

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 the propagation of 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 refugia, 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 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) 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 Fisheries 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.

V.A.1.c. Implement plan.

VI. Accomplishment of FY 2010 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Stocking

The Randlett Unit of the ONFH had a terrific year in 2010, exceeding the Recovery Program's stocking quota in both number and size for razorback sucker. In total, 7,950 kilograms, 16,207 razorbacks were produced (quota specifies 14,890), PIT tagged, measured, weighed and stocked into the Green River in 2010. These fish averaged 356 millimeter (mm) (all fish lengths are total length) (the quota specifies 300 mm), and had an average weight of 491 grams (g) per fish (300 mm fish average 300 g/ fish).

On October 29, 2009, a PIT tag retention pilot study was conducted at the hatchery comparing three different tag insertion methods. The study used 184 fish that were too small to stock. A sample size of approximately 60 fish were used to These fish were PIT tagged, weighed and measured prior to stocking into Baeser Bend wetland along the Green River. This study was a pilot study comparing the survival and tag retention of three different tag insertion methods used by three different stations. The three methods included the use of MS-222 to anesthetize the fish prior to stocking, inserting the tag between the two pelvic fins with no anesthesia, and tagging behind the left pelvic fin with no anesthesia. Anesthetizing the fish had 100 % tag retention while the other two methods had a 90% retention rate. Survival was 100 % for all methods. A poster was made and presented at the Colorado River Researchers Meeting in Grand Junction on January 22 and 23, 2010.

The Middle Green River was stocked with 10,926 razorback suckers throughout the fall of 2010 at the ONWR boat ramp. The Lower Green River (Green River, Utah) was stocked three times with a total of 5,099 razorback suckers.

In 2010, the Randlett Unit of the ONFH continued to make a concerted effort to increase

the 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 the razorback at stocking increased. And second, to determine how big can a razorback be grown in two seasons in an artificial setting. 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. To do this, stocking densities are tweaked to maximize growth while still providing enough numbers to meet the stocking goal.

The razorback suckers from the 2009 year class (age-1) and stocked in 2010 were the largest fish ever reared in two seasons at ONFH eclipsing the record set the previous year. This increase in size can be attributed to young of the year growing so rapidly outside in the first growing season. Lower fish densities in the ponds (700 fish maximum), and feeding them razorback diet year round, instead of the cheaper slow sinking salmon feed is also important in maximizing growth. These practices 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.

Razorback Sucker Spawning

On April 26, 2010 ONFH spawned 41 female and 42 male razorback sucker captive brood stock, producing nearly 1,344,000 eggs. The hatching rate was 17%, while low, it still resulted in over 242,000 larvae. The broodstock were brought in when the outside (pond) water temperatures warmed up to 12-13° Celsius. Historically they were injected with HCG at that temperature before being warmed up to 16° Celsius. This year, in an attempt to increase hatching success, the brood fish were warmed up to 16° Celsius the day before injections were started and held there until spawning day. We saw no increase in hatching rate over last year, however, a significant loss occurred on several lots when a CO2 tank ran empty and the pH of the water jumped to 8.7.

A total of 81,000 razorback sucker larvae from 9 different crosses were divided up and stocked into three 0.2 ha broodstock ponds once the larvae swam-up. A total of 69,000 young of the year razorbacks (1,276 kg) were harvested from these ponds. On October 20, 21, and 22, 2010, 46,000 young of the year razorbacks in excess of ONFH production needs, were harvested from our ponds and stocked into one of the wetlands on Ouray National Wildlife Refuge to assess overwinter survival in these wetlands. The other 23,000 young of the year were kept inside for next years production.

ONFH is currently maintaining approximately 500 (25 lots) genetically sound Green River razorback sucker brood stock and continues to rear approximately 23,000 young of the year (YOY) razorback sucker from 2010 to meet the Recovery Plan goal for 2011. This year, we had the highest rate of survival (85%) of YOY ever harvested out of the ponds. Usually high rates of survival are good but this year, the average size of the YOY are about one half of what the average size was last year. In the past, survival was

usually 55%.

Humpback Chubs

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 chubs, and 170 roundtail chubs. Of the original 30 humpbacks, 21 remain alive on station. The remaining 137 roundtails were stocked back to the Green River in Dinosaur National Monument October 27, 2010. There are no plans to collect any additional chubs from the Yampa River until the Park Service completes an Environmental Assessment.

A population estimate conducted by Julie Jackson in 2005, and a more recent estimate done by Paul Bedame (personal communication, UDWR, Moab), have shown a dramatic decline in the number of humpback chubs in the Green River, in Desolation/Gray Canyons and that they hover near and perhaps have fallen below the minimum viable population estimated 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 chubs into from Desolation/Gray Canyon and brought them into captivity on October 22, 2009. It is anticipated that the collection of humpback chubs out of Desolation/Gray canyon will continue in the foreseeable future, and the wild fish will be transferred to the Randlette unit of the ONFH and kept in refugia, until and if a propagation program is initiated.

Fish Health

The Randlett Unit of the Ouray National Fish Hatchery was given a clean bill of health from the Bozeman Fish Health Center in 2010.

Public Outreach/ Visitors

The ONFH staff conducted many tours of the facility for various groups and individuals in 2010. The hatchery also participated in the annual ONWR open house on May 2, 2010. The public was able to see adult razorback brood stock, one year old razorbacks, razorback larvae, as well as humpback chubs. Due to continued outreach efforts, total of 491 individuals toured the facilities in 2010.

Staff

The hatchery staff lost two members as manager Mike Montagne left to become the Project Leader of the San Marcos Fisheries Conservation Office in San Marcos Texas at the end of January and maintenance worker Jeremy Jones accepted a position with the Ouray National Wildlife Refuge at the beginning of May. Fisheries biologist Larry Zeigenfuss acted as the manager in Mike's absence for the facility. Biological technician Matt Fry also took on extra responsibilities as these two vacancies remain unfilled. ONFH underwent a major reorganization and was combined with the Grand Valley Experimental Station in Grand Junction, CO to form the Ouray National Fish Hatchery. ONFH is now referred to the Ouray National Fish Hatchery, Randlett Unit, and the Grand Valley Experimental Station in Grand Junction is called the Grand Valley Unit of the

Ouray National Fish Hatchery.

The two hatcheries are also complexed with CRFP, and FWCO in Vernal, and the CRFP in Grand Junction. The Project Leader has also changed as Michelle Shaughnessy has replaced Dave Irving who accepted a Project Leader position in Leavenworth, Washington, and she serves as the Project Leader over all of the complex and is stationed in Grand Junction Colorado. Dolores Manning continues to serve as the administrative assistant.

Station Cyclical Maintenance/ Construction

During the spring of 2009, it became clear that the wet well pumps that supply all of the water for ONFH, needed to be reconditioned. A significant improvement in performance was immediately noticed after reconditioning. Pumping ability increased from 300 gallons per minute to 680 g.p.m. A similar need was noticed for the two 400 gpm turbine pumps in the mechanical room. These pumps were reconditioned in November 2009 and March of 2010 as their capacity had decreased to the point that both pumps needed to be turned on in order to keep up with only one of the booster pumps or the whole recirculation system would fail. A significant improvement in performance was again noticed after these pumps were reconditioned.

The large turbine pumps that pump water from the water treatment pond to the production building and fish ponds have also deteriorated as they are now only capable of pumping 300 gallons per minute each. Both pumps were going to be reconditioned in March and April of 2010 but funds were needed to pay for a potential permanent change of station (PCS) move for the new manager. This was not expected to be an issue however as both pumps were still able to pump over 600 g.p.m in 2009. Unfortunately, the performance of these pumps declined dramatically. As a result, only 450 gallons per minute were available for the fish ponds with both pumps turned on. This had a major impact on water quality as not enough water was available to flush the ponds so two inch and four inch trash pumps were used to pump water from one pond to another to keep the oxygen levels up. Also feeding was decreased during these periods to reduce oxygen demand in the ponds. Reconditioning these pumps is now one of the highest priorities of this station.

As part of the routine maintenance for the facility, the Bureau of Reclamation (BOR) comes to Randlett to jet out half of the wells in the well field in the spring so that every well gets jetted every other year. This is necessary to keep the wells producing enough water to meet hatchery needs. As sediment collects in these wells, the amount of water produced decreases so this sediment must be jetted out. Usually there is about \$6,000 available in the budget to do this but in 2009, that money was used to recondition the wet well pumps. This had a large impact on the amount of water the wells were producing during the spring of 2010 as half of the wells had not been jetted in three years. Because of that, \$12,000 was spent on jetting out all of the wells. The plan is in 2011 to go back on the two year rotation where only half of the wells are jetted.

In June of 2010, the large Burgess Iron Removal Media (BIRM) filters had become clogged with manganese. These filters were bypassed while they were cleaned out and rebuilt. The fact that they had clogged after being rebuilt just a year earlier indicates that they are not able to handle the large amount of iron and manganese in the well water. Tests have confirmed that just doubling the amount of filtration will not solve the problem. Increasing filtration efficiency is needed and hatchery staff continue to work with other experts to try and accomplish this task.

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 41,000 YOY razorbacks were reared in two of these ponds in 2010. 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. Several ideas have been implemented and tried including hog ringing the nets to the support wires across the ponds and using a cable to secure the ends of the nets more securely. None of these methods has worked as the nets are vulnerable to the powerful winds and microbursts that are common in the Uintah Basin. A few more ideas have been formed and will be tried but the realization that these ponds are too big to hold nets in such a windy area is starting to set in.

Larry Zeigenfuss entered in all SAMMS data.

Future Outlook

The future remains bright at ONFH. This year, the Randlett Unit of ONFH exceeded production goals by over a 1,300 fish and again broke the all time average size record with only half of the staff and two thirds of the water for most of the year. The station has also brought humpback chubs onto station from two locations from the wild that are being considered for refugia and potential broodstock production. Being complexed with the Grand Valley Unit has greatly increased communication, cooperation and efficiency of both units. It is anticipated that the station will soon be fully staffed and both units of the Ouray National Fish Hatchery will continue to meet the goals and needs of the Colorado River Recovery Program.

VIII. Project Status: Project in ongoing and on track

IX. FY 2009 Budget Status

- A. Funds Provided: \$496,333
- B. Funds Expended: \$496,333
- C. Difference: \$0
- D. Percent of the FY 2010 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 on September 30, 2010.
- XI. Signed: