

# UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2022 ANNUAL REPORT

PROJECT: 29c

## **Project Title**

Wahweap State Fish Hatchery Operation and Maintenance

## **Bureau of Reclamation Agreement Number:**

R19AP00059

## **Project/Grant Period:**

Start date: 10/01/2018

End date: 09/30/2023

Reporting period end date: 09/30/2022

Is this the final report? No

## **Principal Investigator:**

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## **Abstract:**

Wahweap State Fish Hatchery, located in Big Water, Utah, rears bonytail (*Gila elegans*) for stocking in the upper Colorado River basin for the Upper Colorado River Endangered Fish Recovery Program (Recovery Program). Wahweap also maintains a refuge population of razorback sucker brood stock for the Recovery Program.

## **Study Schedule:**

Ongoing

## **Relationship to RIPRAP:**

### General Recovery Program Support Action Plan

- IV Manage genetic integrity and augment or restore populations (stocking endangered fishes)
- IV.A. Genetic management
- IV.A.4. Secure and manage the following species in hatcheries (according to the Genetics Management Plan)
  - IV.A.4.a. Razorback sucker
  - IV.A.4.b. Bonytail
- IV.B. Conduct annual fish propagation activities
- IV.B.2. Implement revised integrated stocking plan (Integrated Stocking Plan Revision Committee 2015); supersedes all earlier stocking plans, including species-specific and individual basin plans.
- IV.C. Operate and maintain facilities
- IV.C.3. Wahweap

**Accomplishment of FY 2022 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:**

Task 1. Rear, PIT tag, and stock bonytail, and report tag and stocking data.

**Husbandry Overview:** Fish reared at the Wahweap Installation are reared in ponds. Pond culture is one of the most economical ways to rear fish, and typically yields fish with a high degree of fitness. The major drawback with pond culture in the mountain west is that six months of the year, late fall, winter and early spring, yield pond temperatures that are not conducive for constant growth. The result being that it takes roughly three years to produce fish large enough for tagging and stocking.

When a new year class of fish is needed, they can be recruited in two ways: First, larval fish transferred from Southwestern Native Aquatic Resources and Recovery Center (SNARRC). Second, young of year can be taken from a given lot's first and second generation. (It is thought that after the second generation, the male female ratio is skewed). Larval fish are reared in linear hatchery production troughs and fed live artemia eight times per day until they grow large enough to be weaned from the artemia and fed the manufactured diet. Prior to stocking in ponds, ponds are fertilized, algal and zooplankton blooms are monitored. Once the pond is ready, the bonytails are then stocked in the pond. Fish are fed several times a day and water quality is closely monitored to ensure maximum growth of young bonytails. As these fish grow, feed pellet size increases, and can be fed three times a day in the summer.

Once the fish are large enough to stock, fish are seined, manually harvested, and PIT tagged. The harvest and PIT tagging happens in the fall, prior to the spring stocking. Fish are removed from the pond, graded into raceways, to ensure fish are large enough to meet stocking requirements. The fish are then treated for Asian tapeworm. Following harvest and treatment, all fish to be stocked are then measured and PIT tagged and returned to culture ponds to await the following springs stock.

Following UCRP stocking directives, fish are loaded into stocking trucks and driven to the prescribed stocking location. Prior to release, water chemistry (dissolved oxygen, temperature, pH, hardness, and alkalinity) are taken to ensure conditions are conducive to survival. Prior to the stock, in waters with a history of water quality problems, Regional- Biologists, Special Project Biologists or Conservation officers should inform fish culture personnel of water quality conditions at stocking site prior to them leaving the hatchery with a load of fish.

- Wahweap PIT-tagged 11,455 fish in October 2021 and stocked 11,441 in April 2022 (Table 1).
- Spring HCPs performed; show fish coming out of the winter months with a mesentery fat score of 3.0 out of 4, a C-factor of 2729 with a 60% male to 40% female sex ratio, 75% normal livers, and no observed deformities. Fish averaged 273 mm in length and 152 g in weight. Results have been submitted to Wade Cavender (State of Utah Fish Pathologist) and sent to the Recovery Program.
- All fish stocked were treated for Asian tapeworm (*Bothriocephalus acheilognathi*) with Praziquantel @ 2.5 mg/L for a 24-hour static bath and no worms were observed during any treatments.
- Wahweap used 120 bonytail progeny from the 2016, 2019 & 2020 lots, for the yearly Fish Health Inspection. During this year's inspection, Asian tapeworm was detected; this pathogen had previously been detected at this location. Infection across the hatchery is very low or unseen and Wahweap is working closely with Wade Cavender (State of Utah Fish Pathologist) to eradicate this parasite from hatchery ponds. Until the eradication, Wahweap has been instructed to treat each individual pond as a different rearing unit. Wahweap will treat prophylactically,

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with Praziquantel, all fish being stocked or transferred. Fish were given the Fish Health Approval number DWR 22-068 and DWR 22-069.

- No bonytail sack fry were received from the Southwestern Native Aquatic Resources and Recovery Center in 2022. Table 2 shows that there are sufficient numbers of bonytail to meet stocking quotas through 2027.
- 59,314 bonytail remain on station in the fall of 2022 (Table 2).

### Task 2. Maintain backup razorback sucker brood.

- All razorback sucker were maintained in one on-site pond (Table 2).

### Task 3. Rebuild concrete raceway for fish sorting and pathogen treatment.

- The new raceway constructed in the spring of 2020 was rebuilt under Contractor Warranty. The raceway had developed many cracks in the concrete that allowed water to leak through the walls. Total project rebuild cost was \$8,135.75 and was paid for by the Wahweap Hatchery Maintenance Budget. The raceway has been used several times and works as intended.

### Additional activities and accomplishments not included in the FY 2022 scope of work.

#### *Outreach and Education*

- Information, still images and video footage was provided to UDWR for the Wildlife Blog, a public outreach and information tool.
- Wahweap did not provide any school tours in this reporting period.

#### *Research and Support*

- No research projects in 2022.

#### *Facility Maintenance and Construction*

- In 2021, UDWR built a new 100,000-gallon concrete water tank, replacing the old steel tank that was undersized and worn out. The project cost was \$525,980.00 and was paid for by the Utah Hatchery Sportfish Program. In 2022, the water tank has been used many times and works as designed to supply large amounts of water to needed rearing units.
- With the Bipartisan Infrastructure Law (BIL) funding now available, there are three major projects proposed for Wahweap. The proposed project, planning and SOWs have been produced for electrical upgrades providing power to all rearing ponds for aerators and subsequent aeration. Second, market research for a fish harvest crane is being produced for proposed purchase. The third project is in the planning phase: Ponds 1-9 are the oldest ponds at the Wahweap installation. These ponds drain to the east, perpendicular to wash flows. The pond drain is below bedload, wash flood events cover these effluent pipes, and regularly need to be cleaned out. A single common drain, that drains all ponds to the south will provide needed elevation to be above bedload. Five of the Nine pond kettles are submerged and are prone to biofouling causing a very slow pond drain. These kettles will be reconstructed similar to kettles found around the installation, with plumbing that will allow for 2/3s of the pond to be drained overnight with no risk of the pond being over-drained. The remaining kettles can be reworked to produce the same results as the rebuilt kettles. Pond liners are aged and nearing the end of their useful life and need to be replaced. The Fresno gate valves are aged and will need to be replaced. A design for the pond rebuild will be pursued with FY2023 BIL funding, and construction will follow in a subsequent year with funding to be determined.
- In the fall of 2022, while we were setting up for the annual bonytail PIT tagging of fish to be stocked in spring 2023, we learned that the new Biomark tag readers, our Windows 2007 operating system, and the P4 tag program were incompatible. Work needs to be done, so that

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these three components operate, so that length information can be tied to individual fish. Because of the aforementioned issue hand lengths were recorded: Three tagging locations were set up; two of the three tagging stations injected and recorded PIT tags, on the remaining tagging location length data and PIT tags were recorded, and 1,852 lengths of the 11,400 tagged fish, were recorded.

### *Fish Mortality Event*

- No large fish mortalities in 2022 outside of normal hatchery operations.

### **Recommendations:**

- Continue rearing bonytail at Wahweap to meet the stocking needs of the Recovery Program.
- Maintain razorback back-up brood stock and add 200 to 300 addition fish to maintain backup brood numbers.
- Continue PIT-tagging bonytail in the fall and stocking in the spring.
- Work on the eradication of Asian tapeworm from the Wahweap Hatchery rearing facility.
- Continue HCP for all fish prior to stocking or transfer. The Recovery Program coordinates the annual collection and reporting for all program hatcheries.
- Pursue BIL infrastructure improvement construction projects: electrical upgrades, fish harvest crane, Ponds 1-9 rebuild.
- Upgrade Windows operating system and software to ensure compatibility with PIT tag readers and facilitate data collection during tagging events.

### **Project Status:**

On track, ongoing, complete, etc.

### **FY 2022 Budget Status**

Funds Provided: \$252,563.98

Funds Expended: \$252,563.98

Difference: \$0

Percent of FY 2022 work completed, and projected costs to complete: 100%

### **Status of Data Submission**

PIT-tagged data for FY 2022 has been submitted to the Recovery Program and uploaded to STReAMS

### **Signed:**

Jared Smith

Principal Investigator

December 12, 2022

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**Table 1.**

Dates, locations, and numbers of Upper Colorado River Recovery Program bonytail stocked or transferred in 2022 by Wahweap State Fish Hatchery.

Stock Date	Contact Name	Lot Number	Lake/River	Stocking Location	Number Stocked	Average Length (mm)	Max Length (mm)	Min Length (mm)	Tagged
4/5/2022	Ladd Bunting	210515CBBTWW01	Lake Powell	Legacy Boat Ramp	15,950	91*	111*	38*	No
4/18/2022	Ladd Bunting	160509CBBTWW01	Colorado	Cisco Boat Ramp	3,978	264	371	220	Yes
4/19/2022	Ladd Bunting	160509CBBTWW01	Dolores River	Rio Mesa Research Center	3,717	264	364	220	Yes
4/20/2022	Ladd Bunting	160509CBBTWW01	Price River	Woodside	3,641	265	387	210	Yes
6/30/2022	Jared Smith	160509CBBTWW01	Green	Stewart Lake	105	269	331	223	Yes
10/26/2022	Jared Smith	220501CBBTWW01	Hatchery X-fer	Mumma State Hatchery	15,991	6.8*	10*	5*	No
10/27/2022	Jared Smith	220501CBBTWW01	Lake Powell	Legacy Boat Ramp	34,800	6.8*	10*	5*	No
<b>Total Tagged:</b>					<b>11,441</b>				
<b>Total:</b>					<b>78,182</b>				

\*- derived from subset

**Table 2.**

Upper Colorado River Recovery Program fish remaining at Wahweap State Fish Hatchery as of fall 2022.

Species	Year Class	Number	Average Size (mm)	Number of Ponds	Projected Year Stocked
Bonytail-Tagged	2016	11,394	268*	3	2023
Bonytail	2016	11,352	218	3	2024
Bonytail	2019	16,277	230	3	2025
Bonytail	2020	20,291	206	4	2026 & 2027
Razorback	Brood	302	466	1	-
Bonytail	<b>Total:</b>	<b>59,314</b>			
Razorback	<b>Total:</b>	<b>302</b>			

\*- derived from subset