

**COLORADO RIVER RECOVERY PROGRAM  
FY 2000 ANNUAL PROJECT REPORT**

**RECOVERY PROGRAM  
PROJECT NUMBER: CAP-4b**

- 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**  
**organization: Colorado River Fishery Project**  
**address: 764 Horizon Drive, Building B  
Grand Junction, CO 81506-3946**  
**phone: (970) 245-9319, FAX (970) 245-6933**  
**E-mail: Frank\_Pfeifer @ FWS.GOV  
Bob\_Burdick @ FWS.GOV**

**III. Project Summary:**

**The overall goal of this project is to evaluate use by endangered fishes of the fish ladder at the Redlands Diversion Dam on the Gunnison River. This is the fifth year that the fish passageway at Redlands has been operated since it was completed in June 1996. In these 5 years, 51 sub-adult and adult Colorado pikeminnow have ascended the fish passageway. No razorback sucker have used the fish passageway. In 2000, four adult Colorado pikeminnow were collected in the fish trap and released upstream of the dam. In 1999, five sub-adult and adult Colorado pikeminnow ascended the passageway, compared to 23 in 1998, 18 in 1997, and only one adult Colorado pikeminnow in 1996. Pikeminnow have used the ladder almost exclusively in July and August over the past four years: 15 in July and 35 in August. However, in 1999, one pikeminnow was found in the fish trap 9 September. Seven different pikeminnow have ascended the fish passageway twice; one of these fish has ascended the passageway three different times. Six-thousand, six-hundred sixty-two fish were collected in the fish trap in 2000. Ninety-two percent were native fishes, including 68% bluehead sucker and only 18% flannelmouth sucker. Since its completion in 1996, 43,123 fish have used the fishway. Native fishes have comprised about 93% of this total for each of these 5 years. A final report is due 31 January 2001.**

- 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 2000 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:**

A. **FY-2000 Tasks and Deliverables: Tasks 2-5.**

**Task 2. Deploy automated radiotelemetry system, monitor movements of radio-tagged fish, download and operate radiotelemetry system.**

**Task completed.**

**Task 3. Monitor fish trap; sort, examine, and enumerate all fish; clean trash and debris from trash racks, bar screens, fish trap, and fishway entrance.**

**Task completed.**

**Task 4. Assess physical habitat available as a function of water depth and discharge.**

**Task Discontinued in FY98**

**Task 5. Analyze and evaluate data; prepare annual progress report.**

**Task completed.**

**B. Findings (2000 Highlights)**

**Fish Passage**

- 1. Four adult Colorado pikeminnow were collected in the fish trap of the fish passageway at the Redlands Diversion Dam during 2000. Two fish were collected in mid-July, two in August. This use pattern was similar to that in 1996, 1997, and 1998 in which 13 fish were found in the fish trap in July and 33 in August.**
- 2. Two of the pikeminnow that were found in the fish trap in 2000 were recaptures that had previously ascended the Redlands passageway, one in July 1998 and the other in August 1998. Two pikeminnow found in the fish trap in 1997 were again found in the trap in 1999 and two pikeminnow that ascended the fish ladder in 1998 again used the ladder in 1999. Two pikeminnow found in the fish trap in 1997 were again found in the fish trap in 1998. In the four years that the fish passageway has been operated and the fish trap monitored, this now brings the total to seven pikeminnow that have ascended the fish ladder more than once. One pikeminnow has ascended the passageway three different occasions. However, none of these seven pikeminnow that**

have re-ascended the fish ladder have done so during the same year.

3. **One Colorado pikeminnow that ascended the fish ladder 17 July 1998 was recaptured with electrofishing 3 August 2000 approximately 22 miles upstream in the Gunnison River. It had been recaptured 11 months earlier at RM 8.2 in the Gunnison River. Three other pikeminnow were recaptured in early-August 2000 that had not passed through the Redland passageway. Two of these fish had previously been radio-tagged during earlier studies of the Gunnison River (see Burdick 1995). All three of these pikeminnow had originally been captured in 1993. Two of these fish were apparently part of the resident pikeminnow population that had probably lived their entire life upstream of Redlands Diversion Dam; the other pikeminnow had been captured in the Lower Gunnison River downstream of Redlands Dam in 1993, radio-tagged, and translocated upstream of the dam.**
4. **Six-thousand, six-hundred sixty-two fish were trapped and counted in the trap of the Redlands Diversion Dam fishway between 23 March and 25 October 2000. The total number of all fishes that used the fish ladder in 2000 was less than the annual catches of the previous four years (1996: 8,375; 1997: 12,233; 1998: 7,589; 1999: 8,264). Native fishes comprised 92% of the total number of fishes collected in 2000, compared to 94% in 1996 and 1997 and 93% in 1998 and 1999. Bluehead sucker comprised 68% of the catch, and flannelmouth sucker only 18%. The numbers of channel catfish that used the fish ladder in 2000 (148) were less than the high of 1998 (196). White sucker usage decreased for the third year in a row.**
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 nonnative species plus hybrid suckers found in the trap were removed.**

### Radiotracking

1. **Four of the five Colorado pikeminnow (total lengths: 767, 719, 682, 594), that ascended the fish ladder in 1999 that were surgically implanted with 10.3 gram, LOTEK® radio transmitters, and released immediately upstream of the Redlands Dam were monitored through 2000. This was conducted to determine 1) the fate of Colorado pikeminnow that had passed through the fish ladder and released upstream of the diversion dam, and 2) if these radio-tagged fish would lead us to sites upstream in the Gunnison River where other pikeminnow may be spawning in 2000.**
2. **The spatial and temporal movements of adult Colorado pikeminnow**

radio-tagged in 1999 were monitored by tracking fish from boats and from three semi-permanent, land-based tracking stations located on the Gunnison River. These stations were located at the Redlands Diversion Dam, at Whitewater (RM 15.3), and another further upstream at RM 33.6.

3. Contact was maintained with three of the four pikeminnow radio-tagged in 1999. One other fish was never contacted since being released. Two of the pikeminnow radio-tagged in August and released immediately upstream of the Redlands Dam eventually passed over the Redlands Diversion Dam. One of these fish spent 26 days upstream of the dam whereas the other fish was located 19 miles downstream in the Colorado River near Fruita, CO, in mid-February 2000 by boat. It was last contacted 0.1-mile upstream on 28 June 2000. The third pikeminnow provided the most movement information of the four pikeminnow radio-tagged in 1999. It was located upstream of the Redlands Diversion Dam about 5-1/2 months following release in the Gunnison River at RM 6.8 on 29 February 2000. This same fish then moved downstream in the Gunnison River to RM 3.4, immediately upstream of the Redlands Dam, on 23 April. It remained there until 27 May. It moved upstream again in the Gunnison River and was contacted at Whitewater at RM 15.3 on 13, 14, and 15 June. This was the furthest upstream movement documented by a Colorado pikeminnow that ascended the passageway, was radio-tagged and released immediately upstream of the Redlands Dam, and its subsequent upstream movements were of its own volition. It then moved downstream and was last contacted 22 July at RM 3.4, immediately upstream of the Redlands Dam.

**VII. Recommendations:**

- A. None (refer to final report).

**VIII. Project Status:**

- A. A final report is due 31 January 2001.

**IX. FY 2000 Budget**

- A. Funds Provided: \$40,000
- B. Funds Expended: \$40,000
- C. Difference: \$ 0
- D. Status of Work--Percent of Work Completed (if BR-funded project): 100% Completed.
- E. Publication Costs: \$ 0

**X. Status of Data Submission:**

**All four Colorado pikeminnow captured in the fish trap of the fish passageway at Redlands Diversion Dam were checked for a PIT-tag. Fish previously not captured were PIT-tagged and the following data collected from all 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 has also been computerized. These completed, computerized data are provided to the UCRB database coordinator upon his request.**

**XI. Signed: Bob D. Burdick                      2000/12/08  
Principal Investigator                      Date**

**APPENDIX:**

**A. More comprehensive/final project reports. If distributed previously, simply reference the document or report. None**

Prepared and compiled by Bob D. Burdick, 00/12/08  
PASSRPT.00