UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

2024 ANNUAL REPORT

Project Title
Annual Operation and Maintenance of the Fish Passage Structure at the Government Highline Diversion Dam on the Upper Colorado River and Price-Stubb Fish Passage

Bureau of Reclamation Agreement Numbers and Grant Periods:
R20PG00024
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Abstract:
The purpose of this project is to collect and summarize annual data on the overall number of large-bodied fish, number of different fish species, and seasonal distribution of fish use at the fish passageway at the Government Highline diversion dam (aka Grand Valley Water Users [GVWU] dam) on the upper Colorado River in De Beque Canyon. This fish passage structure has been operated during 18 of the last 20 years, since construction was completed in August 2004.

In 2024, GVWU Fish Passage was operational from 23 April through 25 July, and again from 23 September through 26 September. The ladder was closed 26 July through 22 September due to inadequate flows for operation. A total of 10,332 fish used the fish passage over a 97-day period in 2024. Two endangered bonytail (*Gila elegans*), two flannelmouth by razorback sucker hybrids, and 20 endangered razorback sucker (*Xyrauchen texanus*) made passage.

Study Schedule:
2004-Ongoing

Relationship to RAP:
Colorado River Action Plan: Mainstem

II.B.	Restore native fish passage at instream barriers.
II.B2.	Restore fish passage at Price-Stubb
II.B.2.a.(4)	Operate and maintain
II.B.2.a.(5)	Monitor and evaluate success
II.B.3.	Restore fish passage at Government Highline (aka Grand Valley Water Users).
II.B.3.a.(3)	Operate and maintain

Accomplishment of 2024 Tasks and Deliverables, Discussion of Findings and Shortcomings:

GVWU Fish Passage
In 2024, two bonytail were collected in the GVWU fish trap (Tables 1, 2, and 3). These fish had total lengths of 279 and 219 mm. Both were stocked near Fruita, Colorado in July 2024. One-hundred-sixty-two bonytail have now made passage at this facility (Table 3).

In 2024, no Colorado pikeminnow (*Ptychocheilus lucius*) made passage at the GVWU fish passage. Twelve Colorado pikeminnow have now made passage at this facility (Table 3).

In 2024, no humpback chub (*Gila cypha*) made passage at the GVWU fish passage. Fourteen humpback chub have made passage at this facility (Tables 3). In the late 1970's Dr. Richard Valdez, while working for our office, described a population of humpback "like" chub collected from the Beavertail stretch of DeBeque Canyon of the Colorado River (Valdez et al. 1982). In addition, fourteen humpback chub have made passage through the Grand Valley Water User's Fish Passage since 2005. Our office sampled Debeque Canyon in 2022 (collecting seven humpback chub) and in 2023 (collecting four humpback chub). Only one humpback chub collected in 2023 was a recapture of a 2022 fish. None of the ten individuals collected in the canyon had been encountered prior to these efforts. A small caudal fin clip was collected from these specimens for future genetic testing (Francis, 2022 and 2023).

In 2024, 20 razorback sucker were collected in the GVWU fish trap (Tables 1, 2 and 3). These fish ranged in total length from 359 to 524 mm with a mean of 458 mm. These fish were stocked near Rifle, Rulison, or Debeque, Colorado between the years of 2001 and 2023. A total of 381 razorback sucker have now made passage at this facility (Table 3).

The first two flannelmouth by razorback sucker hybrids made passage at GVWU fish passage in 2024. These fish were both tagged during this encounter and their total lengths were 484 and 500 mm.

A total of 10,332 fish were collected in the trap of the GVWU Dam fish passage from 23 April through 25 July, and again from 23 September through 26 September. The highest totals ever collected in the trap were in 2014 (n = 24,670) and 2022 (n = 21,387; Table 4). This is the eighteenth year of operation since the structure was built. This facility has been operated for different lengths of time during various times of year, since 2004, thus making specific year-to-year comparisons about yearly catch totals and species composition discouraged. In fiscal-year-2024 (FY-24), GVWU fish passage was open 97 of a possible 183 days during the irrigation season. GVWU dam is one of three irrigation dams in the Colorado River supplying water to the Grand Valley. All three dams have fish passages installed. The lowest dam of the three is the Grand Valley Irrigation Company's (GVIC) Dam. The GVIC fish passage is a non-selective flow through (no fish trap) passageway that is closed during low water conditions so downstream irrigators can use their legally allocated water right. The middle dam is Price-Stubb and it has a non-selective flow through fish passage that can get plugged by debris after elevated springtime flows. Table 8 provides the percent of each month in FY-24 that each fish passage was open and operating allowing for fish to migrate upstream into 55 miles of critical habitat that was previously fragmented from lower reaches for nearly 100 years.

Native fishes (and their hybrid forms) accounted for 77.9% (n = 8,045) of the total catch in 2024 (Table 4). Nonnative fishes (and native by nonnative hybrid fish) accounted for 22.1% (n = 2,287) of the total catch in 2024. For 2024, flannelmouth sucker (*Catostomus latipinnis*), bluehead sucker (*Catostomus discobolus*, and roundtail chub (*Gila robusta*) combined accounted for almost 70% of the total catch (Table 1), and these three native species have dominated the total catch since the ladder began operation. The most prevalent nonnative fish found in the fish trap from 2013 to 2024 was white sucker (*Catostomus commersonii*). Channel catfish (*Ictalurus punctatus*), which were not found between GVWU and Price-Stubb dams prior to completion of the non-selective fish passage at Price-Stubb dam in April 2008, were once again collected in the GVWU fish passage during 2024 (n = 8; Table 1).

Five largemouth bass (*Micropterus salmoides*; total lengths ranged from 164 to 346 mm with a mean of 209 mm) and 12 smallmouth bass (*Micropterus dolomieu*; total lengths ranged from 232 to 300 mm with a mean of 262 mm) were also collected and removed in 2024. No gizzard shad (*Dorosoma cepedianum*) were collected and removed in 2024 (Table 1).

All fish found in the fish trap were counted and sorted by species. All native fish, as well as nonnative rainbow trout (*Oncorhynchus mykiss*), brook trout (*Salvelinus fontinalis*), lake trout (*Salvelinus namaycush*), and brown trout (*Salmo trutta*) were released upstream of GVWU diversion dam. All channel catfish were returned alive immediately downstream from the dam. All other nonnative fish, including native X nonnative hybrid suckers were removed.

Price-Stubb Antenna

The Price-Stubb PIT tag antennas (5 miles downstream of GVWU) produced multiple detections on 1,198 unique PIT tags (FY record) during FY 2024 (Table 5); many of these tags were detected on multiple days. We have reported in past years that a recurring and problematic issue has been data for many PIT-tagged fish whose original tagging information was not being submitted to STReaMS: in FY 2024 the number of unknown tags has remained high at 40% (n = 484). Most of these unidentified tags were not in the PIT tag distribution database, so they likely represent "three species" tags deployed by Colorado Parks and Wildlife. Bluehead sucker (n = 37), bonytail (n = 178), *Gila* unidentifiable to species (n = 1), Colorado pikeminnow (n = 4), flannelmouth sucker (n = 348), razorback sucker (n = 87), roundtail chub (n = 58), flannelmouth sucker X razorback sucker hybrids (n=1), and flannelmouth sucker X bluehead sucker hybrids (n=1) made up the individual PIT tag detections that could be found in STReaMS (many were detected on multiple dates) during FY 2024. Table 6 gives a detailed breakdown of the fish that were detected by the antenna by month, and Table 7 gives annual individual totals by species.

Operation and Maintenance

In 2019, GVWU employees used a track hoe to remove sediment in front of the attraction flow, fish ladder entrances, and fish return tube. Spring runoff in 2020-2022 was moderate in magnitude and duration and redeposited only a small amount of sediment which allowed the facility to operate properly. Spring runoff in 2023 and 2024 was above average in both magnitude and duration, and there is now enough sediment (cumulation over the years) in front of the fish return tube and forebay to the fish passage that track hoe removal is warranted again. In spring 2016 through 2024, GVWU opened the roller closest to the fish passage for several weeks during high spring flows to help sluice away the sediment bar. This has helped tremendously with sediment management. It is our recommendation that this action be continued into future years, as the natural sluicing provided during high flows can move considerably more sediment than can physical removal via track hoe.

Beginning in 2022, the slide gate at the top of the fish passage no longer fully closes squarely and water cannot be fully diverted back to the river. We suggest the gate needs to be fully dismantled and repaired in a future year during the winter.

Weeds were sprayed and removed from the property throughout 2024.

At the Price-Stubb non-selective fish passage facility (5 miles downstream of the GVWU Fish Passage), debris and trash build-up were high after a high and protracted spring runoff. We worked with Bureau of Reclamation (BOR), the water users, and a contractor who operated a track-hoe to clean the debris out of the passage on 24th July 2024. We provided four staff to wade/swim between the baffles and remove the debris the track-hoe couldn't access.

Additional noteworthy observations:
Our office (i.e., Benjamin Schleicher) deployed portable submersible antenna throughout GVWU Fish Ladder during the FY 2024 season of operation and had one at the base of the ladder for the entire year. Those data are available in STReaMS.

Recommendations:

Biological:

Continue to collect information on the number of fish, by species, in the fish trap of the GVWU fish passageway in 2025 starting about mid-April and running through mid-October, if river flows and funding allow. These tentative dates may need to be adjusted, based upon the ability of the adjacent Grand Valley Water Users canal, as well as downstream water diversions, to get sufficient quantities of water to fill their canals.

Continue collecting data from Price-Stubb antenna.

Operation and Maintenance:

The Government Highline (aka GVWU) fish ladder is located on the inside (river left) bend of the river, directly across the river from the GVWU canal head gates, which means that this location will naturally sediment in over time, and manual sediment removal will have to be repeated at regular (1-2 year) intervals. Sediment removal via sluicing (when flows are over 4,000 CFS at this location) and track hoe removal is recommended in FY 2025. Unfortunately, the vegetated bank on river left has reformed (as it did within one year following 2015 sediment removal). The reforming and downstream migration of the heavily vegetated, river left bank causes a slack water (almost backwater) area to form in front of the fish return tube, which in turn causes fish being returned to the river (especially during low water periods) via the fish return tube to be dumped into shallow, still water. This reduces their ability to identify the adjacent main river channel and its current that naturally leads them to move into deeper, flowing water (ideally moving upstream) after being returned to the river. Instead, they tend to linger in this slack water area, just outside the fish return tube, until the fish ladder entrance is opened back up. Once the fish ladder entrance is opened back up, strong flows at that site can lead to fish becoming impinged on the upstream trash racks, leading to injury and/or death. If/when sediment removal is performed in front of the fish ladder entrance via track hoe, we strongly recommend removing/peeling back as much of the river left bank immediately upstream of the fish return tube as is feasible, to facilitate quick and safe movement of fish away from the fish return tube area. Again, this activity will need to be performed on a regular (1-2 year) basis.

During spring high flow periods of 2014-2024 (usually at flows $\geq$ 4,000 CFS at the Cameo gage), GVWU has opened the roller closest to the fish passage. The natural sluicing action that this causes is

very effective at removing large amounts of sediment from in front of the fish passage in a very short period of time. We feel that having GVWU continue to sluice during spring high flow periods by raising the roller closest to the fish passage is highly beneficial.

Beginning in 2022, the slide gate at the top of the fish passage no longer fully closes squarely and water cannot be fully diverted back to the river. We suggest the gate needs to be fully dismantled and repaired in a future year during the winter.

The cam connection for the trash pump was damaged when pulling the pump for winterization in 2023. That pipe was repaired prior to FY-2024 operation.

Project Status:
On track, ongoing.

Status of Data Submission
Data was uploaded into STReaMS 10/16/2024.

Signed:
Travis Francis
Principal Investigator
11/27/2024

Literature Cited

Francis, T.A. 2023. Population Estimate of Humpback Chub (*Gila cypha*) in Black Rocks. Annual Report from the U.S. Fish and Wildlife Service to the Upper Colorado River Endangered Fish Recovery Program, Project Number C4b-GVP. Grand Junction, Colorado.

Francis, T.A. 2022. Population Estimate of Humpback Chub (*Gila cypha*) in Black Rocks. Annual Report from the U.S. Fish and Wildlife Service to the Upper Colorado River Endangered Fish Recovery Program, Project Number C4b-GVP. Grand Junction, Colorado.

Valdez, R., P. Mangan, R. Smith, B. Nilson. 1982. Upper Colorado River Investigation (Rifle, Colorado to Lake Powell, Utah). U.S. Fish and Wildlife Service report to the U.S. Bureau of Reclamation.

Table 1. Total number of juvenile and adult fish captured in the fish trap of the passageway at the Grand Valley Water Users Diversion Dam during 2024.

Common Name	Number of Fish	Percent of Total Fish
NATIVE FISH		
bluehead sucker	2,286	14.37
bonytail	2	0.02
Colorado pikeminnow	0	0.00
flannelmouth sucker	3,752	36.31
humpback chub	0	0.00
mountain whitefish	49	0.47
razorback sucker	20	0.19
roundtail chub	1,910	18.49
speckled dace	1	0.01
TOTAL	**8,020**	**77.62**
NONNATIVE FISH		
black bullhead	3	0.03
bluegill	2	0.02
brown trout	20	0.19
channel catfish	8	0.08
common carp	52	0.50
green sunfish	2	0.02
gizzard shad	0	0.00
largemouth bass	5	0.05
longnose sucker	28	0.27
northern pike	0	0.00
rainbow trout	20	0.19
smallmouth bass	12	0.12
white sucker	1,142	11.05
TOTAL	**1,294**	**12.52**
HYBRID FISHES		
Native X Native Hybrids:		
razorback X flannelmouth sucker	2	0.02
bluehead X flannelmouth sucker	23	0.22
Native X Nonnative Hybrids:		
bluehead X white sucker	206	1.99
flannelmouth X white sucker	785	7.60
bluehead X longnose sucker	2	0.02
ALL TOTALS	**10,332**	**100.00**

Table 2. 2024 GVWU PIT tagged fish histories.

Month-year of Passage	Species	PIT Tag Histories
April-2024	razorback sucker N=3	N=1 stocked August 2016 in Rifle at CO RMI 240.7; this fish also made passage at GVWU in August 2019 and was captured 2022 near Rifle at CO RMI 239.9 N=2 stocked September 2020 in Rifle at CO RMI 240.7; one fish also made passage at GVWU in August 2023
May-2024	flannelmouth X razorback sucker hybrid N=2	N=2 tagged during this encounter
	razorback sucker N=2	N=1 stocked September 2013 in Rifle at CO RMI 240.7 N=1 stocked September 2020 in Rifle at CO RMI 240.7
	roundtail chub N=15	N=4 tagging encounter not in STReaMS and PIT tag was not distributed by Recovery Programs N=11 tagged during this encounter
June-2024	razorback sucker N=1	N=1 stocked August 2017 in Rifle at CO RMI 240.7
	roundtail chub N=2	N=2 tagging encounter not in STReaMS and PIT tag was not distributed by Recovery Programs
July-2024	razorback sucker N=14	N=1 stocked October 2001 near Rulison at CO RMI 226.5; this fish also made passage at GVWU in July 2016, June 2020, and September 2021 N=2 stocked October 2014 in Rifle at CO RMI 240.7; one fish also made passage at GVWU in July 2023 N=1 stocked April 2015 in Rifle at CO RMI 240.7 N=1 stocked September 2016 in Rifle at CO RMI 240.7 N=1 stocked September 2018 in Rifle at CO RMI 240.7; this fish also made passage at GVWU in July 2023 N=2 stocked September 2020 in Rifle at CO RMI 240.7; one fish also made passage at GVWU in June 2022 and June 2023 N=2 stocked September 2021 in Rifle at CO RMI 240.7; one fish also made passage at GVWU in August 2023 N=2 stocked September 2022 in Rifle at CO RMI 240; one was recaptured July 2023 near Palisade at CO RMI 187.2 N=1 stocked July 2023 near CDOT Pond in Debeque Canyon at CO RMI 205.6 N=1 stocked September 2023 in Rifle at CO RMI 240 N=1 stocked July 2023 in Rifle at CO RMI 240 N=1 initial tagging encounter not in STReaMS; this fish also made passage at GVWU in July 2023
	roundtail chub N=2	N=2 tagging encounter not in STReaMS and PIT tag was not distributed by Recovery Programs
September-2024	bonytail N=2	N=2 stocked July 2024 near Fruita at CO RMI 157

Table 3. Number of Colorado pikeminnow, razorback sucker (and hybrids), bonytail and humpback chub captured in the fish trap of the Grand Valley Water User's passageway from 2005 through 2024.

Year	Colorado pikeminnow	razorback sucker	bonytail	humpback chub	flannelmouth X razorback sucker
2005	0	1	0	1	0
2006	0	0	0	0	0
2007	Fish Passage not operated due to insufficient flows				
2008	0	1	0	0	0
2009	0	0	0	0	0
2010	0	0	0	0	0
2011	0	0	22	2	0
2012	Fish Passage not operated due to insufficient flows				
2013	0	2	0	0	0
2014	1	25	14	0	0
2015	1	52	10	0	0
2016	1	36	44	0	0
2017	2	130	12	2	0
2018	0	4	0	2	0
2019	1	29	16	4	0
2020	0	6	3	0	0
2021	0	17	29	0	0
2022	2	11	6	1	0
2023	4	47	4	2	0
2024	0	20	2	0	2
Totals	12	381	162	14	2

Table 4. Comparison of the total number of fish, total native vs. nonnative fishes, and percent composition of native and nonnative fish captured in the fish trap of the Grand Valley Water User's passageway between 2005 and 2024.

Year	Total Number of Fish	Total Native Fishes	Total Nonnative Fishes	Percent Composition		Number of days operated
				Native Fishes	Nonnative Fishes	
2004	fish passageway & fish trap not run due to insufficient flows					0
2005	4,638	2,867	1,771	61.8	38.2	12
2006	11,978	10,747	1,231	89.7	10.3	41
2007	fish passageway & fish trap not run due to insufficient flows					0
2008	10,788	9,663	1,125	89.6	10.4	166
2009	12,402	11,286	1,116	91	9	178
2010	18,390	16,358	2,032	89	11	182
2011	8,875	6,870	2,005	77.4	22.6	178
2012	fish passageway & fish trap not run due to insufficient flows					0
2013	13,401	10,702	2,699	79.9	20.1	49
2014	24,670	17,253	7,417	69.9	30.1	177
2015	14,248	12,094	2,154	84.9	15.1	140
2016	15,889	13,754	2,135	86.6	13.4	136
2017	13,581	11,352	2,229	83.6	16.4	183
2018	10,210	9,058	1,152	88.7	11.3	58
2019	11,862	9,339	2,523	78.7	21.3	146
2020	6,920	5,815	1,105	84	16	58
2021	14,190	10,438	3,752	73.6	26.4	52
2022	21,387	14,767	6,620	69.1	30.9	76
2023	14,906	11,236	3,670	75.4	24.6	160
2024	10,332	8,045	2,287	77.9	22.1	97
Totals	**223,761**	**180,408**	**43,353**	**80.6**	**19.4**	**2,089**

Table 5. Key for initial encounter location in Table 6.

Key For Initial Encounter Location		
Upper CO River Reach	RMI 193.8-248	Above GVWU Dam to Silt
Grand Valley Reach	RMI 152.6-193.7	Loma to GVWU Dam
Ruby Horsethief Reach	RMI 124.8-152.5	Westwater Wash to Loma
Westwater Reach	RMI 111.1-124.7	Above Cisco Launch to below Westwater Wash
Lower CO River Reach	RMI 0.0-111.0	Green River Confluence to Cisco Launch

Table 6. FY2024 Price-Stubb PIT Antenna Detections.

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Oct/23	bluehead sucker	2	Unknown	2021	Canal Salvage	Grand Valley Reach
Oct/23	bluehead sucker	1	Unknown	2021	CPW 3-Spp	Grand Valley Reach
Oct/23	bluehead sucker	1	Downstream	2021	Canal Salvage	Grand Valley Reach
Oct/23	bonytail	14	Unknown	2022(n=1), 2023(n=13)	ONFH-GJ Stock	Upper CO River Reach
Oct/23	bonytail	1	Unknown	2023	ONFH-GJ Stock	Grand Valley Reach
Oct/23	bonytail	14	Unknown	2023	MUMMA stock	Upper CO River Reach
Oct/23	bonytail	1	Downstream	2023	MUMMA stock	Upper CO River Reach
Oct/23	flannelmouth sucker	2	Unknown	2019, 2021	Canal Salvage	Grand Valley Reach
Oct/23	razorback sucker	6	Unknown	2015 (n=1), 2023 (n=5)	ONFH-GJ Stock	Upper CO River Reach
Oct/23	roundtail chub	1	Unknown	2020	Westwater HB Estimate	Westwater Reach
Oct/23	Unknown	1	Unknown	Unknown	Distributed to ONFH-GJ	Unknown
Oct/23	Unknown	3	Unknown	Unknown	Not a Program Tag	Unknown
Nov/23	bluehead sucker	1	Unknown	2021	Canal Salvage	Grand Valley Reach

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Nov/23	bonytail	20	Unknown	2023	ONFH-GJ Stock	Upper CO River Reach
Nov/23	bonytail	74	Unknown	2023	MUMMA stock	Upper CO River Reach
Nov/23	bonytail	1	Downstream	2023	ONFH-GJ Stock	Upper CO River Reach
Nov/23	bonytail	1	Downstream	2023	MUMMA stock	Upper CO River Reach
Nov/23	roundtail chub	1	Unknown	2017	CPW 3-Spp	Upper CO River Reach
Nov/23	razorback sucker	2	Unknown	2022, 2023	ONFH-GJ Stock	Upper CO River Reach
Nov/23	Unknown	3	Unknown	Unknown	Not a Program Tag	Unknown
Dec/23	bonytail	3	Unknown	2023	ONFH-GJ Stock	Upper CO River Reach
Dec/23	bonytail	17	Unknown	2023	MUMMA stock	Upper CO River Reach
Dec/23	bonytail	1	Downstream	2023	MUMMA stock	Upper CO River Reach
Dec/23	roundtail chub	1	Unknown	2021	CPW 3-Spp	Upper CO River Reach
Jan/24	bluehead sucker	1	Unknown	2021	Canal Salvage	Grand Valley Reach
Jan/24	bonytail	3	Unknown	2023	ONFH-GJ Stock	Upper CO River Reach
Jan/24	bonytail	7	Unknown	2023	MUMMA stock	Upper CO River Reach
Jan/24	razorback sucker	1	Unknown	2022	ONFH-GJ Stock	Upper CO River Reach
Jan/24	Unknown	2	Unknown	Unknown	Not a Program Tag	Unknown
Feb/24	bonytail	4	Unknown	2022 (n=1), 2023 (n=3)	ONFH-GJ Stock	Upper CO River Reach
Feb/24	bonytail	4	Unknown	2023	MUMMA stock	Upper CO River Reach
Feb/24	razorback sucker	2	Unknown	2023	ONFH-GJ Stock	Upper CO River Reach
Mar/24	bluehead sucker	1	Upstream	2021	Canal Salvage	Grand Valley Reach

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Mar/24	bluehead sucker	2	Unknown	2021	CPW 3-Spp	Grand Valley Reach
Mar/24	bluehead sucker	3	Unknown	2018	CPW 3-Spp	Unknown
Mar/24	bluehead sucker	4	Unknown	2019 (n=1), 2021 (n=3)	Canal Salvage	Grand Valley Reach
Mar/24	bonytail	3	Unknown	2023	MUMMA stock	Upper CO River Reach
Mar/24	flannelmouth sucker	2	Upstream	2014, 2021	CPW 3-Spp	Grand Valley Reach
Mar/24	flannelmouth sucker	2	Upstream	2018	CPW 3-Spp	Unknown
Mar/24	flannelmouth sucker	2	Upstream	2019	Canal Salvage	Grand Valley Reach
Mar/24	flannelmouth sucker	30	Unknown	2014 (n=6), 2016 (n=5), 2019 (n=1), 2021 (n=18)	CPW 3-Spp	Grand Valley Reach
Mar/24	flannelmouth sucker	10	Unknown	2018	CPW 3-Spp	Unknown
Mar/24	flannelmouth sucker	5	Unknown	2019 (n=4), 2021 (n=1)	Canal Salvage	Grand Valley Reach
Mar/24	roundtail chub	1	Upstream	2017	Black Rocks HB Estimate	Ruby Horsethief Reach
Mar/24	roundtail chub	2	Unknown	2020, 2021	Black Rocks HB Estimate	Ruby Horsethief Reach
Mar/24	roundtail chub	1	Unknown	2019	Canal Salvage	Grand Valley Reach
Mar/24	roundtail chub	3	Unknown	Unknown	Initial Tagging encounter not in STReaMS	Unknown
Mar/24	roundtail chub	1	Downstream	2017	CPW 3-Spp	Upper CO River Reach
Mar/24	roundtail chub	1	Downstream	2020	Westwater HB Estimate	Westwater Reach
Mar/24	razorback sucker	3	Unknown	2023	ONFH-GJ Stock	Upper CO River Reach
Mar/24	Unknown	4	Upstream	Unknown	Not a Program Tag	Unknown
Mar/24	Unknown	76	Unknown	Unknown	Not a Program Tag	Unknown
Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Mar/24	Unknown	3	Downstream	Unknown	Not a Program Tag	Unknown
Apr/24	bluehead sucker	1	Upstream	2018	Canal Salvage	Unknown
Apr/24	bluehead sucker	6	Unknown	2016 (n=1), 2021 (n=5)	CPW 3-Spp	Grand Valley Reach
Apr/24	bluehead sucker	5	Unknown	2018	CPW 3-Spp	Unknown
Apr/24	bluehead sucker	4	Unknown	2019	Canal Salvage	Grand Valley Reach
Apr/24	bluehead sucker	1	Downstream	2019	Canal Salvage	Grand Valley Reach
Apr/24	bonytail	1	Unknown	2020	ONFH-GJ Stock	Grand Valley Reach
Apr/24	bonytail	2	Unknown	2023	ONFH-GJ Stock	Upper CO River Reach
Apr/24	Colorado pikeminnow	2	Unknown	2014, 2019	Colorado River CPM Estimate	Lower CO River Reach
Apr/24	Colorado pikeminnow	1	Unknown	2014	Colorado River NNF Removal	Lower CO River Reach
Apr/24	flannelmouth sucker	7	Upstream	2014 (n=3), 2016 (n=1), 2021 (n=3)	CPW 3-Spp	Grand Valley Reach
Apr/24	flannelmouth sucker	3	Upstream	2019 (n=2), 2021 (n=1)	Canal Salvage	Grand Valley Reach
Apr/24	flannelmouth sucker	136	Unknown	2014 (n=29), 2016 (n=39), 2017 (n=1), 2019 (n=4), 2021 (n=59), 2022 (n=4)	CPW 3-Spp	Grand Valley Reach
Apr/24	flannelmouth sucker	44	Unknown	2018	CPW 3-Spp	Unknown
Apr/24	flannelmouth sucker	54	Unknown	2019 (n=51), 2021 (n=3)	Canal Salvage	Grand Valley Reach
Apr/24	flannelmouth sucker	2	Unknown	2014	CPW 3-Spp	Roubideau Creek
Apr/24	flannelmouth sucker	5	Downstream	2016 (n=2), 2021 (n=3)	CPW 3-Spp	Grand Valley Reach
Apr/24	flannelmouth sucker	1	Downstream	2018	CPW 3-Spp	Unknown
Apr/24	flannelmouth sucker	3	Downstream	2019	Canal Salvage	Grand Valley Reach
Apr/24	flannelmouth X razorback sucker hybrid	1	Unknown	2021	Colorado River CPM Estimate	Lower CO River Reach
Apr/24	roundtail chub	1	Unknown	2021	CPW 3-Spp	Upper CO River Reach

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Apr/24	roundtail chub	3	Unknown	2021	Blackrocks HB Estimate	Ruby Horsethief Reach
Apr/24	roundtail chub	4	Unknown	2017 (n=1), 2020 (n=3)	Westwater HB Estimate	Westwater Reach
Apr/24	roundtail chub	1	Unknown	Unknown	Initial Tagging encounter not in STReaMS	Unknown
Apr/24	roundtail chub	1	Downstream	2021	Westwater HB Estimate	Westwater Reach
Apr/24	razorback sucker	1	Upstream	2016	ONFH-GJ Stock	Upper CO River Reach
Apr/24	razorback sucker	1	Unknown	2020	Colorado River CPM Estimate	Grand Valley reach
Apr/24	razorback sucker	13	Unknown	2020 (n=2), 2022 (n=1), 2023 (n=10)	ONFH-GJ Stock	Upper CO River Reach
Apr/24	Unknown	14	Upstream	Unknown	Not a Program Tag	Unknown
Apr/24	Unknown	3	Unknown	Distributed to CPW 2005 (n=1), 2013 (n=2)	Initial Tagging encounter not in STReaMS	Unknown
Apr/24	Unknown	244	Unknown	Unknown	Not a Program Tag	Unknown
Apr/24	Unknown	11	Downstream	Unknown	Not a Program Tag	Unknown
May/24	bluehead sucker	2	Unknown	2018	CPW 3-Spp	Unknown
May/24	bluehead sucker	3	Unknown	2021	CPW 3-Spp	Grand Valley Reach
May/24	bluehead sucker	6	Unknown	2019, 2021	Canal Salvage	Grand Valley Reach
May/24	bonytail	1	Upstream	2023	ONFH-GJ Stock	Upper CO River Reach
May/24	bonytail	1	Upstream	2019	ONFH-GJ Stock	Grand Valley Reach
May/24	bonytail	1	Unknown	2023	ONFH-GJ Stock	Upper CO River Reach
May/24	chub (G*ila*) not identified to spp.	1	Upstream	2020	Blackrocks HB Estimate	Ruby Horsethief Reach

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
May/24	flannelmouth X bluehead sucker hybrid	1	Unknown	2018	CPW 3-Spp	Unknown
May/24	flannelmouth sucker	4	Upstream	2014 (n=1).2016 (n=1), 2019 (n=1), 2021 (n=1)	CPW 3-Spp	Grand Valley Reach
May/24	flannelmouth sucker	5	Upstream	2019 (n=5)	Canal Salvage	Grand Valley Reach
May/24	flannelmouth sucker	1	Upstream	2018	CPW 3-Spp	Grand Valley Reach
May/24	flannelmouth sucker	3	Unknown	2023	UDWR 3-Spp	Lower CO River Reach
May/24	flannelmouth sucker	23	Unknown	2019 (n=23)	Canal Salvage	Grand Valley Reach
May/24	flannelmouth sucker	23	Unknown	2014 (n=2), 2016 (n=5), 2019 (n=2), 2021 (n=14)	CPW 3-Spp	Grand Valley Reach
May/24	flannelmouth sucker	8	Unknown	2018	CPW 3-Spp	Unknown
May/24	flannelmouth sucker	1	Downstream	2016	CPW 3-Spp	Grand Valley Reach
May/24	flannelmouth sucker	1	Downstream	2018	CPW 3-Spp	Unknown
May/24	flannelmouth sucker	1	Downstream	2019	Canal Salvage	Grand Valley Reach
May/24	roundtail chub	2	Upstream	2021	Canal Salvage	Grand Valley Reach
May/24	roundtail chub	1	Upstream	2021	CPW 3-Spp	Grand Valley Reach
May/24	roundtail chub	1	Unknown	2021	CPW 3-Spp	Grand Valley Reach
May/24	roundtail chub	1	Unknown	2019	Canal Salvage	Grand Valley Reach
May/24	roundtail chub	3	Unknown	2020 (n=2), 2021 (n=1)	Blackrocks HB Estimate	Ruby Horsethief Reach
May/24	roundtail chub	3	Unknown	2020 (n=1), 2021 (n=2)	Westwater HB Estimate	Westwater Reach
May/24	roundtail chub	1	Downstream	2021	Canal Salvage	Grand Valley Reach
May/24	roundtail chub	1	Downstream	Unknown	Initial Tagging encounter not in STReaMS	Unknown
May/24	razorback sucker	2	Upstream	2014, 2020	ONFH-GJ Stock	Upper CO River Reach

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
May/24	razorback sucker	1	Upstream	Unknown	Initial Tagging encounter not in STReaMS	Unknown
May/24	razorback sucker	25	Unknown	2016 (n=1), 2017 (n=1), 2019 (n=3), 2020 (n=2), 2021 (n=1), 2022 (n=1), 2023 (n=16)	ONFH-GJ Stock	Upper CO River Reach
May/24	razorback sucker	2	Unknown	2018, 2020	ONFH-GJ Stock	Grand Valley Reach
May/24	razorback sucker	1	Unknown	Unknown	Initial Tagging encounter not in STReaMS	Unknown
May/24	razorback sucker	1	Downstream	2020	ONFH-GJ Stock	Upper CO River Reach
May/24	Unknown	10	Upstream	Unknown	Not a Program Tag	Unknown
May/24	Unknown	95	Unknown	Unknown	Not a Program Tag	Unknown
May/24	Unknown	2	Unknown	Distributed to CPW 2013 (n=1), Distributed to UDWR 2017 (n=1)	Initial Tagging encounter not in STReaMS	Unknown
May/24	Unknown	9	Downstream	Unknown	Not a Program Tag	Unknown
Jun/24	bonytail	1	Upstream	2023	ONFH-GJ Stock	Upper CO River Reach
Jun/24	bonytail	1	Unknown	2023	MUMMA stock	Upper CO River Reach
Jun/24	bonytail	1	Downstream	2022	ONFH-GJ Stock	Upper CO River Reach
Jun/24	flannelmouth sucker	1	Upstream	2019	Canal Salvage	Grand Valley Reach
Jun/24	flannelmouth sucker	5	Unknown	2019 (n=3), 2021 (n=2)	Canal Salvage	Grand Valley Reach
Jun/24	flannelmouth sucker	1	Unknown	2018	CPW 3-Spp	Unknown
Jun/24	flannelmouth sucker	1	Downstream	2023	UDWR 3-Spp	Lower CO River Reach
Jun/24	roundtail chub	1	Upstream	2021	Westwater HB Estimate	Westwater Reach
Jun/24	roundtail chub	3	Unknown	2021	Canal Salvage	Grand Valley Reach
Jun/24	roundtail chub	5	Unknown	2021	Blackrocks HB Estimate	Ruby Horsethief Reach

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Jun/24	roundtail chub	3	Unknown	2011 (n=1), 2021 (n=2)	Westwater HB Estimate	Westwater Reach
Jun/24	roundtail chub	1	Unknown	Unknown	Initial Tagging encounter not in STReaMS	Unknown
Jun/24	roundtail chub	5	Downstream	2019 (n=3), 2021 (n=2)	Canal Salvage	Grand Valley Reach
Jun/24	roundtail chub	1	Downstream	2018	CPW 3-Spp	Unknown
Jun/24	roundtail chub	2	Downstream	2020, 2021	Blackrocks HB Estimate	Ruby Horsethief Reach
Jun/24	roundtail chub	1	Downstream	2020	Westwater HB Estimate	Westwater Reach
Jun/24	roundtail chub	1	Downstream	Unknown	Initial Tagging encounter not in STReaMS	Unknown
Jun/24	razorback sucker	8	Unknown	2014 (n=1), 2021 (n=1), 2022 (n=1), 2023 (n=4), 2024 (n=1)	ONFH-GJ Stock	Upper CO River Reach
Jun/24	razorback sucker	3	Downstream	2016, 2020, 2022	ONFH-GJ Stock	Upper CO River Reach
Jun/24	Unknown	2	Upstream	Unknown	Not a Program Tag	Unknown
Jun/24	Unknown	13	Unknown	Unknown	Not a Program Tag	Unknown
Jun/24	Unknown	6	Downstream	Unknown	Not a Program Tag	Unknown
Jul/24	flannelmouth sucker	1	Unknown	2019	Canal Salvage	Grand Valley Reach
Jul/24	roundtail chub	1	Upstream	2011	Westwater HB Estimate	Westwater Reach
Jul/24	roundtail chub	3	Unknown	2020 (n=2), 2021 (n=1)	Blackrocks HB Estimate	Ruby Horsethief Reach
Jul/24	roundtail chub	5	Unknown	2020 (n=2), 2021 (n=3)	Westwater HB Estimate	Westwater Reach
Jul/24	roundtail chub	1	Downstream	2021	Westwater HB Estimate	Westwater Reach
Jul/24	razorback sucker	3	Unknown	2020 (n=1), 2024 (n=2)	ONFH-GJ Stock	Upper CO River Reach
Jul/24	Unknown	4	Upstream	Unknown	Not a Program Tag	Unknown

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Jul/24	Unknown	17	Unknown	Unknown	Not a Program Tag	Unknown
Jul/24	Unknown	1	Downstream	Unknown	Not a Program Tag	Unknown
Aug/24	bluehead sucker	1	Downstream	2021	Canal Salvage	Grand Valley Reach
Aug/24	bonytail	1	Unknown	2024	ONFH-GJ Stock	Grand Valley Reach
Aug/24	Colorado pikeminnow	1	Unknown	2020	Colorado River CPM Estimate	Ruby Horsethief Reach
Aug/24	Colorado pikeminnow	1	Unknown	2017	Colorado River NNF Removal	Lower CO River Reach
Aug/24	flannelmouth sucker	1	Unknown	2021	CPW 3-Spp	Grand Valley Reach
Aug/24	flannelmouth sucker	2	Unknown	2018	CPW 3-Spp	Unknown
Aug/24	roundtail chub	1	Unknown	2021	Blackrocks HB Estimate	Ruby Horsethief Reach
Aug/24	roundtail chub	1	Unknown	2020	Westwater HB Estimate	Westwater Reach
Aug/24	razorback sucker	11	Unknown	2014 (n=1), 2019 (n=1), 2020 (n=4), 2021 (n=3), 2022 (n=2)	ONFH-GJ Stock	Upper CO River Reach
Aug/24	Unknown	11	Unknown	Unknown	Not a Program Tag	Unknown
Aug/24	Unknown	2	Unknown	Distributed to CPW 2024 (n=4)	Initial Tagging encounter not in STReaMS	Unknown
Aug/24	Unknown	1	Downstream	Unknown	Not a Program Tag	Unknown
Sep/24	bluehead sucker	1	Unknown	2018	CPW 3-Spp	Unknown
Sep/24	bonytail	1	Unknown	2023	ONFH-GJ Stock	Upper CO River Reach
Sep/24	bonytail	2	Unknown	2024	ONFH-GJ Stock	Grand Valley Reach
Sep/24	Colorado pikeminnow	1	Unknown	2017	Colorado River NNF Removal	Lower CO River Reach
Sep/24	roundtail chub	1	Unknown	2019	Canal Salvage	Grand Valley Reach

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Sep/24	roundtail chub	2	Unknown	2020, 2021	Blackrocks HB Estimate	Ruby Horsethief Reach
Sep/24	roundtail chub	3	Unknown	2020 (n=1), 2021 (n=2)	Westwater HB Estimate	Westwater Reach
Sep/24	roundtail chub	1	Downstream	2021	Blackrocks HB Estimate	Ruby Horsethief Reach
Sep/24	razorback sucker	4	Unknown	2015 (n=1), 2022 (n=1), 2023 (n=2)	ONFH-GJ Stock	Grand Valley Reach
Sep/24	Unknown	1	Upstream	Unknown	Not a Program Tag	Unknown
Sep/24	Unknown	1	Upstream	Distributed to CPW 2024	Initial Tagging encounter not in STReaMS	Unknown
Sep/24	Unknown	5	Unknown	Unknown	Not a Program Tag	Unknown
Sep/24	Unknown	4	Unknown	Distributed to CPW 2024	Initial Tagging encounter not in STReaMS	Unknown
Sep/24	Unknown	2	Downstream	Unknown	Not a Program Tag	Unknown
Sep/24	Unknown	1	Downstream	Distributed to CPW 2024	Initial Tagging encounter not in STReaMS	Unknown

Table 7. Price-Stubb Fiscal Year Individual PIT Antenna Detections

Species	BH	BT	CH	CS	FB	FM	FR	HB	RT	RZ
# of Individuals FY2010* **	0	0	0	2	0	0	0	0	6	0
# of Individuals FY2011 **	0	16	0	1	0	1	0	0	19	83
# of Individuals FY2012 **	0	88	0	8	0	3	0	1	36	135
# of Individuals FY2013 **	0	138	0	2	0	1	0	0	79	239
# of Individuals FY2014 **	0	114	0	3	0	1	0	0	29	69
# of Individuals FY2015 **	106	22	0	4	0	251	0	0	19	19
# of Individuals FY2016 **	67	126	0	13	0	245	0	0	21	36
# of Individuals FY2017 **	88	66	0	21	0	103	0	0	16	140
# of Individuals FY2018 **	70	71	0	11	0	73	0	0	29	81
# of Individuals FY2019 **	137	176	0	5	4	328	0	0	28	278
# of Individuals FY2020 **	99	98	1	0	3	474	0	0	58	142
# of Individuals FY2021 **	42	91	0	2	1	319	0	0	54	209
# of Individuals FY2022 **	80	77	0	6	3	621	0	0	130	110
# of Individuals FY2023 **	32	75	1	6	3	127	0	0	53	75
# of Individuals FY2024 **	37	178	1	4	1	348	1	0	58	87
Grand total[1]	758	1,336	3	88	15	2,895	1	1	635	1,703

[1] Many of these fish were detected at Price-Stubb in multiple years

* Antenna was only in operation for 1.5 months during FY 2010

** Some of these fish were detected in more than one month during the fiscal year

Table 8. Percent of days per month each Colorado River fish passage was open.

Month, Year	GVWU, River Mile 193.7	Price Stubb, River Mile 188.3	GVIC, River Mile 185.4
October, 2023	0%	100%	100%
November, 2023	0%	100%	100%
December, 2023	0%	100%	100%
January, 2024	0%	100%	100%
February, 2024	0%	100%	100%
March, 2024	0%	100%	100%
April, 2024	27% (8 days)	100%	100%
May, 2024	100%	100%	100%
June, 2024	100%	100%	100%
July, 2024	81% (25 days)	48% (15 days)	81% (25 days)
August, 2024	0%	100%	0%
September, 2024	13% (4 days)	100%	0%