

**COLORADO RIVER RECOVERY PROGRAM
FY-2006–2007 PROPOSED SCOPE OF WORK for:**

Project No.: 121a

Larval Razorback Sucker Reproduction–Gunnison and Upper Colorado rivers

Lead Agency: Fish and Wildlife Service
Colorado River Fishery Project

Submitted by: Douglas Osmundson, Fishery Biologist (Lead)

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Date: February 8, 2006

Category: _____

Expected Funding Source:

- | | |
|---|--|
| <input type="checkbox"/> Ongoing project | <input checked="" type="checkbox"/> Annual funds |
| <input type="checkbox"/> Ongoing-revised project | <input type="checkbox"/> Capital funds |
| <input checked="" type="checkbox"/> Requested new project | <input type="checkbox"/> Other (explain) |
| <input type="checkbox"/> Unsolicited proposal | |

I. Title of Proposal: **Verification of Stocked Razorback Sucker Reproduction in the Gunnison River via Annual Collections of Larvae with an option to continue sampling in the Upper Colorado River.**

II. Relationship to RIPRAP:

Colorado River Action Plan: Gunnison River

IV.A.1.b.(2). Monitor and evaluate stocking results; make recommendations regarding further augmentation.

V.A.2. Identify additional spawning sites of endangered fishes on the Gunnison River.

III. Study Background/Rationale and Hypotheses:

Wild razorback suckers were last captured in the Gunnison River in the late 1970s (Holden et al. 1981), and in the Upper Colorado River in the late 1990's (from the Walter Walker Wildlife Area in 1998). Wild razorback sucker are virtually extirpated in these two river systems. Restoration stocking of razorback sucker began in April 1994 in the Gunnison River and has continued annually since that time (Burdick 2003). About 18,400 juvenile, sub-adult, and adult razorback sucker have been stocked from 1994

through 2002. Restoration stocking began in the Upper Colorado River in 1999 and is ongoing. To date, about 43,000 juvenile, sub-adult, and adult razorback sucker have been stocked.

To produce a self-sustaining population in a particular river system, stocked individuals need to 1) survive, 2) remain in the vicinity of release, or if displaced downstream, return upstream to spawn, 3) successfully spawn in either the Gunnison or Upper Colorado rivers, and 4) progeny need to survive to adulthood and be retained in or return to the Gunnison and Upper Colorado river so as to maintain an adult population there. Razorback sucker stocked in the Gunnison River near Delta, Colorado, have been recaptured subsequent to their release upstream from the Redlands Diversion Dam. Twenty of these domestic-reared razorback sucker were recaptured from 1997–2001 in the Gunnison River upstream from Redlands Dam that had been at large for more than six months post-stocking (Burdick 2003). Six of these fish were at large at least 18 months (17.9–50.2 months) following release. Five of these six were at least 300 mm when stocked. All six fish were >390 mm long when recaptured, and therefore presumably sexually mature. How many stocked razorback suckers have survived and remained in the Gunnison River is unknown, but those that have should be actively spawning if suitable spawning habitat exists. The Gunnison River upstream from Redlands Dam has not been sampled since 2001. However, an inventory of stocked endangered fish in the Gunnison River is planned for 2006, with possible expansion in later years if sufficient numbers of adult razorback sucker and Colorado pikeminnow are found.

Although no sampling for adult endangered fish has been done in the Gunnison River recently, sampling for larval razorback suckers has been done in the Gunnison River since 2002 and in the Colorado River since 2004. Larval razorback suckers were collected in both rivers during each year of sampling: Gunnison River: 2002, 8; 2003, 7; 2004, 2; 2005, 2. Colorado River: 2004, 2; 2005, 4. The final report for the larval sampling will be completed in 2006. This study is intended to complement the adult fish survey on the Gunnison River and continue the data collected during that study without a break.

IV. Study Goals, Objectives, End Product:

Study Goals/Objectives

1. Provide continuity of verification of spawning by razorback sucker in the Gunnison River.
2. Provide continuity of verification of spawning by razorback sucker in the Upper Colorado River.

Objectives:

1. Collect samples of larvae from the Gunnison River and Upper Colorado River during and immediately after the suspected spawning season and determine if razorback sucker larvae are present among samples.

FINAL PRODUCT: Draft Final Report to coordinator: 5/1/2008
Draft Report to peer reviewers/BC: 6/1/2008
Revised Report for BC consideration: 7/15/2008

V. Study Area

Backwater and flooded bottomland sites along the Gunnison River between Delta and immediately upstream from Redlands Diversion Dam (river miles 57–3), and the Grand Valley portion of the Upper Colorado River (rm 153-185; option 2). If razorback larvae are discovered downstream of the Gunnison River confluence, we will not know if they originated from spawning sites in the Colorado River or the Gunnison River. However, larvae found in collections from the 15-mile reach (upstream of the Gunnison River confluence) would verify Colorado River spawning. Some limited sampling between Loma and the Westwater boat landing in eastern Utah (rm 152–128) and the lower 2.3 miles of the Gunnison River (downstream of Redlands Diversion) will also be included as time and manpower allows.

VI. Study Methods/Approach

Larval Sampling

This is a three-year study with two years devoted to field work and the third year for analyses and writeup of the field data. The study commences in FY 2006 and concludes in FY2008.

General

The primary method of sampling will be seining quiescent river habitats (shorelines, backwaters and flooded bottomlands) with small-mesh seines (0.5 mm). Seine sampling, because of its more complete geographic coverage of the river, provides better larval distributional information than does light-trapping used in other parts of the upper basin where larval concentration areas are already known. Commencement of sampling will be determined by runoff conditions and temperatures during individual years. Muth et al. (1998) reported that razorback sucker larvae were first collected at sites in the Green River some 20–30 days after initiation of spawning, which coincided with the first significant increase in discharge from snow melt runoff. In 2002 through 2005, no fish larvae of any kind were found until mid-May. Sampling will occur for about 8 weeks.

For seine sampling, each river study area is divided into 5-mile segments and 1-6 sites are sampled per segment each week, depending on availability of low-velocity habitats. An investigator spends about five minutes at each site running a seine through the water. River-mile locations of sites are noted, as well as presence or absence of larvae. If larvae are found, they are preserved in individually labeled bottles of 100% ethanol.

Samples will be forwarded to the Larval Fish Laboratory for analysis.

VII. Task Description and Schedule

Description

- Task 1. Collect samples of larvae.
- Task 2. Analyze samples in the lab.
- Task 3. Write annual reports and final report.

Schedule

- Tasks 1 & 2: 2006, 2007
- Task 3: 2008

VIII. FY-2006 Work (year 1 of multi-year study)

Deliverables/Due Dates Annual Report Due 11/2006

Budget

Task 1. Collect larval fish samples: Gunnison River Only, Delta to Grand Junction.

Labor (salary and benefits)			
Project Biologist (1-GS-12 @ 1,846)	3 weeks		\$ 5,538
Bio-Technicians (1-GS-7 @ 1,030)	8 weeks		\$ 8,240
Bio-Technicians (1-GS-5 @ 613)	8 weeks		<u>\$ 4,904</u>
	Subtotal		\$ 18,682
Equipment and supplies			
Sample bottles, ethanol, repair seines			\$ 400
Vehicle rental (GSA \$300/month + milage, Gas, oil, maintenance on			
Service owned vehicles			\$ 1,400
Outboard motor gas, oil, etc.			\$ 700
Outboard motor repair and maintenance (eg. 72/hr @ sundance			
Marine + parts, water pumps, props, etc)			<u>\$ 800</u>
	Subtotal		\$ 3,300

Task 2. Analyze samples in lab.

Larval Fish Laboratory		<u>\$ 10,000</u>
Category Total		\$ 31,982

Task 3. Analyze data, write annual report

Project Leader (1- GS-14 @ 2,035/week: 1 week)	\$ 2,035
Project Biologist (1-GS-12 @ 1846/week, 4 weeks)	\$ 7,384
Administrative Assistant (1-GS-9 @ 1,332 1 week)	<u>\$ 1,332</u>
Subtotal	\$ 10,751

Travel (RP meetings, workshops, professional meetings) 900

Gunnison River only Grand Total \$ 43,633

Task 1. Collect larval fish samples: Gunnison River, Delta to Grand Junction and Colorado River, GVIC irrigation Dam to Westwater.

Labor (salary and benefits)

Project Biologist (1-GS-12 @ 1,846)	6 weeks	\$ 11,076
Bio-Technicians (1-GS-7 @ 1,030)	8 weeks	\$ 8,240
Bio-Technicians (3-GS-5 @ 613)	8 weeks	\$ 14,712
Project Leader (1 GS-14 @ 2,050)	1 week	\$ 2,050
Administrative Officer (1 GS-9 @ 1,362)	2 weeks	<u>\$ 2,724</u>
Subtotal		\$ 38,802

Equipment and supplies

Sample bottles, ethanol, repair seines	\$ 600
Vehicle rental (GSA \$300/month + mileage, Gas, oil, maintenance on Service owned vehicles	\$ 1,600
Outboard motor gas, oil, etc.	\$ 1,000
Outboard motor repair and maintenance (eg. 72/hr @ sundance Marine + parts, water pumps, props, etc)	<u>\$ 1,200</u>
Subtotal	\$ 4,400

Task 2. Analyze samples in lab.

Larval Fish Laboratory	\$ 20,000
Category Total	\$ 63,202

Task 3. Analyze data, write annual report

Project Leader (1- GS-14 @ 2,035/week: 1 week)	\$ 2,035
Project Biologist (1-GS-12 @ 1846/week, 4 weeks)	\$ 7,384
Administrative Assistant (1-GS-9 @ 1,332 1 week)	<u>\$ 1,332</u>
Subtotal	\$ 10,751

Travel (RP meetings, workshops, professional meetings) 900

Gunnison and Colorado Rivers Grand total \$ 74,853

FY-2007 Work (year 2 of multi-year study)

Deliverables/Due Dates Annual Report Due 11/2006

Budget

Task 1. Collect larval fish samples: Gunnison River Only, Delta to Grand Junction.

Labor (salary and benefits)		
Project Biologist (1-GS-12 @ 1,965)	3 weeks	\$ 5,895
Bio-Technicians (1-GS-7 @ 1,080)	8 weeks	\$ 8,640
Bio-Technicians (1-GS-5 @ 625)	8 weeks	<u>\$ 5,000</u>
	Subtotal	\$ 19,535

Equipment and supplies		
Sample bottles, ethanol, repair seines	\$ 420	
Vehicle rental (GSA \$300/month + milage, Gas, oil, maintenance on Service owned vehicles	\$ 1,500	
Outboard motor gas, oil, etc.	\$ 720	
Outboard motor repair and maintenance (eg. 72/hr @ sundance Marine + parts, water pumps, props, etc)	<u>\$ 825</u>	
	Subtotal	\$ 3,465

Task 2. Analyze samples in lab.

Larval Fish Laboratory		<u>\$ 11,000</u>
	Category Total	\$ 34,000

Task 3. Analyze data, write annual report

Project Leader (1- GS-14 @ 2,180/week: 1 week)	\$ 2,180	
Project Biologist (1-GS-12 @ 1965/week, 4 weeks)	\$ 7,860	
Administrative Assistant (1-GS-9 @ 1,332 1 week)	<u>\$ 1,400</u>	
	Subtotal	\$ 11,440

Travel (RP meetings, workshops, professional meetings)	900
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Gunnison River only Grand Total \$ 46,340

Task 1. Collect larval fish samples: Gunnison River, Delta to Grand Junction and Colorado River, GVIC irrigation Dam to Westwater.

Labor (salary and benefits)		
Project Biologist (1-GS-12 @ 1,965)	6 weeks	\$ 11,790
Bio-Technicians (1-GS-7 @ 1,080)	8 weeks	\$ 8,640
Bio-Technicians (3-GS-5 @ 625)	8 weeks	\$ 15,000
Project Leader (1 GS-14 @ 2,180)	1 week	\$ 2,180
Administrative Officer (1 GS-9 @ 1,400)	2 weeks	<u>\$ 2,800</u>
	Subtotal	\$ 40,414
Equipment and supplies		
Sample bottles, ethanol, repair seines		\$ 630
Vehicle rental (GSA \$300/month + milage, Gas, oil, maintenance on Service owned vehicles		\$ 1,650
Outboard motor gas, oil, etc.		\$ 1,050
Outboard motor repair and maintenance (eg. 72/hr @ sundance Marine + parts, water pumps, props, etc)		<u>\$ 1,250</u>
	Subtotal	\$ 4,580

Task 2. Analyze samples in lab.

Larval Fish Laboratory		<u>\$ 22,000</u>
	Category Total	\$ 66,994

Task 3. Analyze data, write annual report

Project Leader (1- GS-14 @ 2,035/week: 1week)		\$ 2,180
Project Biologist (1-GS-12 @ 1846/week, 4 weeks)		\$ 7,860
Administrative Assistant (1-GS-9 @ 1,332 1 week)		<u>\$ 1,400</u>
	Subtotal	\$ 11,440

Travel (RP meetings, workshops, professional meetings) 950

Gunnison and Colorado Rivers Grand total \$ 79,384

Deliverables/Due Dates

Annual Report 11/2007

Budget

Task 3. Write draft and final report.

Labor (salary and benefits)		
Project Biologist (1-GS-12 @ 2,100)	weeks	\$ 16,800
Admin. Assistant (1-GS-9 @ 1,450)	1 week	\$ 1,450
Project Leader (1-GS-14 @ 2,200)	1 week	<u>\$ 2,200</u>

	Subtotal	\$ 20,450
Printing and Distribution (e.g., GPO printing; postage & mailing of Final Report)		<u>\$ 1,000</u>
	Grand Total	\$ 21,450

IX. Budget Summary

	<u>Project Cost</u>
FY-2006	\$ 43,633 or 74,853
FY-2007	\$ 46,340 or 79,384
FY-2008	\$21,450

X. Reviewers

Program Staff

XI. References

Burdick, B. D. 2003. Monitoring and evaluating various sizes of domestic-reared razorback sucker stocked in the Upper Colorado and Gunnison rivers: 1995–2001. Final Report prepared for the Recovery Implementation Program for Endangered Fishes in the Upper Colorado River Basin. Recovery Program Project Number 50. U. S. Fish and Wildlife Service, Colorado River Fishery Project, Grand Junction, Colorado. 54 pp + appendices.

Holden, P. B., C. Richard, L. W. Crist, and J. R. Campbell. 1981. Aquatic biology studies for proposed Colorado-Ute Electrical Association power plant near Grand Junction, Colorado. Final Report to Burns and McDonnell, Planning and Environmental Analysis Division. Report PR-56-1, BIOWEST, Inc., Logan, Utah.

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 of Colorado State University Larval Fish Laboratory to Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado. 62 pp.

Osmundson, D. B. 2005. Verification of stocked razorback sucker reproduction in the Gunnison River via annual collections of larvae. Annual report prepared for the Recovery Implementation Program for the Endangered Fishes of the Upper Colorado River Basin. Recovery Program Project Number 121. U. S. Fish and Wildlife Service, Grand Junction, Colorado.

