Project Title
Propagation Facilities in the Grand Valley (Ouray National Fish Hatchery - Grand Valley Unit) for Captive Rearing of Endangered Fishes for the Upper Colorado River Basin.

Bureau of Reclamation Agreement Number:
R20PG00024

Project/Grant Period:
Start date: 10/01/19
End date: 09/30/2024
Reporting period end date: 09/30/2020
Is this the final report? Yes _____ No __X__

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Abstract:
Ouray National Fish Hatchery - Grand Valley Unit (Ouray NFH-GVU) consists of several facilities near Grand Junction, CO. These facilities include the Horsethief Canyon Native Fish Facility (HCNFF), the 24 Road Hatchery building, and three other "lease-free" grow-out ponds.

Ouray NFH-GVU produces and rears razorback sucker (annual stocking target = 6,000 fish > 350 mm TL) for stocking into the Colorado and Gunnison rivers. In addition, Ouray NFH-GVU rears bonytail obtained as larvae from the USFWS's Southwest Native Aquatic Resources and Recovery Center (SNARRC) in Dexter, NM (annual stocking target = 10,000 fish > 250 mm TL), for stocking into the Colorado River. All stockings of these two endangered fishes are in accordance with the approved Integrated Stocking Plan (ISP).

A small number of wild humpback chub from the Black Rocks area of the Colorado River continue to be held at the HCNFF ponds in refugia.

Study Schedule:
1996-Ongoing

Relationship to RIPRAP:
General Recovery Program Support Action Plan
IV.A. Genetic Management
IV.A.1. Augment razorback sucker
IV.A.4. Secure and manage genetic stocks in refugia
IV.C. Operate and maintain facilities

Accomplishment of FY 2020 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Facility Inspections

Ouray NFH-GVU routinely participates in annual inspections to insure our facilities, as well as the fish we grow, are free from problematic diseases and Aquatic Invasive Species (AIS). Due to travel restrictions necessitated by COVID, in-person inspections by staff from other facilities were cancelled. Instead, on 13 May 2020, personnel from Ouray NFH-GVU collected samples and sent them to the USFWS's Bozeman Fish Health Center (Bozeman FHC) for analysis for our annual Fish Health Inspection. The results were negative for any problematic/reportable fish health diseases.

Likewise, the annual Aquatic Invasive Species (AIS) inspection (normally conducted by personnel from Hotchkiss NFH) was also cancelled due to COVID. Instead, on 11 August 2020, Ouray NFH-GVU personnel gathered the appropriate water and plankton samples and sent them to the Montana Fish, Wildlife & Parks in Helena, MT to be tested for the presence or absence of zebra and/or quagga mussel velligers. A walk-through, hands-on, visual inspection of both our hatchery building and ponds were also conducted by Ouray NFH-GVU personnel. The results of the walk-through inspection were negative for any problematic or reportable AIS. The water and plankton samples were processed by Montana Fish, Wildlife & Parks and on 17 August 2020 and our facility was declared negative for the presence of mussel velligers.

Health Condition Profile (HCP) necropsies were performed for both bonytail and razorback sucker (20 fish per species) in summer (for bonytail) and early fall (for razorback sucker) 2020 by Ouray NFH-GVU staff and results were submitted online to the Utah Division of Wildlife Resource's AuSum Program.

Experimental Diet Study

During the winter of 2019-2020 (13 November 2019 through 19 February 2020), Ouray NFH-GVU, in cooperation with three other state and federal hatcheries participated in a bonytail diet study. This study was initiated to help address the issue of "fatty livers" observed (to varying degrees) among bonytail being grown at four hatcheries associated with the Upper Colorado River Endangered Fish Recovery Program (UCREFRP). At Ouray NFH-GVU, 2019 year-class bonytail just being brought back into the hatchery from the HCNFF grow-out ponds were divided into 14 circular, 8-foot tanks and fed a series of six experimental diets (2 tanks per diet) that had been developed by Gibson Gaylord of the Bozeman FHC. Two tanks of bonytail were also fed the standard Rangen brand Razorgrower diet they had been given in past years. Fish were fed by hand, four times per day, at 9:00 AM, 11:00 AM, 1:00 PM and 3:00 PM. The amount of feed distributed to bonytail gradually increased as they grew throughout the study. This diet study lasted for 12 weeks. Sample counts and length/weight data were recorded

periodically throughout the study. At the end of the study, 20 fish from each experimental lot were sent to Gibson Gaylord at Bozeman FHC for post-mortem analysis. The results of that study are still being analyzed and should be reported to the UCREFRP once available.

Education and Public Outreach Activities

Though the activity is unfunded, Ouray NFH-GVU staff annually provide a wide variety of public education and outreach opportunities. All of these activities are geared toward informing the general public about endangered fish recovery issues and trying to build an advocacy base for endangered fish recovery among the local population. Outreach efforts reach several thousand people each year, ranging from elementary school through college age students, families, Cub Scout troops, professional NGO (e.g., Nature Conservancy), government agency personnel, etc. They include providing tours of the 24 Road Hatchery building, partnering with Colorado Parks and Wildlife (CPW) to provide endangered razorback sucker for their Aquarium in the Classroom Program (which allows local elementary school students to raise endangered fish in their classroom, tagging and stocking them into the river at the end of the school year), attending local water festivals, providing fish for outreach at the Heritage Days, Palisade Peach Festival, Home and Garden shows, Farmer's Markets. Ouray NFH-GVU staff also participate in outreach via local newspaper, television, and radio interviews. In addition, our staff annually either performs endangered fish related lectures at or provides panel members for symposiums at Colorado Mesa University. These education and outreach activities continued as per normal through early March 2020. Unfortunately, after early that time, all public education and outreach activities were suspended indefinitely, due to COVID.

During FY 2020, Ouray NFH-GVU staff continued to partner with Palisade High School (PHS) to establish a small razorback sucker grow-out hatchery system on their high school campus. The hatchery components were installed at their building throughout the winter of 2019-2020. In spring and summer 2020 the hatchery was filled with water and trouble-shooting of the system took place. The first batch of 200 razorback sucker were transferred from Ouray NFH-GVU to PHS on 20 August 2020. The razorback sucker averaged roughly 50-60 mm TL. PHS students and staff will rear these fish at their hatchery facility until they release them into the Colorado River near Palisade, CO in Spring 2021. All fish will be implanted with a passive integrated transponder (PIT) tag prior to being released into the wild.

Hatchery Maintenance Activities

In summer 2020, Ouray NFH-GVU staff undertook a major effort to tear down, service, repair and/or replace every piece of equipment (pumps, motors, sand, bead and drum filters, belt feeders, etc.) they could possibly get to while most of the fish were out at the HCNFF grow-out ponds. This clean sweep of the hatchery system was much needed after almost 25 years of the indoor 24 Road Hatchery building being in operation. In addition, several spare pumps and other vital pieces of equipment were purchased to have on hand for when (not if) vital hatchery systems go offline in the future.

In addition, Ouray NFH-GVU staff performed several repairs of broken water lines, water control valves and air distribution lines at the HCNFF ponds during FY 2020. Bug lights were also installed on HCNFF grow-out ponds that held bonytail, in order help supplement the species' diet with a more natural food source.

Razorback Sucker

In March 2020, approximately 7,660 age-1 razorback sucker were being held indoors at the 24 Road Hatchery building. These fish represented young from 12 different paired matings of broodstock performed in April 2019. From early April to mid-May 2020, approximately 4,880 of these age-1 razorback sucker were stocked into the grow-out ponds at HCNFF. Ponds were stocked with a mixture of fish from several different family lots. Equal numbers from each represented family lot were stocked into a total of six ponds. These fish were all PIT tagged in the 24 Road Hatchery building several weeks prior to being stocked into grow-out ponds. The remaining age-1 razorback sucker (approximately 6,860 fish) continued to be held at the 24 Road Hatchery building until bonytail were harvested from HCNFF (in mid-July 2019) and those ponds were then available to stock the razorback sucker remaining at 24 Road Hatchery into.

Despite the difficulties presented by COVID, in April 2020, Ouray NFH-GVU staff were able to successfully spawn razorback sucker broodstock held at HCNFF. The eggs produced from this spawning effort were transferred to the 24 Road Hatchery building. In 2020, approximately 63% of all razorback sucker eggs successfully hatched into fry. The hatchery is currently holding 16,150 razorback sucker. This includes 3,200 razorback sucker that will be stocked into Lake Powell in spring 2021 for a separate study and 12,950 razorback sucker for UCREFRP production purposes.

We observed an approximately 93% return rate of juvenile razorback sucker from grow-out ponds to harvest and stocking. Any "excess" razorback sucker culled from family lots as fish grew were stocked into our "lease-free" grow-out ponds for later opportunistic harvest and stocking.

Our three "lease-free" grow-out ponds (CDOT, Beswick's, and Butch Craig ponds) will continue to be used as necessary in future years to provide redundancy and as we continue to evaluate management options to improve the survival and growth of razorback sucker for augmentation.

Bonytail

In spring 2019 approximately 15,000 larval bonytail were received from SNARRC. These fish were stocked into grow-out ponds at HCNFF. In October 2019, these bonytail were harvested from HCNFF and brought into the 24 Road Hatchery to overwinter. In early to mid-April 2020, these bonytail were transferred to HCNFF to maximize growth until being stocked in summer 2020. These fish were all PIT tagged in the 24 Road Hatchery building, several weeks prior to being stocked into the grow-out ponds.

In spring 2020 approximately 15,000 larval bonytail were received from SNARRC. These fish were stocked into two ponds at HCNFF. In October 2020, 9,000 bonytail were harvested from HCNFF and brought into the 24 Road Hatchery to be grown overwinter, as per normal operating procedures. The remaining 6,000 bonytail at HCNFF remained in a grow-out pond, to allow us to experiment with in-hatchery versus in-pond overwinter growth and survival. In spring 2021, the 9,000 bonytail in the 24 Road Hatchery will be stocked back into grow-out ponds at HCNFF, where they will be reared until being stocked in summer 2021 at various locations in the Colorado River. The 6,000 bonytail kept overwinter (2020-2021) at HCNFF will be periodically monitored to see at what point they become large enough to stock into riverine habitats.

We typically observe a < 10% loss of larval bonytail to stockable age-1 fish, with the greatest losses typically occurring immediately after larval fish are received via FedEx from SNARRC and after stocking into grow-out ponds due to avian predation. Any "excess" bonytail culled from family lots as fish grew were stocked into our "lease-free" grow-out ponds for later opportunistic harvest and stocking.

Humpback Chub

Wild adult humpback chub that were collected from the Black Rocks area of the Colorado River continue to be held as a refugia population at the HCNFF ponds. At one point, HCNFF housed a total of 37 wild fish. Due to space constraints, all 37 of these wild humpback chub were being held in one pond. In late summer or early fall 2019, we had an outbreak of "ich" (Ichthyophthirius multifilis) that occurred in this pond. As of our last census of these fish (on 1 October 2020) we had 9 (24%) of these wild, adult humpback chub remaining. The eventual fate of these fish is yet to be decided. The staff at Ouray NFH-GVU has recommended repatriating these 9 adult humpback chub back to the Colorado River. However, if the UCREFRP Biology Committee decides to continue to hold these wild fish, we suggest freeing up another pond and splitting up the fish to have some redundancy, in case of any future catastrophic events. This would, however, cut into available pond space currently ear-marked to meet our annual razorback sucker and bonytail production targets.

The Ouray NFH-GVU continued to supply volunteer-spawned, young-of-year humpback chub to David Ward of the USGS's Grand Canyon Monitoring and Research Center (GCMRC). On 1 October 2020, Mr. Ward picked up 605 humpback chub, averaging 100 mm TL. These fish will be used to study the effects of prey size and water turbidity on predation by large (500-600 mm TL) channel catfish.

2020 Stocking Summary

Razorback sucker: A total of 7,952 razorback sucker (132.53% of the target stocking number {n = 6,000}) were stocked into the Colorado and Gunnison rivers in 2020. Of these, 7,589 were from the HCNFF grow-out ponds. The other 3 were from the 24 Road Hatchery building and had been provided to Shelledy Elementary School as part of the "Aquarium in the Classroom" program. Those three fish were stocked directly into the river by outreach staff, as they could not be taken back onto our facility once they had left, due to fish health considerations. All razorback sucker stocked in 2020 were stocked either far upstream of Grand Junction, CO (i.e., in Rifle, CO) or downstream of the 15 Mile Reach. Excessively low in-river flows in the 15 Mile Reach throughout the latter portion of the 2020 water year (i.e., after July) made stocking razorback sucker in the 15 Mile Reach in 2020 unsuitable. All razorback sucker were stocked during daylight hours. The mean TL for all razorback sucker stocked in 2020 was 373 mm. Numbers of fish stocked in each location in 2020 were as follows:

River	Location Name	River Mile	Number Stocked	Day Stocked	Notes
Colorado	Rifle, CO	240.7	786	September 14, 2020	HCBFF fish
Colorado	Rifle, CO	240.7	789	September 16, 2020	HCBFF fish
Colorado	Rifle, CO	240.7	802	September 17, 2020	HCBFF fish
Colorado	Fruita, CO	157.1	44	April 23, 2020	Old broodstock from HCNFF
Colorado	Fruita, CO	157.1	3	August 16, 2020	Aquarium in the Classroom fish
Colorado	Fruita, CO	157.1	800	September 21, 2020	HCNFF fish
Colorado	Fruita, CO	157.1	801	September 22, 2020	HCNFF fish

River	Location Name	River Mile	Number Stocked	Day Stocked	Notes
Colorado	Fruita, CO	157.1	948	September 23, 2020	HCNFF fish
Colorado	Fruita, CO	157.1	1,220	October 22, 2020	HCNFF fish
Gunnison	Delta, CO	57.1	948	September 23, 2020	HCNFF Fish
Gunnison	Delta, CO	57.1	974	September 24, 2020	HCNFF Fish

Bonytail: A total of 9,825 bonytail (98.25% of the target stocking number {n = 10,000}) were stocked into the Colorado River in 2020, which was slightly less than the target stocking number identified in the ISP. All of these were from the HCNFF grow-out ponds. The mean TL for all bonytail stocked in 2020 was 225 mm, which was slightly smaller than the target stocking size identified in the ISP. These shortfalls were a direct result of the bonytail feed study and the added handling/manipulation of these fish associated with that effort. Bonytail are very prone to stress events and don't adapt well to repeated handling or change in diet and will often quit feeding for several days to a week after each such event, thus reducing both growth and survival over the course of the diet study. The UCREFRP's Biology Committee had been informed that the total numbers and overall size of the bonytail being stocked by our facility in 2020 might both fall a little short of the "normal" production goals, identified in the ISP. We were told that this was not an issue, given the circumstances. Numbers of fish stocked in each location in 2020 were as follows:

River	Location Name	River Mile	Number Stocked	Month Stocked	Notes
Colorado	Rifle, CO	240.7	2,588	July 2020	Daytime stocking
Colorado	Riverbend Park	183.6	1,601	9 July 2020	Daytime stocking
Colorado	Riverbend Park	183.6	1,127	15 July 2020	Evening stocking
Colorado	Corn Lake	177.4	1,107	14 July 2020	Evening stocking
Colorado	Corn Lake	177.4	1,136	22 July 2020	Daytime stocking
Colorado	Redlands Parkway	166.7	1,105	21 July 2020	Daytime stocking
Colorado	Redlands Parkway	166.7	1,134	23 July 2020	Evening stocking
Colorado	Fruita, CO	157.1	27	22 October 2020	Daytime stocking

Bonytail were stocked at a wider variety of stocking sites in FY 2020 then razorback sucker were. This is because all but 27 bonytail were stocked prior to the precipitous in-river drops in flow that occurred, after July 2020. In FY 2020, paired daytime/evening stockings of bonytail were performed at three stocking sites (RM 183.6, 177.4 and 166.7) to see if any post-stocking survival difference could be detected between fish being stocked at different times of the day.

Additional noteworthy observations:
None

Recommendations:
Continue management and operation of Ouray NFH – GVU facilities to serve as a primary refuge facility for endangered fishes of the Upper Colorado Basin.

Continue production, grow-out, and stocking of razorback sucker and bonytail (and other native, endangered fish species as appropriate) to meet stocking goals set forth in approved stocking plans by

the UCREFRP.

Project Status:
Project is on track and ongoing.

FY 2020 Budget Status
Funds Provided: $540,535 (plus $70,000 paid directly by Bureau of Reclamation for utilities)
Funds Expended: $540,535 (plus $70,000 paid directly by Bureau of Reclamation for utilities)
Difference: $0
Percent of the FY 2020 work completed, and projected costs to complete: 100%
Recovery Program funds spent for publication charges: $0

Status of Data Submission
All PIT tag data were submitted to the UCREFRP database manager in October 2020 for Project 29a

Signed:
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11/20/2020