



State of Utah
DEPARTMENT OF NATURAL RESOURCES
Division of Wildlife Resources

Bonneville Cutthroat Trout (*Oncorhynchus
clarki utah*) Surveys in the Northern Region,
2002



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Utah Division of Wildlife Resources
1594 W. North Temple
Salt Lake City, Utah
Kevin K. Conway, Director

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by

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INTRODUCTION

Bonneville cutthroat trout (*Oncorhynchus clarki utah*) surveys in northern Utah during 2002 focused primarily in Cache Valley. Most streams in the Cache Valley subunit of the Bear River Geographic Management Unit (GMU), as defined by Lentsch et al. 1997, have been surveyed during the past five years. A few streams remain to be surveyed, which will provide a complete picture of the remaining Bonneville cutthroat trout populations in this subunit. Yellow Creek in the Uinta Mountains/Upper Bear River subunit of the Bear River GMU also was surveyed. The 2002 surveys provided needed data that will help towards the objectives of long term conservation of Bonneville cutthroat trout in Utah (Lentsch et al. 1997).

METHODS

All stream surveys were completed during base flow conditions to determine the extent of the resident Bonneville 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. Forty-five people days were required to complete the surveys.

Universal Transverse Mercator (UTM) coordinates were recorded for each stream survey location with a hand-held Global Positioning System (GPS). Habitat Quality Index (HQI) attributes were collected for Model II according to Binns (1982) on the Left Hand Fork of the Blacksmith Fork section 01.

A 100 m reach, representing habitat conditions throughout the entire stream, was identified for each survey. Stations were measured using a 100 m tape. 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 Left Hand Fork of the Blacksmith Fork section 01 and the South Fork of the Bear River. 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 downstream of the station. 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.

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

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

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 (K_{tl}) 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 were submitted to the Salt Lake Office of the UDWR during the fall of 2002. Samples will be processed with nuclear DNA and mitochondrial DNA.

Population estimates were not attempted for speckled dace, longnose dace, or mottled sculpin because these species are difficult to catch. 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

At least one complete two-pass depletion electrofishing survey was completed on the following streams: Left Hand Fork of the Blacksmith Fork sections 01 and 02, Rock Creek, South Fork of the Bear River, and Yellow Creek sections 01 and 02. Bonneville cutthroat trout were present in five of the six streams/stream sections sampled in 2002 (Table 1). Based on the stream surveys in 2002, Bonneville cutthroat trout occupy approximately 52.8 stream km (32.8 stream miles) in the streams sampled (Table 1).

Fish species caught during 2002 stream surveys included: Bonneville cutthroat trout (BCT), brown trout (BNT; *Salmo trutta*), brook trout (BKT; *Salvelinus fontinalis*), mountain whitefish (MWF; *Prosopium williamsoni*), mountain sucker (MTS; *Catostomus platyrhyncus*), mottled sculpin (MSC, *Cottus bairdi*), Utah Sucker (UTS; *Catostomus ardens*), redbelt shiner (RSS; *Richardsonius balteatus hydrophlox*), speckled dace (SPD; *Rhinichthys osculus*), longnose dace (LND; *Rhinichthys cataractae*), and leatherside chub (LSC; *Gila copei*).

Table 1. Streams/stream sections containing Bonneville cutthroat trout during 2002 surveys.

Stream/Section	Approximate # of stream km occupied (# stream miles occupied)	# of \geq age-1 cutthroat/km (#/mile)
Left Hand Fork of the Blacksmith Fork section 01	11.4 (7.1)	258 (416)
Left Hand Fork of the Blacksmith Fork section 02	8.6 (5.3)	68 (110)
Rock Creek	13.3 (8.3)	75 (121)
South Fork of the Little Bear River (low)	14.0 (8.7)	90 (145)
South Fork of the Little Bear River (high)		160 (258)
Yellow Creek section 01	0	N/A
Yellow Creek section 02 (low)	5.5 (3.4)	N/A
Yellow Creek section 02 (medium)		70 (112)
Yellow Creek section 02 (high)		153 (247)
Total	52.8 (32.8)	

BEAR LAKE GMU

Bonneville cutthroat trout work in the Bear Lake GMU was coordinated and completed by the Bear Lake Field Station. Results from 2002 activities can be found in the reports produced by this field station.

BEAR RIVER GMU

Uinta Mountains/Upper Bear River subunit

Yellow Creek

IVAQ220

Section 01

Yellow Creek section 01 (western Wyoming state line upstream to western Wyoming state line) is a tributary to the Bear River. Yellow Creek section 01 is in Summit County (Wasatch USGS Quad) with the entire drainage being privately owned. Fish species present in Yellow Creek section 01 are mountain sucker, Utah sucker, longnose dace, mottled sculpin, leatherside chub, speckled dace, and redbside shiner.

The stream survey on Yellow Creek section 01 was completed on July 11, 2002. This 96 m survey was completed at the Utah/Wyoming state line, UTMs 4609995N and 0455233E.

Two-pass electrofishing resulted in the capture of 32 leatherside chub ($394 \pm 124/\text{stream km}$ [$634 \pm 200/\text{stream mile}$]), 199 redbside shiner ($2242 \pm 156/\text{stream km}$ [$3611 \pm 252/\text{stream mile}$]), 51 mountain sucker ($643 \pm 176/\text{stream km}$ [$1035 \pm 284/\text{stream mile}$]), and 21 utah sucker ($352 \pm 383/\text{stream km}$ [$567 \pm 617/\text{stream mile}$])(Table 2). Speckled dace were abundant and mottled sculpin and longnose dace were common.

Yellow Creek section 01 had not been sampled before by the UDWR.

Section 02

Yellow Creek section 02 (Southern Wyoming state line upstream to the headwaters) is a tributary to the Bear River. Yellow Creek section 02 is in Summit County (Seven Tree Flat USGS Quad) with the entire drainage being privately owned. Fish species present

in Yellow Creek section 02 are Bonneville cutthroat trout, mottled sculpin, leatherside chub, mountain sucker, speckled dace, and red side shiner. All cutthroat trout caught in 2002 phenotypically resembled Bonneville cutthroat trout. Yellow Creek section 02 is classified as a IVB fishery for Bonneville cutthroat trout.

Three stream surveys were completed on Yellow Creek section 02 in 2002. Station #1, the lower station (119 m in length), was surveyed on June 27, 2002. Station #1 was located at the Utah/Wyoming state line. UTM's for this station were: 0503056E and 4538302N. Station #2, the middle station (115 m in length), was surveyed on June 27, 2002. Station #2 was located at a four wheel drive road crossing approximately 5.5 km upstream from the southern Utah/Wyoming border. UTM's for this station were: 0504460E and 4534688N. Station #3, the upper station (100 m in length), was surveyed on June 28, 2002. UTM's for this station were: 0504943E and 4532745N.

Station #1

Two-pass electrofishing resulted in the capture of 103 leatherside chub ($934 \pm 84/\text{stream km}$ [$1504 \pm 135/\text{stream mile}$]), 12 redside shiner ($206 \pm 485/\text{stream km}$ [$331 \pm 781/\text{stream mile}$]), and 12 mountain sucker ($206 \pm 485/\text{stream km}$ [$331 \pm 781/\text{stream mile}$]) (Table 2). Mottled sculpin were sparse and speckled dace were abundant.

Station #2

Two-pass electrofishing resulted in the capture of eight age-1 or older Bonneville cutthroat trout ($70 \pm 0/\text{stream km}$ [$112 \pm 0/\text{stream mile}$]; 13 kg/ha [12 lb/acre]) (Table 2; Figure 1) and 33 leatherside chub ($302 \pm 35/\text{stream km}$ [$486 \pm 56/\text{stream mile}$]) (Table 2). Mottled sculpin were common and speckled dace and mountain sucker were sparse. An additional 700-900 m of stream was electrofished to obtain 30 Bonneville cutthroat trout (17 whole, 13 fin clips) for genetic analyses. The 30 cutthroat trout samples were frozen according to the cutthroat trout collection procedural manual (Toline and Lentsch 1999).

Station #3

Two-pass electrofishing resulted in the capture of 15 age-1 or older Bonneville cutthroat trout ($153 \pm 20/\text{stream km}$ [$247 \pm$

33/stream mile]; 23 kg/ha [20 lb/acre]) (Table 2; Figure 1), 11 leatherside chub (128 ± 59/stream km [206 ± 95/stream mile]), and 15 mountain sucker (153 ± 20/stream km [247 ± 33/stream mile]). Mottled sculpin were common and speckled dace were sparse.

Yellow Creek section 02 had never been sampled before by the UDWR.

Table 2. Population statistics for species sampled in Yellow Creek, 2002.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2002 sec.01	LSC	394 (634)		71 (52-100)		
	RSS	2242 (3641)		65 (46-79)		
	MTS	643 (1035)		75 (52-106)		
	UTS	352 (567)		77 (53-121)		
	MSC	common				
	LND	common				
	SPD	abundant				
2002 sec.02 station #1 (low)	LSC	934 (1504)		74 (40-107)		
	RSS	206 (331)		48 (36-71)		
	MTS	206 (331)		77 (51-102)		
	MSC	sparse				
	SPD	abundant				
2002 sec.02 station #2 (middle)	≥age-1 BCT	70 (112)	13 (12)	170 (69-355)	88 (2-400)	0.86
	LSC	302 (486)		82 (51-124)		
	MSC	common				
	SPD	sparse				
	MTS	sparse				
2002 sec.02 station #3 (high)	≥age-1 BCT	153 (247)	23 (20)	139 (77-298)	44 (3-250)	0.89
	LSC	128 (206)		98 (51-139)		
	MTS	153 (247)		104 (53-157)		
	MSC	common				
	SPD	sparse				

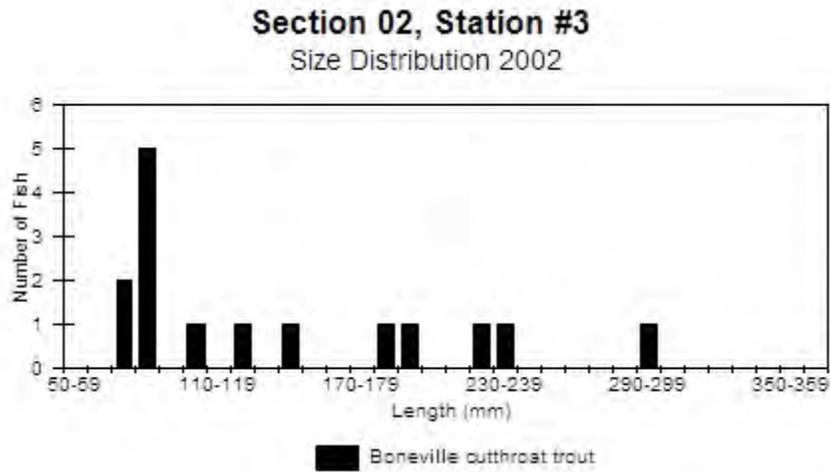
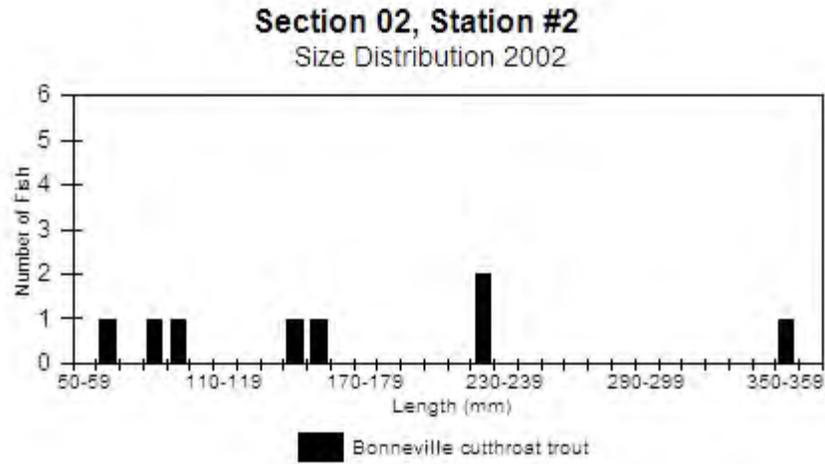


Figure 1. Size distribution of Bonneville cutthroat trout sampled in Yellow Creek section 02, stations #2 and #3, 2002.

Cache Valley subunit

Left Hand Fork of the Blacksmith Fork

IVAQ040A03A

Section 01

The Left Hand Fork of the Blacksmith Fork section 01 (confluence with the Blacksmith Fork upstream to Bear Hollow) is a tributary to the Blacksmith Fork. The Left Hand Fork of the Blacksmith Fork section 01 is in Cache County (Logan Peak and Boulder Mountain USGS Quads) with approximately 10% of the drainage being privately owned and the remaining 90% being USFS land. Fish species present in the Left Hand Fork of the Blacksmith Fork section 01 are Bonneville cutthroat trout, brown trout, mottled sculpin, and mountain whitefish. All cutthroat trout caught in 2002 phenotypically resembled Bonneville cutthroat trout. The Left Hand Fork of the Blacksmith Fork section 01 is classified as a IIB fishery for Bonneville cutthroat trout.

The stream survey on the Left Hand Fork of the Blacksmith Fork section 01 was completed on July 02, 2002. This 117 m survey was completed at the USFS boundary, UTMs 4609876N and 0441156E.

Two-pass electrofishing resulted in the capture of 28 age-1 or older Bonneville cutthroat trout (258 ± 43 /stream km [416 ± 69 /stream mile]; 65 kg/ha [58 lb/acre]), 53 age-1 and older brown trout (463 ± 25 /stream km [746 ± 41 /stream mile]; 133 kg/ha [119 lb/acre]), and one age-1 or older mountain whitefish (9 ± 0 /stream km [14 ± 0 /stream mile]; 12 kg/ha [11 lb/acre]) (Table 3; Figure 2). Mottled sculpin were abundant. An additional 20 m of stream was electrofished to obtain 30 Bonneville cutthroat trout (24 whole, 6 fin clips) for genetic analyses. The 30 Bonneville cutthroat trout samples were frozen according to the cutthroat trout collection procedural manual (Toline and Lentsch 1999). The HQI predicted a considerably lower salmonid biomass (66 kg/ha predicted, 209 kg/ha actual) with macro-invertebrates being limiting.

The Left Hand Fork of the Blacksmith Fork section 01 had been sampled three times previously by the UDWR. In 1967, two surveys were completed. Station #1 (161 m in length), was located upstream from the confluence with the Blacksmith Fork, at the first road crossing. One-pass electrofishing produced 14 age-1 or

older Bonneville cutthroat trout (87/stream km, 140/stream mile), nine age-1 or older brown trout (56/stream km, 90/stream mile), and one mountain sucker (6/stream km, 10/stream mile) (Table 3). Mottled sculpin were common. Station #2 (161 m in length), was located 1.3 km upstream from the Blacksmith Fork Ranger Station. One-pass electrofishing produced 13 age-1 or older Bonneville cutthroat trout (81/stream km, 130/stream mile) and 14 age-1 or older brown trout (87/stream km, 140/stream mile) (Table 3). In 1988, a 161 m section was electrofished by boat upstream from the Blacksmith Fork Guard Station. Two-pass electrofishing produced 42 age-1 or older Bonneville cutthroat trout (265/stream km, 426/stream mile), 177 age-1 or older brown trout (1161/stream km, 1869/stream mile), and 11 age-1 or older rainbow trout (69/stream km, 111/stream mile) (Table 3). Mottled sculpin were common.

Section 02

The Left Hand Fork of Blacksmith Fork section 02 (Bear Hollow upstream to the headwaters) is a tributary to the Blacksmith Fork. The Left Hand Fork of the Blacksmith Fork section 02 is in Cache County (Boulder Mountain and Red Spur Mountain USGS Quads) with approximately 35% being privately owned and the remaining 65% being USFS land. Fish species present in the Left Hand Fork of the Blacksmith Fork section 02 are Bonneville cutthroat trout, brown trout, brook trout, and mottled sculpin. All cutthroat trout caught in 2002 phenotypically resembled Bonneville cutthroat trout. The Left Hand Fork of the Blacksmith Fork section 02 is classified as a IIIB fishery for Bonneville cutthroat trout.

The stream survey on the Left Hand Fork of the Blacksmith Fork section 02 was completed on July 02, 2002. This 88 m survey was completed at UTMs 4613594N and 0453616E.

Two-pass electrofishing resulted in the capture of six age-1 or older Bonneville cutthroat trout (68 ± 0 /stream km [110 ± 0 /stream mile]; 20 kg/ha [18 lb/acre]), 86 age-1 and older brown trout (1040 ± 91 /stream km [1675 ± 146 /stream mile]; 186 kg/ha [165 lb/acre]), one age-0 brown trout, and 16 age-1 or older brook trout (284 ± 329 /stream km [457 ± 530 /stream mile]; 18 kg/ha [16 lb/acre]) (Table 3; Figure 2). Mottled sculpin were abundant.

The Left Hand Fork of the Blacksmith Fork section 02 had been

sampled twice previously by the UDWR. In 1967, a 161 m section was electrofished a couple of km upstream from Bear Hollow. One-pass electrofishing produced 18 age-1 or older Bonneville cutthroat trout (112/stream km, 180/stream mile), two age-1 or older brown trout (12/stream km, 20/stream mile), and 30 age-1 or older brook trout (186/stream km, 300/stream mile) (Table 3). In 1988, a 91 m section was electrofished by boat upstream from Bear Hollow. Two-pass electrofishing produced 21 age-1 or older Bonneville cutthroat trout (232/stream km, 374/stream mile) and 44 age-1 or older brown trout (584/stream km, 940/stream mile) (Table 3). Mottled sculpin were common.

Table 3. Population statistics for species sampled in the Left Hand Fork of the Blacksmith Fork, 1967, 1988, and 2002.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2002 sec.01	>age-1 BCT	258 ² (416 ²)	65 (58)	211 (94-315)	130 (10-313)	1.03
	>age-1 BNT	463 ² (746 ²)	133 (119)	219 (60-392)	148 (7-539)	1.07
	>age-1 MWF	9 ² (14 ²)	12 (11)	402	721	1.11
	MSC	abundant				
1988 sec.01	>age-1 BCT	265 ² (426 ²)		205 (101-307)	105 (10-306)	1.04
	>age-1 BNT	1161 ² (1869 ²)		164 (59-354)	70 (2-408)	1.25
	>age-1 RBT	69 ² (111 ²)		241 (206-284)	137 (90-252)	0.94
	MSC	common				
1967 sec.01 st.#1	>age-1 BCT	87 ¹ (140 ¹)		180 (115-313)	78 (11-274)	0.98
	>age-1 BNT	56 ¹ (90 ¹)		189 (144-299)	85 (30-250)	1.01
	MTS	6 ¹ (10 ¹)		166		
	MSC	common				
1967 sec.01 st.#2	>age-1 BCT	81 ¹ (130 ¹)		157 (123-236)	50 (19-137)	1.09
	>age-1 BNT	87 ¹ (140 ¹)		244 (150-341)	182 (36-425)	1.07
2002 sec.02	>age-1 BCT	68 ² (110 ²)	20 (18)	206 (139-280)	102 (28-215)	1.03
	age-0 BNT			46		
	>age-1 BNT	1040 ² (1675 ²)	186 (165)	151 (50-340)	60 (1-379)	1.15
	>age-1 BKT	284 ² (457 ²)	18 (16)	102 (62-225)	21 (2-98)	0.91
MSC	abundant					
1988 sec.02	>age-1 BCT	232 ² (374 ²)		173 (116-262)	63 (5-270)	0.99
	>age-1 BNT	584 ² (940 ²)		173 (83-330)	77 (5-360)	0.99
	MSC	common				
1967 sec.02	>age-1 BCT	112 ¹ (180 ¹)		182 (110-234)	65 (12-127)	0.93
	>age-1 BNT	12 ¹ (20 ¹)		232 (155-309)	163 (35-290)	0.96
	>age-1 BKT	186 ¹ (300 ¹)		124 (60-221)		

¹ Based on one-pass electrofishing.

² Based on two-pass electrofishing.

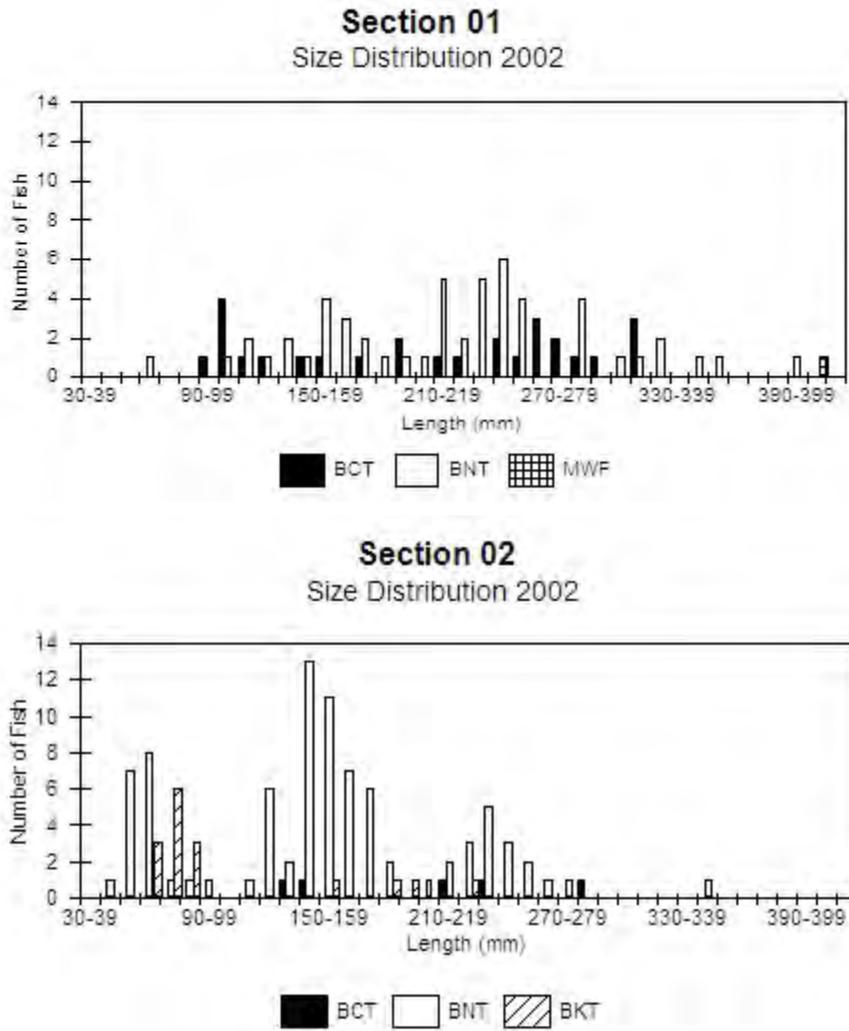


Figure 2. Size distribution of salmonids sampled in the Left Hand Fork of the Blacksmith Fork sections 01 and 02, 2002.

Rock Creek

IVAQ040A03B

Rock Creek section 01 (confluence with the Blacksmith Fork upstream to the headwaters) is a tributary to the Blacksmith Fork. Rock Creek is in Cache County (Hardware Ranch, Red Spur Mountain, and Boulder Mountain USGS Quads) with approximately 10% of the drainage being state land, 40% private land, and the remaining 50% being USFS land. Fish species present in Rock Creek are Bonneville cutthroat trout, brown trout, and mottled sculpin. All cutthroat trout caught in 2002 phenotypically resembled Bonneville cutthroat trout. Rock Creek is classified as a IIIB fishery for Bonneville cutthroat trout.

The stream survey on Rock Creek was completed on October 16, 2002. This 96 m survey was located at UTM's 4609995N and 0455233E.

Two-pass electrofishing resulted in the capture of seven age-1 or older Bonneville cutthroat trout (75 ± 11 /stream km [121 ± 17 /stream mile]; 25 kg/ha [22 lb/acre]) and 46 age-1 and older brown trout (495 ± 41 /stream km [797 ± 66 /stream mile]; 199 kg/ha [178 lb/acre]) (Table 4; Figure 3). Mottled sculpin were abundant. An additional 300 m of stream was electrofished to obtain 30 Bonneville cutthroat trout (17 whole, 13 fin clips) for genetic analyses. The 30 cutthroat trout samples were frozen according to the cutthroat trout collection procedural manual (Toline and Lentsch 1999).

Rock Creek had been sampled five times previously by the UDWR (Table 4). In 1954, a 161 m station was electrofished approximately five km upstream from the confluence with the Blacksmith Fork at the second road crossing north of Hardware Ranch. One-pass electrofishing at this station produced 19 age-1 or older Bonneville cutthroat trout (118/stream km, 190/stream mile), nine age-1 or older brown trout (56/stream km, 90/stream mile), and four age-1 or older rainbow trout (25/stream km, 40/stream mile) (Table 4). Mottled sculpin were common. In 1967, two surveys were completed on Rock creek. Station #1 (161 m in length) was located 0.8 km below Hardware Ranch at the first bridge crossing. One-pass electrofishing at this station produced four age-1 or older Bonneville cutthroat trout (25/stream km, 40/stream mile), five age-1 or older brown trout (31/stream km, 50/stream mile), and one age-1 or older rainbow trout (6/stream

km, 10/stream mile) (Table 4). Mottled sculpin were common and suckers, likely mountain sucker, were sparse. Station #2 (161 m in length) was located upstream from Hardware Ranch where the main road crosses Rock Creek. One-pass electrofishing produced nine age-1 or older Bonneville cutthroat trout (56/stream km, 90/stream mile), 19 age-1 or older brown trout (118/stream km, 190/stream mile), and one age-1 or older rainbow trout (6/stream km, 10/stream mile) (Table 4). Mottled sculpin were common. In 1987, two surveys were completed on Rock Creek. Station #1 (161 m in length), was located upstream from Hardware Ranch by the mountain man retreat area. Two-pass electrofishing produced 70 age-1 or older Bonneville cutthroat trout (458/stream km, 738/stream mile), 53 age-1 or older brown trout (424/stream km, 682/stream mile), and three age-1 or older rainbow trout (25/stream km, 40/stream mile). Mottled sculpin were abundant. Station #2 (161 m in length) was located just above station #1. Three-pass electrofishing produced one age-0 Bonneville cutthroat trout, 82 age-1 or older Bonneville cutthroat trout (675/stream km, 1087/stream mile), 35 age-1 or older brown trout (280/stream km, 451/stream mile), and 16 age-1 or older rainbow trout (69/stream km, 111/stream mile) (Table 4). Mottled sculpin were abundant.

Table 4. Population statistics for species sampled in Rock Creek, 1954, 1967, 1987, and 2002.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2002	≥age-1 BCT	75 ² (121 ²)	25 (22)	209 (138-285)	94 (20-164)	0.89
	≥age-1 BNT	495 ² (797 ²)	199 (178)	204 (81-321)	115 (8-388)	1.04
	MSC	abundant				
1987 st.#1	≥age-1 BCT	458 ² (738 ²)		140 (60-291)	38 (2-194)	0.87
	≥age-1 BNT	424 ² (682 ²)		164 (71-304)	78 (3-261)	1.06
	≥age-1 RBT	25 ² (40 ²)		263 (247-284)	153 (120-204)	0.82
	MSC	abundant				
1987 st.#2	age-0 BCT	present		47		
	≥age-1 BCT	675 ² (1087 ²)		126 (58-265)		
	≥age-1 BNT	280 ² (451 ²)		136 (58-283)		
	≥age-1 RBT	69 ² (111 ²)		236 (185-294)		
	MSC	abundant				
1967 st.#1	≥age-1 BCT	25 ² (40 ²)		194 (155-226)	83 (39-128)	1.07
	≥age-1 BNT	31 ² (50 ²)		173 (154-217)	64 (42-117)	1.17
	≥age-1 RBT	6 ² (10 ²)		273	209	1.03
	sucker	present				
	MSC	present				
1967 st.#2	≥age-1 BCT	56 ² (90 ²)		167 (104-270)	61 (12-210)	0.99
	≥age-1 BNT	118 ² (190 ²)		207 (125-316)	108 (17-318)	0.97
	≥age-1 RBT	6 ² (10 ²)		279	225	1.04
	MSC	present				
1954	≥age-1 BCT	118 ² (190 ²)				
	≥age-1 BNT	56 ² (90 ²)				
	≥age-1 RBT	25 ² (40 ²)				
	MSC	common				

¹ Based on one-pass electrofishing.

² Based on two-pass electrofishing.

³ Based on three-pass electrofishing.

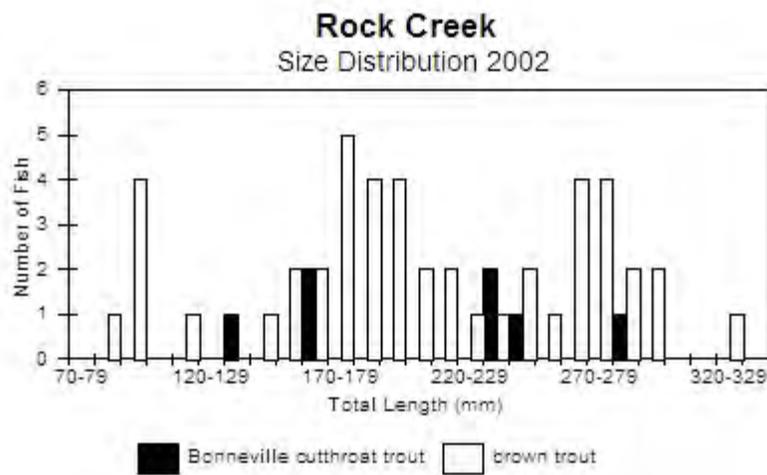


Figure 3. Size distribution of trout sampled in Rock Creek, 2002.

South Fork of the Little Bear River

IVAQ040E

The South Fork of the Little Bear River (confluence with the Little Bear River upstream to the headwaters) is a tributary to the Little Bear River. The South Fork of the Little Bear River is in Cache County (James Peak and Paradise USGS Quads) with approximately 75% of the drainage being privately owned and the remaining 25% being USFS land. Fish species present in the South Fork of the Little Bear River are Bonneville cutthroat trout, brown trout, mountain whitefish, mountain sucker, and mottled sculpin. All cutthroat trout caught in 2002 phenotypically resembled Bonneville cutthroat trout. The South Fork of the Little Bear River is classified as a IIIB fishery for Bonneville cutthroat trout.

Two stream surveys were completed on the South Fork of Little Bear River on July 01, 2002. The lower station (100 m in length) was surveyed at UTMs 4595279N and 0432130E. The higher station (100 m in length) was surveyed at UTMs 4587873N and 0430597E.

Low

Two-pass electrofishing resulted in the capture of one age-0 Bonneville cutthroat trout, five age-1 or older Bonneville cutthroat trout (90 ± 260 /stream km [145 ± 419 /stream mile]; 14 kg/ha [12 lb/acre]), one age-0 brown trout, 28 age-1 or older brown trout (481 ± 542 /stream km [775 ± 872 /stream mile]; 78 kg/ha [69 lb/acre]), one age-0 mountain whitefish, five age-1 and older mountain whitefish (50 ± 0 /stream km [80 ± 0 /stream mile]; 36 kg/ha [32 lb/acre]), and one mountain sucker (10 ± 0 /stream km [16 ± 0 /stream mile]) (Table 5; Figure 4). Mottled sculpin were abundant. Five whole Bonneville cutthroat trout were collected for genetic analyses. The samples were frozen according to the cutthroat trout collection procedural manual (Toline and Lentsch 1999).

High

Two-pass electrofishing resulted in the capture of two age-0 Bonneville cutthroat trout, 15 age-1 or older Bonneville cutthroat trout (160 ± 30 /stream km [258 ± 48 /stream mile]; 19 kg/ha [17 lb/acre]), and 55 age-1 and older brown trout (555 ± 20 /stream km [894 ± 32 /stream mile]; 189 kg/ha [169 lb/acre]) (Table 5; Figure 4). Mottled sculpin were abundant. An additional 200 m of stream

was electrofished to obtain 30 whole Bonneville cutthroat trout for genetic analyses. The 30 cutthroat trout samples were frozen according to the cutthroat trout collection procedural manual (Toline and Lentsch 1999).

The South Fork of the Little Bear River had been sampled three times previously by the UDWR. In 1954, two surveys were completed on the South Fork of the Little Bear River. Station #1, the lower station, was 161 m in length. One-pass electrofishing produced two age-1 or older brown trout (12/stream km, 20/stream mile), one age-1 or older rainbow trout (6/stream km, 10/stream mile), and two age-1 or older mountain whitefish (12/stream km, 20/stream mile) (Table 5). Mottled sculpin were sparse. Station #2, the upper station, was 161 m in length. One-pass electrofishing produced nine Bonneville cutthroat trout (56/stream km, 90/stream mile), eight age-1 or older brown trout (50/stream km, 80/stream mile), and three age-1 or older rainbow trout (19/stream km, 30/stream mile) (Table 5). Mottled sculpin were abundant. In 1965, a 161 m section was electrofished upstream from the confluence with Davenport Creek. One-pass electrofishing produced 33 Bonneville cutthroat trout (205/stream km, 330/stream mile), 17 age-1 or older brown trout (106/stream km, 170/stream mile), and 24 mountain sucker (149/stream km, 240/stream mile) (Table 5). Mottled sculpin were abundant.

Table 5. Population statistics for species sampled in the South Fork of Little Bear River, 1954, 1965, and 2002.

Year	Species	#/km (#/mile)	kg/ha (lb/acre)	Avg TL(mm)	Avg WT(g)	Avg K
2002 st.#1 (low)	age-0 BCT			46		
	≥ age-1 BCT	90 ² (145 ²)	14 (12)	215 (122-288)	117 (16-218)	0.90
	age-0 BNT			46		
	≥ age-1 BNT	481 ² (775 ²)	78 (69)	208 (56-346)	123 (2-405)	1.04
	age-0 MWF			47		
	≥ age-1 MWF	50 ² (80 ²)	36 (32)	334 (180-450)	552 (72-1267)	1.18
	MTS	10 ² (16 ²)		139	34	1.27
MSC	abundant					
2002 st.#2 (high)	age-0 BCT			46 (44-47)		
	≥ age-1 BCT	160 ² (258 ²)	19 (17)	152 (85-260)	51 (8-145)	1.29
	≥ age-1 BNT	555 ² (894 ²)	189 (169)	228 (126-332)	147 (14-393)	1.04
	MSC	abundant				
1965 (low)	all BCT	205 ¹ (330 ¹)				
	all BNT	106 ¹ (170 ¹)				
	all MTS	149 ¹ (240 ¹)				
	MSC	abundant				
1954 st.#1 (low)	≥ age-1 BNT	12 ¹ (20 ¹)				
	≥ age-1 RBT	6 ¹ (10 ¹)				
	≥ age-1 MWF	12 ¹ (20 ¹)				
	MSC	sparse				
1954 st.#2 (high)	all BCT	56 ¹ (90 ¹)				
	all BNT	50 ¹ (80 ¹)				
	all RBT	19 ¹ (30 ¹)				
	MSC	abundant				

¹ Based on one-pass electrofishing.

² Based on two-pass electrofishing.

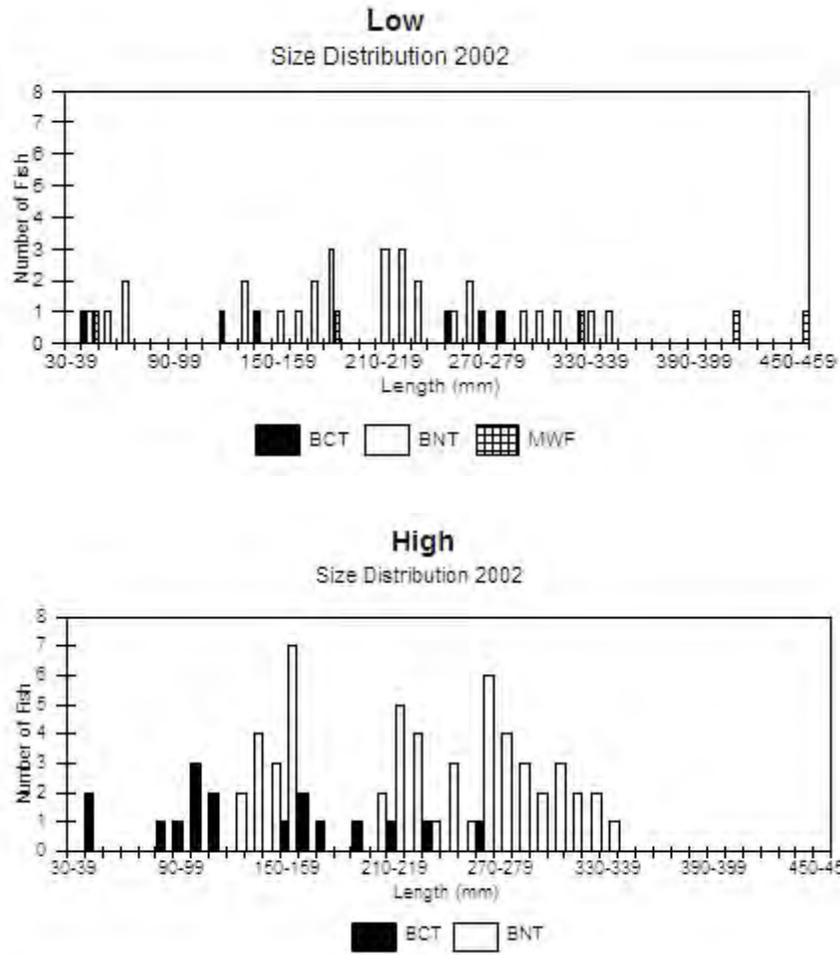


Figure 4. Size distribution of salmonids sampled in the South Fork of the Little Bear River, 2002.

DISCUSSION

Bear River GMU

Uinta Mountains/Upper Bear River subunit

Yellow Creek was the only stream sampled during 2002 in the Uinta Mountains/Upper Bear River subunit. The intent of this stream survey was to document the presence of leatherside chub, however Bonneville cutthroat trout were found to occupy 5.5 stream km (3.4 stream miles) in the headwaters of this stream. Poor water quality in the lower reaches of Yellow Creek precludes Bonneville cutthroat trout from occupying more of this stream. Yellow Creek is entirely on private property and the headwaters are quite remote, consequently, this stream has not been stocked previously with non-native trout. The Bonneville cutthroat trout in this stream should not be introgressed with non-native cutthroat trout or rainbow trout and no future threat of introgression exists.

Cache Valley subunit

Stream surveys were completed on the South Fork of the Little Bear River, Left Hand Fork of the Blacksmith Fork, and Rock Creek within the Cache Valley subunit of the Bear River GMU during 2002. These stream surveys documented that Bonneville cutthroat trout still occupy 47.3 stream km (29.4 stream miles) in these streams. Non-native trout were present in all surveys with brown trout being the most dominant trout in every survey. Previous stream surveys also indicate that brown trout have been the dominant trout in these streams for 40-50 years (Tables 3-5). In spite of the presence of brown trout, Bonneville cutthroat trout remain in good numbers in these streams.

The majority of streams in the Cache Valley subunit have been surveyed during the past five years. The following streams still remain to be surveyed: 1) Davenport Creek and its' tributaries and 2) the East Fork of the Little Bear River upstream from Porcupine Reservoir and its' tributaries. The inventory of the Cache Valley subunit for Bonneville cutthroat trout will be complete when these stream surveys are concluded.

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