

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2021 Annual Report

PROJECT: 179

Project Title: PIA operation/maintenance and PIT equipment

Bureau of Reclamation Agreement Numbers:

R19AC00153, 140R4018D0012

Project/Grant Period:

Start date: 9/16/2019

End date: indefinite

Reporting period end date: 9/30/2021

Is this the final report? No

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Abstract:

The goals of this project are 1) to maximize continuity and performance of passive interrogation array (PIA) operations by performing routine annual operation and maintenance (O/M), repair, and replacement activities and 2) provide Recovery Program investigators and hatchery staff with PIT tags and related tagging and scanning equipment for use on an annual basis. In FY2021, we made several visits to perform upgrades, updates and other operation/maintenance tasks at seven PIA locations in the Upper Colorado River Basin (Green River Canal, Price River confluence, Price River at Woodside, White River, San Rafael River at Hatts and Cottonwood Wash, Tusher Diversion). Several problems discovered during these visits need to be rectified in FY22, including an upgrade to the White River Bonanza Bridge PIA to the latest generation (master-controller) system and installation of a battery bank and switcher at Tusher Diversion. Purchases of PIT equipment in FY21 was limited to tagging guns and needles, and all communications fees were paid.

Study Schedule:

Ongoing

Relationship to RIPRAP:

General Action Plan:

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

V.A Measure and document population and habitat parameters to determine status and biological response to recovery actions.

V.A.1.a Develop basin wide razorback monitoring program (implementation to be reflected in sub-basin worksheets).

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.D Establish sampling procedures to minimize adverse impacts to endangered fishes.

V.F Assess relative biological importance of tributaries and their potential contributions to endangered fish recovery.

Green River Action Plan

II. Restore habitat

II.B.2 Screen Tusher Wash diversion to prevent endangered fish entrainment.

II.B.2.b Design.

V. Research and Monitoring

White River Action Plan.

V. Research and Monitoring

V.A Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.

Colorado River Action Plan

II. Restore Habitat

II.B.2 Restore fish passage at Price Stubb.

II.B.2.a.(5) Monitor and evaluate success.

V. Research and Monitoring

V.A Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.

Dolores River Action Plan.

V. Research and Monitoring

V.A Survey native and nonnative fish in Dolores River

Accomplishment in FY20 Deliverables, Discussion of Initial Findings and Shortcomings:

Task 1: PIA operation and maintenance:

From October 1, 2020, through September 30, 2021, engineers and technicians from the Utah State University (USU) Fish Ecology Lab, undertook multiple trips to repair and update PIAs in various locations throughout the Upper Colorado River Basin and provide technical support to multiple agencies involved with the various fixed PIAs and mobile monitoring equipment. Due to the ongoing COVID pandemic, travel authorizations were once again limited to essential, so USU attempted to consolidate

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

trips by visiting multiple sites and accomplishing various tasks per trip. Several repairs were documented in FY21 but will be performed in FY22 using existing funds.

Details of worked performed are as follows:

15-16 March 2021

Green River Canal fish diversion weir: USU personnel removed a stuck tag on antenna 3, updated firmware on the system. System was checked and tuned prior to the irrigation canal being activated for the 2021 season.

Price River Confluence: USU changed out the satellite modem sim card, updated firmware, and checked on antenna 3 that was not functioning. A new IS1001 node is needed on antenna 3 and will be installed in 2022 using existing funds. The remaining 3 antennas are functioning well.

San Rafael Cottonwood Wash: USU checked on the satellite modem that had not communicated with the Biologic system in a week. They found no obvious issue but did a power cycle. It has been communicating continuously since the power cycle. Antenna 3 at Cottonwood Wash is not functioning and will receive a new IS1001 node in 2022 using FY21 funds. The remaining antennas are functioning well.

12-13 April 2021:

White River Bonanza Bridge: USU Installed a satellite modem to replace the 4G cell modem to restore remote connectivity to the site. The site was added to the Biologic system and auto-uploads to STRaMS have been restored.

Antennas 1 and 6, both shoreline antennas, are not functioning. It is recommended that rather than repairing the existing panels, the entire system should be upgraded to the latest generation IS1001 master controller system (present on most of the other systems in the Upper Colorado basin). The upgrade will also substantially improve the detection range of the system. Additionally, there is a cyclical high noise period on the system that needs to be dealt with. It will take some more investigation, but timing suggests it may be from the solar controller. This and the system upgrade described above will be dealt with during FY22 using existing funds.

Also during the April 2021 site visit, USU met with USFWS (Green River Fish and Wildlife Conservation Office) to identify potential sites for a stream wide monitoring system at the confluence of the White and Green Rivers. Although the depth of unconsolidated sediment in this area may preclude installation of a system spanning the entire width of the river, autonomous single 20' panel installations could be made in certain areas near the confluence of the White and Green rivers.

21-22 September 2021

Tusher Diversion:

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Site was indicating multiple short power outages and the master controller went into standby mode which is to protect it from power surge damage. The power outages were from the AC power supply. The master controller was updated and is currently running with no issues.

Interference from the AC power source has increased over time. It is recommended to add a battery switcher and back up batteries which will both decrease the interference and protect the system from erratic AC power outages. Additionally, several antenna panels on the boat passage and dam crest notches have been damaged during floods and no longer function. The Biology Committee should determine whether the added detection points are worth the expense of repairing as access to them is extremely difficult.

Price River Woodside:

USU received a report from Utah Division of Wildlife Resources that an antenna had come loose at the Woodside site. The river was running too high to determine the extent of the damage. The antenna is still running and detecting tags but is no longer across the river. We will re-anchor the antenna panel or replace it in FY22 using existing funds.

San Rafael Hatts Ranch:

The antennas had gone offline for an unknown reason. System was reset, updated and retuned. Antenna 3 is not functioning and there are tags stuck on two of the other antennas. The water was running too high to determine the problem with antenna 3. We will repair antenna 3 in FY22 using existing funds.

Also in FY 2021, we worked with personnel of the Colorado Natural Heritage Program to establish data linkages between Biologic servers and STReAMS, the lack of which plagued direct uploads from the PIAs to STReAMS for 2020, 2021 and much of 2019. That issue was resolved recently (Nov 2021) for the following PIAs: San Rafael at Chaffin Ranch, Cottonwood Wash and Hatt Ranch, Price-Stubbs fish passage, White River at Bonanza Bridge, and the Dolores River Rio Mesa Center.

All communications invoices for FY21 have been received and paid. All submersible antennas ordered late in FY20 were received and distributed to field crews during March-April of 2021.

Task 2: Purchase PIT tags and related tagging and scanning equipment

PIT equipment purchases in FY21 were limited to implanters and needles which were distributed to field investigators with Utah Division of Wildlife (Vernal), Colorado State University, and USFWS (Vernal). Additionally, about 65,000 pre-loaded PIT tag needles in trays were acquired late in FY21 using non-Program funds.

Equipment and supplies acquired late in FY20 were received at the USFWS Grand Junction office in October 2020 and distributed to field offices from that facility.

Additional noteworthy observations: See report on project C-28a, Green River Canal PIA

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Recommendations:

- 1) Continue to coordinate with field investigators and hatchery staff early in calendar 2022 to identify PIT equipment needs for the coming year and purchase equipment and supplies as needed.
- 2) Advise Biology Committee of needed upgrades at the White River Bonanza Bridge PIA and proposal to install antenna panels near the mouth of the White River; perform needed repairs encountered in FY21 using existing Program and non-Program funds.
- 3) Advise Biology Committee of PIA system problems at the Tusher Wash diversion dam boat ramp and weir notches and seek their guidance on whether to move forward with repairs.
- 4) Continue to monitor PIA performance remotely and perform O/M site visits as required.
- 5) Proceed with other needed repairs (San Rafael River, Price River, Tusher Wash battery switcher) documented in FY21 using existing funds.

Project Status:

Funds Provided in FY21: \$139,614

Funds Expended: 0\$

Difference: \$139,614

Percent of the FY21 tasks completed: 100%

Recovery Program funds spent for publication charges: N/A

Notes: Recovery Program funds were awarded to this agreement late in the fiscal year at a point where much of the work accomplished in FY21 had already been accomplished with non-Program funds from previous years. The \$139,614 awarded in FY21 will be used in FY22 to cover tasks which were not accomplished in FY21.

Status of Data Submission

Data uploads to STReAMS are current as of this writing.

Signed:

/s/Dave Speas

Fish Biologist, USBR

December 30, 2021