

COLORADO RIVER RECOVERY PROGRAM
FY 2016 ANNUAL PROJECT REPORT

RECOVERY PROGRAM
PROJECT NUMBER: 98b

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

II. Bureau of Reclamation Agreement Number(s): R15PG00083

Project/Grant Period: Start date: 10/01/2014
End date: 09/30/2019
Reporting period end date: 9/30/2016
Is this the final report? Yes _____ No X

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IV. Abstract:
The objective of this study is to reduce the abundance of northern pike, smallmouth bass, and white sucker immediately upstream of critical habitat in the Yampa River between Hayden and Craig, CO. We use electrofishing boats to sample this reach seven times a year during spring and early summer. In 2016 we euthanized 31 smallmouth bass, 2,302 white suckers, and 198 northern pike. More smallmouth bass and northern pike were removed in 2016 than 2015, and the number of white suckers removed increased, as it has every year since 2012, when white sucker removal began. Higher northern pike catch rates in 2016 resulted from focusing and recording effort in backwaters to increase efficiency and data resolution, not from noticeably higher pike densities. We suspect that lower northern pike catch rates in comparison to our efforts previous to 2015 were a result of gill netting removal performed by Colorado Parks and Wildlife (CPW) shortly before this project began in 2016.

V Study Schedule: 2004-ongoing.

VI. Relationship to RIPRAP:
GREEN RIVER ACTION PLAN: YAMPA AND LITTLE SNAKE RIVERS
III.B.2 Control nonnative fishes via mechanical removal
III.B.2.a. Estimate nonnative status, trends, and distribution
III.B.2.d. Remove northern pike from Yampa River
III.B.2.e. Remove smallmouth bass

VII. Accomplishment of FY 2016 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

We conducted five electrofishing passes through each of three sections within our 38-mile study section of the upper Yampa River between Hayden and Craig from 12 April - 8 July 2016. All passes were used as removal passes, and all northern pike, smallmouth bass, and white sucker captured were euthanized. Although seven passes are typically completed in this project, our office conducted an extra pass for Project 128 (Green River Colorado pikeminnow population estimate) per Recovery Program direction which reduced our window of opportunity on the Yampa River.

Northern Pike

We removed 198 northern pike from the study reach in 2016. We consider fish <300mm juveniles, fish ≥ 300 mm adults, and fish ≥ 450 mm as piscivores. Of the 198 fish removed in 2016, 14 were juveniles, and 182 were adults, of which 128 were piscivores (Table 1). This was more than we removed in 2015, when we removed 154 fish (22 juveniles, 132 adults of which 86 were piscivores).

Length-frequency of pike captured in 2016 showed greater representation by small and medium adults than other size classes (Figure 1). The majority (93%) of the fish captured were adults, ranging from 301-880 mm. The proportion of juvenile fish decreased from 15 percent in 2015 to 7 percent in 2016, which suggests that northern pike spawning and recruitment was less successful in 2015 compared to 2014.

The overall catch per unit effort (CPUE) in 2016 was the highest observed since 2013 (Figure 6), which primarily reflects a change to fish and data collection methods rather than higher northern pike densities. Catch rates in the main channel of the Yampa River have been very low for years, so we decided to focus our efforts in backwater habitat to increase removal efficiency.

Additionally, we began recording effort, location (RM), and fish data (total length and number of northern pike caught) at the backwater scale instead of the two-mile reach scale. This method allows the determination of catch rates on the reach scale as well as the identification of where northern pike were captured within each two-mile reach. We expect that the increased resolution in our data will benefit future targeted northern pike removal, whether it is achieved by electrofishing, gill netting, or other methods.

Other than 2015, fewer northern pike were captured this year than any year since this project's inception. We suspect that this could be the combined result of over ten years of coordinated multi-agency (USFWS, CSU, and CPW) electrofishing and spring gill netting efforts conducted by CPW during the past three years.

Northern Pike Tags

No tagged pike were captured in 2016.

Smallmouth Bass

Thirty-one smallmouth bass (118 – 340 mm TL; 5 juveniles < 200 mm, 26 adults ≥ 200 mm, 1 piscivore ≥ 325 mm) were captured in this study compared to 5 (176 - 381 mm) in 2015. The majority (n = 27) were caught after late June, at least ten days after sampling ceased in 2015.

White Sucker

We removed 2,302 white suckers (73 -582 mm) in 2016, compared to 2,123 white suckers (55 - 580 mm) in 2015. Of these, 294 measured < 200 mm and 2,008 measured ≥ 200 mm compared to 356 and 1,767 in 2015, respectively. The majority (77%) of white suckers caught during the first month of sampling were expressing gametes, and depletion between passes did not occur this year (Figure 7 and 8), similar to the past four years (Webber 2012, Webber 2013, Webber et al. 2014, Smith and Jones 2015). The continued removal of this species is warranted, especially during spring spawning periods, given that we continue to observe increased white sucker abundance every year and are aware of their direct (competition and hybridization) and indirect (prey base for northern pike) threats to native fish in the Yampa River.

VIII. Additional noteworthy observations:

- The Elkhead and Yampa River confluence was noted in 2012 and 2013 as a smallmouth bass spawning location. Three ripe male bass (range= 205 – 246 mm TL) were caught in Elkhead Creek upstream of the confluence on 7 July 2016.
- One bluehead sucker was caught at RM 139.6 on 11 May, the first native sucker captured in this project since 2013.

IX. Recommendations:

- We recommend conducting 5 passes as early as possible in the spring to remove as many northern pike as possible, and conducting 2 passes after peak runoff to target the smallmouth bass spawn.
- If deemed necessary, gill netting efforts could be extended later into the spring and into more backwaters. In some cases this will require us to obtain permission from landowners to access backwaters that exist within private property. Crews in electrofishing boats could identify near and off-channel backwaters that are not accessible to jon boats due to constrictions or breach depths at certain flows. We believe that this would increase our efficiency at low and high water levels.
- Using backwater-specific data to locate areas with potentially higher northern pike densities, investigate other northern pike removal methods such as “shock and block” backpack electrofishing to extend removal efforts later into the summer when northern pike could be confined to habitat such as main channel pools, off channel canals, and gravel pit ponds.

X. Project Status: This project is on track and ongoing

XI. FY 2016 Budget Status:

A. Funds Provided: \$90,307

B. Funds Expended: \$90,307

C. Difference: -0-

D. Percent of the FY 2016 work completed: 100%

E. Recovery Program funds spent for publication charges: -0-

XII. Status of Data Submission:

XIII. Signed: Christian Smith 21 November 2016
Principal Investigator Date

References:

Smith, C. and M.T. Jones. 2015. Upper Yampa River northern pike management and monitoring. Annual Report to the Upper Colorado River Endangered Fish Recovery Program. Denver, CO

Webber, A. 2012. Management of northern pike from the Yampa River upstream of Craig, Colorado. Annual Report to the Upper Colorado River Endangered Fish Recovery Program. Denver, CO.

Webber, A. 2013. Management of northern pike from the Yampa River upstream of Craig, Colorado. Annual Report to the Upper Colorado River Endangered Fish Recovery Program. Denver, CO.

Webber, A., C. Smith, and M.T. Jones. 2014. Upper Yampa River northern pike management and monitoring. Annual Report to the Upper Colorado River Endangered Fish Recovery Program. Denver, CO.

Table 1. Juvenile (includes all northern pike < 300 mm), adult (300 ≤ 449 mm), and piscivore (≤450 mm) class northern pike removed from the Yampa River for each pass in 2016. Dates sampled are indicated for each pass.

Pass/Date	Juveniles	Adults	Piscivores	Total
1 - 11-13 April, 11 May	4	13	37	54
2 - 14 April, 10-11 May, 16 June	1	7	18	26
3 - 12 May, 15-16 June, 22 June	3	15	31	49
4 - 17 June, 21-22 June, 6 July	3	13	30	46
5 - 23 June, 5 July, 8 July	3	6	12	21

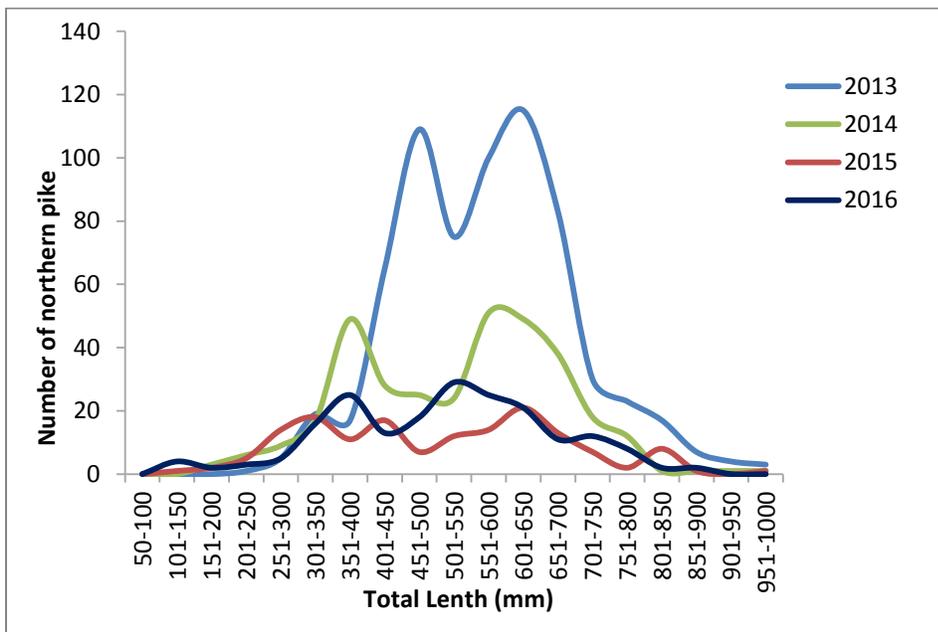


Figure 1. Length frequency of Yampa River northern pike captured 2013 – 2016.

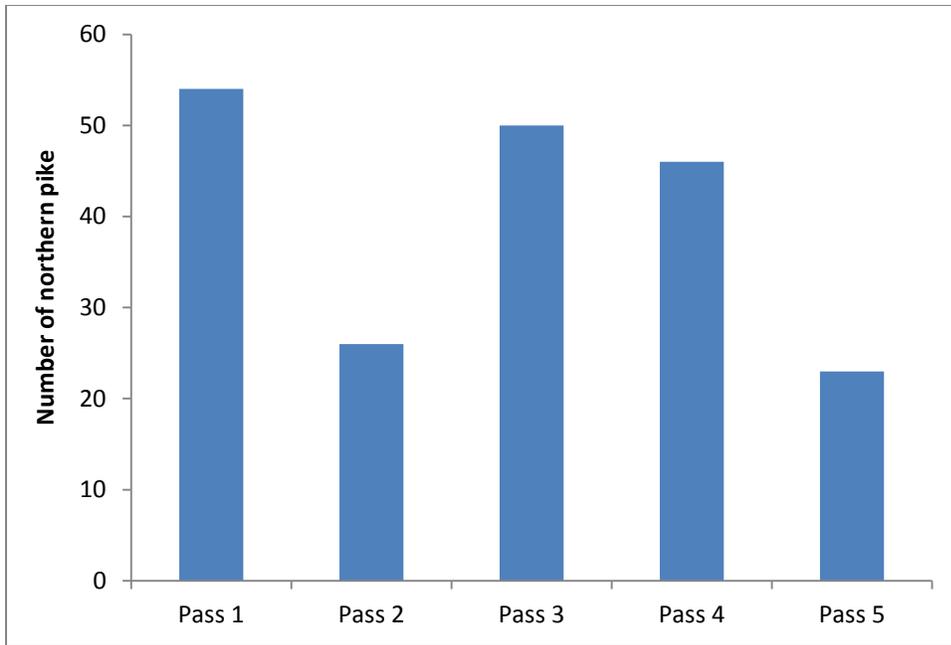


Figure 2. Northern pike captured by pass in the Yampa River, 2016 in project 98b.

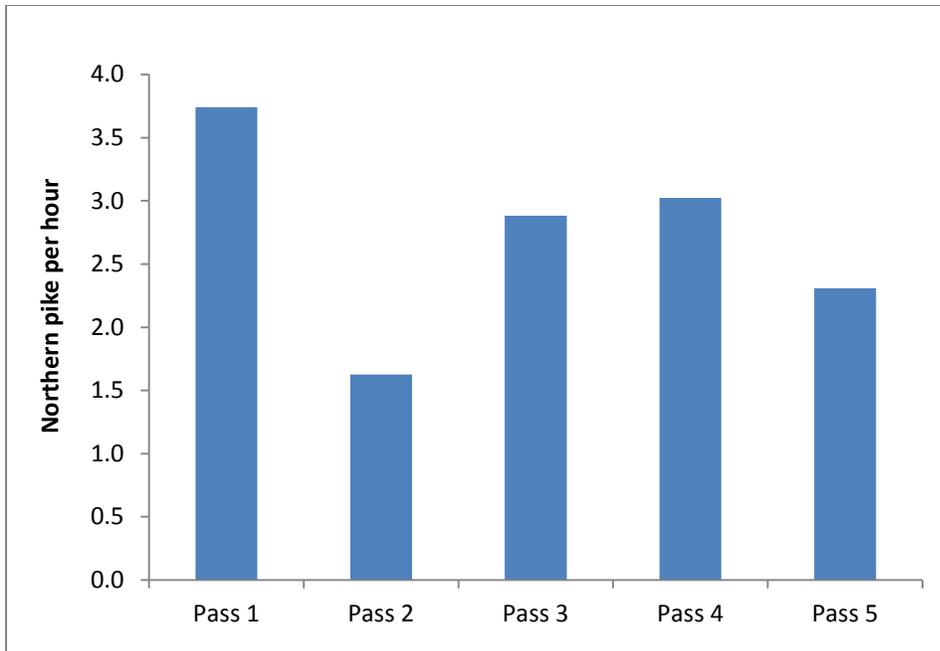


Figure 3. Catch rates for northern pike by pass, Yampa River 2016 in project 98b.

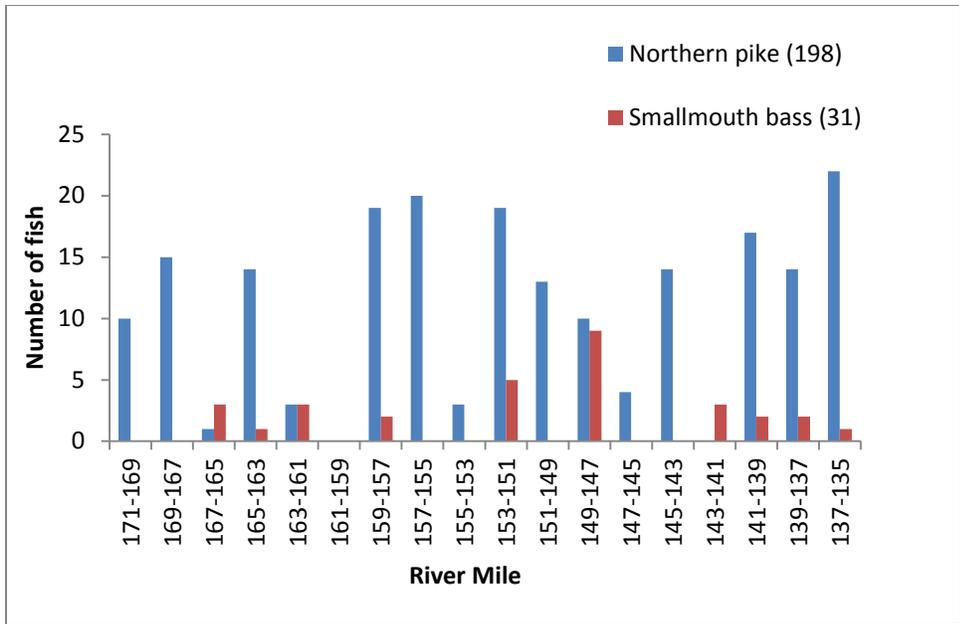


Figure 4. Total number of northern pike and smallmouth bass captured by river mile reach, Yampa River 2016 in project 98b.

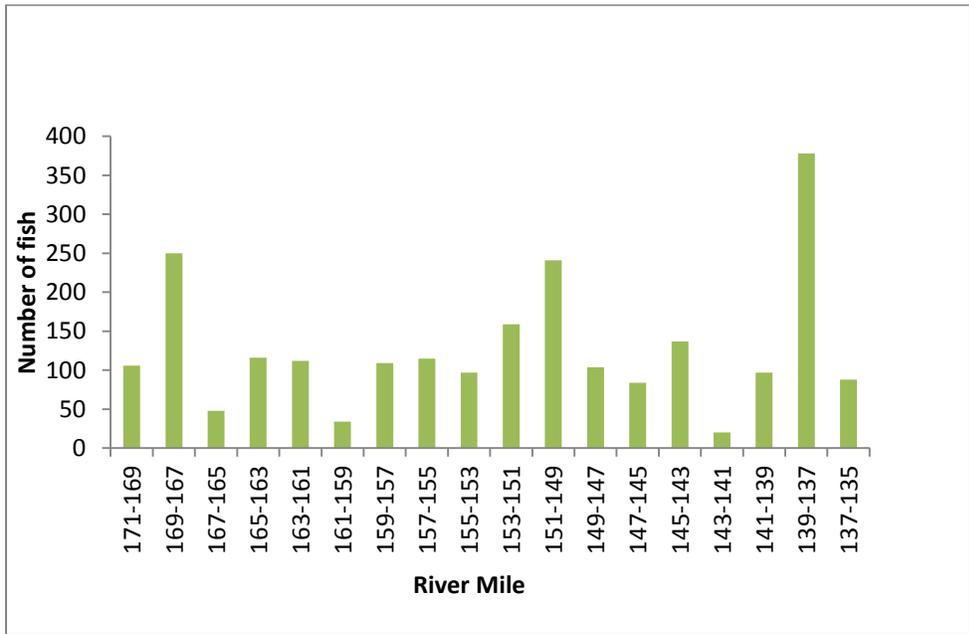


Figure 5. Total number of white sucker captured by river mile reach, Yampa River 2016 in project 98b.

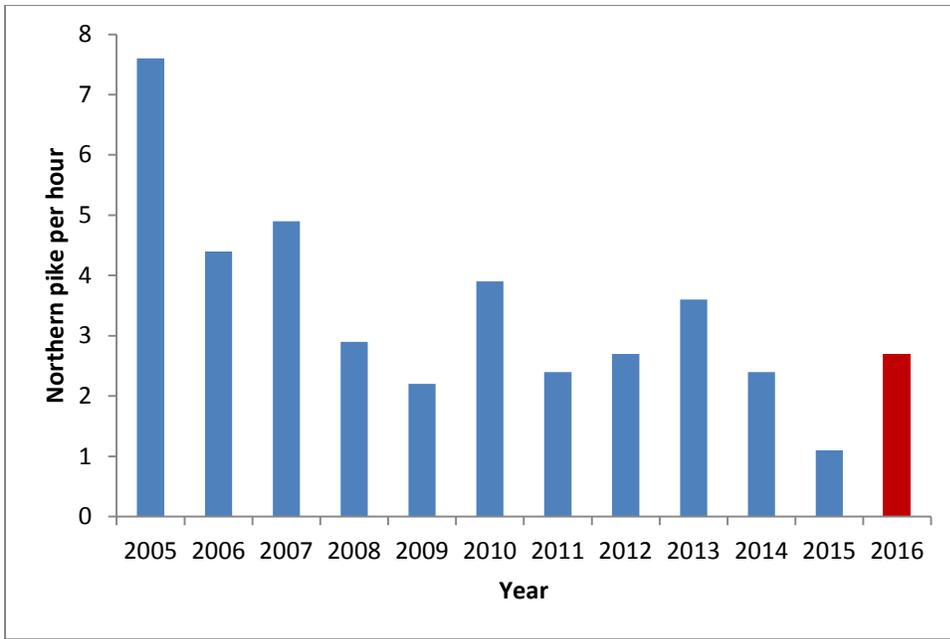


Figure 6. Overall northern pike catch rates per hour (CPUE), 2005 - 2016 for project 98b. The noticeable increase in catch rates from 2015 to 2016 resulted from electrofishing and recording effort primarily in backwaters. This change in calculation is denoted by the red bars.

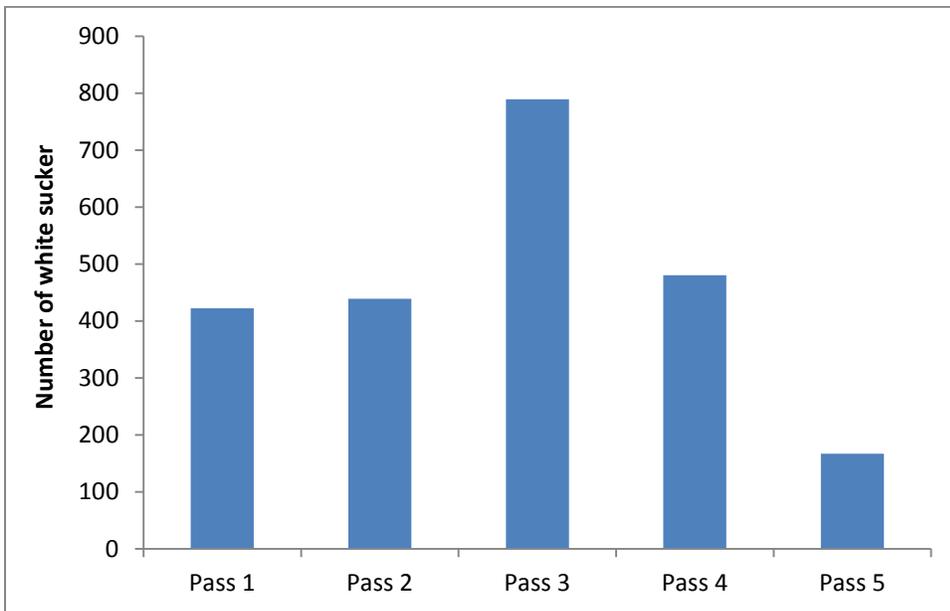


Figure 7. Number of white suckers removed by pass from the Yampa River between Hayden and Craig during 2016 in project 98b. .

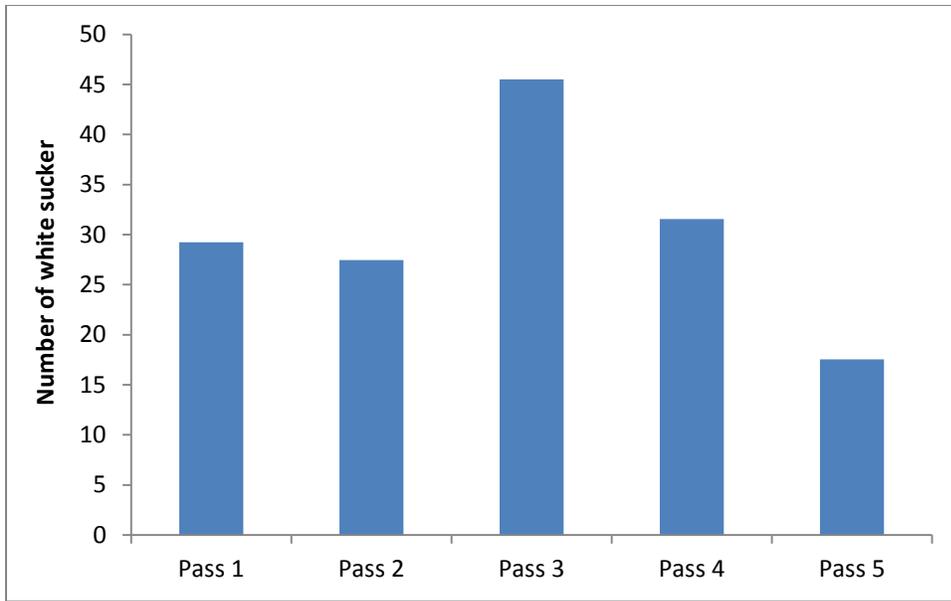


Figure 8. Catch rates for white sucker by pass from the Yampa River between Hayden and Craig during 2016 in project 98b.