

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY-2022 ANNUAL REPORT

PROJECT: C-29a

Project Title

Retrieval of fish from the Grand Valley Irrigation Company and Grand Valley Water Users canals

Bureau of Reclamation Agreement Number:

R20PG00024

Project/Grant Period:

Start date: 10/01/2019

End date: 09/30/2024

Reporting period end date: 09/30/2022

Is this the final report? Yes _____ No X

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Abstract:

Grand Valley Irrigation Company (GVIC) constructed a fish screen on the irrigation canal during the winter of 2001-2002 to limit entrainment of fish, becoming fully operational a few years later. A similar fish screen was constructed during summer 2005, on the Grand Valley Water Users (GVWU) irrigation canal, becoming fully operational spring 2009. When fully operational, these screens are designed to effectively limit fish down to 20-30 mm total length (TL) from becoming entrained. However, during periods of high debris flow and/or algae growth, these screens become clogged, preventing sufficient water to pass through the canals and meet irrigation and/or power generation demands. As an option to mitigate, irrigation companies can lift these screens (GVIC) or divert water through the bypass channel (GVWU). During this time, it is possible for fish to become entrained in these canals. Once the dewatering process begins in the Fall, these fish then become stranded in the canals. Some entrained fish seek refuge in deep-water reaches of the canals and/or underground siphons that hold water year around. Native fish are collected during salvage operations of the two canals and are returned alive to adjacent sections of the Colorado River. FY-2022 canal salvage efforts resulted in 2,441 fish being collected in the canals. Twelve fish from the GVWU canal and 2,429 fish from the GVIC canal were collected and returned to the river. Of the 2,429 fish collected in the GVIC canal, only one listed species (bonytail) was collected in the canal and returned to the river. No listed species were collected in the GVWU canal.

Study Schedule:

2002-Ongoing

Relationship to RIPRAP:

Colorado River Action Plan:

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II.B.1.b. Screen GVIC diversion canal to prevent endangered fish entrainment.

II.B.3.b. Screen Government Highline diversion canal to prevent endangered fish entrainment.

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

FY-2022 Tasks and Deliverables

Task 1: Sample GVIC and GVWU canals; collect native fish and relocate to the Colorado River.

In Fall 2021 (i.e., at the start of FY-2022), Colorado Parks and Wildlife (CPW) led field operations, with assistance from U.S. Fish and Wildlife Service, Grand Junction Fish and Wildlife Conservation Office (GJFWCO), conducting fish salvage efforts by driving portions of the roads adjacent to the irrigation canals, looking for locations with water that may contain fish after the canals were dewatered. Diversion of irrigation water from the Colorado River generally ceases early in November. After the canals are shut down, it usually takes 5-7 days for the water to become low enough for sampling efforts to begin. Pools of water are sampled via electrofishing units and/or seine nets. All native species and trout are collected, identified, and loaded into a hatchery truck. These fish are transported and released into the Colorado River. Total number of fish collected and translocated are recorded. As part of CPW's Three Species (roundtail chub, flannelmouth sucker, and bluehead sucker) sampling efforts, large numbers of native fish may also be weighed, measured, and tagged with passive integrated transponder (PIT) tags, prior to being placed in a hatchery truck to be transported to and stocked in the Colorado and/or Gunnison rivers. Any endangered fish collected during this process will be measured, weighed, and checked for presence of a PIT tag. If no PIT tag is present, one will be implanted prior to releasing the fish alive back into the Colorado and/or Gunnison rivers. Nonnative fish encountered are left in the canal(s). Sampling ceases when salvage operations can no longer be done effectively.

Task 2: Compile and summarize fish salvage data for fish collected in GVIC and GVWU canals; prepare annual RIPRAP report.

Data collected during CPW field operations are transferred to GJFWCO to summarize data and prepare an annual report.

Tasks completed.

Additional noteworthy observations:

Grand Valley Irrigation Company (GVIC) Canal:

The roads adjacent to the GVIC canal were driven to assess areas of the canal for potential locations that could have stranded fish. The canal was driven from the diversion dam on the Colorado River, downstream to 25 Road and G Road where eight reaches were determined to have stranded fish. Sampling focused on these reaches occurred between November 4 and December 6, 2021. Sampling was limited to areas accessible by truck.

A total of 2,429 fish were collected from the GVIC canal, including 1,157 roundtail chub (*Gila robusta*), 814 speckled dace (*Rhinichthys osculus*), 341 flannelmouth sucker (*Catostomus latipinnis*), 105

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bluehead sucker (*Catostomus discobolus*), 9 brown trout (*Salmo trutta*), 2 flannelmouth X bluehead sucker, and 1 bonytail (*Gila elegans*). Of these species, 64 bluehead sucker, 54 roundtail chub, 6 flannelmouth sucker, and 1 flannelmouth X bluehead sucker received PIT tags before translocation back to the river. A few fish (3 roundtail chub, 1 flannelmouth sucker, and 1 bonytail) had been PIT tagged prior to being captured during canal salvage. Multiple species collected included various life stages. Juvenile fish dominated the length frequency histograms for roundtail chub, flannelmouth sucker, and bluehead sucker (Figures 1-3). Based upon field observations, multiple life stages of the other species were present as well.

The endangered bonytail was 286 mm TL when collected on November 9, 2021, near the intersection of 25 Road and G Road. PIT tag data reveals that this fish had previously been stocked on July 9, 2020, at Riverbend Park boat launch (at river mile {RMI} 183.6) in Palisade, CO. The stocking location is downstream of the GVIC intake. After collection this fish was translocated to the Colorado River at Los Colonias Park boat launch (RMI 174.0).

Grand Valley Water User's (GVWU) canal:

The roads adjacent to the GVWU canal were driven to assess areas of the canal for potential locations that could have stranded fish. The canal was driven from the point where the canal enters the Grand Valley through a series of tunnels, east of Palisade, to approximately 21 Road and K Road where two reaches were determined to have stranded fish. Sampling focused on these reaches occurred from November 9-10, 2021. Sampling was limited to areas accessible by truck. Crews traveled the canal roads and sampled pools that could hold fish.

A total of 12 fish were collected from the GVWU canal, including 6 flannelmouth sucker, 4 roundtail chubs, 1 bluehead sucker, and 1 brown trout. Of these species, 4 flannelmouth sucker, 1 bluehead sucker, and 1 roundtail chub received a PIT tag before translocation back to the river. No endangered fish were collected in the GVWU canal during FY-2022 (November-December 2021) fish salvage efforts.

The tables below provide a running total of all fish collected in the GVIC (Table 1) and GVWU (Table 2) canals for 2002-2021 with the exception of 2020. CPW led this effort internally and outside of the UCRRP purview during 2019 and 2020. GJFWCO oversaw canal salvage operations from 2002-2018. Efforts varied considerably throughout the 20 years of sampling. Therefore, direct comparison of individual species collected, and overall total number of fish collected, is not advisable.

Annual variations of numbers of fish collected from canals:

The number of fish collected during canal salvage operations in GVWU canal were very low, compared to fish collected in previous years. River flows were low during several months of the water year preceding canal shutdown and draining in Fall 2021. In addition, the canals had heavy sediment deposition, likely from erosion events upstream. These events likely caused some mortality within the canals/river as well as limiting habitat for the fish to take refuge. I would speculate that a combination of decreased habitat and mortality events resulted in less fish residing in the canal. The reduction of fish in the canal and reduced efforts during salvage efforts likely contributed to the lower numbers of fish collected during salvage efforts.

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Conversely, the numbers of native fish collected in GVIC canal were average compared to previous years.

Recommendations:

1. Continue operating fish screens.
2. Continue fall fish salvage efforts to collect and translocate native fish that have become entrained in the canals.

Project Status:

On track and ongoing

FY-2022 Budget Status

Funds Provided: USFWS \$15,632, CPW in kind contribution.

Funds Expended: \$15,632

Difference: -0-

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

Recovery Program funds spent for publication charges: -0-

Status of Data Submission

Data has been uploaded in STReaMS.

Signed:

Mike Berg

Principal Investigator

November 2, 2022

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Figure 1.

Length frequency histogram of bluehead sucker collected during 2021 fish salvage efforts in the Grand Valley Water User's (GVWU) and Grand Valley Irrigation Company's (GVIC) canals.

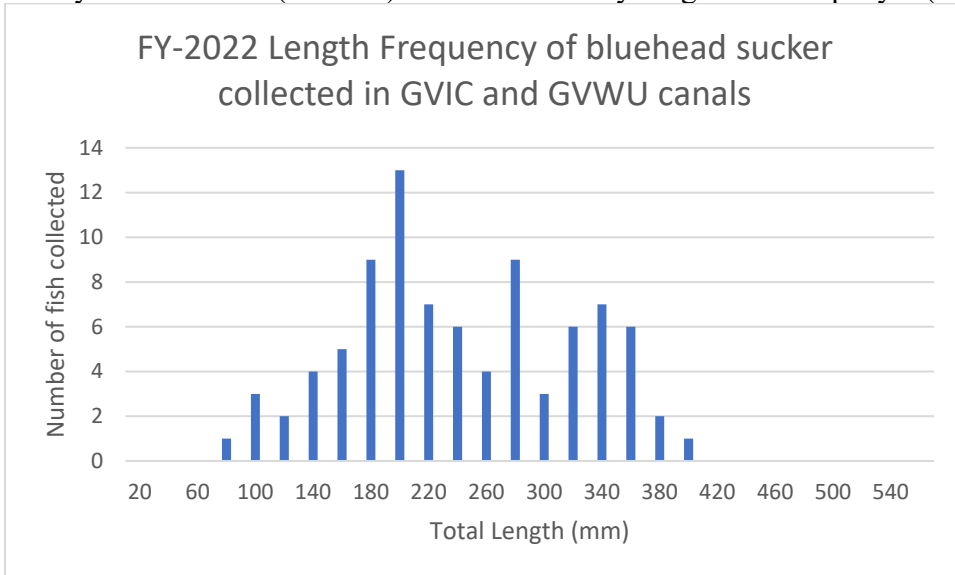
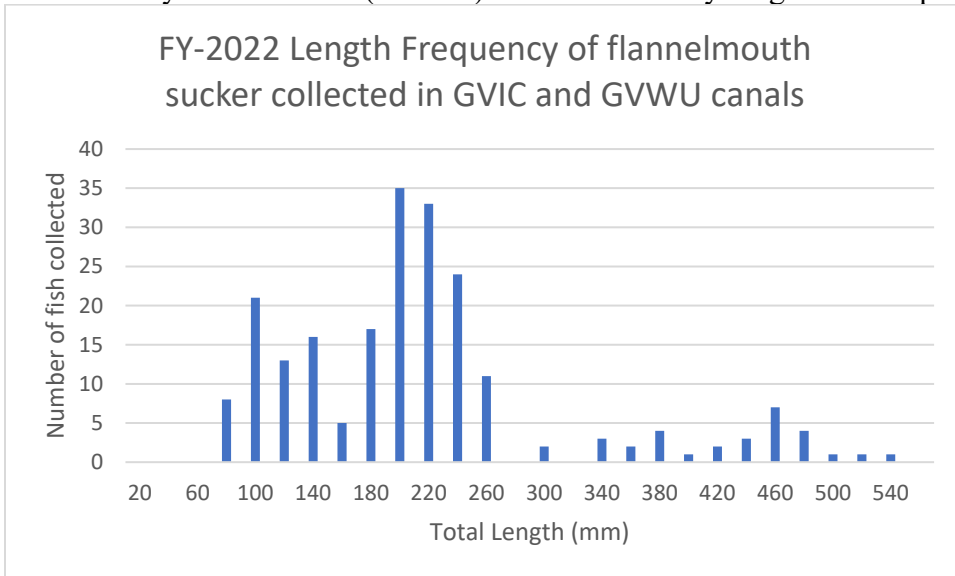


Figure 2.

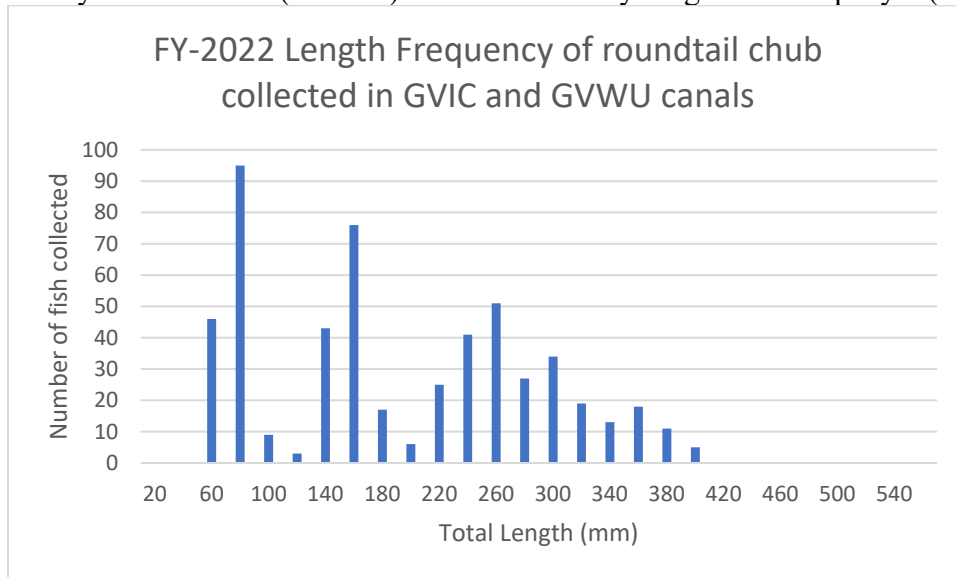
Length frequency histogram of flannelmouth sucker collected during 2021 fish salvage efforts in the Grand Valley Water User's (GVWU) and Grand Valley Irrigation Company's (GVIC) canals.



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Figure 3.

Length frequency histogram of roundtail chub collected during 2021 fish salvage efforts in the Grand Valley Water User's (GVWU) and Grand Valley Irrigation Company's (GVIC) canals.



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Table 1.

Total numbers of native fish collected by species and year in the Grand Valley Irrigation Company (GVIC) canal.

CALENDAR YEAR	FM	BH	FM X BH	RT	SD	MF	MS	RZ	CS	BT	MT	BN	TOTALS
2021	341	105	2	1157	814	0	0	0	0	1	0	9	2,429
2020	-	-	-	-	-	-	-	-	-	-	-	-	-
2019	1212	139	2	336	155	0	0	13	0	6	4	5	1,872
2018	272	18	2	452	199	0	0	1	0	0	-	-	944
2017	533	87	0	380	964	0	0	0	0	0	-	-	1,964
2016	552	60	0	902	1,919	0	0	8	0	1	-	-	3,442
2015	458	25	0	389	131	0	0	2	0	0	-	-	1,005
2014	657	12	0	139	26	1	0	1	0	9	-	-	845
2013	467	34	0	1,669	153	0	0	1	0	3	-	-	2,327
2012	2,386	451	0	2,453	450	0	0	2	0	2	-	-	5,744
2011	428	17	1	258	6	1	0	2	0	0	-	-	713
2010	571	4	0	478	80	0	0	0	0	0	-	-	1,061
2009	877	48	0	79	232	4	0	0	0	0	-	-	1,240
2008	892	59	0	150	0	0	0	1	0	0	-	-	1,102
2007	128	3	0	35	0	0	0	0	0	0	-	-	166
2006	2,252	123	0	1,322	0	0	0	1	0	0	-	-	3,698
2005	897	80	0	730	0	0	0	0	0	0	-	-	1,707
2004	1,783	22	0	588	26	0	0	0	0	0	-	-	2,419
2003	-	-	-	-	-	-	-	-	-	-	-	-	2,908
2002	-	-	-	-	-	-	-	-	-	-	-	-	3,371

Fish Species: FM-flannelmouth sucker, BH-bluehead sucker, RT-roundtail chub, SD-speckled dace, MF-mountain whitefish, MS-mottled sculpin, RZ-razorback sucker, CS-Colorado pikeminnow, BT- bonytail, MT-mountain sucker, BN-brown trout

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Table 2.

Total numbers of native fish collected by species and year in the Grand Valley Water User's (GVWU) canal.

CALENDAR YEAR	FM	BH	FM X BH	RT	SD	MF	MS	RZ	CS	BT	MT	BN	TOTALS
2021	6	1	0	4	0	0	0	0	0	0	0	1	12
2020	-	-	-	-	-	-	-	-	-	-	-	-	-
2019	2645	213	4	1260	41	1	0	2	0	0	19	1	4,186
2018	867	87	0	956	346	0	0	0	0	0	-	-	2,256
2017	6,649	79	0	21,161	10,833	0	0	0	0	0	-	-	38,722
2016	4,004	183	0	25,455	24,612	0	0	0	0	0	-	-	54,254
2015	6,310	85	0	22,290	20,414	0	0	2	0	0	-	-	49,101
2014	19	2	0	2	8	0	0	0	0	0	-	-	31
2013	598	66	0	5,732	1,004	0	0	2	0	8	-	-	7,410
2012	1,574	632	0	5,924	3,942	0	0	1	0	2	-	-	12,075
2011	808	77	1	16,813	328	3	19	3	0	0	-	-	18,052
2010	1,517	88	0	23,299	1,043	30	0	0	0	0	-	-	25,977
2009	6,255	797	0	26,527	5,135	7	1	0	0	0	-	-	38,722
2008	738	77	0	754	23	6	0	0	0	0	-	-	1,598
2007	433	93	0	6,543	70	0	0	1	0	0	-	-	7,140
2006	-	-	-	-	-	-	-	-	-	-	-	-	-
2005	722	173	0	3,815	48	0	0	0	1	0	-	-	4,759
2004	893	118	0	5,166	140	0	1	0	24	0	-	-	6,343
2003	-	-	-	-	-	-	-	-	-	-	-	-	~ 3,000
2002	-	-	-	-	-	-	-	-	-	-	-	-	~ 1,100

Fish Species: FM-flannemouth sucker, BH-bluehead sucker, RT-roundtail chub, SD-speckled dace, MF-mountain whitefish, MS-mottled sculpin, RZ-razorback sucker, CS-Colorado pikeminnow, BT- bonytail, MT-mountain sucker, BN-brown trout