

I. Project Title: **Population Estimate of Humpback Chub in Black Rocks.**

II. Bureau of Reclamation Agreement Number(s): R15PG00083

Project/Grant Period: Start date (Mo/Day/Yr): 10/1/2014
End date: (Mo/Day/Yr): 9/30/2019
Reporting period end date: 9/30/2016
Is this the final report? Yes _____ No X

III. Principal Investigator(s): Travis Francis, Fish Biologist
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IV. Abstract: Robust population estimates are now critical to monitor progress towards recovery of the humpback chub population (USFWS 2001). Recovery goals require estimates of population size at regular intervals to measure population response to management activities under the Recovery Program. A population estimate was made for the 1998–2000 (McAda 2002), 2003–2004 (McAda 2007), 2007–2008 (Francis and McAda 2011), and a more robust design model reporting on all years 1998–2012 (Francis et al. 2016). This report summarizes the work directed at a fifth estimate of population size for humpback chub in Black Rocks during the 2016–2017 time period. These final reports can be found at <http://www.coloradoriverrecovery.org/documents-publications/technical-reports/research-monitoring.html>

V. Study Schedule: FY 2016–2018

VI. Relationship to RIPRAP: Colorado River Action Plan: Mainstem; V.C. Estimate humpback chub populations; V.C.1. Black Rocks

VII. Accomplishment of FY 2016 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

New for project 131 are four seining trips, in July and August, aimed at evaluating young-of-year (YOY) *Gila* year-class strength and attempt to determine what environmental variables are the most limiting to recruitment. In 2016, all four trips were completed from Mee Canyon to Westwater Wash on the Colorado. These data still need to be keypunched due to time constraints; however, several hundred YOY *Gila* were

collected throughout this time period suggesting that a very strong 2016 year-class of *Gila spp.* was produced.

Sampling for the mark-recapture portion of this study is conducted in September and October; therefore sampling overlaps two fiscal years. Sampling in calendar year 2016 overlapped into FY 2017 and sampling in calendar year 2017 will overlap into FY2018. Data analysis and final report writing will occur in FY 2018/2019.

Our SOW calls for four sampling passes conducted during alternating weeks in September and October 2016. Unfortunately, due to boat trailer and boat motor issues we were only able to complete three sampling passes. However, four submersible PIT tag antennas were deployed through the fourth pass. The first trip occurred the week of September 5th to 8th, the second tip was the week of September 19th to 22nd, the third sampling trip was during the week of October 3rd to 6th. The final trip was supposed to have occurred the week of October 17th to 20th.

Boat mounted electrofishing produced 29 roundtail chub (*Gila robusta*) captures, nine humpback chub (*Gila cypha*; five adults and four juveniles) captures, and five age 1+ juvenile *Gila spp.* captures.

Baited (with dog food) specialty hoop nets were deployed throughout the reach with hopes to increase capture of juvenile and YOY *Gila spp.* The hoop nets are specialty 54 inch long Delta H turtle nets with ¼ inch mesh and a 4 inch throat. These nets are set the first afternoon and are checked and baited the next morning and then again in the afternoon throughout the trip. Baited hoop nets produced 367 roundtail chub captures, 97 humpback chub (87 adults and 10 juveniles) captures, two bonytail (*Gila elegans*) captures, 12 age 1+ juvenile *Gila spp.* and 85 YOY *Gila spp.* captures.

Seventy five foot trammel nets have been the primary method used throughout the years and are crucial for comparing catch per effort and fish community changes through time. Four to five trammel nets, with one inch inner mesh, were set to minimize the time between net checks. Attempts were made to keep net sets to 1 to 1.25 hour long. Trammel nets provided 220 roundtail chub captures, 68 humpback chub (all adult) captures, three bonytail captures, six Colorado pikeminnow (*Ptychocheilus lucius*) and two razorback sucker (*Xyrauchen texanus*) captures .

Three submersible PIT tag antennas (that could only detect 134 khz tags) were deployed in Black Rocks proper during all four passes. One submersible antenna was deployed one mile below Black Rocks proper from pass two through three. These fully submersible PIT tag antenna (a product of BioMark) are one meter in diameter with a read range of 40 inches. These antennas were deployed continuously from September 5th to October 21st. While this method biases our sampling towards marked fish, these additional sightings should provide valuable insights to post handling survival. Unfortunately, we have to wait for some data to be retrieved from one antenna that went into a strange digital loop. However, tentative data from these antennas include 909 sightings of 335 unique tags. These belong to 103 roundtail chub, 38 humpback chub (37 adults and one juvenile), 2 age-1+ juvenile *Gila spp.*, 13 bonytail, 4 Colorado pikeminnow, and 164 razorback sucker. There were 11 PIT tags sighted that belong to

fish whose data hasn't been reported to the Upper Colorado River Recovery Program (UCRRP) database.

Even though we missed actively sampling during pass four we still managed to catch or sight 159 individual humpback chub. We still need to determine how to use our antenna data, considering we fished them between passes; however, 18 traditional subsequent-pass recaptures were achieved in 2016. This is a drastic improvement in recapture rate and will only improve more once we include the antenna re-sights.

PIT tag data and catch rate data have just been keypunched. More detailed data analysis will begin when data are checked and as time allows. Population estimates, capture probabilities, and coefficients of variations will be included in the final report scheduled to be finalized 12/15/2018. To provide these now would be premature as the larger analysis including data from 1998 to the present will allow for more precise and robust estimates as survival will most certainly be influenced by earlier capture histories.

VIII. Additional noteworthy observations:

Non-native fishes removed include three bluegill, 13 green sunfish, seven gizzard shad, 14 largemouth bass, three smallmouth bass, one white by flannemouth sucker hybrid, three white sucker, and three yellow bullhead.

IX. Recommendations: Continue project as designed.

X. Project Status: On track and Ongoing

X. FY 2016 Budget Status

- A. Funds Provided: 91,761
- B. Funds Expended: 91,761
- C. Difference: -0-
- D. Percent of the FY 2016 work completed, and projected costs to complete: 100%
- E. Recovery Program funds spent for publication charges: -0-

XI. Status of Data Submission (Where applicable): Will be submitted to UCRRP database by January 2017.

XII. Signed: Travis Francis 11/2/2016
Principal Investigator Date

APPENDIX:

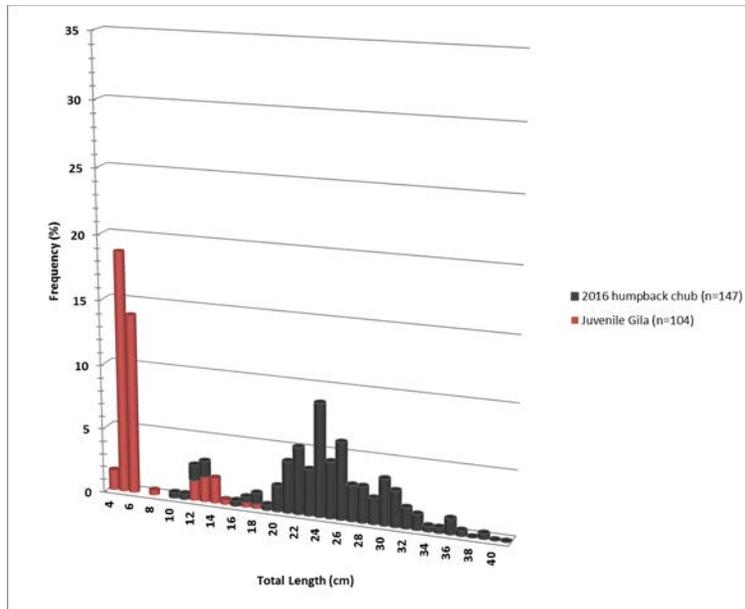


Figure 1. Length Frequency of humpback chub and juvenile *Gila* captured in Black Rocks, Colorado River, autumn, 2016.

Literature Cited

Francis, T.A., and C.W. McAda. 2011. Population size and structure of humpback chub, *Gila cypha* and roundtail chub, *G. robusta*, in Black Rocks, Colorado River, Colorado, 2007– 2008. Final Report from the U.S. Fish and Wildlife Service to the Upper Colorado River Endangered Fish Recovery Program, Project Number 131. Grand Junction, Colorado.

Francis, T.A., K.R. Bestgen, and G.C. White. 2016. Population status of humpback chub, *Gila cypha*, and catch indices and population structure of sympatric roundtail chub, *Gila robusta*, in Black Rocks, Colorado River, Colorado, 1998-2012. Larval Fish Laboratory Contribution 199. Final Report from the U.S. Fish and Wildlife Service to the Upper Colorado River Endangered Fish Recovery Program, Project Number 131. Grand Junction, Colorado.

McAda, C. W. 2002. Population size and structure of humpback chub in Black Rocks, 1998–2000. Final report to the Upper Colorado River Fish Recovery Program, Project Number 22a3. U. S. Fish and Wildlife Service, Grand Junction, Colorado.

McAda, C. W. 2007. Population size and structure of humpback chub in Black Rocks, 2003– 2004. Final report to the Upper Colorado River Fish Recovery Program, Project Number 22a3. U. S. Fish and Wildlife Service, Grand Junction, Colorado.

ANNUAL PERFORMANCE PROGRESS REPORT (PPR)

BUREAU OF RECLAMATION AGREEMENT NUMBER: R14AP00001(Larval Fish Laboratory)

UPPER COLORADO RIVER RECOVERY PROGRAM PROJECT NUMBER: 131

Project Title: Population Estimate of Humpback Chub in Black Rocks

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 Reporting period end date (Mo/Day/Yr):
 Is this the final report? Yes _____ No X

Performance: Data were Assembled and sent to the Principal Investigator, analyses were completed, and portions draft reports were written and a final report was approved.