

I. Project Title: **Operation and Maintenance of Ouray National Fish Hatchery**

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III. Project Summary: Ouray National Fish Hatchery (ONFH) was established in May 1996 as a fish refugia and technology development facility to assist in the recovery of the four listed Colorado River fish: razorback sucker, Colorado pikeminnow, bonytail, and humpback chub. Currently, the hatcheries' primary focus is propagating the razorback sucker, but as of October 15, 2007, approximately 200 chubs from the Yampa River have been brought into captivity at ONFH.

ONFH is located 57 kilometers (km) southwest of Vernal, Utah, on the Ouray National Wildlife Refuge (ONWR). The facility consists of an 114,000 liter (l) indoor recirculation hatchery with 27 2.4 meter (m) circular fiberglass tanks, and 30 1.2 m circular fiberglass tanks. The isolation room consists of twelve 0.9 m² circular fiberglass tanks that can be run as single pass cold water tanks or run as a separate re-use system. There are also 24 0.1 hectare (ha) surface area ponds covered by bird netting, and 12 0.2 ha surface area ponds. The water source consists of seven shallow wells (15 m deep) located near the Green River approximately 0.8 km from the hatchery. The hatchery has its administrative office located in a fisheries complex shared with the Colorado River Fisheries Project (CRFP), Utah Fish and Wildlife Conservation Office, and Jones Hole National Fish Hatchery in Vernal, Utah.

The basic operation plan for the facility is to operate a genetically sound captive propagation program to maintain approximately 500 captive razorback sucker broodstock and produce sufficient larvae needed for floodplain wetland studies and hatchery production. The production goal is to rear 14,895 300 + millimeter (mm) sub-adult razorback sucker to stock into the middle and lower Green River in Utah. This stocking goal was established by the Upper Colorado River Endangered Fish Recovery Program (Recovery Program).

IV. Study Schedule: 1996- Ongoing

V. Relationship to RIPRAP:

General Recovery Program Support Action Plan

IV. Manage genetic integrity and augment or restore populations.

IV.A. Genetics management.

IV.A.4 Secure and manage genetic stocks in refugia.

IV.A.4.a. Razorback sucker.

IV.A.4.a.(1) Middle and Lower Green River.

IV.C. Operate and maintain facilities.

IV.C.1. Ouray National Fish Hatchery.

Green River Action Plan: Main Stem.

IV.A. Augment or restore populations as needed.

IV.A.1. Develop State stocking plan for the four endangered fishes in the Green River.

IV.A.1.c. Implement plan.

VI. Accomplishment of FY 2008 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

On April 29th, 2008, ONFH spawned approximately 45 female and 45 male razorback sucker captive brood stock, producing nearly 1,010,000 eggs and resulting in 270,000 larvae. A newly implemented three year broodstock rotation that was designed to ease the pressure on the broodstock and produce increased numbers of eggs and larva was put into effect in 2008. Using only 90 razorback sucker broodstock (as compared to 120 in 2007), Ouray produced over 70% more eggs and approximately 900% more larvae than in 2007 (21 % increase in hatching success). The three year rotation will be in full effect in 2009 (in 2008 the fish had been used two years previously) and the fish will have had two years of rest between spawnings, and there is an expectation of another dramatic increase in fecundity.

A total of 72,500 razorback sucker larvae were divided up and stocked into four 0.1 ha production ponds on May 11th, 2008. In October of 2008, 41,300 four inch razorback suckers, weighing 445 kilograms (kg), were harvested from the ponds. 27,000 of these fish are now being reared intensively to meet the Integrated Stocking Plan, of the Recovery Program, requiring 14,895 razorback suckers 300 + mm stocked into the middle and lower Green River yearly for six years. An additional 46,000 larvae were stocked into two broodstock ponds (0.2 ha ponds) at ONFH, to conduct stocking experiments to determine optimal stocking conditions for larvae. One of the ponds had been recently cleaned and filled, while the other pond had not been cleaned or refilled for a year (but had no fish in it). The results were that the pond that had been cleaned and refilled just prior to stocking had more fish, but they were smaller in size than in the pond that had been left alone for a year. Studies had indicated that cleaning and filling ponds just prior to stocking larvae would yield more consistent results in terms of number of fish harvested, due to lack of insect predation resulting from the limited amount of time to establish themselves after cleaning and refilling. While this seems to be true in terms

of numbers, the fish in the pond that was stocked without cleaning were bigger, probably due to the increased abundance of natural food in that pond. The recommendation here is to not clean the ponds, but to stock extra larvae to compensate for the extra predation on the larval fish.

On May 20th 2008, 43,400 razorback sucker larvae were stocked into Baeser Bend Wetland (project # C6 Baeser) for overwintering and survival experiments. On October 8th 2008, 24,000 excess young of the year razorback sucker were stocked into Baeser Bend as requested by the Recovery Program.

The year 2008 should be considered the most successful year ever at ONFH. ONFH stocked 16,729 PIT tagged razorback sucker into the Green River, and Stirrup Wetland. 8,678 age one razorback suckers averaging 324 mm, were stocked into the Green River at ONWR boat ramp throughout the fall, and 5,052 age one razorback suckers averaging 335 mm were stocked throughout the fall at Green River, Utah.

The razorback suckers from the 2007 year class (age one) were the largest fish ever reared in two seasons at ONFH averaging over 330 mm. This increase in size can be attributed to retaining the fish in the recirculation warm water hatchery for an extra month to continue growth inside, while the ponds were too cold to produce decent growth, to lower fish densities in the ponds (700 fish maximum), and feeding them razorback diet year round to increase growth. This regime should be followed in the years to come as the short optimal growing season here (water temp over 18° C) lasts for only three months of the year.

In 2008, 2,999 razorback suckers from three different age classes were stocked into the Stirrup Wetland to conduct an experiment (Recovery Program project # RZ-RECR) to determine at which age do razorback sucker leave their nursery habitat and return to the river. A total of 952 age two (2006) fish were stocked into the Stirrup Wetland on July 1st 2008, averaging 309 mm. A total of 1,047 age one (2007) fish were stocked into the Stirrup Wetland on July 23rd, 2008, averaging 203 mm (stocked prior to reaching 300 mm by Colorado River Endangered Fish Recovery Program (CREFRP) request). Finally, 1,000 young of the year (2008) razorback sucker were stocked into the Stirrup Wetland on October 9th 2008, averaging 131 mm (stocked prior to reaching 300 mm by Recovery Program request).

ONFH is currently maintaining approximately 500 (25 lots) genetically sound Green River razorback sucker brood stock and continues to rear approximately 27,000 young of the year razorback sucker to meet the Recovery Plan goal for 2009.

ONFH was given a clean bill of health from the Bozeman Fish Health Center in 2008. The Health Center also gave a clean bill of health to red shiners collected from the Yampa river, that are to act as the surrogate species for health inspections, instead of the chubs that may be taken into captivity this year.

ONFH staff and others collected approximately 200 Yampa Canyon chubs in October of 2007, in an effort to begin building a potential captive broodstock of Yampa River humpback chub, as their numbers continue to decline. ONFH currently maintains approximately 185 of the original 200 chubs captured last October. ONFH will potentially be capturing young of the year Gila species from the Yampa River in October of 2009. Humpback chubs and round tail chubs, are virtually indistinguishable until they reach a larger size, so both species are likely being held at ONFH.

The ONFH staff conducted many tours of the facility for various groups and individuals in 2008. The hatchery also participated in the annual ONWR open house on 10 May. The public were able to see adult razorback brood stock, one year old razorbacks, razorback larvae, and for the first time humpback and roundtail chubs. Due to increased outreach efforts, ONFH visitor numbers increased 33% to a total of 657 individuals that toured the facilities in 2008.

Mike Montagne, and Lawrence Zeigenfuss remain at ONFH as the Hatchery Manager and biologist at ONFH. ONFH welcomes Matthew Fry and Jeremy Jones to the staff as the biological technician and the maintenance worker. Dave Irving is project leader of the complex, and Dolores Manning is our administrative officer.

VII. Recommendations:

Continue management and operation of facilities to serve as a primary refuge for endangered fishes of the Upper Colorado River Basin.

Continue collection of humpback chubs to be used in future broodstock development as described in a genetic management plan, should propagation be required to recover the Yampa Canyon humpback chub.

Continue to refine propagation plan at Ouray NFH to produce more and larger razorback sucker to meet stocking goals. The Recovery Program continues to look at the survival of stocked razorbacks and is finding that bigger fish have a higher survival rate than that of smaller fish. If the Recovery Program determines that it would like to increase stocking size, capital funding will be needed to increase the capacity of the hatchery as increasing the stocking size of the fish will require more space to overwinter the fish for a second year.

VIII. Project Status: Project in ongoing and on track

IX. FY 2008 Budget Status

- A. Funds Provided: \$490,752
- B. Funds Expended: \$490,752
- C. Difference: \$0
- D. Percent of the FY 2008 work completed, and projected costs to complete: 100%
- E. Recovery Program funds spent for publication charges: \$0

X. Status of Data Submission: PIT tag data submitted by October 24, 2008.

XI. Signed: Michael Montagne 10/24/08