

I. Project Title: Evaluation of survival and growth of larval razorback sucker and bonytial stocked into floodplain depressions of the middle Green River.

II. Principal Investigator(s): Ron Brunson / Kevin Christopherson  
Utah Division of Wildlife Resources  
Northeast Region  
152 East 100 North  
Vernal, Utah 84078  
435-789-3103/fax: 435-789-8343  
E-mail: [ronaldbrunson@utah.gov](mailto:ronaldbrunson@utah.gov)  
[kevinchristopherson@utah.gov](mailto:kevinchristopherson@utah.gov)

III. Project Summary:

Based on the assumption that floodplain wetlands provide critical rearing habitat for razorback sucker, the Recovery Program initiated an extensive floodplain habitat restoration program (Levee Removal Strategy) in 1996. In subsequent studies larval razorback suckers that were introduced into the Stirrup floodplain in a “reset” situation showed survival with high stocking densities (1.8 million larvae/acre and 241,000 larvae/acre).

To continue building on the successes of these studies, survival evaluation was made at lower stocking densities to identify the lowest stocking threshold needed to enable detection of surviving larvae. The results of this investigation will have site-management implications and will aid in identifying the number of spawning female razorback sucker needed in the middle Green River population to allow some level of survival and potential recruitment of naturally spawned larvae.

This evaluation took place in a “reset” floodplain depression, with a natural connection and re-invasion of nonnative fishes. This “reset” situation provides larval razorback sucker rearing habitat that does not contain overwhelming established populations of nonnative fish.

IV. Study Schedule:

The initial year of this project was 2003. Fieldwork will be completed in the fall of 2004 and the final report is due in July 2005.

V. Relationship to RIPRAP:

GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN

II. Restore habitat (Habitat development and maintenance).

II.A. Restore flooded bottomland habitats.

GREEN RIVER ACTION PLAN: MAINSTEM

II. Restore habitat (Habitat development and maintenance).

II.A. Restore and manage flooded bottomland habitat.

II.A.3. Implement levee removal strategy at high-priority sites.

II.A.3.d. Evaluation.

VI. Accomplishment of FY 2004 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Task 1: Construct and install enclosures

The experimental enclosures were constructed at the Baeser floodplain site beginning in March and were completed in early May 2003. Twelve 1/8-acre enclosures were constructed using field fence and steel t-posts as the framework over which 7mm hardware cloth was attached. Over the hardware cloth a layer of 1mm mesh screen was attached using lath and screws. The final layer intended to contain stocked larval razorback sucker was poly-tarp. The bottom 30 cm of the 1mm mesh screen was buried in a trench and the bottom of the poly-tarp was anchored using 1/2" re-bar. Maintenance of the enclosures included re-attaching poly-tarp and securing seams.

Task 2: Stock larval razorback sucker and bonytail, and nonnative fishes, into enclosures

A total of 2,000 bonytail and 13,400 razorback sucker larvae were stocked into the 12 experimental enclosures prior to high flows and floodplain connection.

Numbers of larvae and nonnative predators stocked in each 1/8-acre enclosure are as follows:

Number Stocked	Control 400/acre	400/acre	800/acre	4k/acre	8k/acre	40k/acre	Total	Total w/ replication
Razorback sucker	50	50	100	500	1,000	5,000	6,700	13,400
Bonytail					1,000		1,000	2,000
<b>Total</b>	<b>50</b>	<b>50</b>	<b>100</b>	<b>500</b>	<b>2,000</b>	<b>5,000</b>	<b>7,700</b>	<b>15,400</b>
<b>Nonnatives stocked</b>								
Fathead minnow	None	38	38	38	38	38	190	380
Red shiner	None	21	21	21	21	21	105	210
Black bullhead	None	8	8	8	8	8	40	80
Green sunfish	None	12	12	12	12	12	60	120
Carp	None	2	2	2	2	2	10	20
<b>Total</b>	<b>None</b>	<b>81</b>	<b>81</b>	<b>81</b>	<b>81</b>	<b>81</b>	<b>405</b>	<b>810</b>

### Task 3: Field Data Collection

Following stocking of larval bonytail and razorback sucker, water depth and larvae within the enclosures were monitored by visual inspection at least twice a week.

Sampling of the enclosures at Baeser began July 7 and was completed on July 23, 2004. Fyke nets were set in four enclosures beginning with the highest density for four nights. Two 1/4" mesh fyke nets were set in each enclosure. All fish we removed from the fyke nets and placed on a sorting table to aid in locating surviving razorback sucker and bonytail. All fish captured in fyke nets were removed from the floodplain site. The likelihood of the floodplain site completely drying up prompted us to salvage live bonytail and razorback sucker by transporting them to the Stirrup floodplain site. Survival of razorback sucker was detected in the lowest and the highest density enclosures. However, survival among all enclosures was quite variable. The highest and the lowest survival (58% and 5%) were observed in the medium density (800 larvae/acre) enclosures. Overall survival was good with over half of the enclosures sampled, indicating survival greater than 10% for razorback sucker larvae. Survival of bonytail

larvae stocked at a density of 8,000 larvae/acre was good also at 16%. Nonnative species composition by biomass at time of sampling was 76% YOY carp, 10% fatheads, 9% green sunfish and 1% red shiners and sand shiners.

Task 4: Data entry and analysis

All data has been entered into a database and analysis is scheduled to be complete by January 2005.

Task 5: Report Preparation

Annual RIP Report was completed on November 2, 2004  
Draft report to coordinator 15 March 2005; to peer review and Biology Committee 15 April 2005; final draft to Biology Committee 1 July 2005.

VII. Recommendations: Fieldwork for this project is complete. Future work and study should include evaluating and synthesizing known information from this study and others to aid in the development of site-specific floodplain management plans. Management plans should take into consideration proximity of floodplain to known razorback sucker spawning areas, ability and conditions needed to entrain larvae, larval rearing habitat conditions within the floodplain and finally, recruitment of razorbacks from the floodplain into the adult riverine population.

VIII. Project Status:

This project is on track and ongoing. Fieldwork was completed in 2004 and the final completion report will be submitted in July 2005.

IX. FY 2004 Budget Status

- A. Funds Provided: \$61,245
- B. Funds Expended: \$61,245
- C. Difference: \$0
- D. Recovery Program funds spent for publication charges: \$0

X. Status of Data Submission (Where applicable): Data will be submitted at the completion of the final report.

XI. Signed: Ron Brunson November 2, 2004  
Principal Investigator Date