

**COLORADO RIVER RECOVERY PROGRAM
FY-2004–2006 PROPOSED SCOPE OF WORK for:**

Project No.: 121

Larval Razorback Sucker Reproduction–Gunnison and Upper Colorado rivers

Lead Agency: Fish and Wildlife Service
Colorado River Fishery Project

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Category:

Expected Funding Source:

- | | |
|---|--|
| <input type="checkbox"/> Ongoing project | <input checked="" type="checkbox"/> Annual funds |
| <input checked="" type="checkbox"/> Ongoing-revised project | <input type="checkbox"/> Capital funds |
| <input 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 [and Upper Colorado River; see note] via Annual Collections of Larvae**

Note: Larval fish collections will be expanded to include reaches of the Upper Colorado River [*as recommended in FY2004/05 Early Program Guidance*].

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 capture of razorback sucker larvae provides verification that stocked fish have successfully spawned.

Fifty-two razorback suckers stocked in the Upper Colorado and Gunnison rivers from 1996 through 2001 were later recaptured in the Upper Colorado River. These fish had been at large at least six months after stocking. Fifteen of these fish were >350 mm long when recaptured and are presumed sexually mature. Thirteen of these were recaptured from the Grand Valley portion of the upper Colorado River.

2002 Study Results

Eight razorback sucker larvae were collected from the Gunnison River between Delta, Colorado and Redlands Diversion Dam during May and June of 2002, demonstrating that at least some stocked razorback suckers successfully spawned in that year. These eight larvae were collected over a 46-mile area with seines and light traps. One fish was collected at river mile (rm) 50.3, three were collected between rm 9.6 and 5.9 and four fish at rm 4.8. However, it is unknown where these larval fish were actually produced. Future studies utilizing radiotelemetry of adults will be required to identify spawning locations.

In 2004, larval fish collections will be expanded to include reaches of the Upper Colorado River immediately upstream and downstream of the Gunnison River confluence

[*as recommended in FY2004/05 Early Program Guidance*].

IV. Study Goals, Objectives, End Product:

Study Goals/Objectives

1. Determine if hatchery-reared razorback suckers stocked in the Gunnison River successfully spawn in the Gunnison River in successive years.
2. Determine if hatchery-reared razorback suckers stocked in the Gunnison and upper Colorado rivers are successful spawn in the Colorado River [*added for FY2004*].

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: 4/1/2005
Draft Report to peer reviewers/BC: 5/1/2005
Revised Report for BC consideration: 7/15/2005

V. Study Area

[*Revised as per FY2004/05 early Program Guidance*]. 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). 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 4-year study with 3 years devoted to field work and the fourth year for analyses and writeup of the field data. The study commenced in FY 2002 and ends in FY 2005.

General

The primary method of sampling will be seining quiescent river habitats (shorelines, backwaters and flooded bottomlands) with small-mesh seines (0.5 mm). Some use of light traps in selected river reaches will complement seine sampling. Light trapping was originally planned as the primary means to collect larvae, but no good sites could be found during the extremely low water of 2002; hence, seine sampling was substituted as the primary technique. Seine sampling, because of its more complete geographic coverage of the river, provides better larval distributional information than does light-trapping concentrated at 2-3 sites. Therefore, study-area-wide seine-sampling will also be used in 2004 in both the Gunnison and Colorado rivers. 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 and 2003, 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.

For light-trapping, 1-5 light traps will be set at each of 1-2 locations in each river. Traps are set in the afternoon of one day and then checked the following morning. In 2002, sites on the Gunnison River included one near Delta and another at Whitewater. In 2003, one site at rm 11.9 was trapped. In 2004, 1-2 trapping sites will be located in both the Gunnison and Colorado rivers; specific locations will depend on availability of habitat, access, and for the Gunnison River, the results from the 2003 collections. Number of trap nights will depend on success of seine sampling: if many larvae are being captured with seines, less light-trapping will be conducted.

Light-trap and dip-net samples will be forwarded to the Larval Fish Laboratory for processing and identification.

VII. Task Description and Schedule

Description

Task 1. Collect samples of larvae.

Budget

Task 3. Write draft and final report.

Labor (salary and benefits)			
Project Biologist (1-GS-11 @ 1,974)	7 weeks		\$ 13,818
Admin. Assistant (1-GS-9 @ 1,287)	1 week		<u>\$ 1,287</u>
	Subtotal		\$ 15,105
Printing and Distribution (e.g., GPO printing; postage & mailing of Final Report)			<u>\$ 1,000</u>
	Grand Total		\$ 16,105

IX. Budget Summary

	<u>Project Cost</u>
FY-2004	\$ 67,740
FY-2005	\$ 16,105
FY-2006	\$ -0-
Total:	\$ 83,845

X. Reviewers

Bruce Haines and Steve Platania (original Scope of Work)

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. Meisner, 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. 2002. 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.

Prepared and compiled by Doug Osmundson, 15 March 2001
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Updated 12 June 2003 by BDB/CWM
Revised 6 October 2003 by BDB
Revised 8 Oct by D. Osmundson
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