

**COLORADO RIVER RECOVERY PROGRAM
FY 2011 PROPOSED SCOPE-OF-WORK for:
Smallmouth Bass control in the Green River**

Project No.: 123a

Lead Agency: USFWS

Submitted by: Kenny Breidinger
Utah Division of Wildlife Resources
Moab Field Station
1165 S. Hwy 191 – Suite 4
Moab, UT 84532
435-259-3781/fax 435-259-3785
E-mail: kennybreidinger@utah.gov

Tildon Jones
Colorado River Fish Project
U. S. Fish and Wildlife Service
Vernal, UT 84078
Phone: (435) 789-0366 ext. 14; Fax: (435) 789-4805
E-mail: tildon_jones@fws.gov

Date: ****Updated – 7 March 2011 for USFWS edits****

Category:

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

Expected Funding Sources:

- Annual funds
- Capital funds
- Other (explain)

I. Title of Proposal:

Nonnative Fish Control in Echo Park to Split Mountain Reach and the Desolation/Gray Reach 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. Five 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 a revised scope of work for the Echo Park to Split Mountain reach of the Green River in Utah. In the first revision, effort from Desolation/Gray Canyons was reallocated to the Echo Park Reach.

In 2008, two control/monitoring trips were completed to assess smallmouth abundance and distribution within Desolation/Gray Canyons. The 2008 assessment showed that although distribution had spread slightly downstream, relative abundance remained low and that intensive control efforts in this reach were not warranted at that time and should continue to be applied in the Echo Park reach.

In January of 2011, consideration of increasing smallmouth captures in the upper most section of Desolation Canyon prompted a change in the distribution of smallmouth control efforts for 2011. This revised scope of work redistributes effort from four Echo reach removal passes and reallocates them to two Desolation/Gray reach removal passes. The results are two new objectives (3 and 4) and one new task (task 3). There is no net change in the FY 2011 costs for this project.

IV. Study Goals, Objectives, End Product:

Goal: Control smallmouth bass populations in the Green River.

Objectives:

1. Remove smallmouth bass, and other nonnative fishes in the Green River from Echo Park (RM 344.5) to Split Mountain (RM 319.5).
2. Calculate an annual population estimate of adult and juvenile smallmouth bass for this reach of the Green River.
3. Monitor adult and juvenile smallmouth bass to determine extent of control needed in Desolation/Gray Canyons of the Green River.
4. Remove smallmouth bass in the Green River from Sand (RM 215.3) to Swasey's Rapid (RM 129.8).
5. Attain at least a 65% annual exploitation rate for smallmouth bass over 150 mm within the Echo study reach.

End Products: **Echo Reach** – 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.

Desolation/Gray Reach – An annual report will be written providing information on: adult and juvenile smallmouth bass catch rates, total catch-per-unit-effort (CPUE), CPUE by river mile and length frequency histograms, and CPUE for other nonnatives. Data from past years of sampling will be included for relevant comparisons and to demonstrate trends and progress toward smallmouth bass removal criteria.

V. Study Area

The first study area is located on the Green River from Echo Park (RM 344.5) to Split Mountain boat ramp (RM 319.5); a total of 26 miles. Crews from UDWR - Moab and USFWS CRFP will both work in this reach to complete a total of twelve passes. The UDWR – Moab crew will complete back-to-back sampling trips (with a one day camp break) in each of their 2 visits (4 trips) to minimize mileage and other travel related costs.

The second study area is located in Desolation/Gray Canyons located on the Green River from Sand Wash (RM 215.3) to Swaseys Rapid boat ramp (RM 129.8) (85.5 river miles).

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. Twelve electrofishing passes will be conducted in the Echo study reach beginning June and ending in late September or early October. Two sampling passes will be conducted in Desolation and Gray Canyons beginning in July and ending in August. All smallmouth bass captured during the first two passes in the Echo reach will be tagged with individually numbered Floy tags. The smallmouth bass population estimate will be conducted during the first four sampling passes--two marking passes and two subsequent removal / recapture passes. All bass captured in subsequent passes will be removed. All bass captured in Desolation and Gray Canyons 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. Finally, the time and locations of YOY smallmouth appearance in catches will be noted and tracked to back estimate spawning period and to locate spawning areas.

Data Analysis: Population estimates for the Echo population will be calculated using a Lincoln-Petersen estimate with Chapman's correction. Other population models may be explored using Program Mark and recapture rates for all passes. The annual abundance estimate of adult and juvenile bass will be used to calculate the related exploitation rates for the year. Estimates of age 1 fish will be compiled 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.

Adult and juvenile smallmouth bass catch rates, total catch-per-unit-effort (CPUE), CPUE by river mile and length frequency histograms, and CPUE for other nonnative fish will be calculated for the Desolation and Gray study reach. Data from past years of sampling will be included for relevant comparisons and to demonstrate trends and progress toward smallmouth bass removal 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 removal passes from Echo Park to Split Mountain boat ramp (USFWS CRFP – Vernal; August – October 2011).

Task 2. Two marking and two removal passes from Echo Park to Split Mountain boat ramp (UDWR Moab; June–August 2011).

Task 3. Two removal passes from Sand Wash to Swasey Rapid (UDWR Moab; July–August 2011).

Task 4. Data entry, analysis, and reporting – October/November 2011.

VIII. FY2011 Work Deliverables/Due Dates

Recovery Program annual progress report: November 2011

Task 1. Eight removal passes from Echo Park to Split Mountain boat ramp (USFWS CRFP – Vernal; August – October 2011).

| Task 1 – USFWS Echo Sampling (8 trips) | Rate (\$/h) | Total Hours | Cost |
|---|--------------------|--------------------|--------------------|
| Labor | | | |
| GS-11 Biologist | \$40.58 | 488 | \$19,803.04 |
| GS-11 Biologist trip prep | \$40.58 | 128 | \$5,194.24 |
| GS-8 Fish Tech | \$35.83 | 192 | \$6,879.36 |
| GS-8 Fish Tech trip prep | \$35.83 | 128 | \$4,586.24 |
| 3 GS-5 Tech | \$17.49 | 576 | \$10,074.24 |
| 3 GS-5 Technicians trip prep | \$17.49 | 384 | \$6,716.16 |
| Subtotal | | | \$53,253.28 |
| Travel, Shuttle Drivers, Boat gas, Per Diem, Equipment, etc. | | | |
| (3 trucks/trip x 175 mi/truck x \$0.505/mi x 8 trips) Vernal to Echo Park, round trip | | | \$2,121 |
| (12 gal gas/boat x 3 boats/trip x \$3.50/gal x 8 trips) | | | \$1,008 |
| (2 qts motor boat oil/boat x 3 boats/trip x \$3.00/qt x 8 trips) | | | \$144 |
| Shuttle (3 trucks/trip x \$150/truck x 8 trips) Echo to Split Mountain | | | \$3,600 |
| GSA trucks | | 2 | \$5,400 |
| Vehicle maintenance (oil chgs, tires, cleaning, etc.) | | | \$2,000 |
| Per diem (5 people/day x \$30/person x 3 days/trip x 8 trips) | | | \$3,600 |
| 1 outboard motor | | | \$2,500 |
| Maintenance/replacement of rafting gear, sampling nets, electrofishing gear, etc. | | | \$6,476.60 |
| GS-8 Fish Tech maintenance work | \$35.83 | 160 | \$5,732.80 |
| Subtotal | | | \$32,582.40 |
| TASK 1 Subtotal-USFWS Vernal | | | \$85,835.68 |

Task 2. Four removal passes from Echo Park to Split Mountain boat ramp (UDWR Moab;

June - August 2010).

| Task Activity – Echo Sampling (4 trips) | Work Days | UDWR Moab |
|--|---------------------|------------------|
| Labor | | |
| Proj. leader (\$451/day) | 5 | \$2,255 |
| Biologist (\$340/day) | 20 | \$6,800 |
| Technicians (\$195/day) | 103 | \$20,085 |
| | Subtotal | \$29,140 |
| Travel | | |
| Vehicle - 4 trips (2 trucks 3% total fleet cost) | | \$1,300 |
| Shuttle Services - 4 trips, 2 vehicles @ \$150 / truck | | \$1,200 |
| Per diem - 4 trips (4 days/ 5 people @ \$30 per day) | | \$2,400 |
| | Subtotal | \$4,900 |
| Equipment | | |
| Boat, Trailer, Sampling gear repair and maintenance | | \$1,350 |
| Boat/generator fuel, propane 4 trips | | |
| | Subtotal | \$1,350 |
| | Task 2 Total | \$35,390 |

Task 3. Two removal passes in Desolation/Gray Canyons (UDWR Moab; June - August 2011).

| Task Activity – Desolation/Gray Sampling (2 trips) | Work Days | UDWR Moab |
|---|---------------------|------------------|
| Labor | | |
| Proj. leader (\$451/day) | 5 | \$2,255 |
| Biologist (\$340/day) | 20 | \$6,800 |
| Technicians (\$195/day) | 103 | \$20,085 |
| | Subtotal | \$29,140 |
| Travel | | |
| Vehicle - 2 trips (3 trucks 3% total fleet cost) | | \$1,300 |
| Shuttle Services - 2 trips, 3 vehicles @ \$190 / truck | | \$1,140 |
| Per diem - 2 trips (8 days/ 5 people @ \$30 per day) | | \$2,400 |
| | Subtotal | \$4,840 |
| Equipment | | |
| Boat, Trailer, Sampling gear repair and maintenance | | \$1,350 |
| Boat/generator fuel, propane 2 trips | | |
| | Subtotal | \$1,350 |
| | Task 3 Total | \$35,330 |

Task 4. Data management and reporting

| Labor-USFWS Vernal | Rate (\$/h) | Total Hours | Cost |
|---|--------------------|--------------------|--------------------|
| Labor | | | |
| GS-14 Project Leader (\$72.14/h x 80h) | \$71.70 | 80 | \$5,736.00 |
| GS-11 Biologist (\$42.95/h x 304h) | \$40.58 | 304 | \$12,336.32 |
| GS-9 Admin. Assist. (\$33.63/h x 140h) | \$35.26 | 140 | \$4,936.40 |
| Supplies (paper, computer disks, copies, etc.) | | | \$1,000.00 |
| Meetings/Workshops | | | |
| Per diem (1 person x \$140/day x 6 days) Vernal to Grand Junction | | | \$840.00 |
| Travel to give presentations at workshops and meetings (1 truck/trip x 275 mi/truck x \$0.505/mi x 2 trips) | | | \$278.00 |
| USFWS Subtotal | | | \$25,126.72 |
| Labor – UDWR - Moab | | | |
| Biologist (\$340/day x 15 days) | | | \$5,100 |
| Technician. (\$195/day x 4 days) | | | \$780 |
| Project Leader (\$451/day x 2 days) | | | \$902 |
| UDWR Subtotal | | | \$6,782 |
| Task 4 Total | | | \$31,908.72 |

IX. Program Budget Summary

| | |
|----------------------|------------------|
| FY 2011 | |
| UDWR Moab | \$ 77,502 |
| USFWS Vernal | \$110,963 |
| FY 2011 Total | \$188,465 |

X. Reviewers