

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

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III. Project Summary:

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 Redlands passageway. In 2003, the passageway was operational from 16 April to 14 October. This is the eighth year that the fish passageway at Redlands has been operated since it was completed in late-June 1996. In these 8 years, 62 sub-adult and adult Colorado pikeminnow and six razorback sucker have ascended the fish passageway. The first stocked bonytail was collected in the fish trap during June of 2003. Three sub-adult Colorado pikeminnow used the fish passageway in 2003. Seven thousand, two hundred fifty nine fish were collected in the fish trap during 2003. Native fishes comprised about 92% of this total for each of the first 5 years. However, in 2002 and again in 2003, the percentage of native fish declined to about 66 and 68%, respectively. This marks the third consecutive year that there has been a significant decline in the relative percentage of native fish that have used the fish ladder. Bluehead sucker comprised 41% of the total fish in the fish trap in 2003, followed by flannelmouth sucker (22%). Channel catfish were the most numerous nonnative fish collected (12% of the total) followed by white sucker (6%), green sunfish (5%), and black bullhead (1%). All nonnative fish, except channel catfish and salmonid species, continue to be removed. Since its completion in 1996, 61,163 fish have used the fishway.

IV. Study Schedule:

- a. initial year: 1996
- b. final year: Ongoing

V. Relationship to RIPRAP:

- A. Colorado River Action Plan: Gunnison River
 - II.B.1.c. Operate and maintain fish ladder.
 - II.B.1.d. Monitor and evaluate success.

VI. Accomplishment of FY 2003 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

A. FY-2003 Tasks and Deliverables:

Task 1. Routine O & M of the fish ladder and fish trap which includes monitoring, sorting, enumerating all fish in addition to cleaning trash and debris from trash racks, bar screens, fish trap, and fishway entrance.

Task completed.

Task 2. Compile, computerize, and summarize fish use data; prepare annual progress report.

Task completed.

B. Findings (2003 Highlights)

Fish Passage

1. Three sub-adult Colorado pikeminnow were collected in the fish trap of the fish passageway at the Redlands Diversion Dam during 2003 (Appendix; Table 1). This brings the total number of Colorado pikeminnow that have been captured in the fish trap at the passageway of the Redlands Dam to 62 from 1996 through 2003.

One pikeminnow used the fishway in late-July and the two other pikeminnow used the fishway in late-August, which is similar to the seasonal use patterns in former years, 1996-2002. The pikeminnow that was found in the fish trap on 30 July had previously been captured near Moab (river mile 64) on 27 May 2003. Between the original capture point and capture in the fish trap, this fish moved 107 miles upstream in the Colorado River and then moved into the Gunnison River. This pikeminnow then moved another 2.3 miles upstream to the Redlands Dam. This movement was over a 64-day period.

2. One stocked bonytail was captured in the fish trap in mid-June of 2003. This marks the first bonytail captured in the fish trap at Redlands.
3. No razorback sucker were found in the fish trap during 2003. To date, six razorback sucker have been captured in the fish trap at the passageway of the Redlands Dam.
4. Seven thousand, two hundred and fifty-nine fish were trapped and counted in the trap of the Redlands Diversion Dam fishway between 16 April and 14 October 2003. The total number of all fishes that used the fish ladder in 2003 was greater than the annual catches from the three previous years (2000: 6,662; 2001: 6,317; 2002: 4,454) (Appendix; Table 3). Native fishes

comprised 68% of the total number of fishes collected in 2003, compared to 94% in 1996 and 1997, 93% in 1998 and 1999, 92% in 2000, 83% in 2001, and 66% in 2002. This marks the third consecutive year that the relative percentage of native fishes has declined from the first 5 years that the ladder was operated and monitored (Appendix; Table 3).

Bluehead sucker comprised 41% of the catch and flannelmouth sucker 22%. The numbers of channel catfish (887), green sunfish (330), and white sucker (459) that used the fish ladder in 2003 were the highest ever recorded during the 8 years of operation of the fish ladder at Redlands. Prior to 2003, the highest number of channel catfish that were collected in the fish trap was 613 in 2002. The number of green sunfish was slightly higher than that collected in 2002 (256).

4. 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. Channel catfish were released below Redlands Dam. All nonnative species plus hybrid suckers found in the trap were removed.

Operation and Maintenance

1. Work to renovate features of the fish trap was completed in September 2003. Eight of the twelve steel-hinged grates that cover the fish trap were removed to decrease the likelihood of injury to workers running the trap. In lieu of the heavy grating, 3-foot high chain fencing with a swing-away, hinged gate, and chained access points, were added. Funds for the labor and parts were provided by the Bureau of Reclamation in Grand Junction.
2. At the same time, a 120-AC electrical outlet near the entrance of the fish ladder was also added. This will provide more flexibility and convenience for operation of the five slide gates at this location. Funds for this project were also provided by the Bureau of Reclamation in Grand Junction.

VII. 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 2004 starting about 1 April and running through September or mid-October (see recommendation no. 1 in Burdick 2001).
- B. Operation and Maintenance: None

VIII. Project Status:

- A. "On track and ongoing".

IX. FY 2003 Budget Status

- A. Funds Provided: \$ 24,000
- B. Funds Expended: \$ 24,000
- C. Difference: \$ -0-
- D. Percent of the FY 2003 work completed, and projected costs to complete: 100%.
Recovery Program funds spent for publication charges: \$ -0-

X. Status of Data Submission (Where applicable): The three Colorado pikeminnow and one bonytail captured in the fish trap of the passageway at the Redlands Diversion Dam during 2003 were checked for a PIT-tag. Only one Colorado pikeminnow and the single bonytail had been previously PIT-tagged. The remaining two Colorado pikeminnow were PIT tagged prior to their release. The following data were collected from all T & E fish prior to their being released: total length (mm), weight (g), reproductive condition, and date and location of capture. These data have been computerized. The total number of fishes that were collected in the fish trap at Redlands fish passageway were also computerized. These completed, computerized data were provided to the UCRB database coordinator in late-October 2003.

XI. Signed: Bob D. Burdick 11/14/2003
Principal Investigator Date

APPENDIX:

- A. More comprehensive/final project reports. If distributed previously, simply reference the document or report.

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.

Prepared and compiled by: Bob D. Burdick, 11/14/2003

Fishpass03annrpr.wpd

APPENDIX

Table 1. Total number of juvenile and adult fish captured in the fish trap of the passageway at the Redlands Diversion Dam from 16 April to 14 October 2003.

<u>Common Name</u>	<u>Number of Fish</u>	<u>Percent of Total Fish</u>
NATIVE FISH		
bluehead sucker	2,967	40.9
flannelmouth sucker	1,577	21.7
razorback sucker	0	0
roundtail chub	331	4.6
Colorado pikeminnow	3	< 0.1
bonytail	1	< 0.1
speckled dace	27	0.4
TOTAL	4,906	67.6
NONNATIVE FISH		
black bullhead	192	1.3
brown trout	10	0.1
channel catfish	887	12.2
common carp	173	2.4
green sunfish	330	4.5
largemouth bass	10	0.1
smallmouth bass	6	< 0.1
rainbow trout	7	< 0.1
white sucker	459	6.3
TOTAL	2,089	28.8
HYBRID FISHES		
bluehead sucker X flannelmouth sucker	3	< 0.1
bluehead sucker X white sucker	186	2.6
flannelmouth sucker X white sucker	75	1.0
TOTAL	264	3.6

ALL TOTALS	7,259	100.0

APPENDIX (cont.)

Table 2. Capture statistics for three sub-adult Colorado pikeminnow (CS) and one juvenile bonytail (BT) captured in the fish trap of the Redlands passageway, 16 April through 14 October 2003.

Total Name	Most Recent Capture Data			Wild or Stocked			Former Capture or Stocking Data				
	Weight Length (mm)	Recapture (g)	Date	Y	N	Fish	River Date	Total River Mile	Time at Length (mm)	Period of Common Large (yrs)	
CS	424	505	7/30	X		Wild	5/27/03	CO 64.0	396	0.18	
CS	442	580	8/25		X	Wild	--	--	--	--	
CS	480	750	8/25		X	Wild	--	--	--	--	
BT	224	84	6/10	X		Stocked	←----- NA ^a -----→				

^a NA=not available at report time.

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 2003.

Year	Total Number of Fish	Total Native	Total Nonnative	Percent Composition	
				Native Fishes	Nonnative Fishes
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