

**RECOVERY PROGRAM  
FY 2016-2017 SCOPE OF WORK for:  
Middle Green River floodplain sampling.**

Recovery Program Project Number: FR-164

Reclamation Agreement number: R12PG40023  
Reclamation Agreement term: 8/8/2012-12/30/2016

Note: Recovery Program FY16-17 scopes of work are drafted in May 2015. They often are revised before final Program approval and may subsequently be revised again in response to changing Program needs. Program participants also recognize the need and allow for some flexibility in scopes of work to accommodate new information (especially in nonnative fish management projects) and changing hydrological conditions.

Lead agency: USFWS

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Category:

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

Expected Funding Source:

- Annual funds  
 Capital funds  
 Other [explain]

I. Title of Proposal: Middle Green River floodplain sampling.

II. Relationship to RIPRAP:

Green River Action Plan:

I.D.1.b. Evaluate recent peak flow studies related to floodplain inundation and entrainment of larval razorback suckers

I.D.1.b.(4)(a) Implement LTSP

II.A. Restore and manage flooded bottomland habitat

II.A.4.a. Implement, validate, and refine Green River Subbasin Floodplain Management Plan

III. Study Background/Rationale and Hypotheses:

Endangered fish of the Colorado River use wetlands during various times to complete their life history. Although researchers in the Green River system spend considerable time sampling fish populations in the mainstem river, less work is conducted in the wetlands to document endangered fish. Razorback sucker (*Xyrauchen texanus*) (RZB), in particular, use floodplain wetlands throughout their lives, and specifically rely on these habitats during early development from larval to juvenile stages (Modde 1996). Until recently, researchers have had little success documenting these life stages for wild-produced fish in recent years (Modde et al. 2001). After several years of meeting stocking goals for hatchery RZB, larval production has increased (Bestgen et al. 2011). In the fall of 2011, wild-spawned RZB were documented in two floodplain wetlands following near-record spring flows and flooding (Webber 2013). In subsequent years, management of Stewart Lake using the Larval Trigger Study Plan (LTSP

2012) has resulted in successful entrainment and recruitment of juvenile RZBs (Skorupski et al. 2013; Schelly et al. 2014). This confirms that the adult RZB population is sufficient to produce larvae, larvae can be entrained into wetland habitats, and recruitment of larvae to juvenile size is feasible. Now that evidence exists that recruitment is possible, the goal of this project is to continue monitoring wetland habitats for young-of-year RZB and other stages and species of endangered fish such as bonytail. This project will also fulfill some of the monitoring and assessment objectives in the RZB monitoring plan (Bestgen et al. 2012) and assess flow recommendations for Flaming Gorge operations. Finally, FWS Vernal obtained a grant to renovate some of the Johnson Bottom floodplain, with a specific focus on establishing floodplain connection for implementing the LTSP. Much of the monitoring and management for the Johnson site will occur under this SOW, and we anticipate the site will be able to connect in low to moderate flow conditions, thus making it available on a more frequent basis.

#### IV. Study Goals, Objectives, End Product:

Goal: Document endangered fish use of wetlands

Objectives:

- 1) Sample wetlands in spring to determine overwinter survival of RZ B and bonytail in wetlands where they have been documented.
- 2) Qualitatively describe fish community in wetlands with comparisons between habitats where endangered species occur/do not occur.
- 3) Sample wetlands during larval drift and in fall to document entrainment and recruitment of RZB.
- 4) Manage Johnson Bottom for entrainment and survival of RZB.
- 5) Document connection flows, period of connection, and collect water quality information at wetlands sampled each year.

End product: Annual report indicating presence/absence data for endangered fish in wetlands. Length frequencies of endangered fish found in wetlands will be included, as well as PIT tag information and origin, where available. Attempts will be made to generate a population estimate for bonytail in spring in wetlands where they have been stocked for acclimation (i.e., Escalante Ranch in 2013 and 2014).

#### V. Study Area: Floodplain wetland habitats in the middle Green River.

#### VI. Study Methods/Approach:

This project will be conducted and coordinated under the guidance of the razorback sucker monitoring plan (Bestgen et al. 2012) and the Larval Trigger Study Plan (LTSP 2012). We will select sampling sites based on each year's hydrology and floodplain habitats identified in these study plans for a given hydrologic regime. We potentially will amend which locations will be sampled based on wetlands that connect to the river in spring or other observations that may require special attention (e.g., finding a northern pike source at Thunder Ranch in 2011). We will sample each wetland with any of the following methods: fyke nets, trammel nets, hoop nets, minnow traps, light traps, electrofishing, or hook and line sampling. The goal is to document endangered fish and sample as many sites as possible, rather than extensive characterization of any particular site. Any endangered fish captured will be measured,

weighed, and PIT tagged if not already tagged, and the location to which it will be released will depend on whether or not we believe the fish can survive through winter in its current location. Nonnative fish community information (species, relative order of abundance) will be gathered in each wetland, and nonnative fish will be euthanized. Temperature and dissolved oxygen loggers will be deployed at these sites to collect water quality information. This information would be summarized and provided to the Program Director's office in the form of an annual report, although significant or unusual findings will be communicated as they occur (e.g., if wild-produced razorback sucker juveniles are found or an alarming amount of nonnative fish of concern are found like the case of northern pike in Thunder Ranch 2011). In the event of more extensive floodplain inundation and wetland development as occurred in 2011, or in cases where significant findings warrant, this scope of work may be expanded to include more sampling, at the discretion of the Biology Committee and Program Director's office. This may require additional field days and personnel beyond what is planned here. Such sampling would again be conducted under the guidance of established monitoring plans.

For Johnson Bottom, this project will initiate floodplain inundation once larval RZBs are detected in the river. The water control structure has already been modified to preclude entrainment of adult nonnative fishes, by the use of a ½" slotted screen. The wetland will be monitored periodically throughout the summer for both fish presence and growth, as well as water quality. FWS has obtained a large 8" pump to pump river water into the wetland if conditions warrant. Finally, the wetland will be sampled and/or drained, in coordination with Ouray NWR objectives, in the fall, either to release any juvenile RZBs back to the river or to facilitate resetting the wetland of any nonnative populations.

VII. Task Description and Schedule:

Task 1: Sample wetlands (locations to be determined)

Task 2: Summarize data and write annual report.

Task 3: Present research findings at Nonnative fish workshop or Researchers Meeting.

Schedule: FY-2016

Task	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1			X	X	X				X	X		
2											X	
3												X

Schedule: FY-2017

Task	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1			X	X	X				X	X		
2											X	
3	X											X

Schedule: FY-2018

Task	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1			X	X	X				X	X		
2											X	
3	X											X

Schedule: FY-2019

Task	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1			X	X	X				X	X		
2											X	
3	X											X

Schedule: FY-2020

Task	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1			X	X	X				X	X		
2											X	
3	X											X

VIII. Deliverables, Due Dates, and Budget by Fiscal Year:  
FY 2016- Annual report due November 2016.

Task Activity	Rate \$/h	Hours	Cost
<b>Task 1. Sample wetlands (to be determined)</b>			
<b>Operational Costs</b>			
GS-7 Fisheries Biologist	\$28.44	240	\$6,826
GS-8 Fisheries Technician	\$39.74	261	\$10,372
GS-5 Fisheries Technician	\$24.96	240	\$5,990
<b>Subtotal</b>			<b>\$23,188</b>
<b>Equipment</b>			
(1 truck/day x 60 mi/truck x \$0.31/mi x 30 trips) Vernal to wetland, round trip			\$558
(5 gal gas/week x \$4.00/gal x 1 boat/week x 6 weeks)			\$120
GSA truck (rate/mo x # truck-months)	\$313	4	\$1,252
Oil, motor repairs, net repair supplies, net replacement (replacement nets = \$848/each)			\$3,000
<b>Subtotal</b>			<b>\$4,930</b>
<b>TASK 1 TOTAL</b>			<b>\$28,118</b>
<b>Task 2. Summarize data and report writing, administrative costs.</b>			
<b>Labor</b>			
GS-9 Administrative Officer	\$39.19	80	\$3,135
GS-7 Fisheries Biologist	\$28.44	32	\$910
GS-12 Supervisory Fish Biologist	\$55.14	40	\$2,206
<b>Subtotal</b>			<b>\$6,251</b>
<b>TASK 2 TOTAL</b>			<b>\$6,251</b>
<b>SOW TOTAL</b>			<b>\$34,369</b>

FY 2017- Annual report due November 2017.

Task Activity	Rate \$/h	Hours	Cost
<b>Task 1. Sample wetlands (to be determined)</b>			
<b>Labor</b>			
GS-9 Fisheries Biologist	\$35.36	240	\$8,486
GS-8 Fisheries Technician	\$39.74	261	\$10,372
GS-5 Fisheries Technician	\$25.76	240	\$6,182
<b>Subtotal</b>			<b>\$25,041</b>
<b>Equipment</b>			
(1 truck/day x 60 mi/truck x \$0.32/mi x 30 trips) Vernal to wetland, round trip			\$576
(5 gal gas/week x \$4.00/gal x 1 boat/week x 6 weeks)			\$120
GSA truck (rate/mo x # truck-months)	\$320	4	\$1,280
Oil, motor repairs, net repair supplies, net replacement (replacement nets = \$848/each)			\$3,000
<b>Subtotal</b>			<b>\$4,976</b>
<b>TASK 1 TOTAL</b>			<b>\$30,017</b>
<b>Task 2. Summarize data and report writing, administrative costs.</b>			
<b>Labor</b>			
GS-9 Administrative Officer	\$39.98	80	\$3,198
GS-9 Fisheries Biologist	\$35.36	32	\$1,132
GS-12 Supervisory Fish Biologist	\$56.25	40	\$2,250
<b>Subtotal</b>			<b>\$6,580</b>
<b>TASK 2 TOTAL</b>			<b>\$6,580</b>
<b>SOW TOTAL</b>			<b>\$36,597</b>

FY 2018- Annual report due November 2018.

Task Activity	Rate \$/h	Hours	Cost
<b>Task 1. Sample wetlands (to be determined)</b>			
<b>Labor</b>			
GS-11 Fisheries Biologist	\$42.93	240	\$10,303
GS-8 Fisheries Technician	\$40.53	261	\$10,578
GS-5 Fisheries Technician	\$26.21	240	\$6,290
<b>Subtotal</b>			<b>\$27,172</b>
<b>Equipment</b>			
(1 truck/day x 60 mi/truck x \$0.33/mi x 30 trips) Vernal to wetland, round trip			\$594
(5 gal gas/week x \$4.00/gal x 1 boat/week x 6 weeks)			\$120
GSA truck (rate/mo x # truck-months)	\$325	4	\$1,300
Oil, motor repairs, net repair supplies, net replacement (replacement nets = \$848/each)			\$3,000
<b>Subtotal</b>			<b>\$5,014</b>

<b>TASK 1 TOTAL</b>			<b>\$32,186</b>
<b>Task 2. Summarize data and report writing, administrative costs.</b>			
<b>Labor</b>			
GS-9 Administrative Officer	\$40.78	80	\$3,262
GS-11 Fisheries Biologist	\$42.93	32	\$1,374
GS-12 Supervisory Fish Biologist	\$57.38	40	\$2,295
<b>Subtotal</b>			<b>\$6,931</b>
<b>TASK 2 TOTAL</b>			<b>\$6,931</b>
<b>SOW TOTAL</b>			<b>\$39,117</b>

FY 2019- Annual report due November 2019.

Task Activity	Rate \$/h	Hours	Cost
<b>Task 1. Sample wetlands (to be determined)</b>			
<b>Labor</b>			
GS-11 Fisheries Biologist	\$43.79	240	\$10,510
GS-8 Fisheries Technician	\$41.35	261	\$10,792
GS-5 Fisheries Technician	\$27.27	240	\$6,545
<b>Subtotal</b>			<b>\$27,847</b>
<b>Equipment</b>			
(1 truck/day x 60 mi/truck x \$0.34/mi x 30 trips) Vernal to wetland, round trip			\$612
(5 gal gas/week x \$4.00/gal x 1 boat/week x 6 weeks)			\$120
GSA truck (rate/mo x # truck-months)	\$332	4	\$1,328
Oil, motor repairs, net repair supplies, net replacement (replacement nets = \$848/each)			\$3,000
<b>Subtotal</b>			<b>\$5,060</b>
<b>TASK 1 TOTAL</b>			<b>\$32,907</b>
<b>Task 2. Summarize data and report writing, administrative costs.</b>			
<b>Labor</b>			
GS-9 Administrative Officer	\$41.60	80	\$3,328
GS-11 Fisheries Biologist	\$43.79	32	\$1,401
GS-12 Supervisory Fish Biologist	\$58.52	40	\$2,341
<b>Subtotal</b>			<b>\$7,070</b>
<b>TASK 2 TOTAL</b>			<b>\$7,070</b>
<b>SOW TOTAL</b>			<b>\$39,977</b>

FY 2020- Annual report due November 2020.

Task Activity	Rate \$/h	Hours	Cost
<b>Task 1. Sample wetlands (to be determined)</b>			
<b>Labor</b>			
GS-11 Fisheries Biologist	\$44.67	240	\$10,721
GS-8 Fisheries Technician	\$42.17	261	\$11,006
GS-5 Fisheries Technician	\$28.09	240	\$6,742
<b>Subtotal</b>			<b>\$28,469</b>
<b>Equipment</b>			
(1 truck/day x 60 mi/truck x \$0.35/mi x 30 trips) Vernal to wetland, round trip			\$630
(5 gal gas/week x \$4.00/gal x 1 boat/week x 6 weeks)			\$120
GSA truck (rate/mo x # truck-months)	\$338	4	\$1,352
Oil, motor repairs, net repair supplies, net replacement (replacement nets = \$848/each)			\$3,000
<b>Subtotal</b>			<b>\$5,102</b>
<b>TASK 1 TOTAL</b>			<b>\$33,571</b>
<b>Task 2. Summarize data and report writing, administrative costs.</b>			
<b>Labor</b>			
GS-9 Administrative Officer	\$42.43	80	\$3,394
GS-11 Fisheries Biologist	\$44.67	32	\$1,429
GS-12 Supervisory Fish Biologist	\$59.69	40	\$2,388
<b>Subtotal</b>			<b>\$7,211</b>
<b>TASK 2 TOTAL</b>			<b>\$7,211</b>
<b>SOW TOTAL</b>			<b>\$40,782</b>

IX. Budget Summary:

FY 2016: \$34,369  
FY 2017: \$36,597  
FY 2018: \$39,117  
FY 2019: \$39,977  
FY 2020: \$40,782

X. Reviewers:

XI. References:

Bestgen, K. R., G. B. Haines, and A. A. Hill. 2011. Synthesis of flood plain wetland information: Timing of razorback sucker preproduction in the Green River, Utah, related to stream flow, water temperature, and flood plain wetland availability. Final Report to the Upper Colorado River Endangered Fish Recovery Program, Denver. Larval Fish Laboratory Contribution 163.

Bestgen, K. R., K. A. Zelasko, and G. C. White. 2012. Monitoring reproduction, recruitment and population status of razorback suckers in the upper Colorado River Basin. Report to the Upper Colorado River Endangered Fish Recovery Program. Larval Fish Laboratory Contribution 170, Colorado State University, Fort Collins.

Larval Trigger Study Plan Ad Hoc Committee. 2012. Study plan to examine the effects of using larval razorback sucker occurrence in the Green River as a trigger for Flaming Gorge Dam peak releases. Final Report to the Upper Colorado River Endangered Fish Recovery Program, Denver, CO.

Modde, T. 1996. Juvenile razorback sucker (*Xyrauchen texanus*) in a managed wetland adjacent to the Green River. *Great Basin Naturalist* 56:375-376.

Modde, T. 2007. Interim Green River subbasin floodplain management plan. Draft report to the Upper Colorado River Endangered Fish Recovery Program, Denver.

Modde, T., R. T. Muth, and G. B. Haines. 2001. Floodplain Wetland Suitability, Access, and Potential Use by Juvenile Razorback Suckers in the Middle Green River, Utah. *Transactions of the American Fisheries Society* 130:1095-1105.

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Skorupski, Jr., J.A., I. Harding, and M.J. Breen. 2013. Use of the Stewart Lake floodplain by larval and adult endangered fishes. Annual report to the Upper Colorado River Endangered Fish Recovery Program, Denver, CO.

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