

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2022 ANNUAL REPORT

PROJECT: C4b-GVP

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 Number:

R20PG00024

Project/Grant Period:

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Is this the final report? Yes _____ No X

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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 16 of the last 18 years, since construction was completed in August 2004.

In 2022, GVWU Fish Passage was operational from 27 April through 12 July. The early shutdown was due to low summer and fall base flows, which did not supply adequate water to operate the passage. A total of 21,387 fish used the fish passage over a 76-day period in 2022. Six endangered bonytail (*Gila elegans*), two Colorado pikeminnow (*Ptychocheilus lucius*), one humpback chub (*Gila cypha*), and eleven razorback sucker (*Xyrauchen texanus*) made passage.

Study Schedule:

2004-Ongoing

Relationship to RIPRAP:

Colorado River Action Plan

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

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- II.B.3. Restore fish passage at Government Highline (aka Grand Valley Water Users).
II.B.3.a.(3). Operate and maintain

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

GVWU Fish Passage

In 2022, six bonytail were collected in the GVWU fish trap (Tables 1, 2, and 3). The fish ranged in total length from 291 to 356 mm with a mean of 328 mm. All six were stocked near Rifle, Colorado in July 2020 (n = 1) or 2021 (n = 5). One-hundred-fifty-six bonytail have now made passage at this facility (Table 3).

In 2022, two Colorado pikeminnow made passage at the GVWU passage. Their total lengths were 562 and 565 mm. One Colorado pikeminnow was a recapture whose initial tagging encounter is not in STReaMS, and the other was tagged on this occasion. Eight Colorado pikeminnow have now made passage at this facility (Table 3).

One humpback chub made passage at GVWU passage in 2022. The humpback chub's total length was 271 mm and it was PIT tagged on this occasion. Twelve humpback chub have now made passage at this facility (Tables 3).

In 2022, eleven razorback sucker were collected in the GVWU fish trap (Tables 1, 2 and 3). These fish ranged in total length from 387 to 529 mm with a mean of 464 mm. These fish were stocked at a variety of locations between the years of 2001 and 2020. One of these fish has become a frequent user of this facility, having made passage in prior years (2008, 2014, 2016, 2020 and 2021). Three-hundred-fourteen razorback sucker have now made passage at this facility (Table 3).

A total of 21,387 fish were collected in the trap of the GVWU Dam fish passage from 27 April through the 12 July 2022. This was the second highest total catch in this facility's operational history. The highest total ever collected in the trap was in 2014 (24,670) and the third highest total (18,390) was in 2010 (Table 4). This is the sixteenth year of operation since the structure was completed. 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.

Native fishes (and their hybrid forms) accounted for 69.1% (n = 14,767) of the total catch in 2022 (Table 4). Nonnative fishes (and native by nonnative hybrid fish) accounted for 30.9% (n = 6,620) of the total catch in 2022. For 2022, flannelmouth sucker (*Catostomus latipinnis*) accounted for 43.4% (n = 9,285) of the total catch, bluehead sucker (*Catostomus discobolus*) accounted for 12.2% (n = 2,618) of the total catch, and roundtail chub (*Gila robusta*) accounted for 12.1% (n = 2,580) of the total catch (Table 1). 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 2022 was white sucker (*Catostomus commersonii*; 21.4% of total catch, n = 4,584 in 2022). 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 2022 (n = 210; Table 1).

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One largemouth bass (*Micropterus salmoides*; total length 297 mm) and 13 smallmouth bass (*Micropterus dolomieu*; total lengths ranged from 197 to 310 mm with a mean of 225 mm) were also collected and removed in 2022. No gizzard shad (*Dorosoma cepedianum*) were collected and removed in 2022 (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*) 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 1,293 unique PIT tags (FY record) during FY 2022 (Table 5); many of these tags were detected on multiple days. In 2020, because the original cell modem was getting outdated and not functioning properly, Peter MacKinnon (Biomark) replaced the old modem. In addition to the new modem, the Loggernet software was replaced with BioLogic web portal for remote data acquisition. We reported in 2010 (first year of operation at this facility) that the close placement of these four antennas in relation to one another (~10 inches apart) complicated determining directionality of fish movements (upstream vs. downstream). Despite adjustments to the antenna settings in 2011, some unknown directions of fish passage remain, however not as many as were previously encountered. In FY 2022 there were 1,555 daily detections, and 63% (n = 975) of those fish passed the antenna heading upstream, 31% (n = 483) in an undetermined direction, and 6% (n = 97) in a downstream direction. 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: however, this had improved by FY 2020 with only 2% (n = 19) of the individual tags detected on this antenna array being unknown fish. Unfortunately, in FY 2021 the number of unknown tags increased to 25% (n = 240). And again, in FY 2022, the number of unknown tags was high at 21% (n = 266). 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 = 80), bonytail (n = 77), Colorado pikeminnow (n = 6), flannelmouth sucker (n = 621), razorback sucker (n = 110), roundtail chub (n = 130), and flannelmouth sucker X bluehead sucker hybrids (n=3) made up the individual PIT tag detections that could be found in STReaMS (many were detected on multiple dates) during FY 2022. Table 5 gives a detailed breakdown of the fish that were detected by the antenna by month, and Table 6 gives annual individual totals by species.

Operation and Maintenance

In 2019, GVWU employees used a track hoe to remove approximately 25 dump-truck loads of river-borne sediment in front of the attraction flow, fish ladder entrances, and fish return tube on 9-10 July. Spring runoff in 2020, 2021, and 2022 was moderate in magnitude and duration and redeposited only a small amount of sediment which allowed the facility to operate properly. However, 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 2022, GVWU opened the roller closest to the fish passage for several weeks during high spring flows to help sluice away the sediment bar. This

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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.

Weeds were sprayed and removed from the property throughout 2022.

At the Price-Stubbs non-selective fish passage facility (5 miles downstream of the GVWU Fish Passage), debris and trash build-up were negligible, and no manual removal was necessary in FY 2022.

Additional noteworthy observations:

Similar to previous years, we deployed submersible PIT antennas (PS) to detect fish that may enter the GVWU passage but not the fish trap. One PS located at the downstream terminus was operated through the entirety of the fiscal year allowing us to identify fish that could potentially use the fish ladder, had the fish ladder been in operation. An additional three antennas were placed within the fish ladder during its operation, from April 27 through July 12. These additional antennas were placed in the “switchbacks” of the fish ladder and allowed us to determine if fish were traveling part or all of the length of the ladder, but not entering the trap.

With one PS located at the downstream terminus of the fish ladder and an additional three PS operating in the ladder during regular operations, there were 18,777 detections of 901 individual tags (cumulative of all four PS) in FY 2022. Of the 901 tags, 767 (85.1%) were able to be identified to species. Ninety-two tags (10.2%) had prior detections, but the original tag deployment data had not been uploaded into STReaMS. The other 42 tags (4.7%) were first detected on these PS that had no historical data in STReaMS. The 767 tags that we were able to identify to species totaled as follows: 277 bonytail, 234 razorback sucker, 152 flannelmouth sucker, 82 roundtail chub, 20 bluehead sucker, one bluehead x flannelmouth sucker, and 1 Colorado pikeminnow.

Twenty-six individual PIT tagged fish were collected/handled in the fish ladder trap in FY 2022 (i.e., at the terminal end of the fish ladder). These 26 fish delineated by species are as follows: 11 razorback sucker, 9 roundtail chub, 5 bonytail, and 1 Colorado pikeminnow. Of the 26 fish captured in the fish trap, five (2 razorback sucker, 2 roundtail chub, and a Colorado pikeminnow) were able to navigate the entire length of the fish ladder without being detected by any of the PS. The other 21 fish (80.8%) were detected by at least one PS (Table 7).

There were an additional 351 individual fish that were detected by one or more PS placed in the ladder that were never collected/handled in the fish ladder trap (Table 7) during 2022 operations. However, only four species that were captured in the trap would have been scanned for a PIT tag upon capture (bonytail, Colorado pikeminnow, razorback sucker, and roundtail chub; n=168 of the 351 individual fish detected by PS). Using these four species and only fish that would have had a PIT tag present prior to entering the trap at the top of the ladder, this would be 26 out of 168 fish known to have been in some portion of the ladder, or a 15.5% complete passage rate of fish with PIT tags.

PIT tags and their associated individual species, detected by the lower PS during periods when the fish ladder was not in operation, can be found in Table 8, by month. Duplicate PIT tag detections within a given month have been removed; however, individual fish can be represented in multiple months. Tag detections were greatest in November 2021 due to bonytail stocking events. Bonytail, flannelmouth

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sucker, and roundtail chub were detected every month in this location regardless of ladder operations. Bluehead and flannelmouth sucker are not tagged by the USFWS. However, Colorado Parks and Wildlife PIT tags these state-protected species to monitor them, along with roundtail chub (i.e., the Three Species). Bluehead and flannelmouth sucker aren't scanned for a PIT tag during collection/handling from the fish trap, because so many thousands make passage every year, and scanning all Three Species fish isn't feasible within our office's time and manpower constraints. Thus, an analysis of bluehead sucker and flannelmouth sucker detected by PS and making a complete passage through the entire fish ladder could not be performed. Histories of all detected fish can be found in STReaMS.

These passage rates should be considered rough estimates because the deployed PS do not detect tags throughout the entire water column, rebar and aluminum baffles create a "noisy" environment and tags may not be detected, the passage was not open for the entire year and the cue for a given species to move upstream may not have occurred, and the habitat directly downstream of the dam and passage is very complex and likely satisfies most life history needs for species precluding the need for further upstream passage.

Recommendations:

Biological:

Continue to collect information on the number of fish, by species, in the fish trap of the GVWU fish passageway in 2023 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 2023. Unfortunately, the vegetated bank on river left has begun to reform (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

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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 2014-2022 (usually at flows $\geq 4,000$ CFS at the Cameo gage), GVVU 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. Unfortunately, the length of time that the fish passage realizes the benefits from this action can be highly variable, depending upon 1) how low summer base flows are, and 2) how many summer rainstorm events we have. Both circumstances act to quickly redeposit the sediment bar in front of the fish ladder entrance and return tube. At a bare minimum though, we feel that having GVVU continue to sluice during spring high flow periods by raising the roller closest to the fish passage is highly beneficial.

Because of its physical location, on the inside bend of a very wide and slow section of the Colorado River, the area directly in front of the GVVU fish passage is very susceptible to sedimentation. It is our recommendation that some combination of the two actions specified above be available every spring to help control sedimentation issues, with physical removal of sedimentation in front of the fish ladder and along the river left bank being done on a 1-2 year basis. At the very minimum, we believe the sluicing operations (at flows $\geq 4,000$ CFS at the Cameo gage) are vital to our ability to continue to successfully operate this structure from mid-April through mid-October each year.

Project Status:

On track and ongoing

FY2022 Budget Status

Funds Provided: \$58,592.00

Funds Expended: \$58,592.00

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 was uploaded into STReaMS 11/28/2022.

Signed:

Travis Francis

Principal Investigator

12/01/2022

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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 2022.

Common Name	Number of Fish	Percent of Total Fish
NATIVE FISH		
bluehead sucker	2,618	12.24
bonytail	6	0.03
Colorado pikeminnow	2	0.01
Colorado cutthroat	1	0.00
flannelmouth sucker	9,285	43.41
humpback chub	1	0.00
mottled sculpin	0	0.00
mountain whitefish	247	1.15
razorback sucker	11	0.05
roundtail chub	2,580	12.06
speckled dace	0	0.00
TOTAL	14,751	68.97
NONNATIVE FISH		
black bullhead	19	0.09
bluegill	5	0.02
brook trout	0	0.00
brown trout	74	0.35
channel catfish	210	0.98
common carp	26	0.12
green sunfish	0	0.00
gizzard shad	0	0.00
largemouth bass	1	0.00
longnose sucker	79	0.37
northern pike	0	0.00
rainbow trout	58	0.27
smallmouth bass	13	0.06
white sucker	4,584	21.43
TOTAL	5069	23.70
HYBRID FISHES		
Native X Native Hybrids:		
razorback X flannelmouth sucker	0	0.00
bluehead X flannelmouth sucker	16	0.07
Native X Nonnative Hybrids:		
bluehead X white sucker	317	1.48
bluehead X flannelmouth X white sucker	0	0.00
flannelmouth X white sucker	1,234	5.77
bluehead X longnose sucker	0	0.00
flannelmouth X longnose sucker	0	0.00
white X longnose sucker	0	0.00
ALL TOTALS	21,387	100.00

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Table 2. 2022 GVWU PIT tagged fish histories.

Month of Passage	Species	PIT Tag Histories
April-22	roundtail chub (<i>Gila robusta</i>) N=2	N=1 tagged October 2017 for 3-spp. work at CO RMI 219 N=1 tagging encounter not in STReaMS
May-22	bonytail (<i>Gila elegans</i>) N=2	N=1 stocked July 2020 in Rifle at CO RMI 240.7; detected at GVWU Ladder and Price Stubb between the period of November 2020 through March 2022 N=1 stocked July 2021 in Rifle at CO RMI 240.7; detected at GVWU Ladder between the period of November 2021 through December 2021
	humpback chub (<i>Gila cypha</i>) N=1	N=1 tagged at this capture event at GVWU Passage
	razorback sucker (<i>Xyrauchen texanus</i>) N=3	N=2 stocked September 2016 in Rifle at CO RMI 240.7; one recaptured September 2020 at CO RMI 168.7 and detected at GVWU Ladder and Price Stubb between the period of June 2021 through April 2022; one detected at GVWU Ladder between the period of July 2018 through September 2021 N=1 stocked October 2020 in Fruita at CO RMI 157.1
	roundtail chub (<i>Gila robusta</i>) N=1	N=1 tagged October 2017 in Black Rocks CO RMI 136; Detected multiple times at Price Stubb and GVWU Ladder from 2018 through 2022
June-22	bonytail (<i>Gila elegans</i>) N=1	N=1 stocked July 2021 in Rifle at CO RMI 240.7; Detected multiple times at Price Stubb and GVWU Ladder from 2021 through 2022
	razorback sucker (<i>Xyrauchen texanus</i>) N=5	N=1 stocked October 2012 in Rifle at CO RMI 240.7; detected multiple times at GVWU Ladder in 2021 N=1 stocked August 2017 in Rifle at CO RMI 240.7; detected multiple times at GVWU Ladder in 2020 and 2021 N=3 stocked September 2020 in Rifle at CO RMI 240.7; two detected multiple times at GVWU Ladder in 2021
	roundtail chub (<i>Gila robusta</i>) N=3	N=1 tagged November 2021 after collection in Grand Valley Canals and returned to the CO River; detected multiple times in 2022 at Price Stubb Ladder N=1 tagged at this capture event at GVWU Passage N=1 tagging encounter not in STReaMS
July-22	bonytail (<i>Gila elegans</i>) N=3	N=3 stocked July 2021 in Rifle at CO RMI 240.7; two detected multiple times at GVWU Ladder in 2021; one detected multiple times at Price Stubb and GVWU Ladder in 2021
	Colorado pikeminnow (<i>Ptychocheilus lucius</i>) N=2	N=1 initial tagging encounter not in STReaMS; detected August 2022 at Price Stubb N=1 tagged at this capture event at GVWU Passage
	razorback sucker (<i>Xyrauchen texanus</i>) N=3	N=1 stocked October 2001 near Rulison at CO RMI 226.5; made passage at GVWU Ladder in 2008, 2014, 2016, 2020 and 2021 and detected at Price Stubb in July 2022 N=1 stocked September 2016 near Rifle at CO RMI 240.7; detected multiple times at GVWU Ladder from 2017 through 2021 N=1 stocked August 2017 near Rifle at CO RMI 240.7
	roundtail chub (<i>Gila robusta</i>) N=4	N=1 tagged October 2017 in Black Rocks CO RMI 136; detected at Price Stubb July 2022 N=1 tagged November 2019 after collection in Grand Valley Canals and returned to the CO River; detected multiple times in 2021 at Price Stubb and GVWU Ladder N=1 tagged September 2020 in Black Rocks CO RMI 136; detected at Price Stubb June 2022 N=1 tagged October 2020 in Westwater at CO RMI 121.7

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Table 3.

Number of Colorado pikeminnow, razorback sucker, bonytail and humpback chub captured in the fish trap of the Grand Valley Water User's passageway from 2005 through 2022.

Year	Colorado pikeminnow	razorback sucker	bonytail	humpback chub
2005	0	1	0	1
2006	0	0	0	0
2007	Fish Passage not operated due to insufficient flows			
2008	0	1	0	0
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	22	2
2012	Fish Passage not operated due to insufficient flows			
2013	0	2	0	0
2014	1	25	14	0
2015	1	52	10	0
2016	1	36	44	0
2017	2	130	12	2
2018	0	4	0	2
2019	1	29	16	4
2020	0	6	3	0
2021	0	17	29	0
2022	2	11	6	1
Totals	8	314	156	12

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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 2022.

Year	Total Number of Fish	Total Native Fishes	Total Nonnative Fishes	Percent Composition	
				Native Fishes	Nonnative Fishes
2004	fish passageway & fish trap not run due to insufficient flows				
2005	4,638 ^a	2,867	1,771	61.8	38.2
2006	11,978 ^b	10,747	1,231	89.7	10.3
2007	fish passageway & fish trap not run due to insufficient flows				
2008	10,788 ^c	9,663	1,125	89.6	10.4
2009	12,402 ^d	11,286	1,116	91	9
2010	18,390 ^e	16,358	2,032	89	11
2011	8,875 ^f	6,870	2,005	77.4	22.6
2012	fish passageway & fish trap not run due to insufficient flows				
2013	13,401 ^g	10,702	2,699	79.9	20.1
2014	24,670 ^h	17,253	7,417	69.9	30.1
2015	14,248 ⁱ	12,094	2,154	84.9	15.1
2016	15,889 ^j	13,754	2,135	86.6	13.4
2017	13,581 ^k	11,352	2,229	83.6	16.4
2018	10,210 ^l	9,058	1,152	88.7	11.3
2019	11,862 ^m	9,339	2,523	78.7	21.3
2020	6,920 ⁿ	5,815	1,105	84	16
2021	14,190 ^o	10,438	3,752	73.6	26.4
2022	21,387 ^p	14,767	6,620	69.1	30.9
Totals	213,429	172,363	41,066	80.8	19.2

^a Fish trap operated for 12 days (June and September).

^b Fish trap operated for 41 days (five, 2-week periods).

^c Fish trap operated continuously from 2 May to 15 October.

^d Fish trap operated continuously from 20 April to 15 October.

^e Fish trap operated continuously from 16 April to 15 October.

^f Fish trap operated continuously from 19 April 19 to 14 October.

^g Fish trap operated for 49 days (continuously from 17 May to 5 July).

^h Fish trap operated for 177 days (continuously from 22 April to 16 October).

ⁱ Fish Trap operated 140 days (continuously from 1 May to 12 August, and again from 9 September to 16 October)

^j Fish Trap operated 136 days (continuously from 25 April to 13 May, again from 16 May to 8 June, again from 9 June to 28 July, and again from 11 August to 14 October)

^k Fish Trap operated continuously from 20 April to 20 October

^l Fish Trap operated for 58 days (continuously from 1 May to 28 June)

^m Fish Trap operated for 146 days (continuously from 30 April to 8 July, and again 10 July to 25 September)

ⁿ Fish Trap operated for 58 days (continuously from 19 May to 16 July)

^o Fish Trap operated for 52 days (continuously from 11 May to 02 July)

^p Fish Trap operated for 76 days (continuously from 27 April to 12 July)

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Table 5.
FY2022 Price-Stubb PIT Antenna Detections

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

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Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Oct-21	BH	1	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Oct-21	BT	1	Upstream	2021	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			
Oct-21	BT	0	Upstream	2021	MUMMA Stock	Upper CO River Reach
		0	Unknown			
		1	Downstream			
Oct-21	FM	1	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Oct-21	FM	2	Upstream	2019	CPW Three Spp.	Upper CO River Reach
		0	Unknown			
		0	Downstream			
Oct-21	RT	1	Upstream	2020	Westwater HB Est.	Westwater Reach
		1	Unknown			
		0	Downstream			
Oct-21	RT	1	Upstream	2011	Black Rocks HB Est.	Ruby Horsethief Reach
		0	Unknown			
		0	Downstream			
Oct-21	RT	0	Upstream	2017	Black Rocks HB Est.	Ruby Horsethief Reach
		1	Unknown			
		0	Downstream			
Oct-21	RT	2	Upstream	2020	Black Rocks HB Est.	Ruby Horsethief Reach
		0	Unknown			
		0	Downstream			
Oct-21	RZ	4	Upstream	2016	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		2	Downstream			

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Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Oct-21	RZ	0	Upstream	2020	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Oct-21	RZ	0	Upstream	2021	ONFH-GJ Stock	Upper CO River Reach
		3	Unknown			
		6	Downstream			
Oct-21	Unknown	0	Upstream	??	Distributed to ONFH-GJ 2021	??
		0	Unknown			
		1	Downstream			
Oct-21	Unknown	1	Upstream	??	Not a Program Tag	??
		0	Unknown			
		0	Downstream			
Nov-21	BT	0	Upstream	2021	MUMMA Stock	Upper CO River Reach
		6	Unknown			
		3	Downstream			
Nov-21	FM	1	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Nov-21	FM	0	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Nov-21	RZ	1	Upstream	2018	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			
Dec-21	BT	0	Upstream	2021	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Dec-21	BT	0	Upstream	2021	MUMMA Stock	Upper CO River Reach
		7	Unknown			
		1	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Dec-21	FM	0	Upstream	2021	CPW Three Spp.	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Jan-22	BT	0	Upstream	2020	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		1	Downstream			
Jan-22	BT	0	Upstream	2021	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Jan-22	BT	0	Upstream	2021	MUMMA Stock	Upper CO River Reach
		6	Unknown			
		2	Downstream			
Jan-22	RZ	0	Upstream	2021	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		1	Downstream			
Feb-22	BT	0	Upstream	2021	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		1	Downstream			
Feb-22	BT	0	Upstream	2021	MUMMA Stock	Upper CO River Reach
		2	Unknown			
		1	Downstream			
Feb-22	RZ	0	Upstream	2021	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Feb-22	Unknown	0	Upstream	??	Not a Program Tag	??
		1	Unknown			
		1	Downstream			
Mar-22	BH	3	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Mar-22	BH	1	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Mar-22	BH	1	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Mar-22	BH	2	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Mar-22	BT	0	Upstream	2020	ONFH-GJ Stock	Upper CO River Reach
		2	Unknown			
		0	Downstream			
Mar-22	BT	0	Upstream	2021	MUMMA Stock	Upper CO River Reach
		1	Unknown			
		2	Downstream			
Mar-22	FM	10	Upstream	2014	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Mar-22	FM	3	Upstream	2016	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Mar-22	FM	12	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		3	Unknown			
		0	Downstream			
Mar-22	FM	1	Upstream	2019	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Mar-22	FM	1	Upstream	2019	CPW Three Spp.	Upper CO River Reach
		2	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Mar-22	FM	15	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		3	Unknown			
		1	Downstream			
Mar-22	FM	19	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		2	Unknown			
		0	Downstream			
Mar-22	FM	5	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Mar-22	FXB	0	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Mar-22	RT	1	Upstream	2011	Black Rocks HB Est.	Ruby Horsethief Reach
		0	Unknown			
		0	Downstream			
Mar-22	RT	1	Upstream	2014	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Mar-22	RT	1	Upstream	2016	Westwater HB Est.	Westwater Reach
		0	Unknown			
		0	Downstream			
Mar-22	RT	2	Upstream	2017	Black Rocks HB Est.	Ruby Horsethief Reach
		1	Unknown			
		0	Downstream			
Mar-22	RT	1	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Mar-22	RT	2	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Mar-22	RZ	0	Upstream	2014	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Mar-22	RZ	0	Upstream	2020	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Mar-22	Unknown	14	Upstream	??	Not a Program Tag	??
		6	Unknown			
		0	Downstream			
Apr-22	BH	3	Upstream	2014	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Apr-22	BH	11	Upstream	2018	CPW Canal Salvage	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Apr-22	BH	1	Upstream	2019	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Apr-22	BH	2	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		2	Unknown			
		1	Downstream			
Apr-22	BH	9	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Apr-22	BH	1	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Apr-22	BT	3	Upstream	2021	MUMMA Stock	Upper CO River Reach
		5	Unknown			
		1	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Apr-22	FM	57	Upstream	2014	CPW Three Spp.	Grand Valley Reach
		2	Unknown			
		0	Downstream			
Apr-22	FM	48	Upstream	2016	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Apr-22	FM	67	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		11	Unknown			
		0	Downstream			
Apr-22	FM	2	Upstream	2019	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Apr-22	FM	2	Upstream	2019	CPW Three Spp.	Upper CO River Reach
		0	Unknown			
		1	Downstream			
Apr-22	FM	80	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		17	Unknown			
		0	Downstream			
Apr-22	FM	0	Upstream	2021	CPW Three Spp.	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Apr-22	FM	79	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		16	Unknown			
		0	Downstream			
Apr-22	FM	9	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		2	Unknown			
		0	Downstream			
Apr-22	FXB	1	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Apr-22	RT	1	Upstream	2016	Black Rocks HB Est.	Ruby Horsethief Reach
		0	Unknown			
		0	Downstream			
Apr-22	RT	1	Upstream	2017	Black Rocks HB Est.	Ruby Horsethief Reach
		0	Unknown			
		0	Downstream			
Apr-22	RT	2	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Apr-22	RT	1	Upstream	2020	Westwater HB Est.	Westwater Reach
		1	Unknown			
		0	Downstream			
Apr-22	RT	2	Upstream	2020	Black Rocks HB Est.	Ruby Horsethief Reach
		1	Unknown			
		0	Downstream			
Apr-22	RT	1	Upstream	2021	Black Rocks HB Est.	Ruby Horsethief Reach
		0	Unknown			
		0	Downstream			
Apr-22	RT	1	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Apr-22	RT	7	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Apr-22	RT	1	Upstream	???	Recaptured at GVWU Ladder, Not a Program Tag	???
		0	Unknown			
		0	Downstream			
Apr-22	RZ	0	Upstream	2013	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		1	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Apr-22	RZ	2	Upstream	2014	ONFH-GJ Stock	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Apr-22	RZ	4	Upstream	2014	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			
Apr-22	RZ	1	Upstream	2015	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			
Apr-22	RZ	1	Upstream	2016	Colorado River NNF, tagged in the field	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Apr-22	RZ	2	Upstream	2016	ONFH-GJ Stock	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Apr-22	RZ	2	Upstream	2016	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			
Apr-22	RZ	2	Upstream	2017	ONFH-GJ Stock	Grand Valley Reach
		0	Unknown			
		1	Downstream			
Apr-22	RZ	2	Upstream	2017	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			
Apr-22	RZ	1	Upstream	2018	ONFH-GJ Stock	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Apr-22	RZ	1	Upstream	2018	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Apr-22	RZ	2	Upstream	2020	ONFH-GJ Stock	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Apr-22	RZ	0	Upstream	2020	ONFH-GJ Stock	Upper CO River Reach
		2	Unknown			
		0	Downstream			
Apr-22	RZ	0	Upstream	2021	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Apr-22	Unknown	77	Upstream	??	Not a Program Tag	??
		13	Unknown			
		1	Downstream			
Apr-22	Unknown	2	Upstream	??	Distributed to CPW 2013	??
		1	Unknown			
		0	Downstream			
Apr-22	Unknown	1	Upstream	??	Distributed to ONFH-GJ 2014	??
		0	Unknown			
		0	Downstream			
May-22	BH	1	Upstream	2014	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		1	Downstream			
May-22	BH	1	Upstream	2016	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
May-22	BH	9	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		2	Unknown			
		0	Downstream			
May-22	BH	1	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		0	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
May-22	BH	2	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		2	Unknown			
		0	Downstream			
May-22	BH	1	Upstream	2021	CPW Three Spp.	Upper CO River Reach
		0	Unknown			
		0	Downstream			
May-22	BH	3	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		0	Unknown			
		0	Downstream			
May-22	BT	0	Upstream	2019	ONFH-GJ Stock	Grand Valley Reach
		2	Unknown			
		0	Downstream			
May-22	BT	0	Upstream	2020	ONFH-GJ Stock	Grand Valley Reach
		1	Unknown			
		0	Downstream			
May-22	BT	0	Upstream	2021	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		1	Downstream			
May-22	BT	1	Upstream	2021	MUMMA Stock	Upper CO River Reach
		2	Unknown			
		1	Downstream			
May-22	FM	1	Upstream	2014	CPW Three Spp.	Roubideau Creek, Tributary to Gunnison River
		0	Unknown			
		0	Downstream			
May-22	FM	9	Upstream	2014	CPW Three Spp.	Grand Valley Reach
		3	Unknown			
		0	Downstream			
May-22	FM	18	Upstream	2016	CPW Three Spp.	Grand Valley Reach
		4	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
May-22	FM	23	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		4	Unknown			
		3	Downstream			
May-22	FM	4	Upstream	2019	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
May-22	FM	34	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		8	Unknown			
		3	Downstream			
May-22	FM	24	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		9	Unknown			
		2	Downstream			
May-22	FM	0	Upstream	2021	CPW Three Spp.	Upper CO River Reach
		1	Unknown			
		0	Downstream			
May-22	FM	5	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		0	Unknown			
		0	Downstream			
May-22	FM	4	Upstream	2022	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
May-22	FXB	1	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
May-22	RT	0	Upstream	2012	Black Rocks HB Est.	Ruby Horsethief Reach
		1	Unknown			
		0	Downstream			
May-22	RT	1	Upstream	2016	Black Rocks HB Est.	Ruby Horsethief Reach
		1	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
May-22	RT	0	Upstream	2017	123d Walleye Removal	Westwater Reach
		1	Unknown			
		0	Downstream			
May-22	RT	4	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		1	Unknown			
		0	Downstream			
May-22	RT	2	Upstream	2020	Black Rocks HB Est.	Ruby Horsethief Reach
		2	Unknown			
		0	Downstream			
May-22	RT	1	Upstream	2021	Black Rocks HB Est.	Ruby Horsethief Reach
		0	Unknown			
		0	Downstream			
May-22	RT	0	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
May-22	RT	6	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		3	Unknown			
		1	Downstream			
May-22	RZ	2	Upstream	2014	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		1	Downstream			
May-22	RZ	0	Upstream	2016	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		1	Downstream			
May-22	RZ	1	Upstream	2017	ONFH-GJ Stock	Grand Valley Reach
		0	Unknown			
		0	Downstream			
May-22	RZ	1	Upstream	2017	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
May-22	RZ	1	Upstream	2019	ONFH-GJ Stock	Grand Valley Reach
		0	Unknown			
		0	Downstream			
May-22	RZ	2	Upstream	2019	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		1	Downstream			
May-22	RZ	0	Upstream	2020	ONFH-GJ Stock	Upper CO River Reach
		9	Unknown			
		4	Downstream			
May-22	RZ	0	Upstream	2021	ONFH-GJ Stock	Upper CO River Reach
		2	Unknown			
		3	Downstream			
May-22	Unknown	37	Upstream	??	Not a Program Tag	??
		13	Unknown			
		1	Downstream			
May-22	Unknown	1	Upstream	??	Distributed to CPW 2005	??
		0	Unknown			
		0	Downstream			
Jun-22	BH	1	Upstream	2014	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Jun-22	BH	1	Upstream	2016	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Jun-22	BH	1	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Jun-22	BH	2	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		0	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Jun-22	BH	6	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		2	Unknown			
		0	Downstream			
Jun-22	BT	0	Upstream	2019	ONFH-GJ Stock	Grand Valley Reach
		2	Unknown			
		0	Downstream			
Jun-22	BT	0	Upstream	2020	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Jun-22	BT	3	Upstream	2021	ONFH-GJ Stock	Upper CO River Reach
		4	Unknown			
		1	Downstream			
Jun-22	BT	1	Upstream	2021	MUMMA Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			
Jun-22	FM	0	Upstream	2014	CPW Three Spp.	Grand Valley Reach
		2	Unknown			
		1	Downstream			
Jun-22	FM	0	Upstream	2016	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		1	Downstream			
Jun-22	FM	0	Upstream	2017	CPW Three Spp.	Upper CO River Reach
		2	Unknown			
		0	Downstream			
Jun-22	FM	2	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		1	Downstream			
Jun-22	FM	3	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		2	Unknown			
		3	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Jun-22	FM	7	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		5	Unknown			
		0	Downstream			
Jun-22	FM	0	Upstream	2021	CPW Three Spp.	Upper CO River Reach
		3	Unknown			
		0	Downstream			
Jun-22	FM	3	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		2	Unknown			
		0	Downstream			
Jun-22	FXB	0	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		1	Downstream			
Jun-22	RT	1	Upstream	2016	Black Rocks HB Est.	Ruby Horsethief Reach
		0	Unknown			
		0	Downstream			
Jun-22	RT	1	Upstream	2017	Westwater HB Est.	Westwater Reach
		0	Unknown			
		0	Downstream			
Jun-22	RT	0	Upstream	2017	Black Rocks HB Est.	Ruby Horsethief Reach
		2	Unknown			
		0	Downstream			
Jun-22	RT	0	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Jun-22	RT	2	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		2	Unknown			
		0	Downstream			
Jun-22	RT	8	Upstream	2020	Black Rocks HB Est.	Ruby Horsethief Reach
		2	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Jun-22	RT	2	Upstream	2020	Westwater HB Est.	Westwater Reach
		4	Unknown			
		0	Downstream			
Jun-22	RT	1	Upstream	2021	Black Rocks HB Est.	Ruby Horsethief Reach
		2	Unknown			
		0	Downstream			
Jun-22	RT	1	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		2	Unknown			
		0	Downstream			
Jun-22	RT	9	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		11	Unknown			
		0	Downstream			
Jun-22	RZ	0	Upstream	2015	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Jun-22	RZ	0	Upstream	2016	ONFH-GJ Stock	Upper CO River Reach
		2	Unknown			
		1	Downstream			
Jun-22	RZ	0	Upstream	2020	ONFH-GJ Stock	Upper CO River Reach
		5	Unknown			
		4	Downstream			
Jun-22	RZ	1	Upstream	2021	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Jun-22	Unknown	30	Upstream	??	Not a Program Tag	??
		16	Unknown			
		1	Downstream			
Jun-22	Unknown	0	Upstream	??	Distributed to UDWR-Moab 2020	??
		1	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Jun-22	Unknown	0	Upstream	??	Distributed to ONFH-GJ 2020	??
		1	Unknown			
		0	Downstream			
Jul-22	BH	0	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Jul-22	BH	0	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		0	Unknown			
		1	Downstream			
Jul-22	BH	1	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Jul-22	BT	1	Upstream	2019	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			
Jul-22	BT	1	Upstream	2020	ONFH-GJ Stock	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Jul-22	BT	2	Upstream	2021	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Jul-22	BT	1	Upstream	2021	MUMMA Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			
Jul-22	CS	1	Upstream	2017	Colorado River NNF, tagged in the field	Lower CO River Reach
		0	Unknown			
		0	Downstream			
Jul-22	FM	0	Upstream	2014	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Jul-22	FM	1	Upstream	2016	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Jul-22	FM	1	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Jul-22	FM	1	Upstream	2019	CPW Canal Salvage	Upper CO River Reach
		0	Unknown			
		0	Downstream			
Jul-22	FM	2	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Jul-22	FM	0	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Jul-22	RT	0	Upstream	2017	Black Rocks HB Est.	Ruby Horsethief Reach
		3	Unknown			
		0	Downstream			
Jul-22	RT	0	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Jul-22	RT	2	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		3	Unknown			
		0	Downstream			
Jul-22	RT	4	Upstream	2020	Black Rocks HB Est.	Ruby Horsethief Reach
		1	Unknown			
		3	Downstream			
Jul-22	RT	2	Upstream	2020	Westwater HB Est.	Westwater Reach
		3	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Jul-22	RT	1	Upstream	2021	Black Rocks HB Est.	Ruby Horsethief Reach
		1	Unknown			
		1	Downstream			
Jul-22	RT	3	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		5	Unknown			
		3	Downstream			
Jul-22	RZ	1	Upstream	2001	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			
Jul-22	RZ	5	Upstream	2016	ONFH-GJ Stock	Upper CO River Reach
		2	Unknown			
		0	Downstream			
Jul-22	RZ	0	Upstream	2017	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Jul-22	RZ	1	Upstream	2018	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			
Jul-22	RZ	1	Upstream	2020	ONFH-GJ Stock	Upper CO River Reach
		2	Unknown			
		0	Downstream			
Jul-22	Unknown	10	Upstream	??	Not a Program Tag	??
		11	Unknown			
		3	Downstream			
Jul-22	Unknown	2	Upstream	??	Distributed to UDWR-Moab 2020	??
		0	Unknown			
		0	Downstream			
Jul-22	Unknown	1	Upstream	??	Distributed to ONFH-GJ 2022	??
		1	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Aug-22	BH	0	Upstream	2018	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Aug-22	BH	0	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Aug-22	BH	1	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Aug-22	BT	1	Upstream	2021	ONFH-GJ Stock	Grand Valley Reach
		0	Unknown			
		0	Downstream			
Aug-22	BT	0	Upstream	2021	MUMMA Stock	Upper CO River Reach
		3	Unknown			
		0	Downstream			
Aug-22	BT	0	Upstream	???	Recaptured Colorado River NNF, Tagging encounter not in STReAMS	???
		1	Unknown			
		0	Downstream			
Aug-22	CS	0	Upstream	2017	Colorado River NNF, tagged in the field	Lower CO River Reach
		1	Unknown			
		0	Downstream			
Aug-22	CS	0	Upstream	2018	Redland's Fish Ladder, tagged in the field	Gunnison River
		1	Unknown			
		0	Downstream			
Aug-22	CS	1	Upstream	2020	Redland's Fish Ladder, tagged in the field	Gunnison River
		0	Unknown			
		0	Downstream			
Aug-22	CS	0	Upstream	2021	Colorado River NNF, tagged in the field	Westwater Reach
		1	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Aug-22	CS	0	Upstream	2022	GVWU Ladder, tagged in the field	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Aug-22	FM	0	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		2	Unknown			
		0	Downstream			
Aug-22	FM	0	Upstream	2021	CPW Three Spp.	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Aug-22	FM	0	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Aug-22	RT	1	Upstream	2017	Black Rocks HB Est.	Ruby Horsethief Reach
		0	Unknown			
		0	Downstream			
Aug-22	RT	0	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Aug-22	RT	0	Upstream	2020	Westwater HB Est.	Westwater Reach
		1	Unknown			
		0	Downstream			
Aug-22	RT	0	Upstream	2021	Black Rocks HB Est.	Ruby Horsethief Reach
		2	Unknown			
		0	Downstream			
Aug-22	RT	1	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		1	Unknown			
		1	Downstream			
Aug-22	RZ	1	Upstream	2014	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Aug-22	RZ	0	Upstream	2016	ONFH-GJ Stock	Upper CO River Reach
		3	Unknown			
		0	Downstream			
Aug-22	RZ	1	Upstream	2019	ONFH-GJ Stock	Upper CO River Reach
		0	Unknown			
		0	Downstream			
Aug-22	Unknown	0	Upstream	??	Not a Program Tag	??
		5	Unknown			
		0	Downstream			
Aug-22	Unknown	0	Upstream	??	Distributed to UDWR-Moab 2020	??
		2	Unknown			
		0	Downstream			
Aug-22	Unknown	1	Upstream	??	Distributed to GJ-FWCO 2015 and 2020	??
		1	Unknown			
		0	Downstream			
Aug-22	Unknown	1	Upstream	??	Distributed to ONFH-GJ 2022	??
		3	Unknown			
		0	Downstream			
Sep-22	BH	0	Upstream	2021	CPW Three Spp.	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Sep-22	BH	0	Upstream	2021	CPW Canal Salvage	Grand Valley Reach
		2	Unknown			
		0	Downstream			
Sep-22	BT	0	Upstream	2021	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Sep-22	FM	0	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		1	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Month/Year Detected	Spp.	N	Direction Through Ladder	Initial Encounter Year	Initial Encounter Project	Initial Encounter Location
Sep-22	RT	0	Upstream	2019	CPW Canal Salvage	Grand Valley Reach
		1	Unknown			
		0	Downstream			
Sep-22	RT	0	Upstream	2020	Westwater HB Est.	Westwater Reach
		1	Unknown			
		0	Downstream			
Sep-22	RT	0	Upstream	2020	Black Rocks HB Est.	Ruby Horsethief Reach
		1	Unknown			
		0	Downstream			
Sep-22	RT	0	Upstream	2021	Black Rocks HB Est.	Ruby Horsethief Reach
		2	Unknown			
		0	Downstream			
Sep-22	RZ	0	Upstream	2016	ONFH-GJ Stock	Upper CO River Reach
		2	Unknown			
		0	Downstream			
Sep-22	RZ	0	Upstream	2019	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Sep-22	RZ	0	Upstream	2020	ONFH-GJ Stock	Upper CO River Reach
		1	Unknown			
		0	Downstream			
Sep-22	Unknown	0	Upstream	??	Not a Program Tag	??
		6	Unknown			
		0	Downstream			
Sep-22	Unknown	0	Upstream	??	Distributed to ONFH-GJ 2022	??
		32	Unknown			
		0	Downstream			

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Table 6.

Price-Stubb Fiscal Year Individual PIT Antenna Detections

Species	BH	BT	CH	CS	FXB	FM	HB	RT	RZ
# of Individuals FY2010***	0	0	0	2	0	0	0	6	0
# of Individuals FY2011**	0	16	0	1	0	1	0	19	83
# of Individuals FY2012**	0	88	0	8	0	3	1	36	135
# of Individuals FY2013**	0	138	0	2	0	1	0	79	239
# of Individuals FY2014**	0	114	0	3	0	1	0	29	69
# of Individuals FY2015**	106	22	0	4	0	251	0	19	19
# of Individuals FY2016**	67	126	0	13	0	245	0	21	36
# of Individuals FY2017**	88	66	0	21	0	103	0	16	140
# of Individuals FY2018**	70	71	0	11	0	73	0	29	81
# of Individuals FY2019**	137	176	0	5	4	328	0	28	278
# of Individuals FY2020**	99	98	1	0	3	474	0	58	142
# of Individuals FY2021**	42	91	0	2	1	319	0	54	209
# of Individuals FY2022**	80	77	0	6	3	621	0	130	110
Grand total¹	689	1083	1	78	11	2420	1	524	1541
		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 7.

Number of individual fish detected by PS by species for FY 2022 at Government Highline Fish Passage during fish passage operations.

	bonytail	razorback sucker	roundtail chub	CS	#N/A	bluehead sucker	flannelmouth sucker	unidentified	BHxFM
All 4 + Trap	1	0	0	0	-	-	-	-	-
Trap + 3	1	1	2	0	-	-	-	-	-
Trap + 2	1	2	2	0	-	-	-	-	-
Trap + 1	2	5	2	0	-	-	-	-	-
Trap Only	0	2	2	1	-	-	-	-	-
Below Trap	17	93	58	0	14	17	88	63	1

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Table 8.

Number of individual fish detected each month in FY 2022 by the lower PS at Government Highline Fish Passage when the ladder was not in operation. Each month represents individual fish, individuals can be represented in multiple months.

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Jul	Aug	Sep
bluehead sucker	0	0	0	0	0	1	1	2	0	1
bonytail	3	213	186	119	34	8	23	7	6	4
Colorado pikeminnow	0	0	0	0	0	0	0	0	0	1
flannelmouth sucker	7	11	8	5	2	31	36	10	23	20
razorback sucker	28	23	5	8	0	11	6	109	22	76
roundtail chub	1	10	11	6	4	1	2	8	2	4
unidentified	0	12	13	8	6	5	10	7	1	6
#N/A	0	0	0	2	0	0	0	2	3	24
Grand Total	39	269	223	148	46	57	78	145	57	136