

**COLORADO RIVER RECOVERY PROGRAM
FY-2012-2013 PROPOSED SCOPE OF WORK for:**

Project No.: New #?

Detecting endangered fishes using PIT tag antenna technology in the Upper Colorado River Basin

Lead Agency: US Fish and Wildlife Service

Submitted by:

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Date: February 27, 2011

Category:

Expected Funding Source:

- | | |
|---|--|
| <input type="checkbox"/> Ongoing project | <input checked="" type="checkbox"/> Annual funds |
| <input checked="" type="checkbox"/> Ongoing-revised project | <input type="checkbox"/> Capital funds |
| <input type="checkbox"/> Requested new project | <input type="checkbox"/> Other (explain) |
| <input type="checkbox"/> Unsolicited proposal | |

- I. Title of Proposal: Detecting endangered fishes using PIT tag antenna technology in the Upper Colorado River Basin

- II. Relationship to RIPRAP:
Green River Action Plan:
I.D.1.c.(1) Conduct annual monitoring of larval razorback suckers and analyze historic monitoring data.
V.C. Conduct population estimate for Colorado pikeminnow
IV.A.1.d. Evaluate stocking success as identified in monitoring plan for stocked fish.
V.D.1. Implement razorback sucker monitoring plan.

- III. Study Background/Rationale and Hypotheses:
Researchers monitor endangered fishes in the Upper Colorado River Basin. Periodic population estimates are attempted to try to track population abundance, and the method used for these population estimates is by capture-recapture. This type of estimation requires that marked animals are recaptured in some way, and the more the recaptures the higher the precision of the estimate. Precise population estimates allow

managers to be more confident about the status of the species in question.

In recent years, Colorado pikeminnow estimate work has provided researchers with enough data to generate population estimates, however, captures and recaptures have been declining and more recaptures are desired for better precision (K. Bestgen, personal communication). While conducting work to estimate Colorado pikeminnow, razorback suckers are captured. However, recaptures are lacking for this species to generate a precise population estimate. Managers have identified a need to increase razorback sucker recaptures to thus generate population parameters (Bestgen et al. 2012). This study was initiated with this purpose: to generate as many razorback sucker detections as possible to generate data that can be later used for estimating populations and survival.

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 (Webber et al. 2012). 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 proposed to use this same technology on the Green River at Razorback Bar.

We deployed two of these aforementioned flat plate antennas on Razorback Bar in spring 2012. In 29 days, we detected 52 individual razorback suckers and 7 individual Colorado pikeminnow. Now that we know that this PIT tag antenna technology is capable of detecting endangered fishes in the Green River, we are looking to continue to use this technology at Razorback Bar and experiment with it in other locations.

- IV. Study Goals, Objectives, End Product: Our goals are to: 1) To detect as many endangered fish as possible at Razorback Bar and 2) find other locations where PIT tag antenna technology can be used to obtain more detections. Potential locations include but are not limited to: Brush Creek, Douglas Creek, Vermillion Creek, Escalante Bar, Yampa River Colorado pikeminnow spawning sites, and wetlands that connect to rivers. 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: Razorback Bar near Jensen, Utah; other locations along the middle Green River.

VI. Study Methods/Approach:

Flat Plate Antenna at Razorback Bar

We will deploy two 27” x 13” flat plate PIT tag antennas on Razorback Bar. We have already acquired sampling permits from Dinosaur National Monument since the spawning bar is located on their property. 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 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 secured box on the bank above high water. Batteries (12 V deep cycle) would be recharged and changed weekly or powered by solar panels during the razorback spawn, and we would take down the equipment after flows recede. Data would be downloaded and an annual report would summarize our findings.

VII. Task Description and Schedule

Task 1: Document razorback sucker on spawning bar.

Task 2: Data Analysis, report writing, presentations.

Schedule: FY-2014

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

Schedule: FY-2015

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

Schedule: FY-2016

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

Schedule: FY-2017

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

Schedule: FY-2018

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

VIII. FY-2014 Work

- Deliverables/Due Dates Annual Report due November 2014
- Budget

Task 1. Document razorback sucker on spawning bar.

Labor	Cost
GS-5 Fisheries Tech (\$16.91/hr x 40 hrs)	\$676.40
GS-8 Fisheries Tech (\$37.49/hr x 130.5 hrs)	\$4,892.45
GS-11 Biologist (\$45.06/hr x 80 hrs)	\$3,604.80
Equipment (cables, batteries, wire, stakes etc.)	\$500
Subtotal	\$9,673.65

Task 2. Data Analysis, report writing, presentations, administration.

Labor	Cost
GS-9 Administrative Officer (\$36.89/hr x 58 hrs)	\$2,139.62
GS-11 Biologist (\$45.06/hr x 80 hrs)	\$3,604.80
GS-12 Supervisory Fish Biologist (\$52.31/hr x 40 hrs)	\$2,092.40
Subtotal	\$7,836.82

FY- 2014 Total = \$17,510.47

FY- 2015 Proposed budget:

Task 1. Document razorback sucker on spawning bar.

Labor	Cost
GS-5 Fisheries Tech (\$17.25/hr x 40 hrs)	\$690
GS-8 Fisheries Tech (\$38.24/hr x 130.5 hrs)	\$4,990.32
GS-11 Biologist (\$45.96/hr x 80 hrs)	\$3,676.80
Equipment (cables, batteries, wire, stakes etc.)	\$500
Subtotal	\$9,857.12

Task 2. Data Analysis, report writing, presentations, administration.

Labor	Cost
GS-9 Administrative Officer (\$38.65/hr x 58 hrs)	\$2,241.70
GS-11 Biologist (\$45.96/hr x 80 hrs)	\$3,676.80
GS-12 Supervisory Fish Biologist (\$53.36/hr x 40 hrs)	\$2,134.40
Subtotal	\$8,052.90

FY-2015 Total = \$17,910.02

FY- 2016 Proposed budget:

Task 1. Document razorback sucker on spawning bar.

Labor	Cost
GS-5 Fisheries Tech (\$17.60/hr x 40 hrs)	\$704
GS-8 Fisheries Tech (\$39.01/hr x 130.5 hrs)	\$5,090.81
GS-11 Biologist (\$46.88/hr x 80 hrs)	\$3,750.40
Equipment (cables, batteries, wire, stakes etc.)	\$500
Subtotal	\$10,045.21

Task 2. Data Analysis, report writing, presentations, administration.

Labor	Cost
GS-9 Administrative Officer (\$39.43/hr x 58 hrs)	\$2,286.94
GS-11 Biologist (\$46.88/hr x 80 hrs)	\$3,750.40
GS-12 Supervisory Fish Biologist (\$54.43/hr x 40 hrs)	\$2,177.20
Subtotal	\$8,214.54

FY-2016 Total = \$18,259.75

FY- 2017 Proposed budget:

Task 1. Document razorback sucker on spawning bar.

Labor	Cost
GS-5 Fisheries Tech (\$17.95/hr x 40 hrs)	\$718
GS-8 Fisheries Tech (\$39.79/hr x 130.5 hrs)	\$5,192.60
GS-11 Biologist (\$47.82/hr x 80 hrs)	\$3,825.60
Equipment (cables, batteries, wire, stakes etc.)	\$500
Subtotal	\$10,236.20

Task 2. Data Analysis, report writing, presentations, administration.

Labor	Cost
GS-9 Administrative Officer (\$40.22/hr x 58 hrs)	\$2,332.76
GS-11 Biologist (\$47.82/hr x 80 hrs)	\$3,825.60
GS-12 Supervisory Fish Biologist (\$55.51/hr x 40 hrs)	\$2,220.40
Subtotal	\$8,378.76

FY-2017 Total = \$18,614.96

FY- 2018 Proposed budget:

Task 1. Document razorback sucker on spawning bar.

Labor	Cost
GS-5 Fisheries Tech (\$18.31/hr x 40 hrs)	\$732.40
GS-8 Fisheries Tech (\$40.58/hr x 130.5 hrs)	\$5,295.69
GS-11 Biologist (\$48.77/hr x 80 hrs)	\$3,901.60
Equipment (cables, batteries, wire, stakes etc.)	\$500
Subtotal	\$10,429.69

Task 2. Data Analysis, report writing, presentations, administration.

Labor	Cost
GS-9 Administrative Officer (\$41.02/hr x 58 hrs)	\$2,379.16
GS-11 Biologist (\$48.77/hr x 80 hrs)	\$3,901.60
GS-12 Supervisory Fish Biologist (\$56.62/hr x 40 hrs)	\$2,264.80
Subtotal	\$8,545.56

FY-2018 Total = \$18,975.25

IX. Budget Summary for USFWS:

FY-2014=\$17,510.47

FY-2015=\$17,910.02

FY-2016=\$18,259.75

FY-2017=\$18,614.96

FY-2018=\$18,975.25

X. Reviewers: Tildon Jones, Supervisory Fish Biologist (CRFP- Vernal)

References:

Bestgen K. R., K. A. Zelasko, and G. C. White. 2012. Monitoring reproduction, recruitment and population status of razorback suckers in the upper Colorado River Basin. Report to the Upper Colorado River Endangered Fish Recovery Program. Larval Fish Laboratory Contribution 170, Colorado State University, Fort Collins.

Webber P. A., P. D. Thompson and P. Budy. 2012. Status and structure of two populations of bluehead suckers (*Catostomus discobolus*) in the Weber River, Utah. Southwestern Naturalist 57(3):267-276.