

COLORADO RIVER RECOVERY PROGRAM
FY 2008 ANNUAL PROJECT REPORT

RECOVERY PROGRAM
PROJECT NUMBER: FR- 115

I. Project Title: Cumulative Effects of Flaming Gorge Dam Releases, since 1996, on the Fish Community in Lodore and Whirlpool canyons, Green River.

II. Principal Investigator(s):

Lead Agency: Larval Fish Laboratory, Department of Fish, Wildlife, and Conservation Biology, Colorado State University; Bureau of Reclamation; U.S. Fish and Wildlife Service

Jointly Submitted by: Larval Fish Laboratory, CSU; Bureau of Reclamation; U.S. Fish and Wildlife Service

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III. Project Summary: The primary purpose of this study is to determine the cumulative effect that flow and temperature regimes have had on the fish community in Lodore and Whirlpool canyons of the Green River and recommend how to monitor effects into the future. A secondary purpose is to determine the distribution of the humpback chub population in Whirlpool Canyon to serve as the basis for future monitoring efforts. Future monitoring (i.e. population estimation), if deemed necessary, will be needed to evaluate the contribution of the Whirlpool Canyon population of humpback chub to the overall recovery of the species. Information gathered will be used to evaluate whether flow and temperature regimes from Flaming Gorge Dam are benefitting endangered fishes in the Green River without causing adverse changes in abundance of non-native fishes.

IV. Study Schedule: 2002-2012.

V. Relationship to RIPRAP:

Green River Action Plan: Mainstem.

II.D. Evaluate and revise as needed, flow regimes to benefit endangered fish populations.

VI. Accomplishment of FY 2008 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Task 1: Thermographs

Thermographs data will be provided by George Smith, U.S. Fish and Wildlife Service, Denver, and by Dr. Mark Vinson, Utah State University, at up to 10 other localities in the Green River. We assisted with data collection by removing thermographs from the river in September and October 2008. The Green River upstream of the Yampa River experienced a relatively cool thermal regime in 2008, due to relatively higher flows and cooler weather in late June and July.

Task 2: Sample main channel fish community (large-bodied fishes).

We completed two electrofishing trips through the study area in 2008, as prescribed in the study proposal. Data entry and analysis is not complete for 2008 samples. Of note, main channel sampling conducted in October 2008 in Browns Park detected northern pike and smallmouth bass, unlike in 2007. This was in contrast to 2005 and 2006, when northern pike were found in upstream Browns Park (10 in 2005, 11 in 2006). In 2006 we also captured smallmouth bass in Browns Park (not in 2005 or before).

Table 1.–Tentative list of fishes captured in the Green River, from Browns Park downstream to Rainbow Park with electrofishing, trammel nets, and seining, 2002-2008. N = native, I = introduced. Brook trout was a new species 2006.

	Status	Electrofishing	Trammel netting	Seining
Mountain whitefish	N	X		X
Humpback chub	N	X	X	
Bonytail	N	X	X	X ¹
Roundtail chub	N	X	X	X
Colorado pikeminnow	N	X	X	X
Speckled dace	N	X		X
Bluehead sucker	N	X	X	X
Flannelmouth sucker	N	X	X	X
Razorback sucker	N	X		
Mottled sculpin	N	X		X
Cutthroat trout	I	X		
Brook trout	I	X		
Rainbow trout	I	X	X	
Brown trout	I	X	X	
Northern pike	I	X		X
Red shiner	I	X		X
Common carp	I	X	X	X
Fathead minnow	I			X
Sand shiner	I			X
Redside shiner	I	X		X
White sucker	I	X	X	X
WS x FM		X	X	
FM x BH		X		
WS x BH		X		
RZB x FM		X		X
Channel catfish	I	X	X	X
Green sunfish	I	X		X
Smallmouth bass	I	X	X	X
Walleye	I	X		

¹ Stocked fish.

Task 3: Sample small bodied fish community.

About 100 seine samples were collected in the study area from middle Browns Park downstream to the lower end of Rainbow Park during summer and autumn 2008. We are in the process of identifying those samples; about 15% of summer seine samples have been preliminarily identified.

Smallmouth bass were not collected in seine samples in Brown's Park in 2008. A significant new finding in 2006 was detection of smallmouth bass in seine samples in Browns Park. Samples collected in both summer and autumn then detected the species about 10 river miles upstream of Lodore Canyon and about 11 river miles upstream of the previously known most upstream location.

Task 4: Sample larval drift and process samples.

Drift samples were collected in the Green River just upstream of the Yampa River during summer 2008. Sampling was begun relatively late in July compared to other years because Yampa River flows remained high.

Task 5: Process preserved samples of small-bodied fish (seine hauls).

We have completed identification of 2006 and 2007 seine samples and are progressing with 2008 samples.

Task 6: Prepare and submit annual report.

This report.

Task 7: A final report was prepared and approved in spring 2006 that summarized data collected from 2002 to 2004. Another report was prepared in spring 2007 and approved in autumn 2007 that summarized data collected from 2002 to 2006. Several presentations of data have also been given in the last 12 months.

- VII. Recommendations: We saw a strong fish community response to drought conditions in the study area in 2002 to 2004. Because of ongoing fish community changes in Lodore and Whirlpool canyons, we will be recommending continued removal of non-native fishes and monitoring of the remainder of the fish community in that reach in 2008. Continued drift sampling is also recommended because of captures of early life stages of endangered fishes in 2006.

High flows in spring may be useful to scour rooted aquatic macrophytes in the Green River in Browns Park and disperse small northern pike into unsuitable habitat that may reduce their survival. It may also be useful to sample Browns Park with electrofishing boats or rafts in spring or summer to assess abundance of adult northern pike and smallmouth bass in the reach where we found young.

VIII. Project Status: Ongoing and on track.

IX. FY 2008 Budget Status

- A. Funds Provided: \$62,111
- B. Funds Expended: \$37,111
- C. Difference: \$25,000, these funds are needed to finish identification of samples collected in 2008.
- D. Percent of the FY 2008 work completed, and projected costs to complete: about 70% completed.
- E. Recovery Program funds spent for publication charges: \$400

X. Status of Data Submission (Where applicable): Copy of data will be sent to the database manager in January.

XI. Signed: Kevin R. Bestgen 16 Nov. 2008
Principal Investigator Date

Reports completed in FY-06 and FY-07.

Bestgen, K. R., K. A. Zelasko, R. I. Compton, and T. Chart. 2006. Response of the Green River fish community to changes in flow and temperature regimes from Flaming Gorge Dam since 1996 based on sampling conducted from 2002 to 2004. Final report, Upper Colorado River Basin Endangered Fish Recovery Program, Denver, Colorado. Larval Fish Laboratory Contribution 144.

Bestgen, K. R., K. A. Zelasko, and C. T. Wilcox. 2007. Non-native fish removal in the Green River, Lodore and Whirlpool canyons, 2002-2006, and fish community response to altered flow and temperature regimes, and non-native fish expansion. Final report to the Recovery Implementation Program for Endangered Fishes in the Upper Colorado River Basin. U. S. Fish and Wildlife Service, Denver, CO. Larval Fish Laboratory Contribution 149.