FY-2009-2010 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 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 age-1 razorback sucker and bonytail to natural conditions in Baeser Bend floodplain.

Objective 2. Harvest razorback sucker and bonytail from Baeser Bend floodplain in excess of 300 and 200 mm respectively, and tag and release them into the Green River.

End Product: Production of razorback sucker in excess of 300 mm and bonytail in excess of

200 mm that can be released 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:

There are many unknowns concerning the Baeser Bend project, and our 2009 work plan will depend ultimately on if there is razorback survival when we sample in the spring after ice-off. We know from sampling in 2008 that there are shiners and fathead minnows present in Baeser Bend. It is possible that other non-native fish are present in the wetland. If given a chance, these non-native fish could ruin the wetland for razorbacks. Another issue is regulating and maintaining water levels in Baeser Bend. Last year we had difficulty maintaining sufficient water in the wetland. We did not have a pump of our own to be able to use and ended up spending a lot of money renting a pump and borrowing a pump from the Ouray National Wildlife Refuge. This issue made it very difficult to maintain water in the wetland from both an economic and logistical standpoint.

With these unknown variables explained, this is what we hope to accomplish in 2009. We will determine survival by conducting a mark-recapture population estimate in spring 2009 using nets to sample. Assuming there is razorback survival and that no other non-native fish species are present during sampling, we will weigh, measure, and PIT tag all razorbacks over 300 mm and release them into the Green River. Any non-native fish will be removed.

We will monitor water levels monthly. We want the water levels to not drop below 3 ft. We will pump water from the Green River into Baeser Bend as needed. We will plan on pumping water once a month during June, and September-November and two times per month during July-August.

By fall 2009, all razorbacks currently in Baeser Bend should be 300 mm. We plan to rigorously net the site and PIT tag and release into the river all razorbacks encountered over 300 mm. We expect that the Ouray National Fish Hatchery will have more razorback suckers to stock into Baeser Bend, and we will coordinate with them as the season progresses to accommodate stocking. Baeser Bend originally was going to harbor bonytails as well as razorbacks. We will stock bonytails into Baeser Bend pending their availability.

This approach is our plan assuming there is survival and no other non-native fish species are present during our spring sampling. If, however, there is no survival, we will consider other options. If we determine no fish survived due to anoxic conditions during the winter, we will consider the purchase of aeration equipment to deploy for the following winter. We would allow the wetland to dry completely and reset, then refill it in the fall and stock fish back into it. We would also consider at that point using

bentonite to help reduce leakage from the wetland.

If there is razorback survival but other non-native fish, such as smallmouth bass, are documented during the spring sampling, we will consider another option. We would assume that the razorbacks in the wetland would already be large enough to not fall prey to the non-native predators. We would wait until fall when the razorbacks should reach 300 mm and then we would tag all razorbacks and release them into the Green River. We would then drain the wetland and or treat it with rotenone to ensure a complete non-native fish kill. We could then either fill the wetland and stock razorbacks to allow them to overwinter or wait until spring to fill and stock the wetland. Any decision made would be agreed upon with the Biology Committee.

VII. Task Description and Schedule:

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

Schedule: FY-2009

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

VIII. FY-2009 Work: Stocking, delivery of water, sampling, sample processing and annual reporting:
– Deliverables/Due Dates: Annual Report of FY09 field activities due November 2009.

– Budget:
Task 1. Fill Baeser Bend floodplain with water using pump.

Operational Costs (Including acquisition of an 8" pump)	Cost
Pump	$34,350
Pump hoses, Pump boom fabrication, pump trailer set-up	$5,000
GS-8 Fisheries Tech ($33.30/hr x 8 hrs/day x19 days)	$5,062
Fuel @ $4.50/gal x 108 gal/day x 24 days	$11,664
Oil, filters, misc. parts	$500
(truck/trip x 80mi/truck x $0.505/mi x 48 trips) Vernal to Baeser round trip	$1,940
Subtotal	$58,516

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 and quality parameters monthly.

Labor	Cost
GS-8 Fisheries Tech ($33.30/hr x 8 hrs/day x 6 days)	$1,599
(truck/trip x 80mi/truck x $0.505/mi x 6 trips) Vernal to Baeser round trip	$243
Subtotal	$1842

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

Labor	
GS-11 Biologist ($37.03/hr x 8 hrs/day x 6 days)	$1,778
GS-8 Fisheries Tech ($33.30/hr x 8 hrs/day x 6 days)	$1,599
3 GS-5 Tech ($15.91/hr x 8 hrs/day x 6 day)	$2,292
Subtotal	$5,669

Task 5. Data Analysis, report writing, presentations

Labor	Cost
GS-11 Biologist ($37.03/hr x 8 hrs/day x 6 days)	$1,778
GS-14 Project Leader ($68.84/hr x 8 hrs/day x 6 days)	$3,305
Subtotal	$5,083

IX. Budget Summary:

FY-2009
Total: $71,110

X. Reviewers: Dave Irving

XI. References:

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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.

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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.