

COLORADO RIVER RECOVERY PROGRAM
FY 2012 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

Project/Grant Period: Start date: 10/01/2006
End date: 9/30/2012
Reporting period start/end date: 10/01/2011 to 9/30/2012
Is this the final report? Yes X No _____

III. Principal Investigator(s):

Travis Francis, Fish Biologist
Dale Ryden, Project Leader
U.S. Fish and Wildlife Service
764 Horizon Drive, Building B
Grand Junction, Colorado 81506
(970) 245-9319; Fax 245-6933
E-mail: travis_francis@fws.gov
dale_ryden@fws.gov

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 2012, the Redlands passageway was operational from 18 April to 18 October. Low base flows in the Gunnison River required cooperation with Redlands Water and Power Company on the operation of the fish passage. We voluntarily closed the fish ladder 30 May to 04 June so Redlands Water and Power Company would have enough water to operate their power turbines. This is the seventeenth year that the fish passageway at Redlands has been operated since it was completed in late-June 1996.

V. Study Schedule:

- A. initial year: 1996
- B. final year: 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 2012 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Fish Passage

1. Twelve Colorado pikeminnow (*Ptychocheilus Lucius*) were captured in the fish trap of the fish passageway at the Redlands Diversion Dam during 2011 (Appendix; Table 1 & 2). Six of the pikeminnow were less than 400 mm TL and six were greater than 400 mm TL. Four of the twelve fish were previously PIT tagged (one at the ladder in 2004, one at CO RMI 78.6 in 2008, one at CO RMI 34.7 in 2009, one could not be found in 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 2012 is 122 (Appendix; Table 2).
2. Eleven thousand five hundred sixty two fish were counted in the trap of the Redlands Diversion Dam fishway between 18 April and 18 October 2011. This annual total is the third highest in seventeen years of operation. Native fishes comprised 89% 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, and 81% in 2011(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 136,588. Overall, native fish still continue to comprise about 84% of all fish processed during this 17-year period.

Bluehead sucker comprised 61% of the catch and flannelmouth sucker 18% during 2012. 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). Channel catfish numbers slightly increased in 2012 (n=290) from 2011 (n=205), but were less than 2008 (355), 2007 (501), and 2006 (432). Fourteen smallmouth bass were collected in 2012 compared to only one in 2009, three in 2010, and none in 2011. Four smallmouth bass were collected during 2008 whereas no smallmouth bass were collected in 2006 or 2007

compared to the highest ever recorded in the fish trap during 2005 (21). Two walleye were collected in the fish trap in 2012 (TL 392 mm & 453 mm).

3. Twenty two adult gizzard shad were collected in the fish trap during 2012 which is the second highest catch since 2007. Five adult gizzard shad were collected in the fish trap during 2010 and three gizzard shad were collected during 2009. No gizzard shad were collected in 2008 and 2011. The number of adult gizzard shad in the fish trap was considerably higher in 2007 (43) from that of 2006 (3). During the 2012 smallmouth bass marking and removal study, 73 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, and 0 in 2011.
4. The number of nonnative longnose sucker (n=31) collected in the fish trap in 2012 was similar to the 2011 catch (n=30). In 2010, this species was collected for the first time (n=6) in the fish trap at Redlands.
5. 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 forebay and entrance portions of the fishway deposited by the 2012 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 2012.

VIII. 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.

B. Operation and Maintenance:

1. To maintain optimum performance of the fish passageway, sediment maintenance is an on-going, annual task. A new stop log needs to be acquired and installed at the entrance of the fish ladder. Preferably a plastic one similar to the stop logs at the Price Stub passageway will be used (~\$3,000).

IX. Project Status:

A. "On track and ongoing".

X. FY 2012 Budget Status

A. Funds Provided: 66,612

B. Funds Expended: 66,612

C. Difference: -0-

D. Percent of the FY 2012 work completed, and projected costs to complete: 100%

E. Recovery Program funds spent for publication charges: -0-

XI. Status of Data Submission (Where applicable): Will be submitted to UCRRP database by January 2012.

XII. Signed: Travis Francis 10/30/2012
Principal Investigator Date

APPENDIX:

Burdick, B. D. 2001. Five-year evaluation of fish passage at the Redlands Diversion Dam on the Gunnison River near Grand Junction, Colorado: 1996-2000. Recovery Program Project Number CAP-4b. Final Report prepared for the Recovery Implementation Program for Endangered Fishes in the Upper Colorado River Basin. U. S. Fish and Wildlife Service, Colorado River Fishery Project, Grand Junction, Colorado. 57 pp. + appendices.

B. Appendix: 3 tables attached.

Table 1. Total number of juvenile and adult fish captured in the fish trap of the passageway at the Redlands Diversion Dam from 18 April to 18 October 2012.

<u>Common Name</u>	<u>Number of Fish</u>	<u>Percent of Total Fish</u>
NATIVE FISH		
bluehead sucker	6,993	60.5
flannelmouth sucker	2,120	18.3
roundtail chub	1,113	9.6
speckled dace	8	< 0.1
bonytail	0	0
Colorado pikeminnow	12	0.1
humpback chub	0	0
razorback sucker	0	0
TOTAL	10,246	88.6
NONNATIVE FISH		
black bullhead	42	0.4
black crappie	1	< 0.1
bluegill	3	< 0.1
brown trout	87	0.8
channel catfish	290	2.5
common carp	80	0.7
fathead minnow	1	< 0.1
gizzard shad	68	0.6
green sunfish	22	0.2
largemouth bass	4	< 0.1
longnose sucker	31	0.3
northern pike	0	0
rainbow trout	4	< 0.1
red shiner	4	< 0.1
smallmouth bass	14	0.1
walleye	2	< 0.1
white sucker	407	3.5
yellow bullhead	1	< 0.1
TOTAL	1,061	9.2
HYBRID FISHES		
bluehead sucker X flannelmouth sucker	3	< 0.1
bluehead sucker X white sucker	67	0.6
flannelmouth sucker X white sucker	193	1.7
TOTAL	263	2.3
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ALL TOTALS	8,705	100.0

APPENDIX (cont.)

Table 2. Number of Colorado pikeminnow, razorback sucker, and bonytail capture events in the fish trap of the Redlands passageway between 1996 and 2012.

<u>Year</u>	<u>No. of Colorado pikeminnow</u>	<u>No. of Razorback sucker^a</u>	<u>No. of Bonytail^a</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
2010	4	1	0	1 ^b
2011	2	1	7	0
2012	12	0	0	0
Totals	122	28	8	1

^a all razorback sucker and bonytail captured in the fish trap were from fish originally stocked in the Colorado and Gunnison rivers.

^b 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 2012.

<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
Totals	136,588	115,024	21,572	84.2	15.8