

I. Project Title:

Native fish response to nonnative fish control in the middle Green River, Utah.

II. Principal Investigator:

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III. Project Summary:

Control actions targeting nonnative gamefish species are being evaluated across the upper Colorado River Basin to determine the level of reduction necessary to minimize the threat to the recovery of the endangered Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila cypha*), and bonytail (*Gila elegans*). There are two key aspects to evaluating nonnative fish control: (1) can the abundance of target species be reduced to an acceptable level (i.e., for the persistence of native fishes) by the approaches employed, and (2) is there a measurable positive response by populations of endangered fish and other native species?

Given the current stage of nonnative fish control evaluations and the confinement to select river reaches, the first observed positive response will likely be evident in early life-stages of the native fish community (Bestgen et al. 2007a), such as bluehead sucker (*Catostomus discobolus*), flannelmouth sucker (*Catostomus latipinnis*), roundtail chub (*Gila robusta*), and speckled dace (*Rhinichthys osculus*). An adult response to nonnative removal may not be detectable initially for a number of reasons, one of which is the large home range of adults (Bestgen et al. 2007b). Likewise, a positive response by adult endangered species may be more difficult to measure statistically without a longer observational period due to generation times of endangered fish populations (e.g., Bestgen et al. 2007b). Data necessary for these analyses will be generated by current and future young of-year (YOY) sampling and population estimation projects for endangered species in conjunction with nonnative fish removal efforts.

This project will focus on determining the response of early life-stages of native and small-bodied fish to removal of nonnative predators, primarily smallmouth

bass (*Micropterus dolomieu*) and northern pike (*Esox lucius*), which are being removed in the middle Green River. Removal efforts for northern pike began in 2001 and have kept northern pike abundance at low levels in this reach. Smallmouth bass removal began in 2004 with one marking pass and three removal passes, and effort increased substantially in following years. Native and small-bodied fish will serve as indicators of the response that would be experienced by endangered fish species occupying the same habitats.

IV. Study Schedule: 2005 – 2011; final deliverables for this project submitted in FY 2011 – project completed

V. Relationship to RIPRAP:

Green River Action Plan: Mainstem

III. Reduce negative impacts of nonnative fishes and sportfish management activities (Nonnative and sportfish management)

III.A.2.c. Evaluate the effectiveness of nonnative fish control (e.g., nonnative and native fish response) and develop and implement an integrated, viable active control program.

VI. Accomplishment of FY 2011 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

*Objective 1:* Estimate response of small-bodied and YOY native fish to removal of northern pike and smallmouth bass in the middle Green River.

Field work conducted for this project was incorporated under the YOY Colorado pikeminnow monitoring project starting in 2010. Specific results relating to 2011 field sampling are available in the annual report for project #138.

Task 1. Data entry and analysis.

Data entry and analysis are complete and specific results relating to 2011 field sampling are available in the annual report for project #138.

Task 2. Final reporting.

Annual report (November 2011). A draft final report was submitted to the Program Coordinator on 6 May 2011 and a revised version was sent to the Biology Committee and peer reviewers on 10 June 2011. A final draft will be submitted to the BC by 28 February 2012.

VII. Recommendations:

- Continue this research under project #138, including associated recommendations therein.

VIII. Project Status: complete

IX. FY 2011 Budget Status

- A. Funds Provided: \$2,403
- B. Funds Expended: \$2,403
- C. Difference: \$0
- D. Percent of the FY 2011 work completed, and projected costs to complete: 100%
- E. Recovery Program funds spent for publication charges: \$0

X. Status of Data Submission: 2011 data will be submitted under project #138.

XI. Signed: Joseph A. Skorupski Jr. November 8, 2011  
Principal Investigator Date

XII. References

Bestgen, K.R., C.D. Walford, A.A. Hill, J.A. Hawkins. 2007a. Native fish response to removal of non-native predator fish in the Yampa River, Colorado. Colorado State University, Larval Fish Laboratory Contribution 150. Fort Collins, Colorado.

Bestgen, K.R., J.A. Hawkins, G.C. White, K.D. Christopherson, J.M. Hudson, M.H. Fuller, D.C. Kitcheyan, R. Brunson, P. Badame, G.C. Haines, J.A. Jackson, C.D. Walford, and T.A. Sorensen. 2007b. Population status of Colorado pikeminnow in the Green River Basin, Utah and Colorado. Transactions of the American Fisheries Society 136:1356-1380.

Utah Division of Wildlife Resources. 2006. Conservation and management plan for three fish species in Utah: addressing needs for roundtail chub (*Gila robusta*), bluehead sucker (*Catostomus discobolus*), and flannelmouth sucker (*Catostomus latipinnis*). Publication number 06-17. Salt Lake City, Utah.

Carpenter, J. and G.A. Mueller. 2008. Small nonnative fishes as predators of larval razorback suckers. The Southwestern Naturalist 53(2): 236-242.