

- I. Project Title: a. Evaluation of the Effectiveness of the Fish Passage Structure at the Redlands Diversion Dam and Flow Requirements in the 2.3-mile Reach of the Lower Gunnison River and**
- b. Movement of Sub-adult and Adult Colorado Pikeminnow Following Passage Through the Redlands Fishway and Identification of Colorado Pikeminnow Spawning Sites in the Gunnison River**
- II. Principal Investigator(s): Frank K. Pfeifer, Project Leader
: Bob D. Burdick, Fishery Biologist**
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- III. Project Summary:**
- A final report was completed and distributed in August 2001 that evaluated fish use of the passageway at the Redlands Diversion Dam on the Gunnison River from 1996-2000. In 2001 the passageway was operational from 2 April to 2 October. This is the sixth year that the fish passageway at Redlands has been operated since it was completed in late-June 1996. In these 6 years, 52 sub-adult and adult Colorado pikeminnow have ascended the fish passageway. Five adult razorback sucker used the fish passageway in 2001. This is the first year that razorback sucker have used the passageway at Redlands. The one pikeminnow used the passageway in early-July and had previously ascended the passageway in late-August 1998. Four of the razorback suckers ascended the passageway during August, whereas the fifth razorback sucker ascended in mid-September. All five razorback suckers had been previously stocked in the Gunnison River near Delta, CO. Six thousand, three hundred seventeen fish were collected in the fish trap during 2001. Native fishes comprised about 93% of this total for each of the first 5 years. However, in 2001, the percentage of native fish declined to about 83%. Bluehead sucker comprised 45% of the total fish in the fish trap in 2001, followed by flannelmouth sucker (30%). Channel catfish were the most numerous nonnative fish collected (5% of the total) followed by green sunfish (4%), white sucker (3%) and black bullhead (2.5%). Since its completion in 1996, 49,440 fish have used the fishway.**
- IV. Study Schedule:**
- a. initial year: 1996**
b. final year: 2001

- V. **Relationship to RIPRAP:**
 - A. **Colorado River Action Plan: Gunnison River: II.B.1.d. Monitor and evaluate success of the fish passage structure at the Redlands Diversion Dam.**

VI. **Accomplishment of FY 2001 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:**

A. **FY-2001 Tasks and Deliverables: Tasks 3-5.**

Task 3. 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 4. Analyze and evaluate data; prepare annual progress report.

Task completed.

Task 5. Prepare draft and final report.

Task completed.

B. Findings (2001 Highlights)

Fish Passage

1. **Only one adult Colorado pikeminnow was collected in the fish trap of the fish passageway at the Redlands Diversion Dam during 2001 (Appendix; Table 1). This pikeminnow ascended the fish ladder in early-July. This use pattern was similar to that in 1996-2000 in which 15 fish were found in the fish trap in July and 35 in August. The pikeminnow that ascended the passageway during 2001 had previously ascended the passageway during late-August 1998.**
2. **For the first time since the opening of the Redlands passageway in late-June 1996, razorback suckers ascended the passageway at Redlands. Four razorbacks ascended during August and another in mid-September. All five razorback suckers had been previously stocked in the Gunnison River near Delta, CO. One razorback sucker was stocked in October 1996 and had been at large for about 4.8 years (Appendix; Table 2). The other four fish had been either stocked in April or June 2001. Two of the razorback suckers captured in the Redlands fish trap in August 2001 were later captured upstream of the Redlands Diversion Dam in the Gunnison River in early-September 2001 with electrofishing. One razorback sucker captured in the fish trap on 7 August 2001 was recaptured 30 days later 14.9 miles upstream. Another razorback sucker captured in the Redlands passageway fish trap on 28 August 2001 was recaptured only 8 days**

later. This razorback sucker, though, was captured 31.3 miles upstream. This razorback sucker, then, moved further upstream in a shorter duration than the other razorback sucker initially found in the fish trap.

3. Six thousand, three hundred seventeen fish were trapped and counted in the trap of the Redlands Diversion Dam fishway between 2 April and 2 October 2001. The total number of all fishes that used the fish ladder in 2001 was less than the annual catches of the previous five years (1996: 8,375; 1997: 12,233; 1998: 7,589; 1999: 8,264; 2000: 6,662 (Appendix; Table 2). Native fishes comprised 83% of the total number of fishes collected in 2001, compared to 94% to that each in 1996 and 1997, 93% in 1998 and 1999, and 92% in 2000. This is the first year that the relative percentage of native fishes using the passageway has declined in six years (Appendix; Table 3).

Bluehead sucker comprised 45% of the catch, and flannelmouth sucker 30%. The numbers of channel catfish (290) and green sunfish (232) that used the fish ladder in 2001 were the highest ever recorded during the six years of operation of the fish ladder at Redlands. Prior to 2001, the highest number of channel catfish that were collected in the fish trap was 196 in 1999. Similarly for green sunfish, the highest number collected was 47 in 2000. The number of black bullhead found in the fish trap during 2001 (159) was also the highest ever documented at the Redlands passageway. White sucker usage increased from a five-year low of 70 in 2000 to 190 in 2001.

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. All nonnative species plus hybrid suckers found in the trap were removed.

VII. Recommendations:

- A. None (refer to final report).

VIII. Project Status:

- A. A final report describing fish use of the Redlands passageway from 1996-2000 was completed and distributed in late-August 2001.

IX. FY 2001 Budget

- A. Funds Provided: \$33,000
- B. Funds Expended: \$33,000
- C. Difference: \$ 0
- D. Status of Work--Percent of Work Completed (if BR-funded project): 100%

Completed.

E. Publication Costs: \$ 975.00

X. Status of Data Submission:

The one Colorado pikeminnow and five razorback suckers captured in the fish trap of the passageway during 2001 at the Redlands Diversion Dam were checked for a PIT-tag. All six of these fish had been previously PIT-tagged and 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 are provided to the UCRB database coordinator upon his request.

XI. Signed: Bob D. Burdick 2001/12/03
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.

Prepared and compiled by Bob D. Burdick, 01/12/03
PASSRPT.01

APPENDIX

Table 1. Total number of juvenile and adult fish captured in the fish trap of the passageway at the Redlands Diversion Dam from 2 April to 2 October 2001.

<u>Common Name</u>	<u>Number of Fish</u>	<u>Percent of Total Fish</u>
NATIVE FISH		
bluehead sucker	2,850	45.1
flannelmouth sucker	1,870	29.6
razorback sucker	5	< 0.1
roundtail chub	444	7.0
Colorado pikeminnow	1	< 0.1
speckled dace	47	0.7
TOTAL	5,217	82.6
NONNATIVE FISH		
black bullhead	159	2.5
brown trout	3	0.1
channel catfish	290	4.6
common carp	115	1.8
green sunfish	232	3.7
largemouth bass	7	0.1
rainbow trout	1	< 0.1
white sucker	190	3.0
TOTAL	997	15.8
HYBRID FISHES		
bluehead sucker X flannelmouth sucker	4	< 0.1
bluehead sucker X white sucker	51	0.8
flannelmouth sucker X white sucker	48	0.8
TOTAL	103	1.6
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ALL TOTALS	6,317	100.0

Table 2. Capture statistics for one Colorado pikeminnow (CS) and five razorback suckers (RZ) captured in the fish trap of the Redlands passageway, 2 April through 4 October 2001.

Common Name	Most Recent Capture Data			Recapture Y N	Wild or Stocked Fish	Former Capture or Stocking Data				
	Total Length (mm)	Weight (g)	Date			Date	River	Mile	Total Length (mm)	Period of Time at Large (yrs)
CS	576	1,334	7/03	X	Wild	8/30/98	GU	3.0 (Redlds Fish Trap)	561	2.8
RZ	458	912	8/06	X	Stocked	10/04/96	GU	57.0	314	4.8
RZ	508	1,254	8/07	X	Stocked	6/12/01	GU	57.0	508	0.2
RZ	463	918	8/28	X	Stocked	4/03/01	GU	57.0	???	0.4
RZ	459	914	8/29	X	Stocked	4/03/01	GU	57.0	???	0.4
RZ	451	806	9/18	X	Stocked	4/03/01	GU	57.0	???	0.5

Table 3. Comparison of the total number of fish, total native vs. non-native fishes, and percent composition of native and non-native fish captured in the fish trap of the Redlands passageway between 1996 and 2001.

Year	Total Number of Fish	Total Native	Total Non-native	Percent Composition	
				Native Fishes	Non-native 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