of 2017-2018.

Task 2: Lower Green River sample for YOY and age 1+ razorback sucker: Seine samples were collected between river miles 119.6 and 0.3 during two sampling trips between 7/24/2017-9/2/2017. A total of ~3,635m² was seined in 117 seine hauls within 54 individual habitats. These habitats included backwaters which constituted 57.4% of all areas sampled, flooded tributaries (18.5%), embayments (12.9%), runs (7.4%), and shorelines (3.7%). Twenty-two samples were sent to the CSU larval fish lab for identification. During the study, main channel temperatures ranged from 23.0°C to

27.5°C with a median temperature of 26.0°C. Habitat temperatures ranged from 20.5°C to 31.0°C with a median temperature of 26.0°C.

A total of 112 seine samples were taken during 2016 and 13 were sent to the CSU larval fish lab for identification. The 2016 sample results have been received from the CSU larval fish lab; analysis and resubmission of the 2016 report will occur during the winter of 2017-2018.

Task 3: Colorado River light trap sample collection: Light trap samples were collected at sites between river miles 61.2 and 21.2 during three sampling events from 5/15/2017-6/22/2017. A total of 80 light trap samples were collected and of those, 75 samples were sent to the CSU larval fish lab for identification. During the study, main channel temperatures ranged from 14.0°C to 24.0°C with a median temperature of 18.5°C. Habitat temperatures ranged from 14.0°C to 27.0°C with a median temperature of 20.0°C.

A total of 91 light trap samples were taken in 2016 and 78 samples were sent to CSU larval fish lab for identification. The 2016 sample results have been received from the CSU larval fish lab; analysis and resubmission of the 2016 report will occur during the winter of 2017-2018.

Task 4: Colorado River sample for YOY and age 1+ razorback sucker: Seine samples were collected between river miles 80.1 and 1.4 during two sampling events between 7/18/2016 and 8/24/2016. A total of 5,758m² was seined in 112 seine hauls within 73 habitats. These habitats included backwaters which constituted 50.7% of all areas sampled, flooded tributaries (20.5%), shorelines (16.4%), embayments (8.2%), isolated pools (1.4%), run (1.4%), and island tips (1.4%). Thirteen samples were sent to CSU larval fish lab for identification. During the study, main channel temperatures ranged from 22°C to 27.5°C with a median temperature of 23°C. Habitat temperatures ranged from 19°C to 32°C with a median temperature of 25°C.

A total of 120 seine samples were taken during 2016 and 5 were sent to the CSU larval fish lab for identification. Six samples were collected using a backpack electrofisher and no fish were preserved. The 2016 sample results have been received from the CSU larval fish lab; analysis and resubmission of the 2016 report will occur during the winter of 2017-2018.

Task 5: Preliminary sample identification, data entry, analysis and reporting: All data has been entered. Collected samples have been submitted to the CSU larval fish laboratory for identification. This annual report will be updated and resubmitted upon completion of the larval fish identification.

VIII. Additional noteworthy observations:

One additional sampling trip was conducted in the inflow area of the Colorado River into Lake Powell. Light trap, minnow trap and seine samples were taken between river miles

196.6 and 167.6 (North Wash/lake mile 140), between 6/27/2017 and 6/29/2017. A total of 30 light trap samples were taken, and of those 29 were sent to CSU larval fish lab for identification. Habitats sampled included flooded tributaries and lake shorelines. Eighteen seine samples were taken and of those 11 were sent to CSU larval fish lab. A total of 261m^2 were sampled and habitats included back waters, flooded tributaries, and shorelines. A total of 12 minnow traps samples were taken and of those one was preserved and sent to CSU larval fish lab. Habitats sampled with minnow traps included river and lake shorelines. During the sampling it was observed that between river miles 183 and 167 dense flooded vegetation lined the shorelines (Figure 1). As spring runoff increases the level of Lake Powell, water backs up along these shorelines providing potentially beneficial habitat for the YOY and juvenile native fish that are being transported or moving out of the lower Green and Colorado rivers.

As light trapping samples are pending identification by CSU larval fish lab additional observations are limited to fish large enough to be identified in the field during seine sampling.

Native fishes captured in the lower Green River included YOY flannelmouth sucker (n=9) with a median total length of 55 mm (33-63 mm), juvenile flannelmouth sucker (n=3) with a median total length of 150mm (115-151), juvenile Colorado pikeminnow (n=1) with a total length of 119 mm, and speckled dace (n=2). Nonnative fishes captured on the lower Green River included red shiner, sand shiner, fathead minnow, common carp (n=428), channel catfish (n=462), green sunfish (n=43), white sucker (n=65), gizzard shad (n=29), black bullhead (n=46), plains killifish (n=1), and black crappie (n=2).

Native fishes captured in the lower Colorado River included flannelmouth sucker (n=26) with a median total length of 35 mm (20-64 mm), juvenile Colorado pikeminnow (n=13) with a median total length of 96 mm (74-200 mm), one *Gila sp.* with a total length of 39, and speckled dace (n=1). The capture of juvenile pikeminnow continues to show strong recruitment and corroborate the data from 2015 and 2016 ISMP sampling, which has shown catch rates well above the 5 and 15-year averages (Breen et al 2016). Nonnative fishes captured on the Colorado River included red shiner, sand shiner, fathead minnow, channel catfish (n=90), common carp (n=118), black bullhead (n=8), black crappie (n=58), green sunfish (n=12), largemouth bass (n=36), smallmouth bass (n=4) gizzard shad (n=749), western mosquitofish (n=79), white sucker (n=6), and bluegill (n=1). One walleye was captured with a total length 378 mm and weight of 340 g.

IX. Recommendations:

- Continue sampling via light trapping for larval razorback sucker in both the Colorado and Green Rivers (May-June) to determine success and timing of reproduction.
- Consider expanding light trap sampling below confluence of the Green and Colorado Rivers to determine extent of larval drift.
- Continue seining in both the Colorado and Green Rivers (August-September) to determine successful recruitment of YOY and juvenile razorback suckers.
- Consider expanding sampling reach below the confluence of the Green and Colorado

Rivers in an effort to capture YOY and juvenile razorback sucker which may move out of zero-velocity habitats by mid to late summer.

- Pending sample identification results provided by CSU.

X. Project Status: On track and ongoing.

XI. FY 2017 Budget Status

A.	Funds Provided:	$59,423
B.	Funds Expended:	$59,423
C.	Difference:	$ 0
D.	Percent FY 2017 work completed:	100%
E.	Recovery Program funds spent for publication charges:	$ 0

XII. Status of Data Submission: All data will be submitted upon completion of larval identification by CSU.

XIII. Signed: Jonathan Datrow September 18, 2017

Principal Investigator Date

XIV. 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 Larval Fish Laboratory at Colorado State University to Upper Colorado River Endangered Fish Recovery Program. Denver, CO.

Breen, M.J., Schelly, R.C., Michaud, C.M. 2016. Annual fall monitoring of young of year Colorado pikeminnow and smallbodied native fishes. Annual report of Utah Division of Wildlife Resources Station to Upper Colorado River Endangered Fish Recovery Program. Denver, CO.

Figure 1. Flooded vegetation near the confluence of the Dirty Devil River and North Wash in the inflow area of the Colorado River to Lake Powell.