

**FY-2002-2003 PROPOSED SCOPE OF WORK for:**  
Development of a Northern Pike Control Program  
in the Middle Green River

**Project No.:109**

Lead Agency: Utah Division of Wildlife Resources

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Revised: October 2, 2001 by Pat Nelson

**Category:**

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

**Expected Funding Sources:**

- Annual funds
- Capital funds
- Other (explain)

I. Title of Proposal:

Development of a Northern Pike Control Program in the Middle Green River.

**Note: The PD's Office would like a report by December 2002, for review and evaluation by the Recovery Program.**

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.

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 chub (*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 previous years sampling activities, the northern pike population in the middle Green River is rapidly increasing. Capture rates of northern pike during Basin-Wide Razorback Sucker Monitoring increased from 48 collected in 1997 to 202 collected in 1999 (Table 1). This project will serve to control northern pike within critical habitats of the middle Green River.

Table 1. Collections of northern pike during Basin-Wide Razorback Sucker Monitoring netting: 1996-1999.

Year	Number Captured	Number Recaptured
1996	52	-
1997	48	7
1998	92	17
1999	202	68

IV. Study Goals, Objectives, End Product:

The purpose of this proposed project is to begin active adult northern pike control in the middle Green River and develop an effective control program. The goal of northern pike control in the middle Green River 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.

V. Study Area

The study area will include sections of the Green River from Island Park (RMI 335) to the confluence of the White River (RMI 246). Selected reaches of this section will be sampled dependent 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. The sampling period will be adjusted based on timing and duration of spring flows.

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

<b>Gear Type</b>	<b>Number of Samples</b>	<b>Description</b>
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 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. Sampling will begin near the end of March as river flows begin to increase. This is the general time period when northern pike become active and move into the flooded tributaries (Ashley Creek, Stewart Lake Drain, Brush Creek, Cliff Creek and Sportsmans Drain). Selected reaches will be sampled two to three times weekly through the end of June using fyke and trammel nets.

The effectiveness of northern pike control will be evaluated with trends in CPUE and in number of previously tagged fish removed.

VII. Task Description and Schedule (FY-2002)

- Task 1. October - Dec. Analyze northern pike cliethra collected during FY-2001 for age and growth.
- Task 2. October - Dec. Analyze preserved stomachs collected from northern pike during FY-2001.
- Task 3. April - 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-2002 annual progress report.

VIII. FY-2002 Work:

- Deliverables/Due Dates

Recovery Program annual progress report: December 2002  
**Draft report to coordinator 12/1/02; to peer reviewers and BC 1/1/03; back to BC 3/15/03.**

-Budget (Non-Capital Expenses) by task:

	UDWR
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Task 1. Age analysis	
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Labor	
Biologist (1 week)	1,200
Technicians (2 @ 4 wks)	3,200
Supplies	100
Task subtotal	4,500
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Task 2. Stomach analysis	
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Labor	
Technicians ( 2 @ 4 wk)	2,600

Supplies	200
Task subtotal	2,800

Task 3. Field Work

Labor	
Biologist (1 @ 8 wks)	9,600
Technicians ( 4 @ 12 wks)	20,000
Travel (mileage & rent)	3,500
Equipment (maint. & repair)	1,000
Task subtotal	34,100

Task 4. Data Entry/ Analysis

Labor	
Biologist ( 3 wk)	4,000
Technician (	1,500
Supplies	200
Task subtotal	5,700

Task 5. Report Preparation

Labor	
Biologist	2,300
Task subtotal	2,300

- Budget (Capital Expenses):

Equipment	UDWR
Fyke nets*	2,500
	2,500

FY 2002 Total                      \$ 51,900

\* Currently have fyke nets to continue project but need replacements for damaged nets.  
Total Budget: (2002): \$ 51,900

FY-2003 Work (for multi-year study)

- Deliverables/Due dates

December 2003: Annual Report

-Budget (Non-Capital Expenses) by task:

	<u>UDWR</u>
<u>Task 1. Age Analysis</u>	
Labor	
Biologist (1 week)	1,200
Technicians (2 @ 4 wks)	2,100
Supplies	<u>100</u>
Task subtotal	3,400
<u>Task 2. Stomach Analysis</u>	
Labor	
Technicians ( 2 @ 4 wk)	2,600
Supplies	<u>200</u>
Task subtotal	2,800
<u>Task 3. Field Work</u>	
Labor	
Biologist (1 @ 8 wks)	9,600
Technicians ( 4 @ 12 wks)	20,000
Travel (mileage & rent)	3,500
Equipment (maint. & repair)	<u>1,000</u>
Task subtotal	<u>34,100</u>

Task 4. Data Entry/Analysis

Labor

Biologist ( 3 wks) 4,000

Technician ( 3 wks) 1,500

Supplies 200

Task subtotal 5,700

Task 5. Report Preparation

Labor

Biologist 2,300

Task subtotal 2,300

FY 2003 Total 48,300

FY-2004 etc. (for multi-year study)

- Budget estimate: \$ 48,300

IX. Budget Summary

FY-2002 \$ 51,900

FY-2003 \$ 48,300

FY-2004 \$ 48,300

Total: \$ 148,500

X. Reviewers:

C. McAda, T. Modde, and two anonymous reviewers (reviewed original proposal).

XI References:

Hawkins, J.A., and T.P. Nesler. 1991. Nonnative fishes of the upper Colorado River basin: an issue paper. Final Report of Colorado State University Larval Fish Laboratory to Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado.

Lentsch, L. D., R. T. Muth, P. D. Thompson, B. G. Hoskins, and T. A. Crowl. 1996. Options for

selective control of nonnative fishes in the upper Colorado River basin. Utah Division of Wildlife Resources Publication 96-14, Salt Lake City.

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.

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