

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2022 ANNUAL REPORT

PROJECT: 29D

Project Title

J. W. Mumma Native Aquatic Species Restoration Facility
Operation and Maintenance - Colorado

Bureau of Reclamation Agreement Number:

08-FG-40-2747

Project/Grant Period:

Start date: 10/01/2007

End date: 09/30/2022

Reporting period end date: 09/30/2022

Is this the final report? Yes _____ No X

Principal Investigator:

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Abstract:

The J. W. Mumma Native Aquatic Species Restoration Facility (Mumma), located in Alamosa, Colorado, was constructed in the year 2000 to facilitate the conservation of rare aquatic native species through captive propagation, genetic conservation, scientific research and public education and awareness. Currently there are 12 fish species and one amphibian species reared at Mumma. Many are listed at the State level as Threatened, Endangered or Species of Special Concern. One, the bonytail chub (*Gila elegans*, BT), is federally listed as Endangered and is given full protection under the Endangered Species Act since 1980. Mumma currently produces BT in numbers and sizes sufficient to help meet the annual stocking plan of the Upper Colorado River Endangered Fish Recovery Program (UCREFRP) for BT in the Upper Basin of the Colorado River drainage.

Study Schedule:

2002-Ongoing

Relationship to RIPRAP:

General Recovery Program Action Plan

IV. Manage genetic integrity and augment or restore populations

IV.A. Genetic management

IV.A.4. Secure and manage the following species in hatcheries (according to the Genetics Management Plan)

IV.A.4.b. Bonytail

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

IV.B. Conduct annual fish propagation activities

IV.B.2. Implement revised integrated stocking plan (Integrated Stocking Plan Revision Committee 2015); supersedes all earlier stocking plans, including species-specific and individual basin plans

IV.C. Operate and maintain facilities

IV.C.4. Mumma

Green River Action Plan: Main Stem

IV. Manage genetic integrity and augment or restore populations

IV.A. Augment or restore populations as needed

IV.A.1.c. Implement plan. Superseded by Revised Integrated Stocking Plan (2015), see General IV.B.2.

Colorado River Action Plan: Main stem

IV. Manage genetic integrity and augment or restore populations

IV.A. Augment or restore populations as needed.

IV.A.5.b. Implement bonytail integrated stocking plan. Superseded by Revised Integrated Stocking Plan (2015), see General IV.B.2.

Accomplishment of FY 2022 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

BT Stocking

A total of **5,277 BT** averaging 283.2 mm TL were successfully stocked by Mumma in 2022 (Table 1).

On March 23, 2022, Mumma stocked **506 BT** into Salt Creek, approximately 4 miles southwest of the town of Mack, Colorado. Due to the loss of 16 tags, **490 tagged BT** records were uploaded to STReAMS.

- BT were PIT tagged on March 15, 2022, prior to stocking.
- Recorded discharge for this stocking using waterdata.usgs.gov was ~ 6.65 cubic feet per second (cfs) measured at gauge USGS 09163492 SALT CREEK NEAR MOUTH NEAR MACK, CO at 15:15, the approximate time of stocking.
- The receiving water temperature for the Salt Creek BT stocking was 10 degrees Celsius with a pH 8.1. Hatchery transport temperature and pH prior to stocking were 8.3 degrees Celsius and 8.9, respectively. Due to slight differences in temperature and pH (<5 degrees Celsius and <1 pH unit), BT were not acclimated for temperature and pH on the haul-truck and appeared unstressed upon release into the resource.
- Approximately half of the fish were loaded onto a smaller pick-up truck containing ½ Salt Creek water and ½ hatchery water. They were transported approximately 1 mile downstream to an area of deep pools and moved into the creek by buckets. The remaining half were carried by buckets from the hatchery truck to step pools and slow runs. Conditions were typical for March in Salt Creek with low flows and clear water.
- Releases at Salt Creek are considered “additional” fish above the numbers the Revised Integrated Stocking Plan calls for the Colorado River. We have tried releasing at various times of the year but we have found the best response appears to be to release just before irrigation season starts. The onset of irrigation season on April 1 increases flows in the

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

creek quickly as the creek is supported by irrigation return. As soon as water starts flowing in the creek, our antennas begin picking up lots of native fish! So we are trying to get them in the water when we expect their wild counterparts will be there. We have stocked in the summer to try to meet warmer temperatures, however, it was really difficult to keep fish alive since they have to be moved by buckets due to the railroad. In addition, it is difficult to temper fish on the hatchery truck because of the inability to get close to the creek. We have stocked in the fall as well but backed off that because wild native fish typically leave the creek when the flows subside at the end of irrigations season.

On June 28, 2022, Mumma stocked **2,192 BT** into Yampa River #1 at the Deerlodge Park boat launch. Due to the loss of 11 tags, **2,181 tagged BT** records were uploaded to STReaMS.

- BT were PIT tagged on June 21 & 22, 2022, prior to stocking.
- Recorded discharge for this stocking using waterdata.usgs.gov was ~ 2,000 cubic feet per second (cfs) measured at USGS 09260050 YAMPA RIVER AT DEERLODGE PARK, CO at 14:30, the approximate time of stocking.
- The receiving water temperature for the Yampa River #1 BT stocking was 20.5 degrees Celsius with a pH 8.5. Hatchery transport temperature and pH prior to stocking was 17.2 degrees Celsius and 8.2 respectively. Due to slight differences in temperature and pH (<5 degrees Celsius and <1 pH unit), BT were not acclimated for temperature and pH on the haul-truck and appeared unstressed upon release into the resource.
- BT were released into a fairly swift run of the main channel from the Deerlodge boat launch. Shortly downstream, the run slows and pools among sand bars. In 2022, discharge was higher than most recent years of stocking at this location but likely did not result in a significant habitat change.

On August 9, 2022, Mumma stocked **2,579 BT** into Colorado River #2, 300 meters downstream of Una Bridge (Stone Quarry Road) at the public take-out, west of Parachute, CO. Due to the loss of 12 tags and one tag uploading twice, **2,568 tagged BT** records were uploaded to STReaMS.

- BT were PIT tagged on August 2 & 3, 2022 prior to stocking.
- Recorded discharge for this stocking using waterdata.usgs.gov was ~ 2,100 cubic feet per second (cfs) measured at USGS 09095500 COLORADO RIVER NEAR CAMEO, CO or 2,550 cubic feet per second (cfs) measured at USGS 09163500 COLORADO RIVER NEAR COLORADO-UTAH STATE LINE at 12:00, the approximate time of stocking.
- The receiving water temperature for the Colorado River #2 BT stocking was 22.8 degrees Celsius with a pH 8.2. Hatchery transport temperature and pH prior to stocking was 19.4 degrees Celsius and 8.3 respectively. Due to slight differences in temperature and pH (<5 degrees Celsius and <1 pH unit), BT were not acclimated for temperature and pH on the haul-truck and appeared unstressed upon release into the resource.
- BT were stocked in a shallow but slow riffle that terminates in a large eddy about 300 meters downstream. Conditions were typical of previous stocking events at this location. We have only stocked at this location one or two times previously. Our other most commonly stocked location is at the town of DeBeque's boat launch. We chose to move upstream because there is a lot of shallow riffle habitat below the DeBeque boat launch

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

for a very long way before the river slows. Below Una Bridge (this site), the river slows and has more habitat diversity.

BT Rearing and Health

- BT are received from the Wahweap State Fish Hatchery located in Big Water, UT and are grown out to size in four (4) outdoor 0.10 surface acre PE lined-ponds in a 3 to 5 year period. During this time juvenile BT are fed a Custom Trout #2 diet, progressing to a Custom Trout #4 diet, and finished off with an extruded 1/8 inch Trout diet from Rangen, Inc. The BT are subject to seasonal avian predation, primarily Night herons and assorted raptors.
- All BT to be released are harvested from the ponds and held in two 12 ft. diameter flowing, circular tanks for approximately 1 to 3 weeks prior to stocking.
- Sixty (60) BT were collected on August 1, 2022 and tested for viral hemorrhagic septicemia virus (VHSV) in compliance with Colorado Parks and Wildlife's (CPW) regulatory annual fish health inspection (FHI). Results showed no viruses detected.
- All BT received two (2) consecutive daily 8-10 hour static-bath anti-Platyhelminthes *Praziquantel* treatments prior to stocking.
- Mumma currently provides four (4) 0.10 surface acre PE lined-ponds, and two (2) 0.03 surface acre PE lined-ponds to the recovery of BT. Fish remaining on station can be found in Table 2.
- On August 1, 2022, Mumma performed Health Condition Profiling (HCP) on 20 BT specimens per Lot NSF16BYT111WAH. HCPs on 74-month-old BT showed a mean average of 212.3 mm. in length; a mean average of 72.3 g in weight; a mean average of 51.85 Hematocrit; a mean average of 1.000 Leucocrit; a mean average of 4.905 Plasma Protein; a mean average of 0.00 Deformity Index; a mean average of 0.05 in Skin Lesion; and a mean average 0.1 in Fin Deformities.

Facility Maintenance and Construction None in FY2022.

Additional noteworthy observations: None

Recommendations:

- Continue to refine culture techniques and dietary requirements of BT at Mumma to meet CPW's obligation to produce Federally Endangered bonytail in numbers and sizes sufficient to help meet the annual stocking plan of the UCREFRP for BT in the Upper Basin of the Colorado River Drainage.
- Achieve Mumma's objective as stated in the 2015 Revised Integrated Stocking Plan of the Upper Colorado River Endangered Fish Recovery Program by delivering at least 5,000 BT at a minimum target size of 250 mm average TL by summer 2023.
- Continue annual fish health inspections of BT for the presence of VHSV at Mumma.
- Continue with anti-Platyhelminthes *Praziquantel* treatments of BT prior to all stockings.
- Continue Passive Integrated Transponder (PIT) tagging BT at Mumma prior to all stockings.
- Dependent on drought conditions, annual snow pack and spring runoff, have BT available to stock at warmer water temperatures with the understanding adequate temperature units are available to allow BT to recover from handling and hauling stress prior to the onset of

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

colder water and winter conditions.

- Unless instructed differently from the UCREFRP, continue to culture and stock larger BT (minimum target size of 250 mm average TL) FY 2023 to promote and enhance survival of BT in the resource.
- Continue to expose BT to flow in circular tanks prior to stocking to promote and enhance survival.
- Attempt to closely match receiving water temperature and pH with hatchery rearing and transport water temperatures and pH at time of stocking to promote and enhance survival of BT in the resource.

Project Status:

The project remains on track and ongoing.

FY2022 Budget Status

Funds Provided: \$85,899

Funds Expended: \$85,899

Difference: \$0.00

Percent of the FY 2022 work completed, and projected costs to complete: 100%

Recovery Program funds spent for publication charges: \$0.00

Status of Data Submission

PIT tag and additional data from all three BT stocking events listed in this report was submitted to the UCREFRP Database Coordinator, Christopher Michaud and Koreen Zelasko, Propagation Coordinator for entry into the STReaMS database on October 11, 2022.

Signed:

Theodore J. Smith

Principal Investigator

Date: December 12, 2022

Table 1. Details of stocking events for bonytail reared at Mumma, 2022.

Date	Location	Year class	Number	Fish/lb.	Mean TL (mm)	Min TL (mm)	Max TL (mm)
03/23/2022	Salt Creek	2016	506	2.20	291.8	240	390
06/28/2022	Yampa River, Deerlodge Park	2016	2,192	2.25	289.3	210	437
08/09/2022	Colorado River, Parachute	2018	2,579	2.80	269.0	191	423
total			5,277		283.2	191	437

Table 2. Bonytail remaining on station at Mumma as of November 28, 2022.

Year class	Number	Impoundment
2018	3,730	POND 1
2018	3,638	POND 2
2018	7,844	POND 3
2018	3,070	POND 4
2022	7,995	POND B4
2022	7,995	POND B5
total	34,272	

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM