

I. Project Title: **Humpback chub population estimate in Desolation/Gray Canyon, Green River, Utah.**

II. Principal Investigators:

Patrick Goddard
Utah Division of Wildlife Resources
Moab Field Station
1165 S. Highway 191 - Suite 4
Moab, UT 84532
435-259-3781 Fax: 435-259-3785
Email: patrickgoddard@utah.gov

Paul Badame
Utah Division of Wildlife Resources
Moab Field Station
1165 S. Highway 191 - Suite 4
Moab, UT 84532
435-259-3780 Fax: 435-259-3785
Email: paulbadame@utah.gov

III. Project Summary:

The population of humpback chub in Desolation and Gray canyons (Deso/Gray) is one of the five self-sustaining populations that exist within the upper basin in the Colorado River and Green River sub-basin. This population has been monitored for over 25 years, and the Utah Division of Wildlife Resources has been responsible for the monitoring since 1985. The RIP amended the recovery plan for humpback chub in 2002 and the approved supplement outlined goals that need to be met for downlisting and delisting to be considered. The recovery goals require that subsequent population estimates for Desolation/Gray Canyon humpback chub be conducted in two out of every four years. This study, which represents the second sampling year in a two-year effort, will meet this direction and help provide for five separate point estimates within an eight-year time period. Information collected previously by the Utah Division of Wildlife Resources-Moab Field Station and recommendations from the USFWS population estimate workshops 2002 and 2004 are incorporated into the approach to provide the best opportunity of determining the most accurate and precise estimate for the Desolation/Gray Canyon humpback chub population.

IV. Study Schedule:

- a. Initial year: 2006
- b. Final year: 2007

V. Relationship to RIPRAP:

General Recovery Program Support Action Plan
V.A.1. Conduct standardized monitoring program.

VI. Accomplishments of FY 2006 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

As recommended in the final report from the previous sampling effort in 2001-2003, the sampling was conducted in the fall to avoid the capture of spawning Colorado pikeminnow and to reduce handling stress on humpback chub. Three full sampling passes were conducted through Desolation/Gray canyons on August 24–30, September 20–26, and October 14–20. The sampling dates during 2006 started earlier and were spread out over a longer time period than the previous years sampling because of concurrent humpback chub work being completed by UDWR on the Westwater population.. A total of 12 sites were sampled throughout the canyons including the four long-term trend sites at RM 185, 174.4, 160.4, and 145. The other eight sites were located at RM 202, 182, 178.5, 166.8, 157.4, 154.5, 150 and 147.5. Flows during sampling in 2007 ranged from 1180–2590 cfs. The flows were 1180-1390 cfs during the first pass, 1390-2590 cfs during the second pass, and 2080-2280 cfs during the third pass (all flows determined by USGS gage #09315000, Green River at Green River gage). Sampling during the fall is less stressful on captured fish because ambient and water temperatures are low. Average temperatures during each pass were 23.5 C, 16.4 C and 6.5 C respectively (temperatures taken in the field as the gage does not provide the data). Two 16' catarafts with either a 25 HP or a 8 HP four stroke outboard were used to work trammel nets. Previous monitoring trips have shown that 1" trammel nets are the most effective method for collecting adult sized chubs. Depending on available habitat, six to eight 75' Trammel nets (1" mesh) were set at each sampling location. One night was spent at each of the twelve sites. The nets were fished at each site from late-afternoon until late evening and again the next day during the pre-dawn and morning hours. In addition, Fyke nets were utilized in an effort to increase the capture of the juvenile component of the Deso/Gray humpback chub population. Fyke nets were set in the afternoon after arrival at each site and checked in the late morning prior to leaving. Cat food and cooked meats were used as bait, and the Fyke nets were aligned parallel to the flow. Fyke nets were primarily set from the shoreline. Electrofishing was not conducted in 2007 because previous efforts have had poor capture rates (less than 1 fish per hour effort) and there was some concern about the exposure to shocking equipment of all native fish species..

A total of 116 individual humpback chub were collected in Desolation/Gray canyons by trammel netting and fyke netting. Trammel nets yielded the highest catch of humpback chub. Trammel net catch rates were lower during the first two passes and increased during the third pass. A total of 130 humpback chub were collected in 2728 trammel net hours during the three passes through the canyons, yielding an overall catch rate of .048 fish/net hour (Table 1). Fyke net catch rates were low (6 humpback chub in 988 hours). Neither method was very effective in catching juvenile chub. Average total length of

chubs caught was 275 mm with a range of 164- 377 mm (Figure 1). Six of the humpback chub collected were subadults (< 200 mm TL), all of these were taggable (> 150 mm TL). Average total length of humpback chub caught in trammel nets was 276 mm with a range of 187–387 mm. Humpback chub captured in fyke nets averaged a total length of 260 mm (range 164 –316 mm). Three chub were collected in a trammel nets that could only identified to genus (total lengths 240, 220, 222 mm)). Long term recaptures (from previous years) were observed during all three trips. A collection of morphometric measurements (ray counts on dorsal and anal fins) were taken on all Gila species. In addition, photographs were taken of many fish.

Several humpback chub that had been captured on the earlier passes were recaptured on subsequent passes. No movement of chub was observed. Eighty-three total long term recaptures (fish PIT tagged in previous years) were captured in 2007.

The results presented in this report are a preliminary summary of the raw data. A population estimate will be generated following further verification and analysis of this data.

Table 1. Summary of chub catch by each method employed in Desolation/Gray canyon during 2007. Note: This table is a total of *Gila* spp. (since fish at the time of capture were all identified as chub, and later positively identified) collected including fish that escaped during measurements or fish that were recaptured at the same site. Numbers elsewhere in this document may differ since those that escaped or were captured more than once may not be included in other analyses (i.e., length frequency histograms).

Method	Pass	Number of chub	Effort (hours)	Mean CPUE (fish/hour)
Trammel Net	1	39	1016.88	0.038
	2	42	982.47	0.043
	3	49	728.53	0.067
	1-3	130	2727.88	0.048
Fyke Net	1	2	450.5	0.004
	2	3	194.25	0.015
	3	1	344.0	0.003
	1-3	6	988.25	0.006
Total (incl. all methods)	1-3	136	3716.13	0.037

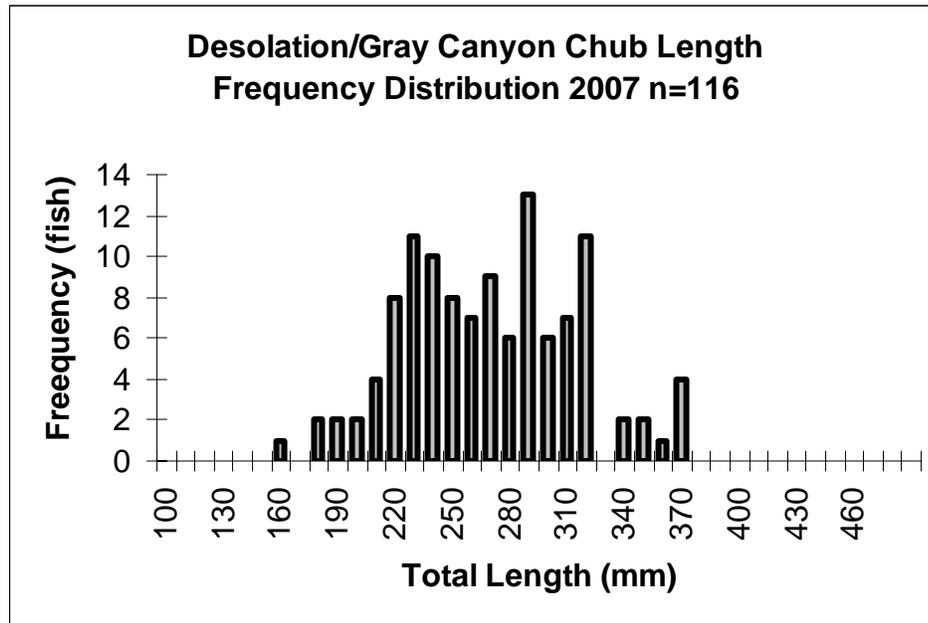


Figure 1. Desolation/Gray Canyon humpback chub length frequency histogram for 2007. Individuals less than 150 mm TL are not included. Frequency is illustrated as the number of total individuals within a given size class.

VII. Recommendations:

- The population is due for a two-year rest period. Fall sampling for this population estimate should continue in FY2010. Sampling should continue to be conducted in the Fall when water temperatures are around 10°C to reduce stress on fish collected. Additionally, by catch of potentially spawning Colorado pikeminnow should be less at this time of year in Desolation and Gray canyons.
- The possibility of conducting a complete fourth sampling trip should be revisited. Lower catch rates during Fall 2007 relative to the previous sampling trips warrants more intensive sampling. A more accurate population estimate is possible with additional effort. Of course, the budget would need to be adjusted accordingly.
- Fyke net sampling should continue in an effort to increase overall captures and target smaller sized chubs. Additional methods for capturing the juvenile component of the Deso/Gray humpback chub population should continue to be investigated; keeping to a minimum the impacts on other native fish populations.

VIII. Project Status: On track and ongoing

Filed work of project finished. Complete final report describing population size and structure of humpback chub in Deso/Gray summer 2008. Draft report June 30, 2008. Final Report, August 15, 2008.

IX. FY 2007 Budget Status:

A. Funds provided:	\$104,448
B. Funds expended:	\$ 83,558
C. Difference:	\$ 20,890
D. Percent FY2007 work completed:	80%
E. Recovery Program funds spent for publication charges:	\$ 0

10. Status of data submission:

Data will be entered on the computer and transferred to USFWS by January 15, 2008.

XI. Signed: Patrick L. Goddard Date: 11/08/2007