

UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

FY 2020 ANNUAL REPORT

PROJECT: 167

Project Title

Smallmouth bass control in the White River

Bureau of Reclamation Agreement Number:

R19AP00059 (UDWR)

R20PG00024 (USFWS)

R17AP00301 (CPW)

Project/Grant Period:

Start date: 10/1/2019

End date: 9/30/2024

Reporting period end date: 9/30/2020

Is this the final report? Yes ___ No X

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Abstract:

U.S. Fish and Wildlife Service, Utah Division of Wildlife Resources, and Colorado Parks & Wildlife worked collaboratively to control an established and growing population of smallmouth bass in the White River. In 2020, a total of 4,961 smallmouth bass were removed between Taylor Draw Dam and

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the Enron boat ramp (river mile 104.3-24.0). COVID-19 induced fieldwork restrictions and a shorter runoff period resulted in less effort expended compared to last year. Consequently, fewer smallmouth bass were removed in 2020 than in 2019, however, overall catch rates were higher. Similar to years past, adult (> 200 mm total length [TL]) bass catch rates peaked in the reach immediately downstream of Taylor Draw Dam; adults comprised 25.7% of bass captures in Colorado and 6.3% in Utah. Adult, juvenile (100-199 mm TL), and smallmouth bass less than 100 mm TL were caught in 2020, demonstrating that successful reproduction and survival have occurred in this system for at least the past three years.

Study Schedule:

2012-Ongoing

Relationship to RIPRAP:

GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN

- III. Reduce negative impacts of nonnative fishes and sportfish management activities.
- III.A. Reduce negative interactions between nonnative and endangered fishes.
- III.A.2. Identify and implement viable active control measures.

GREEN RIVER ACTION PLAN: WHITE RIVER

- III. Reduce negative impacts of nonnative fishes and sportfish management activities.
- III.A. Reduce negative interactions between nonnative and endangered fishes.
- III.B.2. Preclude new nonnative species introductions, translocations or invasions to preserve native species dominance within critical habitat.

Accomplishment of FY 2020 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

The data and analysis within this report are inclusive of combined efforts by U.S. Fish and Wildlife Service Green River Basin Fish and Wildlife Conservation Office (GRB FWCO), Colorado Parks and Wildlife (CPW) and Utah Division of Wildlife Resources. Annual Performance Progress Reports by CPW and UDWR are attached.

Smallmouth bass removal from Taylor Draw Dam to the Colorado/Utah border

U.S. Fish and Wildlife Service Green River Basin Fish and Wildlife Conservation Office (GRB FWCO) and Colorado Parks and Wildlife (CPW) removed smallmouth bass from the Taylor Draw Dam to the Colorado/Utah border between 26 May and 1 July 2020 (Table 1). The majority of Colorado effort in 2020 occurred in the 17 miles downstream of Taylor Draw Dam, as previous data suggested this was the area containing the highest bass densities and an abundance of spawning adult bass (Breen et al. 2012; Webber et al. 2013, 2014; Smith et al. 2015, 2016, 2017, 2018, 2019). Additionally, four days of removal were conducted from the BLM Big Trujillo Wash boat launch to the Utah border (river mile [RM] 87.5-71.6).

Crews removed 3,643 smallmouth bass during 15 days of electrofishing in the Colorado portion of the White River (Table 1), consisting of 937 adults (≥ 200 mm total length [TL]), 2,304 juveniles (100-199 mm TL), and 402 fish < 100 mm TL (likely age-1). Of the 937 adults caught, 14 were large enough to be considered piscivores (≥ 325 mm TL) posing a competitive threat to Colorado pikeminnow and a

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predatory threat to smaller native fishes. A total of 367 adult bass were expressing gametes, and more ripe females were caught than males ($n = 204$ and 151 , respectively, with 12 fish lacking sex determination information).

Mean total length of smallmouth bass removed was 173.9 mm (range = 50 - 392 mm TL; Figure 2). The size structure of bass caught in 2020 revealed one dominant size class that appears to correspond to fish spawned in 2018, which were also well-represented in 2019 (Figure 3). Larger juveniles and adults comprise a greater proportion of the size distribution in 2020 than in any previous year (Figure 3), further indicating the strength of the 2018 year class and establishment of the species in Colorado. Overall catch-per-unit effort (CPUE) for smallmouth bass from Taylor Draw Dam to the Colorado/Utah border (RM 104.3-71.6) in 2020 was 24.7 fish/hr. This removal effort represents the second highest catch rate since the initiation of this project (Figure 1). The catch rate downstream of the Big Trujillo Wash boat launch (RM 87.5) was lower (CPUE = 14.5 /hr, total effort = 36.3 hrs) than upstream reaches (CPUE = 28.0 bass/hr, total effort = 111.4 hrs; Figure 4) in 2020.

Adult catch rates were highest in the reach immediately downstream of the Taylor Draw Dam (RM 104.3-102.6) and, similar to years past, declined downstream of Douglas Creek (RM 97.1; Figure 4; Webber et al. 2013, 2014, Smith et al. 2015, 2016, 2017, 2018, 2019). Catch rates for juveniles between 100 to 199 mm TL were fairly high (CPUE > 9.0 bass/hr) in all reaches except one (RM 87.6-RM 83) in Colorado, and like adult catch rates, were highest in the most upstream reach (Figure 4).

Targeted smallmouth bass removal from the Big Trujillo boat launch (RM 87.5) to the Utah state line (RM 71.6) had not been conducted as part of Project 167 between 2013 and 2016 due to lower bass densities compared to reaches upstream observed during Project 128 passes. Increased smallmouth bass catch rates during Project 128 passes in 2017 prompted GRB FWCO to expand Project 167 efforts into this orphaned reach. During 2017 and 2018, shuttle access to the Colorado/Utah state line through private property was permitted by the landowner, but declined in 2019. Loss of access to the state line prompted the reallocation of removal resources wherein GRB FWCO extended their efforts to the Bonanza Bridge (RM 59.0) and UDWR V focused solely on the Bonanza Bridge to Enron boat ramp reach in 2020.

Smallmouth bass removal from the Colorado/Utah border (RM 71.6) to the Enron boat ramp (RM 24)

The Utah Division of Wildlife Resources and GRB FWCO removed smallmouth bass from the Colorado/Utah border from 16-26 June 2020 (Table 1). Smallmouth bass removal in the Utah section upstream of the Bonanza Bridge (RM 71.6-59.5) was conducted by GRB FWCO over four days (22.9 hrs of total effort) between 18-26 June (Table 1). Downstream of the Bonanza Bridge, UDWR V completed six days of smallmouth bass removal (RM 59.0-24.0; 57.79 hrs of total effort) via cataraft electrofishing from 16-25 June 2020 (Table 1). Only two of three anticipated removal passes were completed by UDWR V in 2020, representing approximately one third of the removal effort expended in Utah in 2019 (Smith et al. 2019). More specifically, the third pass from Bonanza Bridge to the Enron boat ramp was canceled due to low flows in October that did not allow for safe passage downstream.

During this effort, $1,320$ smallmouth bass were removed (mean \pm SE = 161.7 ± 079 mm TL; range = 70 - 402 mm TL; Figures 5 and 6), representing a slight decrease compared to 2019 (Smith et al. 2019; Figure 6). Catch consisted of $1,235$ juveniles (≤ 199 mm TL) and 83 adults (> 200 mm TL), one of

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which was in the piscivore size class (≥ 325 mm TL; Figure 5). Note that two bass are not included in this size class summary because they were removed, but not measured; included in total abundance and overall CPUE metrics only. As was observed in Colorado, the size structure of bass removed from Utah in 2020 revealed one dominant size class that appears to correspond to fish spawned in 2018 particularly individuals between 150-174 mm TL (Figure 5). Adult bass were dissected for sex determination and gamete expression. Of 61 smallmouth bass where sex determination was possible, we removed 32 female and 29 male adults; 34.4% of females and 20.7% of males were ripe at the time of collection. This data suggests our removal efforts were focused on the correct timeframe to target spawning smallmouth bass in the Utah portion of the White River in 2020.

Overall CPUE was 16.13 fish/hr, which is a substantial increase over of the 2019 catch rate (9.86 fish/hr; Smith et al. 2019; Figure 7). We suspect that lower flows in 2020 relative to 2019 were largely responsible for increased catch rates (Smith et al. 2019). Assessment of 5-mile sample reaches suggests that population establishment and expansion has continued in 2020 (Figure 4). More specifically, CPUE for juvenile bass (fish < 200 mm) are highest from RM 66.5-56.5. Of greater concern for 2020, however, is the increase in adult bass catch rates in the farthest downstream reaches of the White River (Figure 4).

Additional noteworthy observations:

Northern pike were not captured in the White River downstream of Taylor Draw Dam in 2020. We are hopeful that continued efforts by CPW to suppress a recent introduction of Northern Pike in Kenney Reservoir may limit northern pike escapement into the White River below Taylor Draw Dam. A summary of Kenney Reservoir removal efforts is attached.

A northern pike angler harvest incentive sponsored by CPW and the Rio Blanco Water Conservancy district was funded for the 2nd year in 2020. The harvest incentive pays anglers \$20 per northern pike turned in. Funds for the incentive were provided by the Colorado Water Conservation board. The incentive is valid for all waters within the Rio Blanco Water Conservancy district including the White River. As of October 27, 2020 nine northern pike have been turned in for 2020 from district waters.

CPW contributed a \$250 cash bonus at the Rio Blanco Water Conservancy District fishing derby for the most smallmouth bass captured category.

Green River Basin FWCO removed 90 smallmouth bass (mean \pm SE = 217.6 ± 5.6 mm TL; range = 96 – 401 mm TL) on hook and line between Taylor Draw Dam and the boat launch 0.15 miles downstream on 26-27 August. Most of these fish were caught in the dam's stilling basin and the majority were caught by two of the five anglers. In addition to these bass, 33 green sunfish were removed during this effort.

Low flows in October 2020, following a relatively dry year, brought the realization that a fall removal pass from Bonanza Bridge to the Enron boat ramp in order to remove additional adult bass will not always be possible. This result emphasizes the need for flexibility in this scope of work given adequate staffing and hydrology.

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Recommendations:

Removal passes in the upper 11 miles of the White River below Taylor Draw Dam should continue to be the priority of this project. Removal should continue to target adult smallmouth bass before and during the spawn period since spawning adults make up a larger proportion of the total catch in Colorado.

Smallmouth bass removal effort should be increased between Big Trujillo Wash (RM 87.6) and the Bonanza Bridge (RM 59.5). The higher smallmouth bass catch rates observed in this reach since 2017 justify additional effort despite access challenges.

During years such as 2020 when water clarity is high for extended periods, angling should be considered a viable option when boat electrofishing removal is not possible. Encompassing approximately 32.4 hours of angling effort or five people over two days, Green River Basin FWCO crews removed 90 smallmouth bass of which 57 qualified as adults.

We recommend switching the UDWR V fall bass removal pass (equivalent to three days of effort) back to spring/summer. In light of lost opportunity in 2020 due to limited October flows, we feel that spring peak flows offer more of a safety net to spread out removal efforts. However, flexibility in this scope of work is crucial so that we are able to take advantage of adequate staffing and hydrology when possible.

Coordinate with Rio Blanco Water Conservancy District and the Town of Rangely, CO for future opportunities to manipulate discharge below the Taylor Draw Dam hydro-electric tunnel to provide short duration high flow events in the White River during low flow years. Evaluate young-of-year smallmouth bass response to flow manipulations.

Continue to support local fishing tournaments and harvest incentives to encourage angler take of northern pike and smallmouth bass within the Rio Blanco Water Conservancy District.

Project Status:

On track and ongoing.

FY 2020 Budget Status

Funds Provided: \$91,302*

Funds Expended: \$77,305

Difference: \$13,997

Percent of the FY 2020 work completed, and projected costs to complete: 63.63%**

Recovery Program funds spent for publication charges: -X-

*GRB FWCO and UDWR V annual funding only; CPW will report funding information related to Project 167 in the Project 98a Annual Report.

**GRB FWCO and UDWR V percent work completed only. UDWR V completed six of nine days and GRB FWCO completed 15 of 23 days.

Status of Data Submission

On track and ongoing.

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Signed:

Christian Smith
Principal Investigator
Date

Jenn Logan
Principal Investigator
Date

Matthew Breen
Principal Investigator
Date

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References

Breen, M.J., J.A. Skorupski Jr., A. Webber, and T. Jones. 2012. Smallmouth bass control in the White River. Annual Report to the Upper Colorado River Endangered Fish Recovery Program. Denver, CO.

Smith, C., T. Jones, M.J. Breen, R.C. Schelly, and J. Logan. 2015. Smallmouth bass control in the White River. Annual Report to the Upper Colorado River Endangered Fish Recovery Program. Denver, CO.

Smith, C., T. Jones, M.J. Breen, R.C. Schelly, and J. Logan. 2016. Smallmouth bass control in the White River. Annual Report to the Upper Colorado River Endangered Fish Recovery Program. Denver, CO.

Smith, C., T. Jones, M.J. Breen, R. Staffeldt, and J. Logan. 2017. Smallmouth bass control in the White River. Annual Report to the Upper Colorado River Endangered Fish Recovery Program. Denver, CO.

Smith, C., T. Jones, M.J. Breen, and J. Logan. 2018. Smallmouth bass control in the White River. Annual Report to the Upper Colorado River Endangered Fish Recovery Program. Denver, CO.

Smith, C., T. Jones, M.J. Breen, M.S. Partlow, and J. Logan. 2019. Smallmouth bass control in the White River. Annual Report to the Upper Colorado River Endangered Fish Recovery Program. Denver, CO.

Webber, A., M.J. Breen, and J.A. Skorupski Jr. 2013. Smallmouth bass control in the White River. Annual Report to the Upper Colorado River Endangered Fish Recovery Program. Denver, CO.

Webber, A., M.T. Jones, M.J. Breen, and R.C. Schelly. 2014. Smallmouth bass control in the White River. Annual Report to the Upper Colorado River Endangered Fish Recovery Program. Denver, CO.

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Table 1. Juvenile (includes all bass <200 mm) and adult smallmouth bass removed from the White River for each pass in 2020. River miles (RM) and dates sampled are also indicated for each pass.

Agency, Date	RM	Juveniles	Adults	Total
CPW, 4 June	93.5-87.6	46	33	79
FWS, 11 June	104.3-87.6	205	151	356
FWS, 15 June	104.3-97.1	154	107	261
CPW, 17 June	104.3-87.6	519	188	707
FWS, 17 & 18 June	87.6-72.0	166	34	200
CPW, 18 June	104.3-97.1	232	76	308
FWS, 22 June	93.5-87.6	76	27	103
CPW, 23 June	104.3-97.1	381	98	479
CPW, 24 June	97.1-87.6	307	67	374
FWS, 24 & 25 June	87.6-72.0	269	59	328
FWS, 29 June	93.5-87.6	97	23	120
FWS, 30 June	104.3-99.0	111	32	143
FWS, 1 July	99-95.5	74	11	85
CPW, 26 May (Fish Health Inspection)	93.5-90.0	69	31	100
Colorado Totals		2,706	937	3,643
FWS, 18 & 19 June	72.0-59.5	337	11	348
FWS, 25 & 26 June	72.0-59.5	284	18	302
UDWR, 16-18 June	59.5-24.0	290	26	316
UDWR, 23-25 June*	59.5-24.0	324	28	352
Utah Totals		1,235	83	1,318
Combined Totals				4,961

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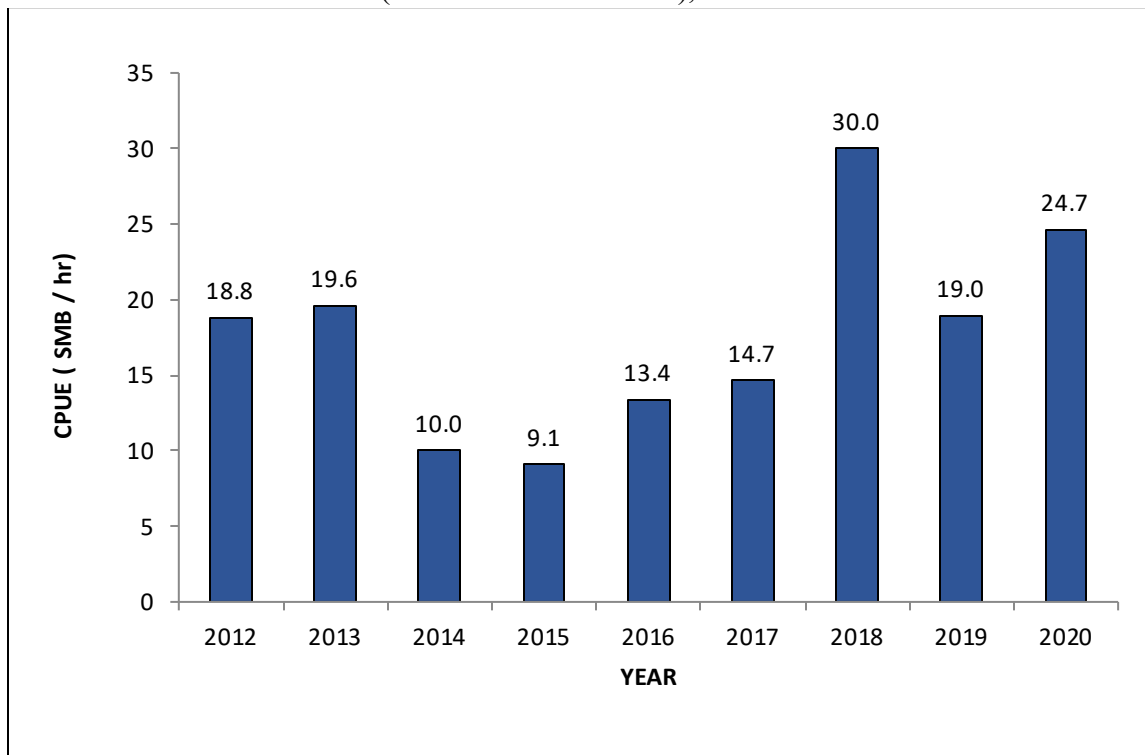
Table 2. Ancillary captures from the White River, 2020.

Species	Total captured	Length Range (mm)
Black bullhead	49	106 - 501
Black crappie	41	51 - 255
Bluehead sucker	5	296 - 398
Brown trout	2	236 - 240
Bonytail**	15	257 - 370
Channel catfish	3	475 - 560
Colorado pikeminnow	15	442 - 885
Flannelmouth x bluehead sucker	3	236 - 361
Flannelmouth sucker	8	127 - 490
Green sunfish	247	42 - 223
Roundtail chub*	48	205 - 422
White sucker x bluehead sucker hybrid	25	102 - 444
White sucker x flannelmouth sucker hybrid	27	191 - 502
White sucker	52	120 - 448

*UDWR collected roundtail chub during all 167 passes. With the exception of one roundtail, these fish were removed from the population for translocation during a concurrent Three Species project conducted for the state of Utah; this data will be submitted to STReAMS separately.

**Due to overwhelming abundance from a recent stocking event, bonytail were ignored for the majority of the sampling conducted by UDWR.

Figure 1. Catch-per-unit-effort (CPUE) for all smallmouth bass captured during Project 167 passes in the White River in Colorado (river miles 104.3-71.6), 2012-2020.



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Figure 2. Length-frequency of smallmouth bass removed from the White River in Colorado, 2020.

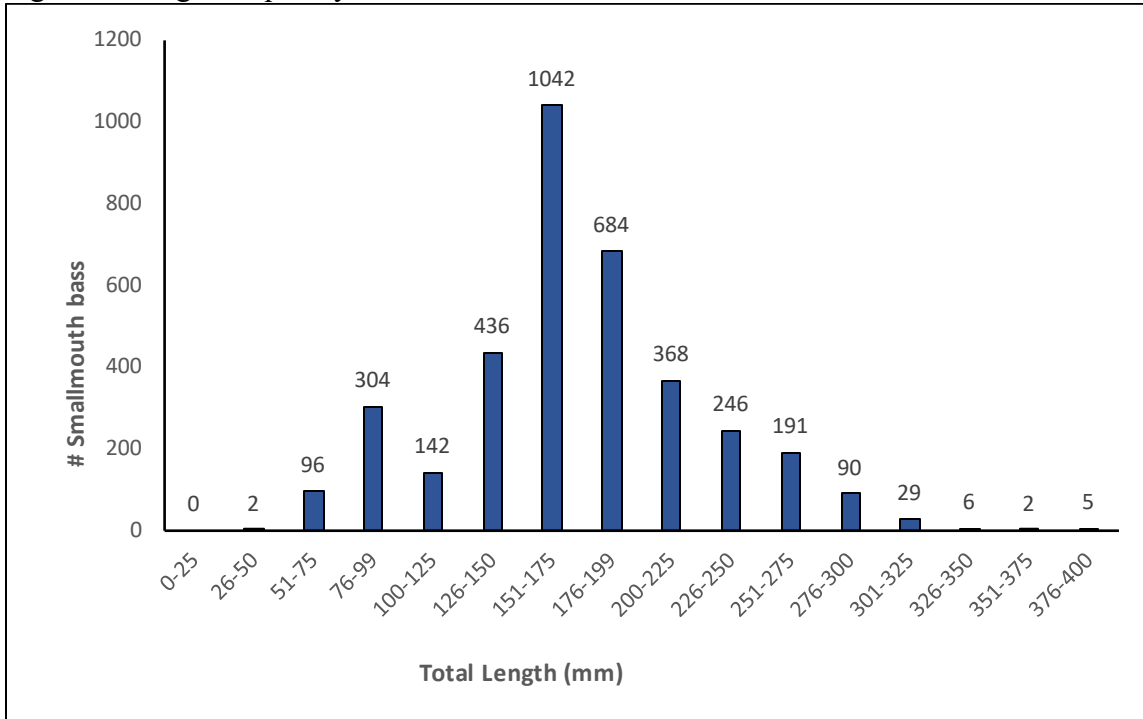
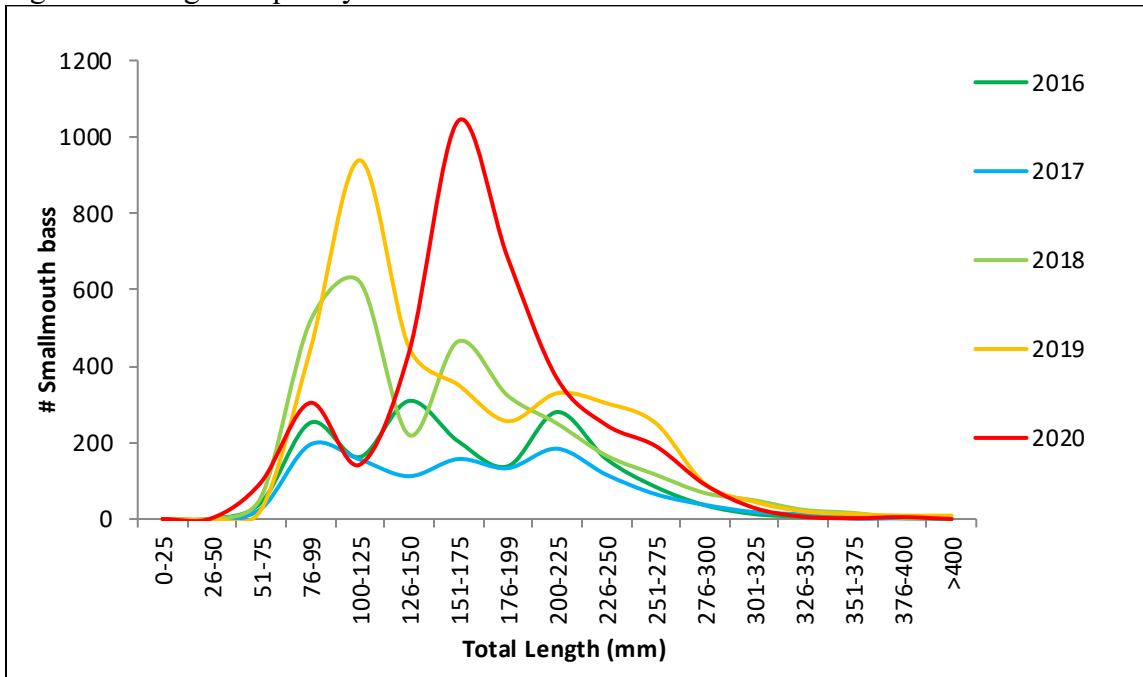


Figure 3. Length-frequency of smallmouth bass removed from the White River in Colorado, 2016-2020.



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Figure 4. Catch rates of smallmouth bass by size class and river mile in the White River, Colorado and Utah, during Project 167 passes in 2020.

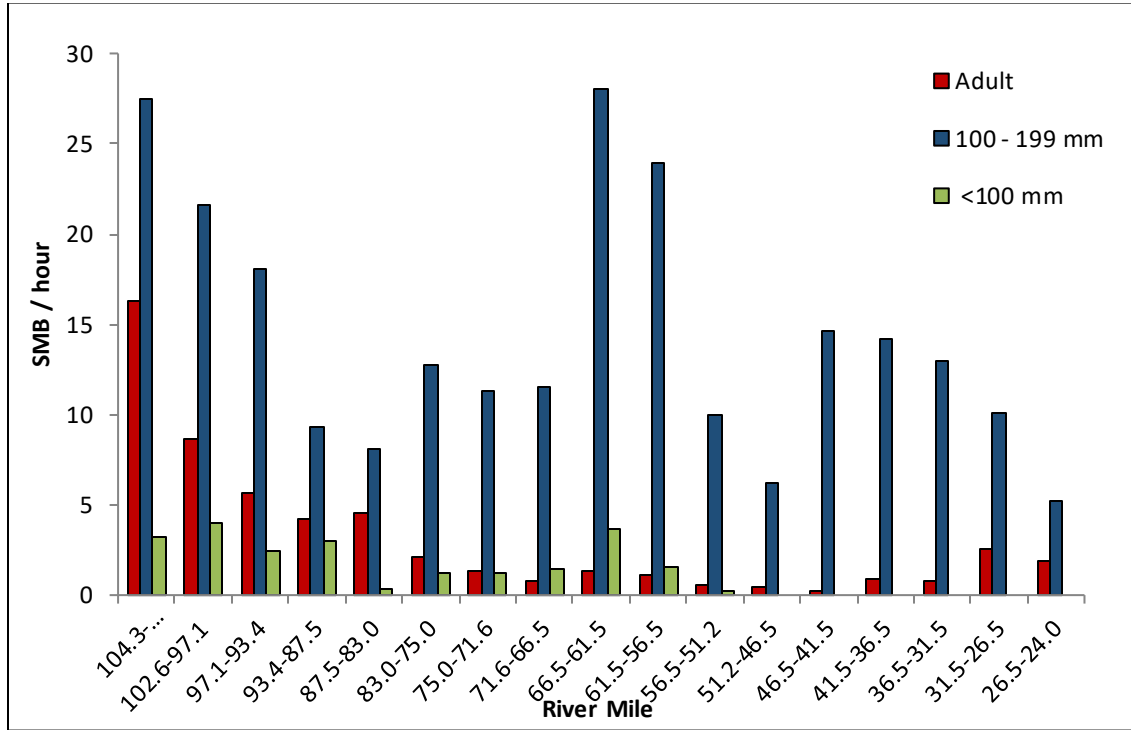
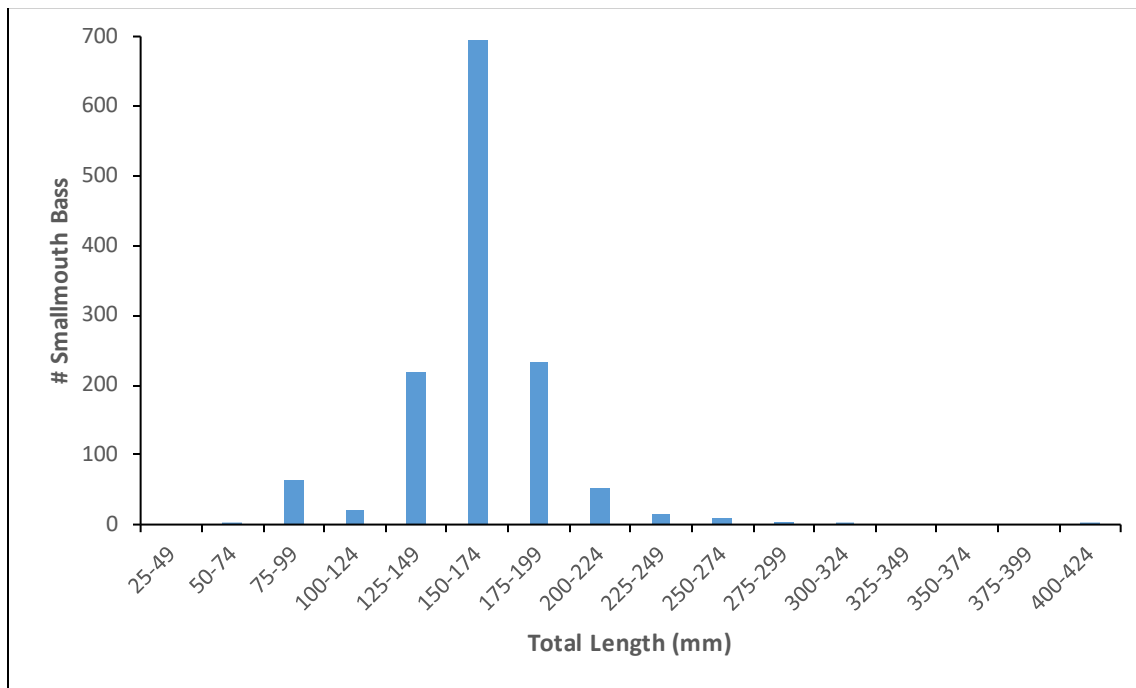


Figure 5. Length-frequency of smallmouth bass removed from the White River in Utah, 2020.



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Figure 6. Length-frequency of smallmouth bass removed from the White River in Utah, 2012-2020.

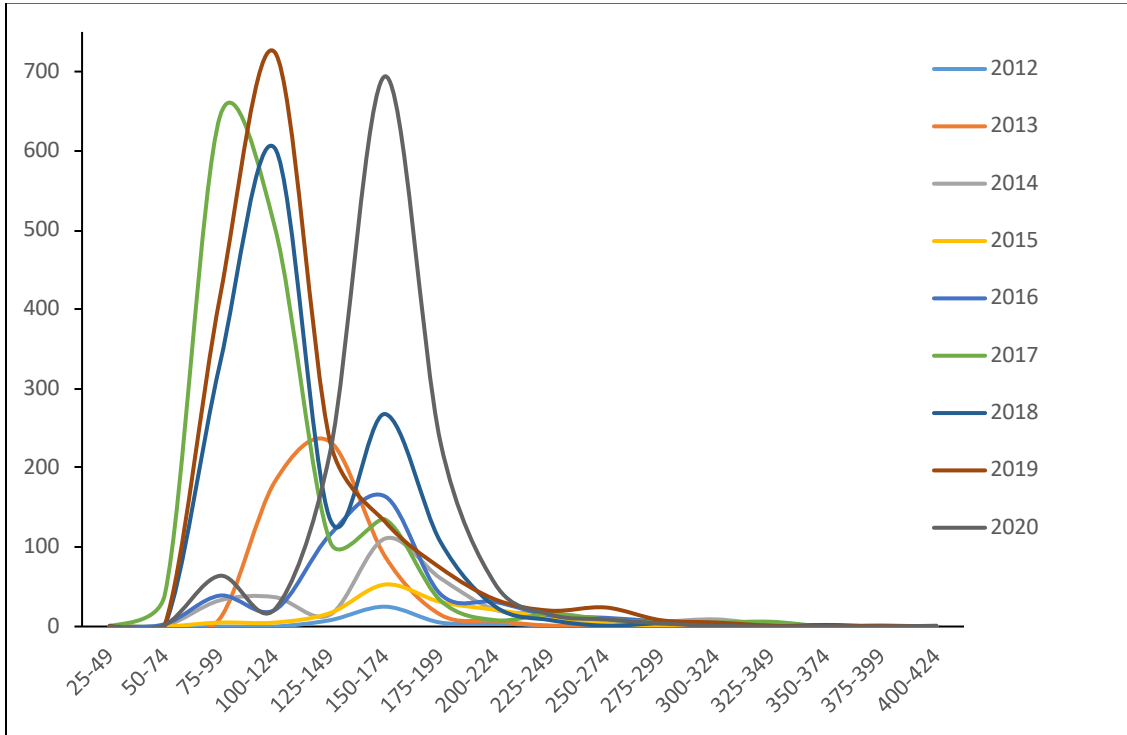
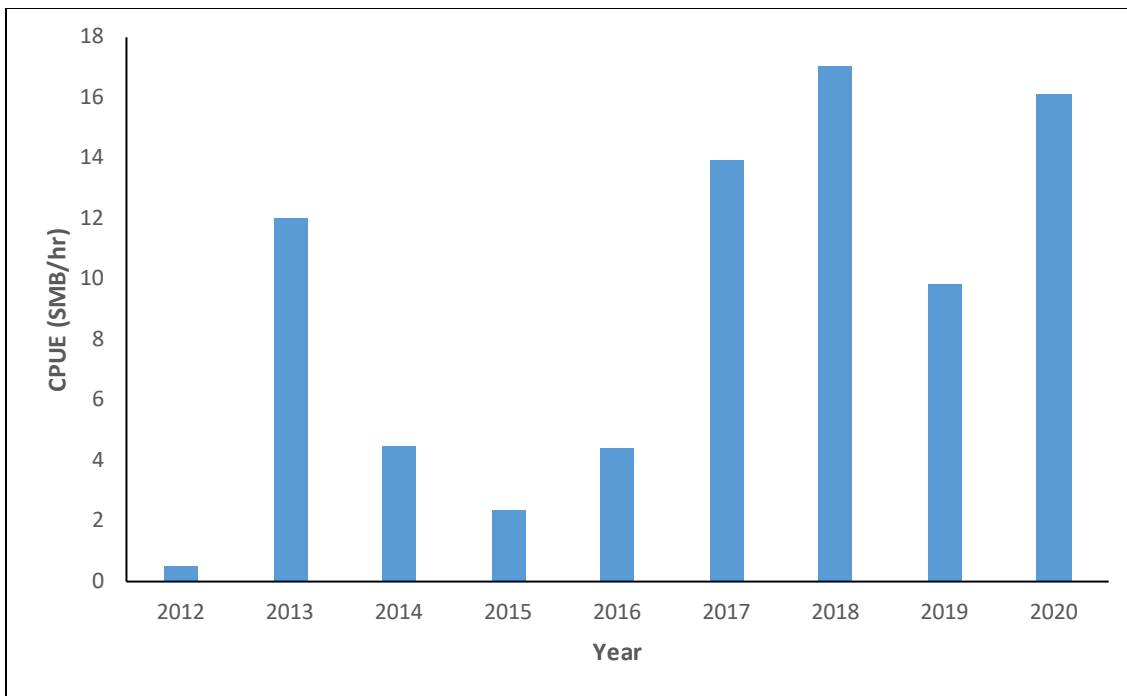


Figure 7. Catch-per-unit-effort (CPUE) for smallmouth bass removed from the White River in Utah, 2012-2020.



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ANNUAL PERFORMANCE PROGRESS REPORT (PPR)

BUREAU OF RECLAMATION AGREEMENT NUMBER: R19AP00059

UPPER COLORADO RIVER RECOVERY PROGRAM PROJECT NUMBER: 167

Project Title:

Smallmouth bass control in the White River

Bureau of Reclamation Agreement Number:

R19AP00059

Project/Grant Period:

Start date: 08/12/2019

End date: 09/30/2023

Reporting period end date: 09/30/2020

Is this the final report? Yes _____ No X

Performance:

With the exception of one pass of smallmouth bass removal effort (three day equivalent) that was canceled in October 2020 due to low flow conditions that did not allow for safe downstream passage, tasks 2–3 were accomplished as outlined in the scope of work for this project. From 16-25 June 2020 we completed two passes of cataraft electrofishing from river mile 59.0–24.0. Bass catch rates in the lower White River have increased substantially from 2019 levels, mainly due to juvenile smallmouth bass (< 200 mm total length). We removed a total of 670 smallmouth bass in 2020. Annual reporting is complete under task 3 and nonnative data will be submitted to Recovery Program personnel by January 2021.

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ANNUAL PERFORMANCE PROGRESS REPORT (PPR)

BUREAU OF RECLAMATION AGREEMENT NUMBER:

UPPER COLORADO RIVER RECOVERY PROGRAM PROJECT NUMBER: #R17AP00301

Project Title:

Smallmouth bass control in the White River

Bureau of Reclamation Agreement Number:

#R17AP00301

Project/Grant Period:

Start date: 09/22/2017

End date: 09/30/2022

Reporting period end date: 11/20/2020

Is this the final report? Yes _____ No X

Performance:

Task 1: Plan logistics, hire and train personnel, order and maintain equipment, and prepare for sampling-Complete

Task 5: Sample White River study area to capture and remove smallmouth bass-78% Complete

The equivalent of seven removal days were conducted on the White River by CPW crews from May 26th through June 24th, 2020. CPW was unable to complete days eight and nine due to delayed commencement of field work related to COVID-19 agency guidelines. Two, 16' rafts equipped with ETS units electrofished both shorelines and all accessible backwater and slackwater habitats. Fish captured were measured in length to the nearest millimeter and weighed to the nearest gram. Centrarchid species, black bullhead, non-native sucker species, and non-native sucker hybrids were lethally removed. While not specifically targeted, some incidental captures of non-native cyprinid species also resulted in lethal removal. Only a single Colorado pikeminnow was captured in 2020. Other native species, salmonids, channel catfish, and most non-native cyprinid species were not netted or handled.

Three passes were completed from Taylor Draw Dam (river mile (RM) 104.3) to Douglas Creek (RM 97.1), two passes were completed between Douglas Creek and RM 93.4, and four passes were completed from RM 93.4 to Big Trujillo Wash (RM 87.5). Additional passes in the White River downstream of Taylor Draw Dam were conducted by crews from the USFWS and Utah Division of Wildlife Resources. Data for those projects are included in the 2020 Annual Report for Project 167.

Eight species of non-native fish were captured and lethally removed. Smallmouth Bass comprised 87% of the total fish removed by CPW crews. Black bullhead, black crappie, common carp, fathead minnow, sand shiner, green sunfish, white sucker and white sucker hybrids were also lethally removed. No northern pike were collected or seen by CPW crews.

- Total number of fish captured and removed by CPW = 2,342
- Total electrofishing effort expended by CPW= 61.96 hours

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Table 1. Total number of each species removed, percentage of total catch each species represents, and size range of individuals captured by CPW crews in the White River downstream of Kenney Reservoir in 2020.

Species	Total Captured	% of Total Catch	Total Length Size Range (mm)
Black Bullhead	45	1.9%	110-225
Black Crappie	27	1.2%	51-255
Green Sunfish	175	7.4%	42-223
Smallmouth Bass	2,047	87.4%	51-386
Nonnative cyprinid species	5	<1.0%	58-115
White Sucker and Hybrids	43	1.8%	102-493
Total		2,342	

Table 2. Catch-per-unit-effort (CPUE) as fish per hour for each species removed by CPW crews in the White River downstream of Kenney Reservoir in 2020.

Species	CPUE (fish/hour)
Black Bullhead	0.72
Black Crappie	0.44
Green Sunfish	2.82
Smallmouth Bass	33.04
White Sucker and Hybrids	0.69
Nonnative cyprinid species	0.08

Task 6: Organize and validate Project 167b data and submit to the USFWS-Complete

- All data submitted to USFWS (Green River- FWCO) for data analysis October 2020.
- All data submitted to STreaMs database November 2020.

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FY 2020 ANNUAL REPORT

PROJECT: 167b

Project Title

Kenney Reservoir Removal of Northern Pike (in Scope of Work for CPW Projects 126b and 167b)

Bureau of Reclamation Agreement Number:

R17AP00301

Project/Grant Period:

Start date: 09/22/2017 (NOTE: this particular project under the BOR grant agreement number above did not receive BOR funds until the FFY 20: October 1, 2019 through September 30, 2020)

End date: 09/30/2022

Reporting period end date: 11/20/2020

Is this the final report? Yes _____ No X

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Abstract:

Kenney Reservoir is an on-channel reservoir located in the White River, upstream of Taylor Draw dam at river mile (RM) 104.3. Colorado Parks and Wildlife (CPW) confirmed the presence of northern pike within Kenney Reservoir in the fall of 2018. In 2019, CPW utilized boat electrofishing and short term gill net sets to remove northern pike for 12 days in the spring, during the spawning season, and three days in the fall. CPW captured multiple size classes of adult northern pike, ≥ 300 mm total length (tl), indicating that reproduction could be occurring in the reservoir. The 2018 and spring 2019 sampling efforts were completed with CPW funds. In 2020, CPW planned to complete five weeks of field work to target northern pike within the reservoir but was unable to complete all of the planned work. Crews planned to target northern pike when the fish are spawning in the spring, the same time that all field work was temporarily halted due to agency guidelines related to COVID-19. Crews spent two days sampling for northern pike using short term gill net sets (May 20th and August 26th) and one night sampling for northern pike using boat electrofishing (August 26th). No northern pike were captured during sampling efforts in 2020.

Study Schedule:

2019-Ongoing

Relationship to RIPRAP:

Project 126b encompasses smallmouth bass and northern pike removal efforts from the Colorado River in Silt, Colorado (RM 248.0) to Beavertail Mountain (RM 195.7) and removal of these species in three constructed, private ponds (Mamm Creek Pit #1, #2, and #3) upstream of Rifle, Colorado (RM 240.4).

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Project 167b includes smallmouth bass and northern pike removal from the White River downstream of Taylor Draw dam (RM 104.3) in Rangely, Colorado, as well as northern pike removal efforts in Kenney Reservoir, just upstream of the Taylor Draw dam (RM 104.3). This report will only describe northern pike removal efforts from Kenney Reservoir. Detailed information regarding Project 126b (Colorado River and Mamm Creek Pits) can be found in the 2020 Annual Report for Project 126a. Detailed information regarding Project 167b (White River) can be found in the 2020 Annual Report for Project 167.

General Recovery Program 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: White River

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.B.2. Preclude new nonnative species introductions, translocations or invasions to preserve native species dominance within critical habitat.

III.B.2.a. Determine and implement an adequate level of mechanical removal to reduce smallmouth bass.

Accomplishment of FY 2020 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Task 1. Plan logistics, hire and train personnel, order and maintain equipment, and prepare for sampling (Project #126b and #167b)

Schedule: January-Mid March

Deliverable: Task completed

Task 2-6: Tasks 2-6 are discussed in the 2020 Annual Report for Projects 126a and 167.

Task 7. Sample Kenney Reservoir to capture and remove northern pike.

Schedule: Late March/April-May; September/October

Deliverable: Partially completed.

CPW planned to complete five weeks of field work sampling Kenney Reservoir to remove northern pike in 2020. The majority of removal efforts were planned to occur during spring, when northern pike are spawning. Prior to the start of those efforts, all field work involving multiple people was temporarily halted due to COVID-19 agency guidelines. Instead, reduced crews completed two days of sampling for northern pike using short term gill net sets (May 20th, August 26th) and one night of targeted northern pike sampling using boat electrofishing (August 26th).

On May 20th crews used three boats to deploy 15 gill nets around the reservoir. Each gill net measured 150 feet long and was comprised of either 1.5" standard mesh size or experimental mesh varying from 0.5" to 2.0". Each net was set in the morning and checked approximately every two hours throughout the

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day for a total of 44.32 gill net hours. On August 26th, crews used two boats to deploy 13 gill nets around the reservoir. Each net was set in the morning and checked approximately every two hours throughout the day for a total of 52.87 gill net hours. Gill nets were checked every two hours to reduce mortality of native fish bycatch. On the night of August 26th, crews used two boats equipped with ETS electrofishing units to target northern pike by electrofishing the reservoir shoreline in habitat the fish would likely occupy. Crews expended 3.46 hours of electrofishing effort.

Overall, eight different fish species were handled and no northern pike were caught during removal efforts (Table 1). Failure to detect northern pike in Kenney Reservoir may be attributable to the reduced removal effort in 2020. Also, crews were not able to complete removal work during the northern pike spawning season, which is when the fish are most vulnerable to capture by gill net and electrofishing. It is also possible that fewer northern pike occupied Kenney Reservoir in 2020 compared to 2019.

In 2019, CPW completed 1,078 gill net hours of removal effort. Each day, gill nets were set within the reservoir and checked approximately every two hours throughout the day. In total, 34 northern pike were captured. The majority of northern pike were captured during the first three days of removal efforts. By May 1st, crews completed their second consecutive day with no northern pike captures (Figure 1). Removal efforts depleted the population quickly and appear to be successful at suppressing the population. When CPW returned to sample Kenney Reservoir in the fall of 2019 (October 7th – October 9th), catch rate (northern pike captured per gill net hour) remained low (0.02 northern pike/hour) compared to the start of the project (0.13 northern pike/ hour) (Figure 1).

All of the northern pike removed from Kenney Reservoir in 2019 were adult fish (≥ 300 mm tl) (Figure 2). It is not surprising that crews captured all adults since efforts were mostly focused in shallow water during the spawning season. Juvenile northern pike would be less likely to occupy the same habitat as adult fish during the spawning season. Additionally, 31 of the 34 northern pike removed in 2019 were classified as piscivores (≥ 450 mm tl). Multiple size classes of northern pike were captured throughout 2019, indicating that northern pike could have successfully spawned in the reservoir.

Task 8. Data entry, data analysis, and preparation of final report. Present findings during the Annual Nonnative Fish Control Workshop (if convened), and at the Annual Recovery Program Researchers Meeting.

Schedule: October-January

Deliverable: Data entry, data analysis, and final report are completed. Findings will be discussed during the Nonnative Fish Control Coordination Calls in lieu of the Nonnative Fish Control Workshop.

Additional noteworthy observations:

In addition to northern pike mechanical removal efforts conducted by CPW within Kenney Reservoir, CPW has coordinated with the reservoir owner, the Rio Blanco Water Conservancy District, to sponsor a northern pike angler harvest incentive. This year marks the second year in which the harvest incentive occurred. Any licensed angler that caught and turned in a northern pike from within the Rio Blanco Water Conservancy District boundary (Kenney Reservoir and portions of the White River upstream and downstream of Kenney Reservoir) was awarded \$20 per northern pike caught. Funds for this incentive were provided by the Colorado Water Conservation Board and distributed by the Rio Blanco Water Conservancy District. The angler harvest incentive began May 15th and continues through November 30th, 2020. As of October 27th, 2020, anglers submitted nine northern pike as part of this incentive program. In 2019, 19 northern pike were paid for by the harvest incentive fund.

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No northern pike were captured by nonnative fish control crews working on the White River downstream of Kenney Reservoir in 2020.

Recommendations:

Five weeks of field work was planned in 2020 to complete the SOW requirements but only a portion of that work was completed due to COVID-19 agency guidelines. It is recommended that five weeks of field work be completed in 2021, if possible, to evaluate whether five weeks of effort is appropriate.

Project Status:

This project is considered on track, with minor revisions to be considered. Additional evaluation of project commitments and efforts will be made internally by CPW in 2020. Additional refinement of the techniques used in the study is appropriate and will serve to further increase the efficiency of removal effort.

FY 2020 Budget Status

Funds Provided: \$94,429 for all projects (including 98a and 126b/167b)

Funds Expended: \$63,659 for all projects (including 98a and 126b/167b)

Difference: \$30,770 Funds expended includes expenditures through September 30th, 2020. Additional expenditures may have occurred during this time period but have not posted as of this reporting date.

Those expenditures will be reported in the FY 2021 budget status report.

Percent of the FY 2020 work completed, and projected costs to complete: Approximately 10%

Recovery Program funds spent for publication charges: -\$0-

Status of Data Submission

Data will be uploaded into STReaMS by the end of March, 2021.

Signed:

Tory Eyre

Principal Investigator

11/19/2020

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Table #1.

Species of fish and length ranges encountered during 2020 northern pike removal efforts in Kenney Reservoir. Not all species of fish were measured.

Species of Fish Captured	Range of total lengths encountered (mm)
Black Bullhead	153-246
Black Crappie	70-210
Common Carp	122-468
Flannelmouth Sucker	175-511
Rainbow Trout	Not measured
Roundtail Chub	284-376
Green Sunfish	67-150

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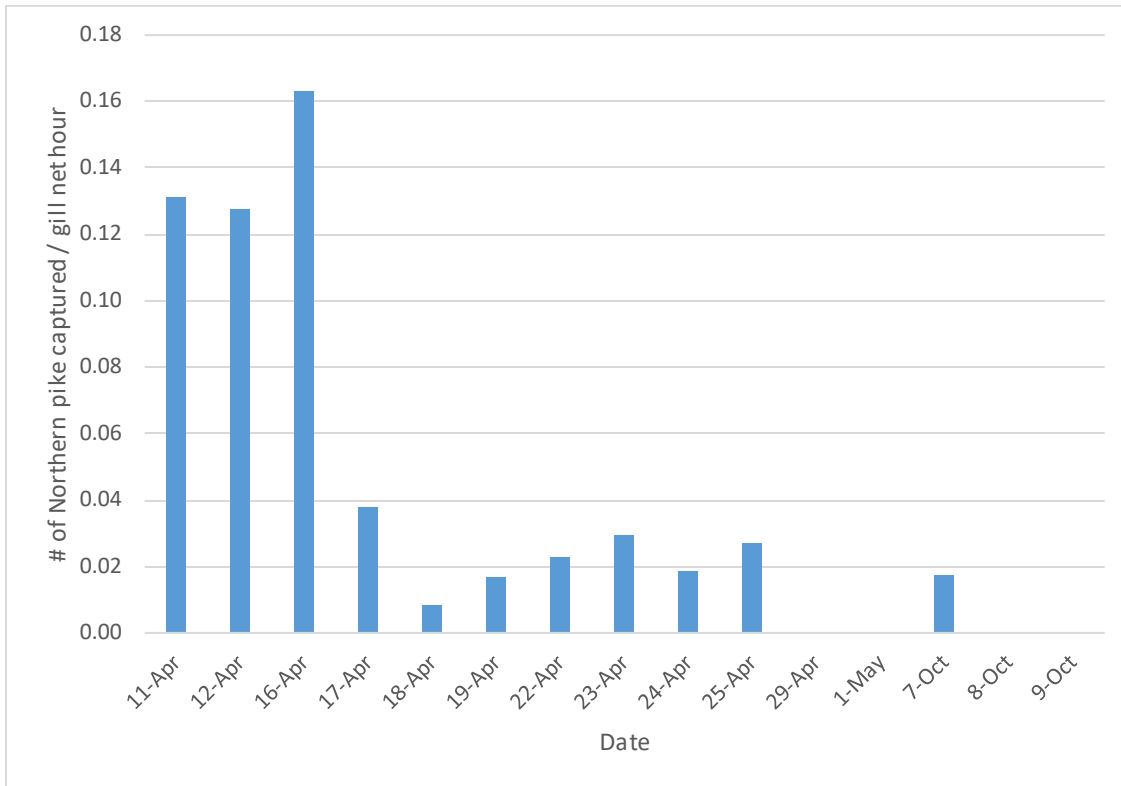


Figure 1. Number of northern pike captured per hour of gill net effort for each day that nets were set in Kenney Reservoir in 2019.

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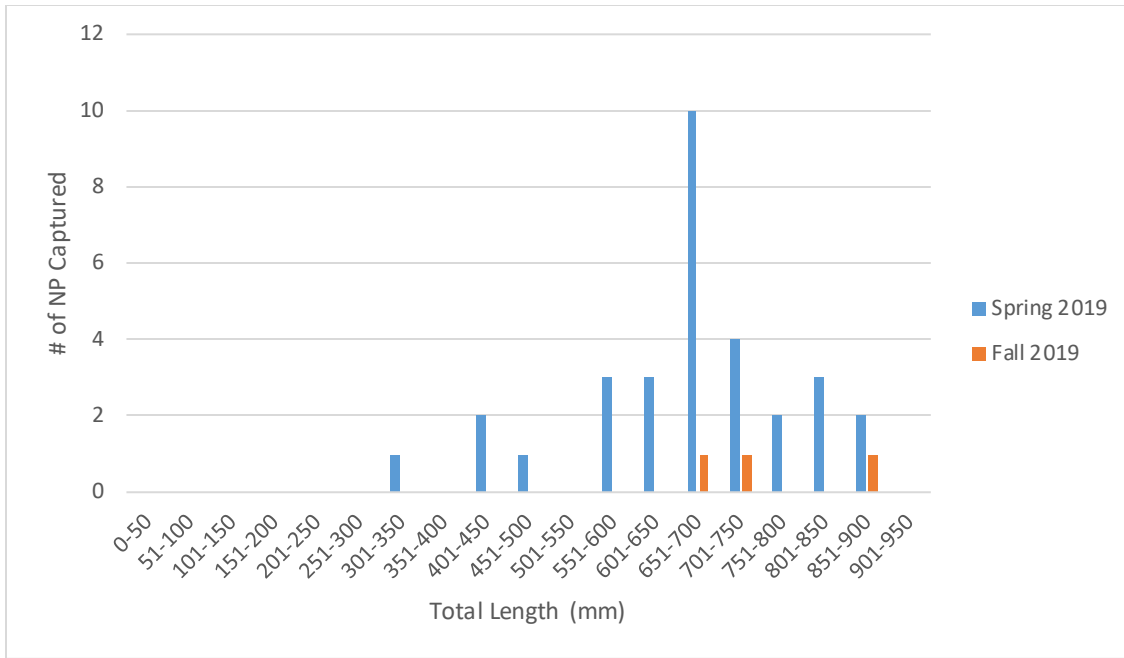


Figure 2. Northern pike (NP) length frequency distribution in millimeters (mm) for spring and fall removal efforts in 2019 at Kenney Reservoir.

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ANNUAL PERFORMANCE PROGRESS REPORT (PPR)

BUREAU OF RECLAMATION AGREEMENT NUMBER: R17AP00301

UPPER COLORADO RIVER RECOVERY PROGRAM PROJECT NUMBER: 167b (in Scope of Work for CPW Projects 126b and 167b)

Project Title:

Kenney Reservoir Removal of Northern Pike

Bureau of Reclamation Agreement Number:

R17AP00301

Project/Grant Period:

Start date: 09/22/2017 (NOTE: this particular project under the BOR grant agreement number above did not receive BOR funds until the FFY 20: October 1, 2019 through September 30, 2020)

End date: 09/30/2022

Reporting period end date: 11/20/2020

Is this the final report? Yes _____ No X

Performance:

Kenney Reservoir is an on-channel reservoir located in the White River, upstream of Taylor Draw dam at river mile (RM) 104.3. Colorado Parks and Wildlife (CPW) confirmed the presence of northern pike within Kenney Reservoir in the fall of 2018. In 2019, CPW utilized boat electrofishing and short term gill net sets to remove northern pike for 12 days in the spring, during the spawning season, and three days in the fall. CPW captured multiple size classes of adult northern pike, ≥ 300 mm total length indicating that reproduction could be occurring in the reservoir. The 2018 and spring 2019 sampling efforts were completed with CPW funds. In 2020, CPW planned to complete five weeks of field work to target northern pike within the reservoir but was unable to complete all of the planned work. Crews planned to target northern pike when the fish are spawning in the spring, the same time that all field work was temporarily halted due to agency guidelines related to COVID-19. Crews spent two days sampling for northern pike using short term gill net sets (May 20th, August 26th) and one night sampling for northern pike using boat electrofishing (August 26th). No northern pike were captured during sampling efforts in 2020.