

COLORADO RIVER RECOVERY PROGRAM  
FY 2013 ANNUAL PROJECT REPORT

RECOVERY PROGRAM  
PROJECT NUMBER: C4b-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): R10PG40085 and R13PG40018

Project/Grant Period: Start date (Mo/Day/Yr): 6/3/2013  
End date: (Mo/Day/Yr): 9/30/2017  
Reporting period end date: 10/01/2012 to 9/30/2013  
Is this the final report? Yes  No

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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 2013, the Redlands passageway was operational from 29 April to 15 October. This is the eighteenth 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 2013 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Fish Passage

1. Two Colorado pikeminnow (*Ptychocheilus Lucius*) were captured in the fish trap of the fish passageway at the Redlands Diversion Dam during 2013 (Appendix; Table 1 & 2). One fish's total length was 422 mm and was a new fish implanted with a PIT tag on this handling occasion. The second fish was a recaptured fish with a total length of 487 mm. This fish was probably given a tag in the spring 2013 Colorado pikeminnow estimate and this data has not been submitted to the database. The total number of Colorado pikeminnow capture events recorded in the fish trap at the passageway of the Redlands Dam from 1996 through 2013 is 124 (Appendix; Table 2).
2. One razorback sucker (*Xyrauchen texanus*) was captured in the fish trap of the fish passageway at the Redlands Diversion Dam during 2013 (Appendix; Table 1 & 2). This fish's total length was not measured. This fish was most likely tagged this year, as the data hasn't been submitted to the UCRRP database. The total number of razorback sucker capture events recorded in the fish trap at the passageway of the Redlands Dam from 1996 through 2013 is 29 (Appendix; Table 2).
3. Sixteen thousand six hundred eighty seven fish were counted in the trap of the Redlands Diversion Dam fishway between 29 April and 15 October 2013. This annual total is the highest in eighteen years of operation. Native fishes comprised 83% of the total number of fishes collected in 2012, 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, and 89% in 2012 (Appendix; Table 3). From 2001–2003, there was a significant downward trend in the relative percentage of native fishes compared to the first 5 years that the ladder was operated and monitored when the relative percentage of native fishes was somewhat constant at about 92% per year (Appendix; Table 3). The relative percentage of native fish has continued to steadily increase since 2003, but declined for the first time during 2008 since 2006. The total number of all fishes collected in the 17-year operation of the fish trap is 153,275. Overall, native fish still continue to comprise about 84% of all fish processed during this 17-year period.

Bluehead sucker comprised 28% of the catch and flannelmouth sucker 46% during 2013. The numbers of white sucker (631) that used the fish ladder in 2006 declined by about 58% from 2005 (1,520) and further declined in 2007 (168) and again in 2008 (153). White sucker numbers in 2010 (162) were

similar to 2009 (156) and 2008. However, white sucker numbers increased for the first time in 2011 (n=593) since 2005 and have slightly declined in 2012 (n=407). The second largest collection, in eighteen years, of white sucker were removed from the fish trap in 2013 (n=977). Channel catfish numbers were the largest in fish trap history in 2013 (n=995) when compared to the previous three most abundant years in 2008 (n=355), 2007 (n=501), and 2006 (n=432). Twenty two smallmouth bass were collected in 2013, the most collected in history with 2005 producing the next highest total (n=21).

4. Ten adult gizzard shad were collected in the fish trap during 2013, the third highest catch. Twenty two adult gizzard shad were collected in the fish trap during 2012 which is the second highest catch since 2007 (n=43). Five adult gizzard shad were collected in the fish trap during 2010 and three gizzard shad were collected during 2009 and 2006. No gizzard shad were collected in 2008 and 2011. During the 2013 centrarchid removal study, 131 adult gizzard shad were collected in the Grand Valley reaches of the Colorado and Lower Gunnison rivers, compared to 135 during 2007, 18 in 2008, 36 in 2009, 48 in 2010, 0 in 2011, and 73 in 2012. However, 2013 marked the first time that young-of-year and juvenile gizzard shad were collected (n=82) in the Grand Valley during the centrarchid removal study.
5. The number of nonnative longnose sucker (n=14) collected in the fish trap in 2012 was less than the 2012 catch (n=31) and 2011 catch (n=30). In 2010, this species was collected for the first time (n=6) in the fish trap at Redlands.
6. All fish found in the fish trap were counted and sorted by species. All native fish including rainbow and brown trout were released upstream of Redlands Diversion Dam. All channel catfish were returned alive immediately downstream from the dam. All other nonnative fish plus hybrid suckers were removed.

#### Operation and Maintenance

1. Maintenance to remove sediment and debris in the fore bay and entrance portions of the fishway deposited by the 2013 runoff flows in the Gunnison River wasn't necessary considering low peak flows. 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 in 2013.
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. Installation will occur in the spring of 2014.
4. A new jib crane was purchased (by Redlands Water and Power) and installed (by USFWS) during FY 2013 for hoisting fish out of the trap.

5. During the beginning of July, 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:

- A. 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.
- B. Operation and Maintenance: Hire an electrician to restore power to the flow meter and outlets located at the bottom of the fish ladder. Record flows, in 2011, flooded this portion of the ladder and damaged electrical systems.

X. Project Status: "On track and ongoing".

XI. FY 2013 Budget Status

- A. Funds Provided: 66,612
- B. Funds Expended: 66,612
- C. Difference: -0-
- D. Percent of the FY 2013 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 2013.

XIII. Signed: Travis Francis 11/14/2013  
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 29 April to 15 October 2013.

<u>Common Name</u>	<u>Number of Fish</u>	<u>Percent of Total Fish</u>
<b>NATIVE FISH</b>		
bluehead sucker	4,667	28.0
flannelmouth sucker	7,745	46.4
roundtail chub	1,356	8.1
speckled dace	2	< 0.1
mountain whitefish	10	< 0.1
bonytail	0	0
Colorado pikeminnow	2	< 0.1
humpback chub	0	0
razorback sucker	1	< 0.1
<b>TOTAL</b>	<b>13,783</b>	<b>82.5</b>
<b>NONNATIVE FISH</b>		
black bullhead	173	1.0
black crappie	0	0
bluegill	6	< 0.1
brown trout	73	0.4
channel catfish	995	6.0
common carp	154	0.9
fathead minnow	0	0
gizzard shad	10	< 0.1
green sunfish	22	0.1
largemouth bass	8	< 0.1
longnose sucker	14	< 0.1
northern pike	0	0
rainbow trout	1	< 0.1
red shiner	126	0.8
smallmouth bass	22	0.1
sand shiner	1	< 0.1
walleye	0	0
white sucker	977	5.9
yellow bullhead	1	< 0.1
<b>TOTAL</b>	<b>2,583</b>	<b>15.2</b>
<b>HYBRID FISHES</b>		
bluehead sucker X flannelmouth sucker	27	0.2
bluehead sucker X white sucker	147	0.9
flannelmouth sucker X white sucker	147	0.9
<b>TOTAL</b>	<b>321</b>	<b>2.0</b>
<hr/>		
<b>ALL TOTALS</b>	<b>16,687</b>	<b>100.0</b>

**Table 2.** Number of Colorado pikeminnow, razorback sucker, and bonytail capture events in the fish trap of the Redlands passageway between 1996 and 2013.

<u>Year</u>	<u>No. of Colorado pikeminnow</u>	<u>No. of Razorback sucker<sup>a</sup></u>	<u>No. of Bonytail<sup>a</sup></u>	<u>No. of Humpback Chub</u>
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 <sup>b</sup>
2010	4	1	0	1 <sup>b</sup>
2011	2	1	7	0
2012	12	0	0	0
2013	2	1	0	0
<b>Totals</b>	124	29	8	1

<sup>a</sup> all razorback sucker and 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 3.** 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 2013.

<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
<b>Totals</b>	153,275	128,834	24,449	84.0	16.0