RECOVERY PROGRAM Recovery Program Project Number: 167
FY 2020-2021 SCOPE OF WORK for:

Smallmouth bass control in the White River

Reclamation Agreement numbers: *TBA* (USFWS) & R19AP00059 (UDWR)
Reclamation Agreement terms: October 1, 2019 – September 30, 2024

Note: Recovery Program FY20-21 scopes of work are drafted in May 2019. 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.

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Date Last Modified: 8/14/2019 12:35:00 PM

Category:
X Ongoing project
__ Ongoing-revised project
__ Requested new project
__ Unsolicited proposal

Expected Funding Source:
X Annual funds
__ Capital funds
__ Other

I. Title of Proposal: Smallmouth bass control in the White River

II. Relationship to RIPRAP:

White River Action Plan:

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

III.B. Reduce negative impacts to endangered fishes from sportfish management activities.

III.B.2. Preclude new nonnative species introductions, translocations or invasions to preserve native species dominance within critical habitat.

III.B.2.a. Determine and implement an adequate level of mechanical removal to reduce smallmouth bass.

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 (USFWS 2002a-c): Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila cypha*), and bonytail (*G. elegans*). The highest catch rates of adult and sub-adult Colorado pikeminnow in the Green River sub-basin were observed in the White River during earlier Colorado pikeminnow abundance estimates (Bestgen et al. 2010). Furthermore, adult razorback sucker, many in spawning condition, have recently been collected in the White River during spring sampling (STReaMs Database) and larval razorback sucker were documented for the first time in June 2011 (Webber et al. 2013a), suggesting this species is now utilizing this system for spawning purposes. Additionally, the White River is a stronghold for unlisted native species (Lanigan and Berry 1981; Martinez et al. 1994; Breen and Hedrick 2009, 2010), thus providing an important forage base for Colorado pikeminnow (Osmundson et al. 1998).

Smallmouth bass (*Micropterus dolomieu*) have been documented in the White River for over three decades (Crosby 1975), yet proliferation of this population did not occur until recently. However, 41 smallmouth bass were collected during one low flow native species sampling pass (42.5 mile reach in Utah) conducted during 2009 (Breen and Hedrick 2010). In addition, increasing numbers of smallmouth bass were collected from 2011-2013 during Colorado pikeminnow abundance estimate sampling. During our initial investigation in 2012, we learned that the majority of smallmouth bass were found in the first ten miles below Taylor Draw Dam, and densities decreased dramatically downstream of this area (Breen et al. 2012). This has continued to be the overall distribution of bass in the river, but adult and sub-adult densities have increased in downstream reaches, particularly after low discharge and warm river conditions that are conducive to bass reproduction (Webber et al. 2013b). More recent removal efforts have demonstrated that smallmouth bass have successfully reproduced and recruited every year since 2012 regardless of hydrology, and as a result, bass densities have continued to increase (Smith et al. 2018).

IV. Study Goals, Objectives, End Product(s):

Goal:

Sufficiently reduce the abundance of adult smallmouth bass in the White River such that their potential to spawn and their predatory and competitive impacts on the growth, recruitment, and

survival of endangered and other native fishes is minimized.

Objectives:

1. Conduct removal passes for smallmouth bass in the White River from the Taylor Draw Dam (RM 104) to the BLM Enron boat ramp (RM 24). Effort will be distributed based on greatest efficiency of bass removal.

2. Identify levels of control necessary to prevent population expansion.

End Product:

An annual report will provide information on the extent of the smallmouth bass population in the White River, as well as annual fluctuations in densities. Metrics to be summarized include: total numbers of adult and juvenile smallmouth bass removed, total CPUE, CPUE by river reach and size class, numbers of other nonnatives removed, and knowledge of spawning periods and locations.

V. Study Area:

The study area encompasses the White River below Kenney Reservoir (Colorado and Utah), where we will remove smallmouth bass from the Taylor Draw Dam (RM 104) to the Enron boat ramp (RM 24). Crews from USFWS Green River Basin FWCO (USFWS-GRBFWCO), UDWR Vernal, and Colorado Parks and Wildlife (see SOW 126b) will share the workload to complete removal efforts through this reach. Previously the Colorado-Utah border (RM 72) served as a break point for two distinct sections. However, river access was further compromised in 2019 eliminating our ability to launch anywhere between the BLM Big Trujillo boat ramp (RM 87.5) and the Bonanza bridge (RM 59). Therefore, beginning in 2020 USFWS-GRBFWCO will extend their portion of removal efforts downstream into Utah, ending at the Bonanza bridge, and UDWR Vernal will conduct removal efforts from the Bonanza bridge to the Enron boat ramp.

VI. Study Methods/Approach:

Temporarily reducing riverine smallmouth bass and northern pike populations appears viable under certain environmental conditions but both species can easily reverse these reductions in population abundance and return to pre-removal abundances under favorable environmental conditions (Breton et al. 2014; Zelasko et al. 2015). Therefore, mechanical removal efforts will attempt to reach eradication of nonnative fish populations in the river. However, recent synthesis reports investigating effectiveness of in-river removal efforts for northern pike and smallmouth bass determined that reducing in-river populations of these two species would not be successful unless in-river reproduction and reservoir escapement were controlled (Breton et al. 2014; Zelasko et al. 2015). Therefore, mechanical removal efforts will continue to temporarily suppress riverine populations, and will focus on reducing in-river reproduction when feasible. Simultaneously, Program partners will work on other means to reduce in-river reproduction and reservoir escapement, in order to make mechanical removal more effective

and to attempt to reach complete eradication of riverine populations.

Smallmouth bass will be removed by electrofishing. Two electrofishing rafts 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 and threatened fishes are known to be present, especially when actively spawning. Electrofishing passes will be conducted from May to early July, focusing on the descending limb of the hydrograph when water temperatures will likely favor smallmouth bass spawning and nesting (~16°C). Additionally, one pass of bass removal (more if extremely productive) will occur in October in the Utah portion of the White River given that this strategy has increased the number of adults removed from this reach (Smith et al. 2018). Smallmouth bass captured in this project will not be tagged and released for population estimates.

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; fish >200 mm TL will be dissected to make this determination if not visibly ripe upon inspection. Finally, the time and locations of YOY smallmouth appearance in catches will be noted and tracked to estimate spawning period and to locate spawning areas. Otolith collection and preservation may provide further insight on exact hatch dates at the request of the Recovery Program.

In addition to the targeted smallmouth bass, other nonnative species encountered will be removed as feasible with the exception of common carp (*Cyprinus carpio*), channel catfish (*Ictalurus punctatus*), and small-bodied cyprinids. All endangered fishes captured will be scanned for a PIT tag, tagged if needed, weighed (g), measured TL (mm), and released alive.

VII. Task Description and Schedule:

Task 1. Fourteen days of smallmouth bass removal from Taylor Draw Dam (RM 104) to BLM boat launch (RM 87.5) and three passes (three days of effort per pass) from the BLM boat ramp to the Bonanza bridge (RM 59).

Task 2. Three smallmouth bass removal passes (or a total of 9 days of effort) from the Bonanza bridge (RM 59) to Enron boat ramp (RM 24); two passes will be completed in spring/summer and one pass in the fall as described above. *Note: prior to the onset of 2019 field sampling, effort to conduct one spring and one fall pass (or 8 days of total effort) was shifted from Project #123b. Following access issues described above, removal passes for this task will now only take three days to complete instead of four.*

Task 3. Data entry, analysis, and reporting.

Schedule: FY 2020-2024

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

VIII. Deliverables, Due Dates, and Budget by Fiscal Year:

FY 2020-2024

Program annual reports due each November.
Project data will be submitted to the Recovery Program Database Manager by January.

IX. Budget Summary:

	USFWS-GRBFWCO	**UDWR-Vernal**	**FY Total**
FY 2020	$59,629	$31,403	**$91,032**
FY 2021	$57,074	$32,031	**$89,105**
FY 2022	$57,423	$45,192	**$102,615**
FY 2023	$58,571	$46,096	**$104,667**
FY 2024	$64,544	$47,018	**$111,562**
TOTAL	**$297,241**	**$226,767**	**$524,008**

X. Reviewers:

XI. References:

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