COLORADO RIVER RECOVERY PROGRAM RECOVERY PROGRAM
FY-2004 ANNUAL PROJECT REPORT: 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 - 2005

V. Relationship to RIPRAP:

General Recovery Program Support Action Plan

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.2. Identify and implement viable active control measures.

VI. Accomplishment of FY 2004 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 15 and was completed on March 17, 2004. All fish were removed using a seine. Fish collected included 293 brown trout, two walleye, 2 yellow perch, three largemouth bass, one mountain sucker, eight mountain whitefish and many mottled sculpin.

Pumping of the spillway stilling basin began on March 18 and was completed April 7, 2004. Trammel nets and seines were used to remove fish from the shallow water (< .3 m) remaining in the chute of the spillway structure. Fish removed included 96 smallmouth bass, over 500 green sunfish, one walleye, one brown trout, 10 carp and two Utah chubs.

Evaluation Draining of Stilling Basins-
Starvation Reservoir did not spill in 2004. Therefore, an evaluation draining of the stilling basin was not conducted. Pumping of the outlet stilling basin began on November 1 and was completed on November 3, 2004. Fish removed included 349 brown trout, 16 mountain whitefish, one white sucker, four mountain sucker, nine carp, one walleye and 49 yellow perch.

Table 1. Number of fish caught by species in the outlet stilling basin of Starvation Reservoir during initial and evaluation draining: 2002 and 2004

	Species					
	Brown Trout	Mountain whitefish	Smallmouth bass	Walleye	Largemouth bass	Yellow perch
Initial draining 3/4 – 3/8/02	120	143	1	4	0	0
Evaluation draining 12/3 – 12/6/02	114	38	0	2	0	0
Initial draining 3/15 – 3/17/04	293	8	0	2	3	2
Evaluation draining 11/1 – 11/3/04	349	16	0	1	0	48

Other species collected in low numbers included: carp, green sunfish, mountain sucker, rainbow trout, Utah chub and mottled sculpin.

Table 2. Number of fish by species caught in the spillway stilling basin of Starvation Reservoir following draining: 2002 and 2004.

	Species					
	Brown Trout	Carp	Green Sunfish	Smallmouth bass	Utah Chub	Walleye
Initial draining 3/12 – 3/28/02	6	230	501	184	139	48
Evaluation draining 10/22 – 11/15/02	4	12	521+	158	20	8
Initial draining 3/18 – 4/7/04	1	10	Abundant yoy	96	2	1
Evaluation draining NOT COMPLETED						

River Reach Monitoring-

River reach monitoring in 2004 included electrofishing the Duchesne River below the Knight diversion and below the town of Myton (Dude Young property) to evaluate presence of target species. Fish species collected below the Knight Diversion included flannelmouth sucker, brown trout and carp. Fish collected below the town of Myton included white sucker, flannelmouth sucker, carp, black bullhead catfish, and smallmouth bass.

In 2002, 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 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.

Table 3. Number of fish by species captured during electrofishing efforts of approximately three river-miles of the Strawberry River below Starvation Reservoir during spring and fall: 2002.

VII. Recommendations:

	Species						
	Brown Trout	Carp	Cutthroat trout	Mountain whitefish	Mountain sucker	Rainbow trout	Utah chub
Electrofishing Spring	1584	2	1	13	0	28	1
Electrofishing Fall	1779	0	0	57	9	21	0

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.

Continue to sample down stream sections of river and associated habitats to evaluate the magnitude of resident populations of smallmouth bass.

VIII Project Status: on track and should be completed in 2005

IX FY 2004 Budget Status

A. Funds Provided: $ 63,100
B. Funds Expended: $ 63,100
C. Difference: $ 0
D. Percent of FY 2004 work completed, and projected costs to complete: 100%
E. Recovery Program funds spent for publication charges: $ 0

X. Status of Data Submission: not applicable

XI. Signed: Ron Brunson March 22, 2005

Principal Investigator Date