

FY-2004 PROPOSED SCOPE OF WORK for:
Green River pike control

Project No.:109

Note: Northern pike will also be removed during smallmouth bass removal (July–Oct).

Lead Agency: Utah Division of Wildlife Resources

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Category:

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

Expected Funding Sources:

- Annual funds
- Capital funds
- Other (explain)

I. Title of Proposal:

Northern Pike Control in the Middle Green River.

II. Relationship to RIPRAP:

General Recovery Program Support Action Plan

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

III.A. Reduce negative interactions between nonnative and endangered fishes.

III.A.2. Identify and implement viable active control measures.

III.A.2.c. Implement and evaluate the effectiveness of viable active control measures.

Green River Action Plan: Mainstem

III.A.4.a Northern pike in the middle Green River.

III. Study Background/Rationale and Hypotheses:

Nonnative fishes have become established in rivers of the upper Colorado River basin, and certain species have been implicated as contributing to reductions in the distribution and abundance of native fishes primarily through predation and competition (e.g., Hawkins and Nesler 1991; Lentsch et al. 1996; Tyus and Saunders 1996). Controlling problematic nonnative fishes is necessary for recovery of endangered humpback chub (*Gila cypha*), bonytail (*G. elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), and razorback sucker (*Xyrauchen texanus*) in the upper Colorado River basin. The northern

pike (*Esox lucius*) is a significant predatory and competitive threat to the endangered and other native fishes, and was rated as one of the six nonnative species of greatest concern by experts in the Colorado River basin (Hawkins and Nesler 1991). Northern pike became established in the Yampa River in the early 1980's. Originally introduced as game fish in Elkhead Reservoir in 1977, the species escaped and invaded the Yampa River. Since then, northern pike have established a reproducing population in the upper Yampa River and have expanded their number and range within the Yampa and Green rivers; there is evidence of successful spawning in Stewart Lake near Jensen, Utah and in Old Charlie Wash on the Ouray National Wildlife Refuge. A control program for northern pike in the Yampa River was initiated in 1999.

Based on catch rates from previous years' sampling activities associated with basin-wide razorback sucker monitoring, the northern pike population in the middle Green River was rapidly increasing. Capture rates of northern pike increased from 48 collected in 1997 to 202 collected in 1999 (Table 1). Removal of Northern pike in the middle Green River was initiated in 2001 and resulted in the removal of 248 northern pike. Based on trends in catch rates in subsequent years, removal efforts have been successful at significantly reducing the number of northern pike in the middle Green River. This project serves as a means to continue to control northern pike within the middle Green River.

Table 1. Collections of northern pike during Basin-Wide Razorback Sucker Monitoring netting: 1996-1999 and removal efforts 2001-2003.

Year	Number Captured	Number Recaptured
1996	52	-
1997	48	7
1998	92	17
1999	202	68
2001	248 removed	
2002	42 removed	
2003	22 removed	

IV. Study Goals, Objectives, End Product:

The purpose of this proposed project is to continue active adult northern pike control in the middle Green River. The goal is to sufficiently reduce the abundance of adults such that predatory and competitive impacts on growth, recruitment, and survival of endangered and other native fishes are minimized. The study objectives are to:

1. Capture and remove (lethal) adult northern pike from reaches of the middle

Green River.

2. Reduce the abundance of adult northern pike in the middle Green River.
3. Determine the efficiency of removal efforts.
4. Identify the means and levels of northern pike control necessary to minimize the threat of predation/competition on endangered and other native fishes.

The end products will be reduction of adult northern pike, evaluation of the effectiveness of northern pike removal, and development of an effective control program. See section VII for approximate due dates.

V. Study Area

The study area will include sections of the Green River from Island Park (RMI 332) to Sand Wash (RMI 215). Selected reaches of this section will be sampled depending on time of year and available habitat.

VI. Study Methods/Approach

Known concentration areas for northern pike in the middle Green River during spring include: mouth of Brush Creek (RMI 304.5), Cliff Creek (RMI 302.9), Stewart Lake Drain (RMI 300.0), Ashley Creek (RMI 299.0) and Sportsman Drain (RMI 296.6). These areas will be targeted for sampling at weekly intervals during late March - June. In 2004, removal efforts will be expanded outside these concentration areas to include the middle Green River from Island Park (RMI 332) to Sand Wash (RMI 215). The sampling period will be adjusted based on timing and duration of spring flows but will generally be from late March through June.

Table 2. Gear types, number of samples and description of sampling effort.

Gear Type	Number of Samples	Description
Fyke Nets	250	24- to 48-hour sets three times per week in low velocity habitats
Trammel Nets	100	1-hour sets in suitable low-flow habitats and used for "block and shock/scare and snare"
Electrofishing	weekly	electrofishing from Island Park to Sand Wash including concentration areas of northern pike, used in conjunction with trammel nets.

Sample methods will employ a combination of fyke nets, trammel nets and electrofishing. (Table 2). All fish collected will be counted, weighed, measured, their "condition"

assessed; nonnative fishes will be removed and killed; and native fishes will be returned alive to the site of capture. The contents of stomachs of northern pike and other predatory fish species will be analyzed in the field and/or preserved for later analysis. Cliethra from all northern pike collected will be removed, preserved and labeled for later age and growth analysis. Endangered fish species will be scanned for a PIT tag, tagged if needed, then released near the area of capture. The effectiveness of northern pike control will be evaluated using trends in CPUE **and analysis of depletion**.

VII. Task Description and Schedule (FY-2004)

- Task 1. October - Dec. Analyze northern pike cliethra collected during FY-2003 for age and growth.
- Task 2. October - Dec. Analyze preserved stomachs collected from northern pike during FY-2003.
- Task 3. March - June Capture and remove northern pike and other nonnative fishes.
- Task 4. July - October Data entry and analysis of field data. Equipment maintenance.
- Task 5. November Prepare Recovery Program FY-2004 annual progress report.

VIII. FY-2004 Work:

- Deliverables/Due Dates

Recovery Program annual progress report: November 2004

-Budget (Non-Capital Expenses) by task:

	Cost
Task 1. Age analysis	
Labor	
Biologist (4 days @ \$315/day)	1,260
Technicians (2 for 6 days @ \$180/day)	2,160
Supplies	100
Task subtotal	3,520

Task 2. Stomach analysis

Labor

Technicians (2 for 4 days @ \$180/day) 1,441

Supplies 200

Task subtotal 1,641

Task 3. Field Work

Labor

Biologist (30 days @ \$315/day) 9,450

Technicians (4 for 40 days @ \$180/day) 28,800

Travel (\$35/day/vehicle) 1,400

Equipment (maint. & repair) 1,000

Task subtotal 40,650

Task 4. Data Entry/ Analysis

Labor

Biologist (10 days @ \$315/day) 3,150

Technician (1 for 5 days @ \$180/day) 900

Supplies 200

Task subtotal 4,250

Task 5. Report Preparation

Labor

Biologist (10 days @ \$315/day) 3,000

Task subtotal 3,000

FY 2004 Total \$53,061

FY-2005 Work:

- Deliverables/Due Dates

Recovery Program annual progress report: November 2005

-Budget (Non-Capital Expenses) by task:

	<u>Work days</u>	<u>Cost</u>
<u>Task 1. Age analysis</u>		
Labor		
Biologist (\$330/day)	4	1,320
Technicians (\$189/day)	12	2,268
Supplies		100
Task subtotal		3,688
<u>Task 2. Stomach analysis</u>		
Labor		
Technicians (\$189/day)	8	1,512
Supplies		200
Task subtotal		1,712
<u>Task 3. Field Work</u>		
Labor		
Biologist (\$330/day)	30	9,900
Technicians (\$189/day)	160	30,240
Travel (\$35/day/vehicle)	30	1,050
Equipment (maint. & repair)		1,000
Task subtotal		42,190

Tyus, H. M., and J. F. Saunders, III. 1996. Nonnative fishes in natural ecosystems and a strategic plan for control of nonnatives in the Upper Colorado River Basin. Final Report of University of Colorado Center of Limnology to Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado.