

COLORADO RIVER RECOVERY PROGRAM  
FY 2014 ANNUAL PROJECT REPORT

RECOVERY PROGRAM  
PROJECT NUMBER: C4-b-RED

I. Project Title: **Annual Operation and Maintenance of the Fish Passage Structure at the Redlands Diversion Dam on the Gunnison River**

II. Bureau of Reclamation Agreement Number(s): R13PG40018

Project/Grant Period: Start date (Mo/Day/Yr): 6/3/2013  
End date: (Mo/Day/Yr): 9/30/2017  
Reporting period end date: 10/01/2013 to 9/30/2014  
Is this the final report? Yes \_\_\_\_\_ No X

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IV. Abstract:

The purpose of this project is to collect and summarize annual data on the number of large-bodied fish, different fish species, and seasonal distribution of fish that use the fish passageway at the Redlands Diversion Dam on the Gunnison River. In 2014, the Redlands passageway was operational from 17 April to 17 October. This is the nineteenth year that the fish passageway at Redlands has been operated since it was completed in late-June 1996.

V. Study Schedule: 1996-Ongoing

VI. Relationship to RIPRAP:  
Colorado River Action Plan  
Gunnison River

II.B.1.c. Operate and maintain fish ladder.

II.B.1.d. Monitor and evaluate success.

VII. Accomplishment of FY 2014 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Fish Passage

1. Seventeen Colorado pikeminnow (*Ptychocheilus Lucius*) were captured in the Redlands fish passage during 2014 (Appendix; Table 1 & 2). Sixteen fish had total length's that ranged from 403 to 543 mm with a mean of 479 mm and

were “new” fish, being implanted with a PIT tag on this handling occasion. The seventeenth fish was a recaptured fish with a total length of 517 mm. The size and general appearance of this fish indicate that it is in the same age-range as the other 16 fish. It was probably implanted with a PIT tag during the spring 2014 Colorado pikeminnow population estimate study (this data has not yet been submitted to the database manager). The total number of Colorado pikeminnow capture events recorded at the Redlands fish passage from 1996 through 2014 is 141 (Appendix; Table 3).

2. Two razorback sucker (*Xyrauchen texanus*) were captured in the Redlands fish passage during 2014 (Appendix; Table 1 & 2). The total lengths of these fish were 312 and 490 mm. The larger of the two animals was tagged at this facility in 2006, and the other was most likely stocked in fall 2014 (this data hasn't been submitted to the UCRRP database manager yet). The total number of razorback sucker capture events recorded at the Redlands fish passage from 1996 through 2014 is 31 (Appendix; Table 3).
3. Five bonytail (*Gila elegans*) were captured in the Redlands fish passage during 2014 (Appendix; Table 1 & 2). The total lengths of these fish ranged from 231 to 312 mm, with a mean of 270 mm. All five of these fish were recently stocked and their respective data have not been submitted to the UCRRP database yet.
4. A total of 13,331 fish were handled at the Redlands fish passage between 17 April and 17 October 2014. This is the second highest total number (the highest total number of fish processed was 2013) of fish processed since this facility has been in operation. Native fishes composed 68% of the total catch in 2014 (tied 2003 as the second lowest relative percentage of native fishes), compared to 94% in 1996 and 1997, 93% in 1998 and 1999, 92% in 2000, 83% in 2001, 66% in 2002, 68% in 2003, 77% in 2004, 74% in 2005, 85% in 2006, 83% in 2007, 76% in 2008, 86% in 2009, 87% in 2010, 81% in 2011, 89% in 2012, and 83% in 2013 (Appendix; Table 4). The total number of all fishes collected in the 19-year operation of the fish trap is 166,606. Overall, native fish still continue to compose about 83% of all fish processed during this 17-year period.

Bluehead sucker composed 26% of the total catch and flannelmouth sucker 31%, during 2014. The largest total number of white sucker, in 19 years of operation, were removed and euthanized in 2014 (2,020).

Channel catfish numbers in 2014 were the highest ever observed (1,029). The three next most abundant years for this species were 2007 (501), 2006 (432), and 2013 (995). Only two smallmouth bass were collected and euthanized at the Redlands fish passage in 2014.

Non-native fish total numbers in 2014 (4,285) were 30% higher than the second most abundant year 2005 {(Appendix; Table 4) (2,989)}.

4. Nineteen adult gizzard shad were collected and euthanized in 2014, the third highest catch for this species (2012 = 22 gizzard shad; 2007 = 43 gizzard shad). Low numbers of adult gizzard shad were collected during 2006 (3), 2009 (3), 2010 (5) and 2013 (10). No gizzard shad were collected in 2008 or 2011. During the 2014 centrarchid removal study, 116 adult gizzard shad were collected in the Grand Valley reaches of the Colorado and Lower Gunnison rivers, compared to 2007 (135), 2008 (18), 2009 (36), 2010 (48), 2011 (0), and 2012 (73). A total of 142 juvenile and young-of-year gizzard shad were removed during the 2014 centrarchid removal study.
5. The number of nonnative longnose sucker collected in the Redlands fish passage in 2014 (25) was less than in 2012 (31) and 2011 (30), but more than 2013 (14). This species was collected for the first time in 2010 (6 fish) at the Redlands fish passage.
6. All fish found in the fish trap were counted and sorted by species. All native fish, as well as nonnative rainbow trout and brown trout, were released upstream of Redlands Diversion Dam. All channel catfish were returned alive to the river immediately downstream from the dam. All other nonnative fish plus hybrid suckers were euthanized and disposed of according to our state collecting permit.

#### Operation and Maintenance

1. No maintenance was necessary to remove sediment and debris in the upstream fore bay or downstream fish entrance portions of the Redlands fish passage, due to low peak flows in 2014 on the Gunnison River. Typically, during mid-June immediately following runoff, sediment removal is necessary with the assistance of the Redlands Water and Power Company.
2. Annual weed control was continued throughout 2014.
3. A new stop log was purchased (by Redlands Water and Power) for the fore bay of the ladder to keep larger debris off of the trash rack. It was installed during the spring of 2014.
4. In early July 2014, four USFWS personnel cleaned all of the debris out of the Price Stubb fish ladder on the Colorado River at river mile 188.3.
6. Multiple trips were made to Price Stubb to clean and maintain the MUX that operates the antenna installed in the fore bay of the fish ladder

VIII. Additional noteworthy observations: See above.

IX. Recommendations:

Biological: Continue to collect information on the number of fish, by species, in the fish trap of the Redlands Dam fish passageway in 2013 starting about 15 April and running through mid-October. Consider FLOY-tagging some of the native three species of concern (roundtail chub, flannelmouth sucker, and bluehead sucker) to determine the number of fish that are re-using the ladder per annum and are being counted more than once in the annual tally.

- X. Project Status: “On track and ongoing”.
- XI. FY 2014 Budget Status
- A. Funds Provided: 68,503
  - B. Funds Expended: 68,503
  - C. Difference: -0-
  - D. Percent of the FY 2014 work completed, and projected costs to complete: 100%
  - E. Recovery Program funds spent for publication charges: -0-
- XII. Status of Data Submission (Where applicable): Will be submitted to UCRRP database by January 2015.
- XIII. Signed: Travis Francis 11/13/2014  
Principal Investigator Date

APPENDIX:

**Table 1.** Total number of juvenile and adult fish captured in the fish trap of the passageway at the Redlands Diversion Dam from 17 April to 17 October 2014.

<u>Common Name</u>	<u>Number of Fish</u>	<u>Percent of Total Fish</u>
<b>NATIVE FISH</b>		
bluehead sucker	3,421	25.7
flannelmouth sucker	4,167	31.3
roundtail chub	1,376	10.3
speckled dace	20	0.2
mountain whitefish	10	< 0.1
bonytail	5	< 0.1
Colorado pikeminnow	17	0.1
humpback chub	0	0
razorback sucker	2	< 0.1
<b>TOTAL</b>	<b>9,018</b>	<b>67.6</b>
<b>NONNATIVE FISH</b>		
black bullhead	161	1.2
black crappie	0	0
bluegill	3	< 0.1
brown trout	17	0.1
channel catfish	1,029	7.7
common carp	118	0.9
fathead minnow	0	0
gizzard shad	19	0.1
green sunfish	57	0.4
largemouth bass	0	0
longnose sucker	25	0.2
northern pike	0	0
rainbow trout	9	< 0.1
red shiner	1	< 0.1
sand shiner	1	< 0.1
smallmouth bass	2	< 0.1
walleye	0	0
white sucker	2,020	15.2
yellow bullhead	8	< 0.1
<b>TOTAL</b>	<b>3,470</b>	<b>26.0</b>
<b>HYBRID FISHES</b>		
bluehead sucker X flannelmouth sucker	28	0.2
bluehead sucker X white sucker	137	1.0
flannelmouth sucker X white sucker	677	5.1
flannelmouth sucker X bluehead sucker X white sucker	1	< 0.1
<b>TOTAL</b>	<b>843</b>	<b>6.3</b>
<hr/>		
<b>ALL TOTALS</b>	<b>13,331</b>	<b>100.0</b>

**Table 2.** 2014 PIT tagged fish histories.

Month of Passage	Species	PIT Tag Histories
July 2014	Bonytail ( <i>Gila elegans</i> )	N=1 recently stocked by ONFH-GJ data incoming
	Colorado pikeminnow ( <i>Ptychocheilus lucius</i> )	N=8 newly tagged at passage
	Roundtail chub ( <i>Gila robusta</i> )	N=1 tagged 10/25/2011 in Black Rocks N=1 tagged for fish ladder tour in 2014
August 2014	Bonytail ( <i>Gila elegans</i> )	N=1 recently stocked by ONFH-GJ data incoming
	Colorado pikeminnow ( <i>Ptychocheilus lucius</i> )	N=6 newly tagged at passage
	Roundtail chub ( <i>Gila robusta</i> )	N=1 tagged 10/23/2012 in Black Rocks
September 2014	Bonytail ( <i>Gila elegans</i> )	N=3 recently stocked by ONFH-GJ data incoming
	Colorado pikeminnow ( <i>Ptychocheilus lucius</i> )	N=2 newly tagged at passage N=1 tagged during field season data incoming
	Roundtail chub ( <i>Gila robusta</i> )	N=1 tagged 9/28/2011 in Westwater, recaptured 9/21/2012 in Westwater N=1 tagged 9/27/2011 in Black Rocks
	Razorback sucker ( <i>Xyrauchen texanus</i> )	N=1 tagged at Redlands Fish Passage 8/24/2006
October 2014	Roundtail chub ( <i>Gila robusta</i> )	N=1 tagged in Black Rocks 2011 or 2012, fish data missing
	Razorback sucker ( <i>Xyrauchen texanus</i> )	N=1 recently stocked by ONFH-GJ data incoming fish found on upstream grate

**Table 3.** Number of Colorado pikeminnow, razorback sucker, and bonytail capture events in the fish trap of the Redlands passageway between 1996 and 2014.

Year	Colorado pikeminnow	Razorback sucker	Bonytail <sup>a</sup>	Humpback chub
1996	1	0	0	0
1997	18	0	0	0
1998	23	0	0	0
1999	5	0	0	0
2000	4	0	0	0
2001	1	5	0	0
2002	7	1	0	0
2003	3	0	1	0
2004	5	3	0	0
2005	4	6	0	0
2006	10	5	0	0
2007	21	4	0	0
2008	0	1	0	0
2009	2	1	0	0
2010	4	1	0	1 <sup>b</sup>
2011	2	1	7	0
2012	12	0	0	0
2013	2	1	0	0
2014	17	2	5	0
Totals	141	31	13	1

<sup>a</sup> all bonytail captured in the fish trap were from fish originally stocked in the Colorado and Gunnison rivers.

<sup>b</sup> wild fish originally PIT tagged at the head end of Westwater Canyon on the Colorado River (river mile 123.4), 10/07/2008 by Utah DWR.

**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 Redlands passageway between 1996 and 2014.

<u>Year</u>	<u>Total Number of Fish</u>	<u>Total Native</u>	<u>Total Nonnative</u>	<u>Percent Composition</u>	
				<u>Native Fishes</u>	<u>Nonnative Fishes</u>
1996	8,375	7,885	490	93.9	6.1
1997	12,233	11,547	686	94.4	5.6
1998	7,589	7,060	529	92.8	7.2
1999	8,264	7,654	610	92.6	7.4
2000	6,662	6,157	505	92.3	7.7
2001	6,317	5,221	1,096	82.6	17.4
2002	4,454	2,956	1,498	66.3	33.7
2003	7,259	4,909	2,350	67.6	32.4
2004	11,720	9,011	2,709	76.9	23.1
2005	11,403	8,414	2,989	73.8	26.2
2006	11,095	9,384	1,711	84.5	15.5
2007	6,963	5,801	1,162	83.4	16.6
2008	3,699	2,818	881	76.2	23.8
2009	3,580	3,066	514	85.6	14.4
2010	6,708	5,805	903	86.5	13.5
2011	8,705	7,087	1,618	81.1	18.9
2012	11,562	10,249	1,321	88.6	11.4
2013	16,687	13,810	2,877	82.8	17.2
2014	13,331	9,046	4,285	67.8	32.2
<b>Totals</b>	166,606	137,880	28,734	83.0	17.0