

Annual Progress Report  
for  
Bonneville Cutthroat Trout  
(*Oncorhynchus clarki utah*)  
in the  
State of Utah

Prepared by:

J. Michael Hudson  
Native Aquatic Species Biologist

Utah Department of Natural Resources  
Division of Wildlife Resources  
Salt Lake City, Utah

Publication Number 99-

October 1999

draft

## TABLE OF CONTENTS

TABLE OF CONTENTS .....	ii
LIST OF TABLES .....	iii
LIST OF FIGURES .....	iv
INTRODUCTION .....	1
PURPOSE .....	1
SUMMARY OF CONSERVATION ACTIONS IMPLEMENTED BY GEOGRAPHIC MANAGEMENT UNIT .....	3
<i>Bear Lake Management Unit</i> .....	3
<i>Bear River Management Unit</i> .....	3
<i>Northern Bonneville Management Unit</i> .....	5
<i>West Desert Management Unit</i> .....	9
<i>Southern Bonneville Management Unit</i> .....	9
LITERATURE CITED .....	10

**LIST OF TABLES**

Table 1. Conservation actions implemented within the Bear Lake GMU ..... 3

Table 2. Conservation actions implemented within the Uinta Mountains/ Upper  
Bear River subunit ..... 4

Table 3. Conservation actions implemented within the Rich County subunit ..... 4

Table 4. Conservation actions implemented within the Cache Valley subunit ..... 5

Table 5. Conservation actions implemented within the Ogden River subunit ..... 5

Table 6. Conservation actions implemented within the Weber River subunit ..... 6

Table 7. Conservation actions implemented within the Jordan River subunit ..... 7

Table 8. Conservation actions implemented within the Utah Lake/ Provo River  
subunit ..... 7

Table 9. Conservation actions implemented within the West Desert GMU ..... 8

Table 10. Conservation actions implemented within the Southern Bonneville GMU ..... 9

**LIST OF FIGURES**

Figure 1. Geographic Management Units designated for BCT conservation within  
the State of Utah ..... 2

## INTRODUCTION

The Bonneville cutthroat trout (BCT) is a unique subspecies of the cutthroat trout complex native to the Bonneville Basin. During the Pleistocene, Lake Bonneville and its drainage covered parts of Utah, Nevada, Idaho, and Wyoming. Historically, BCT occurred throughout this drainage. With desiccation of ancient Lake Bonneville, BCT became restricted to headwater streams and lakes with suitable trout habitat. Past and present human activities such as water development, agricultural activities, energy development, mining, timber harvesting, grazing, over-fishing and the introduction of non-indigenous species have directly impacted BCT populations and altered the Bonneville Basin ecosystem. Because of the tenuous status of remaining BCT populations and habitat, BCT conservation efforts have been directed through federal, state and local agencies.

The Conservation Agreement and Strategy for Bonneville Cutthroat Trout (*Oncorhynchus clarki utah*) in the State of Utah (Conservation Agreement; Lentsch et al. 1997) was developed to expedite implementation of conservation measures for BCT in Utah as a collaborative and cooperative effort among resource agencies. Threats that warrant BCT listing as a sensitive species by state and federal agencies and as threatened or endangered under the Endangered Species Act of 1973, as amended, should be eliminated through implementation of the Conservation Agreement.

## PURPOSE

The success of any conservation or recovery program depends on eliminating or reducing the impact of activities that threaten the species existence. The Conservation Agreement outlines a list of actions, by Geographic Management Unit (Figure 1), that would eliminate or reduce threats to BCT persistence. The purpose of the annual progress report is to summarize implementation of the outlined activities that occurred during 1998. Activities that occurred during 1996 and 1997 were summarized in a previous report (Lentsch and Wilson 1998).

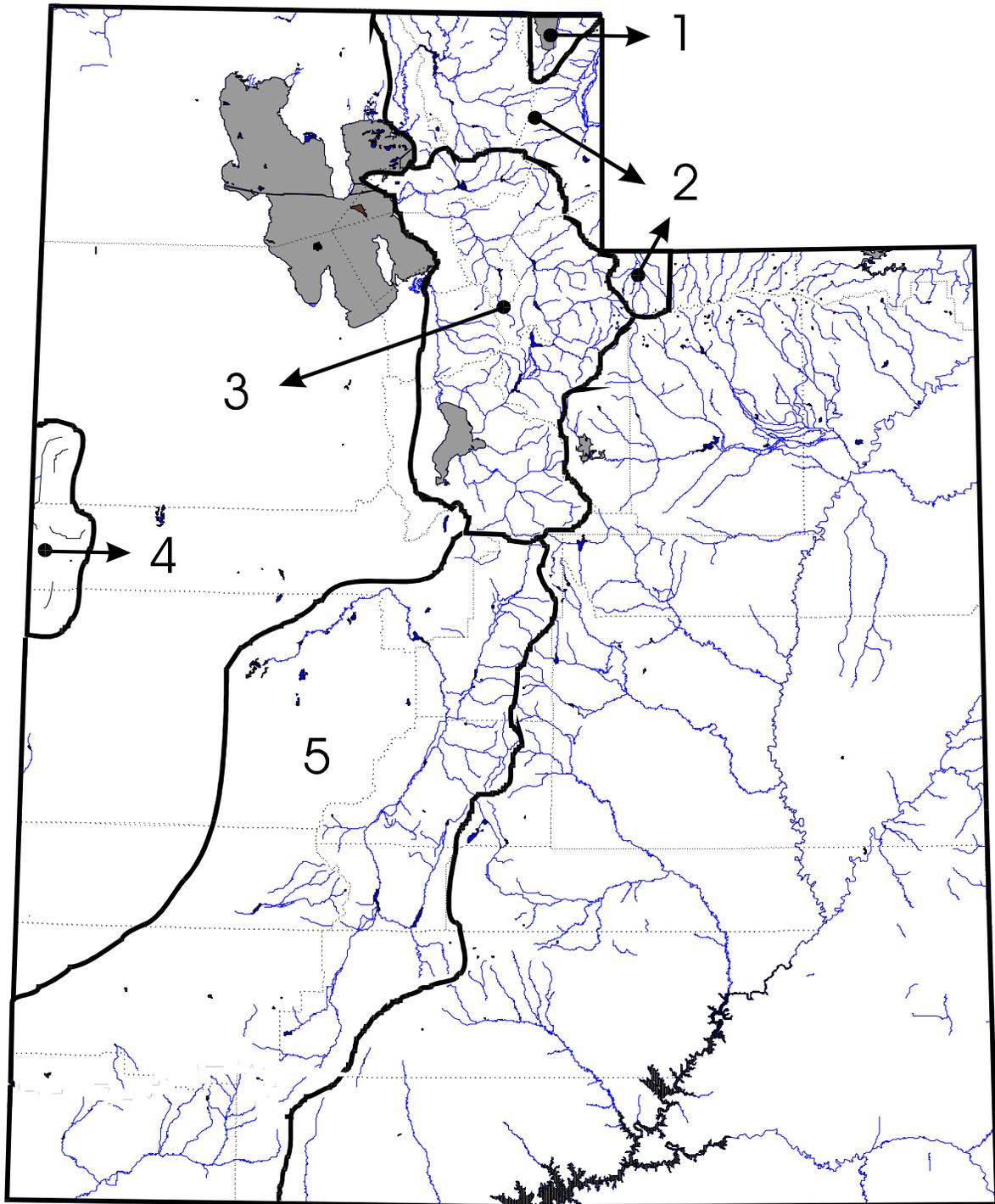


Figure 1. Geographic Management Units designated for BCT conservation within the State of Utah. 1=Bear Lake; 2=Bear River; 3=Northern Bonneville; 4=West Desert; 5=Southern Bonneville.

**SUMMARY OF CONSERVATION ACTIONS IMPLEMENTED BY GEOGRAPHIC  
MANAGEMENT UNIT**

***Bear Lake Management Unit***

*Unit description:*

Bear Lake is a natural lake that is at least 23,000 years old. It covers 70,000 surface acres and averages 80 feet deep. Bear Lake is bisected by the Utah-Idaho state line. Historically, Bear Lake was an oligotrophic, nitrogen limited, terminal lake with a pH exceeding 8.0. However, diversion of the Bear River into Bear Lake for irrigation water storage since 1917 is altering Bear Lake chemistry. Bear Lake's native fish community includes a lacustrine form of BCT that is piscivorous and relatively long lived (Nielson and Lentsch 1988). In addition, the lake contains four endemic species of whitefish, cisco and sculpin.

Table 1. Conservation actions implemented within the Bear Lake GMU.

State Water ID #	Reach	Implemented Conservation Actions
IVAQ405	S Bear Lake	S The Lake population is monitored annually. Monitoring did occur in 1998.
IVAQ120B	S Swan Creek	S Eggs were collected from the wild brood at Swan Creek in 1998. These eggs contributed to the total of 327,881 Bear Lake cutthroat trout stocked into Bear Lake in 1998.
IVAQ120C	S Big Spring Creek	S Bear Lake cutthroat population observed spawning in Big Spring Creek in 1998. The minimum flow bypass habitat project was completed in 1998. This will allow water to bypass an irrigation structure at all times with exception of extreme drought which will protect downstream spawners, eggs and progeny. Plans are continuing to improve the spawning habitat and riparian zone.
IVAQ120D	S Laketown Creek	S Less than 10 adults introduced from North Eden Creek during 1998. Population monitoring occurs annually.
IVAQ120F	S North Eden Creek	S No further translocation from this stream will occur after 1998 until the population improves. It is currently recovering from the past drought and is being impacted by grazing.

***Bear River Management Unit***

*Unit Description:*

This GMU is characterized by aspen and subalpine fir/spruce forests and willow dominated meadows. Lower elevations may be dominated by sagebrush communities. Elevation ranges from 5,000 to 11,000 feet. Stream gradient ranges from high gradient in canyon reaches to low gradient in meadows. Hydrology of streams are characterized by high spring runoff peaks during snowmelt and low to intermittent fall and winter base flows.

For management purposes, the Bear River Management Unit was divided into three geographic

draft

subunits: 1) Uinta Mountains and Upper Bear River drainage, 2) Rich County drainage and 3) Cache Valley drainage.

Table 2. Conservation actions implemented within the Uinta Mountains/ Upper Bear River subunit.

State Water ID #	Reach	Implemented Conservation Actions
IV AQ 230 01	Drainage: <i>Mill Creek</i> S Mill Creek	S Genetic samples collected in 1998.
IV AQ 260 01	Drainage: <i>Stillwater Fork</i> S Stillwater Fork	S Molecular analysis completed in 1998.
IV AQ 270 01	Drainage: <i>Hayden Fork</i> S Hayden Fork	S Molecular analysis completed in 1998.
IV AQ 240A 01	Drainage: <i>West Fork</i> S Deer Creek	S Surveyed and genetic samples collected in 1998. Population estimate and HQI completed in 1998.
IV AQ 240 02	S Upper West Fork of Bear River	S Molecular analysis completed in 1998.

Table 3. Conservation actions implemented within the Rich County subunit.

State Water ID #	Reach	Implemented Conservation Actions
IV 407	Drainage: <i>Big Creek</i> S Woodruff Reservoir	S Molecular analysis completed.
	Drainage: <i>Deseret Land/Livestock</i> S Meecham Creek	S Monitoring occurred in Meecham Creek in 1998. This stream was seeded with Bear River Bonneville cutthroat trout in 1996. Prior to that time, it was fishless due to a severe drought situation. Habitat has been improved with fencing protecting the riparian zones and off-channel livestock watering. Sampling and further observation indicate that this stream is fully seeded.

Table 4. Conservation actions implemented within the Cache Valley subunit.

State Water ID #	Reach	Implemented Conservation Actions
	Drainage: <i>Logan River</i>	
IV AQ 040A 14 01	S Bunchgrass Creek	S Genetic samples collected in 1998.
IV AQ 040A 08A 01	S Spawn Creek	S Molecular analysis completed in 1998.

***Northern Bonneville Management Unit***

*Unit Description:*

The North Bonneville Management Unit ranges in elevation from 5,000 to approximately 10,000 feet. The vegetational community is characterized by high desert sagebrush at lower elevations, and aspen and subalpine fir/spruce communities at higher elevations. Riparian areas are generally dominated by willows or mountain maples and gamble oak. Stream gradient ranges from extremely high alpine streams to low gradient meadow meanders. Lower elevation areas have extensive agricultural and urban development whereas inaccessible high elevation areas tend to be more pristine. Habitat condition is highly variable among drainages and streams.

For management purposes, the Northern Bonneville Management Unit was divided into four management subunits: 1) the Ogden River drainage; 2) the Weber River drainage; 3) the Jordan River drainage; 4) the Utah Lake/ Provo River drainage.

Table 5. Conservation actions implemented within the Ogden River subunit.

State Water ID #	Reach	Implemented Conservation Actions
	Drainage: <i>Ogden River</i>	
IVAP 030B 05 01	S Left Fork of South Fork Ogden River	S Molecular analysis completed in 1998.

Table 6. Conservation actions implemented within the Weber River subunit.

State Water ID #	Reach	Implemented Conservation Actions
	<i>Drainage: East Canyon Creek</i>	
IV AP 150O 01	S Toll Canyon	S Surveyed and genetic samples collected in 1998. Population estimate and HQI completed in 1998.
IV AP 150P 01	S Two Mile Creek	S Surveyed in 1998.
IV AP 150Q 01	S Three Mile Creek	S Attempted to survey in 1998. However, uncooperative landowner prevented this work. Will attempt to survey in 1999.
	<i>Drainage: Echo Creek</i>	
IV AP 210A 01	S Sawmill Creek	S Attempted to survey in 1998. However, uncooperative landowner prevented this work. Will attempt to survey in 1999.
	<i>Drainage: Chalk Creek</i>	
IV AP 230A 01	S South Fork Chalk Creek	S Surveyed and genetic samples collected in 1998. Population estimate and HQI completed in 1998.
IV AP 230A 05 01	S Fish Creek	S Surveyed and genetic samples collected in 1998. Population estimate and HQI completed in 1998. 130 Bonneville cutthroat trout transplanted from Fish Creek into a private pond for a possible future brood source.
IV AP 230C 01	S East Fork Chalk Creek	S Surveyed and genetic samples collected in 1998. Population estimate and HQI completed in 1998.
IV AP 280 01	S Silver Creek	S Surveyed and genetic samples collected in 1998. Population estimate and HQI completed in 1998. This population was an additional population not identified in conservation strategy for 1998.
	<i>Drainage: Upper Weber River</i>	
IV AP 400D 01	S Red Pine Creek	S Molecular analysis completed in 1998.
IV AP 400D 01 01	S Box Canyon Creek	S Molecular analysis completed in 1998.

Table 7. Conservation actions implemented within the Jordan River subunit.

State Water ID #	Reach	Implemented Conservation Actions
	Drainage: <i>Jordan River</i>	
IV AA 030 IV AA 040 02	S Emigration Creek S Parley's Creek	S Surveyed and genetic samples collected in 1998. S Genetic sample collected in 1998 for identification of hybrid individuals in broodstock production of Bonneville cutthroat trout. Molecular analysis completed in 1998.
IV AA 040A 01	S Mountain Dell Creek	S Surveyed and genetic samples collected in 1998. Samples collected for disease certification in order to potentially use in future transplants.
IV AA 090 01	S Bell Canyon Creek	S Surveyed and genetic samples collected in 1998.

Table 8. Conservation actions implemented within the Utah Lake/ Provo River subunit.

State Water ID #	Reach	Implemented Conservation Actions
	Drainage: <i>American Fork</i>	
V AB V AB 020	S American Fork Creek S North Fork of American Fork Creek	S Molecular analysis completed in 1998. S Surveyed in 1998.
	Drainage: <i>Provo River</i>	
V AF 170 01 V AF 180 01 V AF 200A 02	S Bench Creek S Little South Fork of Provo River S Upper Boulder Creek	S Surveyed and genetic samples collected in 1998. S Ongoing population monitoring. S Molecular analysis completed in 1998.
	Drainage: <i>Hobble Creek</i>	
V AJ 020 E 01	S Wardsworth Creek	S Surveyed and genetic samples collected in 1998.
	Drainage: <i>Thistle Creek</i>	
V AK 030E 01	S Nebo Creek	S Molecular analysis completed in 1998.

**West Desert Management Unit**

*Unit Description:*

The West Desert is comprised of streams in the western part of the Bonneville Basin. These streams flow from mountains to desert valleys where they historically became subterranean or intermittent. Currently, many of the streams are diverted at higher elevations for agricultural use. The only BCT habitat (historic or current) exists in small streams draining the relatively steep, small Deep Creek Mountain range.

The vegetational community in the Deep Creek Mountains is the characteristic high elevation, pinyon-juniper forests and sagebrush prairies. Riparian areas are commonly dominated by river birch and aspen. Elevation ranges from 6,000 to 9,000 feet for most streams. These relatively small, steep streams drain into the Snake Valley.

Located on the west side of the Deep Creek Mountains is the Goshute Indian Reservation. This area is mineral rich; hence, the potential for future mining activities exists and could threaten BCT recovery efforts in this area. However, the relatively isolated location of these mountains has discouraged extreme human land use and water development.

Table 9. Conservation actions implemented within the West Desert GMU.

State Water ID #	Reach	Implemented Conservation Actions
IV AR 410	Drainage: <i>East Slope</i>	
	S Tom’s Creek	S Surveyed in 1998.
Goshute Reservation	Drainage: <i>West Slope</i>	
	S South Fork of Johnson Creek	S Surveyed and genetic samples collected in 1998.
	S Spring Creek	S Habitat enhancement and protection in 1998. S Surveyed and genetic samples collected in 1998. S Bonneville cutthroat trout spawned and incubated in streamside incubator, yielding 280 fry.
	S Nelms Pond	S Habitat enhancement and protection in 1998.
	S Fifteen Mile Creek	S Pond construction and habitat enhancement in 1998.

**Southern Bonneville Management Unit**

*Unit Description:*

This GMU encompasses what was once the southwest area of pluvial Lake Bonneville. Today, this area comprises the Sevier River drainage, including the relatively discrete Beaver River drainage. The Southern Bonneville GMU also contains a portion of the Virgin River drainage. Although the Virgin River drains into the Colorado River system, the presence of BCT in some streams on the Pine Valley Mountains (a portion of the Virgin River basin) suggests a recent geologic stream capture event. The elevation of the Southern Bonneville GMU ranges from 5,000 to over 10,000 ft. This area is characterized by a high elevation desert climate with

draft

pinyon-juniper forests and sagebrush prairie. Stream hydrology approximates typical high mountain desert systems with spring flooding and low to intermittent fall and winter base flows.

Table 10. Conservation actions implemented within the Southern Bonneville GMU.

State Water ID #	Reach	Implemented Conservation Actions
	Drainage: <i>Virgin River</i>	
I AA 040 I AA 060A 01	S Leeds Creek S South Ash Creek	S Surveyed in 1998. S Surveyed in 1998.
	Drainage: <i>Sevier River</i>	
VI AA 360A 01	S Sam Stowe Creek	S Translocation of 120 Bonneville cutthroat trout into four locations along Sam Stowe Creek in 1998.
VI AA 680 01 NO WATER ID VI 402	S Threemile Creek S Delong Creek S Manning Meadow Reservoir	S Habitat enhancement in 1998. S Surveyed in 1998. S In excess of 80,000 eggs were taken from wild brood stock at Manning Meadow Reservoir in 1998.
VI AA 430 01	S Manning Creek	S Additional introductions of Bonneville cutthroat trout fry in 1998.
VI AA 430B 01 VI AA 510M 01	S Manning Vale Creek S Ranch Creek	S Surveyed in 1998. S Habitat enhancement in 1998. Translocation of 60 Bonneville cutthroat trout from lower section to upper section.

## LITERATURE CITED

- Lentsch, L. D., Y. Converse, and J. Perkins. 1997. Conservation Agreement and Strategy for Bonneville Cutthroat Trout (*Oncorhynchus clarki utah*) in the State of Utah. Publication No. 97-19. Utah Department of Natural Resources, Division of Wildlife Resources, Salt Lake City, Utah.
- Lentsch, L. D., and K. W. Wilson. 1998. Annual progress report for Bonneville cutthroat trout (*Oncorhynchus clarki utah*) in the state of Utah. Publication No. 98-08. Utah Division of Wildlife Resources, Salt Lake City, Utah. 15 pp.
- Nielson, B. R., and L. Lentsch. 1988. Bonneville cutthroat trout in Bear Lake: status and management. American Fisheries Society Symposium 4:128-133.