

**Native Cutthroat Trout (*Oncorhynchus
clarki spp.*) Conservation Activities in the
Northern Region, 2003**

by

Paul Thompson
Aquatics Biologist

December 2003

Utah Division of Wildlife Resources
1594 West North Temple
Salt Lake City, Utah 84414

An Equal Opportunity Employer

Kevin K. Conway, Director

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION.....	1
Bonneville cutthroat trout.....	1
Colorado River cutthroat trout.....	1
Yellowstone cutthroat trout.....	1
METHODS.....	1
RESULTS.....	3
Bonneville cutthroat trout.....	3
Bear Lake GMU.....	5
Bear River GMU.....	5
Uinta Mountains/Upper Bear River subunit.....	5
Mill Creek.....	5
Deadman Creek.....	8
West Fork of the Bear River.....	9
Deer Creek.....	11
East Fork of the Bear River.....	13
Stillwater Fork.....	15
Hayden Fork.....	17
Cache Valley Subunit.....	19
Beaver Creek.....	19
Davenport Creek.....	21
Wellsville Creek.....	23
Rich County subunit.....	24
Otter Creek.....	24
South Branch of Otter Creek.....	25
Middle Branch of Otter Creek.....	26
New Canyon.....	28
Big Creek.....	28
Meachum Canyon.....	32
Northern Bonneville GMU.....	33
Ogden River subunit.....	33
Middle Fork of the Ogden River.....	33
Weber River subunit.....	36
Cottonwood Creek.....	36
Arbuckle Creek.....	38
Colorado River cutthroat trout.....	40
West Fork of Beaver Creek.....	40
Gilbert Creek.....	42
West Fork of the Smiths Fork.....	43

TABLE OF CONTENTS, continued

Yellowstone cutthroat trout.....	44
Wildcat Creek.....	44
Goose Creek.....	44
DISCUSSION.....	46
Bonneville cutthroat trout.....	46
Bear River GMU.....	46
Uinta Mountains/Upper Bear River subunit.....	46
Cache Valley subunit.....	46
Rich County subunit.....	47
Northern Bonneville GMU.....	47
Ogden River subunit.....	47
Weber River subunit.....	47
Colorado River cutthroat trout.....	48
Northeastern GMU.....	48
North Slope of the Uinta Mountains subunit...	48
Yellowstone cutthroat trout.....	48
LITERATURE CITED.....	49

LIST OF TABLES

	<u>Page</u>
Table 1. Streams/stream sections containing Bonneville cutthroat trout during 2003 surveys.....	4
Table 2. Population statistics for species sampled in Mill Creek, 1953, 1973, and 2003.....	6
Table 3. Population statistics for species sampled in Deadman Creek, 1978 and 2003.....	8
Table 4. Population statistics for species sampled in the West Fork of the Bear River section 01, 1964, 1971, 1985, and 2003.....	10
Table 5. Population statistics for species sampled in Deer Creek, 1977, 1986, 1998, and 2003.....	12
Table 6. Population statistics for species sampled in the East Fork of the Bear River section 01, 1965 and 2003.....	13
Table 7. Population statistics for species sampled in Stillwater Fork section 01, 1953 and 2003.....	15
Table 8. Population statistics for species sampled in Hayden Fork, 1953, 1970, and 2003.....	17
Table 9. Population statistics for species sampled in Beaver Creek, 1967, 1968, 1999, and 2003.....	20
Table 10. Population statistics for species sampled in Davenport Creek, 1976, 1978, and 2003.....	22
Table 11. Population statistics for species sampled in Wellsville Creek, 1978 and 2003.....	23
Table 12. Population statistics for species sampled in Otter Creek, 1954 and 2003.....	24
Table 13. Population statistics for species sampled in the South Branch of Otter Creek, 1954, 1968, and 2003.	25

LIST OF TABLES, continued

	<u>Page</u>
Table 14. Population statistics for species sampled in the Middle Branch of Otter Creek, 1954 and 2003.....	26
Table 15. Population statistics for species sampled in Big Creek section 02, 1977, 1980, and 2003.....	30
Table 16. Population statistics for species sampled in Meachum Canyon, 2003.....	32
Table 17. Population statistics for species sampled in the Middle Fork of the Ogden River section 02, 1975, 1987, and 2003.....	34
Table 18. Population statistics for species sampled in Cottonwood Creek, 1979 and 2003.....	36
Table 19. Population statistics for species sampled in Arbuckle Creek, 1979, 1996, and 2003.....	38
Table 20. Population statistics for species sampled in the West Fork of Beaver Creek section 01, 1973 and 2003.....	40
Table 21. Fish species and numbers reintroduced into Gilbert Creek, upstream from the border barrier, following the chemical reclamation in 2001 and 2002.....	42
Table 22. Population statistics for species sampled in Goose Creek, 1957, 1971, 1996, and 2003.....	45

LIST OF FIGURES

	<u>Page</u>
Figure 1. Size distribution of Bonneville cutthroat trout and brook trout sampled in Mill Creek, Stations #1 and #2, 2003.....	7
Figure 2. Size distribution of Bonneville cutthroat trout and brook trout sampled in the West Fork of the Bear River section 01, 2003.....	10
Figure 3. Size distribution of Bonneville cutthroat trout sampled in Deer Creek, 2003.....	12
Figure 4. Size distribution of Bonneville cutthroat trout, brook trout, and mountain whitefish sampled in the East Fork of the Bear River section 01, 2003..	14
Figure 5. Size distribution of Bonneville cutthroat trout, brook trout, and mountain whitefish sampled in Stillwater Fork section 01, 2003.....	16
Figure 6. Size distribution of Bonneville cutthroat trout, brook trout, rainbow trout, and rainbow trout x Bonneville cutthroat trout sampled in Hayden Fork, 2003.....	18
Figure 7. Size distribution of Bonneville cutthroat trout sampled in Beaver Creek, 2003.....	20
Figure 8. Size distribution of Bonneville cutthroat trout and brown trout sampled in Davenport Creek, 2003..	22
Figure 9. Size distribution of brook trout sampled in the Middle Branch of Otter Creek, 2003.....	27
Figure 10. Size distribution of Bonneville cutthroat trout, brook trout, and brown trout sampled in Big Creek section 02, 2003.....	31
Figure 11. Size distribution of Bonneville cutthroat trout sampled in Meachum Canyon, 2003.....	32

LIST OF FIGURES, continued

	<u>Page</u>
Figure 12. Size distribution of Bonneville cutthroat trout, rainbow trout, and Bonneville cutthroat trout x rainbow trout sampled in the Middle Fork of the Ogden River section 02, 2003.....	35
Figure 13. Size distribution of Bonneville cutthroat trout sampled in Cottonwood Creek, 2003.....	37
Figure 14. Size distribution of Bonneville cutthroat trout sampled in Arbuckle Creek, 2003.....	39
Figure 15. Size distribution of brook trout sampled in the West Fork of Beaver Creek section 01, 2003.....	41

The Utah Department of Natural Resources receives federal aid and prohibits discrimination on the basis of race, color, sex, age, national origin, or handicap. For information or complaints regarding discrimination, contact Executive Director, Utah Department of Natural Resources, 1636 West North Temple #316, Salt Lake City, Utah 84116-3193 or the Equal Employment Opportunity Commission, 1801 L Street, NW, Washington, D.C. 20507.

INTRODUCTION

BONNEVILLE CUTTHROAT TROUT (*Oncorhynchus clarki utah*)

Bonneville cutthroat trout surveys in northern Utah during 2003 focused primarily in the Bear River Geographic Management Unit (GMU) and a few stream surveys were completed in the Northern Bonneville GMU. Most of the major tributaries to the Upper Bear River were surveyed in the Uinta Mountains/Upper Bear River subunit. A few streams were surveyed in the Rich County subunit, which completes the initial stream surveys for this subunit. Two stream surveys were completed in the Cache Valley subunit, which leaves a few streams upstream from Porcupine Reservoir to be surveyed before the initial surveys are completed in this subunit. The 2003 surveys provided needed data that will help towards the objectives of long term conservation of Bonneville cutthroat trout in Utah (Lentsch et al. 1997).

COLORADO RIVER CUTTHROAT TROUT (*Oncorhynchus clarki pleuriticus*)

Work on Colorado River cutthroat trout primarily focused on re-establishing fish in the Utah portion of Gilbert Creek. Establishing a Colorado River cutthroat trout brood source for the North Slope was an effort initiated in 2003 as well. The only stream survey completed in the North Slope of the Uinta Mountains subunit was on the West Fork of Beaver Creek section 01. The work completed in the Northeastern GMU provided needed data that will help towards the objectives of long term conservation of Colorado River cutthroat trout in Utah (Lentsch and Converse 1997).

YELLOWSTONE CUTTHROAT TROUT (*Oncorhynchus clarki bouvieri*)

Wildcat Creek on the North slope of the Raft River Mountain Range and Goose Creek were the only two streams examined during 2003. On Wildcat Creek, a wildfire burned the majority of the drainage occupied by Yellowstone cutthroat trout in 2002. Spot electrofishing was completed in 2003 to verify if Yellowstone cutthroat trout still persist.

METHODS

All stream surveys were completed during base flow conditions to determine the extent of the resident cutthroat trout populations in each stream/stream section. When possible, stream survey locations were chosen as closely to previous Utah Division of Wildlife Resources (UDWR) survey locations. Sixty people days were required to complete the work on native cutthroat trout in the Northern Region during 2003.

Universal Transverse Mercator (UTM) coordinates were recorded for each stream survey location with a hand-held Global Positioning System (GPS).

For stream surveys, a 100 m reach, representing habitat conditions throughout the entire stream, was identified for each survey. Stations were measured using a 100 m tape. On the larger streams, a block net was placed at the upstream end of the station to prevent fish from escaping before the two electrofishing passes were completed. On smaller streams, a natural habitat break (e.g., small waterfall/cascade) was chosen for the upper end of each reach and when possible, the lower end. Two battery-powered backpack electrofishing units, manufactured by Smith Root, were utilized side-by-side for surveys on the larger streams (e.g., streams >2.5-3 m in width). On all remaining surveys, a single battery-powered backpack electrofishing unit was used. Between three and six personnel were utilized on these surveys. Electrofishing settings varied depending on the stream conductivity. In general, the pulse was set at J (70 Hz), the frequency was set at 4 (4 ms), and the voltage was set at 300 V.

All captured fish were transferred to live cages placed in the stream. Fish collected from the first electrofishing pass were kept separate from the fish collected from the second electrofishing pass. Fish processing and data collection commenced immediately following electrofishing completion and fish not collected for genetic analyses were returned to the stream. All fish captured were measured to the nearest millimeter (mm) TL and weighed to the nearest gram (g).

A modified Zippin multiple pass depletion electrofishing formula was used to calculate the population estimates and ninety-five percent confidence limits for each site surveyed (Zippin 1958). The formulas used to calculate the estimates were:

$$N = C_1^2 / C_1 - C_2$$

where,

N = estimated fish population,

C₁ = the number of fish captured from the first pass, and

C₂ = the number of fish captured on the second pass.

$$SE = [C_1 * C_2 / (C_1 - C_2)^2] * (C_1 + C_2)^{\frac{1}{2}}$$

$$95\% \text{ C.I.} = 2 * SE$$

Population estimates were calculated separately for age-1 and

older fish and age-0 fish because smaller fish are not immobilized as effectively as larger fish while electrofishing (Reynolds 1989) and consequently, population estimates for age-0 fish are usually not as meaningful. All cutthroat trout < 50 mm TL were considered to be age-0.

Condition factor (Ktl) was calculated using the formula:

$$K = W * 100,000/L^3$$

where,

W = weight in g, and

L = TL in mm.

All cutthroat trout tissue samples were collected for genetic analyses according to the cutthroat trout collection procedural manual (Toline and Lentsch 1999). These samples will be submitted to the Salt Lake Office of the UDWR during the winter of 2003/2004. Samples will be processed with nuclear DNA and mitochondrial DNA.

Population estimates were not attempted for speckled dace (*Rhinichthys osculus*), longnose dace (*Rhinichthys cataractae*), or sculpin (*Cottus spp.*) because these species are difficult to capture. An estimate of abundance was made for these species as follows: >50 individuals/100 m station = abundant, 10-50 individuals/100 m station = common, and <10 individuals/100 m station = sparse.

RESULTS

BONNEVILLE CUTTHROAT TROUT

At least one complete two-pass depletion electrofishing survey was completed on 15 streams and four streams were spot electrofished. Bonneville cutthroat trout were present in 13 of the 19 streams/stream sections surveyed in 2003 (Table 1). Based on the stream surveys in 2003, Bonneville cutthroat trout occupy approximately 147.4 stream km (91.6 stream miles) in the streams sampled (Table 1).

Fish species encountered during the 2003 stream surveys included: Bonneville cutthroat trout (BCT), rainbow trout (RBT; *Oncorhynchus mykiss*), Bonneville cutthroat trout x rainbow trout hybrids, brown trout (BNT; *Salmo trutta*), brook trout (BKT; *Salvelinus fontinalis*), mountain whitefish (MWF; *Prosopium williamsoni*), mountain sucker (MTS; *Catostomus platyrhincus*), sculpin, Utah sucker (UTS; *Catostomus ardens*), redbside shiner (RSS; *Richardsonius balteatus hydrophlox*), speckled dace (SPD),

longnose dace (LND), and leatherside chub (LSC; *Gila copei*).

Table 1. Streams/stream sections containing Bonneville cutthroat trout during 2003 surveys.

Stream/Section	Approximate # of stream km occupied (# stream miles occupied)	# of \geq age-1 cutthroat/km (#/mile)
Mill Creek, station #1	19.3 (12.0)	80 (129)
Mill Creek, station #2		130 (210)
Deer Creek	10.5 (6.5)	30 (48)
East Fork of the Bear River section 01	16.1 (10.0)	169 (272)
Stillwater Fork section 01	8.1 (5.0)	63 (101)
Hayden Fork	19.3 (12.0)	35 (57)
Beaver Creek	10.5 (6.5)	412 (664)
Davenport Creek	13.8 (8.6)	303 (488)
Wellsville Creek	4.8 (3.0)	abundant
Big Creek section 02	19.3 (12.0)	30 (48)
Meachum Canyon	3.2 (2.0)	70 (113)
Middle Fork of the Ogden River section 02	16.1 (10.0)	27 (43)
Cottonwood Creek	4.8 (3.0)	1704 (2743)
Arbuckle Creek	1.6 (1.0)	106 (171)
Total	147.4 (91.6)	

BEAR LAKE GMU

Bonneville cutthroat trout work in the Bear Lake GMU was coordinated and completed by the Bear Lake Field Station. Results from 2003 activities can be found in the reports produced by this field station.

BEAR RIVER GMU

Uinta Mountains/Upper Bear River subunit

Mill Creek

IVAQ230

Mill Creek (Wyoming state line upstream to the headwaters) is a tributary to the Bear River. Mill Creek is in Summit County (Deadman Mountain, Elizabeth Mountain, and Red Knob USGS Quads) with the lower portion of the drainage being privately owned. Fish species present in Mill Creek are Bonneville cutthroat trout, brook trout, mountain whitefish, leatherside chub, mountain sucker, Utah sucker, speckled dace, longnose dace, sculpin, and redbreast shiner.

Two stream surveys were completed on Mill Creek. Station #1 was completed near the Wyoming/Utah state line on August 18, 2003. This 112 m station was located at UTMS 4538074N and 0513154E. Station #2 was completed directly upstream from the confluence with Deadman Creek. This 96 m station was located at UTMS 4532483N and 0517568E.

Station #1

Two-pass electrofishing resulted in the capture of eight \geq age-1 Bonneville cutthroat trout (80 ± 35 /stream km [129 ± 57 /stream mile]; 20 kg/ha [18 lb/acre]), seven \geq age-1 brook trout (75 ± 56 /stream km [120 ± 90 /stream mile]; 5 kg/ha [5 lb/acre]) (Table 2; Figure 1), five mountain whitefish (80 ± 231 /stream km [129 ± 373 /stream mile]; 0.5 kg/ha [0 lb/acre]), nine leatherside chub (81 ± 9 /stream km; 131 ± 15 /stream mile), 23 redbreast shiner (215 ± 27 /stream km; 346 ± 43 /stream mile), and 10 Utah sucker (109 ± 73 /stream km; 176 ± 117 /stream mile) (Table 2). Speckled dace, longnose dace, and sculpin were abundant. Mountain sucker were sparse (Table 2).

Station #2

Two-pass electrofishing resulted in the capture of 12 \geq age-1 Bonneville cutthroat trout (130 ± 20 /stream km [210 ± 32 /stream mile]; 10 kg/ha [9 lb/acre]), 18 \geq age-1 brook trout (250 ± 177 /stream km [402 ± 285 /stream mile]; 29 kg/ha [26 lb/acre]) (Table 2; Figure 1), two leatherside chub (21 ± 0 /stream km; 34 ± 0 /stream mile), and 8 mountain sucker (130 ± 211 /stream km; $210 \pm$

339/stream mile) (Table 2). Two mountain whitefish were captured, however, one fish was captured on each electrofishing pass and a population estimate was not available. Longnose dace and sculpin were common (Table 2).

Mill Creek had been sampled twice previously by the UDWR. Both surveys were near the North Slope Road crossing. In 1973, a one-pass electrofishing survey in a 161 m reach resulted in the capture of 38 Bonneville cutthroat trout (236/stream km; 380/stream mile) and one brook trout (6/stream km; 10/stream mile) (Table 2). Sculpin were sparse. In 1953, one-pass electrofishing in a 161 m reach resulted in the capture of four Bonneville cutthroat trout (25/stream km; 40/stream mile) and sculpin were sparse (Table 2).

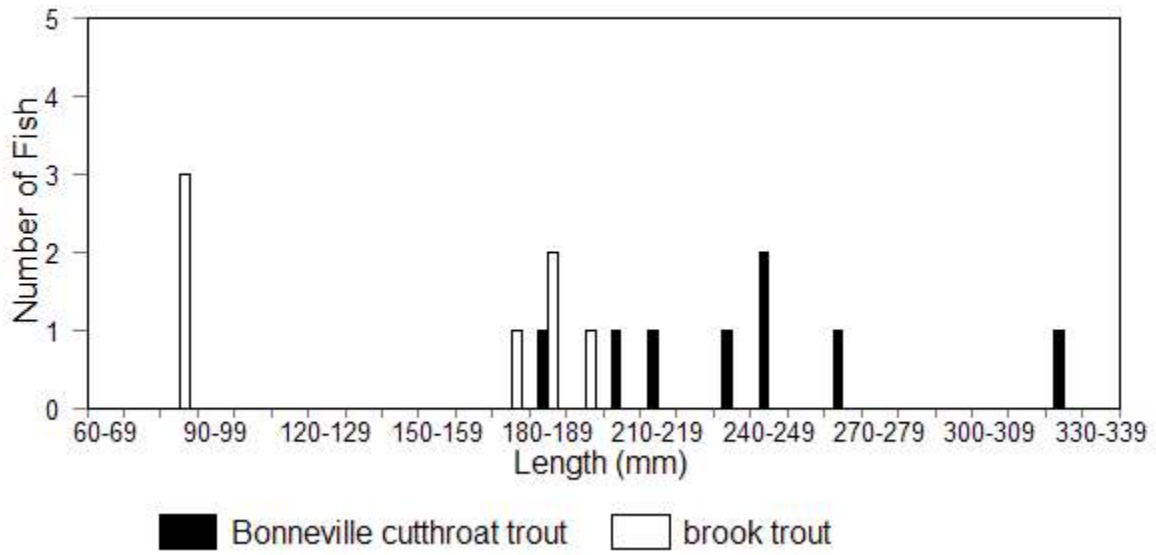
Table 2. Population statistics for species sampled in Mill Creek, 1953, 1973, and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003 Station #1	≥age-1 BCT	80 ² (129 ²)	20 (18)	241 (189-328)	143 (55-338)	0.94 1.21
	≥age-1 BKT	75 ² (120 ²)	5 (5)	141 (80-328)	40 (4-81)	
	MWF	80 ² (129 ²)	0.5 (0)	78 (71-85)	4 (2-6)	
	LSC	81 ² (131 ²)		70 (59-93)		
	RSS	215 ² (346 ²)				
	UTS	109 ² (176 ²)				
	MTS	sparse				
	sculpin	abundant				
	LND	abundant				
SPD	abundant					
2003 Station #2	≥age-1 BCT	130 ² (210 ²)	10 (9)	142 (71-282)	55 (4-231)	0.96 1.18
	≥age-1 BKT	250 ² (402 ²)	29 (26)	180 (120-270)	83 (19-223)	
	MWF	2 captured		169 (132-205)	56 (22-89)	
	LSC	21 ² (34 ²)		43 (41-45)		
	MTS	130 ² (210 ²)				
	sculpin	common				
LND	common					
1973	BCT	236 ¹ (380 ¹)				
	BKT	6 ¹ (10 ¹)				
	sculpin	sparse				
1954	BCT	25 ¹ (40 ¹)				
	sculpin	sparse				

¹ Based on one-pass electrofishing.

² Based on two-pass electrofishing.

Mill Creek, 2003 Station #1



Mill Creek, 2003 Station #2

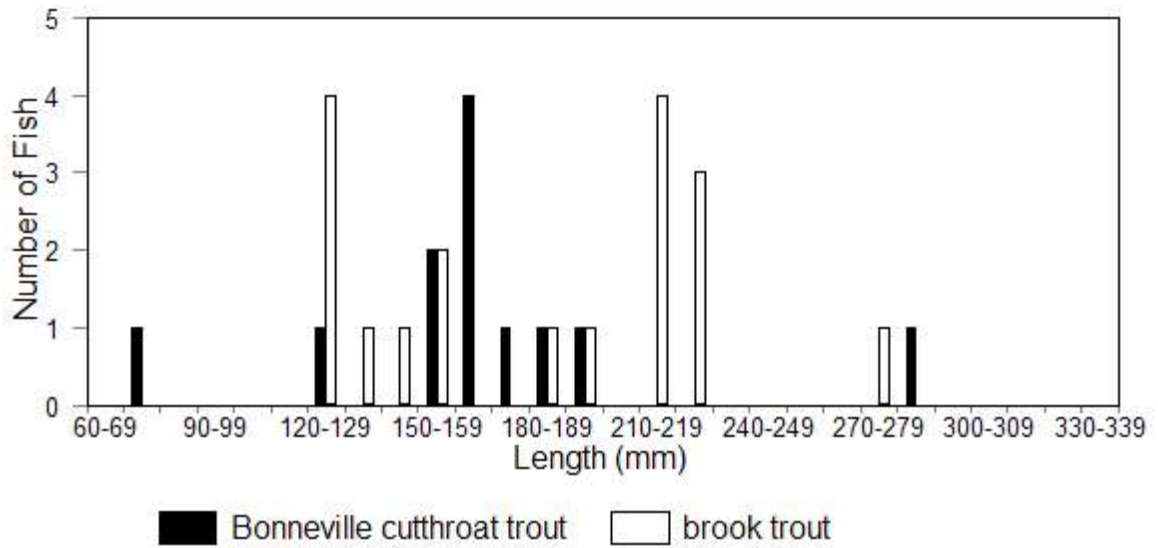


Figure 1. Size distribution of Bonneville cutthroat trout and brook trout sampled in Mill Creek, Stations #1 and #2, 2003.

Deadman Creek**IVAQ230B**

Deadman Creek (Mill Creek confluence upstream to the headwaters) is a tributary to Mill Creek. Deadman Creek is in Summit County (Deadman Mountain USGS Quad) with the lower portion of the drainage being privately owned. Fish species present in Deadman Creek are brook trout, leatherside chub, mountain sucker, and speckled dace.

The 111 m stream survey was completed on Deadman Creek on July 16, 2003 at UTMs 4531448N and 0517319E.

Two-pass electrofishing resulted in the capture of 131 leatherside chub (1,306 ± 135/stream km; 2,102 ± 217/stream mile) and 42 mountain sucker (409 ± 64/stream km; 658 ± 102/stream mile) (Table 3). Two ≥age-1 brook trout were captured, however, one fish was captured on each electrofishing pass and a population estimate was not available. Speckled dace were abundant (Table 3).

Deadman Creek had been sampled once previously by the UDWR in 1978. One-pass electrofishing in a 80 m reach resulted in the capture of four Bonneville cutthroat trout (50/stream km; 80/stream mile) and six brook trout (37/stream km; 60/stream mile) (Table 3). Non-game fish species were not recorded for this survey. The 1978 stream survey was completed at the boundary of USFS and private lands.

Table 3. Population statistics for species sampled in Deadman Creek, 1978 and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	≥age-1 BKT LSC MTS SPD	2 captured 1306 ² (2102 ²) 409 ² (658 ²) abundant		248 (245-250) 54 (27-111)	210 (196-224)	0.94
1978	BCT BKT	50 ¹ (80 ¹) 37 ¹ (60 ¹)				

¹ Based on one-pass electrofishing.

² Based on two-pass electrofishing.

Section 01

The West Fork of the Bear River section 01 (Bear River confluence upstream to Whitney Reservoir) is a tributary to the Bear River. The West Fork of the Bear River section 01 is in Summit County (Deadman Mountain, Seven Tree Flat, and Whitney Reservoir USGS Quads) with the lower portion of the drainage being privately owned. Fish species present in the West Fork of the Bear River section 01 are Bonneville cutthroat trout, brook trout, and sculpin.

The 123 m stream survey was completed on the West Fork of the Bear River section 01 on August 20, 2003 at UTMs 4532083N and 0511934E.

Two-pass electrofishing resulted in the capture of eight \geq age-1 Bonneville cutthroat trout (66 ± 8 /stream km [107 ± 13 /stream mile]; 8 kg/ha [7 lb/acre]) and one \geq age-1 brook trout (8 ± 0 /stream km [13 ± 0 /stream mile]; 0 kg/ha [0 lb/acre]) (Table 4; Figure 2). Sculpin were abundant.

The West Fork of the Bear River section 01 had been sampled five times previously by the UDWR. In 1985, the West Fork of the Bear River section 01 was sampled in two localities. The 1985 lower station was the same stream reach as the 2003 stream survey. The use of cyanide pellets in this reach resulted in the capture of 75 Bonneville cutthroat trout (820/stream km; 1320/stream mile) and two mountain whitefish (22/stream km; 35/stream mile). Mountain sucker were sparse and sculpin were common (Table 4). The use of cyanide pellets in the 1985 upper station (located downstream from the confluence with Humpy Creek) resulted in the capture of 72 Bonneville cutthroat trout (787/stream km; 1267/stream mile) and sculpin were abundant (Table 4). A 1971, one-pass electrofishing survey at the Whitney Road crossing resulted in the capture of 43 Bonneville cutthroat trout (267/stream mile; 430/stream km) and sculpin were common (Table 4). Two one-pass electrofishing surveys were completed on the West Fork of the Bear River section 01 in 1964. A station located two miles below the Whitney Guard Station resulted in the capture of 26 Bonneville cutthroat trout (161/stream km; 260/stream mile) and sculpin were abundant (Table 4). The other stream survey completed in 1964 was located directly downstream from the confluence with Humpy Creek. This survey resulted in the capture of 29 Bonneville cutthroat trout (180/stream km; 290/stream mile) and sculpin were abundant (Table 4).

Table 4. Population statistics for species sampled in the West Fork of the Bear River section 01, 1964, 1971, 1985, and 2003.

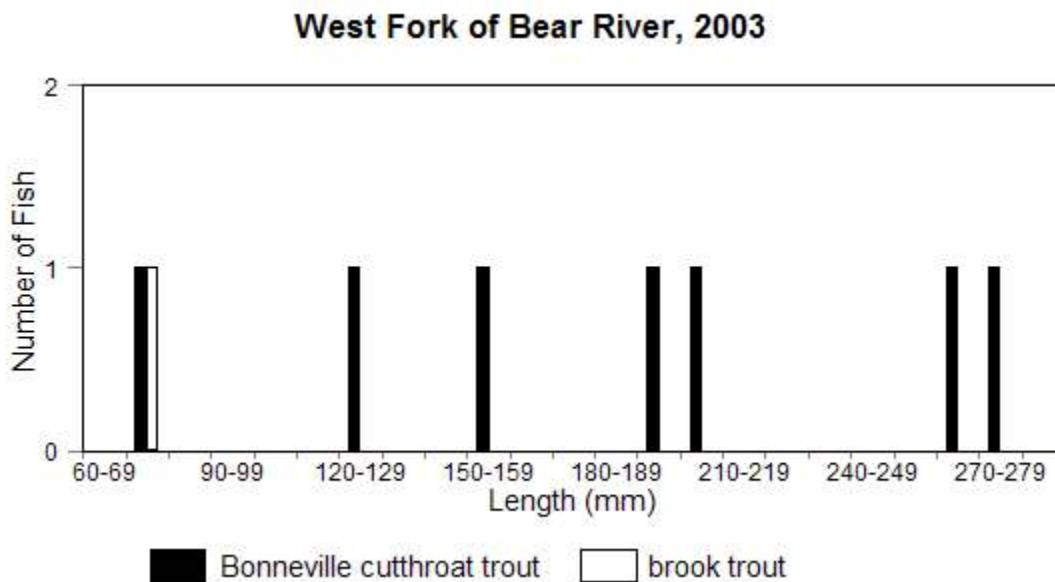
Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	≥age-1 BCT ≥age-1 BKT sculpin	66 ² (107 ²) 8 ² (13 ²) abundant	8 (7) 0 (0)	184 (76-277) 76	84 (6-210) 6	1.04 1.37
1985 low	BCT MWF MTS sculpin	820 ³ (1320 ³) 22 ³ (35 ³) sparse common	34 (31)	138 (37-383) 198 (156-239)	40 (1-525) 95 (45-145)	0.92 1.12
1985 high	BCT sculpin	787 ³ (1267 ³)	66 (59)	139 (40-373)	44 (1-475)	0.96
1971	BCT sculpin	267 ¹ (430 ¹) common		143 (80-240)	38 (5-150)	1.12
1964 high	BCT sculpin	161 ¹ (260 ¹) abundant				
1964 low	BCT sculpin	180 ¹ (290 ¹) abundant				

¹ Based on one-pass electrofishing.

² Based on two-pass electrofishing.

³ Based on the use of cyanide pellets.

Figure 2. Size distribution of Bonneville cutthroat trout and brook trout sampled in the West Fork of the Bear River section 01, 2003.



Deer Creek

IVAQ240A

Deer Creek (West Fork of the Bear River confluence upstream to the headwaters) is a tributary to the West Fork of the Bear River. Deer Creek is in Summit County (Deadman Mountain and Seven Tree Flat USGS Quads) with the entire drainage being privately owned. Fish species present in Deer Creek are Bonneville cutthroat trout and sculpin.

The 100 m stream survey was completed on Deer Creek on July 15, 2003 at UTMs 4530356N and 0510801E.

Two-pass electrofishing resulted in the capture of three >age-1 Bonneville cutthroat trout (30 ± 0 /stream km [48 ± 0 /stream mile]; 6 kg/ha [5 lb/acre]) (Table 5; Figure 3). Sculpin were abundant.

Deer Creek had been sampled three times previously by the UDWR. A 1998 two-pass electrofishing survey located directly downstream from the confluence with the two headwater forks resulted in the capture of 44 Bonneville cutthroat trout (510 ± 120 /stream km; 824 ± 194 /stream mile) and sculpin were common (Table 5). Cyanide was used in a 1986 survey, which was located near the confluence with the West Fork of the Bear River. Forty Bonneville cutthroat trout (656 /stream km; 1056 /stream mile) were captured during this survey. Mottled sculpin were abundant and mountain sucker and redbside shiner were sparse (Table 5). In 1977, 35 Bonneville cutthroat trout (217 /stream km; 350 /stream mile) and two brook trout (12 /stream km; 20 /stream mile) were captured in a one-pass electrofishing survey located near the headwaters. Mottled sculpin were common (Table 5).

Table 5. Population statistics for species sampled in Deer Creek, 1977, 1986, 1998, and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	≥age-1 BCT sculpin	30 ² (48 ²) abundant	6 (5)	178 (122-222)	68 (19-113)	1.04
1998	≥age-1 BCT sculpin	510 ² (824 ²) common	98 (87)	158 (70-280)	62 (2-190)	1.04
1986	BCT sculpin RSS MTS	656 ³ (1056 ³) abundant sparse sparse				
1977	BCT BKT sculpin	217 ¹ (350 ¹) 12 ¹ (20 ¹) common		140 (90-252)	32 (6-150)	1.01

¹ Based on one-pass electrofishing.

² Based on two-pass electrofishing.

³ Based on the use of cyanide pellets.

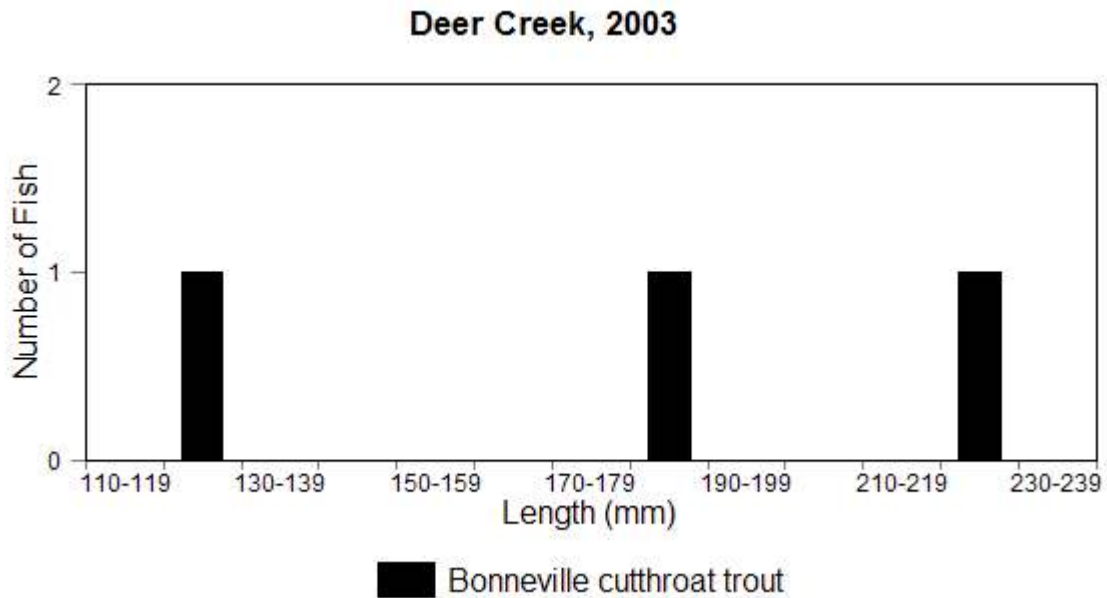


Figure 3. Size distribution of Bonneville cutthroat trout sampled in Deer Creek, 2003.

East Fork of the Bear River

IVAQ250

Section 01

The East Fork of the Bear River section 01 (Bear River confluence upstream to the headwater forks) is a tributary to the Bear River. The East Fork of the Bear River section 01 is in Summit County (Christmas Meadows, Deadman Mountain and Red Knob USGS Quads) with the majority of the drainage being USFS land. Fish species present in the East Fork of the Bear River section 01 are Bonneville cutthroat trout, brook trout, mountain whitefish, and sculpin.

The 122 m stream survey was completed on the East Fork of the Bear River section 01 on August 25, 2003 at UTMs 4524281N and 0518563E.

Two-pass electrofishing resulted in the capture of 20 \geq age-1 Bonneville cutthroat trout (169 ± 16 /stream km [272 ± 26 /stream mile]; 9 kg/ha [8 lb/acre]), 16 \geq age-1 brook trout (134 ± 17 /stream km [216 ± 27 /stream mile]; 8 kg/ha [7 lb/acre]), and 8 mountain whitefish (66 ± 0 /stream km [106 ± 0 /stream mile]; 17 kg/ha [15 lb/acre]) (Table 6; Figure 4). Sculpin were abundant.

The East Fork of the Bear River had been sampled once previously by the UDWR. A 1965 one-pass electrofishing survey upstream from the road access resulted in the capture of 29 Bonneville cutthroat trout (180/stream km; 290/stream mile). No other fish were recorded in this survey (Table 6).

Table 6. Population statistics for species sampled in the East Fork of the Bear River section 01, 1965 and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	\geq age-1 BCT	169 ² (272 ²)	9 (8)	160 (34-270)	51 (1-197)	0.96
	\geq age-1 BKT	134 ² (216 ²)	8 (7)	163 (67-250)	62 (2-204)	1.04
	MWF	66 ² (106 ²)	17 (15)	274 (231-325)	263 (138-552)	1.19
	sculpin	abundant				
1965	BCT	180 ¹ (290 ¹)				

¹ Based on one-pass electrofishing.

² Based on two-pass electrofishing.

East Fork of the Bear River, 2003

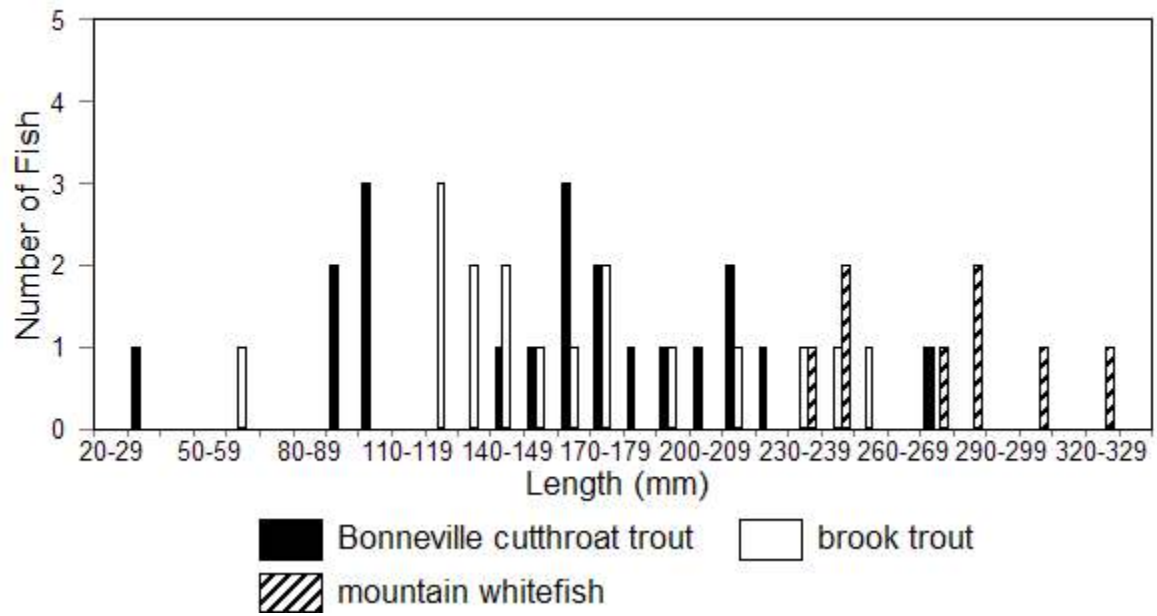


Figure 4. Size distribution of Bonneville cutthroat trout, brook trout, and mountain whitefish sampled in the East Fork of the Bear River section 01, 2003.

Stillwater Fork

IVAQ260

Section 01

Stillwater Fork section 01 (Bear River confluence upstream to the trailhead) is a tributary to the Bear River. Stillwater Fork section 01 is in Summit County (Christmas Meadows USGS Quad) with the entire drainage being USFS land. Fish species present in Stillwater Fork section 01 are Bonneville cutthroat trout, brook trout, mountain whitefish, and sculpin.

The 115 m stream survey was completed on Stillwater Fork section 01 on August 18, 2003 at UTMs 4519017N and 0516615E.

Two-pass electrofishing resulted in the capture of six \geq age-1 Bonneville cutthroat trout (63 ± 9 /stream km [101 ± 14 /stream mile]; 7 kg/ha [6 lb/acre]) and 28 \geq age-1 brook trout (255 ± 35 /stream km [411 ± 57 /stream mile]; 23 kg/ha [21 lb/acre]) (Table 7; Figure 5). Two mountain whitefish were captured on both electrofishing passes, consequently, a population estimate was not available. Sculpin were abundant (Table 7).

Stillwater Fork section 01 had been sampled twice previously by the UDWR in 1953. Only sculpin were observed while electrofishing 4.8 km upstream from the confluence with the Bear River and near the Stillwater Campground.

Table 7. Population statistics for species sampled in Stillwater Fork section 01, 1953 and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	\geq age-1 BCT	63 ² (101 ²)	7 (6)	185 (114-292)	75 (11-220)	0.93
	\geq age-1 BKT	255 ² (411 ²)	23 (21)	167 (61-255)	66 (2-209)	1.11
	MWF	4 captured		188 (126-255)	100 (46-165)	2.06
	sculpin	abundant				
1953	sculpin	common				

² Based on two-pass electrofishing.

Stillwater Fork, 2003

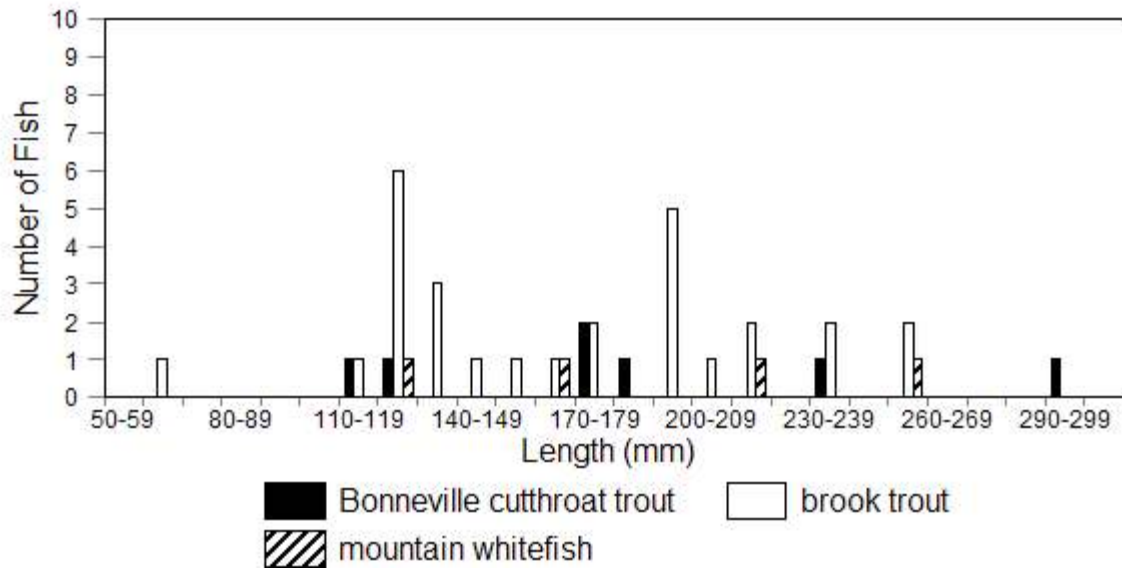


Figure 5. Size distribution of Bonneville cutthroat trout, brook trout, and mountain whitefish sampled in Stillwater Fork section 01, 2003.

Hayden Fork**IVAQ270**

Hayden Fork (Bear River confluence upstream to the headwaters) is a tributary to the Bear River. Hayden Fork is in Summit County (Christmas Meadows, Hayden Peak, and Whitney Reservoir USGS Quads) with the entire drainage being USFS land. Fish species present in Hayden Fork are Bonneville cutthroat trout, rainbow trout, Bonneville cutthroat trout x rainbow trout hybrids, brook trout, mountain sucker, and sculpin.

The 113 m stream survey was completed on Hayden Fork on September 16, 2003 at UTMS 4520842N and 0513112E.

Two-pass electrofishing resulted in the capture of four \geq age-1 Bonneville cutthroat trout (35 ± 0 /stream km [57 ± 0 /stream mile]; 2 kg/ha [2 lb/acre]), eight \geq age-1 rainbow trout (71 ± 0 /stream km [114 ± 0 /stream mile]; 13 kg/ha [11 lb/acre]), and 24 \geq age-1 brook trout (221 ± 27 /stream km [356 ± 43 /stream mile]; 9 kg/ha [8 lb/acre]) (Table 8; Figure 6). One \geq age-1 Bonneville cutthroat trout x rainbow trout was captured on both electrofishing passes, consequently, a population estimate was not available. Sculpin were abundant and mountain sucker were sparse (Table 8).

Hayden Fork had been sampled three times previously by the UDWR. In 1970, only catchable rainbow trout were observed. Two one-pass electrofishing stations in 1953 resulted in the capture of sculpin, mountain sucker, and leatherside chub (Table 8).

Table 8. Population statistics for species sampled in Hayden Fork, 1953, 1970, and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	\geq age-1 BCT	35 ² (57 ²)	2 (2)	162 (105-241)	52 (14-130)	0.92
	\geq age-1 RBT	71 ² (114 ²)	13 (11)	266 (207-300)	192 (98-230)	0.99
	\geq age-1 BKT	221 ² (356 ²)	9 (8)	146 (65-240)	46 (2-152)	0.99
	\geq age-1 BCTxRBT	2 captured		252 (243-261)	136 (102-170)	0.83
	sculpin	abundant				
	MTS	sparse				
1970	RBT	present				
1953	sculpin	common				
	MTS	sparse				
	LSC	sparse				

² Based on two-pass electrofishing.

Hayden Fork, 2003

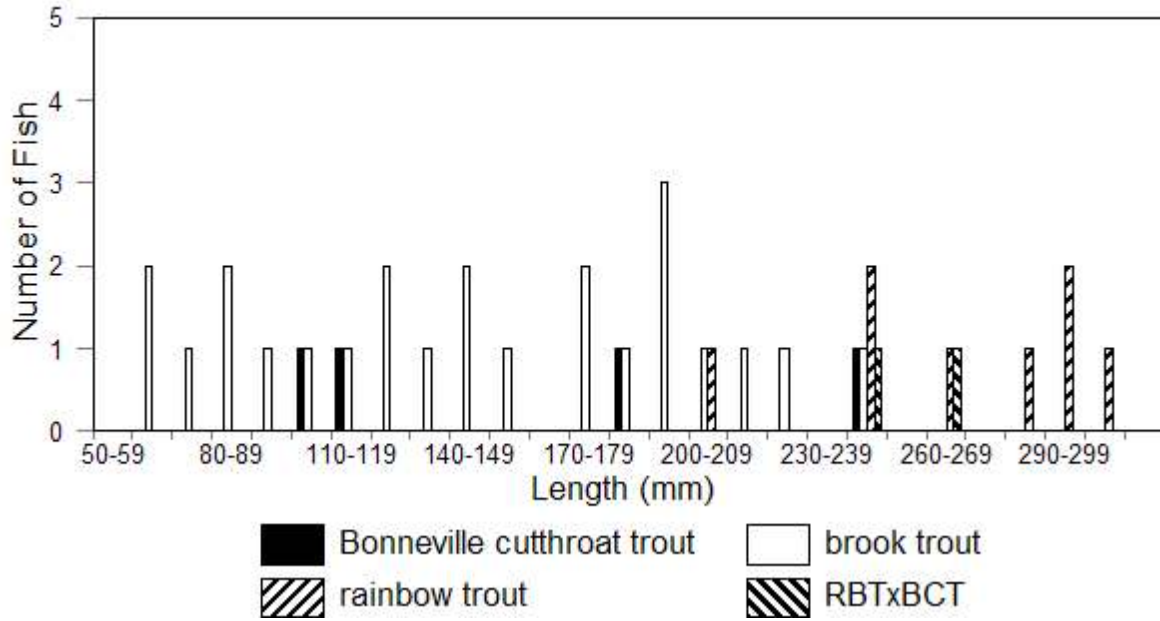


Figure 6. Size distribution of Bonneville cutthroat trout, brook trout, rainbow trout, and rainbow trout x Bonneville cutthroat trout sampled in Hayden Fork, 2003.

Cache Valley subunit

Beaver Creek

IVAQ040A16

Beaver Creek (confluence with the Logan River upstream to the Idaho stateline) is a tributary of the Logan River. Beaver Creek is in Cache County (Tony Grove Creek USGS Quad) with the majority of the drainage being USFS land. Fish species present in Beaver Creek are Bonneville cutthroat trout, brook trout, and sculpin.

The 100 m stream survey was completed on Beaver Creek on August 21, 2003 at UTM's 4648117N and 0456612E.

Two-pass electrofishing resulted in the capture of 37 age-1 and older Bonneville cutthroat trout (412 ± 81 /stream km; 664 ± 130 /stream mile) and three Bonneville cutthroat trout <50 mm TL (Table 9; Figure 7).

Beaver Creek had been surveyed four times previously by the UDWR. Two electrofishing stations were completed in 1999. Station #1 was located at UTM's 0453899E and 4642869N. Two-pass electrofishing in this station resulted in the capture of 76 age-1 and older Bonneville cutthroat trout (909 ± 137 /stream km [1464 ± 221 /stream mile]; 216 kg/ha [192 lb/acre]) and four age-1 and older brook trout (Table 9). Station #2 was located at UTM's 0456586E and 4648520N. Two-pass electrofishing in this station resulted in the capture of 23 age-1 and older Bonneville cutthroat trout (236 ± 30 /stream km [380 ± 48 /stream mile]; 76 kg/ha [67 lb/acre]) (Table 9). One-pass electrofishing surveys were also completed in 1967 and 1968. Bonneville cutthroat trout were the predominant salmonid in these surveys and low densities of rainbow trout and brown trout were present in 1967 (Table 9).

Table 9. Population statistics for species sampled in Beaver Creek, 1967, 1968, 1999, and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	≥age-1 BCT age-0 BCT	412 ² (664 ²) 3 captured		104 (50-300) 48 (47-49)		
1999 st. #1	≥age-1 BCT ≥age-1 BKT MSC	909 ² (1464 ²) 4 captured abundant	216(192)	187 (80-275) 129 (123-134) 90 (51-124)	83 (4-208) 23 (18-29) 12 (4-29)	1.07 1.08
1999 st. #2	≥age-1 BCT	236 ² (380 ²)	76(67)	190 (59-309)	100 (2-318)	1.18
1968	≥age-1 BCT MSC	56 ¹ (90 ¹) sparse	8(7)	151 (103-240)	45 (12-129)	1.12
1967	BCT BNT RBT MSC	155 ¹ (250 ¹) 12 ¹ (20 ¹) 6 ¹ (10 ¹) sparse				

¹ Based on one-pass electrofishing.
² Based on two-pass electrofishing.

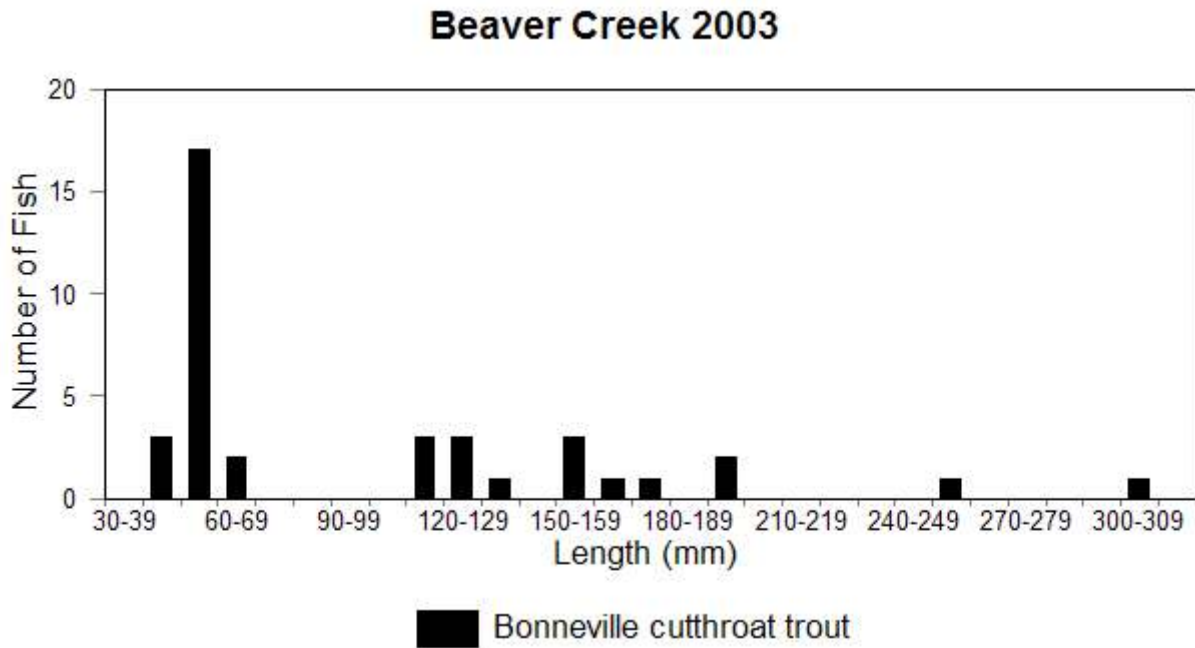


Figure 7. Size distribution of Bonneville cutthroat trout sampled in Beaver Creek, 2003.

Davenport Creek

IVAQ040E01

Davenport Creek (confluence with the South Fork of the Little Bear River upstream to the headwaters) is a tributary of the South Fork of the Little Bear River. Davenport Creek is in Cache County (James Peak, Paradise, and Sharp Mountain USGS Quads) with the entire drainage being privately owned. Fish species present in Davenport Creek are Bonneville cutthroat trout, brown trout, and sculpin are likely present in the lower reaches of the stream.

The 100 m stream survey was completed on Davenport Creek on August 21, 2003 at UTMS 4587146N and 0436207E.

Two-pass electrofishing resulted in the capture of 29 age-1 and older Bonneville cutthroat trout ($303 \pm 40/\text{stream km}$ [$488 \pm 65/\text{stream mile}$]; 50 kg/ha [45 lb/acre]), five age-0 Bonneville cutthroat trout, and 40 age-1 and older brown trout ($437 \pm 70/\text{stream km}$ [$703 \pm 112/\text{stream mile}$]; 83 kg/ha [74 lb/acre]) (Table 10; Figure 8). Thirty Bonneville cutthroat trout (13 whole; 17 fin clips) were collected for genetic analyses and frozen according to the cutthroat trout collection procedural manual (Toline and Lentsch 1999).

Davenport Creek had been sampled twice previously by the UDWR. A one-pass electrofishing survey on Davenport Creek in 1976 near the confluence with the South Fork of the Little Bear River resulted in the capture of nine Bonneville cutthroat trout ($112/\text{stream km}$; $180/\text{stream mile}$) and two brown trout ($25/\text{stream mile}$; $40/\text{stream mile}$) (Table 10). In 1978, a one-pass electrofishing survey was completed at the 2003 station. This survey resulted in the capture of eight Bonneville cutthroat trout ($99/\text{stream km}$; $160/\text{stream mile}$), 14 brown trout ($174/\text{stream km}$; $280/\text{stream mile}$), and one sculpin (Table 10).

Table 10. Population statistics for species sampled in Davenport Creek, 1976, 1978, and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	≥age-1 BCT	303 ² (488 ²)	50 (45)	156 (71-275)	55 (4-189)	0.94
	age-0 BCT	5 captured		39 (35-42)		
	≥age-1 BNT	437 ² (703 ²)	83 (74)	145 (59-264)	63 (2-187)	1.19
1978	BCT	99 ¹ (160 ¹)		194 (90-270)	104 (10-250)	1.83
	BNT	174 ¹ (280 ¹)		134 (98-220)	37 (10-120)	1.31
	sculpin	sparse				
1976	BCT	112 ¹ (180 ¹)		165 (115-260)	61 (14-185)	1.05
	BNT	25 ¹ (40 ¹)		220 (100-340)	220 (14-425)	1.24

¹ Based on one-pass electrofishing.
² Based on two-pass electrofishing.

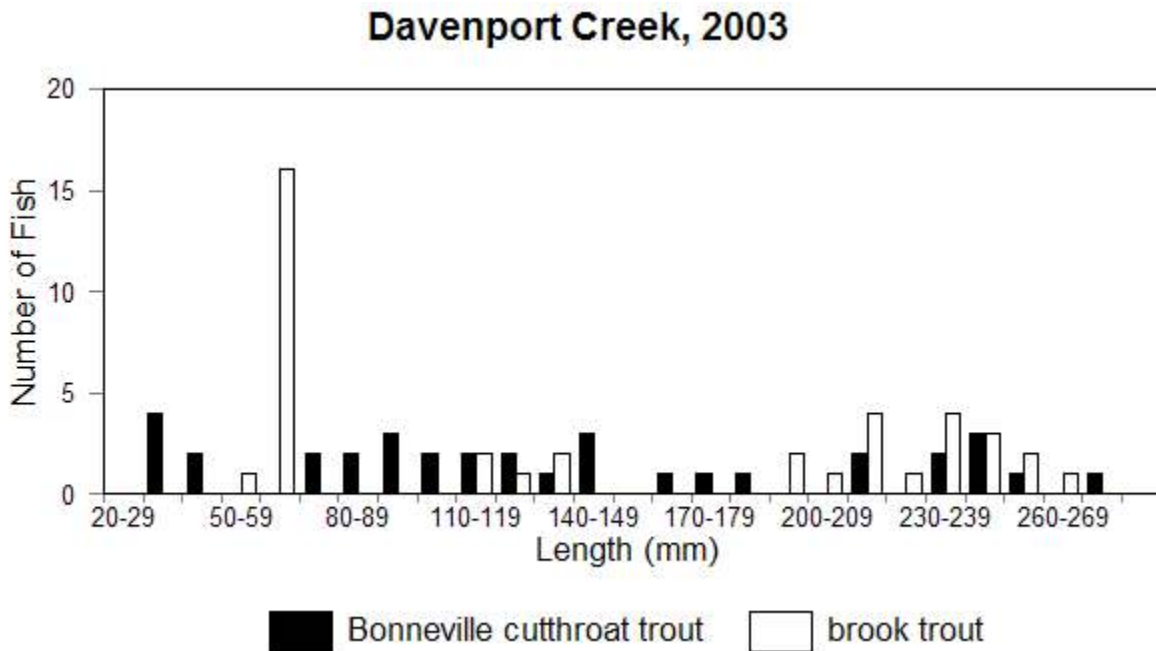


Figure 8. Size distribution of Bonneville cutthroat trout and brown trout sampled in Davenport Creek, 2003.

Wellsville Creek**IVAQ040E01E**

Wellsville Creek (confluence with Davenport Creek upstream to the headwaters) is a tributary to Davenport Creek. Wellsville Creek is in Cache County (James Peak USGS Quad) with the entire drainage being privately owned. Fish species present in Wellsville Creek are Bonneville cutthroat trout and sculpin. Brown trout likely are present in portions of the stream.

Wellsville Creek was spot electrofished on August 21, 2003 at UTM's 4586812N and 0435911E. The landowner reported that he has angled Bonneville cutthroat trout in the stream for the entire 5 km. Approximately 30 m of stream was electrofished, which resulted in the capture of 15 Bonneville cutthroat trout ranging from 30-220 mm TL.

Wellsville Creek had been sampled once previously by the UDWR. In 1978, one-pass electrofishing in a 80 m station located directly upstream from the confluence with Davenport Creek resulted in the capture of 15 Bonneville cutthroat trout (186/stream km; 300/stream mile) and eight brown trout (99/stream km; 160/stream mile). Sculpin were common (Table 11).

Table 11. Population statistics for species sampled in Wellsville Creek, 1978 and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	≥age-1 BCT age-0 BCT	present present				
1978	BCT BNT sculpin	186 ¹ (300 ¹) 99 ¹ (160 ¹) common		141 (82-253) 161 (109-265)	45 (5-148) 67 (16-230)	

¹

Based on one-pass electrofishing.

Rich County subunit

Otter Creek

IQAQ170

Otter Creek (Sage Creek canal section 33 upstream to the headwater spring) is a tributary to the Bear River. Otter Creek is in Rich County (Old Canyon and Randolph USGS Quads) with approximately 50% of the drainage being BLM land and the remainder privately owned. Fish species present in Otter Creek are brook trout, brown trout, and sculpin.

Otter Creek was spot electrofished on September 30, 2003 at UTM's 46194948N and 0478398E. Spot electrofishing resulted in the capture of brook trout and sculpin.

Otter Creek had been sampled once previously by the UDWR. In 1954, one-pass electrofishing at a 161 m station located 6 ½ miles upstream from Highway 16 resulted in the capture of nine Bonneville cutthroat trout (56/stream km; 90/stream mile), four brook trout (25/stream km; 40/stream mile), and sculpin were abundant (Table 12).

Table 12. Population statistics for species sampled in Otter Creek, 1954 and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	BKT sculpin	present present				
1954	BCT BKT sculpin	56 ¹ (90 ¹) 25 ¹ (40 ¹) abundant				

¹

Based on one-pass electrofishing.

South Branch of Otter Creek**IVAQ170A**

The South Branch of Otter Creek (Otter Creek confluence upstream to the headwater spring) is a tributary to Otter Creek. The South Branch of Otter Creek is in Rich County (Old Canyon and Randolph USGS Quads) with approximately 25% of the drainage being BLM land and the remainder privately owned. Fish species present in the South Branch of Otter Creek are brook trout, brown trout, and sculpin.

The South Branch of Otter Creek was spot electrofished on September 30, 2003 at UTM's 4616548N and 0478670E. Spot electrofishing resulted in the capture of brown trout, brook trout and sculpin. Sculpin were the most abundant fish species with brown trout being the second most abundant.

The South Branch of Otter Creek had been sampled twice previously by the UDWR. In 1968, one-pass electrofishing at a 161 m station located near the confluence with the Middle Branch and South Branch resulted in the capture of six brown trout (37/stream km; 60/stream mile) and sculpin were abundant (Table 13). One-pass electrofishing in 1954 resulted in the capture of sculpin (Table 13). This station was located approximately two miles upstream from the confluence with the Middle Fork.

Table 13. Population statistics for species sampled in the South Branch of Otter Creek, 1954, 1968, and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	BNT BKT sculpin	present present present				
1968	BNT sculpin	37 ¹ (60 ¹) abundant				
1954	sculpin	abundant				

¹ Based on one-pass electrofishing.

Middle Branch of Otter Creek**IVAQ170A01**

The Middle Branch of Otter Creek (South Branch of Otter Creek confluence upstream to the headwater spring) is a tributary to the South Branch of Otter Creek. The Middle Branch of Otter Creek is in Rich County (Old Canyon and Randolph USGS Quads) with the majority of the drainage being BLM land. Fish species present in the Middle Branch of Otter Creek are brook trout and sculpin.

The 100 m stream survey was completed on the Middle Branch of Otter Creek on September 30, 2003 at UTMs 4617940N and 0478156E.

Two-pass electrofishing resulted in the capture of 40 age-1 and older brook trout (408 ± 20/stream km [657 ± 32/stream mile]; 178 kg/ha [159 lb/acre]). Sculpin were abundant (Table 14; Figure 9).

The Middle Branch of Otter Creek had been sampled once previously by the UDWR. In 1954, one-pass electrofishing in a 161 m station located approximately 2 miles upstream from the confluence with the South Branch resulted in the capture of 11 brook trout (69/stream km; 110/stream mile) and one Bonneville cutthroat trout (6/stream km; 10/stream mile) (Table 14). Sculpin were abundant.

Table 14. Population statistics for species sampled in the Middle Branch of Otter Creek, 1954 and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	≥age-1 BKT sculpin	408 ² (657 ²) abundant	178 (159)	172 (61-372)	111 (3-512)	1.07
1954	BKT BNT sculpin	69 ¹ (110 ¹) 6 ¹ (10 ¹) abundant				

¹ Based on one-pass electrofishing.

² Based on two-pass electrofishing.

Middle Branch of Otter Creek, 2003

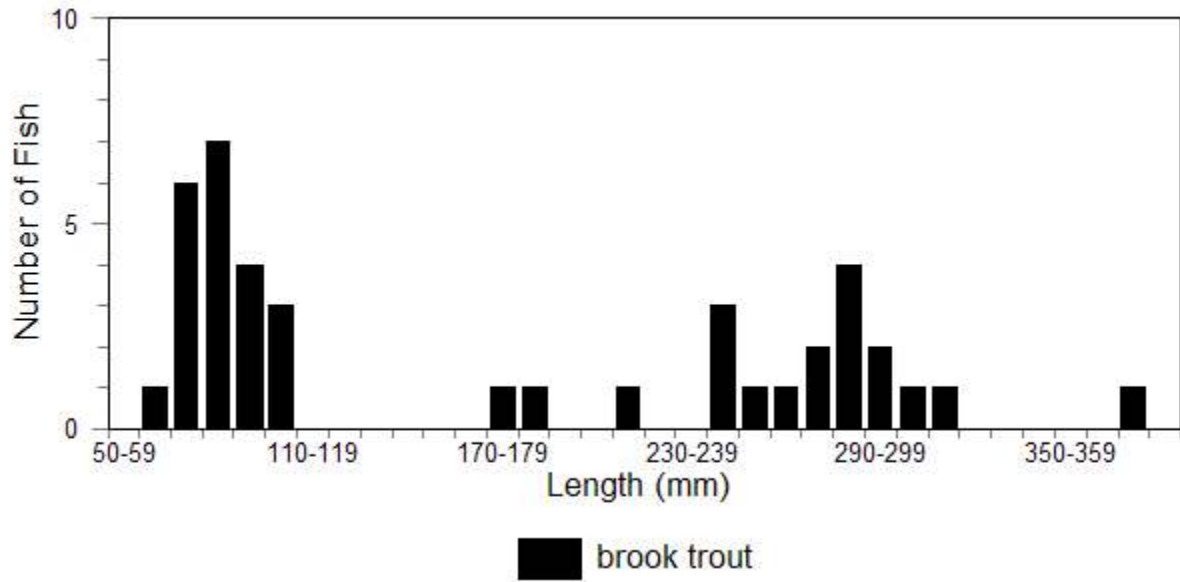


Figure 9. Size distribution of brook trout sampled in the Middle Branch of Otter Creek, 2003.

New Canyon**IVAQ180A**

New Canyon (Little Creek Reservoir confluence upstream to Clawson Spring) is a tributary to Little Creek. New Canyon is in Rich County (Old Canyon and Randolph USGS Quads) with the entire drainage upstream to Clawson Spring being privately owned.

New Canyon was spot electrofished on September 30, 2003 at UTM's 4614331N and 0477736E. Spot electrofishing resulted in the capture of no fish. New Canyon had been sampled once previously by the UDWR. In 1981 no fish were observed.

Big Creek**IVAQ190**Section 02

Big Creek section 02 (Big Ditch Diversion upstream to the headwaters) is a tributary to the Bear River. Big Creek section 02 is in Rich County (Birch Creek Reservoirs, Randolph, and Woodruff USGS Quads) with the majority of the drainage being privately owned and the remainder being BLM land. Fish species present in Big Creek section 02 are Bonneville cutthroat trout, brook trout, brown trout, mountain sucker, and sculpin.

The 100 m stream survey was completed on Big Creek section 02 on September 30, 2003 at UTM's 4602201N and 0470774E.

Two-pass electrofishing resulted in the capture of three age-1 and older Bonneville cutthroat trout (30 ± 0 /stream km [48 ± 0 /stream mile]; 5 kg/ha [4 lb/acre]), 13 age-1 and older brook trout (131 ± 10 /stream km [211 ± 16 /stream mile]; 26 kg/ha [23 lb/acre]), and two age-1 and older brown trout (20 ± 0 /stream km [32 ± 0 /stream mile]; 16 kg/ha [14 lb/acre]). Mountain sucker were common and sculpin were abundant (Table 15; Figure 10).

Big Creek had been sampled six times previously by the UDWR between 1977 and 1980. Three two-pass electrofishing stations were surveyed in 1977. Station #1 was located at the BLM/private fence line. Electrofishing in this 161 m station resulted in the capture of five age-1 and older Bonneville cutthroat trout (33 ± 13 /stream km [53 ± 21 /stream mile]; 3 kg/ha [3 lb/acre]) and three catchable rainbow trout (19 ± 0 /stream km [30 ± 0 /stream mile]; 13 kg/ha [11 lb/acre]) (Table 15). Sculpin were abundant. Station #2 was located in the BLM enclosure fence. Electrofishing in this 161 m station resulted in the capture of 27 age-1 and older Bonneville cutthroat trout (173 ± 19 /stream km [278 ± 30 /stream mile]; 28 kg/ha [25 lb/acre]) and 17 catchable rainbow trout (106 ± 6 /stream km; 171 ± 10 /stream mile) (Table 15). Sculpin were common and mountain sucker were sparse. Station #3 was located near the old air force cabin. Electrofishing in this 161 m station resulted in the capture of

49 age-1 and older Bonneville cutthroat trout (307 ± 6 /stream km [494 ± 10 /stream mile]; 29 kg/ha [26 lb/acre]) and two age-1 and older brook trout (12 ± 0 /stream km [20 ± 0 /stream mile]; 3 kg/ha [3 lb/acre]) (Table 15).

The same three electrofishing stations were sampled in 1980. Two-pass electrofishing in the 161 m station #1 resulted in the capture of nine catchable rainbow trout (75 ± 75 /stream km [120 ± 120 /stream mile]; 49 kg/ha [43 lb/acre]) (Table 15). Sculpin were abundant and mountain sucker were sparse. Two-pass electrofishing in the 161 m station #2 resulted in the capture of two age-1 and older Bonneville cutthroat trout and two catchable rainbow trout. Equal numbers or more fish were captured on the second electrofishing pass, consequently, a population estimate was not available for these two species. Sculpin were common and mountain sucker were sparse (Table 15). Two-pass electrofishing in the 161 m station #3 resulted in the capture of 22 age-1 and older Bonneville cutthroat trout and two catchable rainbow trout (12 ± 0 /stream km [20 ± 0 /stream mile]; 7 kg/ha [6 lb/acre]) (Table 15). Equal numbers of Bonneville cutthroat trout were captured on each electrofishing pass, consequently, a population estimate was not available. Sculpin were abundant and mountain sucker were common.

Table 15. Population statistics for species sampled in Big Creek section 02, 1977, 1980, and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	≥age-1 BCT	30 ² (48 ²)	5 (4)	156 (126-200)	42 (21-79)	0.99
	≥age-1 BKT	131 ² (211 ²)	26 (23)	149 (112-216)	53 (12-131)	1.44
	≥age-1 BNT	20 ² (32 ²)	16 (14)	255 (214-295)	209 (119-299)	1.19
	MTS sculpin	common abundant				
1980 St.#1	≥age-1 RBT sculpin MTS	75 ² (120 ²) abundant sparse	49 (43)	257 (213-287)	172 (100-226)	1.00
1980 St.#2	≥age-1 BCT	2 captured		185 (176-194)	70 (64-76)	1.14
	≥age-1 RBT sculpin MTS	2 captured common sparse		239 (230-247)	125 (102-148)	0.91
1980 St.#3	≥age-1 BCT	22 captured		164 (95-288)	50 (10-244)	0.99
	≥age-1 RBT sculpin MTS	12 ² (20 ²) abundant common	7 (6)	243 (225-262)	146 (115-176)	0.99
1977 St.#1	≥age-1 BCT	33 ² (53 ²)	3 (3)	137 (107-190)	25 (10-61)	0.84
	≥age-1 RBT sculpin	19 ² (30 ²) abundant	13 (11)	257 (255-258)	181 (180-184)	1.07
1977 St.#2	≥age-1 BCT ≥age-1 RBT sculpin MTS	173 ² (278 ²) 106 ² (171 ²) common sparse	28 (25)	133 (105-221)	133 (105-221)	1.86
1977 St.#3	≥age-1 BCT	307 ² (494 ²)	29 (26)	132 (91-231)	132 (91-231)	0.87
	≥age-1 BKT	12 ² (20 ²)	3 (3)	184 (183-184)	70 (64-75)	1.13

²

Based on two-pass electrofishing.

Big Creek, 2003

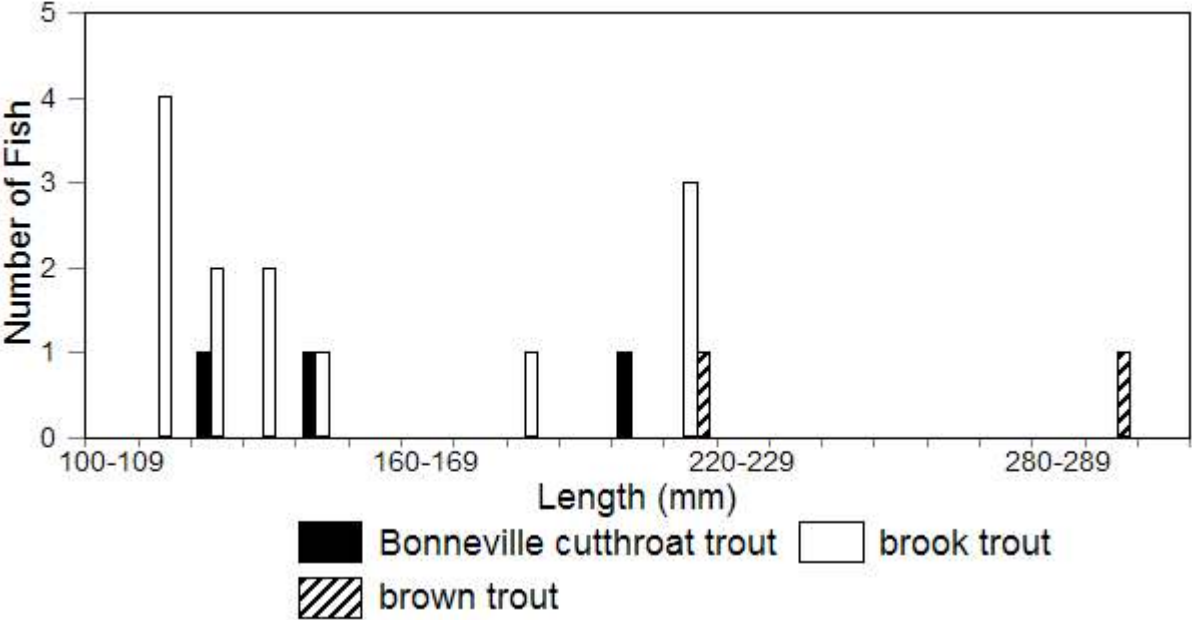


Figure 10. Size distribution of Bonneville cutthroat trout, brook trout, and brown trout sampled in Big Creek section 02, 2003.

Meachum Canyon

IVAQ210A01

Meachum Canyon (Saleratus Creek confluence upstream to the headwaters) is a tributary to Saleratus Creek. Meachum Canyon is in Rich County (Meachum Ridge and Peck Canyon USGS Quads) with the entire drainage being owned by Deseret Land and Livestock. Bonneville cutthroat trout were introduced into Meachum Canyon on July 23, 1996. Approximately 100 fish were transplanted from Sugar Pine Creek. Meachum Canyon was spot electrofished in 1998 and reproduction from the transplant was verified.

The 100 m stream survey was completed on Meachum Canyon on October 22, 2003 at UTMs 4580650N and 0473667E.

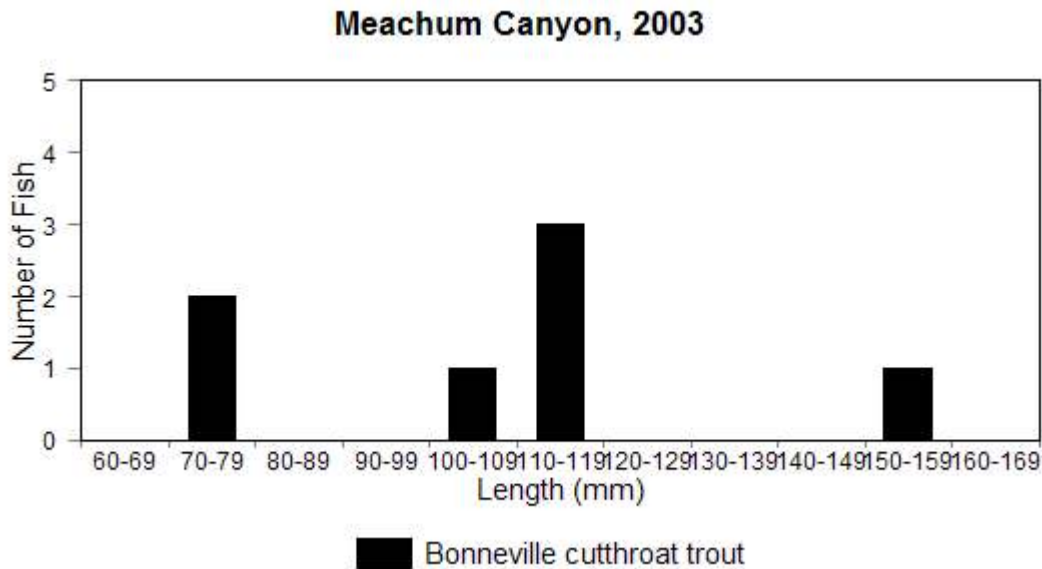
Two-pass electrofishing resulted in the capture of seven age-1 and older Bonneville cutthroat trout (70 ± 0/stream km [113 ± 0/stream mile]; 8 kg/ha [7 lb/acre]) (Table 16; Figure 11).

Table 16. Population statistics for species sampled in Meachum Canyon, 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	BCT	70 ² (113 ²)	8 (7)	106 (70-154)	11 (2-23)	0.78

² Based on two-pass electrofishing.

Figure 11. Size distribution of Bonneville cutthroat trout



sampld in Meachum Canyon, 2003.

**Northern Bonneville GMU
Ogden River subunit**

Middle Fork of the Ogden River

IVAP030C

Section 02

The Middle Fork of the Ogden River section 02 (diversion to the headwaters) is a tributary to the Ogden River. The Middle Fork of the Ogden River section 02 is in Weber County (Browns Hole and Huntsville USGS Quads) with the majority of the drainage being state land. Fish species present in the Middle Fork of the Ogden River are rainbow trout, rainbow trout x Bonneville cutthroat trout hybrids, and Bonneville cutthroat trout.

The 150 m stream survey was completed on the Middle Fork of the Ogden River section 02 on September 22, 2003 at UTM's 4574400N and 0440525E.

Two-pass electrofishing resulted in the capture of 78 age-1 and older rainbow trout (580 ± 80 /stream km [934 ± 129 /stream mile]; 63 kg/ha [56 lb/acre]), six age-1 and older rainbow trout x Bonneville cutthroat trout hybrids (42 ± 14 /stream km [67 ± 22 /stream mile]; 3 kg/ha [3 lb/acre]), and four age-1 and older Bonneville cutthroat trout (27 ± 0 /stream km [43 ± 0 /stream mile]; 9 kg/ha [8 lb/acre]) (Table 17; Figure 12).

The Middle Fork of the Ogden River had been sampled three times previously by the UDWR. Two of the surveys were in 1987. Station #1 was located in the lower reaches of section 02. Two-pass electrofishing in a 161 m reach resulted in the capture of nine age-1 and older Bonneville cutthroat trout (56 ± 0 /stream km [90 ± 0 /stream mile]; 5 kg/ha [4 lb/acre]), 12 age-1 and older rainbow trout (78 ± 12 /stream km [125 ± 19 /stream mile]; 18 kg/ha [16 lb/acre]), 14 age-1 and older rainbow trout x Bonneville cutthroat trout (88 ± 6 /stream km [141 ± 10 /stream mile]; 11 kg/ha [10 lb/acre]), and one age-1 and older brown trout (Table 17). The brown trout was captured on the second electrofishing pass, consequently a population estimate was not available. Sculpin were common. Station #2 was located at the road crossing directly downstream from Elk Creek. Two-pass electrofishing in a 161 m station resulted in the capture of 14 age-1 and older Bonneville cutthroat trout (89 ± 13 /stream km [144 ± 21 /stream mile]; 11 kg/ha [10 lb/acre]), 21 age-1 and older rainbow trout (132 ± 6 /stream km [212 ± 10 /stream mile]; 32 kg/ha [29 lb/acre]), and 29 age-1 and older rainbow trout x Bonneville cutthroat trout (193 ± 31 /stream km [311 ± 50 /stream mile]; 24 kg/ha [22 lb/acre]) (Table 17). In 1975, one-pass electrofishing in a 161 m station resulted in the capture of 25 Bonneville cutthroat trout (155/stream km; 250/stream mile) and four rainbow

trout (25/stream km; 40/stream mile (Table 17)).

Table 17. Population statistics for species sampled in the Middle Fork of the Ogden River section 02, 1975, 1987, and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	≥age-1 RBT	580 ² (934 ²)	63 (56)	147 (59-277)	55 (1-218)	1.26
	≥age-1 RBTxBCT	42 ² (67 ²)	3 (3)	157 (139-205)	38 (14-84)	0.90
	≥age-1 BCT	27 ² (43 ²)	9 (8)	207 (136-244)	112 (24-220)	1.08
1987 St. #1	≥age-1 BCT	56 ² (90 ²)	5 (4)	156 (70-245)	45 (5-140)	1.02
	≥age-1 RBT	78 ² (125 ²)	18 (16)	192 (90-288)	121 (10-290)	1.28
	≥age-1 RBTxBCT	88 ² (141 ²)	11 (10)	166 (65-262)	67 (2-195)	1.01
	≥age-1 BNT sculpin	1 captured common		370	530	1.05
1987 St. #2	≥age-1 BCT	89 ² (144 ²)	11 (10)	161 (90-235)	58 (6-135)	1.29
	≥age-1 RBT	132 ² (212 ²)	32 (29)	194 (92-285)	114 (8-265)	1.33
	≥age-1 RBTxBCT	193 ² (311 ²)	24 (22)	163 (89-287)	58 (10-200)	1.25
1975	BCT	155 ¹ (250 ¹)		119 (85-240)	41 (12-142)	2.14
	RBT	25 ¹ (40 ¹)		169 (114-223)	88 (36-157)	1.89

²

Based on two-pass electrofishing.

¹

Based on one-pass electrofishing.

Middle Fork of the Ogden River, 2003

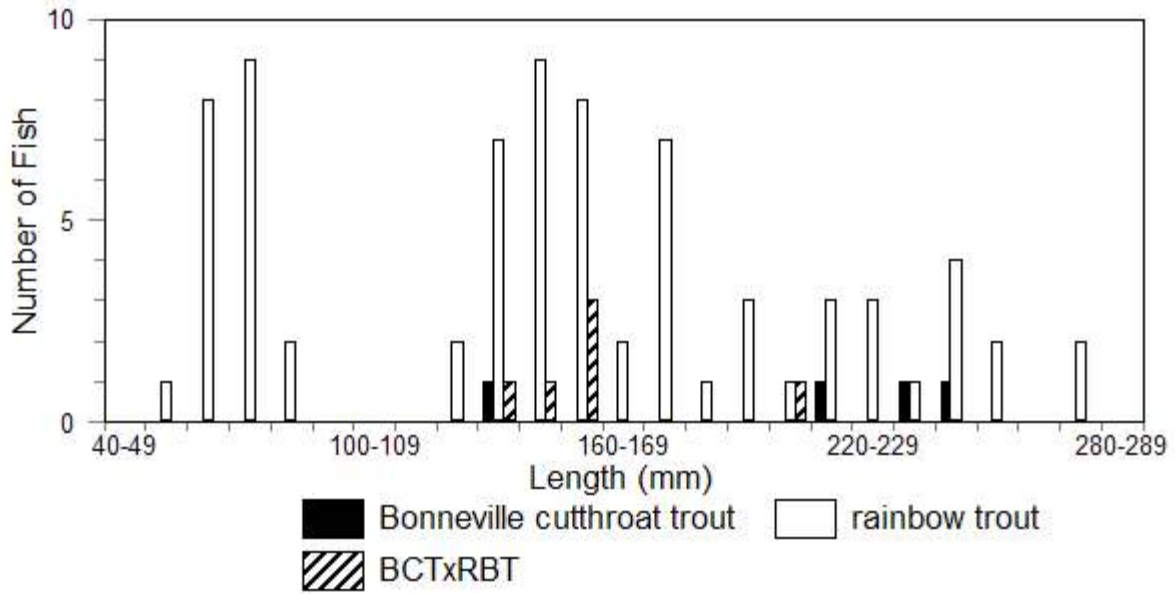


Figure 12. Size distribution of Bonneville cutthroat trout, rainbow trout, and Bonneville cutthroat trout x rainbow trout sampled in the Middle Fork of the Ogden River section 02, 2003.

Weber River subunit

Cottonwood Creek

IVAP080

Cottonwood Creek (Weber River confluence upstream to the headwaters) is a tributary to the Weber River. Cottonwood Creek is in Morgan County (Bybee Knoll, Durst Mountain, and Snow Basin USGS Quads) with the majority of the drainage being privately owned and a small portion being state land. Fish species present in Cottonwood Creek are Bonneville cutthroat trout, mountain sucker, and sculpin are likely present in portions of the drainage.

The 100 m stream survey was completed on Cottonwood Creek on September 10, 2003 at UTMs 4562005N and 0451824E.

Two-pass electrofishing resulted in the capture of 170 Bonneville cutthroat trout ≥ 50 mm TL (1704 ± 60 /stream km [2743 ± 97 /stream mile]; 109 kg/ha [97 lb/acre]) and 47 Bonneville cutthroat trout < 50 mm TL (484 ± 31 /stream km; 780 ± 50 /stream mile) (Table 18; Figure 13). Thirty whole Bonneville cutthroat trout were collected for genetic analyses and frozen according to the cutthroat trout collection procedural manual (Toline and Lentsch 1999).

Cottonwood Creek had been sampled once previously by the UDWR. In 1979, a station was surveyed upstream from the confluence with Arbuckle Creek. One-pass electrofishing resulted in the capture of three Bonneville cutthroat trout (37/stream km; 60/stream mile), one rainbow trout (12/stream km; 20/stream mile), and mountain sucker were present (Table 18).

Table 18. Population statistics for species sampled in Cottonwood Creek, 1979 and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	\geq age-1 BCT age-0 BCT	1704 ² (2743 ²) 484 ² (780 ²)	109 (97)	89 (50-185) 44 (38-49)	10 (1-55)	0.93
1979	BCT RBT MTS	37 ¹ (60 ¹) 12 ¹ (20 ¹) present				

¹ Based on one-pass electrofishing.

² Based on two-pass electrofishing.

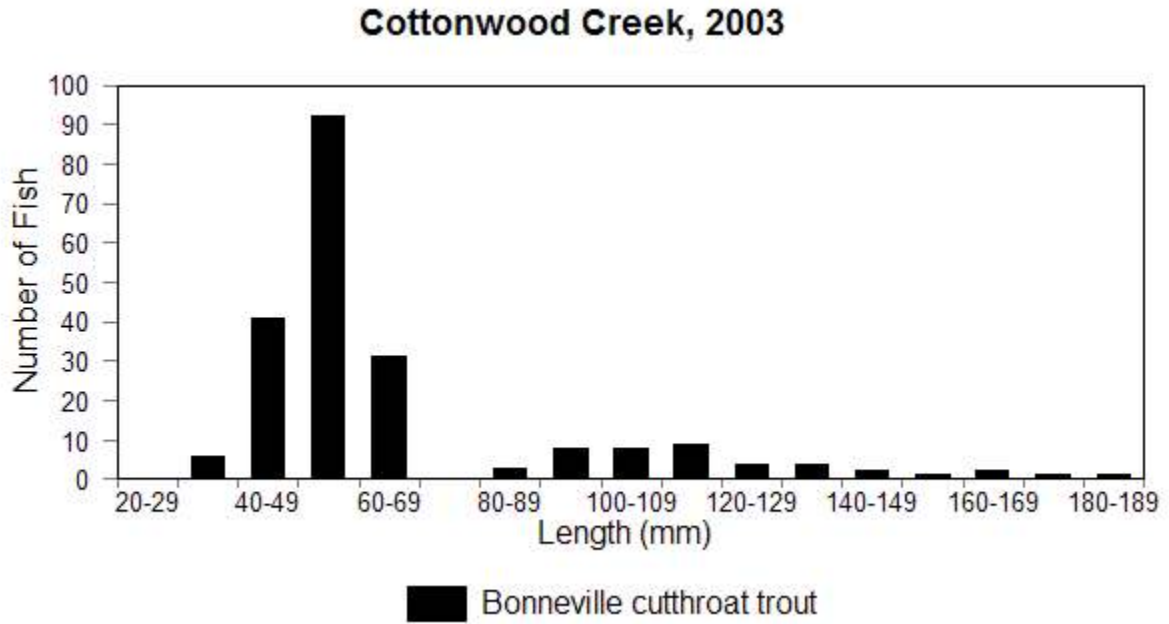


Figure 13. Size distribution of Bonneville cutthroat trout sampled in Cottonwood Creek, 2003.

Arbuckle Creek**IVAP080A**

Arbuckle Creek (Cottonwood Creek confluence upstream to the headwaters) is a tributary to Cottonwood Creek. Arbuckle Creek is in Morgan County (Durst Mountain USGS Quad) with the entire drainage being privately owned. Fish species present in Arbuckle Creek are Bonneville cutthroat trout and sculpin.

The 86 m stream survey was completed on Arbuckle Creek on September 10, 2003 at UTMs 4557697N and 0445147E.

Two-pass electrofishing resulted in the capture of nine age-1 and older Bonneville cutthroat trout (106 ± 12/stream km [171 ± 19/stream mile]; 45 kg/ha [40 lb/acre]) (Table 19; Figure 14) and sculpin were sparse.

Arbuckle Creek had been sampled twice previously by the UDWR. In 1996, two-pass electrofishing in a 100 m station resulted in the capture of four age-1 and older Bonneville cutthroat trout (40 ± 0/stream km [64 ± 0/stream mile]; 12 kg/ha [11 lb/acre]) (Table 19). In 1979, one-pass electrofishing resulted in the capture of 18 Bonneville cutthroat trout (224/stream km; 360/stream mile). Mountain sucker were sparse and sculpin were abundant (Table 19).

Table 19. Population statistics for species sampled in Arbuckle Creek, 1979, 1996, and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	≥age-1 BCT sculpin	106 ² (171 ²) sparse	45 (40)	191 (123-232)	69 (18-115)	0.89
1996	≥age-1 BCT	40 ² (64 ²)	12 (11)	170 (125-189)	55 (20-65)	1.04
1979	BCT sculpin MTS	224 ¹ (360 ¹) abundant sparse				

¹ Based on one-pass electrofishing.

² Based on two-pass electrofishing.

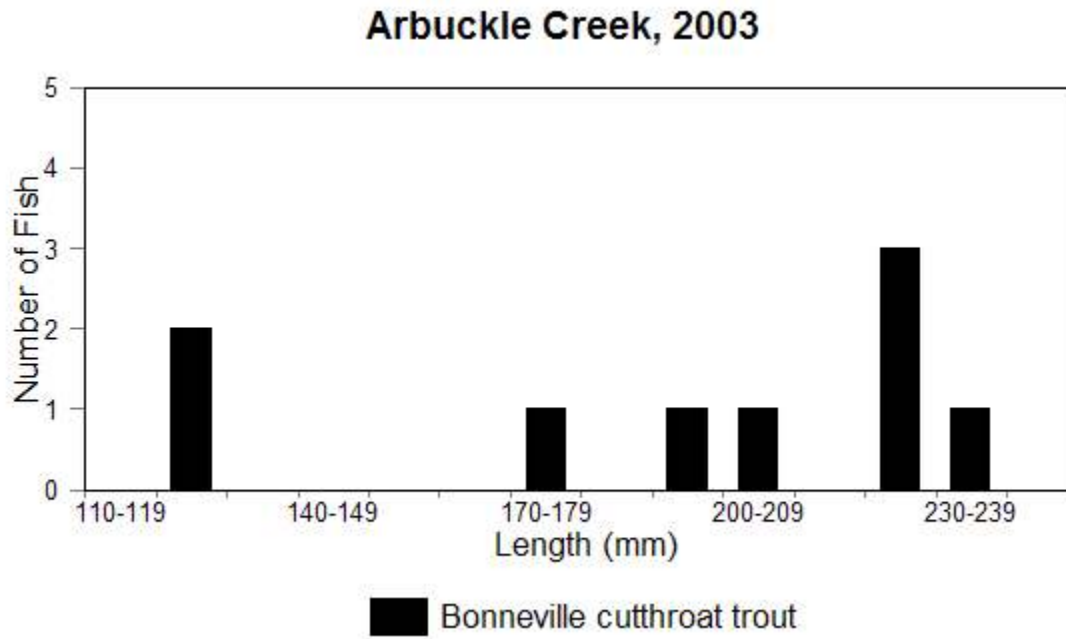


Figure 14. Size distribution of Bonneville cutthroat trout sampled in Arbuckle Creek, 2003.

COLORADO RIVER CUTTHROAT TROUT

Only one two-pass depletion electrofishing survey was completed on the West Fork of Beaver Creek section 01.

West Fork of Beaver Creek

IICJ040A

Section 01

The West Fork of Beaver Creek section 01 (Wyoming stateline upstream to the USFS boundary) is a tributary to the Henrys Fork. The West Fork of Beaver Creek section 01 is in Summit County (Hole in the Rock USGS Quad) with the entire section 01 being privately owned. Fish species present in the West Fork of Beaver Creek section 01 are brook trout and sculpin. Colorado River cutthroat trout are likely present in the upstream portions of section 01.

The 103 m stream survey was completed on the West Fork of Beaver Creek section 01 on October 2, 2003 at UTMs 4535559N and 0568679E.

Two-pass electrofishing resulted in the capture of 24 age-1 and older brook trout (238 ± 19/stream km [383 ± 31/stream mile]; 14 kg/ha [12 lb/acre]) (Table 20; Figure 15) and sculpin were abundant.

The West Fork of Beaver Creek section 01 had been sampled once previously by the UDWR. In 1973, one-pass electrofishing in a 161 m station located just South of the Wyoming stateline resulted in the capture of one Bonneville cutthroat trout (6/stream km; 10/stream mile) (Table 20). Sculpin and longnose dace were common and mountain sucker were sparse.

Table 20. Population statistics for species sampled in the West Fork of Beaver Creek section 01, 1973 and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	≥age-1 BKT sculpin	238 ² (383 ²) abundant	14 (12)	117 (64-215)	24 (2-72)	1.06
1973	≥age-1 BKT sculpin MTS LND	6 ¹ (10 ¹) common sparse common				

¹ Based on one-pass electrofishing.

² Based on two-pass electrofishing.

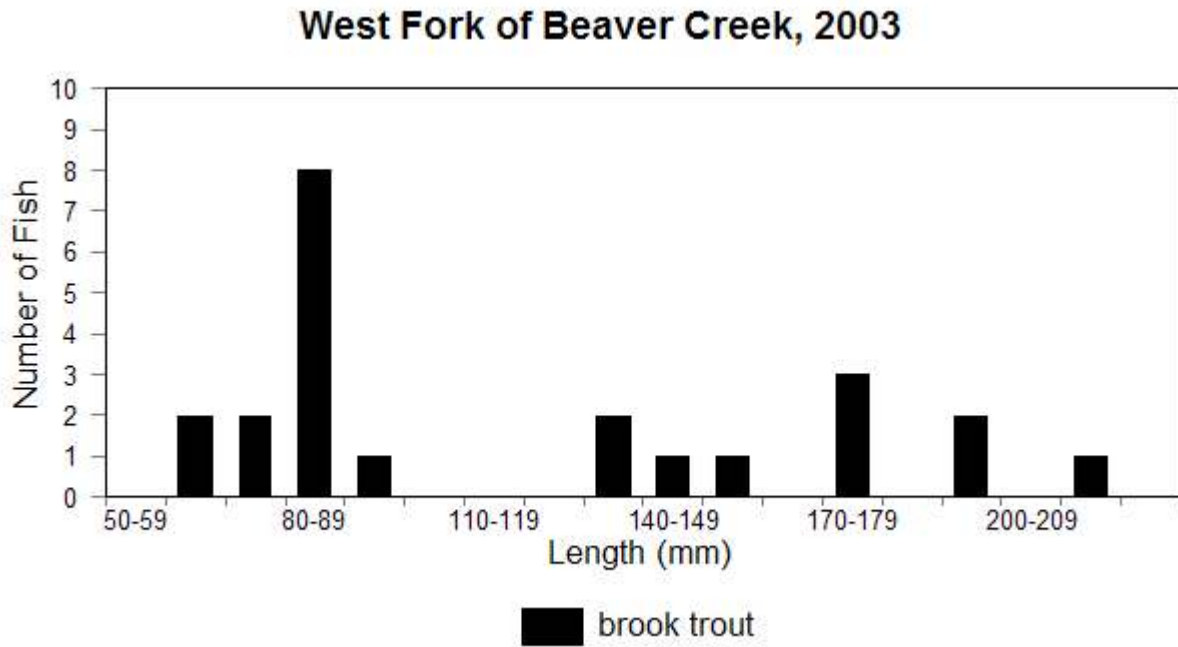


Figure 15. Size distribution of brook trout sampled in the West Fork of Beaver Creek section 01, 2003.

Gilbert Creek**IICK020A01**

Gilbert Creek (Wyoming state line upstream to the headwaters) is a tributary to the East Fork of the Smiths Fork River. Gilbert Creek is in Summit County (Bridger Lake USGS Quad) with the majority of the drainage being USFS land and the remainder being privately owned. Following the chemical reclamation of Gilbert Creek in 2001 and 2002, fish species currently present (2003) in Gilbert Creek are Colorado River cutthroat trout, sculpin, and mountain sucker.

Two attempts were made at moving Colorado River cutthroat trout from the West Fork of the Smiths Fork (wilderness boundary area) to Gilbert Creek during 2003. One May 28, 2003, 17 Colorado River cutthroat trout were collected and released into Gilbert Creek. On July 22, 2003, 258 Colorado River cutthroat trout were collected and released into Gilbert Creek. Between the two efforts, 275 Colorado River cutthroat trout were reintroduced into Gilbert Creek during 2003 (Table 21). The Wyoming Game and Fish Department stocked sculpin and mountain sucker into the Wyoming portion of Gilbert Creek upstream from the border barrier during 2002 (Table 21). These fish came from salvage efforts in the Wyoming portion of Gilbert Creek prior to the chemical reclamation of this section.

Table 21. Fish species and numbers reintroduced into Gilbert Creek, upstream from the border barrier, following the chemical reclamation in 2001 and 2002.

Year	Species	Number
2002	sculpin	>2,000
2002	mountain sucker	367
2003	Colorado River cutthroat trout	275

West Fork of the Smiths Fork**IICK020B**

The West Fork of the Smiths Fork (Wyoming state line upstream to the headwaters) is a tributary to the East Fork of the Smiths Fork River. The West Fork of the Smiths Fork is in Summit County (Bridger Lake USGS Quad) with the majority of the drainage being USFS land and the remainder being privately owned. Fish species present in the West Fork of the Smiths Fork are Colorado River cutthroat trout, Colorado River cutthroat trout x rainbow trout hybrids, sculpin, and mountain sucker.

The West Fork of the Smiths Fork was spot electrofished on four separate occasions during 2003. On May 28th and July 22nd, 275 Colorado River cutthroat trout were collected near the wilderness boundary and moved to Gilbert Creek (Table 21). Two portions of the West Fork of the Smiths Fork were spot electrofished on September 3rd. Approximately 150 Colorado River cutthroat trout were collected near the wilderness boundary area and moved to Sheep Creek Lake as a start in establishing a brood source for the North Slope. The fish were fin clipped to distinguish them from the South Slope brood source. On the same day, the lower portion of the West Fork of the Smiths Fork was spot electrofished and 60 fish were collected for disease certification. The Colorado River cutthroat trout in the West Fork of the Smiths Fork passed the disease inspection for the fourth straight year.

YELLOWSTONE CUTTHROAT TROUT

Wildcat Creek

IIIAA040

Wildcat Creek section 02 (USFS boundary upstream to the headwaters) is a tributary to the Raft River. Wildcat Creek section 02 is in Box Elder County (Yost and Buck Hollow USGS Quads) with a majority of section 02 being USFS land. Yellowstone cutthroat trout were documented to occupy approximately 1.1 stream miles of Wildcat Creek section 02 during surveys completed in 2001 (Thompson 2002).

A wildfire in 2002 burned the entire 1.1 occupied stream miles. Spot electrofishing in this reach during 2003 resulted in the capture of 11 age-1 and older Yellowstone cutthroat trout. Riparian habitat was virtually non-existent in 2003 and the substrate was primarily silt following spring runoff.

A genetic sample had been collected during 2001 survey efforts, however, this sample was lost. Fin clips were collected from the 11 Yellowstone cutthroat trout during 2003. These samples were preserved in alcohol according to the cutthroat trout collection procedural manual (Toline and Lentsch 1999).

Goose Creek

IIIAB

Goose Creek (Idaho border to the Nevada border) is in Box Elder County (Nile Spring and Pole Creek USGS Quads). The entire stream corridor of Goose Creek is privately owned. Fish species present in Goose Creek are mountain sucker, sculpin, speckled dace, redbreast shiner, longnose dace, and Utah sucker. Yellowstone cutthroat trout may occupy Goose Creek seasonally and leatherside chub may be present in the downstream reaches of the Utah portion of the stream (Thompson 2002).

The 100 m stream survey was completed on Goose Creek on September 29, 2003 at UTM coordinates 46550235N and 07445361E. This survey was located on the Utah side of the Utah/Nevada border.

Two-pass electrofishing resulted in the capture of 744 redbreast shiner ($7,788 \pm 180$ /stream km; $12,539 \pm 290$ /stream mile), 29 Utah sucker (322 ± 71 /stream km; 519 ± 114 /stream mile), and two mountain sucker (20 ± 0 /stream km; 32 ± 0 /stream mile). Speckled dace and longnose dace were abundant and sculpin were sparse (Table 22).

Goose Creek in Utah had been sampled three times previously by the UDWR. In 1996, three age-1 and older Yellowstone cutthroat trout were captured at the Idaho/Utah border (Table 22). One Yellowstone cutthroat trout was captured in 1971 and none were captured in 1957 (Table 22).

Table 22. Population statistics for species sampled in Goose Creek, 1957, 1971, 1996, and 2003.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2003	RSS UTS MTS SPD LND sculpin	7788 ² (12539 ²) 322 ² (519 ²) 20 ² (32 ²) abundant abundant sparse				
1996	≥age-1 YCT SPD RSS MTS sculpin	40 ² (64 ²) abundant abundant common sparse		285 (253-320)	251 (153-383)	1.03
1971	≥age-1 YCT RSS suckers	6 ¹ (10 ¹) present present				
1957	RSS dace suckers sculpin	present present present present				

¹

Based on one-pass electrofishing.

²

Based on two-pass electrofishing.

DISCUSSION

BONNEVILLE CUTTHROAT TROUT

BEAR RIVER GMU

Uinta Mountains/Upper Bear River subunit

The lower reaches of most of the major tributaries to the Upper Bear River were surveyed during 2003. In addition, the USFS completed surveys on many of the upper reaches of these streams and their tributaries in 2003. These survey efforts documented the range and population size of Bonneville cutthroat trout in the Uinta Mountains/Upper Bear River subunit. The lower reaches of many of the larger streams that were surveyed in 2003 appear to be fairly unproductive, which is reflected in the low salmonid densities. Future conservation efforts in this subunit should focus on: 1) identifying streams/stream reaches where non-native salmonid control would be feasible, 2) continuing the program of stocking sterile rainbow trout where there is a public demand for this salmonid, 3) developing a sterile brook trout source for stocking where there is a public demand for this salmonid, 4) establishing Bonneville cutthroat trout monitoring stations in a representative portion of the streams in this subunit, and 5) completing the genetic testing of Bonneville cutthroat trout in this subunit.

Cache Valley subunit

Bonneville cutthroat trout and brook trout both occupy the South Fork of the Little Bear River and its' tributaries. These two species appear to have coexisted in this drainage since the 1950s (Thompson 2003). A good population of Bonneville cutthroat trout still remains in the headwaters of Davenport Creek (Table 10) and Wellsville Creek (Table 11). Non-native removal efforts in this drainage would likely be hampered due to private land issues. The surveys on Davenport Creek were postponed for five years because access onto private lands was denied. Future conservation efforts in this subunit should focus on: 1) completing the initial survey efforts, 2) identifying streams/stream reaches where non-native salmonid control would be feasible, 3) continuing the program of stocking sterile rainbow trout where there is a public demand for this salmonid, 4) establishing Bonneville cutthroat trout monitoring stations in a representative portion of the streams in this subunit, and 5) completing the genetic testing of Bonneville cutthroat trout in this subunit.

Rich County subunit

Following the surveys completed in 2003, all streams in the Rich County subunit have been surveyed for Bonneville cutthroat trout.

Future conservation efforts in this subunit should focus on: 1) identifying streams/stream reaches where non-native salmonid control would be feasible, 2) continuing the program of stocking sterile rainbow trout where there is a public demand for this salmonid, 3) establishing Bonneville cutthroat trout monitoring stations in a representative portion of the streams in this subunit, and 4) completing the genetic testing of Bonneville cutthroat trout in this subunit.

NORTHERN BONNEVILLE GMU

Ogden River subunit

Rainbow trout are the dominant salmonid in the lower reaches of the Middle Fork of the Ogden River. The headwater portions of this stream and its' tributaries should be surveyed to determine if isolated reaches containing pure Bonneville cutthroat trout still remain. If pure cutthroat trout remain in the drainage, this stream should be targeted for chemical reclamation because: 1) a majority of the drainage is owned by the UDWR and 2) the lower reaches of the stream are dewatered, which would create an effective barrier to the upstream movement of salmonids. Other conservation efforts in this subunit should focus on: 1) identifying other streams/stream reaches where non-native salmonid control would be feasible, 2) continuing the program of stocking sterile rainbow trout where there is a public demand for this salmonid, 3) establishing Bonneville cutthroat trout monitoring stations in a representative portion of the streams in this subunit, and 4) completing the genetic testing of Bonneville cutthroat trout in this subunit.

Weber River subunit

Of all the Bonneville cutthroat trout streams being managed by the Northern Region Office of the UDWR, the Weber River subunit has the most streams remaining to be surveyed. As the initial surveys are being completed in the other subunits in this region, more survey effort will be directed at this subunit. Other conservation efforts in this subunit should focus on: 1) identifying streams/stream reaches where non-native salmonid control would be feasible, 2) continuing the program of stocking sterile rainbow trout where there is a public demand for this salmonid, 3) establishing Bonneville cutthroat trout monitoring stations in a representative portion of the streams in this subunit, and 4) completing the genetic testing of Bonneville cutthroat trout in this subunit.

COLORADO RIVER CUTTHROAT TROUT

NORTHEASTERN GMU

North Slope of the Uinta Mountains subunit

The chemical renovation and reintroduction of Colorado River cutthroat trout is complete on the Utah portion of Gilbert Creek. The following still needs to be completed on this project: 1) yearly monitoring of the two established Utah stations to ensure that the number of Colorado River cutthroat trout, sculpin, and mountain sucker reintroduced in 2002 and 2003 are sufficient, 2) a yearly inspection of the border barrier during spring runoff needs to be completed to ensure the barrier is functioning properly, and 3) removal of the border barrier after five years of brook trout free monitoring by the Wyoming Game and Fish Department.

Future conservation efforts in this subunit should focus on: 1) identifying streams/stream reaches where other non-native salmonid control would be feasible, 2) continuing the program of stocking sterile rainbow trout where there is a public demand for this salmonid, 3) developing a sterile brook trout source for stocking where there is a public demand for this salmonid, 4) establishing Colorado River cutthroat trout monitoring stations in a representative portion of the streams in this subunit, 5) completing the genetic testing of Colorado River cutthroat trout in this subunit, and 6) continue developing a North Slope brood source.

YELLOWSTONE CUTTHROAT TROUT

The Yellowstone cutthroat trout population in Wildcat Creek may not persist following the 2002 wildlife and subsequent runoff events. This population should be monitored to determine if it will persist post wildfire. If this population does not persist, a population of pure Yellowstone cutthroat trout from an adjacent stream on the Raft River Mountains should be reintroduced when habitat conditions allow. Future conservation efforts in this subunit should focus on: 1) identifying streams/stream reaches where non-native salmonid control would be feasible, 2) establishing Yellowstone cutthroat trout monitoring stations in the occupied streams, and 3) completing the genetic testing of Colorado River cutthroat trout in this subunit.

LITERATURE CITED

Lentsch, L., Y. Converse, and J. Perkins. 1997. Conservation agreement and strategy for Bonneville cutthroat trout (*Oncorhynchus clarki utah*) in the State of Utah. Publication Number 97-19. Utah Department of Natural

Resources, Division of Wildlife Resources, Salt Lake City, Utah.

Lentsch, L. and Y. Converse. 1997. Conservation agreement and strategy for Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*) in the State of Utah. Publication Number 97-20. Utah Department of Natural Resources, Division of Wildlife Resources, Salt Lake City, Utah.

Reynolds, J. B. 1989. Electrofishing. Pages 147-163 in L. A. Nielsen and D. L. Johnson, editors. Fisheries Techniques. American Fisheries Society, Bethesda, Maryland.

Thompson, P. 2002. Status of native Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*) in Utah, 2001. Publication Number 02-16. Utah Department of Natural Resources, Division of Wildlife Resources, Salt Lake City, Utah.

Thompson, P. 2003. Bonneville cutthroat trout (*Oncorhynchus clarki utah*) surveys in the Northern Region, 2002. Publication Number 03-03. Utah Department of Natural Resources, Division of Wildlife Resources, Salt Lake City, Utah.

Toline, C. A. and L. D. Lentsch. 1999. Guidelines and protocols for identification and designation of populations of native cutthroat trout. Final report submitted to the Utah Division of Wildlife Resources. Utah State University, Logan, Utah.

Zippin, C. 1958. The removal method of population estimation. Journal of Wildlife Management 22:82-90.