

FISH SURVEYS
ON THE
WASATCH-CACHE NATIONAL FOREST

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TABLE OF CONTENTS

TABLE OF CONTENTS	i
LIST OF FIGURES	iii
LIST OF TABLES	vi
INTRODUCTION	1
METHODS	1
RESULTS	5
<u>Bonneville Basin</u>	5
Big Cottonwood Creek	5
Mill Creek (Salt Lake County)	11
Mill Creek (Davis County)	12
Mill D South Creek (Salt Lake County)	16
North Willow Creek	16
South Willow Creek	16
<u>Bear River (downstream of Bear Lake)</u>	18
Bear Hollow	18
Beaver Creek	18
Little Bear Creek	20
Logan River	20
Temple Fork	21
Spawn Creek	21
<u>Bear Lake</u>	21
<u>Bear River (upstream from Bear Lake)</u>	21
Boundary Creek	21
Bear River, East Fork	22
Bear River, West Fork	22
Gold Hill Creek	25
Hayden Fork	25
Left Hand Fork	28
Mill Creek (Summit County)	28
Mill City Creek	31
Main Fork	31
New Canyon	34
North Fork Mill Creek	34
Old Canyon	37
Ostler Fork	37
Otter Creek	40
Pole Canyon	40
Right Hand Fork	40
Spring Creek	40
Stillwater Fork	40
Unnamed tributary (West Basin)	42
Unnamed tributary (Teal Lake)	45
Whiskey Creek	45
<u>Ogden River Basin</u>	48
Wheeler Creek	48
<u>Weber River Basin</u>	48

Gardners Fork	48
<u>Blacks Fork Basin</u>	48
Little West Fork Blacks Fork	48
<u>Henrys Fork Basin</u>	51
<u>Burnt Fork Basin</u>	51
OPPORTUNITIES AND RECOMMENDATIONS	53
Big Cottonwood Creek	53
Mill Creek (Salt Lake County)	55
Mill Creek (Davis County)	55
Mill D South Creek (Salt Lake County)	55
North Willow Creek	55
South Willow Creek	56
<u>BEAR RIVER (downstream of Bear Lake)</u>	56
Bear Hollow	56
Beaver Creek	56
Little Bear Creek	57
Logan River	57
Temple Fork and Spawn Creek	57
<u>Bear Lake</u>	58
<u>Bear River (upstream from Bear Lake)</u>	58
Boundary Creek	58
Bear River, East Fork	58
Bear River, West Fork	59
Gold Hill Creek	59
Hayden Fork	59
Mill Creek (Summit County)	59
Mill City Creek	59
Main Fork	59
New Canyon	60
North Fork Mill Creek	60
Old Canyon	60
Ostler Fork	60
Otter Creek	60
Pole Canyon	61
Spring Creek	61
Stillwater Fork	61
Unnamed tributary (West Basin)	61
Unnamed tributary (Teal Lake)	61
Whiskey Creek	61
<u>Ogden River Basin</u>	61
Wheeler Creek	61
<u>Weber River Basin</u>	62
Gardners Fork	62
<u>Blacks Fork Basin</u>	62
Little West Fork Blacks Fork	62
<u>Henrys Fork Basin</u>	62
<u>Burnt Fork Basin</u>	62
LITERATURE CITED	64
APPENDIX	65

LIST OF FIGURES

Figure

1. Length frequency of brook trout captured in the lower section of Big Cottonwood Creek, Jordan River Drainage, Wasatch-Cache National Forest, in 1994. 7
2. Length frequency of brook trout captured in the middle section of Big Cottonwood Creek, Jordan River Drainage, Wasatch-Cache National Forest, in 1994. 8
3. Length frequency of brook trout captured in the upper section of Big Cottonwood Creek, Jordan River Drainage, Wasatch-Cache National Forest, in 1994. 9
4. Length frequency of brown, cutthroat and brook trout captured in Mill Creek, Jordan River Drainage, Wasatch-Cache National Forest, in 1994. 13
5. Species composition of brown, cutthroat and rainbow trout captured in Mill Creek, Jordan River Drainage, Wasatch-Cache National Forest, in 1994. 14
6. Length frequency of cutthroat trout captured in Mill Creek, Jordan River Drainage, Wasatch-Cache National Forest, in 1994 15
7. Length frequency of rainbow trout captured in South Willow Creek, Wasatch-Cache National Forest, in 1994. . . 17
8. Length frequency of cutthroat trout captured in Beaver Creek, Logan River Drainage, in 1994. 19
9. Length frequency of cutthroat and brook trout captured in Boundary Creek, Bear River Drainage, Wasatch-Cache National Forest, in 1994. 23
10. Length frequency of cutthroat trout captured in the East Fork Bear River, Bear River Drainage, Wasatch-Cache National Forest, in 1994. 24
11. Length frequency of cutthroat trout captured in the West Fork of the Bear River, Bear River Drainage, Wasatch-Cache National Forest, in 1994. 26
12. Length frequency of cutthroat trout captured in Gold Hill Creek, Bear River Drainage, Wasatch-Cache National Forest, in 1994 27
13. Length frequency of cutthroat and brook trout captured in Hayden Fork, Bear River Drainage, Wasatch-Cache National Forest, in 1994. 29

LIST OF FIGURES (continued)

Figure

14. Length frequency of cutthroat trout captured in the lower section of Mill Creek, Bear River Drainage, Wasatch-Cache National Forest, in 1994	30
15. Length frequency of cutthroat trout captured in the upper section of Mill Creek, Bear River Drainage, Wasatch-Cache National Forest, in 1994	32
16. Length frequency of cutthroat trout captured in Mill City Creek, Bear River Drainage, Wasatch-Cache National Forest, in 1994.	33
17. Length frequency of cutthroat trout captured in Main Fork, Bear River Drainage, Wasatch-Cache National Forest, in 1994.	35
18. Length frequency of cutthroat trout captured in North Fork Mill Creek, Bear River Drainage, Wasatch-Cache National Forest, in 1994	36
19. Length frequency of cutthroat and brook trout captured in the lower section of Ostler Fork, Bear River Drainage, Wasatch-Cache National Forest, in 1994	38
20. Length frequency of cutthroat and brook trout captured in the upper section of Ostler Fork, Bear River Drainage, Wasatch-Cache National Forest, in 1994	39
21. Length frequency of brook trout captured in Spring Creek, Bear River Drainage, in 1994.	41
22. Length frequency of cutthroat, rainbow and brook trout captured in the lower section of Stillwater Fork, Bear River Drainage, Wasatch-Cache National Forest, in 1994.	43
23. Length frequency of cutthroat trout captured in Stillwater Fork, Bear River Drainage, Wasatch-Cache National Forest, in 1994.	44
24. Length frequency of cutthroat trout captured in West Basin Creek, Bear River Drainage, Wasatch-Cache National Forest, in 1994.	46
25. Length frequency of brook trout captured in Whiskey Creek, Bear River Drainage, Wasatch-Cache National Forest, in 1994.	47
26. Length frequency of cutthroat trout captured in Wheeler Creek, Ogden River Drainage, Wasatch-Cache National Forest, in 1994	49

LIST OF FIGURES (continued)

Figure

27. Length frequency of cutthroat trout captured in Gardners Fork, Weber River Drainage, Wasatch-Cache National Forest, in 199450
28. Length frequency of cutthroat trout captured in Little West Fork Blacks Fork, Blacks Fork Drainage, Wasatch-Cache National Forest, in 199452
29. Length frequency of cutthroat trout captured in a tributary to Beaver Meadows Reservoir, Wasatch-Cache National Forest, in 199454

LIST OF TABLES

Table

1. Sampling location for streams surveyed for fish on the Wasatch-Cache National Forest in 1994 and township (T), range (R) and section (Sec) and quarter section where sampled2
2. Streams surveyed on the Wasatch-Cache National Forest in 1994 and fish species found in sampling sections. 10
3. Fish samples taken to Brigham Young University in 1994 by the Wasatch-Cache National Forest. Samples were from sites in Utah.63

INTRODUCTION

In a joint effort between the Caribou, Bridger-Teton, Uinta & Wasatch-Cache National Forests, Region 4 of the Forest Service, the states of Wyoming, Idaho and Utah and the Bureau of Land Management, surveys were conducted throughout many of the tributaries of the Bear River Drainage. The main purpose for conducting these surveys was to identify fish species compositions of streams on the forest. A secondary purpose was to collect tissue samples from cutthroat trout collected to determine genetic purity. Other information which was hoped could be acquired was a population estimate for fish within the stream and age class distribution of the population.

The streams, sampled (Table 1) on the Uinta and Wasatch-Cache National Forest, were selected by Forest staff. Working with a Forest Service seasonal crew and Utah Division of Natural Resources the streams were sampled to determine species composition, fin clips were taken and where possible a population estimate made.

METHODS

Crews were instructed to sample two locations on each stream surveyed. Crews consisted of two to three people. One person ran the electrofishing equipment and, depending on the individual, may also have assist in netting fish. The second person would be a netter and a third person would be a netter and also carry a bucket to hold captured fish. A string line or a tape measure would be used to determine the ending point of the 100 M section sampled. One sampling location was located near the stream's mouth if on forest or at the forest boundaries if the stream's mouth was off forest. Some of the samples, collected in coordination with Utah Division of Natural Resources personnel, were collected off forest to aid in better describing the stream. The second sampling location was located near the headwaters. All possible attempts were made to locate sampling sections where a crew, in future years, could relocate and resample the same steam sections.

The sample sections were approximately 100m in length and started and ended at distinguishable habitat breaks. All side channels were sampled within this length of stream section. Fish collected within the sampling section during each pass were placed in a bucket of fresh water until weight, total length and adapose fin clips could be taken. Crews were instructed to take fin clips from up to 30 cutthroat trout. I selected the adapose fin because I believed that removal of this fin would be the least damaging to the fish's ability to survive. Fish less than

Table 1. Sampling location for streams surveyed for fish on the Wasatch-Cache National Forest in 1994 and township (T), range (R) and section (Sec) and quarter section where sampled.

Drainage Creek	Tributary to	Sample Location
BONNEVILLE BASIN		
GREAT SALT LAKE		
Big Cottonwood	Jordan River	T2S,R3E,Sec27NE
Mill (Salt Lake C.)	Jordan River	T2S,R2E,Sec27SW
Mill (Davis C.)	Great Salt Lake	T2N,R1E,Sec34SW
Mill D South	Big Cottonwood	T2S,R3E,Sec18SW
North Willow	Great Salt Lake	T3S,R6W,Sec30NW
South Willow	Great Salt Lake	T4S,R6W,Sec6NW
BEAR RIVER (downstream of Bear Lake)		
Bear Hollow	Logan River	T13N,R3E,Sec23SW
Beaver	Logan River	T14N,R4E,Sec5SW
Little Bear	Logan River	T13N,R3E,Sec12SW
Logan River	Bear River	T13N,R3E,Sec12SW
Spawn Creek	Logan River	T13N,R3E,Sec35NE
Temple Fork	Logan River	T12N,R3E,Sec2NE
BEAR LAKE		
Hodges Canyon	Bear Lake	T14N,R4E,Sec36SW
Swan Creek	Bear Lake	T14N,R4E,Sec1SE
BEAR RIVER (upstream from Bear Lake)		
Boundary	E.F. Bear	T1N,R10W,Sec2SE
Boundary	E.F. Bear	T1N,R10E,Sec13SE
Bear River, E. F.	Bear River	T2N,R10E,Sec17NE
Bear River, W. F.	Bear River	T2N,R9E,Sec34NW
Gold Hill	Hayden Fork	T1N,R9E,Sec23NE
Hayden Fork	Bear River	T1N,R9E,Sec25SW
Hayden Fork	Bear River	T1S,R9E,Sec1SW
Mill (Summit C.)	Bear River	T2N,R11E,Sec7NE
Mill (Summit C.)	Bear River	T2N,R11E,Sec29NW
Mill City	W.F. Bear	T1N,R9E,Sec13NW
Main Fork	Stillwater River	T1N,R10E,Sec8SE
Main Fork	Stillwater River	T1N,R10E,Sec32NW
New Canyon	Bear River	T11N,R5E,Sec23SW
N.F. Mill	Mill Creek	T2N,R11E,Sec5SW
N.F. Mill	Mill Creek	T2N,R11E,Sec16NE
Old Canyon	Bear River	T11N,R6E,Sec28SE
Otter Creek	Bear River	T11N,R5E,Sec15NW
Pole Canyon	Bear River	T11N,R6E,Sec28SE

Table 1 continued.

Drainage Creek	Tributary to	Sample Location
BONNEVILLE BASIN (cont.)		
BEAR RIVER (upstream from Bear Lake)		
Ostler Fork	Stillwater	T1S,R10E,Sec12NW
Ostler Fork	Stillwater	T1N,R10E,Sec27NW
Spring Creek	Old Canyon	T11N,R5E,Sec15NW
Stillwater Fork	Bear River	T2N,R10E,Sec32SE
Stillwater Fork	Bear River	T1S,R10E,Sec3NE
Stillwater Fork	Bear River	T1S,R10E,Sec15NE
unnamed tributary	Hayden Fork	T1S,R9E,Sec11SW
unnamed tributary	Stillwater	T1S,R10E,Sec9NW
Whiskey Creek	Hayden Fork	T1N,R10E,Sec35
OGDEN RIVER		
Wheeler Creek	Ogden River	T6N,R1E,Sec28NW
WEBER RIVER		
Gardners Fork	Weber River	T1N,R8E,Sec35SE
COLORADO RIVER BASIN		
BLACKS FORK		
LITTLE W.F. Blacks F.	Blacks Fork	T3N,R11E,Sec25SE
HENRYS FORK		
Fallon Creek	Henrys Fork	T2N,R15E,Sec4NW
Poison Creek	Henrys Fork	T3N,R15E,Sec29NE
Spring Creek	Henrys Fork	T3N,R15E,Sec29NW
BURNT FORK		
unnamed tributary(a)	Beaver Meadows R.	T2N,R17E,Sec19NE
unnamed tributary(b)	Beaver Meadows R.	T2N,R17E,Sec18SW

S=SOUTH, N=NORTH, E=EAST, W=WEST, F=FORK, C=COUNTY, R=RESERVOIR

80mm were not fin clipped because of the small size of the adipose fin. The finclips were preserved in 95% alcohol. Five whole fish were also collected and preserved in 70% alcohol for museum specimens and to make comparisons between meristic counts and DNA analysis. Whole fish were sliced open along the right side to better preserve internal organs.

A population estimate was made for each section where possible. Some populations were not estimated because the sampling assumptions were violated. The assumptions for making population estimates are: (1) equal sampling efforts, (2) the probability of capture for any individual in the population is equal, and (3) the population is closed, no movement, deaths or births occur during or between sampling efforts (White et al. 1982). The probability of capture for any individual is also supposed to be equal between passes. Riley and Fausch (1992) found that this may not always be the case. They suggest that at least three passes be done to test capture probability. In most situations only two passes were conducted because of limited money, time and other resources.

Fish populations were estimated for fish 100mm and over. The probability for capturing fish under 100mm is believed to be too low to make an accurate estimate. With electrofishing the larger the fish the higher the probability of capture (White et al. 1982). Fish under 50mm were assumed to be age 0 fish. Fish from 51 to 100mm were believed to be age 1 fish. It is realized that in many situations, because of local environmental factors, this generalization may not hold true.

In the lower section of Big Cottonwood Creek capture probabilities were determined for fish 50 - 99mm, 100 - 149mm and 150mm and longer. These probabilities were 0.575, 0.862 and 0.75 respectively. The capture probability for size 100mm and longer was 0.838. It is recognized that the use of a population estimate which assumes equal probability of capture is violated. For this survey population estimates were made for fish 100mm and over.

The calculations used to make the population estimate was:

$$N = U1 / (1 - (U2/U1))$$

where

- N = population estimate for the section sampled
- U1 = fish captured during the first sample
- U2 = fish captured during the second sample

The probability of capture (P) is estimated by using: $P = 1 - (U2/U1)$. Results from calculation using this formula suggest that if more fish are captured during the second pass than the first pass a violation of the assumptions has occurred and the population estimate is of no value. Also if no fish are captured during a second pass a capture probability of 100 has occurred

and all fish in the population have theoretically been captured. An upper and lower bound was placed on the population estimate. The formula used was:

$$CI=N\pm 1.96\sqrt{N*P*(1-P)}$$

where:

CI = 95% confidence interval.

In some cases the lower confidence limit was below the number of fish taken from a survey reach. In such cases the lower limit was set at the number of fish, 100mm and longer of a particular species, capture from a stream reach.

RESULTS

Fortytwo streams were surveyed on the Wasatch-Cache National Forest through this effort (Table 1). Pole Canyon, Old Canyon, New Canyon, Swan Creek, Hodges Canyon and Spring Creek and Fallon Creek were completely dry on Forest or at the road crossing in the case of Fallon Creek. Mill D South, Mill (Davis County), Poison and Spring (Henrys Fork Drainage) creeks had water but no fish were found on Forest. The other streams were composed of a number of fish species (Table 2).

Bonneville Basin

Big Cottonwood Creek

Big Cottonwood Creek is a tributary to the Jordan River. Its headwaters are found in Salt Lake County, Utah. It drains west into the Salt Lake Valley and is used as a municipal water source. Private homes, campgrounds, picnic areas, and ski resorts are common in the drainage. Other recreational activities include hiking, fishing, mountain biking and cross country skiing. Three samples reaches were surveyed on Big Cottonwood Creek as a result of a snowmaking water withdrawal proposal from the Solitude Ski area. The main objective of the samples was to determine species which use the survey areas and some of the possible implication of water withdraw in these areas.

The lower sample section was located adjacent to a maintenance shed between the upper and lower parking lots of the Solitude ski resort and goes upstream 50m. Riparian vegetation consisted of willows and mature conifers. Water temperature at the time of electrofishing the section was 42°F at 12:30 in the afternoon of 16 Sept. 1994. The section consisted of 100% brook

trout with 77 fish being captured during the first pass and 23 fish being captured during the second pass. The population estimate for fish 100mm or longer for this reach would be 44 and ranged from 43, the number of fish captured during the two passes, to 49. The total length of the fish capture ranged from 54mm to 219mm and averaged 97mm (3.8in., Figure 1). Weights ranged from less than 1g to 952g and averaged 12.2g (0.5oz.). This section of Big Cottonwood Creek consisted primarily of young-of-the-year fish with some age 1 fish being present along with a few older fish (Figure 1).

The middle sample section was located adjacent to log cabins on both sides of the stream between the upper and lower parking lots of the Solitude ski resort and goes upstream 50m. Riparian vegetation consisted of willows and mature conifers. Water temperature at the time of electrofishing the section was 42°F at 11:30 in the morning of 16 Sept. 1994. Twentynine brook trout and 6 rainbow were captured during the first pass and 15 brook trout were captured during the second pass. The brook trout population estimate for this reach was 41 fish, 100mm and longer, and ranged from 35 to 47. The total length of the brook trout capture ranged from 58mm to 183mm and averaged 121mm (4.8in., Figure 2). Brook trout weight ranged from 2g to 70g and averaged 20.6g (0.7oz.). The rainbow trout population estimate for this reach was 6 fish with no rainbow being captured during the second pass. The total length of the rainbow trout capture ranged from 206mm to 267mm and averaged 251mm (9.9in.). Their weight ranged from 86g to 237g and averaged 171.8g (6.1oz.). This section of Big Cottonwood Creek consisted primarily of age 1 brook trout with some young-of-the-year fish and older fish being present (Figure 2). Some swimup fry were also collected but because of their size no identification was made.

The upper most reach was located adjacent to the upper solitude lodge. The riparian vegetation consisted of willows and mature conifer. Brook trout and hatchery stocked rainbow trout were found in this reach. Water temperature, at the time of electrofishing the section, was 42°F at 10:00 in the morning of 16 Sept. 1994. The section consisted of 98% brook trout and 2% rainbow trout. Sixtythree brook trout were captured during the first pass and 23 brook trout were captured during the second pass. The population estimate for brook trout, 100mm or longer for this reach, was 43 and ranged from 40, the number of fish captured during the two passes, to 49. The total length of the brook trout captured ranged from 49mm to 303mm and averaged 186mm (7.7in., Figure 3). Their weight ranged from less than 1g to 74g and averaged 105g (14.1z.). This section of Big Cottonwood Creek consisted primarily of young-of-the-year fish with some age 1 fish being present along with a few older fish (Figure 3). The rainbow trout population estimate for this reach was 2 fish with no rainbow being captured during the second pass.

Table 2. Streams surveyed on the Wasatch-Cache National Forest in 1994 and fish species found in sampling sections.

Drainage Stream	Fish species		
	Lower	Middle	Upper
BONNEVILLE BASIN			
GREAT SALT LAKE			
Big Cottonwood	BKT	BKT, HRT	BKT, HRT
Mill (Salt Lake C.)		CUT, HRT, BRT	
Mill (Davis C.)		FISHLESS	
Mill D South		FISHLESS	
North Willow	BRT		
South Willow	RBT		
BEAR RIVER (downstream of Bear Lake)			
Bear Hollow	CUT		
Beaver , BRK	CUT		CUT
Little Bear	CUT		
Logan River	RBT, BRN, WHT, SC		CUT
Spawn Creek	CUT, BRN,		CUT, BKT
Temple Fork	CUT		
BEAR LAKE			
Hodges Canyon	DRY		
Swan Creek	DRY		
BEAR RIVER (upstream from Bear Lake)			
Boundary	CUT		BRK
Bear River, E. F.	CUT, WHT, BRK, SCU		
Bear River, W. F.	CUT		CUT
Gold Hill	DRY		CUT
Hayden Fork River	CUT, HRB, BKT		CUT, BRK
Left Hand Fork	CUT		CUT
Mill (Summit C)	CUT		CUT
Mill City	DRY		CUT
Main Fork	CUT		CUT
New Canyon	DRY		DRY
N.F. Mill	CUT		CUT
Old Canyon	DRY		DRY
Otter Creek	SCU		DRY
Pole Canyon	DRY		DRY
Ostler Fork	BKT, CUT, SCU		BKT, CUT
Right Hand Fork			
Spring Creek	BKT, SCU		DRY
Stillwater Fork	SCU, CUT, BKT, WHT	CUT	CUT

Table 2 cont.

Drainage Stream	Fish species		
	Lower	Middle	Upper
BEAR RIVER (upstream from Bear Lake continued)			
unnamed tributary (Teal Lake)	BKT,CUT		BKT,CUT
unnamed tributary (West Basin Creek)	CUT		CUT
Whiskey Creek	BKT		BKT
OGDEN RIVER			
Wheeler Creek		CUT	
WEBER RIVER			
Gardners Fork		CUT	
COLORADO RIVER BASIN			
Blacks Fork			
Little W.F. Blacks			CUT
HENRYS FORK			
Fallon Creek	DRY		
Poison Creek	FISHLESS		
Spring Creek	FISHLESS		
BURNT FORK			
unnamed tributary(a)	CUT		
unnamed tributary(b)	FISHLESS		

S=SOUTH, N=NORTH, E=EAST, W=WEST, F=FORK

CUT=CUTTHROAT TROUT, BKT=BROOK TROUT, RBT=RAINBOW TROUT,
HRB=HATCHERY RAINBOW TROUT, SCU=SCULPIN, BRT=BROWN TROUT

Mill Creek (Salt Lake County)

Mill Creek is a tributary to the Jordan River. Its headwaters are found in Salt Lake County, Utah. It drains west into the Salt Lake Valley and is used as an irrigation water source. Private cabins, picnic areas, a large Boy Scout camp and a couple of resorts are found in the drainage. Other recreational activities include hiking, fishing horseback riding and crosscountry skiing. Two sample reaches were surveyed on Mill Creek to monitor construction work occurring in the drainage.

The main objective of the samples was to determine use of structures install in 1993 and to conduct a premoitoring survey prior to implementation of a bank restoration project just upstream of the 1993 project area.

The post monitoring sample of fish use of the rehabilitation section appears to be good. Adult fish of natural and hatchery origin were found to be utilizing a large majority of the structures install in 1993. One of the structures had filled in with bed material and was not functioning. The reach rehabilitated in 1993 was divided into two separate reaches. The lower reach ran from the dam upstream to the first set of rock steps leading to the stream. Species composition comparisons between the 1993 samples and 1994 samples in this reach would be pointless because the first sample included the pond upstream of the dam. During the 1993 rehabilitation work this pond was cleaned of silt making an electrofish sample unrealistic. Cutthroat trout captured in the stream portion of the reach averaged 129mm and ranged from 80 to 245mm in total length. Brown trout captured in the stream portion of the reach averaged 132mm and ranged from 100 to 164mm in total length. Rainbow trout captured in the stream portion of the reach averaged 213mm and ranged from 173 to 274mm in total length (Figure 4).

The second section of stream, from the rock steps upstream to the Terraces Bridge, was composed of 21.8% rainbow trout, 62.7% cutthroat trout and 15.5% brown trout in 1994 (Figure 5). This corresponds to a 1993 preproject surveys (for the first pass because rainbow trout were stocked into the stream prior to a second pass) of 50.1% cutthroat trout, 44.1% rainbow trout and 4.4% brown trout. Water temperature, at the time of electrofishing the section, was 46°F at 9:15 in the morning of 28 Sept. 1994. The total length of the cutthroat trout captured in 1994 ranged from 73mm to 238mm and averaged 137.0mm (Figure 6). Their weight ranged from less than 4g to 132g and averaged 33g.

In the area adjacent to Maple Grove Picnic area, the species composition was 48.6 percent rainbow trout, 38.6% cutthroat trout and 12.9% brown trout (Figure 6). The population estimate for cutthroat 100mm and larger was 27 fish and ranged from 22 to 31 fish. The total length of the cutthroat trout captured in 1994 ranged from 52mm to 210mm and averaged 114.4mm (Figure 6). The main difference between the two sections is that the upper section consists of old log drop structures which provides for more ponded water. The upper sections is also less accessible to the average angler.

Mill Creek (Davis County)

Mill Creek in Davis County was sampled on the 29 of June 1994. The main objective of the survey was to identify fish species which could be affected by campground rehabilitation work done in September of 1994. The survey consisted of electrofishing, starting at the forest boundary and sampling

upstream to the Bountiful City's water intake structure, approximately 1/2 mile. No fish were found during the survey.

Mill D South Creek (Salt Lake County)

Mill D South Creek in Salt Lake County is a tributary of Big Cottonwood Creek. It was surveyed near the trailhead approximately one mile upstream from the confluence with Big Cottonwood Creek. No fish were found in the stream. The number of aquatic insects also seemed low from a visual inspection. Water quality may be a possible problem.

North Willow Creek

North Willow Creek, one of two streams which drain towards the east from the Stansbury Mountain Range, was sampled in conjunction with the Utah Division of Wildlife Resources (UDWR). The sampling location was located just on forest and a length of 528 feet or 1/10 of a mile was sampled. Brown trout was the only species collected. The UDWR has the fish information for this reach.

South Willow Creek

South Willow Creek, one of two streams which drain towards the east from the Stansbury Mountain Range, was sampled in conjunction with the Utah Division of Wildlife Resources (UDWR). The sampling location started at the spring box at the west end of the intake campground, just downstream of the South Willow Guard Station, and goes upstream 528 feet or 1/10 of a mile. Water temperature at the time of electrofishing the section was 48°F at about 2:30 on the afternoon of 14 September 1994. The section consisted of 100% rainbow trout with 59 fish being captured during the first pass. Eleven fish were captured during a second pass. The total length of the fish captured ranged from 52 to 260mm and averaged 120mm (4.7in.). The weight ranged from less than 1g to 206g and averaged 38g (1.3oz.). This section of South Willow Creek consists primarily of age 0 to 2 fish as distinguished by length (Figure 7). The rainbow trout population was estimated for fish 100mm and longer to be 40 fish and ranged from the 40 fish, the number caught, up to 45 fish.

A section of upper South Willow Creek know as Dry Lake Fork was also sampled. No fish were found within this section although habitat appeared adequate and mayflies and leaches were found within the section.

Bear River (downstream of Bear Lake)

Bear Hollow

Bear Hollow is a tributary of the Logan River. This is an intermittent stream which was checked for fish in the spring of 1994. Only a short section near the mouth on the north side of the freeway was checked for fish. Cutthroat trout were found to be using this area for spawning. The fish captured in this area were tagged as part of a migration study being conducted jointly between the UDWR and the Uinta & Wasatch-Cache Nation Forest. UDWR maintains the data for this project so no data will be reported here.

Beaver Creek

Beaver Creek is a tributary to the Logan River. Its headwaters are found in Idaho, Franklin County, and it drains south into Cache County. Sheep and cattle graze in the drainage and recreational activities such as hunting, fishing and camping are common. Two sample reaches were surveyed on Beaver Creek.

The lower sample section was located in Utah at the 2nd crossing of Beaver Creek by road 011, just above the Beaver Mountain Ski Resort turnoff (photos 1 & 2), and goes upstream 100m. Water temperature at the time of electrofishing the section was 54°F at 9:27 in the morning of 27 July 1994. The section consisted of 100% cutthroat trout with 32 fish being captured during the first pass and 12 fish being captured during the second pass. Fin clips were collected from 31 fish and 5 whole fish were preserved. The total length of the fish capture ranged from 27mm to 205mm and averaged 97mm (3.8in.). Their weight ranged from less than 1g to 102g and averaged 12.9g (0.5oz.). This section of Beaver Creek consisted primarily of age 1 fish with some young-of-the-year fish being present along with a few older fish (Figure 8). The cutthroat trout population was estimated for fish 100mm and longer to be 15 fish and ranged from the 15 fish, the number caught, up to 18 fish.

The upper Beaver Creek section was located in Idaho just upstream from the turnoff to Pat Hollow where the road (Forest road 415) is closest to the stream and goes upstream 100m. This is approximately 300m from the turnoff to Pat Hollow (road 459). Water temperature, at the time of electrofishing the section, was 54°F at 11:45 in the morning of 27 July 1994. The section

consisted of 100% cutthroat trout with 3 fish being captured during the first pass and no fish being captured during the second pass. Seven fish were collected above and 28 fish from below the sampling section to acquire the necessary number of fin clips and whole fish. Three brook trout were captured above the section. Brook trout were also captured below the section. Fin clips were collected from 30 fish and 5 whole fish were preserved (Photo 4 is one of the fish preserved). The total length of the cutthroat trout captured ranged from 80mm to 303mm and averaged 194mm (7.7in.). Their weight ranged from less than 6g to 312g and averaged 105g (3.7oz.). This section of Beaver Creek consisted primarily of age 3 fish and older fish (Figure 8).

In a related study, Beaver Creek was also sampled in T14N,R3E,Sec24 starting at the highway 89 road crossing and working upstream. Fish in this area were tagged as part of a migration study being conducted jointly between the UDWR and the Uinta & Wasatch-Cache Nation Forest. UDWR maintains the data for this project so no data will be reported here.

Little Bear Creek

Little Bear Creek is a tributary to the Logan River and was surveyed in the spring of 1994. This stream is adjacent to the Utah State University Forestry Field Station. Grazing, fishing, camping and hunting are common activities in the drainage. Fish composition consisted of 100% cutthroat trout. The fish captured in this area were tagged as part of a migration study being conducted jointly between the UDWR and the Uinta & Wasatch-Cache Nation Forest. UDWR maintains the data for this project so no data will be reported here.

Logan River

The Logan River is a tributary to the Bear River. It was sampled in December of 1994 near the mouth of Little Bear Creek and near Ricks Spring. Fish composition consisted of sculpin, cutthroat trout and brown trout. The cutthroat trout captured in these areas were tagged as part of a migration study being conducted jointly between the UDWR and the Uinta & Wasatch-Cache Nation Forest. UDWR maintains the data for this project so no data will be reported here.

Temple Fork

Temple Fork is a tributary to the Logan River and was surveyed in the spring of 1994. Grazing, logging, camping, off road vehicle travel, fishing and hunting are common activities in the drainage. Fish composition consisted of brook, brown and

cutthroat trout. Cutthroat trout captured in this area were tagged as part of a migration study being conducted jointly between the UDWR and the Uinta & Wasatch-Cache Nation Forest. UDWR maintains the data for this project so no data will be reported here.

Spawn Creek

Spawn Creek is a tributary to Temple Fork and was surveyed in the spring of 1994. Grazing, camping, off road vehicle travel, fishing and hunting are common activities in the drainage. Fish composition consisted of brook, brown and cutthroat trout. The fish captured in this area were tagged as part of a migration study being conducted jointly between the UDWR and the Uinta & Wasatch-Cache Nation Forest. UDWR maintains the data for this project so no data will be reported here.

Bear Lake

Two streams were looked at that drain directly into Bear Lake. These were Hodges Canyon and Swan Creek. Both of these streams when field reviewed in 1994 were dry on Forest.

Bear River (upstream from Bear Lake)

Boundary Creek

Boundary Creek is a tributary to East Fork Bear River and is located on the north slope of the Uinta Mountains. It drains to the north. Boundary Creek was sampled in two locations on 24 of August 1994. A Boy Scout camp is located at the mouth of Boundary Creek. Historical activities in the drainage include tie hacking as evidenced by a number of decaying cabins along the stream and an old road and bridge work in the lower mile of the stream.

The lower sample section was approximately 1 mile upstream of the mouth adjacent to a small group of old cabins. Water temperature at the time of electrofishing the section was 58°F at about 3:15 in the afternoon. Seven brook, one rainbow and five cutthroat trout were collected within the 100 meter sample section. Six additional cutthroat were collected outside the 100 meter sample section. The total length of the brook trout captured ranged from 104mm to 239mm and averaged 126mm (5.0in., Figure 9). The brook trout weight ranged from 13 to 154 grams and averaged 35 grams (1.2 oz.). The total length of the cutthroat trout captured ranged from 162mm to 241mm and averaged 162mm (6.4in., Figure 9). The cutthroat trout weight ranged from

43 to 139 grams and averaged 94 grams (3.3 oz.). No population estimate was made because of lack of time to conduct a second pass.

An upper section starting 100m downstream from Baker Lake and going upstream to the mouth produced only one brook trout which was 212mm long and weighed 132 grams. The water temperature at the time of electrofishing was 62°F at 11:30 in the morning.

Bear River, East Fork

The East Fork Bear River was found to contain rainbow and cutthroat trout, sculpin, longnose dace and mountain suckers. The section sampled goes from the mouth upstream to the Mirror Lake Highway Bridge.

Water temperature at the time of electrofishing the section was 63°F at about 2:12 in the afternoon of 11 August 1994. No second pass was conducted. The total length of the cutthroat trout captured ranged from 137mm to 225mm and averaged 174mm (6.9in., Figure 10).

UDWR sampled some of the upper sections of the E. F. Bear River and maintains the database from that effort.

Bear River, West Fork

The West Fork Bear River was surveyed in two location. The first being where Forest Road 032 crosses over the stream. The upper section was located approximately 3/4 of a mile above Whitney Reservoir where conifers begin to make up the riparian zone. Both sections are 100 meters in length. The survey on 29 August 1994 on the lower section and 7 September 1994 on the upper section. The West Fork Bear River drains to the north and is located on the north slope of the Uinta Mountains. Activities occurring within the drainage include hunting, fishing, camping, grazing and timber harvest.

The lower sample section contained cutthroat trout and sculpin. Water temperature at the time of electrofishing the section was 58°F at about 10:50 in the morning. The total length of the cutthroat trout ranged from 41mm to 240mm and averaged 117mm (4.6in., Figure 11). Their weight ranged from less than 1g to 162 grams and averaged 20.1 grams (3.9 oz.).

An upper section also contained only cutthroat trout and sculpin. The cutthroat trout total length ranged from 26mm to 322mm and averaged 79.1mm (3.1 in., Figure 11). Their weight ranged from less to 1 mm to 287grams and averaged 14.3 grams. The water temperature at the time of electrofishing was 39°F at

10:00 in the morning.

A habitat survey was also conducted on the West Fork in 1994. The results of this survey will be presented in a later document. Cutthroat trout were however seen 2 miles up from the reservoir.

Gold Hill Creek

Gold Hill Creek is a tributary to Hayden Fork and parallels the upper portion of the Gold Hill Road. The stream contains a number of old beaver dams and a few ponds which contain cutthroat trout. This stream was surveyed on the 25 of August 1994 at 10:30 in the morning. Because of the intermittent nature of the stream only one section was surveyed. Joe Fauset, the permittee on the Gold Hill allotment, stated that at one time a saw mill ran on Gold Hill Creek which put waste sawdust into the stream to dispose of it.

Fish in this section were collected where Gold Hill Road and the stream meet each other at a dispersed camp site. No population estimate was attempted because of the ponded nature of the stream. Water temperature at the time of shocking was 60°F.

Cutthroat trout captured ranged from 80 to 244mm and averaged 159.7mm (6.3 in., Figure 12). They weighed from 6 to 122 grams and averaged 40.6g (1.4oz.).

Hayden Fork

Hayden Fork is a tributary to the Bear River and flows north out of the Uinta Mountains. Two sample sections were surveyed in Hayden Fork. Activities which have and/or do occur in the drainage include tie hacking, timber harvest, hunting, fishing, camping and hiking.

The lower section was located adjacent to the Sulphur Campground and started at the mouth of Whiskey Creek and goes upstream 100m. Fish capture within this section included brook, hatchery rainbow, and cutthroat trout, mountain whitefish and piute sculpin. Additional cutthroat trout were collected outside the section for genetic analysis. Within the section 3 (5%) rainbow trout, 35 (53%) brook trout, 2 (3%) cutthroat trout, 1 (2%) mountain white fish, and 25 (38%) sculpin were captured.

The cutthroat trout captured within and outside the survey reach in the area of Sulphur Campground ranged from 108mm to 282mm and averaged 188.8mm in total length (Figure 13). They weighed 12g to 175g and averaged 72.4g. Brook trout ranged from 46mm to 226mm and averaged 144.6mm. Their weight ranged from less than 1g to 104 grams and averaged 40.3 grams.

The upper section started at the mouth of the tributary to Teal Lake and went up the Hayden Fork 100m. Because of equipment failure no fish were collect.

Left Hand Fork

Left Hand Fork is a tributary to the East Fork Bear River. UDWR crews sampled this stream in 1994. Information is currently not available on their findings.

Mill Creek (Summit County)

Mill Creek is a tributary to the Bear River with only the headwater located on National Forest Lands. Two sections were surveyed on Mill Creek in 1994. Historic land uses have included tie hacking or timber harvest as evidenced by the number of old cabins, a tie hack dam, and piles of log slabs which can be found in the drainage. Grazing, hunting and other recreational activities are the primary uses today.

The lower section starts where the North Slope Road crosses over Mill Creek and goes upstream 100m. Additional fish were collected above the section to make up the necessary numbers of fish for genetic analysis. Cutthroat trout and sculpin were found in this area. The population estimate for the 100m section was 19 fish, 100mm and longer. The population estimate ranged from 18, the number of fish captured, to 22 fish. Water temperature at the time of collection, 4:00pm on 10 August 1994, was 56°F. The 46 cutthroat trout captured ranged in total length from 35mm to 244mm and averaged 131.9 (5.2in., Figure 14). The weight of these fish ranged from less than 1g to 137g and averaged 32.0g (1.1oz).

The upper section starts 100m below old road crossing in township 2N, range 11E, section 29 and goes upstream to the road crossing. Additional fish were collected from beaver ponds above

the road crossing to make up the necessary numbers of fish for genetic analysis. Only cutthroat trout were found in this area. The population estimate for the 100m section was 5 fish, 100mm and longer. The population estimate ranged from 5 the number of fish captured to 7. Water temperature at the time of collection, 9:30a.m. on 10 August 1994, was 54°F. In all, 27 cutthroat were collected and measured. They ranged in total length from 125mm to 342mm and averaged 224.5 (8.8in., Figure 15). The weight of these fish ranged from 17g to 370g and averaged 139.3g (4.9oz).

Mill City Creek

Mill City Creek is a tributary to the West Fork Bear River and parallels the Mill City Creek Road. The stream contains a number of beaver dams and supports a good riparian zone. The stream runs dry where it crosses the 032 road to Whitney Reservoir. This stream was surveyed on the 25 of August 1994. At 9:15 in the morning the water temperature was 52°F. Because of the intermittent nature of the stream only one section was surveyed.

Fish in this section were collected where Gold Hill Road and the stream come in close proximity to each other. No population estimate was attempted because of the ponded nature of the stream.

A total of 12 cutthroat trout were capture along with one sculpin. The cutthroat trout ranged in length from 87 to 204mm and averaged 151.7mm (6.0in., Figure 16). They weighed from 6 to 84 grams and averaged 38.6g (1.4oz.). One sculpin was also captured during the survey.

Main Fork

Main Fork is a tributary to the Stillwater River and flows north out of the Uinta Mountains. Two sample sections were surveyed in the Main Fork. Activities which have and/or do occur in the drainage include tie hacking, grazing, timber harvest, hunting, fishing, camping and hiking.

The lower section was located adjacent to the old road from the Hayden Fork comes in sight of the Main Fork. A single old cabin is located on the site. The section goes from this point upstream 100m. Cutthroat trout were the only fish captured in this section. The population estimate for the 100m section was 36 fish, 100mm and longer, and ranged from 30 to 42 fish. The water temperature at the time of sampling, 4:00pm on 23 August 1994, was 56°F. Additional cutthroat trout were collected outside the section for genetic analysis. In all, 33 cutthroat trout were captured. They ranged in length from 94mm to 244mm and averaged 138.6mm in total length (Figure 17). They weighed from 7g to 149g and averaged 29.5g.

The Upper section was located 100m from Hell Hole Lake and went upstream to the lake. The water temperature at the time of sampling, 10:30a.m. on 23 August 1994, was 60°F. Cutthroat trout were the only fish capture in this section. Additional cutthroat trout were collected outside the section for genetic analysis. The cutthroat trout captured ranged from 37mm to 257mm and averaged 104.0mm in total length (Figure 17). They weighed less than 1g to 149g and averaged 15.1g. No population estimate was made for this section because of the complex nature of the habitat.

New Canyon

New Canyon is located west of Randolph, Utah and drains to the east into Little Creek Reservoir. When surveyed on 27 June 1994 this stream was dry on forest.

North Fork Mill Creek

North Fork Mill Creek is a tributary to the Mill Creek, Summit County, and flows north out of the Uinta Mountains. Two sample sections were surveyed in the North Fork Mill Creek. Activities which have and/or do occur in the drainage include tie hacking, grazing, timber harvest, hunting, camping and hiking.

The lower section starts where the North Slope Road crosses the North Fork and goes upstream 100m. The water temperature at the time of sampling, at approximately 9:30a.m. on 9 August 1994, was 53°F. Cutthroat trout and sculpin were the only fish capture in this section. The cutthroat trout captured ranged from 72mm to 215mm and averaged 131.6mm in total length (Figure 18). They weighed 3g to 83g and averaged 24.3g. Only one pass was made in the section because of a rainstorm at the time of sampling. Sediment, transported from the North Slope Road into the stream, made additional sampling on 9 August 1994 impossible.

The upper section starts at the road crossing in Township 2N, Range 11E, Section 16 and goes upstream 100m. The water temperature at the time of sampling, at 9:30a.m. on 11 August 1994, was 47°F. Cutthroat trout were the only fish capture in this section. The population estimate for fish 100mm and longer was 16 fish and ranged from 15, the number caught to 19 fish. Additional cutthroat trout were collected outside the section for genetic analysis. The cutthroat trout captured ranged from 92mm to 200mm and averaged 138.9mm in total length (Figure 18). They weighed 6g to 79g and averaged 33.1g.

Old Canyon

Old Canyon is located west of Randolph, Utah and drains to the east into Little Creek Reservoir. When surveyed on 27 June 1994 this stream was dry on forest and did not contain water until joining with Spring Creek off Forest.

Ostler Fork

Ostler Fork is a tributary to the Stillwater Fork and flows northwest out of Amethyst Basin in the Uinta Mountains. Two sample sections were surveyed in Ostler Fork. Activities which have and/or do occur in the drainage include grazing, hunting, fishing, camping and hiking.

The lower section starts where Ostler Fork enters the Stillwater River and goes upstream 100m. The water temperature at the time of sampling, at 3:40a.m. on 17 August 1994, was 56°F. Cutthroat and brook trout and one sculpin were captured in this section. No population estimate for cutthroat trout or brook trout in the section because of assumption violations. The cutthroat trout captured ranged from 82mm to 199mm and averaged 149.2mm in total length (Figure 19). They weighed 5g to 76g and averaged 38.8g. The brook trout captured ranged from 91mm to 295mm and averaged 194.0mm in total length. They weighed 9g to 192g and averaged 93.1g.

The upper section starts 100 meters downstream from Amethyst Lake and goes upstream to the lake. The water temperature at the time of sampling, at 1:00a.m. on 30 August 1994, was 56°F. Cutthroat and brook trout were the only fish capture in this section. Additional cutthroat trout were collected outside the section for genetic analysis. The cutthroat trout captured ranged from 37mm to 264mm and averaged 182.2mm in total length (Figure 20). No population estimate was made for cutthroat trout because none were captured on the second pass. The cutthroat trout weighed less than 1g to 171g and averaged 56.3g. Brook trout captured ranged from 105mm to 264mm and averaged 197.3mm (Figure 20). The brook trout population was estimated at 25 fish and ranged from 24, the number of fish caught, to 29 fish. The brook trout weighted from 13g to 190g and averaged 92.9g. As a side note two of the brook trout contained mice they had recently swallowed.

Otter Creek

Otter Creek is located west of Randolph, Utah and drains to the east into the Bear River. When surveyed on 27 June 1994 this stream was dry on forest and did not contain water until it reached Township 12N, Range 6E, Section 33 on public lands administered by the Bureau of Land Management. Here, only sculpin were collected. In speaking with UDWR employee Bryce Nelson, rainbow trout were historically stocked at this location.

This area was heavily impacted by domestic livestock.

Pole Canyon

Pole Canyon is located west of Randolph, Utah and drains to the east into Little Creek Reservoir. When surveyed on 27 June 1994 this stream was dry on forest except for some stock watering ponds and did not contain water until joining with Old Canyon and Spring Creek off Forest.

Right Hand Fork

Right Hand Fork is a tributary to the East Fork Bear River. UDWR crews sampled this stream in 1994. Information is currently not available on their findings.

Spring Creek

Spring Creek is a tributary to Old Canyon Creek and is located west of Randolph, Utah. One sample section was surveyed in Spring Creek. Grazing is the main activity occurring in the drainage.

This section starts where the road crosses over Spring Creek, near its mouth and goes upstream 100m. This section was located off forest. At the time of sampling, 27 June 1994 at 10AM., the water temperature was 59°F. Brook trout and sculpin were captured in this section. The brook trout captured ranged from 62mm to 232mm and averaged 118.6mm in total length (Figure 21). They weighed 2g to 127g and averaged 32.2g. A second pass was not conducted because of time constraints. The close proximity of the road and grazing were causing silt to accumulate in the stream.

Stillwater Fork

The Stillwater Fork is a tributary to the Bear River and flows north from the Uinta Mountains. Three sample sections were surveyed in Stillwater Fork. Activities which have and/or do occur in the drainage include timber harvest, grazing, hunting, fishing, camping and hiking. Summer homes are also located along the reach of the stream.

The lower section starts at the uppermost campsite in the stillwater campground and goes upstream 100 meters. Species of fish captured within the section included mountain whitefish (37, 50%), cutthroat (1,1%), rainbow (10, 14%) and brook trout (5,

7%), mountain sucker (6, 8%) and sculpin (15, 20%) were captured in this section. Twentyfour additional cutthroat were captured above this section. Equipment failure prevented weights from being taken from all fish. This sample was taken on 15 August 1994 at approximately 10a.m. with the water temperature being 61°F. The cutthroat trout captured ranged from 37mm to 264mm and averaged 159mm in total length (Figure 22). They weighed from less than 1g to 159 grams and averaged 42.4g. The rainbow trout captured ranged from 209mm to 279mm and averaged 252.7mm in total length. The rainbow trout population was estimated at 11 fish, 100mm and over, and ranged from 10, the number captured to 13 fish. The brook trout captured ranged from 59mm to 173mm and averaged 109.4mm in total length. They weighed 2g to 21g and averaged 115g. The whitefish captured ranged from 62mm to 294mm and averaged 215.3mm in total length. The white fish population was estimated at 61 fish, 100mm and over, and ranged from 53 to 68 fish.

The middle section starts at the mouth from the tributary out of West Basin and goes upstream for 100m in the main Stillwater. Only cutthroat trout were collection. Additional cutthroat were collected above the survey section for genetic analysis. The water temperature at the time of sampling, 17 August 1994 at 10:40a.m., was 47°F. The cutthroat trout ranged in total length from 87mm to 233mm and averaged 144mm in total length (Figure 23). They weighed from 5g to 102 grams and averaged 33g. A couple of bedrock slides historically may have precluded cutthroat trout from historically inhabiting this area. The cutthroat trout population was estimated at 24 fish and ranged from 23, the number of fish captured, to 27 fish.

The upper section starts where the trail is adjacent to a bedrock slide and goes upstream for 100 meters. The cutthroat trout captured ranged from 37mm to 251mm and averaged 137.4mm in total length (Figure 23). They weighed less than 1g to 137g and averaged 35.4g. The population was estimated at 23 fish and ranged from 22, the number of fish captured, to 27 fish.

Unnamed tributary (West Basin)

An unnamed tributary which drains West Basin and drains into the Stillwater Fork was also sampled on 16 August 1994. This stream will here after be referred to as "West Basin Creek". The sampling location was in the outlet stream of Kermsuh Lake. At this location 29 cutthroat were captured. Their total length ranged from 82 to 342mm and averaged 206mm (Figure 24). Their weight ranged from 4 to 278g and averaged 89.5g. The cutthroat trout in Kermsuh Lake were stocked.

Unnamed tributary (Teal Lake)

An unnamed tributary which drains Teal Lake and drains into Hayden Fork was also sampled in 1994. This stream will here after be referred to as "Teal Lake Tributary". The sampling locations were in the outlet stream of Teal Lake and went 100m downstream from the lake up to the lake. The cutthroat and brook trout in Teal Lake were stocked.

At the most upstream location, three cutthroat and two brook trout were capture. The cutthroat trout ranged in total length from 57 to 143mm and averaged 113mm. They weighed from less than 1g to 30g and averaged 18g. The brook trout ranged in total length from 160 to 275mm and averaged 218mm. They weighed from 34 to 144g and averaged 89g.

At the lower location, one cutthroat and three brook trout and three sculpin were capture. The cutthroat trout was 126mm long and weighed 18g. The brook trout ranged in total length from 139 to 174mm and averaged 157mm. They weighed 24g to 53g and averaged 38g. The fish counts in this tributary should not be used for more than just presents and absents information and wight and length. The collection equipment was in questionable operating condition.

Whiskey Creek

Whiskey Creek was sampled from the mouth going upstream 100 meters. The area consisted of a number of small beaver dams and diversions. Only 26 brook trout were captured in this section. They ranged in total length from 73mm to 227mm and averaged 149mm (Figure 25). Their weighed ranged from 3g to 135g and averaged 40g. The stream was also checked above the Mirror Lake highway with only brook trout being captured. No population estimate was made because of the ponded nature of the stream.

Ogden River Basin

Wheeler Creek

Wheeler Creek is a tributary to the Ogden. It's mouth is located just downstream of Pineview Dam. The sampling location is found approximately 2.75 miles upstream from the mouth. Cutthroat trout were the only fish captured at this location. Brown trout are know to live in the lower reaches of the stream.

The thirty cutthroat trout captured ranged in length from 52mm to 299mm and average 140mm (Figure 26). They weighed from 2g to 282 grams and averaged 37.5g. No population estimate was made for the reach because the same number of fish were caught during the first two passes. A third pass was made capturing only one fish. The genetic testing suggest two different type of subspecies. One of Bonneville origin and the other of Yellowstone origin. However, the results were not fully available because of some on going work to establish baseline information (Shiozawa and Evans 1994). Habitat inventories were also completed and have been written up in "Wheeler Creek, Ogden River Drainage, Utah; A Stream Survey" by Cowley (1994).

Weber River Basin

Gardners Fork

Gardners Fork is a tributary to the Weber River. Gardners Fork was surveyed from the trail head crossing upstream 100 meters. Six cutthroat trout were captured during the first pass, seven the second pass and three the third pass. Sculpin were also found in the section. No population estimate was made because of inconsistent capture rates. Cutthroat trout were also collected from below and above the survey section to aid in the genetic analysis. In all 25 cutthroat trout and 6 sculpin were collected. The cutthroat trout ranged, in total length, from 78mm to 333mm and averaged 219.8mm (Figure 27). They weighted from 8g to 356 grams and averaged 125.9.

Blacks Fork Basin

Little West Fork Blacks Fork

Little West Fork Blacks Fork is a tributary to the Blacks. it originates in the Uinta Mountains and flow in a northeasterly direction.

In 1975 a fish migration barrier was install in the Little West Fork Blacks Fork. In 1979-81,1983,1984 Macro-invertebrate samples were collected. Results from the 1981 survey suggest that no clean water species were collected. Organic enrichment and sedimentation impacts were found to occur based on species collected. In 1980 an exclosure was installed on the Little West Fork Blacks Fork. In 1981 willows were planted along the stream. Prior to 1983 some fish structures were also installed. Monitoring of these structures took place in 1983. At that time a number of the structures were listed in fair condition and in need of repair. In 1994 while sampling the stream these structures were seen. None of the structures were functioning at that time. The majority of them were on the bank out of the water. Riparian vegetation along the Little West Fork Blacks Fork is limited and grazing appears to be heavy.

Cutthroat trout and mountain suckers were found to be present during the survey conducted on 29 August 1994. The water temperature was 62°F in the afternoon. The sampling location is near the end of a two track road that goes along the southeast side of the stream. the fish collection was taken in section 25, Township 3N, Range 11E where two tributaries meet. In all 126 cutthroat were collected. They ranged in size from 36mm to 213mm and averaged 104mm (Figure 28). The cutthroat trout population was estimated at 75 fish, 100mm and longer, and ranged from 69 fish, the number caught, to 82 fish. Their weight ranged from less than 1g to 84g and averaging 15g.

Henrys Fork Basin

Fallon, Poison and Spring creeks, tributaries to the Henrys Fork, were surveyed in June of 1994. The area surveyed was from the forest road (046) crossing upstream 100m and then downstream to the forest boundary on Poison and Spring creeks. Fallon Creek was dry at the road crossing. No fish were collected in either Poison or Spring creeks.

Burnt Fork Basin

Tributaries to Beaver Meadow Reservoir were sampled in 1994. The tributary that runs straight south contained no fish over a limited reach surveyed. A lightning storm precluded us from sampling a greater length of stream.

The tributary which drains from the southeast contained cutthroat trout. The reach surveyed started where willows first meet the stream after coming from the lake and goes upstream for 100m. Additional fish were collected upstream of the reach to meet the number of fish needed for genetic analysis. In all the cutthroat ranged from 66 to 185mm and averaged 99.5mm (Figure 29). The cutthroat trout population estimate, for fish 100mm and longer, was 10 fish and ranged from 9, the number of fish captured, to 13 fish. Because of equipment failure the weight information was not collected. Grazing appears to be impacting this system along with reservoir fluctuations.

OPPORTUNITIES AND RECOMMENDATIONS

Opportunities mean many different things to different people. In this report, I have viewed opportunities from a fish management perspective. Ecosystem management principles would suggest that we manage for all resources so as to not lose any one part. In this report I have dealt with mainly fish issues or habitat issues which were obvious at a glance. No habitat survey was conducted to identify specific habitat project which could be implemented to improve fish habitat.

Streams like Bear Hollow, Gold Hill, Mill City, Otter Creek, Pole Canyon, Spring Creek, West Basin tributary, Teal Lake tributary, Poison Creek and Spring Creek are not large enough to make it worth while to conduct fish habitat surveys on. It would be beneficial to conduct habitat surveys on the other streams mentioned in this report.

Bonneville Basin

Big Cottonwood Creek

In Big Cottonwood Creek the Forest has the opportunity to provide for a strong resident trout fishery close to a major metropolitan area. Brook trout have the ability to sustain heavy fishing pressure if adequate spawning and rearing habitat is available. All three section had evidence of spawning occurring. There were also a number of young of the year and age one fish found within these sections. If spawning beds (redds) and cobble and larger gravel is dewatered a number of fish will be killed. This will reduce recruitment to the fishery and the spawning population affecting this popular fishery.

Mill Creek (Salt Lake County)

The structure work and riparian rehabilitation in Mill Creek is benefiting the aquatic ecosystem and the public. The majority of the stocked fish appear to be in good condition. Fish were collected in close proximity to all operating structures.

In the area adjacent to Maple Grove Picnic area, a number of fish were found to be using the old structures. This may be due to the increased depth of water or the lack of passage over these structures.

Mill Creek (Davis County)

Mill Creek in Davis County provides a unique opportunity. This stream could be used to hold native Bonneville cutthroat trout. It is likely that this stream contained Bonneville cutthroat trout historically but due to dewatering and high flood flows the fish were removed from the system with no opportunity to recolonize the area. Prior to moving fish into this system amphibian, snail and macroinvertebrate surveys should be conducted to prevent adverse affects which may occur from the stocking. Cutthroat trout were historically found in this drainage.

Mill D South Creek (Salt Lake County)

Mill D South Creek in Salt Lake County provides a unique opportunity. This stream could be used to hold native Bonneville cutthroat trout. It is likely that this stream contained Bonneville cutthroat trout historically but due to mining and high flood flows the fish were removed from the system with no opportunity to recolonize he area. Water quality, which may be a possible problem as a result of historic mining in the area, would need to be checked for suitability. Prior to moving fish into this system amphibian, snail and macroinvertebrate surveys should be conducted to prevent adverse affects which may occur from the stocking.

North Willow Creek

North Willow Creek is one of the most productive streams on the forest. There is an opportunity to improve water quality and riparian vegetation through reducing the number of roads in the area and improving riparian vegetation. Dispersed recreation sites also appear to be contributing to sedimentation of the stream. This nursery stream provide much of the fish production for the Grantsville Reservoir and the fishery which occurs there.

North Willow Creek may also provide the opportunity for restocking native Bonneville cutthroat trout. The stream could

easily be treated and restocked. However, with the amount of fishing pressure the stream endures the chances of reducing fishing success with the removal of a non-native fishery would be high. Overfishing may also occur if the stream contained only cutthroat trout.

South Willow Creek

South Willow Creek is one of two streams providing the fishery on the Stansbury Mountains. With six campgrounds and two trailheads along this stream, South Willow Creek is an important recreational resource. It provides fishing opportunities for local campers.

South Willow Creek may also provide the opportunity for restocking native Bonneville cutthroat trout. The stream could easily be treated and restocked. However, with the amount of fishing pressure the stream endures the chances of reducing fishing success with the removal of a stocked fishery would be high. Overfishing may also occur if the stream contained only cutthroat trout.

BEAR RIVER (downstream of Bear Lake)

Bear Hollow

The fish using Bear Hollow are unique in comparison to fish using the non intermittent streams. When we checked the fish in Bear Hollow they were ripe and ready to spawn. Fish checked the same day in Little Bear Creek were still green. This would suggest that the fish from Bear Hollow are genetically adapted to moving into the stream and spawning earlier thus providing for an early hatch. If this population were to be lost finding another strain with this spawning pattern would be difficult.

Beaver Creek

The opportunity exists in Beaver Creek to improve fish habitat through reducing sediment entering the stream from the number of fords and roads in the drainage. Opportunities also exist to improve fish habitat through restoring riparian vegetation and reducing grazing and people impacts. From a fish management perspective treatment of this drainage to remove or reduce competition from exotic species would also benefit native cutthroat trout populations.

I would recommend that the Uinta & Wasatch-Cache National Forests in conjunction with the Caribou National Forest conduct

habitat inventories on Beaver Creek. The upper Logan River, of which Beaver Creek is a part of, has been identified as a possible reserve area for Bonneville cutthroat trout.

Little Bear Creek

Little Bear Creek is one of the most important spawning tributaries on the Logan River for cutthroat trout. Dispersed recreation along Little Bear Creek and the Logan River in the vicinity of Little Bear Creek is reducing the riparian vegetation and fish cover. The opportunity exists with the close proximity of the Utah State University Forestry Field Station to allow Little Bear Creek to be used to better educate teachers and students in stream ecology. Care would have to be taken to prevent the overutilization of the fishery resource if it were used in this manner.

Logan River

Dispersed recreation is a major challenge along the Logan River and its tributaries. If dispersed recreation could be better controlled and hardened access points to the stream provided, there may be an opportunity to restore riparian vegetation that has been lost through people trampling.

From a fish management point-of-view the opportunity exists to provide for the removal of non-native fish through increased harvest. Currently the limit of 2 under 12 inches and one over 18 inches may preclude the removal of nonnative fish. It may be better to open up the nonnative fish to higher fishing.

Temple Fork and Spawn Creek

Temple Fork and Spawn Creek could be improved by shifting the road up the slope away from the stream. The road project up Temple Fork has already been proposed and is waiting funding. The other project which has been proposed up Temple Fork and Spawn Creek is the removal of some old log weirs which may be inhibiting fish passage and preventing the stream from narrowing. This project will be initiated in 1995 if funding is available.

Dispersed recreation is a major challenge in the Temple Fork Drainage. If dispersed recreation and grazing could be better controlled and hardened access points to the stream provided, there may be an opportunity to restore riparian vegetation that has been lost through people and livestock trampling.

From a fish management point-of-view the opportunity exists to provide for the removal of non-native fish through increased

harvest. Currently the limit of 2 under 12 inches and one over 18 inches may preclude the removal of nonnative fish. It may be better to open up the nonnative fish to higher fishing.

Bear Lake

No opportunities for fisheries improvement work were identified for Hodges Canyon and Swan Creek.

Bear River (upstream from Bear Lake)

Boundary Creek

Boundary Creek could be improved through increasing the harvest of non-native fish and in stocking native cutthroat in Baker Lake. Overall habitat conditions appear to be in good condition.

Bear River, East Fork

There are opportunities to improve fisheries in the East Fork of the Bear River through reducing sediment from some of the high cut banks. There is also an opportunity to improve fish production in the East Fork Bear River through utilizing the irrigation withdraw canals as spawning channels. There are currently two irrigation canals which withdraw water from the East Fork of the Bear River. These canals parallel the East Fork for a total of about 3,000 feet. The bottom of the canals consists of spawning size gravels. In looking over these canals in 1994 a number of juvenile fish had been trapped in the canals after the water had been shut off. Neither of the diversions had fish screens. If a rotating screen were installed down the canal with a bypass back to the main channel fish could use the irrigation canal as a side spawning channel.

Bear River, West Fork

The main opportunity to improve the water quality in the West Fork Bear River would come from improving road crossing and fords which exist in the drainage. A number of the roads could have water bars installed to prevent sediment and road runoff from reaching the stream.

Gold Hill Creek

Gold Hill Creek could be improved through increased willow plantings along the stream. Currently little vegetation is found along the stream to provide for fish habitat and riparian species.

Hayden Fork

The opportunity exists along Hayden Fork to improve riparian vegetation along those sections of streams impacted by campgrounds. Access points could be hardened and riparian vegetation planted to improve the aquatic ecosystem.

Mill Creek (Summit County)

Opportunities for improving water quality in Mill Creek exist. The road that runs parallel to the stream could be improved with increased water drainage structures which would prevent water from eroding the road surface.

Mill City Creek

The only opportunity which was identified to improve Mill City Creek would be to improve the road crossing high in the drainage to prevent sediment from entering the stream.

Main Fork

The only opportunity which was identified to improve Main Creek would be to improve the trail crossings in the drainage to prevent sediment from entering the stream.

New Canyon

No opportunities were identified in New Canyon.

North Fork Mill Creek

Opportunities for improving water quality in North Mill Creek exist. The North Slope Road that runs parallel to the stream could be improved with increased water drainage structures and surfacing the road. Sediment is currently being delivered to the stream from this road surface. Trash found on private land, adjacent to an old logging mill could also be removed from the

stream.

Old Canyon

No opportunities were identified for Old Canyon on Forest. Off forest the road paralleling the stream is contributing a significant amount of sediment to the stream. Because of the arid nature of the drainage, grazing impacts also appear to be sever.

Ostler Fork

No opportunities were identified on Ostler Fork. To think of removing brook trout from the drainage appears to be impossible. This is especially true with the remoteness of the area.

Otter Creek

No opportunities were identified for Otter Creek on Forest. Off forest grazing appears to be having an impact on the stream down near the spring feeding the stream. These spring should be fenced off to protect water quality. The amount of water these spring produce and the lack of fish in these water a small native fish hatchery could be placed here to provide for future needs to preserve the Bonneville cutthroat trout.

Pole Canyon

No opportunities were identified for Pole Canyon on Forest.

Spring Creek

No opportunities were identified for Spring Creek on Forest. Off forest the road paralleling the stream is contributing a significant amount of sediment to the stream. Because of the arid nature of the drainage, grazing impacts also appear to be sever.

Stillwater Fork

There is an opportunity to improve water quality in the Stillwater Fork through improving the trail up the Stillwater Fork. Many of the crossing are fords with sections of wetlands with no boardwalks through them.

Unnamed tributary (West Basin)

No opportunities were identified for the unnamed tributary which drains West Basin.

Unnamed tributary (Teal Lake)

No opportunities were identified for the unnamed tributary which drains Teal Lake.

Whiskey Creek

No opportunities were identified for Whiskey Creek.

Ogden River Basin

Wheeler Creek

The opportunities identified to improve Wheeler Creek include the removal of old or non functioning bridges and culverts.

Weber River Basin

Gardners Fork

No opportunities were identified for Gardners Fork.

Blacks Fork Basin

Little West Fork Blacks Fork

Opportunities in the Little West Fork Blacks Fork include restoring riparian vegetation along the stream banks. Removal of the old fish structure which are currently nonfunctioning would also improve the aquatic system.

Henry's Fork Basin

Only the road crossings were identified with Fallon, Poison and Spring creeks. Sedimentation from the road could be affection species found in the aquatic ecosystem.

Burnt Fork Basin

The main opportunity to improve the tributaries to Beaver Meadow Reservoir and the reservoir its self would be to plant riparian vegetation and reduce impacts from trampling from cows and recreational visitors.

All fish samples have been taken to Brigham Young University for analysis. Because of limited money, only a few of the fish from each stream will be analyzed at this time (Table 3). Priority for the analysis of the fin clips was based on (1) greatest potential of loss to project around streams, (2) streams with the potential of being genetic reserve areas, (3) streamns which have a high likelihood of being pure, and (4) the remaining stream populations.

Table 3. Fish samples taken to Brigham Young University in 1994 by the Wasatch-Cache National Forest. Samples were from sites in Utah.

<u>Stream</u>	<u>Drainage</u>	<u>Fin Clips</u>	<u>Whole Fish</u>
BEAR HOLLOW	LOGAN RIVER	7	
GARDNERS FORK	WEBER RIVER	19	5
LITTLE BEAR	LOGAN RIVER	21	
SPAWN CREEK	LOGAN RIVER	30	
BEAVER CREEK (LOWER)	LOGAN RIVER	30	5
BEAVER CREEK (UPPER)	LOGAN RIVER	30	5
HAYDEN FORK	BEAR RIVER	25	
TEAL LAKE TRIB.	BEAR RIVER	2	
MILL CREEK (LOWER)	BEAR RIVER	27	5
MILL CREEK (UPPER)	BEAR RIVER	27	
N.F. MILL CREEK (UPPER)	BEAR RIVER	30	
E.F. BEAR RIVER (LOWER)	BEAR RIVER	3	
MILL CITY CREEK	BEAR RIVER	12	
LITTLE W.F. BLACKS FORK	BLACKS FORK	30	5
BOUNDARY CREEK	EAST FORK BEAR	11	
N.F. MILL CREEK (LOWER)	BEAR RIVER	30	4
OSTLER FORK (LOWER)	STILLWATER FORK	17	
OSTLER FORK (UPPER)	STILLWATER FORK	30	
STILLWATER F. (LOWER)	BEAR RIVER	22	5
STILLWATER F. (MIDDLE)	BEAR RIVER	30	5
STILLWATER F. (UPPER)	BEAR RIVER	30	
GOLD HILL CREEK	HAYDEN FORK	30	5
WEST BASIN CREEK	STILLWATER FORK	14	1
W.F. BEAR RIVER (UPPER)	BEAR RIVER	30	
W.F. BEAR RIVER (LOWER)	BEAR RIVER	30	5
MAIN FORK (LOWER)	BEAR RIVER	30	3
MAIN FORK (UPPER)	BEAR RIVER	30	5
BEAVER MEADOW RES. TRIB,	BURNT FORK	30	

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APPENDIX