

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 primary focus of ONFH is propagating the razorback sucker, but as of 2007, the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) has been capturing humpback chub and transferring them to ONFH to keep them in a refuge, and for future broodstock development.

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 m<sup>2</sup> 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) ponds covered by bird netting, and 12 0.2 ha ponds, three of which have been covered in bird netting. 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 (UFWCO), 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) (all lengths presented are total lengths) sub-adult razorback sucker to stock into the middle and lower Green River in Utah. This stocking goal was established by the 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.c Humpback chub

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 2009 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Stocking:

ONFH had a terrific year in 2009, exceeding the stocking quota of the Recovery Program in both number and size for razorback sucker. In total, 20,000 razorbacks were produced (quota specifies 14,890), PIT tagged, measured, weighed and stocked into the Green River (and the Stirrup Wetland) in 2009. These fish averaged 350 mm (the quota specifies 300 mm), and had an average weight of 504 grams (g) per fish (300 mm fish average 300 g/ fish).

On June 10, 2009, 1,727 razorback sucker were stocked into the Stirrup Wetland, averaging 295 mm. These fish were also stocked prior to reaching 300 mm by request of the Recovery Program for the razorback sucker emigration from the Stirrup study conducted by the Utah Division of Wildlife Resources (UDWR) (project # RZ-RECR), to determine at which age do razorback sucker leave their nursery habitat and return to the river. These fish were PIT tagged, weighed and measured prior to stocking.

The Middle Green River was stocked with 13,256 razorback suckers throughout the fall of 2009. A total of 1,839 of these fish were stocked at Split Mountain Boat Ramp, in Dinosaur National Monument, and the remaining 11,417 were stocked at the ONWR boat ramp. The Lower Green River (Green River, Utah) was stocked three times with a total of 5,017 razorback suckers.

ONFH also stocked 110,000, (10 mm average) razorback sucker larvae into Baeser Bend Wetland for research purposes for the Recovery Program (project # C6 Beaser). These larvae were stocked on June 4, 2009 for the purpose of conducting overwinter survival experiments and non native predation experiments. An additional 15,000 young-of-the-

year (yoy) razorback sucker, in excess of production needs, were stocked into Baeser Bend on October 30, 2009.

In 2009, ONFH made a concerted effort to increase both the number and size of the razorbacks it was producing. There were two reasons for doing this. The first was that a study on survival rates of stocked razorback suckers, by Koreen Zelasko, Keven Bestgen, and Gary White of Colorado State University, concluded that survival rates increased as the length of razorback sucker at stocking increased. So in an effort to increase survival rates, ONFH began trying to increase the size of fish stocked and increasing the numbers stocked to get more survivors out in the wild. And second, in proving that ONFH was capable of producing 20,000 350 mm razorback sucker (25% more fish than the current quota requires), it shows that the hatchery is now ready to expand to fill additional needs of the Recovery Program. ONFH wanted to be proactive in dealing with the current decline of wild humpback chub by preparing to develop a hatchery refuge and broodstock for future production and stocking purposes. ONFH is a likely candidate to do this work and we needed to know what the capacity is for this facility, to be able to answer questions about costs, and abilities.

The razorback sucker from the 2008 year class (age-1) were the largest fish ever reared in two seasons at ONFH by an average of 31 mm and a 67 % increase in weight over a 300 mm fish. This increase in size can be attributed to three main activities. First, the 2008 young of the year growing so rapidly outside in the first growing season. Second, retaining the fish in the recirculating warm water hatchery for an extra month to continue growth inside, while the ponds were too cold to produce decent growth. And third, lower fish densities in the ponds (700 fish maximum), and feeding them razorback sucker diet year round, instead of the cheaper slow sinking salmon feed. This regime should be followed in the years to come as the short optimal growing season here (water temperature over 18° C) lasts for only three months of the year.

#### Razorback Sucker Spawning

On April 28, 2009, ONFH spawned 41 female and 43 male razorback sucker captive brood stock, producing nearly 1,260,000 eggs and resulting in over 233,000 larvae. While the hatching success (18%) was disappointing, this spawn produced sufficient larvae for production purposes. In an effort to increase our hatching success, a second spawn was conducted on May 15, 2009 using 19 females and 23 males. This spawn produced over 620,000 eggs, resulting in over 242,000 larvae. The hatching success of 38% was much closer to what we were hoping to see. In 2010, ONFH will conduct spawning activities one to two weeks later to see if we may be spawning too early.

A total of 85,000 razorback sucker larvae from all 24 crosses were divided up and stocked into three 0.2 ha broodstock ponds once the larvae swam-up. On June 4, 2009, 110,000 excess larvae were stocked into Baeser Bend for the Recovery Program project # C6 Baeser, for overwintering and survival experiments. On October 30, 2009, 15,000 razorbacks in excess of ONFH production needs, were harvested from the ponds and stocked into Baeser Bend.

ONFH is currently maintaining approximately 500 (25 lots) genetically sound Green River razorback sucker brood stock and continues to rear over 20,000 yoy razorback sucker from 2009 to meet the Recovery Plan goal for 2010. The 2009 yoy harvested out of the ponds this year are the largest we have produced in one growing season, and puts ONFH about five months ahead of last years growth rate. This will likely result in even larger fish than in 2009. ONFH will continue to provide larvae and larger fish to the Recovery Program to conduct experiments.

### Humpback Chub

ONFH staff and others collected approximately 200 Yampa Canyon *Gila* spp. in October of 2007, in an effort to begin building a potential captive broodstock of Yampa River humpback chub. Of the original 200 chubs 30 of them were suspected to be humpback chub and 170 roundtail chubs. Of the original 30 humpbacks, 21 remain alive on station. They were put out into the ponds this summer to increase growth. The remaining 137 roundtails were stocked back to the Green River in Dinosaur National Monument in late October. ONFH was not able to obtain any additional chubs from the Yampa River in 2009, and will have to wait until the Park Service completes an Environmental Assessment.

An attempt to spawn the humpback chub this year was fruitless, as no eggs or milt were produced despite the injection of hormones they received. We followed the process that was described by Roger Hamman from Dexter Fish Technology Center, NM, as he is one of the few people with any experience with spawning humpback chub. We have determined that the fish were likely just too immature to spawn this year as they were only age two.

A population estimate for the humpback chub in Desolation/Gray canyons conducted by Julie Jackson in 2005, and a more recent estimate done by Paul Bedame (personal communication, UDWR, Moab), have shown a dramatic decline and have fallen below the minimum viable population estimate identified in the 2002 humpback chub recovery goals. As a result it has been decided to begin taking them into captivity to preserve as much genetic material as possible. ONFH and the UDWR captured 25 adult humpback chub from Gray Canyon and brought them into captivity in October of 2009. Collection of humpback chub out of Desolation/Gray canyons will continue in 2010 and into the foreseeable future, and the wild fish will be transferred to ONFH and kept in a refuge, until and if a propagation program is initiated.

### Fish Health

ONFH was given a clean bill of health from the Bozeman Fish Health Center in 2009. The Health Center also gave a clean bill of health to red shiner collected from Desolation/Gray canyon, they act as the surrogate species for health inspections, instead of humpback chub that have been taken into captivity this year.

### Public Outreach/ Visitors

The ONFH staff conducted many tours of the facility for various groups and individuals in 2009. The hatchery also participated in the annual ONWR open house on May 9, 2009. The public was able to see adult razorback sucker brood stock along with larvae and one year olds; as well as humpback and roundtail chubs. Due to continued outreach efforts, total of 576 individuals toured the facilities in 2009. ONFH also participated in the 4<sup>th</sup> of July Parade in 2009, entering our fish hauling trailer into the event.

### Staff

The hatchery staff remained the same this year with Jeremy Jones as the maintenance worker, Matt Fry as the biological technician, Larry Zeigenfuss as the biologist, and Mike Montagne as the Hatchery Manager. ONFH continues to be a part of the CRFP complex and FWCO in Vernal. Dave Irving is project leader of the complex, and Dolores Manning is the administrative officer.

### Station Cyclical Maintenance/ Construction

By the spring of 2009, it became clear that the wet well pumps that supply all of the water for ONFH, needed to be reconditioned. They were only capable of pumping about 425 gallons per minute (gpm) with both pumps running. The first pump was pulled out of the cistern with great difficulty, as it has to be lifted up quite high in the air to remove it from the enclosed cistern. The pump was sent off to be reconditioned in Grand Junction, Colorado. We limped along on about 300 gpm for two weeks until the pump was ready. We reinstalled the pump and removed the second pump for reconditioning.

When the first pump was turned on, it was able to pump 680 gpm. This was great news as we had never had that much water to work with at ONFH. However, the higher volume of water broke free all the iron and manganese that were lining the inside of the pipes (the same stuff that was clogging the pumps) and pumped it into our Burgess Iron Removal Media (BIRM) filters, that are designed to remove the iron and manganese from the water. The water did finally clear up, but the filters could not handle all of the iron and manganese that was pumped into them, and despite an elevated rate of back flushing, the filters plugged and needed to be rebuilt as a result. We called in a contractor with a vacuum truck and had them remove all of the media and heavy metals from the filters. We cleaned out the filters manifolds and re-packed the filters. Unfortunately the wrong sand was used and instantly plugged up the filters again. The contractor came out again and vacuumed out the filters. We ordered new BIRM to fill the filters, but the process took about two weeks to complete. The water was unfiltered for that span of time, but the fish managed to overcome the poor water quality without ill effects.

The second wet well pump was replaced shortly after, and the filter system was bypassed to avoid a reoccurrence of the filter problem. At the same time that the second pump was installed we discovered a large leak in the plumbing for well #10. We uncovered the pipe and repaired the leak. At this time we also discovered that the pump on well # 4 was not operating. We pulled the pump and motor and replaced the motor as water had infiltrated the unit causing failure.

In the spring of 2009, nets were installed over three of the 0.2 ha broodstock ponds so they could be used as production ponds. Over 5,000 razorbacks were reared in these three ponds in 2009. The nets are proving to be problematic, as they are easily swept up by the wind due to their large area, and have been ripped and torn almost completely off on several occasions. We have brain stormed and have come up with several ideas that we will try and implement as soon as possible.

Larry Zeigenfuss entered in all SAMMS data, and Jeremy Jones will be trained in SAMMS in 2010.

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 chub to be used in future broodstock development as described in a genetic management plan, should propagation be required to recover the Yampa Canyon, and the Desolation/Gray Canyon humpback chub.

Continue to refine propagation plan at ONFH 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. ONFH has the capacity to rear over 20,000 350 mm razorback sucker or some mix of razorbacks and humpback chub.

VIII. Project Status: Project in ongoing and on track

IX. FY 2009 Budget Status

- A. Funds Provided: \$502,680
- B. Funds Expended: \$502,680
- C. Difference: \$0
- D. Percent of the FY 2009 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 November 9, 2009.

XI. Signed: Michael Montagne 11/010/2009