

**COLORADO RIVER RECOVERY PROGRAM
FY 20010-11 PROPOSED SCOPE-OF-WORK for:**

Project No.:130 (22 1)

Population monitoring of humpback and bonytail chub in Cataract Canyon

Lead Agency: Utah Division of Wildlife Resources

Principal Investigator:

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Date: Nov 9, 2009

Category:

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

Expected Funding Source:

- Annual funds
 Capital funds
 Other (explain)

I. Title of Proposal:

Humpback and bonytail chub monitoring in Cataract Canyon

II. Relationship to RIPRAP:

General Recovery Program Support Action Plan:

V.A.1. Colorado River Action Plan: Mainstem - Monitor populations and habitat and conduct research to support recovery actions (research, monitoring, and data management).

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 estimates 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). This 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 is not necessary for the Cataract population and that monitoring would return to following annual fall catch rate trends.

IV. Goals and End Product:

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

Objectives:

1. Complete one ten day pass each year 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 Product: 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 and annual monitoring trip will be completed within a ten day period. During each year's sampling trip 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 levels for 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 are rapids, and cannot be effectively sampled. Of the remaining 7 miles between rapids, 4 miles will be sampled.

Annual trips will be ten days long, with sites 1-3 being sampled for two consecutive nights and sites 4 and 5 will be 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 estimates 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 Smith-Root 5.0 GPP 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 endangered fish 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 150 mm total length (TL) will be PIT-tagged

VII. Task Description and Schedule for FY2010-11.

- Task 1) Complete one sampling trip in Cataract Canyon in mid October 2009-10.
- Task 2) Data will be entered into a database on the computer and transferred to the UCRRP database manager by January 15, 2009-10.
- Task 3) An annual progress report summarizing the data and comparing it with past monitoring efforts will be submitted by Nov. 15, 2009-10.

VIII. Work Deliverables/Due Dates

FY 2010 Costs:

| Task 1 - Sampling | UDWR Moab |
|--|------------------|
| Labor | |
| Proj. leader (10 days @ \$438/day) | \$3,504 |
| 2 Biologist (20 days @ \$340/day) | \$6,800 |
| 4 Technicians (56 days @ \$195/day) | \$10,920 |
| Travel | |
| Vehicle ^a (4 trucks for 7% of annual fleet costs) | \$2,242 |
| Per diem 10 days/ 7 people @ \$25 per day) | \$1,750 |
| Equipment | |
| Trammel net, minnow trap replacement | \$500 |
| Boat, Trailer, Sampling gear repair and maintenance | \$500 |
| Boat fuel, propane, camp equipment replacement/ repair | \$500 |
| <i>Task 1 subtotal</i> | <u>\$26,716</u> |

^a Calculated as the total percentage of annual fleet costs based on the number of trucks, days used, and total miles driven. Annual fleet costs for the Moab Field Station is \$34,000 for 5 vehicles. Moab fleet vehicles are not assigned to specific projects; instead they are rotated through all projects in the UCRRP & SJRRP.

| Task 2 - Data Entry | UDWR Moab |
|----------------------------------|------------------|
| Labor | |
| Biologist (1 days @ \$340/day) | \$340 |
| Technicians (5 days @ \$195/day) | \$975 |
| <i>Task 4 subtotal</i> | <u>\$1,315</u> |

| Task 3 - Data Analysis and Reporting | UDWR Moab |
|---|------------------|
| Labor | |
| Proj. leader (2 days @ \$438/day) | \$876 |
| Biologist (5 days @ \$340/day) | \$1,700 |
| <i>Task 5 subtotal</i> | <u>\$2,576</u> |

| | |
|----------------------|------------------------|
| FY 2010 TOTAL | <u>\$30,607</u> |
|----------------------|------------------------|

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IX. Budget Summary

| | |
|---------|----------|
| FY-2010 | \$30,607 |
| FY-2011 | \$30,607 |

X. 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.

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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.

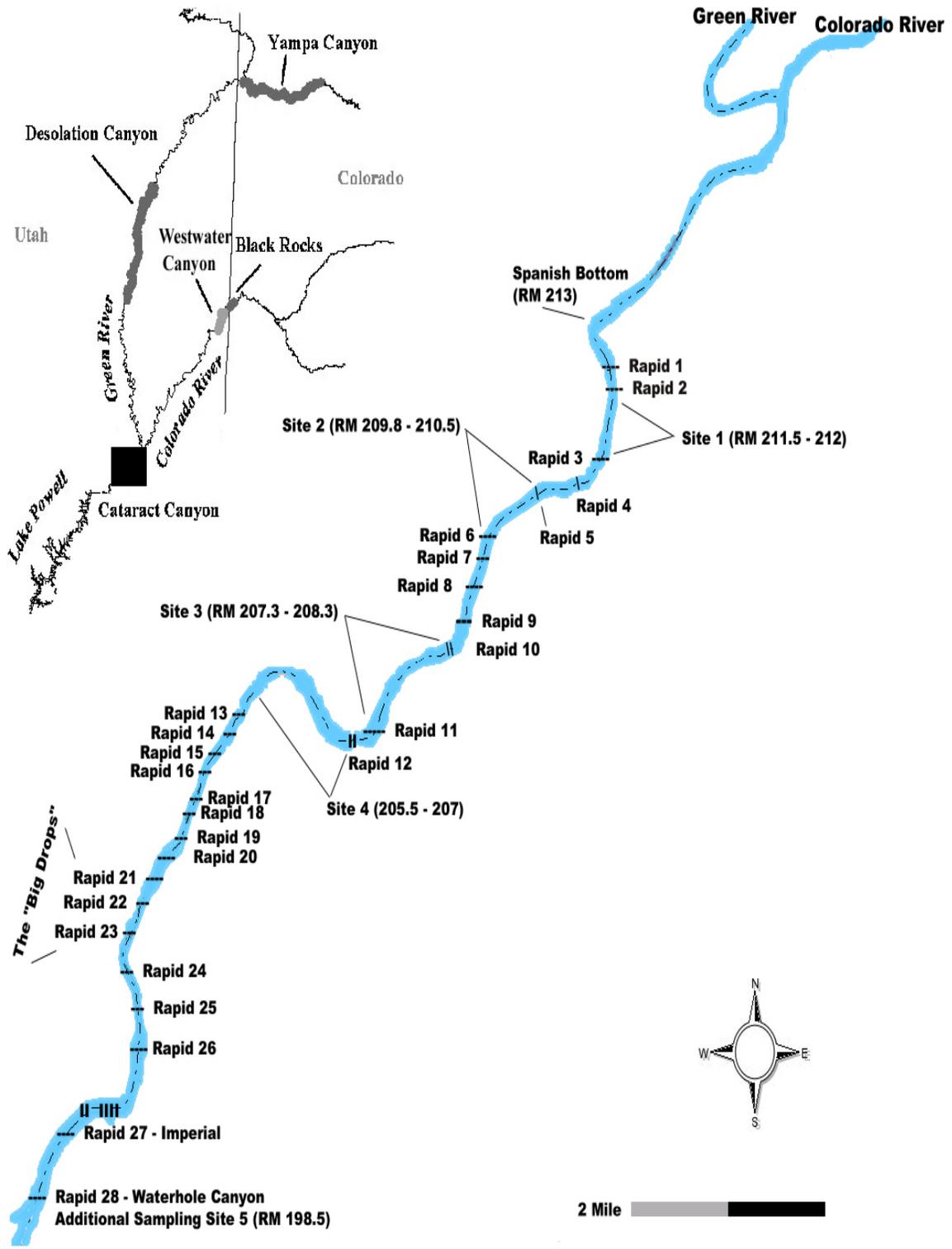


Figure 1. Cataract Canyon map detailing sampling locations for FY 2009 – 2010.