RECOVERY PROGRAM Recovery Program Project Number: 158
FY 2020-2021 SCOPE OF WORK for:

Assessment of larval Colorado pikeminnow presence and survival in low velocity habitats in the middle Green River

Reclamation Agreement number: R19AP00059 (UDWR) & TBD (FWS-GRBFWCO)
Reclamation Agreement term: Oct. 1, 2019 – Sept. 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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Category:
X Ongoing project
__ Ongoing-revised project
__ Requested new project
__ Unsolicited proposal

Expected Funding Source:
X Annual funds
_ Capital funds
_ Other *[explain]*

I. Title of Proposal: Assessment of larval Colorado pikeminnow presence and survival in low velocity habitats in the middle Green River

II. Relationship to RIPRAP:

GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN

IV. Conserve genetic integrity and augment or restore populations.
IV.A.4.a.(1) Maintain genetic refuge for each endangered species in the Middle Green River.

IV.A.4.d.(1)	Upper Colorado River Basin (Broodstock currently represented at Southwest Native ARRC and by wild fish in the river).
V.B.	Conduct research to acquire needed life history information.
V.B.2.	Conduct appropriate studies to provide needed life history information.

GREEN RIVER ACTION PLAN: MAINSTEM

IV.A.	Augment or restore populations as needed, and as guided by the Genetic Management Plan.
V.C.3	Monitor age-0 Colorado pikeminnow in backwaters.

III. Study Background/Rationale and Hypotheses:

Fall Interagency Standardized Monitoring Program (ISMP) sampling of age-0 Colorado pikeminnow (CPM) has been conducted annually since the mid-1980s to assess the abundance and distribution of young fish (USFWS 1987). Since 1994, these surveys have shown a reduction in the abundance of age-0 CPM in the alluvial section of the Green River between Split Mountain and Desolation Canyon (Breen et al. 2011). Other studies monitoring the upstream abundance of larval CPM drifting from the Yampa Canyon spawning site during the same time suggest that larval fish production has not decreased from previous levels when age-0 CPM were more abundant in this reach (Bestgen et al. 1998, 2006; Bestgen and Hill 2016). Several possibilities exist for why age-0 CPM are not captured as frequently as they once were, including an increase in nonnative predatory fishes, nonnative competitors, and habitat alterations (e.g., Breen and Jones 2019). Other researchers have investigated environmental conditions such as changes in habitat related to flow and temperature. For example, analysis of available data obtained from 1979–2012 demonstrates that larger Colorado pikeminnow year-class production occurs in the middle Green River when mean August–September base flow levels were 1,700–3,000 cfs (Bestgen and Hill 2016). Prior to 2019, this study sought to monitor the arrival of larval CPM in middle Green River backwaters and investigate how nonnative fishes influence age-0 CPM as they arrive and grow in backwater habitats. Although continuing this work will build a more robust dataset, allowing for comparisons across years with different hydrologic regimes, the focus of this project will shift for the near future for reasons discussed below.

The declining size of the Green River subbasin CPM population in recent years as estimated by Project #128 (Bestgen et al. 2018a; Bestgen et al. 2018b) prompted the Recovery Program to reorient the scope of this project in 2019. As a result, the Utah Division of Wildlife Resources Vernal (UDWR V) will no longer deplete backwaters of nonnative fish in preparation for backwater blocking treatments or conduct fyke netting in backwaters to determine predation effects (previously tasks 2 and 5). Instead, UDWR V will focus all efforts on age-0 CPM monitoring in the middle Green River from Split Mountain to the Duchesne River confluence throughout the summer base flow period. Additionally, the Green River Basin Fish and Wildlife Conservation Office (GRB FWCO) will no longer monitor larval CPM drift at Split Mountain and presence in the middle Green River (previously task 1), but instead focus all efforts on collecting age-0 CPM that will be held as broodstock at Southwestern Native Aquatic Resources & Recovery Center (SNARRC). These fish will enhance diversity of the SNARRC CPM broodstock and produce offspring that will augment the Green River CPM population in the future.

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

Goal:

Monitor age-0 Colorado pikeminnow in the middle Green River to determine their presence, location, and status during the summer (UDWR) and collect age-0 CPM in early fall (GRB FWCO) that will become broodstock at SNARRC to bolster the Green River subbasin CPM population in the future.

Objectives:

1. Document densities of age-0 CPM in backwaters as the season progresses.
2. Collect sufficient numbers of age-0 CPM from backwaters during the fall to enhance the CPM broodstock at SNARRC.

End product:

1. Documentation of relative abundance of age-0 CPM in the middle Green River throughout the summer base flow period in relation to experimental Flaming Gorge Dam releases.
2. Young-of-year Colorado pikeminnow collected in the middle Green River will bolster the SNARRC broodstock.

V. Study Area:

The study area encompasses the middle Green River from Split Mountain boat ramp (river mile [RM] 319.5) to the Duchesne River confluence (RM 247.9).

VI. Study Methods/Approach:

To document age-0 recruitment success in relation to experimental Flaming Gorge Dam releases, we will seine backwater habitats in the middle Green River on a temporal basis throughout the summer base flow period until brood collection begins in early fall (see below). Larval drift sampling conducted for Recovery Program Project #22f will guide the timing of this project. More specifically, seining in the middle Green River will begin shortly after larval CPM are detected on the lower Yampa River at the Echo Park site (e.g., Bestgen and Jones 2018). Once detected, UDWR V crews will conduct a scouting trip from Split Mountain to the Duchesne River confluence to identify available backwater habitats that meet ISMP criteria (USFWS 1987), then randomly select a subset of backwaters encompassing the entire reach. We will sample selected backwaters and collect habitat information following the ISMP sampling protocol (USFWS 1987; some flexibility in seining locations within backwaters will be exercised using the PI's best judgment) every two weeks to document age-0 CPM abundance and overall fish community composition over the course of the summer until standardized ISMP sampling initiates in mid-September.

Depending upon weather and hydrology, age-0 CPM will be collected by seining backwaters in the middle Green River and transferred to SNARRC between mid-September and mid-October.

GRB FWCO crews will attempt to increase efficiency by communicating with UDWR V and conducting occasional early fall sampling to determine reaches with previously observed higher CPM densities. All efforts will be made to increase survival of the CPM intended for broodstock in the field such as minimizing handling and transport time. These fish will be held at the Ouray National Fish Hatchery until collections are complete and the fish are transferred to SNARRC.

VII. Task Description and Schedule:

Task 1. Determine age-0 Colorado pikeminnow presence, densities, and overall fish community composition in backwaters throughout the summer base flow period.

Task 2. Collect age-0 Colorado pikeminnow from backwaters during fall and transfer them to SNARRC where they will be used for broodstock.

Task 3. Data analysis and reporting.

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

	UDWR	GRBFWCO	Total
FY 2020	$86,731	$46,113	$132,844
FY 2021	$81,364	$40,874	$122,238
FY 2022	$82,991	$41,713	$124,704
FY 2023	$84,651	$42,592	$127,243
FY 2024	$86,344	$50,052	$136,396
		TOTAL	**$643,425**

X. Reviewers:

XI. References:

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USFWS. 1987. Interagency standardized monitoring protocol handbook. U.S. Fish and Wildlife Service. Grand Junction, Colorado.