

COLORADO RIVER RECOVERY PROGRAM
FY 2018 ANNUAL PROJECT REPORT

RECOVERY PROGRAM
PROJECT NUMBER: 172

I. Project Title: Remote monitoring of endangered fishes in the middle Green River

II. Bureau of Reclamation Agreement Number(s): R14AP00007

Project/Grant Period: Start date: 10/01/2014
End date: 09/30/2019
Reporting period end date: 09/30/2018
Is this the final report? Yes _____ No X

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IV. Abstract:

In response to an ongoing need to increase encounters of endangered fish in the Green River sub-basin, the Utah Division of Wildlife Resources Vernal Field Office deployed remote submersible PIT antennas in the middle Green River to complement the existing recovery program project #169. Antenna sites included known and suspected razorback sucker spawning locations and flooded tributary mouths. Additionally, a single antenna was deployed at a location where an aggregation of ripe Colorado pikeminnow were observed while electrofishing for project #123b. In 2018, submersible antennas logged 11,053 total detections, 1,727 of which were unique individual fish. We were able to associate 1,536 of these tags with records of implantation into fish. Tagging records indicate that we detected 1,430 razorback sucker, 88 Colorado pikeminnow, five bonytail, five flannelmouth sucker X razorback sucker hybrids, seven flannelmouth sucker, and one roundtail chub (Table 1). Given that this was the pilot year for this project, we consider the basic design a success and will continue making improvements for future implementation.

V. Study Schedule: 2018-ongoing

VI. Relationship to RIPRAP:

GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN

V. Monitor populations and habitat and conduct research to support recovery actions (research, monitoring and data management).

- V.A. Measure and document population and habitat parameters to determine status and biological response to recovery actions.
- V.A.1.a.(2) Investigate improving recapture rates through passive PIT tag monitoring, nets, etc. to improve population abundance estimates.
- V.A.3. Collect and submit data according to standard protocol (e.g., location, PIT tag #, length, weight, etc.) on endangered fish encountered in all field activities in order to provide annual information on population status outside of formal population estimates.
- V.B. Conduct research to acquire needed life history information.
- V.B.2. Conduct appropriate studies to provide needed life history information.
- V.D. Establish sampling procedures to minimize adverse impacts to endangered fishes.
- V.D.2. Implement scientific sampling protocols to minimize mortality for all endangered fishes.
- V.F. Assess relative biological importance of tributaries and their potential contributions to endangered fish recovery.

GREEN RIVER ACTION PLAN: MAINSTEM

- V. Monitor populations and habitat and conduct research to support recovery actions (research, monitoring and data management).
- V.A. Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.

VII. Accomplishment of FY 2018 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Objective 1. Deploy remote submersible PIT antennas to increase razorback sucker encounters in the middle Green River.

Use of cobble substrate microhabitats upstream of Jensen, Utah (river mile [RM] 317-302) by spawning razorback sucker has been well documented (Tyus and Karp 1990; Modde et al. 1996). Furthermore, passive detection of PIT-tagged fish at Razorback Bar (RM 310.9) is undertaken annually by the Green River Basin Fish and Wildlife Conservation Office under project #169 and has proven to be an efficient means of detecting PIT-tagged razorback sucker (Smith et al. 2017; Webber and Beers 2014).

To complement project #169 and further increase detections of razorback sucker, we deployed three submersible antennas at cobble substrate microhabitats downstream of Razorback Bar. These locations include sites on the right bank at RM 309.7 (Escalante Ranch #1) and RM 309.5 (Escalante Ranch #2), and the left bank at RM 306.8 (Escalante Bar). All three of these sites were successful in detecting large numbers of razorback sucker (Table 1). While some tags were detected at multiple sites throughout this study, unique tags reported on a site by site basis refer to tags that were unique to each individual site.

We deployed antennas at the Escalante Ranch sites (RM 309.7 and 309.5) from 3 April to 31 May 2018. The antenna at RM 309.7 detected 487 razorback sucker, 12 Colorado

pikeminnow, seven flannelmouth sucker and four flannelmouth sucker X razorback sucker hybrids. Just downstream at RM 309.5, 445 razorback sucker, six Colorado pikeminnow, one bonytail, and one roundtail chub were detected (Table 1).

At Escalante Bar (RM 306.8), we deployed an antenna from 18 April to 31 May 2018, where we detected 225 razorback sucker, 10 Colorado pikeminnow, and one bonytail (Table 1).

Objective 2. Adjust sampling locations and timing as needed to increase encounter rates of other endangered fishes (e.g., Colorado pikeminnow).

In an attempt to increase detections of Colorado pikeminnow and bonytail, and to provide additional opportunities for razorback sucker detections, we deployed antennas in flooded tributary mouths and backwater habitats (Table 1). These sites included Ashley Creek (RM 299.0), Brush Creek (RM 304.6), and the mouth of Stewart Lake Drain (RM 299.2). Additionally, in an unexpected series of events, crew members electrofishing under project #123b observed a group of 10 or more Colorado pikeminnow on 9 July 2018 and captured two ripe male fish. An antenna was promptly deployed at Placer Point (RM 315.9), in Dinosaur National Monument, from 10–30 July 2018. Detections at Placer Point were dominated by Colorado pikeminnow with 52 Colorado pikeminnow detected and seven razorback sucker.

We deployed an antenna at Ashley Creek (RM 299.0) from 4 April to 27 June 2018. At this site, we detected 449 razorback sucker, 14 Colorado pikeminnow, three bonytail, and one flannelmouth sucker X razorback sucker hybrid (Table 1). Low water levels in the Green River during this timeframe may have concentrated use of Ashley Creek by endangered fish due to a relative lack of other inundated tributary mouths in the area.

We deployed an antenna at the mouth of Brush Creek (RM 304.6) from 31 May to 27 June 2018. The Brush Creek antenna detected 12 razorback sucker, six Colorado pikeminnow, three bonytail, and a single flannelmouth sucker X razorback sucker hybrid (Table 1). It should be noted that due to low water levels in the Green river, the antenna at Brush Creek was dry at the time of retrieval, so the length of time that detections were possible is not known.

At the mouth of the Stewart Lake Drain (RM 299.2), we deployed an antenna from 31 May to 27 June 2018. Detections at this site include 36 razorback sucker and three Colorado pikeminnow (Table 1). Like Brush Creek, the Stewart Lake Drain was inundated for a relatively short period in 2018 and the antenna there was out of the water upon retrieval. A separate antenna was deployed near the control gate structure of the Stewart lake wetland to document fish as they attempt to enter Stewart Lake. Data from this antenna are summarized in the project #165 annual report.

VIII. Additional noteworthy observations:

The antenna deployed at Placer Point (RM 315.9) detected more than half of the Colorado pikeminnow detected under this study in just 20 days of deployment. These detections in conjunction with observations made while electrofishing under project

#123b, where ten or more fish were shocked simultaneously and two ripe males were captured, provides strong evidence that Colorado pikeminnow spawned at this location in 2018. This area technically falls outside of the study area for this project as defined in the scope of work, which is defined as occurring downstream of Razorback Bar (RM 310.8). Future scopes of work should include Placer Point as a location to investigate pikeminnow spawning activity and increase Colorado pikeminnow detections.

Given the close proximity of antennas used in this study to antennas simultaneously deployed under project #169, the level of duplicate detections between the two projects should be monitored. In 2018, 671 total tags were detected under both projects #169 and #172 (Chris Smith, personal communication), indicating that the majority of tags detected under this study were not detected under project #169. Further investigation of the potential overlap between these two projects should occur in subsequent years and possibilities for collaborative data analysis should be considered.

IX. Recommendations:

- Additional antennas should be deployed at Placer Point in subsequent years as well as other nearby locations to determine use of this area by Colorado pikeminnow during the presumptive spawning period.
- Cross reference data from this project against data from project #169 to monitor overlap between the two projects.
- Consider ways to collaborate with Green River Basin Fish and Wildlife Conservation Office regarding data analysis (i.e., movement timing and direction, habitat use, and relationships between spawning bars).

X. Project Status: On track and ongoing.

XI. FY 2018 Budget Status

- A. Funds Provided: \$8,568
- B. Funds Expended: \$8,568
- C. Difference: \$0
- D. Percent of the FY 2018 work completed, and projected costs to complete: 100%
- E. Recovery Program funds spent for publication charges: \$0

XII. Status of Data Submission:

Data will be submitted in December 2018.

XIII. Signed: Michael Partlow 11/21/2018
Principal Investigator Date

XIV. Works Cited

- Tyus, H.M. and C.A. Karp. 1990. Spawning and Movements of Razorback Sucker, *Xyrauchen texanus*, in the Green River Basin of Colorado and Utah. *The Southwestern Naturalist* 35 (4): 427-433.
- Modde T., Burnham K.P., and E.J. Wick. 1996. Population status of the razorback sucker in the middle Green River. *Conservation Biology* 10:110-119.
- Smith, C.T., D. Beers, and M.T. Jones. Detecting endangered fishes using PIT tag antenna technology in the Upper Colorado River Basin. Annual Report to the Upper Colorado River Endangered Fish Recovery Program. Denver, CO.
- Webber, P.A. and D. Beers. 2014. Detecting razorback suckers using passive integrated transponder tag antennas in the Green River, Utah. *Journal of Fish and Wildlife Management* 5: 191-196.

Table 1. Submersible PIT antenna locations, deployment dates and detections by species.

Site	Species	Unique Detections
<u>Ashley Creek (RM 299.0) 4/4-6/27</u>		
	Razorback sucker	449
	Colorado pikeminnow	14
	Bonytail	3
	Flannelmouth sucker X razorback sucker	1
<u>Brush Creek (RM 304.6) 5/31-6/27</u>		
	Razorback sucker	12
	Colorado pikeminnow	6
<u>Escalante Bar (RM 306.8) 4/18-5/31</u>		
	Razorback sucker	255
	Colorado pikeminnow	10
	Bonytail	1
<u>Escalante Ranch #1 (RM 309.7) 4/3-5/31</u>		
	Razorback sucker	487
	Colorado pikeminnow	12
	Flannelmouth sucker	7
	Flannelmouth sucker X razorback sucker	4
<u>Escalante Ranch #2 (RM 309.5) 4/3-5/31</u>		
	Razorback sucker	445
	Colorado pikeminnow	6
	Bonytail	1
	Roundtail	1
<u>Placer Point 7/10-7/30</u>		
	Colorado pikeminnow	52
	Razorback sucker	7

Stewart Lake Drain 5/31-6/27

Razorback sucker	36
Colorado pikeminnow	3
