

Fisheries Division

Federal Aid Job Progress Report

Montana Statewide Fisheries Management

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Project Title:

Montana Statewide Fisheries Management

Job Title:

Upper Clark Fork Drainage Fisheries Management

Abstract: This report summarizes fish sampling and fisheries related surveys conducted in waters of the upper Clark Fork River basin (not including the Clark Fork River, Silver Bow Creek or NRDP priority tributaries, which are summarized in other reports) during the 2019 and 2020 field seasons. Sampling was carried out as part of the fisheries management duties of the Upper Clark Fork fisheries responsibility area located in administrative region 2.

Upper Clark Fork River Basin

Fisheries Sampling

2019 & 2020



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TABLE OF CONTENTS

PURPOSE5
METHODS5
RESULTS6
STREAMS
GOLD CREEK DRAINAGE
Gold Creek7
LITTLE BLACKFOOT RIVER DRAINAGE
Spotted Dog Creek7
South Fork Spotted Dog Creek12
Middle Fork Spotted Dog Creek14
Trout Creek14
Connors Gulch
Dog Creek
<u>O'NEILL CREEK DRAINAGE</u>
O'Neill Creek19
FREEZEOUT CREEK DRAINAGE
Freezeout Creek
Jake Creek21
FRED BURR CREEK DRAINAGE
Fred Burr Creek
MODESTY CREEK DRAINAGE
Modesty Creek

LA MARCHE CREEK DRAINAGE

La Marche Creek	24
WARM SPRINGS CREEK DRAINAGE	
Barker Creek	24
Cable Creek	26
Fifer Gulch	26
Foster Creek	27
BASIN CREEK DRAINAGE	
Basin Creek	
BLACKTAIL CREEK DRAINAGE	
Blacktail Creek	
LAKES and PONDS	
RACETRACK CREEK DRAINAGE	
Racetrack Pond	36
WARM SPRINGS PONDS	
Pond #3	
BASIN CREEK DRAINAGE	
Lower Basin Creek Reservoir	41
Upper Basin Creek Reservoir	41
LITERATURE CITED	42

PURPOSE

This report summarizes fish sampling and fisheries related surveys conducted in streams, lakes and ponds of the Upper Clark Fork River basin during the field seasons of 2019 and 2020. Sampling was carried out as part of the fisheries management duties of the Upper Clark Fork fisheries responsibility area located in administrative region 2. This report does not include monitoring conducted on the upper Clark Fork River, Silver Bow Creek, or other priority tributaries as defined in the Natural Resource Damage Program's *Final Upper Clark Fork River Basin Aquatic and Terrestrial Resources Restoration Plans (NRDP 2012)*. Sampling in these waters is summarized in the 2019 and 2020 Upper Clark Fork basin fisheries monitoring reports (Cook et. al 2019 and Cook et. al 2020).

METHODS

Fish Sampling

Streams:

The focus of stream sampling was primarily to assess species composition and general abundance at a broad scale. A backpack electrofishing unit (Smith-Root LR-24 and/or LR-20B) was used to collect fish at all sites. Sampled reaches varied in length but were typically 100 – 200 m long. Population estimates were completed at many sites. Estimates used multiple-pass (typically 2 or 3) depletion methodology. Single-pass, catch-per-unit-effort (CPUE) electrofishing was also used at locations where little or no prior survey information was available, or where survey conditions made obtaining a population estimate difficult. At each sample reach, all captured fish were identified to species (based on phenotypic characteristics), weighed, measured.

Lakes and Ponds:

The focus of lake and pond sampling was to assess species composition and general abundance in sampled waters. Experimental monofilament gillnets were used to sample fish. Gillnets were 125 ft long and were either 4 or 6 feet deep depending on the size of the water being sampled. All nets were set in the evening and retrieved the following morning. Fish captured in each net were identified to species (based on phenotypic characteristics), weighed and measured. Genetic samples were also collected from fish where no prior genetic information had been collected.

Data Summary

Fishery data was summarized for each sample location by species and included the number of fish captured (first pass only for stream locations where multiple passes were

made), catch-per-unit-effort (standardized to number of fish per 100 m of channel or number of fish per net), mean and range of fish lengths, and percent of species composition. Tables displaying this information were created for each sampled stream, lake or pond. At stream sites where population estimates were made, an estimate value with a 95% confidence interval was reported. Population estimates were calculated using Montana Fish, Wildlife and Parks' Fisheries Information System. For depletion surveys, estimates were produced using Zippin's removal method for fish 75 mm in total length and larger. Values were reported in the number of fish per 100 m of channel length. Trout were the only species considered in many of these data summary efforts although observations of other species were sometimes noted in the tables and write-ups.

RESULTS

STREAMS

Gold Creek Drainage

Gold Creek

A population estimate was completed at two sites on Gold Creek in late summer of 2019. The first estimate was a 100 m sample at a site on upper Gold Creek near RM 11.0 that has never been sampled previously. Followed by a 200 m sample section located near RM 0.3 that was first sampled in 2015 (Lindstrom 2017). Table 1 contains a summary of results from the first electrofishing pass at both sites. Like previous years at RM 0.3, brown trout dominated the trout community, with many of the fish captured being under 100 mm in total length. Westslope cutthroat trout were also observed in 2019, but the species was relatively uncommon (Table 1). Rocky Mountain sculpin were also noted as present in the reach. The estimate for brown trout 75 mm and larger was 35 per 100 m (95% confidence interval: +/- 1.5). This estimate was the lowest since sampling was initiated in 2015 (Figure 1). Further analysis of the data showed that much of the difference observed over the three sample years was largely related to fish under 175 mm in total length. It is possible that above average flows from 2017-2019 prompted the outmigration of many juvenile fish to the Clark Fork River. Larger fish in the reach showed less variability over the period of record. Brown trout greater than 175 mm averaged 23 fish per 100 m since sampling began in 2015. The estimate for cutthroat trout at RM 0.3 in 2019 was 2 per 100 m. This estimate was similar to what was observed in previous sample years (Figure 1). Only westslope cutthroat trout were observed at RM 11.0 (Table 1). The estimate for westslope cutthroat trout 75 mm and larger was 37 per 100 m (95% confidence interval: +/-2.4).

Table 1. Electrofishing data collected at two sections on Gold Creek in 2019. Data presented is from the first electrofishing pass.

Section Name	Species	Number of Fish Captured	Fish per 100 m (CPUE)	Mean Length (mm)	Length Range (mm)	Species Composition
		Cupitited		(mm)	(mm)	(70)
RM 0.3	LL	53	26.5	211	82-475	93
	WCT	4	2	272	235-322	7
RM 11.0	WCT	25	25	140	50-245	100



Figure 1. Depletion estimates for trout greater than 75 mm in total length collected in Gold Creek at RM 0.3 for the period of record. Note: No sampling was completed in 2017.

Little Blackfoot River Drainage

Spotted Dog Creek

Fish population estimates were completed on Spotted Dog Creek in 2019 and 2020. The sites were located at RM 6.5, 7.9, 9.8, and 11.3 in 2019. Sites were located at RM 8.1, 8.5, 9.8, and 11.3 in 2020. These samples were taken for long-term monitoring and for pre-restoration evaluation of the fishery in a section of Spotted Dog Creek that will undergo restoration efforts in 2020 and 2021. Table 2 contains a summary of catch statistics for trout captured at each sample location on the first pass. Figures are also present for sites where multiple years of population estimates have been completed.

In 2019 westslope cutthroat trout and brook trout were present at all sample sites, but densities were variable. At RM 6.5, westlope cutthroat trout and brook trout were found at similar densities (Figure 2). The first depletion at RM 6.5 was completed in 2018 and densities were significantly higher in 2019 (Lindstrom 2019). The estimate of total trout greater than 75 mm at RM 6.5 in 2018 was 36 trout per 100 m, in 2019 the estimate was 173 trout per 100 m. Longnose suckers were also observed at RM 6.5 in 2019.

A population estimate was also completed at RM 7.9 in 2019. Brook trout were found at roughly twice the density of westslope cutthroat trout at RM 7.9 (Figure 3). The estimate for cutthroat trout 75 mm and larger was 37 per 100 m (95% confidence interval: +/- .2). The estimate for brook trout 75 mm and larger was 77 per 100 m (95% confidence interval: +/- 2.9). Population estimates have been completed at RM 7.9 in 2016 (Lindstrom 2017), 2018 (Lindstrom 2019), and 2019, over this period populations have remained relatively stable. In addition to trout, longnose suckers were also collected at the RM 7.9

Two new sapling sites were established on Spotted dog Creek in 2020 to evaluate future restoration project. The first site was at RM 8.1 and the second was at RM 8.5, depletion estimates were completed at both sites. At RM 8.1 the estimate for westslope cutthroat trout greater than 75 mm was 22 fish per 100 m (95% confidence interval: +/- 0.2), for brook trout it was 60 fish per 100 m (95% confidence interval: +/- 3.1). No other species were observed at this site. Upstream at RM 8.5 the estimate for westslope cutthroat trout greater than 75 mm was 39 fish per 100 m (95% confidence interval: +/- 4.6), for brook trout it was 83 fish per 100 m (95% confidence interval: +/- 4.7). One Columbia slimy sculpin was also observed at this site.

Population estimates were completed at RM 9.8 in 2019 and 2020. Westslope cutthroat trout made up the majority of the species composition at this site in both 2019 and 2020, with brook trout also present (Table 2). A Population estimate was first completed at RM 9.8 in 2018 (Lindstrom 2019), at that time brook trout and westslope cutthroat trout densities were nearly even (Figure 4). The estimate for cutthroat trout 75 mm and larger in 2019 was 121 per 100 m (95% confidence interval: +/- 2.1), while for brook trout it was 25 per 100 m (95% confidence interval: +/- 1.0) (Figure 4). In 2020 the estimate for cutthroat trout 75 mm and larger was 87 per 100 m (95% confidence interval: +/- 3.0) (Figure 4). In addition to trout, Columbia slimy sculpin were also observed at RM 9.8

Population estimates were completed at RM 11.3 in 2019 and 2020 as well. Densities of trout at RM 11.3 are low relative to other sites on Spotted Dog Creek, and westslope cutthroat trout made up the majority of the species composition (Table 2). A population estimate was first completed at RM 11.3 in 2014 (Lindstrom 2015) and repeated in 2018 (Lindstrom 2019). Trout densities have been relatively stable across all four estimates completed at RM 11.3 (Figure 5). In 2019, the estimate for westslope cutthroat trout greater than 75mm was 24 fish per 100 m (95% confidence interval: +/- 0.4), and for brook trout it was 5 fish per 100 m (95% confidence interval: +/- 0.5). Estimates were slightly higher in 2020, westslope cutthroat trout greater than 75 mm were found at a

density of 37 fish per 100 m (95% confidence interval: +/-7.5), and brook trout at a density of 9 fish per 100 m (95% confidence interval: +/-0.5). No other fish species were observed at RM 11.3 in 2019 or 2020.

Section	Species	Number	Fish ner	Mean	Longth	Species
Name	species	number of Eich		Ivicali	Dengen	Commonition
Name		OI FISH	100 m	Length	Kange	Composition
(year)		Captured	(CPUE)	(mm)	(mm)	(%)
RM 6.5	WCT	95	95	109	38-265	39
(2019)						
()	EB	150	150	80	35-185	61
		100	100	00	00 100	01
RM 7 9	WCT	46	46	1127	40-210	43
(2010)	wei	-10	-10	112.7	40 210	45
(2017)	ED	61	61	00.0	45 212	57
	ED	01	01	99.9	43-212	57
	WOT	21	21	10(1	77 107	26
KIM 8.1	WCI	21	21	126.1	//-18/	26
(2020)	ED	(1	(1	00.0	45 010	7.4
	EB	61	61	99.9	45-212	/4
RM 8.5	WCT	25	25	120.1	77-198	29
(2020)						
	EB	61	61	111	47-224	71
RM 9.8	WCT	94	94	94.5	44-156	79
(2019)						
	EB	25	25	111.4	62-202	21
RM 9.8	WCT	73	73	104	32-176	79
(2020)						
()	EB	19	19	143	46-216	21
		17	17	110	10 210	21
RM 11 3	WCT	40	40	83.6	50-152	87
(2019)	wer	-10	-10	05.0	50 152	07
	ED	6	6	107.8	42 102	12
	ĽD	0	0	107.0	42-172	13
DM 11 2	WCT	27	27	20.0	20 152	70
KIVI 11.3	WCI	27	21	80.9	28-153	/9
(2020)		_	-	1050		0.1
	EB	1	1	107.9	73-171	21

Table 2. Electrofishing data collected at four sections of Spotted Dog Creek in 2019. Data presented is for trout from the first electrofishing pass.



Figure 2. Depletion estimates for trout greater than 75 mm in total length collected in Spotted Dog Creek at RM 6.5 for the period of record.



Figure 3. Depletion estimates for trout greater than 75 mm in total length collected in Spotted Dog Creek at RM 7.9 for the period of record.



Figure 4. Depletion estimates for trout greater than 75 mm in total length collected in Spotted Dog Creek at RM 9.8 for the period of record.



Figure 5. Depletion estimates for trout greater than 75 mm in total length collected in Spotted Dog Creek at RM 11.3 for the period of record.

South Fork Spotted Dog Creek

Population estimates were completed on two sites on the South Fork of Spotted Dog Creek in 2019. The sites were at RM 1.8 and 4.5. The purpose of these population estimates was for long-term monitoring. The site at RM 4.5 was previously sampled in 2018 (Lindstrom 2019). RM 4.5 has been sampled in 2015 (Lindstrom 2017) and 2018 (Lindstrom 2019). Table 3 contains a summary of results for trout captured at each sample location on the first pass of electrofishing depletion estimates. Westslope cutthroat trout and brook trout were the only trout species present at both sample sites. During the period of record at RM 1.8, brook trout have been very abundant and far outnumbered cutthroat trout (Figure 6). In 2019 the estimate for brook trout 75 mm and larger was 91 per 100 m (95% confidence interval: +/- 2.3), and for westslope cutthroat it was 24 per 100 m (95% confidence interval: +/- 3.1). In addition to trout, seven longnose suckers were also collected in the South Fork of Spotted Dog Creek at RM 1.8. During the period of record at RM 4.5 brook trout were much less abundant than at RM 1.8, in 2015 and 2019 westslope cutthroat trout far outnumbered brook trout at RM 4.5, but in 2018 brook trout outnumbered cutthroat and both numbers were down from 2015 and 2019 (Figure 7). In 2019 the estimate for brook trout 75 mm and larger was 12 per 100 m (95% confidence interval: +/- 0.7), while for cutthroat trout it was 43 per 100 m (95% confidence interval: +/- 1.8).

steek in 2019. Dud presented is for dour nom the mist electronishing pass.							
Section	Species	Number	Fish per	Mean	Length	Species	
Name		of Fish	100 m	Length	Range	Composition	
		Captured	(CPUE)	(mm)	(mm)	(%)	
RM 1.8	WCT	18	18	123.9	40-264	13	
	EB	124	124	98.4	45-227	87	
RM 4.5	WCT	44	44	86.9	61-153	80	
	EB	11	11	97.5	48-160	20	

Table 3. Electrofishing data collected at two sections of the South Fork of Spotted Dog Creek in 2019. Data presented is for trout from the first electrofishing pass.



Figure 6. Depletion estimates for trout greater than 75 mm in total length collected in South Fork of Spotted Dog Creek at RM 1.8 for the period of record.



Figure 7. Depletion estimates for trout greater than 75 mm in total length collected in South Fork of Spotted Dog Creek at RM 4.5 for the period of record.

Middle Fork Spotted Dog Creek

Fish population surveys were completed at two sites on the Middle Fork of Spotted Dog Creek during the summer of 2019. The sites were located at RM 0.3 and 2.5 and were both within the Spotted Dog Wildlife Management Area. Table 4 contains a summary of results for trout captured at each sample location on the first electrofishing pass. Westslope cutthroat trout and brook trout were the only trout species observed in the Middle Fork during these sampling events. At RM 0.3 cutthroat and brook trout were both present, but only one brook trout was observed on the third pass. The estimate for westslope cutthroat trout 75 mm and larger was 48 per 100 m (95% confidence interval: +/- 5.8), the brook trout sample was not sufficient for a depletion estimate. At RM 2.5, cutthroat trout were the only species observed. The population estimate for fish greater than 75 mm in total length was 30 per 100 m (95% confidence interval: +/- 2.9).

CICCR III 2017	Steek in 2019. Data presented is for troat nom the first electronishing pass.							
Section	Species	Number	Fish per	Mean	Length	Species		
Name		of Fish	100 m	Length	Range	Composition		
		Captured	(CPUE)	(mm)	(mm)	(%)		
RM 0.3	WCT	15	30	92.8	68-113	100		
RM 2.5	WCT	67	67	68.4	17-114	100		

Table 4. E	lectrofishin	g data collecte	ed at two se	ctions of the	e Middle Fo	rk of Spotted Dog
Creek in 2	019. Data p	presented is for	r trout from	the first ele	ctrofishing	pass.

Trout Creek

Fish population estimates were completed on Trout Creek in 2019 and 2020. The sites were located at RM 4.5, 7.0, 9.4, and 10.9 in 2019. Sites were located at RM 4.5, 7.0, and 9.4 in 2020. Most of these locations were first monitored in 2018 (Lindstrom 2019). These samples were taken in an effort to establish a baseline dataset for long-term monitoring. Table 5 contains a summary of catch statistics for trout captured at each sample location on the first pass. Figures are also present for sites where multiple years of population estimates have been completed. In 2019 and 2020 westslope cutthroat trout were present at all sample sites, but densities were variable, higher densities were generally observed the further upstream a sample was taken. Brook trout were also present at low densities at several of the more downstream sites in 2019 and 2020.

The most downstream sample was at RM 4.5, westlope cutthroat trout and brook trout were found, both at relatively low densities (Figure 8). An estimate was not completed at RM 4.5 in 2020 because too few fish were caught to complete an estimate. The estimate for cutthroat trout 75 mm and larger was 21 fish per 100 m (95% confidence interval: +/- 1.0), brook trout larger than 75 mm were observed at 4 fish per 100m (95% confidence interval: +/- 0.0). Too few fish were caught. Westslope cutthroat trout and brook trout were the two trout species present in 2019 and 2020, with westslope cutthroat trout making up

much of the composition (Table 5). Longnose suckers were also observed at RM 4.5 in 2019 and 2020.

A population estimate was also completed at RM 7.0 in 2019 and 2020. Westslope cutthroat trout and brook trout were the only species observed, but at slightly higher densities than downstream (figure 9). In 2019 the estimate for cutthroat trout 75 mm and larger was 63 fish per 100m (confidence interval: +/- 2.4), brook trout were also observed bu there were no fish larger than 75 mm. In 2020 cutthroat trout greater than 75 mm were estimated at 42 fish per 100m (confidence interval: +/- 2.5), and brook trout larger than 75 mm were found at 16 fish per 100m (confidence interval: +/- 0.6). The 2019 and 2020 estimates showed similar densities of cutthroat trout as the 2018 sample, however, no brook trout were observed in 2018.

The next site was at RM 9.4, estimates were completed at this site in 2019 and 2020. Westslope cutthroat trout were the only species observed at this site, they were found in slightly higher densities than downstream locations (figure 10). In 2019 the estimate for cutthroat trout larger than 75 mm was 72 fish per 100m (confidence interval: +/- 2.3). In 2020 the estimate was 56 cutthroat larger than 75 mm per 100m (confidence interval: +/- 1.6). The 2019 and 2020 estimates showed similar densities as those observed in 2018.

We also did an estimate at RM 10.9 in 2019. Westslope cutthroat trout were the only species observed and they were at very low densities. This site had been sampled on time previously, a single pass sample taken in 2015 (Lindstrom 2017). The estimate for cutthroat trout greater than 75 mm was 8 fish per 100m (confidence interval: +/- 0.4). This site will likely not be included in future long-term monitoring because densities are very low and several hundred meters has to be shocked to get an estimate.

				<u> </u>		
Section Name	Species	Number	Fish per	Mean	Length	Species
		of Fish	100 m	Length	Range	Composition
		Captured	(CPUE)	(mm)	(mm)	(%)
RM 4.5 (2019)	WCT	17	17	149.3	96-235	77
	EB	5	5	177.0	46-265	23
RM 4.5 (2020)	WCT	4	4	154.2	88-238	67
	EB	2	2	161.5	110-213	33
RM 7.0 (2019)	WCT	50	50	117.0	87-182	82
	EB	11	11	48.6	45-50	18
RM 7.0 (2020)	WCT	37	37	113.9	69-234	72
	EB	14	14	99.7	85-114	18
RM 9.4 (2019)	WCT	78	78	87.5	26-175	100

Table 5. Electrofishing data collected at three sections of Trout Creek in 2019 and 2020. Data presented is for trout from the first electrofishing pass.

RM 9.4 (2020)	WCT	60	60	100.8	57-180	100
RM 10.9 (2019)	WCT	19	7.6	84.7	63-105	100



Figure 8. Depletion estimates for trout greater than 75 mm in total length collected in Trout Creek at RM 4.5 for the period of record.



Figure 9. Depletion estimates for trout greater than 75 mm in total length collected in Trout Creek at RM 7.0 for the period of record.



Figure10. Depletion estimates for trout greater than 75 mm in total length collected in Trout Creek at RM 9.4 for the period of record.

Connors Gulch

Fish sampling was completed on Connors Gulch in 2020 at RM 0.2. This was the first time Connors Gulch has been sampled by FWP. The sampling was conducted to collect baseline fisheries data on Connors Gulch and assess genetics of westslope cutthroat trout in Connors Gulch. Table 6 contains a summary of results for trout captured at RM 0.2. Westslope cutthroat trout and brook trout were both observed at RM 0.2. We found 26 cutthroat trout making up 93% of the trout composition. Brook trout were found at much lower numbers, 4 brook trout were captured making up 7% of the trout composition.

Jesented is for trout from one electronishing pass.							
Section	Species	Number	Fish per	Mean	Length	Species	
Name		of Fish	100 m	Length	Range	Composition	
		Captured	(CPUE)	(mm)	(mm)	(%)	
RM 0.2	WCT	26	26	105.0	23-170	93	
	EB	4	4	130.8	80-185	7	

Table 6.	Electrofishing data collected at one section on Connors (Gulch in 2020. Data
presented	d is for trout from one electrofishing pass.	

Dog Creek

Fish sampling was completed on Dog Creek in 2020 at RM 1.2, 10.4, and 13.8. These samples were collected to add to long term monitoring data for Dog Creek. We conducted a single pass electrofishing sample at all three locations, Table 7 contains a summary of trout captured at each location. Our most downstream sample location is at RM 1.2, we captured 8 westslope cutthroat trout (length range: 102-246 mm), 11 brown trout (length range: 141-382), 4 mountain whitefish (length range: 153-344 mm), and 2 longnose dace (length range: 85-87 mm). The next upstream site is at RM 10.4, we captured 7 westslope cutthroat trout (length range: 78-235 mm), 26 brown trout (length range: 112-287 mm), and 1 brook trout that was 171 mm in length. The furthest upstream sample was taken at RM 13.8, and we captured 24 westslope cutthroat trout (length range: 63-197 mm), 19 brown trout (length range: 105-277 mm), and 5 longnose suckers (length range: 80-196 mm).

presented is io	i tiout nom		sinng pass.			
Section	Species	Number	Fish per	Mean	Length	Species
Name		of Fish	100 m	Length	Range	Composition
		Captured	(CPUE)	(mm)	(mm)	(%)
RM 1.2	WCT	8	5.3	155.1	102-246	42
	LL	11	7.3	257.9	141-382	58
		_		1.00.1		
RM 10.4	WCT	7	4.6	160.4	78-235	21
	LL	26	17.3	173.5	112-287	76
	EB	1	.6	171		3

Table 7. Electrofishing data collected at one section on Dog Creek in 2020. Data presented is for trout from one electrofishing pass.

RM 13.8	WCT	24	24	120.6	63-197	56
	LL	19	19	154.8	105-277	44

O' Neill Creek Drainage

O' Neill Creek

Fish population estimates were completed on O' Neill Creek in 2019 and 2020. The sites were located at RM 1.7 and 2.9 in 2019, and RM .35, 1.0, 1.7, and 2.9 in 2020. O' Neill Creek was first sampled in 2015 at the RM 1.7 site (Lindstrom 2019), sites have been incrementally added since then as restoration monitoring has increased on the stream. These samples were taken in an effort to establish a baseline dataset for long-term monitoring as well as evaluate planned and potential restoration actions. Table 8 contains a summary of catch statistics for trout captured at each sample location on the first pass. Figures are also present for sites where multiple years of population estimates have been completed. In 2019 and 2020 westslope cutthroat trout were present at all sample sites, but densities were variable, higher densities were generally observed further upstream near a barrier waterfall. One brook trout was also found at the lowest sample site in 2020.

The most downstream sample was at RM 0.35. This site was established in 2020 to collect baseline data for future restoration projects that have been proposed in the area. Westslope cutthroat trout were found at relatively low densities and one brook trout was observed. The estimate for cutthroat trout 75 mm and larger was 23 fish per 100 m (95% confidence interval: +/- 2.0). Too few brook trout were observed to run an estimate.

The next upstream site was at RM 1.0. This site was also added in 2020 in an effort to collect baseline data for proposed future restoration projects in the reach. Westslope cutthroat trout were the only species present. Densities were higher at this site than the site downstream and similar to the next site upstream. We found 52 westslope cutthroat trout larger than 75mm per 100m (95% confidence interval: +/- 5.7).

Our next upstream site is at RM 1.7 and it was monitored in both 2019 and 2020 to get baseline data for long-term monitoring. Westslope cutthroat trout were the only species observed, they were found in relatively high densities in 2019 but closer to baseline numbers in 2020 (figure 11). In 2019 the estimate for westslope cutthroat trout larger than 75mm was 116 fish per 100m (95% confidence interval: +/- 3.2). In 2020 the estimate for westslope cutthroat trout larger than 75mm was 54 fish per 100m (95% confidence interval: +/- 6.5).

Our furthest upstream site is located at RM 2.9 and was also sampled in 2019 and 2020. These samples were taken to get baseline data for a long-term monitoring dataset. Westslope cutthroat trout were the only species observed and were found at relatively high densities in both 2019 and 2020 (figure 12). Westslope cutthroat trout greater than 75mm were found at a density of 187 fish per 100m (95% confidence interval: +/- 5.2) in

2019. In 2020 westslope cutthroat trout larger than 75 mm were found at 149 fish per 100m (95% confidence interval: +/- 2.9).

				01		
Section Name	Species	Number	Fish per	Mean	Length	Species
		of Fish	100 m	Length	Range	Composition
		Captured	(CPUE)	(mm)	(mm)	(%)
RM 0.35	WCT	17	17	123.5	97-179	94
(2020)	EB	1	1			6
RM 1.0 (2020)	WCT	34	34	126.7	74-215	100
RM 1.7 (2019)	WCT	109	109	88.3	51-168	100
RM 1.7 (2020)	WCT	33	33	118.6	77-172	100
	MAGE	10.6	1.00	100.4	55 00 0	100
RM 2.9 (2019)	WCT	126	168	109.4	57-220	100
	WOT	101	125	1057	(2,220)	100
KM 2.9 (2020)	wCI	101	135	125.7	63-228	100

Table 8. Electrofishing data collected at two sections of O'Neill Creek in 2019 and 2020. Data presented is for trout from the first electrofishing pass.

Freezeout Creek Drainage

EB

90

Freezeout Creek

A single fish population survey was completed on Freezeout Creek during the summer of 2019. The site was located at RM 2.9. The sampling was done in an effort to collect baseline data for Freezeout Creek. Table 9 contains a summary of results. Westslope cutthroat trout and brook trout were the only species observed at the sample site, with brook trout being the more abundant species. The population estimate for cutthroat greater than 75 mm in total length was 4 per 100 m (95% confidence interval: +/- 0.0), while for brook trout it was 31 per 100 m (95% confidence interval: +/- 0.4) (Figure 11).

presented is for trout from the first electrofishing pass.								
Section Name	Species	Number of Fish Captured	Fish per 100 m (CPUE)	Mean Length (mm)	Length Range (mm)	Species Composition (%)		
RM 2.9	WCT	5	5	101.4	35-138	5		

90

100.0

45-206

95

Table 9. Electrofishing data collected at one section of Freezeout Creek in 2019. Data



Figure 11. Depletion estimates for trout greater than 75 mm in total length collected in Freezeout Creek at RM 2.9 for the period of record.

Jake Creek

A single fish population survey was completed on Jake Creek during the summer of 2019. The site was located at RM 4.1. The sampling was done in an effort to collect baseline data on Jake Creek. Table 10 contains a summary of results. Westslope cutthroat trout were the only species observed at the sample site. The population estimate for cutthroat greater than 75 mm in total length was 18 per 100 m (95% confidence interval: +/- 0.5) (Figure 12).

presented is to	resented is for from the first electronishing pass.								
Section	Species	Number	Fish per	Mean	Length	Species			
Name		of Fish	100 m	Length	Range	Composition			
		Captured	(CPUE)	(mm)	(mm)	(%)			
RM 2.9	WCT	17	17	128	67-149	100			

Table 10. Electrofishing data collected at one section of Jake Creek in 2019. Data presented is for trout from the first electrofishing pass.



Figure 12. Depletion estimates for trout greater than 75 mm in total length collected in Jake Creek at RM 2.9 for the period of record.

Fred Burr Creek Drainage

Fred Burr Creek

A single fish population survey was completed on Fred Burr Creek during the summer of 2019. The site was located at RM 6.5 and was within the Spotted Dog Wildlife Management Area. Table 11 contains a summary of results. Westslope cutthroat trout and brook trout were the only species observed at the sample site, with cutthroat being the more abundant species. The population estimate for cutthroat greater than 75 mm in total length was 52 per 100 m (95% confidence interval: +/- 1.9), while for brook trout it was 8 per 100 m (95% confidence interval: +/- 0.0) (Figure 13).

Table 11. Electrofishing data collected at one section of Fred Burr Creek in 2018. Data presented is for trout from the first electrofishing pass.

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	Section	Species	Number	Fish per	Mean	Length	Species
	Name		of Fish	100 m	Length	Range	Composition
			Captured	(CPUE)	(mm)	(mm)	(%)
	RM 6.5	WCT	87	87	86.7	47-221	63
		EB	52	52	61.1	40-132	37



Figure 13. Depletion estimates for trout greater than 75 mm in total length collected in Fred Burr Creek at RM 6.5 for the period of record.

<u>Modesty Creek Drainage</u>

Modesty Creek

In 2015, the lower reach of Modesty Creek was reconstructed and reconnected to the Clark Fork River as part of the Clark Fork River remediation and restoration effort carried out by the Department of Environmental Quality and the Natural Resource Damage Program. Prior to the project, Modesty Creek was intercepted by the West Side Ditch and had no direct connection to the river. Sampling conducted in 2019 was a continued effort to monitor fish response to this reconnected tributary. The sites were located near the mouth of the constructed channel and farther upstream above the upper extent of the reconstructed reach. Table 12 contains a summary of results for trout captured at each sample location.

We conducted a single pass electrofishing sample at both locations, Table 12 contains a summary of trout captured at each location. Our most downstream sample location is near the mouth, we captured 17 brown trout (length range: 83-240 mm), 1 brook trout that was 269 mm in length, 2 mountain whitefish (length range: 90-98 mm), and 2 longnose dace (length range: 50-56 mm), 8 longnose suckers (length range: 77-177 mm), and 3 largescale suckers (length range: 100-132 mm). The next upstream site is on state land above the reconstructed reach, we captured 4 brown trout (length range: 91-206 mm), and 3 longnose suckers (length range: 118-227 mm).

Section	Species	Number	Fish per	Mean	Length	Species
Name		of Fish	100 m	Length	Range	Composition
		Captured	(CPUE)	(mm)	(mm)	(%)
Mouth	LL	17	4.25	167	83-240	94
State Land	LL	4	2	175	91-206	100

Table 12. Electrofishing data for trout collected at two sections of Modesty Creek in 2019.

La Marche Creek Drainage

La Marche Creek

In 2020, electrofishing surveys were completed in early August on two sections of La Marche Creek. The sites were located at RM 2.1, and 2.9. Table 13 contains a summary of results for trout captured at each sample location. The samples were collected to determine if westslope cutthroat trout persisted in the drainage. These same sites were sampled in 2014 and at that time westslope cutthroat trout inhabited very small area in low densities. Trout were found in low densities in the same reaches in 2020.

We conducted a single pass electrofishing sample at both locations, Table 13 contains a summary of trout captured at each location. Our most downstream sample location is near RM 2.1, we captured 1 westslope cutthroat trout that was 247 mm in length, no other fish were observed. The next upstream site is at RM 2.9, we captured 4 westslope cutthroat trout (length range: 89-204 mm), no other fish species were present.

Table 13. Electrofishing data for trout collected at three sections of La Marche Creek in 2020.

Section Name	Species	Number of Fish Captured	Fish per 100 m (CPUE)	Mean Length (mm)	Length Range (mm)	Species Composition (%)
RM 2.1	WCT	1	1	247	247-247	100
RM 2.9	WCT	4	4	122	89-204	100

Warm Springs Creek Drainage

Barker Creek

Fish population surveys were completed on Barker Creek at two locations during the summer of 2019. The first site was located at RM 0.5 and the second was at RM 1.5. Table 14 contains a summary of results. Westslope cutthroat trout and bull trout were the only species observed at both sites, with bull trout being the more abundant species. The population estimate at RM 0.5 for bull trout greater than 75 mm in total length was 33 per 100 m (95% confidence interval: +/- 3.0), while for cutthroat trout it was 12 per 100 m (95% confidence interval: +/- 1.0) (Figure 14). The population estimate at RM 1.5 for bull trout greater than 75 mm in total length was 13 per 100 m (95% confidence interval: +/- 0.3) (Figure 14). The population estimate at RM 1.5 for bull trout greater than 75 mm in total length was 17 per 100 m (95% confidence interval: +/- 0.3) (Figure 15). Bull trout and cutthroat trout densities were near the long term average for both sites in 2019.

resented is for trout from the first electronshing pass.								
Section	Species	Number	Fish per	Mean	Length	Species		
Name		of Fish	100 m	Length	Range	Composition		
		Captured	(CPUE)	(mm)	(mm)	(%)		
RM 0.5	WCT	12	12	190.5	106-269	26		
	BULL	34	34	115.4	33-206	74		
RM 1.5	WCT	7	5	168	45-243	21		
	BULL	26	19	122	30-210	79		

Table 14. Electrofishing data collected at one section of Barker Creek in 2019. Data presented is for trout from the first electrofishing pass.



Figure 14. Depletion estimates for trout greater than 75 mm in total length collected in Barker Creek at RM 0.5 for the period of record.



Figure 15. Depletion estimates for trout greater than 75 mm in total length collected in Barker Creek at RM 1.5 for the period of record.

Cable Creek

Cable Creek was sampled at RM 0.8 in 2019. A three pass depletion estimate was completed to gather pre-project data for a potential restoration project. Brook trout and rainbow trout were the only species observed at RM 0.8, with brook trout being the more abundant species. Table 15 contains a summary of data from fish collected on the first pass. The population estimate at RM 0.8 for brook trout greater than 75 mm in total length was 42 per 100 m (95% confidence interval: +/- 1.1), while for rainbow trout it was 7 per 100 m (95% confidence interval: +/- 0.6).

presented is to	resented is for trout from the first electronishing pass.								
Section	Species	Number	Fish per	Mean	Length	Species			
Name		of Fish	100 m	Length	Range	Composition			
		Captured	(CPUE)	(mm)	(mm)	(%)			
RM 6.5	EB	44	44	131	55-206	76			
	RB	14	14	101	49-236	24			

Table 15. Electrofishing data collected at one section of Cable Creek in 2019. Data presented is for trout from the first electrofishing pass.

Fifer Gulch

Fifer Gulch was sampled at RM 2.0 and RM 2.5 in 2019, it was again sampled in 2020 at RM 0.03. The samples were taken to document species presence, abundance and collect

genetic data on cutthroat trout. Depletion estimates were completed at all sites except RM 0.03 because too few trout were captured to do an estimate. Data from first pass electrofishing at each site can be found in Table 16.

Brown trout, cutthroat trout and a brook trout were observed at RM 0.03 in 2020. We captured 2 westslope cutthroat trout (length range: 180-188 mm), 4 brown trout (length range: 128-253 mm), and a brook trout that was 134 mm in length. We also observed 1 longnose sucker and 19 Columbia slimy sculpin. Brook trout and cutthroat trout were th only fish species observed at RM 2.0 and RM 2.5 in 2019. The population estimate at RM 2.0 for brook trout greater than 75 mm in total length was 42 per 100 m (95% confidence interval: +/- 2.5), while for cutthroat trout it was 14 per 100 m (95% confidence interval: +/- 0.6). The population estimate at RM 2.5 for brook trout greater than 75 mm in total length was 25 per 100 m (95% confidence interval: +/- 0.5), while for cutthroat trout it was 19 per 100 m (95% confidence interval: +/- 0.8).

Section	Species	Number	Fish per	Mean	Length	Species
Name		of Fish	100 m	Length	Range	Composition
		Captured	(CPUE)	(mm)	(mm)	(%)
RM 0.03	EB	1	1	134	-	14
	LL	4	4	197	128-253	57
	WCT	2	2	184	180-188	29
RM 2.0	EB	32	32	117	76-180	67
	WCT	16	16	115	58-194	33
DM 2 5	ED	25	25	108	40 150	61
Kivi 2.3	WCT	23 16	25	106	40-130 95 190	20
	WCI	10	10	120	03-100	39

Table 16. Electrofishing data collected at three sections on Fifer Gulch in 2019 and 2020. Data presented is for trout from the first electrofishing pass.

Foster Creek

Foster Creek was sampled at RM 1.0, RM 2.3, and RM 3.8 in 2019. The samples were taken to document abundance and collect genetic data on bull trout. Depletion estimates were completed at all sites except RM 2.3 because too few trout were captured to do an estimate. Data from first pass electrofishing at each site can be found in Table 17.

Oncorhynchus trout (westslope cutthroat trout and cutthroat trout hybrids), bull trout, and brook trout were observed at RM 1.0 in 2019. The population estimate at RM 1.0 for Oncorhynchus greater than 75 mm in total length was 73 per 100 m (95% confidence interval: +/- 15), for bull trout it was 33 per 100 m (95% confidence interval: +/- 19), and for brook trout it was 5 per 100 m (95% confidence interval: +/- 1.2). Ocorhynchus were near the long-term average, brook trout appeared in high enough densities to get an estimate for the first time in 2019, and bull trout were well above the long-term average at this site in 2019 (Figure 16).

Westslope cutthroat trout and a bull trout were the only species observed at RM 2.3 in 2019. Only one pass was completed in 2019 because too few fish were captured to complete an estimate. We captured 11 westslope cutthroat trout (length range: 55-216 mm), and 1 bull trout that was 224 mm in length (Table 17). This data would suggest that densities were lower in 2019 than in previous years because enough fish were captured to complete estimates in previous years (Figure 17).

Westslope cutthroat trout were the only species observed at RM 3.8 in 2019. The population estimate at RM 3.8 for cutthroat trout greater than 75 mm in total length was 31 per 100 m (95% confidence interval: +/- 1.9). Cutthroat trout were well below the long-term average in 2019 (Figure 18). Brook trout have been observed at this site in past years but were not observed in 2019.

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Section	Species	Number	Fish per	Mean	Length	Species
Name		of Fish	100 m	Length	Range	Composition
		Captured	(CPUE)	(mm)	(mm)	(%)
RM 1.0	WCT	53	53	145	54-261	78
	WCTxRB	1	1	244	-	1
	BULL	11	11	114	101-176	16
	EB	3	3	130	100-189	5
RM 2.3	WCT	11	11	100	55-216	92
	BULL	1	1	224	-	8
RM 3.8	WCT	34	26	127	45-213	100

Table 17. Electrofishing data collected at three sections on Foster Creek in 2019. Data presented is for trout from the first electrofishing pass.



Figure 16. Depletion estimates for trout greater than 75 mm in total length collected in Foster Creek at RM 1.0 for the period of record.



Figure 17. Depletion estimates for trout greater than 75 mm in total length collected in Foster Creek at RM 2.3 for the period of record.



Figure 18. Depletion estimates for trout greater than 75 mm in total length collected in Foster Creek at RM 3.8 for the period of record.

<u>Basin Creek Drainage</u>

Basin Creek

Fish population surveys were completed at four sites on upper Basin Creek in 2019 and 2020. The sites were located at RM 12.2, 13.1, 14.0 and 14.5. All the sites were situated near the headwaters of the drainage upstream of Basin Creek Reservoir. All of the sites were previously established locations (Lindstrom 2013, Lindstrom 2015, Lindstrom 2017 and Lindstrom 2019). Sampling at these sites was conducted to monitor a westslope cutthroat trout restoration project that occurred between 2005 and 2007 that consisted of the movement of genetically pure fish from downstream of a natural barrier into unoccupied habitat located above it. The goal of the project was to expand the range of the species in upper Basin Creek thereby increasing the chance of long-term persistence. The site at RM 12.2, located between lower and upper Basin Creek Reservoir, was added to further our monitoring efforts in the basin.

As expected, westslope cutthroat trout were the only fish observed at all the survey locations in 2019 and 2020. Table 18 contains a summary of data collected on the first electrofishing pass at each site. Sampling within the relocation area (sites at RM 14.0 and 14.5) showed that westslope cutthroat trout were persisting as well as reproducing despite no young-of-the-year being observed. Similar to previous sampling events, fish density tended to be fairly low in these upper reaches. However, fish numbers were relatively

high at the section at RM 12.2 (between reservoirs). The estimate for fish 75 mm and larger at this site was 62 per 100 m (95% confidence interval: +/- 1.5) in 2019, and 88 per 100 m (95% confidence interval: +/- 3.7) in 2020 (Figure 19). At RM 13.1 (above upper reservoir) fish numbers were also relatively good. The estimate for cutthroat 75 mm and larger was 23 per 100 m (95% confidence interval: +/- 1.8) in 2019, and 24 per 100 m (95% confidence interval: +/- 1.8) in 2019, and 24 per 100 m (95% confidence interval: +/- 1.9) in 2020 (Figure 20). Within the relocation area at RM 14.0, fish were sparse despite good looking habitat. Only a single pass was made through the survey section in both years due to the very low numbers of fish captured. We caught 1 cutthroat trout that was 82 mm in length in 2019, and 10 cutthroats in 2020 (length range: 80-149 mm). At RM 14.5, density improved a little. The estimate for cutthroat 75 mm and larger was 9 per 100 m (95% confidence interval: +/- 0.5) in 2019 (Figure 21). We only completed one pass in 2020 due to low numbers and we observed 17 cutthroat trout (length range: 68-168 mm).

Section	Species	Number	Fish per	Mean	Length	Species
Name		of Fish	100 m	Length	Range	Composition
		Captured	(CPUE)	(mm)	(mm)	(%)
RM 12.2 (2019)	WCT	64	64	111	36-248	100
RM 12.2 (2020)	WCT	65	65	110	39-249	100
RM 13.1 (2019)	WCT	19	19	107	67-195	100
RM 13.1 (2020)	WCT	20	20	119	65-195	100
RM 14 (2019)	WCT	1	1	82	-	100
RM 14 (2020)	WCT	10	10	118	80-149	100
RM 14.5 (2020)	WCT	10	10	94	49-136	100
RM 14.5 (2020)	WCT	17	17	115	68-168	100

Table 18. Electrofishing data collected at three sections on upper Basin Creek in 2019 and 2020. Data presented is from the first electrofishing pass.



Figure 19. Depletion estimates for trout greater than 75 mm in total length collected in Basin Creek at RM 12.2 for the period of record.



Figure 20. Depletion estimates for trout greater than 75 mm in total length collected in Basin Creek at RM 13.1 for the period of record.



Figure 21. Depletion estimates for trout greater than 75 mm in total length collected in Basin Creek at RM 14.5 for the period of record.

Blacktail Creek Drainage

Blacktail Creek

Fish surveys were completed at three locations on Blacktail Creek in mid-July of 2019 and 2020. All the sites were located in the headwaters of the watershed near RM 11.1, 11.8, and 12.5. Table 19 contains a summary of data collected on the first electrofishing pass. Sampling was done to examine species composition, size structure, and relative density in several sections of the stream following the construction of a number of simulated beaver dams near RM 11.8 in the summer of 2016. Each of the sections was 100 m in length and was sampled with multiple electrofishing passes to obtain population estimates for species present. Estimates were generated by species for fish 75 mm in total length and larger. Westslope cutthroat trout and brook trout were the only species present at all locations. Species composition and abundance was variable, but in general both species were found to be relatively common at all sites. We only sampled RM 11.1 in 2020 and only one pass was completed. We observed 10 cutthroat trout (length range: 86-173 mm). and 6 brook trout (length range: 105-147 mm). Past estimates for RM 11.1 can be found in figure 22. At RM 11.8 in the location where the simulated beaver dams were constructed, the estimate for westslope cutthroat trout in 2019 was 28 per 100 m (95%) confidence interval: +/- 2.0), and for brook trout it was 19 per 100 m (95% confidence interval: +/- 0.5). The estimate for cutthroat trout at RM 11.8 in 2020 was 10 per 100 m (95% confidence interval: +/- 0.6), and for brook trout it was 20 per 100 m (95% confidence interval: +/- 0.6)

confidence interval: +/- .5) (Figure 23). At RM 12.5 above where the simulated beaver dams were constructed, the estimate for westslope cutthroat trout in 2019 was 26 per 100 m (95% confidence interval: +/- 0.8), and for brook trout it was 16 per 100 m (95% confidence interval: +/- 1.1). The estimate for cutthroat trout at RM 12.5 in 2020 was 14 per 100 m (95% confidence interval: +/- 1.0), and for brook trout it was 29 per 100 m (95% confidence interval: +/- 0.4) (Figure 24). Brook trout densities at all three sites have been variable and have not necessarily shown a clear pattern. Although the data set is small, it appears that the beaver dam analogs constructed in 2016 near RM 11.5 have potentially benefited cutthroat trout, or at least not negatively impacted the species. Further monitoring will be necessary to help discern whether the pattern observed in a result of the habitat modifications or some other factor(s).

Section Name	Species	Number of Fish	Fish per 100 m	Mean Length	Length Range	Species Composition
	MICT		(CPUE)	(mm)	(mm)	(%)
RM 11.1 (2020)	WCT	10	10	124	86-173	62
	EB	6	6	124	105-147	38
RM 11.8	WCT	24	24	104	58-170	61
(2017)	EB	15	15	151	79-186	39
RM 11.8	WCT	16	16	87	52-142	52
(2020)	EB	15	15	135	77-206	48
RM 12.5	WCT	25	25	95	53-217	69
(2019)	EB	11	11	116	74-182	31
RM 12.5	WCT	28	28	69	47-133	52
(2020)	EB	26	26	97	69-179	48

Table 19. Electrofishing data collected at three sections of Blacktail Creek in 2019 and 2020. Data presented is for trout from the first electrofishing pass.



Figure 22. Depletion estimates for trout greater than 75 mm in total length collected in Blacktail Creek at RM 11.1 for the period of record. Note: 2016 sample was collected prior to beaver dam analog (BDA) construction near RM 11.8.



Figure 23. Depletion estimates for trout greater than 75 mm in total length collected in Blacktail Creek at RM 11.8 for the period of record. Note: 2016 sample was collected prior to beaver dam analog (BDA) construction.



Figure 24. Depletion estimates for trout greater than 75 mm in total length collected in Blacktail Creek at RM 12.5 for the period of record. Note: 2016 sample was collected prior to beaver dam analog (BDA) construction near RM 11.8.

LAKES

Racetrack Creek Drainage

Racetrack Pond

Racetrack Pond is a 35-acre pond located near Racetrack, Montana that was transferred into public ownership in approximately 2010. At this time, gillnet sampling was completed to identify what species were present in the pond prior to beginning any supplemental trout stocking (Lindstrom 2010). This initial sampling discovered that largescale suckers were common and were the most abundant fish in the pond. Other species found to be present (in order of abundance in the nets) included yellow perch, mountain whitefish, and brown trout. While mountain whitefish and brown trout are common in the Clark Fork River (which Racetrack Pond flows into), yellow perch likely became established because of an illegal introduction. FWP began stocking Racetrack Pond with catchable size westslope cutthroat trout and sterile rainbow trout in 2012 (five hundred of each species are stocked into the pond annually). Gillnet sampling was repeated in 2013 to see how stocked fish were faring. Only four rainbow trout and no cutthroat trout were captured during this sampling indicating that planted fish likely had limited survival or were perhaps moving out of the pond via the outflow. Regulations on Racetrack Pond are relatively restrictive and only allow harvest of stocked fish to those 14 years of age and younger. The 2013 sampling showed that largescale suckers continued to be rather common, and yellow perch continued to be present in similar numbers to 2010.

Due to a need for alluvial material for remediation activities being conducted upstream of Racetrack Pond on Phase 6 of the Clark Fork River cleanup, the Department of Environmental Quality began gravel mining to the north of Racetrack Pond in 2016. This activity essentially enlarged the pond area by around 20 acres. During the mining activity it was necessary to pump the pond down to lower the groundwater table. The pond went into the winter of 2016-2017 with a low residual pool, and winterkill seemed to be a possibility given that the pond is relatively shallow and only has a maximum depth of around 12 feet. Fish sampling was conducted in late June of 2017 and consisted of setting two 125' by 4' experimental gillnets overnight (like previous sampling events). The first net was set on the east side of the pond while the second net was set on the west side. Like past sampling, largescale suckers were shown to be the most common fish in the pond, although numbers did appear less than what was observed in 2010 and 2013 (Lindstrom 2019). Stocked fish (rainbow trout and westslope cutthroat trout) appeared to be rare. Brown trout were present but not very abundant, and all individuals captured were relatively large. The most interesting finding was that no yellow perch were captured. While the status of this species remains unknown, it is unlikely that the low water conditions during the 2016-2017 winter led to complete mortality. However, it is possible that the population was greatly reduced.

In early 2018 Racetrack Pond was again lowered to carry out a pond habitat improvement project coordinated between the Natural Resource Damage Program and FWP. Specific objectives of project were to connect the alluvium pond on the north side to the main pond, deepen the main pond in two areas to provide for better trout habitat, construct a new screened outlet channel, and reduce the steepness of the banks around the entire pond perimeter to allow for safer access as well as better vegetation establishment. To carry out this work, the pond was dewatered extensively for most of the spring and summer of 2018. One of the hopes of the dewatering was that all the non-game (primarily suckers) and illegally introduced species (yellow perch) would be able to be removed. However, this proved to not be possible. Despite the drying of almost the entire pond with numerous pumps, the pond was unable to be completely dewatered due to the constant influx of ground water. In order for the pumps to continue to operate a small area of less than a quarter acre remained inundated. Hundreds if not thousands of suckers were observed in this area in addition to a handful of trout (primarily rainbow and brown). Attempts to mechanically remove these fish proved unsuccessful. While the drawdown likely reduced the pre-project fish numbers significantly, a total removal was not achieved as hoped. During mechanical removal attempts, no perch were encountered. However, at least two adult perch were found dead on the pump screens during the

dewatering process. Following completion of the earthwork, the pumps were removed, and the pond began filling very quickly. Once the pond was full by late summer, 250 catchable westslope cutthroat trout as well as 250 catchable rainbow trout (sterile triploids) were stocked into the pond. Additionally, several thousand cutthroat and rainbow fingerlings were stocked into the pond in the fall. To assist future stocking plans, Racetrack Pond will be gillnetted in the next one to two years.

Racetrack Pond was again gillnetted in 2020 using two 125' by 4' experimental gillnets overnight (like previous sampling events). The first net was set on the east side of the pond while the second net was set on the west side. Data for fish captured in 2020 can be found in Table 20. As expected, largescale suckers were still prevelant in the pond, although numbers did appear less than what was observed in previous sampling (Lindstrom 2019). Stocked fish (rainbow trout and westslope cutthroat trout) appeared to be more common than in the past. No perch were observed.

Table 20. Gillnet data collected from Racetrack Pond in 2020. A total of two gillnets were set. Species abbreviations are as follows: RB=Rainbow Trout, WCT=Westslope Cutthroat Trout, LL=Brown Trout, MWF=Mountain Whitefish, LSSU=Largescale Sucker, and YP=Yellow Perch.

Year	Species	Total Number of Fish Captured	Mean Fish per Net	Mean Length (mm)	Length Range (mm)
2020	RB	6	3	419	303-500
	WCT	7	3.5	389	277-417
	LL	3	1.5	556	495-595
	MWF	1	0.5	215	-
	LSSU	5	2.5	383	213-500

Warm Springs Creek Drainage

Warm Springs Ponds

Pond #3

Montana Fish, Wildlife and Parks first planted rainbow trout in the Warm Springs Pond System in 1980. The plant consisted of approximately 500 catchable-size fish in both Pond #2 and Pond #3. An additional 500 catchable-size rainbow trout were stocked into Pond #2 the following year, but stocking was largely abandoned in this pond after this plant. Following the initial 1980 plant, stocking began in earnest in Pond #3 in 1987. At this time the department began stocking rainbow fingerlings on an annual basis. Stocking density varied over the years, but typically averaged about 10,000 fish per year through 2013. Beginning in 2008, the department started stocking only triploid (sterile) rainbow fingerlings into Pond #3. This management change was done to try and limit the hybridization risk to westslope cutthroat trout populations present upstream in Silver Bow Creek and its tributaries. Beginning in 2015, stocking density in Pond #3 was increased to 20,000 rainbow fingerlings per year. Stocking has consisted of two separate plants of 10,000 fish each occurring in June and September. Other species that have been stocked into the Warm Springs Pond system include brown trout and westslope cutthroat trout. About 5,000 fingerling brown trout were stocked into Pond #3 each year from 2000 through 2013, and westslope cutthroat trout have been stocked (5,000 fingerlings) into Pond #3 annually since 2008.

Fish sampling in Warm Springs Pond #3 was completed in early May of 2017. Sampling consisted of setting five 125 ft-long by 6 ft-deep experimental gillnets overnight for two consecutive nights (total of 10 nets set). Sets included seven floating nets and three sinking nets. Figure 25 shows the general location of where nets were placed. Nets were set in approximately the same locations as in previous years (Lindstrom 2014). All fish captured were measured for total length and weighed if possible. Trout captured were also examined for a missing adipose fin as some fish stocked had this fin removed in the hatchery. Data was summarized by grouping the ten nets together and obtaining total catch numbers, as well as mean fish per net, mean total length, and range of lengths observed for each species captured.

Species captured during the 2020 netting efforts on Warm Springs Pond #3 included rainbow trout, westslope cutthroat trout, longnose sucker and largescale sucker. Table 21 contains a summary of all fish collected. While rainbow trout were the most common trout species present in the Pond #3 gillnet catch during 2020, density was relatively low. We caught 62 rainbow trout (length range: 309-725mm) in 2020. Despite the recent doubling of the stocking rate, these findings were like those from past sampling efforts (Lindstrom 2014). The largest rainbow trout handled was 725 mm in total length (or approximately 29 inches). This fish was unable to be weighed accurately but was more than 4,500 gm (or about 10.0 lbs).

Westslope cutthroat trout were the next most abundant trout observed during 2020 gillnetting in Pond #3, but the species was not common (Table 21). We caught a total of 8 westslope cutthroat trout (length range: 182-485mm) in 2020. Westslope cutthroat trout are currently stocked at a rate of 5,000 fingerlings annually.



Figure 25. Map of the Warm Springs Pond System with Pond # 3 gillnet locations indicated by yellow dots. The letter after each net number indicates whether it was a floating (F) or sinking (S) net.

nets. Species abbreviations are as follows: RB=Rainbow Trout, WCT=Westslope Cutthroat Trout, LNSU=Longnose Sucker, and LSSU=Largescale Sucker.						
Year	Species	Total Number of Fish Captured	Mean Fish per Net	Mean Length (mm)	Length Range (mm)	
2020	RB	62	6.2	527	309-725	
	WCT	8	0.8	390	182-485	
	LNSU	4	0.4	172	170-186	
	LSSU	35	3.5	390	182-485	

Table 21. Gillnet data collected from Warm Springs Pond #3 in 2020. A total of ten gillnets were set. Nets set were a combination of seven floating nets and three sinking nets. Species abbreviations are as follows: RB=Rainbow Trout, WCT=Westslope Cutthroat Trout, LNSU=Longnose Sucker, and LSSU=Largescale Sucker.

Basin Creek Drainage

Lower Basin Creek Reservoir

Lower Basin Creek Reservoir is a municipal water impoundment outside of Butte, MT. The reservoir has been closed to the public for fishing and recreating to protect the municipal water values. The reservoir is home to a conservation population of westslope cutthroat trout. No other fish species are present. Without any angling and harvest pressure the population had remained robust. However, the fish only have ~100m of main-stem Basin Creek to spawn in due to a sediment impoundment upstream of the reservoir that acts as a barrier. The reservoir was first sampled in 2015 (Lindstrom 2017) to collect data in preparation for opening the reservoir to the public and to monitor a passage project planned for the sediment impoundment. A robust and stunted westslope cutthroat population was found when netted in 2015.

The reservoir wasn't opened to the public as planned and the passage project wasn't completed. In 2020 talks of opening the reservoir and completing the passage project were picked up again and another round of sampling was completed to collect more predata. Westslope cutthroat trout were again the only species found. We set three nets around the lake overnight. We caught 197 fish in the three nets combined with an average length of 241mm (length range: 161-367mm). Densities were still very high and the population still appeared to be stunted.

The reservoir was finally opened in June of 2021, but only remained open for a month due to increased fire danger in July 2021. The local government plans to keep the reservoir open from May to October in future years. It remains to be seen how angling pressure and harvest effect the fish population. Some harvest will likely increase fish quality and decrease density. The passage project is planned to be completed in 2022 to help this fishery sustain itself with wild reproduction and without stocking efforts.

Upper Basin Creek Reservoir

Upper Basin Creek Reservoir is a second reservoir further up in the Basin Creek drainage from the Lower Basin Creek Reservoir. This reservoir is also part of the municipal water supply system that the Lower Basin Creek Reservoir is part of. However, the upper reservoir is no longer operated to store and release water because the dam was deemed a high hazard dam and it had to be notched. The notch in the damn has drastically decreased depth and made this reservoir a flow through dam, there is no ability to manipulate water levels.

The Upper Basin Creek Reservoir had never been sampled prior to 2020. We set three nets in summer of 2020. As expected, westslope cutthroat trout were the only fish species present. We found 8 total westslope cutthroat trout in the three nets combine, with an average length of 369mm (length range: 260-490mm). The cutthroat in the upper reservoir persist in much lower densities than the lower reservoir. Sample size is relatively small, but quality appears to be much higher in the upper reservoir. It is unclear if fish from the lower reservoir will be able to ascend the notch in the upper reservoir damn once the sediment basin passage project is complete.

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