COLORADO RIVER RECOVERY PROGRAM Project No.: C-6 Baeser
FY-2012-2013 PROPOSED SCOPE OF WORK for:

Rearing Bonytail/Razorback Sucker in Baeser Bend wetland in the Green River.

Lead Agency: US Fish and Wildlife Service

Submitted by:

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Category:

	Expected Funding Source:
_ Ongoing project	_X_ Annual funds
_X_ Ongoing-revised project	_ Capital funds
_ Requested new project	_ Other (explain)
_ Unsolicited proposal	

I. Title of Proposal: Rearing Bonytail/Razorback Sucker in Baeser Bend wetland in the Green River.

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:
Rearing and Stocking Razorback Sucker and Bonytail at Baeser Bend Wetland
Razorback sucker and bonytail are thought to learn skills that will aid in their survival if they are raised in a natural environment instead of a hatchery environment. It is hoped that Baeser Bend wetland will be void of nonnative fish in 2012. We will stock larval razorback sucker and/or bonytail in the spring of 2012, allow them to grow and acquire needed survival skills in the wetland, and begin capturing, PIT tagging, and releasing them into the Green River in the fall of 2013. We do this with the end goal of producing fish to contribute to the population in the river and to later compare survival of hatchery-

reared fish and fish raised in a natural wetland. To date, 1,516 razorback sucker have been stocked from Baeser Bend wetland, and 66 of these have since been documented in the river by multiple researchers. We need additional time and a larger sample size to determine the contribution and effectiveness of fish raised in natural wetlands to the populations in the river; this project will help fill this data gap. The razorbacks stocked from Baeser Bend in 2009 can now be expected to congregate on a spawning bar known as "Razorback Bar." We plan to passively document razorback sucker on the bar using flat plate PIT tag antennae, with Baeser fish being among those detected.

Flat Plate Antenna at Razorback Bar

In 2008, a flat plate antenna (27"x13") and an FS2001F-ISO reader manufactured by Biomark (information on this equipment is found at www.biomark.com) was used on the Weber River and documented 58 of 98 (59%) total PIT tagged bluehead sucker from October 2007-March 2008 (Thompson and Webber 2009). Many of these fish were not captured during electrofishing passes, but they were detected with the antenna. The flatplate antenna had a read range of approximately 12". The flat plate antenna was deployed in an area known to have a concentration of tagged fish. The equipment was easy to setup and maintain. It required only the weekly recharging and replacement of a 12 V deep-cycle battery. We propose to use this same technology on the Green River at Razorback Bar.

Razorback Bar is a known spawning bar in the middle Green River. Razorback sucker congregate at this spawning bar in the spring, and stay in the general area for approximately 6 weeks (Modde et al. 2005). During this time, Modde et al. (2005) detected individuals moving all over this relatively small spawning bar (Fig. 1). With the two flat plate antennae positioned on the bar, many razorback sucker should be documented. This spawning bar is located on the inside of a bend of the river where current is minimal. If the antennae are properly secured, there should be little threat of high water taking the equipment away. Modde et al. (unpublished data) also measured velocities, depths, and substrate where fish were located, and these results suggest the proposed location is not susceptible to sediment deposition (boulder/gravel substrate) or high velocities.

If razorback sucker from Baeser Bend are contributing to the spawning population in the Green River, this detection method has a good chance of documenting them. It will also provide data on the age and stocking cohort composition of the spawning population of razorback sucker at Razorback Bar. Currently, field crews avoid sampling this area with electrofishing equipment to avoid the possibility of disrupting spawning behavior, therefore little data is available to assess which fish are contributing to wild reproduction. The expected data to be gathered from this project is a list of individual razorback sucker using the spawning bar. From this data, we will summarize similarities among the fish (e.g., what year they were spawned, when and where they were stocked, movements from prior captures or stocking locations etc.). This information can aid us in improving fish stocking procedures and give us a better idea of how many spawning sucker congregate

at Razorback Bar. There is also the potential of documenting survival of many fish for the first time since stocking. During the study on the Weber River, 18% of the bluehead sucker used in a survival estimate were only documented on the flatplate antenna after their initial tagging, and not recaptured using electrofishing in 3 years of intensive effort. These additional passive recaptures aided in generating a much more precise survival estimate than what was possible with only active sampling (electrofishing) data, and there are models available (such as the Pradel model) in Program MARK that take advantage of this type of additional detections. The current sampling conducted on the Green River (Colorado pikeminnow estimates and nonnative fish removal effort) has not obtained enough recaptures to provide a precise survival estimate on razorback sucker (K. Bestgen, pers. comm.). Any additional detections (i.e., with PIT tag antennae) would help with the precision of survival estimates of razorback sucker in the future, and this PIT tag antenna has the potential of documenting many razorbacks. This equipment is able to detect older frequency PIT tags which Recovery Program researchers have tagged razorback sucker with in the recent past.

IV. Study Goals, Objectives, End Product: Our goals are to: 1) Stock as many razorback sucker and bonytail as possible into the Green River from Baeser Bend wetland, to supplement the existing populations, and to later calculate the survival of these fish and compare these rates with hatchery reared fish; 2) To document these same fish (and others) at Razorback Bar to determine if these fish will contribute to the spawning population of razorback sucker in the middle Green River. All recapture data will be provided electronically to the Recovery Program database for future survival estimates. This project is not intended to estimate razorback sucker survival in and of itself, but rather to augment other datasets (ancillary captures through pikeminnow estimates and nonnative fish removal). We will also provide results of our findings in the form of an annual report.

V. Study area: Baeser Bend wetland on the middle Green River, and Razorback Bar near Jensen, Utah.

VI. Study Methods/Approach:

<u>Rearing and Stocking Razorback Sucker and Bonytail at Baeser Bend wetland</u>

If Baeser Bend becomes reset (void of fish) over the winter, we will stock larval razorback sucker and or bonytail in spring of 2012. We will maintain water levels at Baeser Bend through pumping water from the Green River into the wetland. During pumping events, we will cover the discharge hose with special small meshed sock nets to prevent invasion of nonnative fishes. We will make a special effort to leave the wetland with as much water as possible just prior to ice-up in the winter to facilitate overwinter survival. We would begin harvesting razorback sucker and bonytail when each species reaches 300 and 200 mm respectively, which would likely occur in October 2013. We would then seek guidance from the Biology Committee to determine if we would stock more fish into the wetland.

Flat Plate Antenna at Razorback Bar

As a follow-up from previous years' stocking, we will deploy two 27" x 13" flat plate PIT tag antennae on Razorback Bar to potentially document survival of these fish. This location is a known spawning bar, and we assume that at least some of the razorbacks from Baeser Bend would be found on this bar seeking spawning opportunity. We would access the spawning bar by a road on the Dinosaur National Park, and have already obtained permission from the Park. On 7 March 2012, we spoke via phone with Kevin McAbee of the Service's Salt Lake City ES office regarding obtaining the necessary permits to anchor the PIT tag antennae in the river channel. He in turn referred us to Daren Rasmussen of the Utah Stream Alteration Program, to whom we spoke via phone on that same date. We explained in detail to Mr. Rasmussen the methods that we would use to anchor the flat plate antennae onto the river bed (see details below). Mr. Rasmussen indicated that there would be no permits required to perform this work. We will install the flat plates several weeks before flows begin to rise on the bar (probably late March or early April). We will use four ≥ 24" stakes to secure each flat plate to the river bottom. We intend to set up one flat plate at the upper end of the spawning bar and one at the lower end. Depending on flows, these flat plates will likely be 1'-3' underwater. There will be a 50' cable from the flat plate which we would either be secured to the bottom of the river channel or buried. This cable would be connected to a PIT tag reader housed in a metal box on the bank above high water. Batteries (12 V deep cycle) would be recharged and changed weekly during the razorback spawn, and we would take down the equipment after flows recede.

VII. Task Description and Schedule

Task 1: Stock larval razorback sucker and bonytail into Baeser Bend floodplain.
Task 2: Pump Baeser Bend floodplain.
Task 3: Tag and release fish into Green River.
Task 4: Data Analysis, report writing, presentations.
Task 5: Document razorback sucker on spawning bar.

Schedule: FY-2012

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

Schedule: FY-2013

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

4											X	X
5				X	X	X						

VIII. FY-2012 Work

- Deliverables/Due Dates Annual Report due November 2012
- Budget

Task 1. No cost (fish production costs are covered in propagation scopes and no charge is requested for stocking fish).

Task 2. Pump Baeser Bend floodplain.

Operational Costs	Cost
GS-11 Biologist ($44.25/hr x 64 hrs)	$2,832
GS-8 Fisheries Tech ($37.38/hr x 51 hrs)	$1,906.38
GS-5 Fisheries Tech ($17.45/hr x 200 hrs)	$3,490
Fuel @ $4.50/gal x 50 gal/day x 8 days	$1,800
Oil, filters, grease, tires, misc. parts for trailers/pump	$1,000
GSA truck lease $334/mo/1 truck/4 mo	$1,336
(truck/trip x 80mi/truck x $0.30/mi x 18 trips) Vernal to Baeser round trip	$432
Subtotal	$12,796.38

Task 3. No cost during 2012 (Fish will be harvested in 2013).

Task 4. Data Analysis, report writing, presentations, administration.

Labor	Cost
GS-9 Administrative Officer ($38.54/hr x 35 hrs)	$1,348.90
GS-11 Biologist ($44.25/hr x 16 hrs)	$708
GS-12 Supervisory Fish Biologist ($49.65/hr x 54 hrs)	$2,681.10
GS-13 Assistant Project Leader ($61.38/hr x 26 hrs)	$1,595.88
GS-14 Project Leader ($74.16/hr x 11 hrs)	$815.76
Subtotal	$7,149.64

Task 5. Document razorback sucker on spawning bar.

Labor	Cost
GS-5 Fisheries Tech ($17.45/hr x 24 hrs)	$418.80
GS-8 Fisheries Tech ($37.38/hr x 8 hrs)	$299.04
GS-11 Biologist ($44.25/hr x 16 hrs)	$708
GS-12 Supervisory Fish Biologist ($49.65/hr x 8 hrs)	$397.20
50’ cables for PIT antenna (2 x $75 ea.)	$150
Shipping for cables	$25
Subtotal	$1,998.04

FY- 2012 Total = $21,944.06

PIT supplies (Ordered by BOR on 2/28/12)

2 FS2001 reader @ $2,750.00 = $5,500.00
2 Flat plate antenna @ $1,900.00 = $3,800.00
2 FS2001 Remote monitoring case @ $600.00 = $1,200.00
2 FS2001 DC power cable @ $140.00 = $280.00

Total: $10,780

FY- 2013 Proposed budget:

Task 1. No cost (No stocking in 2013).

Task 2. Pump Baeser Bend floodplain.

Operational Costs	Cost
GS-11 Biologist ($45.54/hr x 96 hrs)	$4,371.84
GS-8 Fisheries Tech ($38.45/hr x 96 hrs)	$3,361.92
Fuel @ $4.50/gal x 50 gal/day x 12 days	$2,700.00
Oil, filters, grease, tires, misc. parts for trailers/pump	$500
GSA truck lease $334/mo/2 trucks/4 mo	$2,672.00
(truck/trip x 80mi/truck x $0.30/mi x 24 trips) Vernal to Baeser round trip	$576.00
Subtotal	$14,511.04

Task 3. Tag and release fish into Green River.

Labor	Cost
GS-11 Biologist ($45.54/hr x 80 hrs)	$3,643.20
GS-8 Fisheries Tech ($38.45 x 80 hrs)	$2,801.60
GS-5 Fisheries Tech ($17.95/hr x 69 hrs)	$1,238.55
(truck/trip x 80mi/truck x $0.30/mi x 10 trips) Vernal to Baeser round trip	$240
Subtotal	$7,923.35

Task 4. Data Analysis, report writing, presentations

Labor	Cost
GS-9 Administrative Officer ($38.54/hr x 35 hrs)	$1,348.90
GS-11 Biologist ($45.54/hr x 128 hrs)	$5,829.12
GS-12 Supervisory Fish Biologist ($52.69/hr x 54 hrs)	$2,845.26
GS-13 Assistant Project Leader ($65.05/hr x 26 hrs)	$1,691.30
GS-14 Project Leader ($76.34/hr x 11 hrs)	$839.74
Subtotal	$12,554.32

Task 5. Document razorback sucker on spawning bar.

Labor	Cost
GS-5 Fisheries Tech ($17.95/hr x 24 hrs)	$430.80
GS-8 Fisheries Tech ($38.45 x 8 hrs)	$307.60
GS-11 Biologist ($45.54/hr x 16 hrs)	$728.64
GS-12 Supervisory Fish Biologist ($52.69/hr x 8 hrs)	$421.52
Subtotal	$1,888.56

FY- 2013 = $36,877.27

IX. Budget Summary for USFWS:

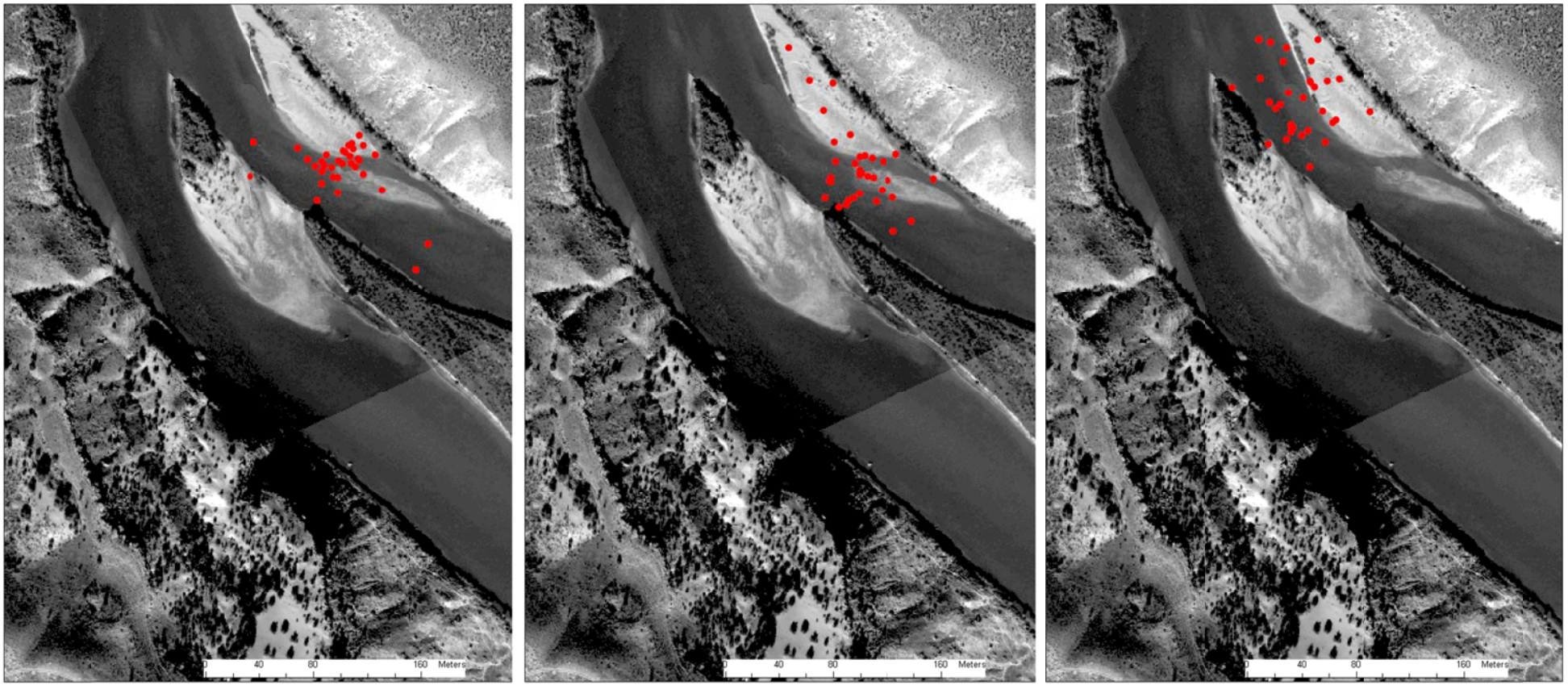
FY-2012=$21,944.06 (does not include $10,780 direct expenditures from BOR)
FY-2013=$36,877.27

X. Reviewers: Tildon Jones, Supervisory Fish Biologist (CRFP- Vernal)
Dale Ryden, Supervisory Fish Biologist (CRFP- Grand Junction)

References:

Modde, T., Z. H. Bowen, and D. C. Kitcheyan. 2005. Spatial and Temporal Use of a Spawning Site in the Middle Green River by Wild and Hatchery-Reared Razorback Suckers. Transactions of the American Fisheries Society 134:937-944.

Thompson, P. and A. Webber. 2009. Bluehead sucker (*Catostomus discobolus*) distributional surveys and monitoring in Northern Utah, 2008. Pages 1-1 to 1-18 *in* S. L. Jones, editor. Three species roundtail chub (*Gila robusta*) bluehead sucker (*Catostomus discobolus*) flannelmouth sucker (*Catostomus latipinnis*) statewide monitoring summary 2008. Publication #09-27. Utah Division of Wildlife Resources, Salt Lake City, Utah.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