

COLORADO RIVER RECOVERY PROGRAM
FY 2007 PROPOSED SCOPE-OF-WORK for:
Smallmouth Bass control in the Green River

Project No.: 123a

Lead Agency: UDWR and USFWS

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Category:

- Ongoing project
- Ongoing-revised project
- Requested new project
- Unsolicited proposal

Expected Funding Sources:

- Annual funds
- Capital funds
- Other (explain)

I. Title of Proposal:

Smallmouth Bass Control in Echo Park to Split Mountain of the Green River, Utah.

II. 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.

GREEN RIVER ACTION PLAN: MAINSTEM

- III. Reduce impacts of nonnative fishes and sportfish management activities (nonnative and sportfish management).
- III.A. Reduce negative impacts to endangered fishes from sportfish management activities.
- III.A.4. Develop and implement control programs for nonnative fishes in river reaches occupied by the endangered fishes to identify required levels of control. Each control activity will be evaluated for effectiveness, and then continued as needed.

III. Study Background/Rationale and Hypotheses:

The Upper Colorado River Endangered Fish Recovery Program has determined that control of nonnative fish in the upper Colorado River basin is essential to the recovery of the four endangered fish species: Colorado pikeminnow, razorback sucker, humpback chub, and bonytail. Smallmouth bass abundance has dramatically increased in the Green River since 2000. This information resulted in a recommendation from the December 2003 Nonnative Fish Control Workshop (Grand Junction, CO) to attempt control of this species in the Green River. Three years of removal and Nonnative Fish Control Workshops have added to the knowledge base of the effort required to successfully remove smallmouth bass from the Green River. During the December 2006 workshop, participants discussed the importance of increasing the removal effort and reallocating effort to concentration areas, resulting in this revised scope of work for the Echo Park to Split Mountain reach of the Green River in Utah.

IV. Study Goals, Objectives, End Product:

Goal: Control smallmouth bass populations in the Green River.

Objectives:

1. Remove smallmouth bass in the Green River from Echo Park (RM 344) to Split Mountain (RM 318).
2. Calculate an annual population estimate of adult and juvenile smallmouth bass for this reach of the Green River.
3. Attain at least a 65% annual exploitation rate for smallmouth bass over 200 mm.

End Product: An in-depth annual report will provide the current years data for: adult and juvenile population estimates (including 95% confidence intervals, coefficients of variation, and probabilities of capture), annual exploitation estimates, total CPUE, CPUE by river mile and size class, monthly length frequency histograms, catches for experimental methods, CPUE for other nonnatives, total numbers captured for target species, and estimates of spawning/nesting periods and locations. Data from past years of sampling will be included for relevant metrics to provide background, demonstrate trends and progress toward smallmouth bass removal criteria.

V. Study Area

The study area is located on the Green River from Echo Park (RM 344) to Split Mountain boat ramp (RM 318); a total of 26 miles. Crews from UDWR - Moab and USFWS CRFP will both work in this reach to complete a total of fifteen passes. The UDWR – Moab crew will complete back-to-back sampling trips (with a one day camp break) in their first three visits (6 trips) to minimize mileage and other travel related costs, and the final trips will be four days long including travel. Under a separate scope of work UDWR – Vernal will remove smallmouth bass from Split Mountain boat ramp (RM 318) to the Duchesne River confluence (RM 247.9) for nine to ten passes. When feasible, crew members from UDWR – Moab and USFWS – Vernal will assist UDWR – Vernal with efforts between Split Mountain and the Duchesne River confluence.

VI. Study Methods/Approach

Sampling: Smallmouth bass will be removed primarily by electrofishing. Two electrofishing boats will simultaneously electrofish each shoreline of the river. Effort will be focused on shoreline habitat that is likely to contain smallmouth bass. Sampling crews will conduct removal activities in a manner that minimizes potential negative impacts to endangered fish as a result of electrofishing activities. This includes discontinuing electrofishing when elevated numbers of endangered fish are known to be present. Fifteen electrofishing passes will be conducted beginning July when water temps reach approximately 20°C and ending in late September or early October. All smallmouth bass captured during the first pass will be tagged with individually numbered Floy tags and released. All bass captured in subsequent passes will be removed.

Several methods will be used in an attempt to identify spawning periods and locations. First, crews will examine shoreline areas for nests and destroy any found; second, all bass captured will be examined for spawning condition, and finally, the time and locations of YOY smallmouth appearance in catches will be noted and tracked to back estimate the period and location spawning areas.

Three additional capture techniques will be experimented with as time and conditions permit. The first will include the use of an adult fish block/trap seine (Figure 1). The dimensions of the block/trap seine will be 30'W x 6'H with a 2' diameter fyke in the center and a 1" mesh. The first method is to deploy the block/trap seine at the bottom of a riffle or shallow run and electrofish toward it, the seine is used to capture stunned fish which are not visible due to high turbidity. The

second method could be used if localized spawning locations are found; this method would use a large adult beach seine (300-400'L x 12'H x 1''m) to partition off a spawning area and crowd fish downstream into a block/trap seine. The third technique is the use of a 30' long DC electric seine with a boat mounted generator fished upstream in shallow habitats. The electric seine was successfully used in this reach in 2006 to capture YOY smallmouth bass; this method would again be used during late September or early October when YOY smallmouth have reached a size available to capture.



Figure 1. Adult fish block/trap seine.

Data Analysis: Recapture rates for marked fish in subsequent passes will be used estimate abundance of adult and juvenile smallmouth bass using a closed capture model with removal in program Mark. The annual abundance estimate of adult and juvenile bass will be used to calculate the related exploitation rates for the year. Estimates of age 2 fish will be compiled for two years and then analyzed to estimate annual YOY over-winter recruitment. Exploitation rates and recruitment estimates will be used in a population dynamics model to examine removal effectiveness and project future effort needed to reach the smallmouth bass target criteria.

Fish Handling and Disposal: All other centrarchids (green sunfish, bluegill, black crappie, and largemouth bass), northern pike, and walleye encountered will be removed. Any nonnative species of special concern such as grass carp, gizzard shad, or burbot which are encountered will be removed and the appropriate state Fish and Game agencies will be contacted. All nonnative fish removed in Dinosaur National Park will be euthanized and buried on banks, as advised by the National Park Service. Any endangered fish captured will be scanned for a PIT tag, tagged if needed, weighed (g), measured TL (mm), and released alive. Endangered fish data will then be reported to appropriate principal investigators and included in annual reporting.

VII. Task Description and Schedule

Task 1. Eight smallmouth bass removal passes from Echo Park to Split Mountain boat ramp (USFWS CRFP – Vernal; August – October 2007).

Task 2. One marking and six removal passes from Echo Park to Split Mountain boat ramp (UDWR Moab; July - August 2007).

Task 3. Data entry, analysis, and reporting – October/November 2007

VIII. FY2007 Work Deliverables/Due Dates

Recovery Program annual progress report: November 2007

Task 1. Eight smallmouth bass removal passes from Echo Park to Split Mountain boat ramp (USFWS CRFP – Vernal; August – October 2007).

Task Activity	Cost
Labor	
GS-14 Project Leader (\$62.33/hr x 8 hrs/day x 10 days)	\$4,986
GS-11 Biologist (\$38.17/hr x 8 hrs/day x 5 days/trip x 8 trips) + (\$57.25/hr x 2 hrs OT/day x 5 days/trip x 8 trips)	\$16,796
GS-7 Fish Biologist (\$23.55/hr x 8 hrs/day x 5 days/trip x 8 trips) + (\$35.32/hr x 2 hrs OT/day x 5 days/trip x 8 trips)	\$10,362
GS-8 Fish Tech (\$29.14/hr x 8 hrs/day x 5 days/trip x 8 trips) + (\$43.71/hr x 2 hrs OT/day x 5 days/trip x 8 trips)	\$12,822
2 GS-5 Tech (\$23.68/hr x 8 hrs/day x 5 days/trip x 8 trips) + (\$35.53/hr x 2 hrs OT/day x 5 days/trip x 8 trips)	\$20,840
GS-9 Admin. Assist. (\$32.82/hr x 8 hrs/day x 10 days)	\$2,626
Subtotal	\$68,432
Travel, Shuttle Drivers, Boat gas, Per Diem, Equipment, etc.	
(4 trucks/trip x 80 mi/truck x \$0.405/mi x 8 trips) Vernal to Eco Park	\$1,037
(4 trucks/trip x 70 mi/truck x \$0.405/mi x 8 trips) Eco Park to Split Mt Ramp	\$907
(4 trucks/trip x 25 mi/truck x \$0.405/mi x 8 trips) Split Mt Ramp to Vernal	\$324
Vehicle maintenance (oil chgs, tires, cleaning, etc.)	\$800
(12 gal gasl/boat x 3 boats/trip x \$2.75/gal x 8 trips)	\$792
(2 qts motor boat oil/boat x 4 boats/trip x \$2.75/qt x 8 trips)	\$176
Contract Shuttle Drivers (\$125/truck x 4 trucks/trip x 8 trips)	\$4,000
Per diem (5 people/day x \$25/person x 5 days/trip x 8 trips)	\$5,000
GS-8 Fish Tech maintenance of equipment (\$29.14/hr x 8 hrs/day x 60 days)	\$13,987
Subtotal	\$27,023
Task 1 Total	\$95,455

Task 2. One marking and six removal passes from Echo Park to Split Mountain boat ramp (UDWR Moab; July - August 2007).

Task Activity	Work Days	UDWR – Moab Cost
Labor		
Technician (\$195/day)	200	39,000
Biologist (\$340/day)	40	13,600
Project Leader (\$438/day)	10	4,380
	Subtotal	\$56,980
Travel		
Mileage Moab to Echo Park round trip:		
Back-to-back trip (2 trucks/trip x 654 mi/truck x \$0.41/mi + \$5/day rent x 3 trips)		1,958
Single trip (2 trucks/trip x 514 mi/truck x 0.41/mi + \$5/day rent x 3 trips)		472
Shuttle service: 2 trucks X 7 trips @\$125 per truck		1,750
Per diem: 5 people x \$30/person x 4 days/trip x 7 trips		4,200
	Subtotal	\$8,380
Equipment		
Maintenance of outboard motors, rafts, electrofishing gear, outboards & generator fuel (30 gal./pass), and oil.		2,000
Nets: 1- 30' block/trap seine, 1 - 400' beach seine		750
	Subtotal	\$2,750
	Task 2 Total	\$68,100

Task 3. Data management and reporting

Task Activity	Cost
Labor – USFWS - Vernal	
GS-11 Biologist (\$38.17/hr x 8 hrs/day x 40 days)	\$12,214
GS-9 Admin. Assist. (\$32.82/hr x 8 hrs/day x 5 day)	\$1,313
Supplies (paper, computer disks, copies, etc.)	\$1,000
	USFWS Subtotal
	\$14,527
Labor – UDWR - Moab	
Biologist (\$340/day x 4 days)	\$1,360
Technician. (\$195/day x 6 days)	\$1,170
Project Leader (\$438/day x 2 days)	\$876
	UDWR Subtotal
	\$3,406

Task 3 Total \$17,933

IX. Program Budget Summary

UDWR Moab \$ 71,516

USFWS Vernal \$109,982

FY 2007 Total \$181,498

X. Reviewers