

**COLORADO RIVER RECOVERY PROGRAM
FY-2002 ANNUAL PROJECT REPORT:**

RECOVERY PROGRAM
PROJECT NUMBER:119

I. Project Title: Evaluation of nonnative fish escapement from Starvation Reservoir.

II Principal Investigators:

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III. Project Summary:

The Recovery Program has determined that control of nonnative fishes is necessary for recovery of the endangered fishes. Chronic escapement of nonnative fishes from reservoirs or other impoundments and dispersal into riverine habitats occupied by the endangered fishes where they potentially pose a significant predatory or competitive threat has been identified as a problem. Screening of reservoir outflow to reduce escapement of target nonnative fishes has been implemented at Highline Reservoir, and other such fish barriers are being considered for other Upper Basin reservoirs (e.g., Elkhead; Miller and Laiho 1997). Control of escapement through screening or other types of fish barriers is costly, and the need for such nonnative fish control measures needs to be evaluated on a case-by-case basis. Starvation Reservoir was identified in the 8 March 2000 version of the RIPRAP for such an evaluation beginning in 2002.

Presently, northern pike are of great concern in the Yampa and middle Green Rivers. However, other highly piscivorous species, including walleye and smallmouth bass, are currently increasing in abundance in the middle Green River. A very likely source for escapement of both walleye and smallmouth bass is Starvation Reservoir. This reservoir is located in the Duchesne River drainage and receives inflow from the Strawberry and Duchesne rivers. The reservoir is primarily a walleye, smallmouth bass and brown trout fishery. There are also rare occurrences of northern pike and yellow perch within the reservoir. Locating major sources of these nonnatives to the river system is the first step in controlling the spread and negative impacts these species may be having on recovery efforts for endangered fish species, particularly Colorado pikeminnow and razorback sucker. This project will identify locations and rates of escapement of nonnative sportfish from Starvation Reservoir. A synthesis of available data and literature on fish populations in the Duchesne River adjacent to Starvation Reservoir will also be provided to aid in the evaluation of impacts of escapement.

Operation records from Starvation Reservoir from 1986 through 2000 show that spills occur regularly. Starvation Reservoir has spilled seven out of the previous ten years and is operated with the intent to spill each year. Spills generally occur in June with a duration ranging from a week to nearly one month. Effort for this project is focused on draining the stilling basins of the spillway and outlet of Starvation Reservoir to evaluate escapement.

IV. Study Schedule: 2002 – 2004

V. Relationship to RIPRAP:

GREEN RIVER ACTION PLAN: DUCHESNE RIVER

III. Reduce negative impacts of nonnative fishes and sportfish management activities (nonnative and sportfish management).

III.A. Reduce negative interactions between nonnative and endangered fishes.

III.A.3.b. Evaluate escapement of nonnative fishes from Starvation Reservoir and feasibility of screening.

VI. Accomplishment of FY 2002 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Initial Draining of Stilling Basins

Sampling was focused on the stilling basins of the outlet and spillway of Starvation Reservoir. The stilling basins of the spillway and outlet were drained by pumping prior to spilling and irrigation releases. All fish were removed from the outlet stilling basin. All fish were identified and enumerated and a representative sample of fish were measured and weighed. A net weir was then installed down river from the spillway stilling basin to block movement of fish from downstream sections of the river into the stilling basin. The block was constructed using stock panels for a rigid frame overlaid with ½" mesh screening and was anchored to the bank using gabion baskets. The center of the block was also anchored to a gabion basket.

Pumping of the outlet stilling basin began on March 4 and was completed on March 8. All fish were removed using a seine. Fish removed included 120 brown trout, 30 carp, 3 green sunfish, 143 mountain whitefish, 5 mountain sucker, 7 rainbow trout, 1 smallmouth bass, 9 Utah chub, and 4 walleye.

Pumping of the spillway stilling basin began on March 12 and was completed as the reservoir began to spill on March 28. The last days of pumping were also very windy, creating large waves on the reservoir which caused water to begin spilling over the spillway and filling up the stilling basin. Due to the reservoir beginning to spill as the stilling basin was being pumped out we used an electrofishing boat, trammel nets and seines to get as many fish out as possible before the stilling basin filled. As a result, not all of the fish were removed during the initial draining of the spillway stilling basin.

Fish that were removed included 6 brown trout, 230 carp, 501 green sunfish, 184 smallmouth bass, 139 Utah chub, and 48 walleye.

Evaluation Draining of Stilling Basins

Starvation Reservoir only spilled for a period of 7 days in 2002, beginning March 8, and only a very shallow amount of water came over the spillway. The stilling basin of the spillway was drained a second time in November. Pumping began on October 22 and was completed on November 15. Knowing that the spill in the spring was very short and there was very little chance for escapement, it is assumed that none of the fish removed in the second draining escaped from the reservoir during the 2002 spill. Therefore, the second draining served to remove the remaining fish that were missed during the first draining as a result of the reservoir spilling before the draining was complete. The remainder of the fish removed during the second draining included 4 brown trout, 12 carp, 521 green sunfish, 158 smallmouth bass, 20 Utah chub, and 8 walleye. The stilling basin of the outlet will be drained the first week of December.

River Reach Monitoring

Movement of fish from areas downstream of the block was monitored by electrofishing the three-mile section of river directly below the block before and following runoff. A canoe equipped for electrofishing using a generator and a Coffelt 2-C electrofishing unit was used to electrofish the entire width of the stream channel as crews moved upstream. Fish species sampled by electrofishing before spring irrigation releases were made included 1,584 brown trout, 2 carp, 1 cutthroat trout, 13 mountain whitefish, 28 rainbow trout, and 1 Utah chub. Fish species sampled during fall stream electrofishing included 1,779 brown trout, 57 mountain whitefish, 9 mountain sucker, and 21 rainbow trout. There were not any walleye, smallmouth bass, or green sunfish observed in the three-mile reach of stream below the stilling basins during spring or fall electrofishing efforts.

VII. Recommendations:

The next evaluation draining of the spillway stilling basin should only be done in the event of a significant spill. This will likely be associated with a wetter water year. A better evaluation of escapement rates would be achieved during a year when Starvation Reservoir spills a higher volume of water for a longer time period.

Recommend continuing to sample downstream sections of river and associated habitats to evaluate the magnitude of resident populations of smallmouth bass and possibly walleye.

VIII Project Status: On track and should be completed in 2004

IX FY 2002 Budget Status

- A. Funds Provided: \$ 70,800
- B. Funds Expended: \$ 55,800
- C. Difference: \$ 15,000
- D. Percent of FY 2002 work completed,
and projected costs to complete: 85% complete ~\$12,000 needed to complete
second draining of outlet stilling basin, and data entry and analysis.
- E. Recovery Program funds spent for publication charges: \$ 0

X. Status of Data Submission: Not applicable

XI. Signed: Ron Brunson November 27, 2002
Principal Investigator Date