

**COLORADO RIVER RECOVERY PROGRAM
FY 2014-15 PROPOSED SCOPE OF WORK for:**

Project No.: 130

Population monitoring of humpback and bonytail chub in Cataract Canyon

Reclamation Agreement number: R09AP40844
Reclamation Agreement term: 10/1/2010-4/30/2015

Lead Agency: Utah Division of Wildlife Resources

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Category:

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

Expected Funding Sources:

- Annual funds
- Capital funds
- Other (explain)

- I. Title of Proposal: Humpback chub and bonytail monitoring in Cataract Canyon
- II. 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

III. Study Background/Rationale and Hypotheses:

The Upper Colorado River Endangered Fish Recovery Program (UCRRP) has assisted Region 6 of the U.S. Fish and Wildlife Service (Service) in developing recovery goals for the four Colorado River endangered fishes, including the humpback chub (*Gila cypha*), Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), and bonytail (*Gila elegans*) (USFWS 2001). Achievement of the recovery goals for humpback chub will be determined in part by monitoring the six known self-sustaining populations in the upper and lower Colorado River basins to ensure that each population is stable or increasing. These populations include Black Rocks, Westwater Canyon, Desolation/Gray Canyons, Yampa Canyon, Cataract Canyon, and Grand Canyon. The period of monitoring for downlisting is 5 years, in which at least three reliable population estimates will be taken for each of the six populations. The period of monitoring for delisting is 3 years beyond downlisting, in which at least one reliable population estimate will be taken for each of the six populations.

Sampling in Cataract Canyon began in 1979 under the Service's Colorado River Fishery Project (Valdez et al. 1982), and then continued under the U.S. Bureau of Reclamation contracted studies with Bio/West (Valdez 1990). Between 1990 and 2000, sampling was conducted intermittently by the Utah Division of Wildlife Resources (UDWR). Sampling included annual monitoring of the fish community in Cataract Canyon which was added to the Interagency Standardized Monitoring Program (ISMP) beginning in 1998. The catch rates observed during these studies were highly variable, and the population size could not be determined from these data.

Beginning in 2003, three pass mark/recapture sampling was conducted for three consecutive years. This sampling protocol was used to develop three annual point estimates for adult humpback in the canyon (Badame 2008). The estimates for the Cataract population ranged from 273 - 468 humpbacks within the canyon. Due the small size of the population and probable violations of modeling assumptions it was determined that this level of monitoring was not necessary for the Cataract population and that monitoring would return to following annual fall catch rate trends. In 2011 funding restrictions reduced sampling to once every two years.

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

Goals: Maintenance of long term catch rate trend data, longitudinal distributions, and population size structures for humpback chub and bonytail within Cataract Canyon.

Objectives:

1. Complete one ten day pass every two years sampling five sites within Cataract Canyon.

2. Obtain highest possible rates of capture of humpback and bonytail within concentration habitats and maximize number of individuals marked and captured at each sampling site.
3. Determine annual catch rate trend for chubs and examine population size structure and compare longitudinal distribution to past years.

End Products: Annual reports summarizing humpback and bonytail population trends using catch per unit effort as the trend index.

V. Study Area:

Sampling will occur at four long term trend sites: site 1 (RM 211.5-212), site 2 (RM 209.8-210.5), site 3 (RM 207.3-208.3) and site 4 (RM 207-205.5); in addition, one site (5) below the “Big Drops”, Waterhole Canyon (RM 198.5) (Figure 1).

VI. Study Methods/Approach:

During mid-October an annual monitoring trip will be completed within a ten day period. Four primary sites will be sampled, which were identified by previous studies as trend sites for long-term monitoring (Valdez 1990) and one additional site below the full pool level of Lake Powell. Few chubs have been captured outside the trend sites due to Cataract Canyon’s high proportion of large turbulent rapids. Cataract Canyon is 17 miles in length, from the confluence of the Green and Colorado rivers to 40' below the lake full level of Lake Powell (3700' amsl). The first 4 miles below the confluence, above all rapids, have been sampled by UDWR as part of the bonytail reintroduction monitoring and have not produced humpback chub. Of the remaining 13 miles, 6 miles are rapids, and cannot be effectively sampled. Of the remaining 7 miles between rapids, 4 miles will be sampled.

The sampling trip will be ten days long, with sites 1-3 being sampled for two consecutive nights and sites 4 and 5 sampled for one night.

Sampling methods will be similar to those used for humpback chub in the Westwater Canyon, Black Rocks, and Desolation/Gray Canyons population estimate sampling. Trammel nets, electrofishing, and baited traps will be used to capture juvenile and adult chubs. Chart and Lentsch (1999) found that adult chub >200 mm are better sampled with trammel nets, and juvenile chub are better sampled by electrofishing. Each site will be electrofished before nets are set. Electrofishing will be conducted using a boat-mounted electrofishing unit and will follow shorelines closely. At each site, eight to ten nets will be set in the evening beginning at 1530 hrs and checked every 2 hours to 2330 hrs. Nets will be set again in the morning and checked through mid-morning. All chub captured will be tagged and processed after each net check.

All endangered species will be scanned for a PIT tag and tagged if one is not detected, measured (mm), and weighed (g). All chub greater than or equal to 150 mm total length (TL) will be PIT-tagged.

VII. Task Description and Schedule:

Task 1: Sampling: Complete one sampling trip in Cataract Canyon in fall of 2015. As sampling occurred in fall of 2013, according to the biennial schedule, no sampling is scheduled for 2014.

Task 2: Data entry, analysis, reporting: Data will be entered into a database and transferred to the UCRRP database manager by January 15 of each year following sampling. An annual progress report summarizing the data and comparing it with past monitoring efforts will be submitted in November of each year of sampling.

Schedule: FY 2015, 2017

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

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

FY 2015 Costs for UDWR- Moab (same as FY13)
Task 1. 1 sampling pass in September/October 2015

Labor: salary + benefits + applicable overtime (personnel services)

	Rate	Hours	Cost
Project Leader	\$29.71	120	\$3,565
Biologist	\$26.83	270	\$7,243
Technician	\$16.97	500	\$8,484
		subtotal	\$19,292

Food and Transport (current expense)

	Rate	Quantity	Cost
Fleet Costs (4 trucks for 6% of total fleet costs)	\$40,800.00	0.06	\$2,448
Food (8 people, 10 days)	\$30.00	80	\$2,400
Shuttle (4 trucks)	\$150.00	4	\$600
		subtotal	\$5,448

Equipment (current expense)

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$497

Sampling gear repair/replacement:			\$1,050
Boating gear repair/replacement:			\$800
Fuel for motors (25 gallons)	\$4.00	25	\$100
		subtotal	\$2,447

Task 1 subtotal **\$27,188**

Task 2. Data Entry, Analysis, and Reporting

Labor: salary + benefits + applicable overtime (personnel services)

	Rate	Hours	Cost
Project Leader	\$29.71	20	\$594
Biologist	\$26.83	80	\$2,146
Technician	\$16.97	40	\$679
		subtotal	\$3,419

Task 2 subtotal **\$3,419**

Grand Total FY 2015	\$30,607
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FY 2017 Costs for UDWR- Moab (2% increase from FY15)

Task 1. 1 sampling pass in September/October 2017

Labor: salary + benefits + applicable overtime (personnel services)

	Rate	Hours	Cost
Project Leader	\$30.30	120	\$3,636
Biologist	\$27.36	270	\$7,388
Technician	\$17.31	500	\$8,654
		subtotal	\$19,678

Food and Transport (current expense)

	Rate	Quantity	Cost
Fleet Costs (4 trucks for 6% of total fleet costs)	\$41,616.00	0.06	\$2,497
Food (8 people, 10 days)	\$30.60	80	\$2,448
Shuttle (4 trucks)	\$153.00	4	\$612
		subtotal	\$5,557

Equipment (current expense)

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$507
Sampling gear repair/replacement:	\$0.00		\$1,071
Boating gear repair/replacement:	\$0.00		\$816

Fuel for motors (25 gallons)	\$4.08	25	\$102
		subtotal	\$2,496

Task 1 subtotal **\$27,731**

Task 2. Data Entry, Analysis, and Reporting

Labor: salary + benefits + applicable overtime (personnel services)

	Rate	Hours	Cost
Project Leader	\$30.30	20	\$606
Biologist	\$27.36	80	\$2,189
Technician	\$17.31	40	\$692
		subtotal	\$3,487

Task 2 subtotal **\$3,487**

Grand Total FY 2017	\$31,219
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IX. Program Budget Summary

	UDWR-Moab
FY2014	\$0
FY2015	\$30,607
FY2016	\$0
FY2017	\$31,219
FY2018	\$0
total:	\$61,826

X. Reviewers:

XI. References:

Badame, P.V. 2008. Population Estimates for Humpback Chub (*Gila cypha*) In Cataract Canyon, Colorado River, Utah, 2003–2005. Final Report to the Colorado River Endangered Fishes Recovery Program. Utah Division of Wildlife Resources, Salt Lake City, UT.

Chart, T.E. and L. Lentsch. 1999. Humpback Chub in Westwater Canyon. Final Report to the Colorado River Endangered Fishes Recovery Program. Utah Division of Wildlife Resources, Salt Lake City, UT.

U.S. Fish and Wildlife Service. 2001. Recovery goals for the humpback chub (*Gila cypha*) of the Colorado River Basin; A supplement and amendment to the Humpback Chub Recovery Plan. U.S. Fish and Wildlife Service, Region 6, Denver, CO.

Valdez, R.A., P. Mangan, R. Smith, B. Nilson. 1982. Upper Colorado River investigation (Rifle, Colorado to Lake Powell, Utah). Pages 100–279 in U.S. Fish and Wildlife Service. Colorado River Fishery Project, Final Report, Part 2: Field Investigations. U.S. Fish and Wildlife Service, Salt Lake City, Utah.

Valdez, R.A. 1990. The endangered fish of Cataract Canyon. Bio/West Report No. 134-3 to Bureau of Reclamation, Salt Lake City, UT.

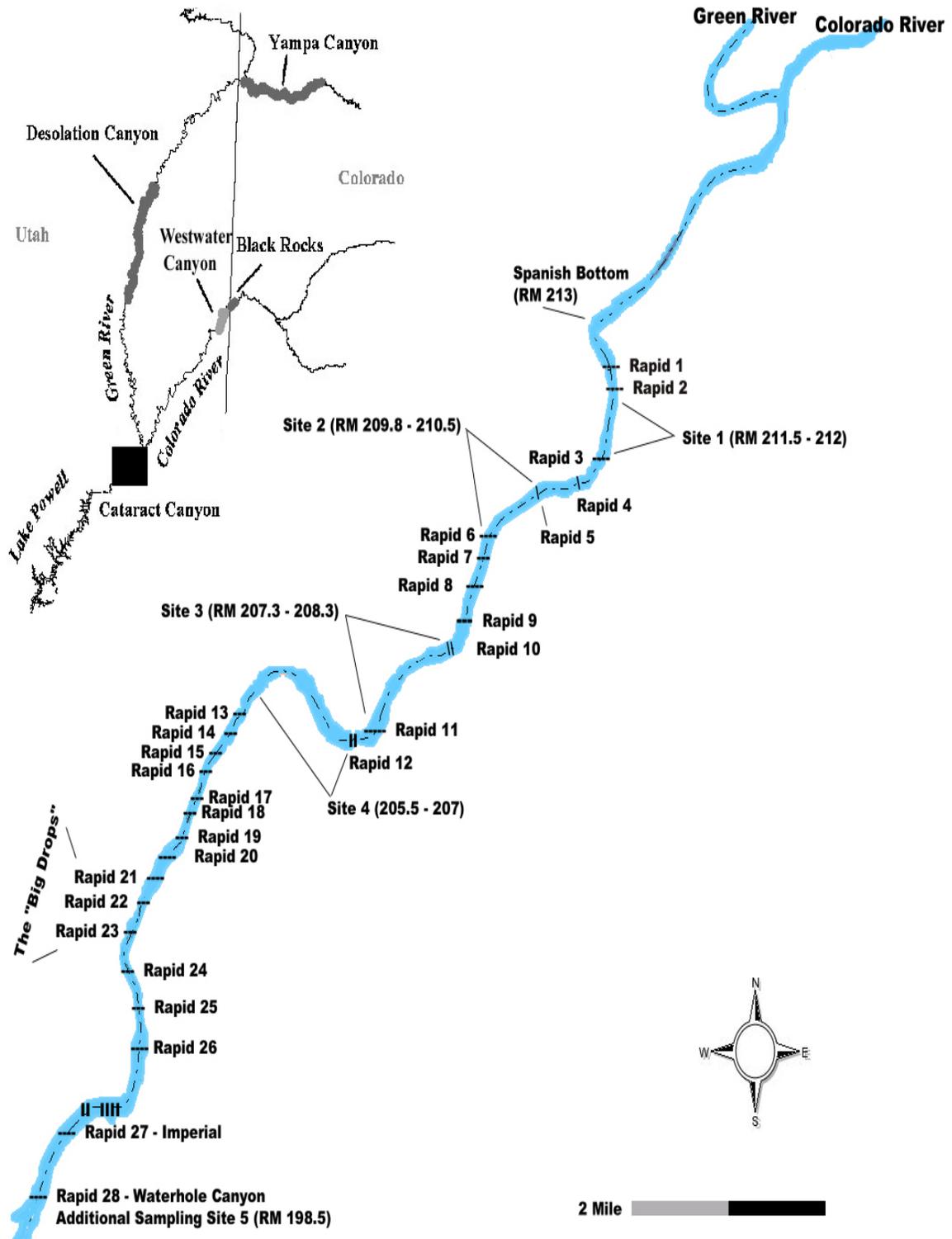


Figure 1. Sampling locations within Cataract Canyon on the Colorado River.