

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2021 ANNUAL REPORT

PROJECT: 130

Project Title

Monitoring of Humpback Chub in Cataract Canyon

Bureau of Reclamation Agreement Number:

R19AP00059

Project/Grant Period:

Start date: 10/01/2019

End date: 09/30/2024

Reporting period end date: 10/30/2021

Is this the final report? Yes ___ No X

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Abstract:

Exploratory sampling of emerging riverine habitats in lower Cataract Canyon was conducted in lieu of the standard biennial monitoring trip. No humpback chub (*Gila cypha*) or other native fishes were captured in areas formerly inundated by Lake Powell. However, habitats potentially beneficial to humpback chub and young-of-year Colorado pikeminnow (*Ptychocheilus lucius*) or razorback sucker (*Xyrauchen texanus*) were identified and may be useful for future monitoring.

Study Schedule:

2019-2024

Relationship to RIPRAP:

GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN

V. Monitor populations and habitat and conduct research to support recovery actions (research, monitoring, and data management).

V.A. Measure and document population and habitat parameters to determine status and biological response to recovery actions.

COLORADO RIVER ACTION PLAN: MAINSTEM

V. Monitor populations and habitat and conduct research to support recovery actions (research, monitoring, and data management).

V.A. Conduct research to acquire life history information and enhance scientific techniques required to complete recovery actions.

V.C.3. Cataract Canyon

Accomplishment of FY 2021 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Task 3: Complete one exploratory sampling trip in emerging riverine habitats in fall of 2021.

Trip summary

An exploratory sampling trip was conducted from 17-21 October 2021 with the purpose of scouting and sampling riverine habitats formerly inundated by Lake Powell. A crew of four conducted sampling at two reservoir affected sites and one long-term monitoring site (“Rapid 2” RMI -4.5 to -4.8). The long-term site was included to have contemporary catch rate comparison data should humpback chub (HBC) be encountered downstream, and because the site could be conveniently accessed while traveling downstream to the reservoir affected sites. Potential downstream sites were identified prior to launch and evaluated qualitatively in the field. The two downstream areas sampled covered RMI -15.4 to -16.0 (downstream of Ten Cent Rapid) and -19.5 to -19.8 (upstream of Gypsum Canyon Rapid), respectively.

At Rapid 2 and Ten Cent, a combination of up to three trammel nets and 12 hoop nets were simultaneously deployed to determine presence or absence of HBC. No trammel nets were set at the Gypsum site. Trammel net deployment lasted from approximately 18:00 to 22:00 each evening. Trammel net checks occurred promptly every two hours to avoid fish mortality. Hoop nets were deployed each evening, left sampling overnight, and collected in the morning prior to moving downstream. Nets were baited with “Kibbles ‘N Bits” dog food suspended inside the net with mesh bags. All endangered fish were measured for total length (mm) and weighed (g). Each individual was then scanned for a PIT tag if greater than or equal to 150 mm in total length (TL) and a tag was implanted if not present. Nonnative fishes were tallied, unless targeted for removal by other programs (e.g. Walleye *Sander vitreus*), in which case individuals were measured, weighed, and euthanized.

Trammel net effort totaled 40.3 net-hours. Hoop nets were deployed for 599 net-hours. Two unique adult HBC were captured at Rapid 2; one by each capture method. No humpback chub were captured at the two downstream, reservoir-affected sampling sites. No other *Gila sp.* or other native species were captured. Notably, walleye (n = 3; TL = 330-343 mm) were encountered below Ten Cent Rapid. Total fish captures by are reported by site and gear in Tables 1 and 2.

The lack of HBC encounters in lower Canyon may be related to the low densities observed elsewhere in Cataract in multiple ways: 1) individual HBC display high site fidelity throughout the Upper Basin and therefore the known Cataract Canyon HBC population may not constitute a large enough source from which the species can quickly re-colonize otherwise suitable downstream habitats or 2) HBC in lower Cataract Canyon simply occur in densities low enough that their presence was not detected with the amount of effort applied. Additionally, potential predation and/or competition from nonnative fishes from Lake Powell may deter or prevent successful re-colonization. Conceivably, a combination of strong HBC reproductive success and recruitment coupled with conditions favoring movement and/or benefitting native species over non-natives could facilitate such a re-colonization, but these conditions may be rare.

Additional noteworthy observations:

- Opportunistic seining of off-channel habitat was also conducted downstream of the uppermost historic extent of the reservoir (below Rapid 23; RMI -14.5). No native or novel nonnative species were encountered during this sampling. Logistical constraints limited the number of

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these habitats sampled (n = 2), however, and more small-bodied sampling may be warranted to investigate use of reservoir-affected habitats by YOY native fish.

Recommendations:

- Continue sampling reservoir-affected reaches of Cataract for presence of HBC with effort similar to established long-term sampling protocols in Cataract Canyon. Increasing effort relative to this year's exploratory study will likely increase probability of detecting HBC (if present).
- If necessary, prioritize sampling at reservoir-affected zones with 1) the most pronounced return to pre-dam geomorphology and 2) closest proximity to known HBC aggregations.
- Consider summary analysis of catch rate and abundance data from all Upper Basin HBC populations. Exploring correlations of catch rates with abundance estimates, nonnative fish catch rates, and environmental factors through time could provide insight into both Cataract Canyon HBC observations and factors influencing population dynamics throughout the Upper Basin.

Project Status:

On track and ongoing.

FY 2021 Budget Status

Funds Provided: \$18,000

Funds Expended: \$18,000

Difference: \$0

Percent of the FY 2021 work completed, and projected costs to complete: 100%

Recovery Program funds spent for publication charges: -X-

Status of Data Submission

Data will be uploaded into STReaMS by January 15, 2022.

Signed:

Zachary Ahrens

Principal Investigator

15 November 2021

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Table 1.

Fish species captured in Cataract Canyon by location, trammel net; 18-20 October, 2021.

Species	Rapid 2	Ten Cent	Total
black bullhead (<i>Ameiurus melas</i>)	5	-	5
bluehead sucker (<i>Catostomus discobolus</i>)	1	-	1
channel catfish (<i>Ictalurus punctatus</i>)	11	11	22
common carp (<i>Cyprinus carpio</i>)	3	-	3
flannelmouth sucker (<i>Catostomus latipinnis</i>)	5	-	5
gizzard shad (<i>Dorosoma cepedianum</i>)	7	1	8
humpback chub (<i>Gila cypha</i>)	1	-	1
walleye (<i>Sander vitreus</i>)	-	3	3
white sucker (<i>Catostomus commersonii</i>)	1	-	1

Table 2.

Fish species captured in Cataract Canyon by location, hoop net; 18-21 October, 2021.

Species	Rapid 2	Ten Cent	Gypsum	Total
black bullhead (<i>Ameiurus melas</i>)	14	-	-	19
channel catfish (<i>Ictalurus punctatus</i>)	6	20	8	34
humpback chub (<i>Gila cypha</i>)	1	-	-	1