COLORADO RIVER RECOVERY PROGRAM Project No.: 98b
FY-2009-2010 PROPOSED SCOPE OF WORK

Upper Yampa River northern pike management and monitoring

Lead Agency: U. S. Fish and Wildlife Service
Colorado River Fishery Project

Submitted by: Aaron Webber and Dave Irving
U.S. Fish and Wildlife
Colorado River Fishery Project
1380 South 2350 West
Vernal, UT 84078

Phone: (435) 789-4078 ext. 21
FAX: (435) 789-4805

E-Mail: aaron_webber@fws.gov

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Category
__ Ongoing project
xx Ongoing-revised project
__ Requested project
__ Unsolicited proposal

Expected Funding Source
xx Annual funds
__ Capital Funds
__ Other

I. Title of Proposal: Upper Yampa River northern pike management and monitoring

II. Relationship to RIPRAP:

Green River Action Plan: Yampa and Little Snake rivers
- III.A.1.b(1) Remove and translocate northern pike and other sportfishes from Yampa River.
- III.A.1.b(2) Reduce northern pike reproduction in the Yampa River.
- III.A.1.d. Remove smallmouth bass.

III. Study Background/Rationale and Hypotheses

Northern pike *Esox lucius* is an exotic, predatory species that has become established in the Yampa River. Northern pike escaped from Elkhead Reservoir (a reservoir on Elkhead Creek, which is a tributary to the Yampa River near Craig, CO) where they were originally stocked to provide sportfishing. Since escapement, they have established large, reproducing populations in the upper Yampa River (Nesler 1995, Personal communication with John Hawkins, CSU, and Richard Anderson, CDOW). The large populations likely provide a source for continual movement of northern pike into the lower Yampa River and further downstream into the Green River where they coexist with three endangered fishes — Colorado pikeminnow *Ptychocheilus lucius*, razorback sucker *Xyrauchen texanus*, and humpback chub *Gila cypha*. Large portions of the lower Yampa River are designated critical habitat for these species. Northern pike provide a significant predatory risk to these endangered fish, especially juveniles and small adults of Colorado pikeminnow and razorback sucker. Additionally, northern pike present a significant predatory risk to other native species in the basin (e.g., flannelmouth sucker *Catostomus latipinnis* and roundtail chub *G. robusta*) that have been considered for listing under the Endangered Species Act in the past (Martinez 1995; Nesler 1995). Northern pike were identified as presenting a significant risk to the endangered fishes by a majority of upper basin researchers in surveys conducted during the late 1980s (Hawkins and Nesler 1991).

The Recovery Program has established an active program to control nonnative fishes in the main rivers of the upper basin to assist in recovery of the endangered fishes found there. To date, the Recovery Program has initiated nonnative reduction efforts for channel catfish, northern pike, and smallmouth bass in the Yampa and Green rivers, and small cyprinids in the Colorado and Green River drainages. In some cases, such as the Yampa River, northern pike have been removed from the main channel and stocked into off-channel impoundments to provide fishing opportunity for local anglers.

Temporarily reducing the pike population through mechanical means appears to be a viable option for the rivers of the upper basin (Lentsch et al. 1996), although complete eradication is unlikely. A small, non-reproducing population of northern pike in the Gunnison River was reduced with relatively little effort applied at a time when pike were vulnerable (McAda 1997). Initial sampling efforts in the Yampa River suggest that substantial numbers of northern pike can be captured during spring when they enter shallow floodplain habitats for spawning (Nesler 1995; J. Hawkins, personal communication; USFWS unpublished data). Sampling in 2001-2004 yielded a total catch of 2453 northern pike.

The aquatic management plan for the Yampa River includes trapping northern pike in the river and transporting them to ponds in the Yampa Valley that qualify under the

Nonnative Stocking Procedures (CDOW 1998). Preliminary efforts from 2001-2004 showed that large numbers of anglers were attracted to the ponds at Yampa SWA when northern pike were stocked there. Translocation of pike will reduce the numbers of northern pike in the Yampa River to benefit endangered fishes and still provide recreational opportunities for anglers.

IV. Study Goals, Objectives, End Product:

Goal

Improve survival of endangered fish in the Yampa and Green rivers.

Objectives

1. Reduce numbers of adult northern pike in the study reach.
2. Determine population size and structure of northern pike in the study reach and the subsequent changes in the population size and structure after translocation.
3. Monitor movement of northern pike into and out of the study area and within the study area. Movements will be monitored within year and between years.
4. Maintain public support for the recovery program by providing off-channel angling opportunity to Yampa Valley anglers with northern pike removed from the Yampa River.
5. Monitor the native fish community in the study area.
6. Monitor smallmouth bass in the study area.

End products: Annual reports due 11/09 and 11/10; presentation of results at annual non native fish workshop

V. Study area: Upper Yampa River (upstream from Craig, CO); river miles 139.7-177.5

VI. Study Methods/Approach:

The main channel of the Yampa River between Highway 40 Bridge upstream of Hayden, Colorado and the Highway 13 Bridge in Craig, CO will be electrofished using hard-bottom electrofishing boats. The river channel will be electrofished seven times between April and June. The entire study area will be divided into two-mile sections that will be sampled individually. On one sampling pass, in agreement with CDOW, all northern pike and smallmouth bass will be measured for total length, tagged with Floy tags, and released. On the next removal passes all northern pike will be measured for total length, tagged with Floy tags, and transferred. Smallmouth bass will be tagged and returned to the river unless otherwise agreed upon by CDOW and USFWS.

During sampling, the first three passes will cover the entire study area. During passes four and five, pike concentration areas identified in previous years will be targeted with

electrofishing boats and nets. Passes six and seven will again be river wide. The purpose of sampling in this manner is to compare trends of sampling river-wide to sampling in a targeted manner (passes 4 and 5).

Any native fish captured will be identified to species, and length (TL) and weight will be recorded. Any gizzard shad captured will be recorded and preserved in a discreet manner. All smallmouth bass captured will be tagged with a red Floy tag, will receive a left pelvic fin clip, and returned to the river. If approved, smallmouth bass will be removed from the river and stocked according to CDOW protocol. Data will be analyzed to establish a population estimate of northern pike, proportion and size structure of northern pike population that is removed, and movement of northern pike. Data will be presented for all years of study in the annual report. The status of native fish populations will be examined and a smallmouth bass population estimate and movement will be determined in the study reach. Incidental mortalities will be refrigerated (when possible) and turned over to the Colorado Division of Wildlife. The relocation effort of northern pike will be closely coordinated with CDOW personnel.

All capture and length data on northern pike, smallmouth bass, and other species collected during the sampling effort will be turned over to the Colorado Division of Wildlife and added to the Recovery Program database. A brief summary report will be produced after sampling is completed and distributed through the Recovery Program's annual reporting process. In addition, results will be presented at the annual non native fish workshop.

To be effective and to maintain public understanding and support, it will be critical to initiate an active and widespread public relations campaign. Public relations will be critical to the success of this project. We will assist the RIP staff, CDOW, and the Yampa Basin Partnership in their I&E efforts on nonnative removal projects.

VII. Task Description and Schedule

1. April through June: Electrofish the main channel of the Yampa River between Hayden and Craig, CO (7 passes). All northern pike and smallmouth bass captured will be handled as determined by the CDOW.
2. October: Consolidate data and provide to Colorado Division of Wildlife and to Recovery Program database.
3. Nov 2009 – Jan 2010: Prepare annual reports. Attend annual researchers meeting.

VIII. FY-2009/10 Deliverables: Annual Report 11/09, 11/10, synthesis report 3/10

IX. FY2009 and FY2010 Budget:

SOW 98b FY2009

Task Activity	Cost

Task 1

Preparatory Labor/Training	Cost
GS-11 Biologist ($37.80/hr x 8 hrs/day x 15 days)	$4,536
GS-8 Fisheries Tech ($32.33/hr x 8 hrs/day x 15 days)	$3,880
3 GS-5 Biological Techs ($15.91/hr x 8 hrs/day x 15 days)	$5,728

Subtotal	$14,144

Field Labor	Cost
GS-11 Biologist ($37.03/hr x 8 hrs/day x 5 days/trip x 7 trips) + ($50.55/hr x 2 hr OT/day x 5 days/trip x 7 trips)	$13,907
GS-8 Fisheries Tech ($32.33/hr x 8 hrs/day x 5 days/trip x 7 trips) + ($48.50/hr x 2 hr ot/day x 5 days/trip x 7 trips)	$12,448
3 GS-5 Biological Techs ($15.91/hr x 8 hrs/day x 5 days/trip x 7 trips) + ($23.87/hr x 2 hr ot/day x 5 days/trip x 7 trips)	$18,378

Subtotal	$44,733

Travel, Per Diem, Equipment	Cost
(3 trucks/trip x 700 mi/truck x $0.505/mi x 7 trips) Vernal to Craig round trip and on the river	$7,424
Boat gas (8 gal gas/boat x $4.50/gal x 3 boats/day x 5 days/trip x 7 trips)	$3,780
Boat oil (2 qts. Oil/boat x $4.50/qt x 3 boats/day x 5 days/trip x 7 trips)	$945
Per diem (5 people/day x $109.00/person x 5 days/trip x 7 trips)	$19,075
GS-8 Fisheries Tech Maintenance work ($32.33/hr x 8 hrs/day x 30 days)	$7,760
Equipment and Maintenance (nets, repairs, fish tags, etc.)	$10,000
Two boat motors	$5,141

Subtotal	$54,125

Tasks 2 and 3

Data summary, Analysis, report preparation, project presentation, write synthesis report	Cost
GS-14 Project Leader ($68.84/hr x 8 hrs/day x 40 days)	$22,029
GS-11 Fisheries Biologist ($37.03/hr x 8 hrs/day x 65 days)	$19,256
GS-9 Admin Assist. ($36.85/hr x 8 hrs/day x 15 days)	$4,423
GS-5 Technician ($15.91/hr x 8 hrs/day x 20 days)	$2,546
Supplies (Copies, disks, paper, etc.)	$1,000
Per diem to travel for presentation (1 person/day x $130/person x 2 days/trip x 3 trips)	$780
Travel to give presentations and workshops and meetings (1 truck/trip x 275 mi/truck x $0.505/mi x 3 trips)	$417

Subtotal	$50,451

Total	$163,453

SOW 98b FY2010

Task Activity	Cost

Task 1

Preparatory Labor/Training	Cost

GS-11 Biologist ($38.14/hr x 8 hrs/day x 15 days)	$4,577
GS-8 Fisheries Tech ($33.30/hr x 8 hrs/day x 15 days)	$3,996
3 GS-5 Biological Techs ($16.39/hr x 8 hrs/day x 15 days)	$5,901

Subtotal	$14,474

Field Labor	Cost
GS-11 Biologist ($38.14/hr x 8 hrs/day x 5 days/trip x 7 trips) + ($57.21/hr x 2 hr OT/day x 5 days/trip x 7 trips)	$14,684
GS-8 Fisheries Tech ($33.30/hr x 8 hrs/day x 5 days/trip x 7 trips) + ($49.95/hr x 2 hr ot/day x 5 days/trip x 7 trips)	$12,821
3 GS-6 Biological Techs ($16.39/hr x 8 hrs/day x 5 days/trip x 7 trips) + ($24.58/hr x 2 hr ot/day x 5 days/trip x 7 trips)	$18,930

Subtotal	$46,435

Travel, Per Diem, Equipment	Cost
(3 trucks/trip x 700 mi/truck x $0.505/mi x 7 trips) Vernal to Craig round trip and on the river	$7,424
Boat gas (8 gal gas/boat x $4.50/gal x 3 boats/day x 5 days/trip x 7 trips)	$3,780
Boat oil (2 qts. Oil/boat x $4.64/qt x 3 boats/day x 5 days/trip x 7 trips)	$975
Per diem (5 people/day x $109.00/person x 5 days/trip x 7 trips)	$19,075
GS-8 Fisheries Tech Maintenance work ($33.30/hr x 8 hrs/day x 30 days)	$7,992
Equipment and Maintenance (nets, repairs, fish tags, etc.)	$10,000
Two boat motors	$5,278

Subtotal	$54,524

Tasks 2 and 3

Data summary, Analysis, report preparation, project presentation, write synthesis report	Cost
GS-14 Project Leader ($70.91/hr x 8 hrs/day x 40 days)	$22,692
GS-11 Fisheries Biologist ($38.14/hr x 8 hrs/day x 65 days)	$19,833
GS-9 Admin Assist. ($37.96/hr x 8 hrs/day x 15 days)	$4,556
GS-5 Technician ($16.39/hr x 8 hrs/day x 20 days)	$2,623
Supplies (Copies, disks, paper, etc.)	$1,200
Per diem to travel for presentation (1 person/day x $109/person x 2 days/trip x 3 trips)	$654
Travel to give presentations and workshops and meetings (1 truck/trip x 275 mi/truck x $0.505/mi x 3 trips)	$417

Subtotal	$51,975

Total	$167,408

Summary: FY-2009 $163,453
FY-2010 $167,408

X. Reviewers: Dave Irving, U.S. Fish and Wildlife Service

XI. References

CDOW (Colorado Division of Wildlife). 1998. Aquatic Wildlife Management Plan: Yampa River Basin. Aquatic Wildlife Section, Denver.

Hawkins, J. A., and T. P. Nesler. 1991. Nonnative fishes in the upper Colorado River basin: an issue paper. Final Report. Colorado State University Larval Fish Laboratory and Colorado Division of Wildlife, Fort Collins.

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. Final Report to the Recovery Program for the Endangered Fishes of the Upper Colorado River. Publication 96-14, Utah Division of Wildlife Resources, Salt Lake City, Utah.

Martinez, P. J. 1995. Coldwater Reservoir Ecology. Colorado Division of Wildlife, Federal Aid in Fish and Wildlife Restoration Project F-242R-2, Job Final Report, Fort Collins.

McAda, C. W. 1997. Mechanical removal of northern pike from the Gunnison River, 1995–1996. Final Report to the Recovery Program for the Endangered Fishes of the Upper Colorado River, Project 58. U. S. Fish and Wildlife Service, Grand Junction, Colorado.

Nesler, T.P. 1995. Interactions between endangered fishes and introduced game fishes in the Yampa River, Colorado, 1987-1991. Final Report, Federal Aid Project SE-3. Colorado Division of Wildlife, Fort Collins.