

Project Title

Rearing Endangered Fish at the Horsethief Canyon Native Fish Facility Ponds for Stocking into the San Juan River

Bureau of Reclamation Agreement Number:

R17PG00084

This inter-agency agreement expires on June 15, 2022. A new 5-year inter-agency agreement is in the process of being developed. However, in FY 2021 and FY 2022, this SOW was funded using the Four Corners Power Plant (FCPP) and Navajo Mine Energy Project Mitigation Account funding that is distributed via the National Fish and Wildlife Foundation (NFWF).

Reclamation Agreement Term

R17PG00084: July 1, 2017 – June 15, 2022

Note: Recovery Program FY23 scopes of work are drafted in May 2022. They often are revised before final Program approval and may subsequently be revised again in response to changing Program needs. Program participants also recognize the need and allow for some flexibility in scopes of work to accommodate new information and changing hydrological conditions.

Lead Agency:

U. S. Fish and Wildlife Service

Principal Investigator:

Dale Ryden, Project Leader
Brian Scheer, Deputy Project Leader/Hatchery Manager
U. S. Fish and Wildlife Service
Ouray National Fish Hatchery – Grand Valley Unit
445 West Gunnison Avenue, Suite 140
Grand Junction, Colorado 81505
Phone: Dale Ryden (970) 628-7200
 Brian Scheer (970) 245-9236
Email: dale_ryden@fws.gov
 brian_scheer@fws.gov

Category:

- Ongoing project
- Ongoing-revised project
- Requested new project
- Unsolicited proposal

Expected Funding Source:

- Annual funds
- Capital funds
- Other: FCPP (NFWF) funds

Relationship to LRP (from SJRBRIP 2016):

Goal 1.1 — Establish Genetically and Demographically Viable, Self-Sustaining CPM and RBS Populations.

Action 1.1.2 Support facilities to produce, rear, and stock sufficient numbers of CPM and RBS to meet stocking goals of augmentation plan.

Task 1.1.2.1 Per augmentation plans, annually stock CPM and RBS and opportunistically stock any excess fish.

Study Background/Rationale and Hypotheses:

Since the mid-1990s, the San Juan River Basin Recovery Implementation Program (SJRBRIP) has been stocking Razorback Sucker into the San Juan River to help make progress towards recovery for this endangered fish species. As a part of this strategy Razorback Sucker are being reared in several hatchery, as well as grow-out pond facilities, to augment the riverine population of this species.

The Ouray National Fish Hatchery – Grand Valley Unit (NFH-GVU) is a sub-unit of the Grand Junction Fish and Wildlife Conservation Office (FWCO). The Ouray NFH-GVU consists of several distinct facilities located in and around Grand Junction, CO. One of these facilities is the Horsethief Canyon Native Fish Facility (HCNFF) pond complex (about 7½ miles west of the main hatchery building) near Fruita, CO. The other facility used for this SOW is the 24-Road Hatchery, an intensive water reuse hatchery building, utilizing a municipal water source, thus insuring good water quality, clarity, and freedom from parasites.

The HCNFF consists of 22 ponds, ranging in size from 0.1 to 0.5 surface acres, with a total surface acreage for the entire facility of 6.2 acres. Each pond is 5-6 feet deep and is equipped with a fabric liner to prevent seepage. Each pond also has a concrete kettle and drain structure to facilitate draining and concentrating of fish for ease of harvest. This facility is a multi-species broodstock, production, and rearing facility currently dedicated to rearing two endangered Colorado River fish species: Razorback Sucker (*Xyrauchen texanus*) and Bonytail (*Gila elegans*).

Until 2012, the operation and maintenance (O&M) of the entire Ouray NFH-GVU complex (i.e., Project 29a: Operation and Maintenance of Ouray National Fish Hatchery – Grand Valley Unit) was funded by Upper Colorado River Endangered Fish Recovery Program (UCREFRP). On 25 March 2010, the Coordination Committee of the SJRBRIP voted to cost-share 1/6 of the routine O&M costs for the HCNFF pond complex. This equates to a total of one surface acre of pond rearing and production space (either two 0.5 acre ponds, or four 0.25 acre ponds). See previous versions of this SOW (e.g., Ryden and Scheer 2021) for details on how the cost share for the Ouray NFH-GVU facility is implemented. Other costs unique to the handling and delivery of Razorback Sucker to the SJRBRIP to achieve Tasks 1 and 2 of this SOW are in addition to the 1/6 cost share agreement.

Study Goals, Objectives, End Product(s):

Along with the SOW entitled **Razorback Sucker Augmentation at NAPI Grow-Out Ponds** (SOW 11), this SOW is intended to supply the SJRBRIP with a reliable source of endangered Razorback Sucker with which to help restore a self-sustaining population via annual fall stocking events.

Ouray NFH-GVU will provide the SJRBRIP with a minimum of 2,000 Razorback Sucker (> 300 mm TL) to be stocked into the San Juan River annually, in the fall (Task 1). In addition, the Ouray NFH-GVU will supply up to 3,000 age-1 Razorback Sucker (< 300 mm TL) to be stocked into the three NAPI Ponds in April of each year, in support of the site/source post-stocking survival study being conducted by the SJRBRIP office (Task 2).

Study Area:

Task 1: Current stocking locations for Razorback Sucker on the San Juan River include Bloomfield (RM 195.6), Shiprock bridge (RM 147.9), and PNM Weir (RM 166.6), all of which are in NM, as well as Montezuma Creek, UT (RM 93.0). In the Animas River Razorback Sucker are stocked at Berg Park (RM 4.0), in NM. Four of the above-listed stocking sites (Bloomfield, Berg Park, PNM Weir, and Montezuma Creek) are part of the site/source study being conducted to examine post-stocking survival of stocked Razorback Sucker. Roughly equal numbers of Razorback Sucker (usually around 800 per site) from HCNFF are stocked at these four sites at times close to when these same sites are being stocked with similar Razorback Sucker (numbers, age, size) from the NAPI Ponds facility. If Razorback Sucker can't be stocked at the Berg Park site (due to low water in the Animas River), then they are stocked at the Shiprock bridge site instead. All stocking events are scheduled to occur between early October and early November of each calendar year, following the cessation of riverwide fish community monitoring activities. All Razorback Sucker stocked into the mainstem San Juan River will be \geq 300 mm TL and implanted with a PIT tag.

Task 2: The SJRBRIP office has identified some differences in post-stocking survival between Razorback Sucker being stocked from the HCNFF and NAPI Pond facilities. In order to investigate why this may be, the SJRBRIP office has asked HCNFF to supply up to 3,000 age-1 Razorback Sucker (< 300 mm TL) to be stocked into the three NAPI Ponds (East Avocet, West Avocet, and Hidden Pond – located SW of Farmington, NM) in the spring of the year. These fish will be stocked into the NAPI Ponds alongside similar Razorback Sucker (numbers, age, size) from the Southwestern Native Aquatic Resources and Recovery Center (SNARRC), located near Dexter, NM. They will then be reared to target sizes, harvested, and stocked, following normal protocols for that facility. All Razorback Sucker delivered to the NAPI Ponds will arrive in April, just after the ponds are filled and will have a PIT tag implanted in them prior to delivery.

Study Methods/Approach:

Currently, the one surface acre of grow-out ponds allotted to the SJRBRIP is being used to rear Razorback Sucker that are progeny of 15-20 paired matings of appropriate genetic lineage, produced annually from Razorback Sucker broodstock being held at HCNFF. Spawning takes place at the HCNFF each spring around mid-April, depending upon ambient water temperatures. After spawning, fertilized eggs are transported to the 24-Road Hatchery building where they are reared in flow-through egg jars until they hatch into larvae. Several weeks after spawning, larval Razorback Sucker are then stocked back out into grow-out ponds at HCNFF for the remainder of their age-0 growing season. At the end of their age-0 growing season, the Razorback Sucker grow-out ponds are drained and the young fish are transported back into the 24-Road hatchery building where they continue to be fed and reared in a warm, climate-controlled, indoor environment overwinter, thus allowing fish to continue to grow even during the coldest months of the year.

Several months after they have been brought back into the hatchery, young Razorback Sucker are implanted with PIT tags. This usually happens at 100-200 mm TL (usually in late January or early

February). PIT-tagging young Razorback Sucker several months after they are transferred to the hatchery building (i.e., after they have recovered from being moved into the hatchery building from the HCNFF grow-out ponds) helps reduce stress on these animals and allows them to have abundant time to heal in the hatchery building after being PIT-tagged, prior to being stocked back into either the HCNFF or NAPI grow-out ponds for their age-1 growing season (this occurs in late March for HCNFF and April for NAPI). Prior to being PIT-tagged, fish are taken off of feed for at least 48 hours and aren't fed again for at least 24 hours following PIT-tagging. This helps reduce stress as well as allowing the fish's intestinal tract to empty and retract, thus reducing the possibility of accidentally puncturing an intestine or other internal organ during PIT tag implantation. After PIT-tagging, fish are monitored in circular hatchery tanks for both PIT tag loss and delayed mortality (both tag loss and mortality due to PIT-tagging are very low, averaging < 0.5% annually).

Task 1: During the spring of their age-1 year these Razorback Sucker, now about 200 mm TL, are released back into the HCNFF grow-out ponds. They are not handled again until the fall of that same year. When ponds are harvested, every individual Razorback Sucker is measured (TL in mm) and scanned for a PIT tag. A random subset from each grow-out pond are also weighed. This happens at the end of the age-1 growing season (October or November), just prior to stocking. Harvest operations consist of taking fish off of feed 48 hours before harvest, draining grow-out ponds and passively gathering fish into the concrete kettles as the pond drains, anesthetizing fish (using MS-222), measuring fish (all fish), weighing fish (a random subset of fish from each pond; minimum of 50 fish per pond), and checking fish for PIT tags. If a PIT tag is found to be missing at this point (which is relatively rare), then a new PIT tag is implanted prior to the fish being loaded for transport and stocking into the San Juan River. Fish are lifted from grow-out ponds to the stocking truck using a fish bucket suspended on the terminal end of a Palfinger brand knuckle boom crane. They are then transported to the appropriate stocking site, tempered following appropriate USFWS protocols, and stocked as either a hard- or soft-release, as per directions from the SJRBRIP and the U. S. Fish and Wildlife Service's New Mexico Fish and Wildlife Conservation Office (NMFWCO). PIT tag data files undergo QA/QC and are then submitted to the SJRBRIP office and the USFWS's New Mexico FWCO (the office in charge of compiling the annual stocking report), no later than 31 December.

Task 2: Those age-1 Razorback Sucker that are taken to the NAPI Ponds will be retained in the 24-Road hatchery building until the NAPI Ponds are filled with water in April. At that time these fish will be scanned for a PIT tag, measured and weighed, following the same protocols as for Task 1, above. They will then be transported to the NAPI Pond facility, tempered following appropriate USFWS protocols, and stocked in equal numbers into the three NAPI ponds, in cooperation with Navajo Fish and Wildlife. From that point on, these Razorback Sucker will be reared to target sizes, harvested, and stocked, following normal protocols for that facility.

Daily operation and maintenance (O&M) of the HCNFF ponds and the 24-Road hatchery includes regularly checking and making appropriate adjustments to water quality (dissolved oxygen, pH, nitrates/nitrites, etc.), maintenance, cleaning, and replacement of air distribution systems (air stones, air pads, oxygen cylinders), calculating proper feed ratios and distributing proper types and sizes of feed based on fish life stage, fish size, and tank/pond stocking densities, cleaning of fish tanks/ponds, checking fish daily for signs of disease and applying appropriate treatments for sick/infected fish when necessary, maintenance of pumps, filters (e.g., fluidized sand, drum, UV), screens, and air distribution systems, maintenance of vehicles, equipment and grounds, scheduling and performing USFWS and

state-mandated annual fish health inspections and Aquatic Invasive Species (AIS) inspections, performing annual Health Condition Profile (HCP) inspections (required by the UCREFRP), applying for and obtaining state fish importation permits, collection and QA/QC of PIT tag database files, submission of data files to the SJRBRIP and NMFWCO, preparation of a SOW and annual report, etc.

Task Description, Deliverables and Schedule:

PIT tag files will include all Razorback Sucker handled and scanned at time of pond harvest (including all fish that were re-tagged), immediately prior to transport and stocking. Following QA/QC of the data, this file is submitted the SJRBRIP office and the NMFWCO. The SJRBRIP has eliminated stocking any of Razorback Sucker that are < 300 mm TL into the San Juan River. However, for Task 1, the SJRBRIP is actually getting age-1 fish (i.e., after 2 full growing seasons = approx. 18 months old) from HCNFF that are meeting the Upper Colorado River Basin’s minimum size requirements of > 350 mm TL. The stocking size of most Razorback Sucker sent directly to the San Juan River from HCNFF for Task 1 is usually considerably larger than the minimum 300 mm TL target.

It is anticipated that 2,000-4,000 Razorback Sucker (all ≥ 300 mm TL) can be reared annually in the one surface acre of ponds allotted to the SJRBRIP. Razorback Sucker of the appropriate target stocking size will be made available to the SJRBRIP in October/November of each calendar year for stocking (after the annual fall fish community monitoring studies are completed). All stockings of Razorback Sucker will be coordinated with personnel from the SJRBRIP office and the NMFWCO.

In fall 2021, a total of 3,869 Razorback Sucker from the HCNFF were stocked into the San Juan River. Their mean total length at stocking was 357 mm (range = 300-464 mm TL). There have now been five years (representing the fall 2013-2017 stockings) during which Razorback Sucker stocked from the HCNFF have been available for recapture during the riverwide, fall Sub-Adult and Adult Large-Bodied Fish Community Monitoring (“Adult Monitoring”) study. During the fall 2017 Adult Monitoring study, Razorback Sucker from HCNFF accounted for 47% of all Razorback Sucker collected (the fall Adult Monitoring study was not performed in 2018-2021).

Budget Summary:

This SOW is currently being funded using Four Corners Power Plant (FCPP) and Navajo Mine Energy Project Mitigation Account funding, distributed via the National Fish and Wildlife Foundation (NFWF). FCPP funding has 0% overhead rate associated with it, so the amounts summarized in the table below reflect funding that would go directly to the Ouray NFH-GVU (a sub-unit of the Grand Junction FWCO) in Grand Junction, CO, if this same source of funding were used in 2023-2026.

FY Year	Ouray NFH-GVU	Ouray NFH-GVU
2023	Task 1: \$40,208 Task 2: \$14,557	Total = \$54,765
2024	Task 1: \$41,414 Task 2: \$14,993	Total = \$56,407
2025	Task 1: \$42,656 Task 2: \$15,443	Total = \$58,099
2026	Task 1: \$43,936 Task 2: \$15,907	Total = \$59,843
Total		\$229,114

Reviewers:

San Juan River Basin Recovery Implementation Program staff, Biology Committee, and Coordination Committee

References:

Ryden, D. and B. Scheer. 2021. Rearing Endangered Fish at the Horsethief Canyon Native Fish Facility Ponds for Stocking into the San Juan River. SOW 7. Pages 17-26 in Fiscal Year 2022 Annual Budget and Statements of Work. San Juan River Basin Recovery Implementation Program, U.S. Fish and Wildlife Service, Albuquerque, New Mexico.

San Juan River Basin Recovery Implementation Program. 2016. Long-range plan. San Juan River Basin Recovery Implementation Program, U.S. Fish and Wildlife Service, Albuquerque, New Mexico.