

**COLORADO RIVER RECOVERY PROGRAM
FY 2007 ANNUAL PROJECT REPORT**

**RECOVERY PROGRAM
PROJECT NUMBER: RZ-RECR**

I. Project Title: Razorback emigration from the Stirrup floodplain

II. Principal Investigator(s):

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III. Project Summary:

Floodplain wetlands are presumed to be important rearing habitat for razorback sucker (*Xyrauchen texanus*) (Wydoski and Wick 1998; Muth et al. 1998; Lentsch et al. 1996; Modde 1996; Tyus and Karp 1990). Reproduction by razorback suckers occurs on the ascending limb of the spring hydrograph allowing enough time between hatching and swim up for larvae to enter the system when highly productive floodplain habitats are accessible (Muth et al. 1998). This seasonal timing of razorback sucker reproduction indicates possible adaptation for using floodplain habitats for rearing purposes (Muth et al. 1998). It is currently unclear, however, how long young razorback sucker tend to stay in the floodplain before moving out into the river.

The Green River Floodplain Management Plan (2003) identifies the Stirrup floodplain as a high priority habitat for recovery of the endangered razorback sucker and potentially bonytail (*Gila elegans*) and Colorado pikeminnow (*Ptychocheilus lucius*). The natural levee surrounding the Stirrup was breached at the downstream end in March 1997 in an effort to increase the frequency of connectivity of the floodplain to the river. The floodplain now connects at around 14,000 cfs and fills to approximately 20 acres (Birchell and Christopherson 2004) during spring peak flows.

Though it is not extremely large, it is one of the few floodplain habitats in the middle Green River that retains enough water to over-winter fish, thus making it ideal when maintaining razorback sucker over multiple years. Because of its potential to overwinter fish and because it only has one breach, this site was chosen for a study to research the timing of razorback sucker emigration from highly productive floodplain habitats to the river. Surplus razorback sucker were identified from normal operations at the Ouray National Fish Hatchery and are currently being held at the hatchery site for stocking in the Stirrup floodplain. Multiple year classes of razorback sucker will be stocked as they become available, PIT tagged for individual identification, and monitored for how long they choose to stay in the floodplain versus going out to the river. The information gathered during this study will help in identifying and revising management considerations for the Stirrup floodplain and for other floodplains in the middle Green River.

IV. Study Schedule: Initial year - FY - 2007 Final year - FY 2009

V. Relationship to RIPRAP:

GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN

II. Restore habitat (habitat development and maintenance)

II.A. Restore flooded bottomland habitats

II.A.1. Conduct inventory of flooded bottomlands habitat for potential restoration

GREEN RIVER ACTION PLAN: MAINSTEM

II. Restore habitat (habitat development and maintenance)

II.A. Restore and manage flooded bottomland habitat

II.A.1. Conduct site restoration

II.A.2. Acquire interest in high-priority flooded bottomland habitats between Ouray NWR and Jensen to benefit endangered fish

II.A.2.a. Identify and evaluate sites

IV. Manage genetic integrity and augment or restore populations (stocking endangered fishes)

VI. Accomplishment of FY 2007 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Task 1. Pump water from the river into the Stirrup floodplain. This includes preparation of compliance documents for both the BLM and Utah Division of Water Rights. This may also be done again between tasks 3 and 4. Spring and summer (potential to require pumping at other times of year as well)

Both the Utah Division of Wildlife Resources (Division) and the U.S. Fish and Wildlife Service (Program Director's Office and Ecological Services) worked on completing the EA with the Bureau of Land Management. A working draft of the EA was completed by the pumping date, 20 June 2007. The Final EA was completed in August. The Division began pumping on 20 June 2007 with two Honda WT40X, 4" trash pumps. The pumps initially appeared to be efficient at pumping water and each ran at about 580 gallons/minute. The pumps were filled with gas in the morning and then topped-off in the afternoon and were left running for approximately 20 hours/day. Crews began experiencing difficulty with the pumps on 29 June 2007 and so at times only ran one pump/day. Crews were able to borrow an additional pump from the U.S. Fish and Wildlife Service, Colorado River Fisheries Project (CRFP) and some days were using three pumps, but mostly one or two. Pumping was discontinued on 11 July 2007 for pump maintenance. Maximum depth was only 0.9 m on this day (desired depth was >4') and therefore,

pumping continued on 23 July 2007. Due to other activities, pumps were only filled with gas in the morning during this second pumping period.

Towards the end of August, it became apparent that the 4" trash pumps were not effective at filling the Stirrup. They required too much maintenance and were not fast enough to get ahead of subsurface drainage or evaporation. We began looking into a 6" or 8" trash pump with a larger gas tank and a diesel engine. Pumping with a 6" trash pump began on 15 October and ended on 7 November. Depth at this time was 4.5' and was determined to be sufficient to maintain fish overwinter.

Task 2. Stock razorback sucker in the Stirrup floodplain

The Ouray National Fish Hatchery stocked 1600 PIT-tagged, age-2, razorback sucker on 22 June 2007. Total mortality is unknown; however, only a handful of razorback suckers were observed on the shoreline (most likely due to stocking or handling stress). The total number of razorback suckers consumed by pelicans is unknown; however, razorback suckers were to remain in the floodplain in the fall. They hatchery again stocked approximately 1600 PIT-tagged, age-1, razorback sucker in mid-October. No stocking mortality has been observed from this latest stocking effort.

Task 3. Monitor water quality and species assemblage in Stirrup floodplain

The Fish and Wildlife Service, Colorado River Fisheries Project (CRFP) monitored water quality in the Stirrup before and during pumping. Dissolved oxygen, which dropped under 2.0 mg/L overnight at the beginning of the pumping period, seemed to be the limiting factor for fish survival. We attempted to ascertain water quality multiple times over the pumping period, but were unable to do so for various reasons. However, no razorback sucker (or any other species) mortalities were observed after the first week post-stocking, suggesting that water quality remained adequate for survival in the Stirrup.

The U.S. Fish and Wildlife Service, CRFP set three 1/4" fyke nets overnight at the Stirrup. Two were set off the immediate shoreline, another was set off of one of the fyke nets. This third net (labeled Net 1 below) sampled the deepest water and also collected the most razorback sucker. Their summary follows:

Net 1

74 Razorback sucker (13 fish measured TL; 298, 309, 314, 326, 292, 344, 322, 313, 359, 321, 306, 311, 264). In addition, we captured ~100 black bullhead (75 to 150 mm), >20 carp of multiple ages, 5 green sunfish adults, and ~ 30 adult fathead minnows.

Net 2

3 Razorback sucker. ~15 black bullhead (75 to 150 mm), ~10 carp of multiple ages, 4 green sunfish adults, and ~ some adult fathead minnows

Net 3

7 Razorback sucker, ~100 black bullhead (75 to 150 mm), ~20 carp of multiple ages, 4 green sunfish adults, and ~ some adult fathead minnows

Task 4. Research stationary PIT tag readers and determine the appropriate set up for the Stirrup floodplain

This task was not completed in FY2007; however, we will meet with the UDWR Central Region to view their stationary PIT tag reader the last week of November. We will order supplies immediately thereafter and work on getting the reader functional from Jan – March.

Task 5. Set up stationary PIT tag reader during spring peak flows.

Not done in FY07.

Task 6. Download PIT tag data and monitor PIT tag array

Not done in FY07.

Task 7. Summarize results/findings

Annual report submitted November 8, 2007.

VII. Recommendations:

- Do not continue to use 4” trash pumps unless needed to bring water levels in the Stirrup up only slightly. This size trash pump is not efficient for the depth levels we’re trying to acquire in the floodplain and 6” pumps require less maintenance, can pump water more quickly, and require less attention during the pumping process.

VIII. Project Status:

Ongoing

IX. FY 2007 Budget Status

- A. Funds Provided: \$18,143
- B. Funds Expended: \$18,143
- C. Difference: \$0
- D. Percent of the FY 2007 work completed, and projected costs to complete: 100%
- E. Recovery Program funds spent for publication charges: \$0

XI. Signed: Trina Hedrick 10/31/07
Principal Investigator Date

XII. Literature Cited

Birchell, G.J. and K. Christopherson. 2004. Survival, growth, and recruitment of larval and juveniles razorback sucker (*Xyrauchen texanus*) introduced into floodplain depressions of the Green River, Utah. Utah Division of Wildlife Resources, publication no. 04-15, Salt Lake City, Utah.

Christopherson, K. Native Aquatics Project Leader, Utah Division of Wildlife Resources, Northeastern Region, 1998-2006.

Valdez, R.A. and P. Nelson. 2003. Green River Subbasin Floodplain Management Plan. Biology Committee Review Draft, R.A. Valdez & Associates, Inc., Upper Colorado River Endangered Fish Recovery Program, Denver, CO.

Lentsch, L., T. Crowl, P. Nelson, and T. Modde. 1996. Levee removal strategic plan. Utah Division of Wildlife Resources, Salt Lake City, UT. 21 pp.

Modde, T. 1996. Juvenile razorback sucker (*Xyrauchen texanus*) in a managed wetland adjacent of the Green River. Great Basin Naturalist 56:375-376.6

Muth, R.T., G.B. Haines, S.M. Meismer, E.J. Wick, T.E. Chart, D.E. Snyder, and J.M. Bundy. 1998. Reproduction and early life history of razorback sucker in the Green River, Utah and Colorado, 1992 – 1996. Final Report submitted to the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin. U.S. Fish and Wildlife Service, Denver, CO. 62 pp.

Tyus, H.M. and C.A. Karp. 1990. Spawning and movements of razorback sucker, *Xyrauchen texanus*, in the Green River basin of Colorado and Utah. Southwestern Naturalist 35:427-433.

Wydoski, R.S. and E.J. Wick. 1998. Ecological value of floodplain habitats to razorback suckers in the Upper Colorado River Basin. Final Report submitted to the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin. U.S. Fish and Wildlife Service, Denver, SO. 55 pp.