COLORADO RIVER RECOVERY PROGRAM **Project No.: 144**
FY – 2009-2011 PROPOSED SCOPE-OF-WORK for:

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

Lead Agency: Utah Division of Wildlife Resources

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Category:
___Ongoing project
_X Ongoing-revised project
___Requested new project
___ Unsolicited proposal

Expected Funding Source:
X Annual funds
___ Capital funds
___ Other (explain)

I. Title of Proposal:

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

II. 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.

III. Study Background/Rationale and Hypotheses:

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 cypah*), 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 preliminary 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 (*Rhinicthys 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 (UDWR 2006). 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 from the Green River between Island Park and the confluence with the Duchesne River. Removal efforts for northern pike began in 2001 and have kept numbers of northern pike at low levels in this reach. This work was originally contained within project #109, but was subsumed under project #123b in 2007. Smallmouth bass removal began in 2004 with one marking pass and three removal passes. This effort (project #123b) continued through 2006, but was increased to include eight removal passes in 2007 and eleven removal passes in 2008. 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. Goals, Objectives, End Product:

Goal: A reliable estimate of native fish response to nonnative predator removal.

Objectives:

1. Estimate response of small-bodied and YOY native fish to removal of northern pike and smallmouth bass.

End Product:
RIP Final report: October 2010

V. Study area:

Middle Green River (Split Mountain to Sand Wash): RM 319 - RM 215

VI. Study Methods/Approach:

Objective 1.
Estimate response of small-bodied and YOY native fish to removal of northern pike and smallmouth bass.

Response of small-bodied and YOY native fish to nonnative predator removal will be evaluated by seining suitable low-flow and backwater habitats. Three backwaters will be sampled in the middle Green River (Split Mountain to Sand Wash) every five miles dependent upon the availability of suitable habitats within each subreach. Upon the initiation of this project in 2005 until 2008, the first two backwaters encountered in each 5-mile subreach were sampled under Project #138, YOY Colorado pikeminnow monitoring, while the third backwater sampled was covered by this project. Beginning in 2009 all small-bodied and YOY sampling will be conducted entirely under Project #138.

Backwater/low velocity habitats will be sampled using a 1.2 m x 4 m seine with 3 mm mesh. At least two non-overlapping seine hauls will be conducted in each habitat sampled. Seine hauls will be parallel to one another and perpendicular to the axis of the backwater. However, if water depth is too great, seine hauls will be completed along one shoreline. The first 2 seine hauls will be taken at ⅓ and ⅔ the distance from the mouth of the backwater. Additional seine hauls may be completed in any portion of the backwater including the mouth or shallow tail end. Length of each seine haul, maximum depth, and average depth will be recorded for each sample. All endangered and native fish will be identified, measured (total length in mm), and returned alive. Ray counts will be completed for all chubs (*Gila* spp.) captured. All nonnative fishes will be enumerated (first seine haul only) and removed. In subsequent seine hauls, common (i.e., highly abundant) nonnative species will be ignored and other less common nonnative species will enumerated.

VII. Task Description and Schedule (FY 2009-2011):

Task 1. Data entry, analysis, and assist LFL and ANL with the *Historical assessment of factors affecting young Colorado pikeminnow abundance and physical habitat availability in the Green River, Utah.*

Database development and management - Fall 2009
Data analysis - Winter 2009

Task 2. Annual and final reporting. Note: UDWR's assessment of native fish response to nonnative fish control will draw on baseline information provided by the Project #138 summary report (due in late 2009) as well as the *Historical assessment of factors affecting young Colorado pikeminnow abundance and physical habitat availability in the Green River, Utah.* The Project #144 Final Report is scheduled accordingly.

Draft final report to recovery program coordinator – October 15, 2010
Draft final report to peer reviewers and Biology Committee – November 15, 2010
Final report to Biology Committee – February 15, 2011

Deliverables and due dates: Annual Report November 2009, 2010, 2011

FY 2009 Budget:

Task 1. Data entry and analysis. *This task overlaps with work currently being done by UDWR - Vernal for Task 1 of Project #138 Annual fall monitoring of YOY Colorado pikeminnow and small-bodied native fishes.*

Labor-	Work days	Cost
Project Leader (438/day)	8	$3,504
Biologist (340/day)	25	$8,500
Technician (195/day)	20	$3,900
Travel ($38/day/vehicle)		
Equipment (maintenance)		
FY 09 Task 1 Subtotal		$15,904

FY 2009 Total	$15,904

FY 2010 Budget:

Task 1. Data entry and analysis. *This task overlaps with work currently being done by UDWR - Vernal for Task 1 of Project #138 Annual fall monitoring of YOY Colorado pikeminnow and small-bodied native fishes.*

Labor-	Work days	Cost
Project Leader (438/day)	5	$2,190
Biologist (340/day)	10	$3,400
Technician (195/day)		
Travel ($38/day/vehicle)		
Equipment (maintenance)		
FY 10 Task 1 Subtotal		$5,590

Task 2. Final reporting.

Labor-	Work days	Cost
Project Leader (438/day)	5	$2,190
Biologist (340/day)	10	$3,400
Technician (195/day)		
Travel ($38/day/vehicle)		
Equipment (maintenance)		
FY 09 Task 1 Subtotal		$5,590
FY 2010 Total		$11,180

FY 2011 Budget:

Task 2. Final reporting.

Labor-	Work days	Cost
Project Leader (451/day)	3	$1,353
Biologist (350/day)	3	$1,050
Technician (200/day)		
Travel ($38/day/vehicle)		
Equipment (maintenance)		
Other		
FY 11 Task 2 Subtotal		$2,403
FY 2011 Total		$2,403

VIII. Program Budget Summary:

FY 2009-2011	$29,487

IX. Reviewers:

X. 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.