FY-2006-2007 PROPOSED SCOPE OF WORK for: **Project #: 148**

Rearing razorback sucker in a floodplain on the Ouray National Wildlife Refuge

Lead Agency: U.S. Fish and Wildlife Service
Jointly Submitted by: Ouray National Wildlife Refuge, Colorado River Fish Project, and Ouray National Fish Hatchery

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Category:
_ Ongoing project
_ Ongoing-revised project
_ Requested new project
X Unsolicited proposal

Expected Funding Source:
_ Annual funds
_ Capital funds
X Other (explain)
Unfunded

I. Title of Proposal:

Rearing razorback sucker in a floodplain on the Ouray National Wildlife Refuge

II. 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.

III. Study Background/Rationale and Hypotheses:

While razorback sucker stocking in the Colorado River Basin to increase existing populations has seen limited success in the San Juan Program, the history of razorback sucker augmentation has been benign at best (Minckley et al. 1991, Mueller 2003). Success of augmentation is probably a factor of environmental challenges and its interaction with the fitness of the fish introduced. Given the assumption that genetics and health are equal, acclimation may be an important factor affecting survival of razorback sucker stocked into Upper Colorado River Basin rivers. Wiley et al. (1993) suggested that greater post-stocking survival of trout would occur if hatchery fish were exposed to quasi-natural stream conditions and fed natural food prior to stocking. Use of wild or naturally acclimated individuals is a practice used in reintroducing rare wildlife species (Griffiths et al. 1989). Mueller (2003) stated that physical and behavioral stress associated with the transition from a strictly controlled environment to the challenges of a natural environment demands time and tremendous energy reserves. In fact, acclimated razorback sucker moved shorter distances that non-acclimated fish (i.e., appeared more oriented to the environment) after stocking in the Colorado River basin (Mueller and Foster 1999) .

Most would agree that rearing fish in a natural environment, feeding on a natural diet and learning to avoid natural predators would provide a much better orientation to the challenges of a natural environment than fish reared in circular tanks on an artificial diet which are not only insulated from natural processes (Wiley et al. 1993), but are subjected to the shock of immediately switching from a hatchery tank to a natural environment. However, in order to meet stocking goals the production of fish in intensive culture provides a more consistent product and therefore is a better programmatic fit than the unpredictable returns from floodplain rearing. To date the consideration of using floodplain wetlands as rearing sites has not been considered viable because the relatively low return rate and unpredictable survival rates. In addition, during the recent drought few floodplains in the Green River have retained sufficient water to overwinter fish that need at least two growing seasons before they are able to survive in the mainstem river. However, the ability of Ouray National Fish Hatchery to produce extremely large numbers of larvae, the potential for large quantities of runoff from the Yampa River when normal or high flows return combine to make the opportunity of rearing large numbers of razorback sucker worth pursuing. This study offers the opportunity to augment the ongoing propagation efforts, and implements one of the recommendations form the recent reset study (Modde and Haines 2005) to increase the number of razorback sucker in the Green River.

IV. Study Goals, Objectives, End Product:

Goal: Determine if a reset floodplain wetland can be effective in rearing large numbers of razorback sucker.

Objective 1. Stock and rear razorback sucker larvae in L-10 floodplain on Ouray National Wildlife Refuge.

Objective 2. Supplement the existing propagation program by producing acclimated razorback sucker in excess of 300 mm that will be released into the Green River.

End Product: Production of razorback sucker in excess of 300 mm that can be released into the Green River.

V. Study area:

All work will be conducted within Ouray National Wildlife Refuge, with fish eventually being released into the Green River.

VI. Study Methods/Approach:

Leota 10 floodplain will be reset prior to spring of 2006. The floodplain will be stocked with razorback sucker from Ouray National Fish Hatchery as soon as they are available. Razorback sucker larvae produced in excess of propagation needs during the production spawning in late April will be stocked into the floodplain by CRFP staff when they reach the swim-up stage. Ouray National Fish Hatchery staff will inform refuge staff when they intend to spawn razorback sucker broodstock. Once a date has been set to spawn fish, refuge staff will begin adding water filtered through a fish screen from Pelican Lake into Leota-10 floodplain. Sufficient water will be available to cover approximately 100 acres of floodplain prior to stocking. Water from the river will be directed into the floodplain to an elevation as high as possible (limited by either available water or volume of the floodplain) when river elevation increases to access Leota-10. Ouray National Wildlife Refuge will maintain a water level in Leota-10 through the summer and will maximize the water depth in the floodplain to increase the probability of fish surviving through the winter (either through transfer from Pelican Lake, pumping directly from the river, or a combination of both).

CRFP staff will set 5 fyke nets during a single 24 hr period in Leota-10 in mid July 2006 and again in September 2006 to determine relative abundance of razorback sucker. An assessment of the relative abundance will be submitted to the Biology Committee in the form of an annual report. If sufficient numbers of razorback sucker survive into the fall and overwinter in the floodplain, a contingency plan will be selected by the Biology Committee that will include either leaving the fish in the floodplain for a third year of growth or salvaging the remaining fish. If requested, a cost estimate will be developed to implement recovery of razorback sucker in L-10 following the completion of the second growing season. The salvage project will involve draining the water volume of L-10 into the RIP constructed fish kettle where fish will be collected, PIT tagged and then released into the Green River.

VII. Task Description and Schedule:

Task 1: Produce and stock razorback sucker larvae and fill Leota-10.
Task 2: Maintain water elevation in Leota-10.

Task 3: Monitor abundance of razorback sucker

Schedule: FY-2006 (Tasks 1-3)

Task	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1							X					
2							X	X	X	X	X	X
3										X		X

VIII. FY-2006 Work (Tasks 1-3): Stocking, delivery of water, sampling, sample processing, and annual reporting:
– Deliverables/Due Dates: Annual Report of FY06 field activities due to PD's office November 2006.

– Budget: No funding requested for this scope of work. Propagation activities are covered under existing funding, CRFP will donate the time to set and retrieve fyke nets, and Ouray National Wildlife Refuge will provide manpower, water, and pumping costs for no charge.

IX. Budget Summary:

FY-2006 $ 0.0
Total: $ 0.0

X. Reviewers:
None

XI. References:

Griffiths, B., J.M. Scott, J.W. Carpenter, and C. Reed. 1989. Translocation as a species conservation tool, status, and strategy. Science Vol. 245: 477-480.

Minckley, W.L., P.C. Marsh, J.E. Brooks, J.E. Johnson, and B.L. Jensen. 1991. Management toward recovery of the razorback sucker. Chapter 17 in W.L. Minckley and J.E. Deacon, eds., Battle against extinction: Native fish management in the American west. University of Arizona Press, Tucson, AZ.

Modde, T. and G.B. Haines. 2005. Survival and growth of stocked razorback sucker and bonytail in multiple floodplain wetlands of the middle Green River under reset conditions. Final Report C-6-bt/rz, submitted to the Recovery Implementation Program for the Endangered Fish Species in the Upper Colorado River Basin, U.S. Fish and Wildlife Service, Denver, CO

Mueller, G., and D.K. Foster. 1999. A case for acclimation in the reintroduction of the endangered razorback sucker (*Xyrauchen texanus*): USGS Open-File Report 99-110. Denver, CO.

Mueller, G. 2003. The role of stocking in the re-establishment and augmentation of native fish in the lower Colorado River mainstem (1998-2002: USGS Open-File Report 03-288. Denver, CO.

Wiley, R.W., R.A. Whaley, J.B. Satake, M. Fowden. 1993. Assessment of stocking hatchery trout: a Wyoming Perspective. North American Journal of Fisheries Management 13:160-170.