FY-2010-2011 SCOPE OF WORK for: **Project #:__C-6 BAESER___**

Rearing razorback sucker in the Baeser Bend flood plain

Lead Agency: U.S. Fish and Wildlife Service
Submitted by: Colorado River Fish Project

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

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

I. Title of Proposal:

Rearing razorback sucker in the Baeser Bend flood plain

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 (Minkley 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 of 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 over-winter fish that need at least two growing seasons before they are able to survive in the mainstem river. However, the ability to maintain favorable water level, and remove non-native fishes from Baeser Bend floodplain increases the possibility of successful rearing and acclimation.

IV. Study Goals, Objectives, End Product:

Goal: Rear large numbers of razorback sucker and bonytail in a managed floodplain for stocking into the Green River.

Objective 1. Acclimate age-0 and/or age-1 razorback sucker and bonytail to natural conditions in Baeser Bend floodplain.

Objective 2. Tag and release razorback sucker and bonytail from Baeser Bend floodplain (in excess of 300 and 200 mm respectively) into the Green River.

V. Study area:

All work will be conducted within Baeser Bend floodplain, with fish eventually being released into the Green River.

VI. Study Methods/Approach:

We will pump water into Baeser Bend in early March after ice-off and conduct a mark-recapture population estimate in early April to assess the various stocked razorback cohorts. We will also use this sampling as an opportunity to tag larger fish for stocking into the Green River.

We will pump water as needed into Baeser Bend; judging from the experience we gained from last year, in order to keep the water levels over three feet, we will need to pump about every six weeks. We usually need to pump for at least three days and we will use each pumping event as a sampling event to tag razorbacks that are captured near the discharge of the pump.

We will set nets from the last week in September until the end of October to capture as many razorbacks as possible to be released into the Green River. During the month of October, a decision needs to be made regarding the management of Baeser for the following year. There are numerous, red shiner, sand shiner, and fathead minnow that prey on larval razorbacks. We learned last year that larval razorbacks will not survive in Baeser with the current populations of these cyprinids. However, the Ouray National Fish Hatchery for the last two years has provided fingerling razorbacks to stock into Baeser. These fish are large enough to avoid the predatory fish in Baeser, have relatively high overwinter survival, and have been the bulk of the razorbacks that have been stocked from Baeser into the Green River. The Biology Committee will need to decide by October if it wants to continue stocking fingerling razorbacks or if it wants to have Baeser reset to be able to stock larval razorbacks into Baeser during spring 2011.

Bonytail were not available in 2009 to stock into Baeser Bend. We will continue to seek opportunities to obtain bonytail to stock into Baeser Bend for 2010.

VII. Task Description and Schedule:

Task 1: Pump Baeser Bend floodplain.
Task 2: Stock age-0 razorback sucker and bonytail into Baeser Bend floodplain.
Task 3: Monitor water levels monthly.
Task 4: Determine relative abundance of razorback sucker/tag and release fish > 300 mm.
Task 5: Data Analysis, report writing, presentations

Schedule: FY-2010

Task	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1			X	X		X	X		X	X	X	
2					X?					X?		
3	X	X	X	X	X	X	X	X	X	X	X	X
4				X					X	X		
5											X	X

VIII. FY-2010 Work: Stocking, water level maintenance, sampling, and annual reporting:
– Deliverables/Due Dates: Annual Report of FY10 field activities due November 2010.

– Budget:

Task 1. Pump Baeser Bend floodplain.

Operational Costs	Cost
GS-11 Biologist ($39.32/hr x 8 hrs/day x 21days)	$6,605.76
GS-8 Fisheries Tech ($35.11/hr x 8 hrs/day x 21 days)	$5,898.48
Fuel @ $4.19/gal x 75 gal/day x 21 days	$6,599.25
Oil, filters, grease, misc. parts	$1,000
(truck/trip x 80mi/truck x $0.505/mi x 55 trips) Vernal to Baeser round trip	$2,222
Subtotal	$22,325.49

Task 2. No cost (fish production costs are covered in propagation scopes and no charge is requested for stocking fish).

Task 3. Monitor water levels monthly.

Labor	Cost
GS-8 Fisheries Tech ($35.11/hr x 8 hrs/day x 5 days)	$1,404.40
(truck/trip x 80mi/truck x $0.505/mi x *5 trips) Vernal to Baeser round trip	$202
* note-other monthly trips to check water levels are accounted for in pumping. Subtotal	$1,606.40

Task 4.Determine relative abundance of razorback sucker/tag and release fish.

Labor	
GS-11 Biologist ($39.32/hr x 8 hrs/day x 35 days)	$11,009.60
GS-8 Fisheries Tech ($35.11 x 8 hrs/day x 35 days)	$9,830.80
2 GS-5 Tech ($17.42/hr x 8 hrs/day x 35 day)	$9,755.20
Subtotal	$30,595.60

Task 5. Data Analysis, report writing, presentations

Labor	Cost
GS-11 Biologist ($39.32/hr x 8 hrs/day x 6 days)	$1,887.36
GS-14 Project Leader ($71.77/hr x 8 hrs/day x 6 days)	$3,444.96
Subtotal	$5,332.32

IX. Budget Summary:

FY-2010
Total: $59,859.81

X. Reviewer: Dave Irving

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.

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. Assesment of stocking hatchery trout: a Wyoming Perspective. North American Journal of Fisheries Management 13:160-170.