

I. Project Title: Rearing razorback sucker in Baeser Bend, wetland of the Green River

II. Principal Investigator:

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III. Project Summary:

We chose Baeser Bend as a floodplain that could be manipulated and stocked with hatchery razorback sucker to help acclimate them to natural conditions and improve their survival before being stocked into the Green River. Baeser Bend is an ephemeral wetland that fills and holds water only during high flow years. The wetland dried up during the winter of 2007/2008. In the spring of 2008 openings in the levees at up- and down-river sites along the wetland were closed to keep water and nonnative fishes from entering the wetland as flows increased in the river. Water was then pumped into the wetland to create a predator free environment where razorback sucker larvae could be stocked and allowed to grow before they were released into the river.

We stocked 43,400 larval (\bar{X} = 10 mm) razorback suckers in May into the site and monitored water depth throughout the summer. We estimated the razorback sucker population at 3,840 in September (\bar{X} = 160 mm). We also documented nonnative fish in the site during our sampling. In October, we stocked 24,000 more razorback suckers (\bar{X} = 90 mm) into the wetland. Before winter, we will pump more water into the site to increase the chances of the fish surviving the winter and will sample the site again in the spring of 2008 to determine survival.

Deleted: 131

IV. Study Schedule:

We pumped water from the Green River into Baeser Bend during the spring and summer. We stocked larval razorback suckers 20 May 2008. We conducted a population estimate 15-17 September 2008. We stocked age-0 razorback sucker 7 October 2008. We will pump more water into the site in November and will determine survival in the spring of 2009.

V. Relationship to RIPRAP:

Green River Action Plan: Mainstem

IV.A. Augment or restore populations as needed.

IV.A.1. Develop state stocking plan for the four endangered fishes of the Green River.

IV.A.1.c. Implement plan.

VI. Accomplishment of FY 2008 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

We installed a six inch (in) trash pump and transferred water from the Green River to Baeser Bend. We ran the pump from 14 May to 15 September 2008. On 20 May 2008 we stocked 43,400 larval razorback suckers ($\bar{X} = 10$ mm) into Baeser Bend. Initially in our scope of work, we planned on stocking bonytail chub into Baeser Bend, however, bonytail chubs were unavailable for stocking and thus we only stocked razorback suckers into the site.

On 15-18 September 2008, we conducted a mark-recapture population estimate on razorback suckers. We set three fyke nets overnight for three consecutive nights. We marked 209 razorback suckers caught the first day with a hole punch to the caudal fin. We released the fish away from the nets and reset the nets. We pulled the nets the second day and captured 48 unmarked and four marked razorback suckers. We marked these by clipping the left pelvic fin and released them away from the nets. We reset the nets and pulled them the third day, capturing 236 unmarked, 13 caudal punched, and three left pelvic clipped razorback suckers. We estimated using Program Mark (model Mt) a razorback sucker population of 3,783 (95% CI 2,559-5,734, $\bar{X} = 160$ mm).

During the September sampling, we also caught fathead minnow, red shiner, and sand shiner in the fyke nets. Although the pump inlet was screened, we think the nonnative fish entered Baeser Bend through the pump since Baeser Bend was completely dry prior to pumping and the river never overtopped the levels during the spring high flows.

On 7 October 2008, we stocked an additional 24,000 razorback suckers ($\bar{X} = 131$ mm) into Baeser Bend. During the summer, the water depth fluctuated between 1.5-4 feet (ft). On 30 October, the depth was 1.5 ft at our marker and we decided to pump more water into the site to increase chances of over-winter survival. We plan to try to increase the water levels to at least 3 ft before December and we are currently in the process of obtaining a pump to accomplish this task. During the winter, we plan on monitoring the ice level to see if Baeser Bend freezes completely.

The pump we are trying to use is currently owned by the Ouray National Wildlife Refuge. They have two 16 in discharge diesel pumps that they do not use. We hope to service at least one of them to fill Baeser Bend and potentially get one or both of these pumps transferred to the Vernal Colorado River Fish Project ownership so we can use them on future projects.

VII. Recommendations:

I recommend that we sample Baeser Bend in the spring of 2009 using fyke nets to determine over winter survival of razorback sucker. If there is survival, I recommend we allow these fish to grow another summer and then tag and release as many as possible into the Green River. It would be important to see if razorback suckers acclimated in a natural environment like Baeser Bend have better survival than hatchery reared razorback suckers. Bonytail chubs were not available for stocking into Baeser Bend in 2008. I recommend we continue to try to obtain bonytail chubs to stock into Baeser Bend to be able to acclimate them and stock them back into the Green River.

I also recommend that in the future we reset Baeser Bend and use bentonite to decrease lost water in the wetland due to percolation back into the river. Pumping is an expensive and time consuming practice that may or may not be necessary to regulate water levels in a wetland used for acclimating razorback suckers. Although applying bentonite may be expensive initially, it would be worth the cost if it meant we would not have to use pumping to regulate water levels afterwards. I feel it is important to find out if we can stock fish and then have a completely hands off approach to find out if the fish can survive without human manipulation of the wetland (i.e. pumping). If this is the case, we could start preparing other wetlands in a similar manner to Baeser Bend.

Nonnative fish probably entered Baeser Bend during the pumping, even though precautions were taken with screens to prevent fish entering the system. Depending on what happens with survival over the winter, I recommend we consider using rotenone to remove any nonnative fish prior to introducing any more endangered fish into Baeser Bend. If we find there is no razorback sucker survival, I suggest draining the wetland, applying bentonite, refilling it, poisoning it with rotenone to remove any nonnative fish that potentially could enter during the filling process, and then stocking razorback suckers and bonytail chub into the site.

Avian predation occurs on juvenile razorback suckers. We observed pelicans and other fish-eating birds in close proximity to Baeser Bend. The extent to which avian predation affects razorback survival is unknown, however, anything we can do to decrease predation must help survival. I recommend we explore options of installing bird repelling reflectors at Baeser Bend.

VIII. Project Status: The project will continue into 2009.

IX. FY 2008 Budget Status:

- A. Funds Provided: \$29,910
- B. Funds Expended: \$29,910
- C. Difference: 0
- D. Percent of the FY 2008 work completed, and projected costs to complete: 0
- E. Recovery Program funds spent for publication charges: 0

X. Status of Data Submission: Data is recorded and available upon request.

XI. Signed: Aaron Webber November 14, 2008
Principal Investigator Date