

**RECOVERY PROGRAM  
FY 2020-2021 SCOPE OF WORK for:**

Recovery Program Project Number: 98b

Upper Yampa River northern pike management and monitoring

Reclamation Agreement number: TBA

Reclamation Agreement term:

Note: Recovery Program FY20-21 scopes of work are drafted in May 2019. They often are revised before final Program approval and may subsequently be revised again in response to changing Program needs. Program participants also recognize the need and allow for some flexibility in scopes of work to accommodate new information (especially in nonnative fish management projects) and changing hydrological conditions.

Lead agency: USFWS Green River Basin FWCO

Submitted by: Christian Smith, GRB FWCO

1380 S 2350 W, Vernal, UT 84078

[christian\\_t\\_smith@fws.gov](mailto:christian_t_smith@fws.gov)

(435) 789-0351 x21

Date Last Modified: 8/15/2019 2:59:00 PM

Category:

Ongoing project

Ongoing-revised project

Requested new project

Unsolicited proposal

Expected Funding Source:

Annual funds

Capital funds

Other

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

II. Relationship to RIPRAP:

Yampa River Action Plan

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

III.B.2. Control nonnative fishes via mechanical removal

III.B.2.a. Estimate nonnative abundance, status, trends & distribution

III.B.2.c. Identify and evaluate gear types and methods to control nonnative fishes.

III.B.2.d. Remove northern pike from Yampa River designated critical habitat.

III.B.2.d.(1) Remove northern pike and smallmouth bass above Craig, CO.

III.B.2.e. 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 stocked to provide sportfishing opportunities. Since escapement, they have established large, reproducing populations in the upper Yampa River (Nesler 1995, Zelasko et al. 2014). 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 occur in critical habitat for four endangered fishes — Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila cypha*), and bonytail (*Gila elegans*). Approximately 130 miles of the Yampa River below Craig, Colorado is also designated critical habitat for these species. Northern pike pose a significant predatory risk to these endangered fish, especially juveniles and small adults of Colorado pikeminnow and razorback sucker. Additionally, northern pike represent a predatory risk to other native species in the basin (e.g., bluehead sucker *Catostomus discobolus*, flannelmouth sucker *Catostomus latipinnis*, and roundtail chub *Gila robusta*) that have been considered for listing under the Endangered Species Act in the past (Martinez 1995; Nesler 1995). Northern pike and smallmouth bass have been identified as significant threats to the endangered fishes by a majority of upper basin researchers in surveys conducted during the late 1980s (Hawkins and Nesler 1991), as well as through bioenergetics modeling (Johnson et al. 2008).

#### IV. Study Goals, Objectives, End Product(s):

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

Objective: Reduce abundance of northern pike, smallmouth bass, and white sucker in the study reach.

End products: Annual report due November 2020; presentation at Nonnative-Fish Workshop

#### V. Study Area: Upper Yampa River (upstream and through Craig, CO); river miles 171.5-134.5

#### VI. Study Methods/Approach:

Temporarily reducing riverine smallmouth bass and northern pike populations appears viable under certain environmental conditions but both species can easily reverse these reductions in population abundance and return to pre-removal abundances under favorable environmental conditions (Breton et al. 2014; Zelasko et al. 2015). Therefore, mechanical removal efforts will attempt to reach eradication of nonnative fish populations in the river. However, recent synthesis reports investigating effectiveness of in-river removal efforts for northern pike and smallmouth bass determined that reducing in-river populations of these two species would not be successful unless in-river reproduction and reservoir escapement were controlled (Breton et al. 2014; Zelasko et al. 2015). Therefore, mechanical removal efforts will continue to temporarily suppress riverine populations, and will focus on reducing in-river reproduction when feasible. Simultaneously, Program partners will work on other means to reduce in-river reproduction and reservoir escapement, in order to make mechanical removal more effective and to attempt to reach complete eradication of riverine populations.

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 and rafts, with effort concentrated in habitats of higher pike density, such as sloughs and flooded backwaters. When possible, gill nets will be set to optimize removal efforts in backwaters where pike densities are high and boat electrofishing efficiency is limited by factors such as depth, conductivity, or vegetation. Special effort will be made to conduct 3-4

electrofishing passes as early as possible to take advantage of high catch rates for northern pike during their spawn. The remaining passes will be conducted as late as water will allow to attempt to disrupt smallmouth bass spawning activity known to occur in this reach. The effort for one to two passes will be used at the PI's discretion to target the disruption of spawning for northern pike and smallmouth bass. Effort, total length (TL), weight (grams), and abundance of northern pike will be recorded at each backwater to determine where northern pike are encountered and the highest pike densities are observed within and between years. All northern pike, smallmouth bass, and white sucker captured will be euthanized and disposed of in the Craig, Colorado landfill, per CPW guidelines.

Any endangered fish captured will be identified to species, checked for tags, and total length and weight will be recorded along with GPS coordinates. If an endangered fish is untagged, a PIT tag will be inserted and recorded. Given that flannelmouth sucker, bluehead sucker, and roundtail chub captures are extremely rare in this stretch, any encounters with these fish will be handled with the same protocol as endangered fish. All capture and length data on northern pike, smallmouth bass, and other species collected during the sampling effort in the Yampa River will be 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 nonnative fish workshop.

VII. Task Description and Schedule:

1. April - July: Electrofish and gill net the Yampa River between Hayden and Craig, CO.
2. April: Gill net large sloughs/backwaters with CPW to block pike spawning habitats.
3. October: Consolidate data and provide to CPW and to the Recovery Program database.
4. November- January: Prepare annual reports. Attend nonnative fish workshop and annual researchers meeting.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1						X	X	X	X			
2						X	X	X				
3						X	X	X				
4										X	X	X

VIII. Deliverables, Due Dates, and Budget by Fiscal Year:

USFWS personnel costs are based on FY2019 GS and WG tables, with current benefit rates included for each position. Future rates were determined assuming a 2% inflation and cost of living increase. Vehicle and travel costs are based on current GSA rates, again assuming a 2% rate of inflation in future years.

IX. Budget Summary:

Total budget to GRB FWCO by fiscal year:  
 FY2020: \$106,535  
 FY2021: \$100,573  
 FY2022: \$108,861  
 FY2023: \$124,361

FY2024: \$136,729

X. Reviewers:

XI. References:

Breton, A. R., D. L. Winkelman, J. A. Hawkins, and K. R. Bestgen. 2014. Population trends of smallmouth bass in the upper Colorado River basin with an evaluation of removal effects. Final report to the Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado. Larval Fish Laboratory Contribution 169.

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.

Johnson, B.M., P.J. Martinez, J.A. Hawkins, and K.R. Bestgen. 2008. Ranking predatory threats by nonnative fishes in the Yampa River, Colorado, via bioenergetics modeling. North American Journal of Fisheries Management 28: 1941-1953.

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.

Zelasko, K. A., K. R. Bestgen, J. A. Hawkins, G. C. White. 2015. Abundance and population dynamics of invasive northern pike *Esox lucius*, Yampa River, Colorado, 2004–2010. Final Report to the Upper Colorado River Endangered Fish Recovery Program, Project 161b, Denver. Larval Fish Laboratory Contribution 185.

