

**BONNEVILLE CUTTHROAT TROUT
RANGE-WIDE COORDINATION MEETING**

NOVEMBER 6, 2003

9 AM – 5 PM

ROOM 2000
UTAH DIVISION OF WILDLIFE RESOURCES
1594 WEST NORTH TEMPLE
SALT LAKE CITY, UT 84114

MEETING AGENDA

WELCOME Tom Pettengill

INTRODUCTIONS

USFWS UPDATE Yvette Converse

FIELD ACTIVITIES FOR 2003

Idaho

Nevada

Utah

Wyoming

DISCUSSION ITEMS:

1. Dixie National Forest...Update on Sanford Fire
2. Fire Planning Jim Whelan
3. Cutthroat Trout Website Paul Burnett
4. Spring Meeting Format and Issues

NEXT MEETING DATE (March 2004)

ADJOURN

(We'll break at approximately 10 AM and 3 PM for 15 minutes and take an hour lunch at Noon.)

BONNAVILLE MEETING

Nov. 6, 2003

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**Great Basin National Park
Bonneville Cutthroat Trout Reintroduction Program
FY2003 Achievements**

The Bonneville cutthroat trout (BCT) project at Great Basin National Park has as its goal to reintroduce native BCT into 18 miles of park streams by 2005. Currently BCT exist in 14 miles of streams, thanks to the help of Natural Resource Preservation Program funding. Additional funding was received to continue the program through fiscal year 2005.

Strawberry Creek (5 miles in park, 2 miles out of park): 34 BCT reintroduced in 2002. We monitored this population in September, 2003 with a standard 100 m three-pass electrofishing survey and found six adults and 12 young of the year.

South Fork Big Wash (3 miles): 56 BCT were reintroduced in 2000. In September, 2003, we conducted a standard 100 m three-pass electrofishing survey and found ten adults and eight young of the year in September.

Upper Snake Creek (4.2 miles): Upper Snake Creek was shocked in the spring and fall to ensure that the previous year's antimycin treatment was successful, and no brook trout were contacted. One brown trout was found in the spring near a campsite, but is thought to have been moved there by an angler who wanted a fishing opportunity. No brown trout were found in the fall, and brown trout have never been found in previous population surveys.

In 2002 during a community meeting, a local resident notified park staff that Johnson Lake, the headwaters of Snake Creek, connected to Upper Snake Creek. Park staff were not aware of this connection due to many years of drought, but the late season snow storms provided an opportunity to document this connection and the possibility of the introduced, non-native brook trout to spill over from Johnson Lake into Upper Snake Creek.

The park made preparations to treat Johnson Lake with antimycin, and conducted amphibian and macroinvertebrate surveys, water chemistry analysis, and a bathymetric survey. All equipment was transported to the lake and travel arrangements were made for visiting experts when the State of Nevada intervened, and the Johnson Lake treatment was postponed. NPS solicitors are currently advising the park on the next course of action. The Nevada Department of Environmental Quality has issued a permit to the park for treatment in 2004.

Although BCT were to have been reintroduced into Upper Snake Creek in 2003, the park feels that the threat of a brook trout spillover could jeopardize a BCT population and cause the need to retreat the creek at a later date. Therefore the reintroduction of BCT into Upper Snake Creek is postponed and that section of creek remains barren.

South Fork Baker Creek: The South Fork of Baker was shocked three times to remove fish from 1 ½ miles of habitat, with no more than five fish contacted each time. This creek will be shocked several times next year and then will be ready for BCT reintroduction.

Snake Range Recreational Fisheries Brochure: This interagency brochure was printed in May with 10,000 copies to be distributed by NDOW, BLM, USFS, and NPS. This brochure includes a section on Bonneville cutthroat trout reintroduction projects, beautiful illustrations by Joe Tomelleri, and a map of the Snake Range. Thanks to Chris Crookshanks for his revisions and proofreading.

Cooperative agreement for macroinvertebrate analyses: Work done in FY03 included the establishment of a cooperative agreement to conduct macroinvertebrate analyses to determine recovery rate after renovation treatments. Mark Vinson from the Utah State Buglab will assist in writing the final macroinvertebrate report. This report will help fisheries managers to better plan their treatments and to know how soon after the treatment they can reintroduce fish.

Volunteers contributed over 900 hours to the BCT project in FY2003.

Media Coverage included articles about BCT restoration in the park newspaper and the resource management newsletter (online at <http://www.nps.gov/grba/Midden/Midden02.htm>), along with an interview for *The Grandview*, a PBS show that highlights national parks, and a poster presentation at the George Wright Society Conference.

Park Contacts:

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100 Great Basin National Park
Baker, NV 89311

Bonneville cutthroat trout

2003 actions – Dixie National Forest/UDWR Southern Region

Sevier River Sub-unit

Center Creek (VI AA 510 I) and Robs Reservoir (VI 345)

Completed second of two treatments to remove non-native trout (brook)
Robs Reservoir restocked with Manning stock BCT
Center Creek to be restocked with Manning stock in 2004

Deep Creek (VI AA 510 G 01)

Fire Monitoring
Aquatic macroinvertebrates collected (2 stations)
Temperature monitors (3 stations)
R1/R4 habitat survey (lower FS land)
Channel cross-sections surveyed
Riparian greenline survey conducted
Permanent photo points re-taken

Left Fork Sanford Creek (VI AA 650 A)

BCT population eliminated during flooding following summer thunderstorms
Fire Monitoring
Channel cross-sections surveyed
Visual inspection and spot electroshocking of all previously occupied BCT habitat

Threemile Creek (VI AA 680)

Aquatic Macroinvertebrates (1 station)
Monthly water quality samples collected

Ranch Creek (VI AA 510 M 01)

Exclosure checked

Cottonwood Creek (VI AA 510 L)

Potential reintroduction stream
Fire Monitoring
Aquatic Macroinvertebrates (1 station)
Temperature Monitor (1 station)

Deer Creek (VI AA 510 J)

Potential reintroduction stream
Fire Monitoring
Aquatic Macroinvertebrates (1 station)
Temperature Monitor (1 station, monitor lost in flooding)
R1/R4 habitat survey
Riparian greenline survey
Channel cross-sections surveyed

Virgin River Sub-unit

Leap Creek (I AA 060 B)

Fire Monitoring

Aquatic Macroinvertebrates (1 station)

Temperature monitor (1 station, monitor lost due to flooding)

Visual inspection of upper habitat to determine BCT presence and habitat suitability

South Ash Creek (I AA 060 A)

Fire Monitoring

Aquatic Macroinvertebrates (1 station)

Temperature Monitor (1 station)

Visual inspection of upper habitat to determine BCT presence and habitat suitability

Harmon Creek (I AA 060 A 01)

Fire Monitoring

Aquatic Macroinvertebrates (1 station)

Temperature Monitor (1 Station)

Channel cross-sections surveyed

Spot Electroshocking to confirm BCT presence/absence

BCT restocked (experimental, to determine habitat suitability)

Mill Creek (I AA 060 A 02)

Fire Monitoring

Aquatic Macroinvertebrates (1 station)

Temperature Monitor (1 Station)

Channel cross-sections surveyed

Spot Electroshocking to confirm BCT presence/absence

BCT restocked in Middle Fork (experimental, to determine habitat suitability)

Leeds Creek (I AA 040)

Disease certification samples taken by UDWR

Water Canyon (I AA 020 C 01)

Complete loss of BCT population as a result of drought and poor habitat quality

Spot electroshocking to confirm loss of population

Reservoir Canyon (I AA 020 C 02 A)

Drought impacted BCT fishery

Fish population survey conducted (UDWR)

Bonneville cutthroat trout **2003 Actions**
Southern Bonneville Geographical Management Unit (GMU)
Fishlake National Forest/Utah Division of Wildlife Resources

Southern Utah BCT surveys published as Hepworth et al. 2003. *Abundance of Bonneville Cutthroat Trout in Southern Utah, 2001-2002, Compared to Previous Surveys*, UDWR publication number 03-18. Report documents population surveys and distribution limits of BCT on all established streams in the southern GMU.

Forest Planning: Prepared summary of Aquatic Management Indicator Species (MIS) monitoring on the Fishlake from 1986-2002, including BCT. Report included summary of BCT population and aquatic macroinvertebrates on BCT streams, and general observations of habitat conditions on each BCT stream on the Forest. Discussed maintaining BCT as MIS in plan revision meetings.

Fire: Coordination book with list and map of CRCT streams, ANS positive areas, etc.

Sevier River Drainage

Manning Meadow Reservoir (VI 402)

Conducted spawning operations - 223,614 eggs

Documented spawning operations in report as Hepworth et al. 2003. *Trapping, Spawning, and Trend Surveys of Bonneville Cutthroat Trout Conducted at Manning Meadow Reservoir, 2003.*

Manning Creek (VI AA 430)

Aquatic macroinvertebrate sampling (3 stations)

Pre-timber harvest baseline samples

Checked fish barrier

Salina Creek (VI AA 200) - potential remnant stream

Aquatic macroinvertebrate samples (2 stations)

Fish population monitoring (repeated 2 stations from 2000)

Cutthroat trend

Assessed fish species composition on small pond adjacent to upper Salina Cr.

Brook trout – source small numbers in the creek

IRE Level II survey

Beaver Creek tributary (VI AA 200 G)

Aquatic macroinvertebrate samples Beaver (2 stations)

Fish population monitoring (repeated 2 stations from 2000)

Cutthroat trend, pre-fire treatment baseline

IRE Level II survey

Willow Creek (VI AA 190) – potential remnant stream

Visual inspection of upper stream along road – summer

Very low flow

Hiked upper/roadless portion of creek to assess remnant population - fall

Documented distribution of cutthroat

Collected genetic sample

Lost Creek (VI AA 210) – potential remnant stream

Met with Dan Jorgensen, BYU, State Forestry to discuss partnership potential

Hiked upper Forest Service portion of creek.

Collected two genetic samples from upper portion of creek.

Tenmile Creek (VI AA440)

Checked barrier

Birch Creek (east-VI AA 550)

Spot electroshocked to check on success of 2001 reintroduction

Inspected ATV closure

Aquatic macroinvertebrate samples – post-treat/reintroduction (2 stations)

Clear Creek Drainage (tributary of Sevier River Drainage)

Clear Creek (VI AA 360) – long-term potential metapopulation connection stream

3 population stations/fish species distribution

Temperature monitor lower creek (1 station)

Aquatic macroinvertebrate samples (2 stations)

Sam Stowe Creek (VI AA510 M 01)

Checked fish barrier

Temperature monitor lower creek (1 station)

Fish Creek (VI AA 360 E) – potential reintroduction stream

4 population stations/fish species distribution

Temperature monitor lower creek (1 station)

Aquatic macroinvertebrate samples (2 stations)

Shingle Creek (VI AA 360 F) – potential reintroduction stream

4 population stations/fish species distribution

Temperature monitor lower creek (2 stations)

Aquatic macroinvertebrate samples (2 stations)

Pole Creek (VI AA 360 D 01) – potential remnant stream

3 population stations/fish species distribution

Aquatic macroinvertebrate sample (1 station)

Handwork on upper natural barriers

Beaver River Drainage

Birch Creek (west – VI AB 050 A2)

IRE Level II survey

Exclosure maintenance

North Fork of North Creek (VI AB 070 A)

IRE Level II survey (including Pole Creek tributary)

Checked fish barrier

South Fork of North Creek (VI AB 070 B) potential reintroduction stream

IRE Level II survey

Pine Creek (VI AB 010 B)

IRE Level II survey

Exclosure maintenance

Prescribed burning southwest of creek – reduced fuel load/continuity of fuels

Fishlake National Forest

2003

Aquatic Information Packet for Fire Resources

Contents:

Suggested Standard Operating Procedures – Disinfection Protocols
For Aquatic Nuisance Species Control

Aquatic Information Contacts

Cutthroat Trout and High Value Fisheries List

Cutthroat Trout and High Value Fisheries Maps

Known Whirling Disease Maps for Fishlake National Forest

Utah Division of Wildlife Resources Suggested Disinfection Protocols

UDWR Whirling Disease Information Pamphlet

Whirling Disease Prevention Methods for Anglers

Aquatic Nuisance Species in Utah Pamphlet

USDI Information Bulletin – Fire-fighting Chemical Toxicity

Suggested Standard Operating Procedures – Disinfection Protocols

- All arriving off-unit fire suppression equipment utilized to extract or hold water from stream or spring sources will be thoroughly rinsed to remove mud and debris and disinfected with a chlorine bleach solution (1 part bleach to 32 parts water, 10 minute contact time) prior to use and when leaving.
 - Rinse water should be culinary or known disease free.
 - Rinsing should not occur within 100 feet of natural water sources.
- All fire suppression equipment utilized to extract or hold water from stream or spring sources will be thoroughly rinsed to remove mud and debris and thoroughly dried between fire assignments or drainages.
 - Rinse water should be culinary or known disease free.
 - If drying is not possible, disinfection should be conducted as above.
- Do not transfer water between watersheds or between unconnected waters within a watershed. Do not transfer water to upstream waters within the same watershed.
- If known whirling disease positive water must be used for suppression activities where there is a risk of moving water to waters, water should be disinfected with a chlorine bleach solution (1 part bleach to 150 parts water, 30 minutes contact time).
 - Use methods such as staging water to pumpkins to minimize uptake of mud or aquatic organisms and allow disinfection.
- Assume *ALL* waters may harbor an Aquatic Nuisance Species.
 - *Even springs may be unsafe.* Whirling disease has been found in springs - the disease organisms came from nearby infected streams.
- **USE COMMON SENSE.** Think about where you are getting your water from. Think about where the water may be used. Do not transfer water from one source to another. Put water onto the ground instead. Thoroughly clean and dry with culinary or known clean water between uses/drainages.

Cutthroat Trout and High Value Fisheries List

Highest Value Native Cutthroat Trout:

Manning Meadow Reservoir Manning Creek	Bonneville cutthroat trout brood stock lake provides 200,000+native sport fish/yr
Ten mile Creek	Bonneville cutthroat trout-rescued genetic stock
UM Creek	Colorado River cutthroat trout-research study
Birch Creek	Bonneville cutthroat trout-true remnant
North Fork of North Creek	Bonneville cutthroat trout-true remnant

High value:

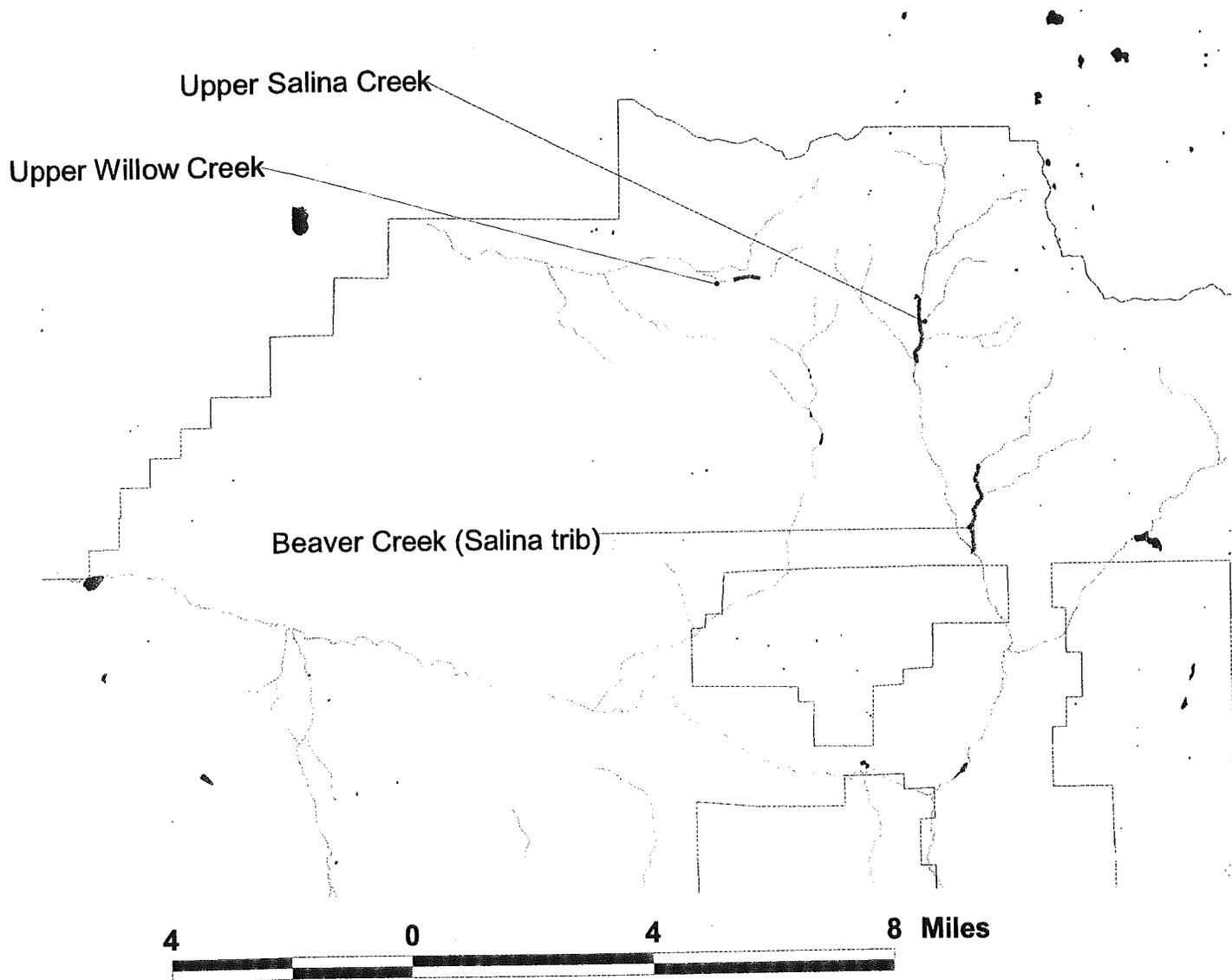
Upper Pole Creek	Potential unique remnant Bonneville cutthroat
Upper Salina Creek	Potential unique remnant Bonneville cutthroat
Pine Creek	Bonneville cutthroat trout-reintroduced population
Sam Stowe Creek	Bonneville cutthroat trout-reintroduced population
Upper Willow Creek	Potential unique remnant Bonneville cutthroat
Birch Creek (E)	Bonneville cutthroat trout-reintroduced population
Sand Creek	Colorado River cutthroat-reintroduced population
Briggs Creek	Bonneville cutthroat trout-reintroduced population

High value recreational fisheries:

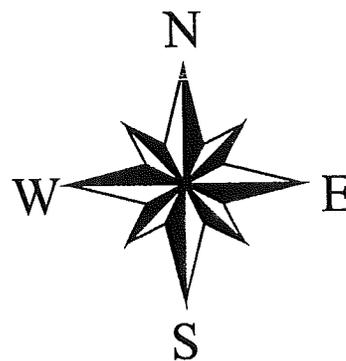
Fish Lake/Twin Creeks	Trophy fishery, high rec. use, fish egg holding
Mill Meadow/Forsyth Res.	High recreational use
Kent's Lakes	High recreational use
Corn Creek	High productivity, potential for trophy fish
Beaver River	High productivity, high recreational use
Seven mile Creek	High productivity, excellent fly fishing stream
Salina Creek	Potential for trophy fish, non-game fisheries

Fishlake N.F. Cutthroat Streams

Richfield R.D. - North



-  Admin_bdry_fl
- Cutthroat.shp**
-  bonneville-reintroduced
-  bonneville-potential
-  bonneville-remnant
-  colorado-reintroduced
-  no known native cutthroat
-  Waterbody



**CARIBOU-TARGHEE NATIONAL FOREST
MONTPELIER RANGER DISTRICT
BONNEVILLE CUTTHROAT TROUT
CONSERVATION ACTIONS DURING 2003**

By

**Louis Berg, Zone Fisheries Biologist
Jim Capurso, Forest Fisheries Biologist**

**Presented to Bonneville Cutthroat Trout Conservation Team
November 6, 2003
Salt Lake City, Utah**

County	Water name	Implemented conservation action	Results and/or findings
Bear Lake	Eightmile Creek	Constructed livestock enclosure fence to reduce riparian/stream channel damage (see Photo 1)	Improved 0.3 mile of habitat
		Placed rock barriers at nine dispersed campsites along stream to reduce riparian damage and sedimentation from motorized vehicle use (Photos 2-5)	Improved 2.0 miles of habitat
	Mill Creek/ Nieber Spring	Placed rock barriers at both ends of a trail along stream to reduce sedimentation from motorized vehicle use (Photos 6 and 7)	Improved 1.0 mile of habitat
		Prepared and submitted funding proposals for enclosure fencing and development of off-channel livestock watering source	None yet
	Emigration Creek	Planned and submitted funding proposals for road, trail, and parking improvements to reduce riparian damage and sedimentation from motorized vehicle use. Purchased materials to construct ATV trail bridges	None yet
	Birch Creek	Planned and submitted funding proposals for trail improvements to reduce sedimentation from motorized vehicle use	None yet
	Bailey Creek	Planned and submitted funding proposals for trail improvements to reduce sedimentation from motorized vehicle use	None yet
	Thomas Fork	Participated in multi-agency partnership to plan/ design screens for irrigation diversion structures (see Photos 8-10)	Documented a problem diversion, contracted design of screening for two diversions

Bear Lake (continued)	Giraffe Creek, Right Fork	Held multi-agency inspection of stream conditions to determine success of Thomas Fork Conservation Agreement. Also performed PFC assessment	Found unimproved habitat conditions. Stream was rated Nonfunctional
	Giraffe Creek, Left Fork	Held multi-agency inspection of stream conditions to determine success of Thomas Fork Conservation Agreement. Also performed PFC assessment	Undetermined trend in habitat conditions. Stream was rated Functional-At Risk Moderate Condition
	Preuss Creek	Held multi-agency inspection of stream conditions to determine success of Thomas Fork Conservation Agreement. Permittees voluntarily reduced livestock use	Found improved habitat conditions
	St. Charles Creek	Participated in watershed working group to determine feasibility of projects to reconnect stream with Bear Lake	Obtained grant for study by USU's Dr. Bob Hill
	Fish Haven Creek	Participated in watershed working group to determine feasibility of projects to reconnect stream with Bear Lake. Also performed PFC and channel stability assessments	Obtained grant for study by USU's Dr. Bob Hill. Stream ratings ranged from PFC to Functional-At Risk Low Condition with downward trend. Channel stability ratings ranged from Poor to Good
	Logan River	Electrofishing and PFC assessment (Photo 11)	Found previously undocumented BCT population. Most of stream was PFC, a small area was rated Functional-At Risk High Condition with downward trend
	White Canyon Creek	Electrofishing, PFC assessment, channel stability assessment (Photo 12)	Found previously undocumented BCT population. Stream was rated PFC and had Good channel stability
	Hodge Nibley Creek	Electrofishing, PFC assessment, channel stability assessment (Photo 13)	Found previously undocumented BCT population. Stream was rated PFC and had Good channel stability
	Boss Creek	Electrofishing, PFC assessment, channel stability assessment (Photo 14)	Found previously undocumented BCT population. Stream was rated PFC and had Good channel stability
Franklin	Beaver Creek	Placed rock barriers at three dispersed campsites, a parking area, and entrance of a user-created road along stream to reduce riparian damage and sedimentation from motorized vehicle use (Photos 15-17)	Improved 0.8 mile of habitat.
		Planned and submitted funding proposals for road and trail improvements to reduce sedimentation from motorized vehicle use, and for movement of livestock corral away from stream.	None yet

Franklin (continued)	Cub River	Placed rock barriers at a dispersed campsite on stream to reduce riparian damage and sedimentation from motorized vehicle use (Photo 18). Also performed PFC assessment.	Improved 0.1 mile of habitat. Stream was PFC or Functional-At Risk High Condition
		Prepared and submitted funding proposals for irrigation diversion screen to reduce fish losses	None yet
	Deep Creek	PFC and channel stability assessments	Stream was rated PFC and had Good channel stability
	Foster Creek	PFC and channel stability assessments	Stream was rated Functional-At Risk with downward trend and had Fair channel stability
	Maple Creek	Planned and submitted funding proposals for trail relocation and improvements to reduce riparian damage and sedimentation from motorized vehicles use. Also performed PFC assessments	Stream was rated Functional-At Risk with downward trend
	Sugar Creek	Planned and submitted funding proposals for trail relocation and improvements to reduce riparian damage and sedimentation from motorized vehicles use	None yet

Eightmile Creek Riparian Enhancement

The purpose of this project was to reduce riparian area/stream channel damage resulting from livestock activity along Eightmile Creek, in order to maintain a population of Bonneville cutthroat trout. An exclosure fence was constructed around 0.3 mile of the stream and riparian area by a fire crew using materials purchased with Range betterment funds. The project should result in improvement of Bonneville cutthroat trout habitat along approximately 0.3 mile of Eightmile Creek. See Photo 1.

Photo 1. A livestock exclosure fence constructed along a portion of Eightmile Creek



Eightmile Creek Sediment Reduction

The purpose of this project was to reduce riparian area damage and sediment input to Eightmile Creek resulting from motorized vehicle use at dispersed campsites, in order to enhance a population of Bonneville cutthroat trout. A backhoe and trackhoe were used to load boulders into a dump truck. The boulders were hauled to nine dispersed campsites and placed by backhoe to prevent motorized vehicles from traveling on stream banks and through streams and wetlands. Nearly 700 boulders were used. TRTR53 funds of \$5,981 were used for heavy equipment costs and operator wages. NFWF53 funds of \$1,284 covered fisheries biologist salary and expenses in planning and coordinating the project. In-kind donations of boulders, and trackhoe and operator time, from Caribou County Road and Bridge Department and Barnard Pipeline Company had an estimated total value of \$25,538. The project should result in improvement of Bonneville cutthroat trout habitat along approximately 2.0 miles of Eightmile Creek. See Photos 2-5.

Photos 2 and 3. A dispersed campsite along Eightmile Creek before and after the project. Boulders keep motorized vehicles from traveling/parking on the stream bank



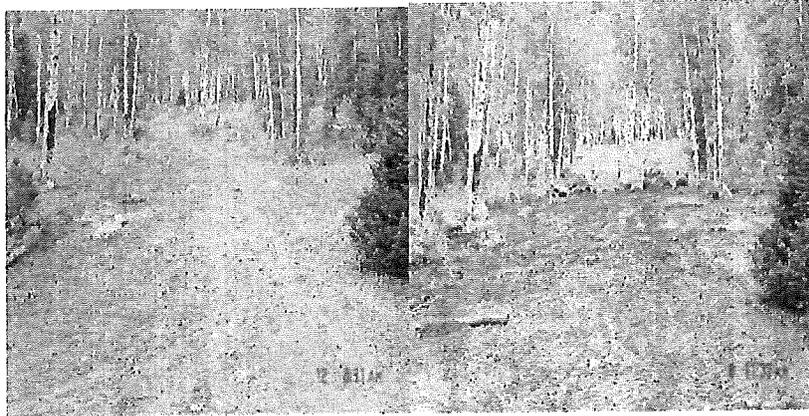
Photos 4 and 5. A tributary of Eightmile Creek before and after the project. Boulders keep vehicles out of the stream and riparian area, preventing damage



Mill Creek/Nieber Spring Sediment Reduction

The purpose of this project was to reduce sediment input to Mill Creek in the Nieber Spring area, resulting from a trail paralleling the stream, in order to enhance a population of Bonneville cutthroat trout. A backhoe was used to place boulders at both ends of the trail, preventing motorized vehicles from traveling along the stream. TRTR53 funds of \$408 were used for heavy equipment costs and operator wages. NFWF53 funds of \$1,284 covered fisheries biologist salary and expenses in planning and coordinating the project. The project should result in improvement of Bonneville cutthroat trout habitat along approximately 1.0 mile of Mill Creek immediately below Nieber Spring. See Photos 6 and 7.

Photos 6 and 7. Lower end of the Nieber Spring trail along Mill Creek before and after the project. Boulders keep motorized vehicles from using the trail along the stream



Thomas Fork Irrigation Diversion Fish Passage

BACKGROUND

There are 3 major, full-spanning water diversion structures on the Thomas Fork of the Bear River in SE Idaho and SW Wyoming. They are the Esche, Thomas Fork, and Taylor Diversions. The diversion inlets are all unscreened and significant downstream-migrant fish mortality has been documented. The full-spanning weirs in the river all pose varying degrees of challenge for upstream-migrating fish. Successful upstream migration is dependent upon the timing of the placement of the boards across the diversion weirs. When passage conditions allow (generally good water years), the river serves as a migrational corridor for Bonneville cutthroat trout.

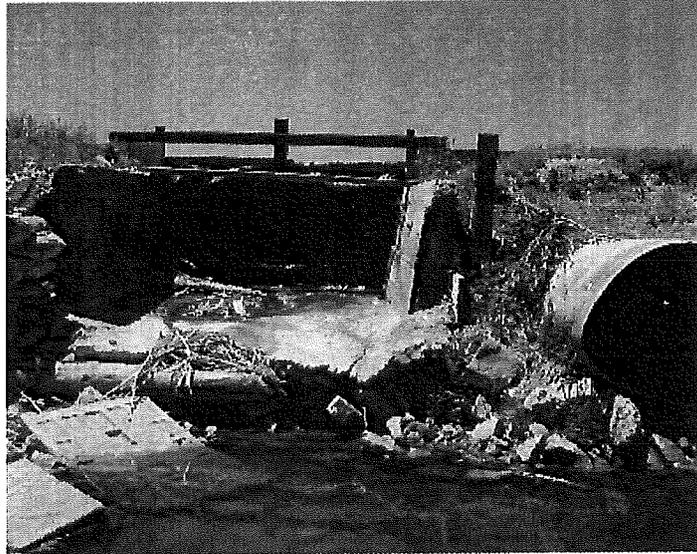
A partnership between the Caribou-Targhee National Forest, Trout Unlimited, US Fish and Wildlife Service, and Idaho Department of Fish and Game has been formed to address these threats to the continued existence of Bonneville cutthroat trout in the Thomas Fork Drainage.

ESCHE DIVERSION

The Esche Diversion is the lowest in the system. See Photo 8. This diversion occurs approximately 1 mile upstream of the confluence with the Bear River. During the fall of 2002, Idaho Department of Fish and Game developed plans to provide passage and screening at the Esche Diversion. Between drafts of the project easement, the landowner passed away. Since then, his son has been trying to sell the property and has been instructed by his Salt Lake City realtor not to enter into an easement because it may encumber the sale. The interagency group has been awaiting a new landowner for the property to implement the plans that include a bypass fish ladder and screens. Mignogno,

Scully, and Capurso plan on reestablishing contact with the son and his realtor during the winter of 2003 to emphasize the urgency of the situation.

Photo 8. Esche Diversion on the Thomas Fork, view from below



THOMAS FORK (MUMFORD) DIVERSION

The Thomas Fork Diversion, also known locally as the Mumford Diversion, has been previously undocumented by the region's fisheries biologists. See Photo 9. This diversion occurs near the town of Raymond, approximately 6 miles north of the Bear River. It is the most challenging structure to address upstream passage concerns of the 3 full-spanning diversions described here. Upstream migration is effectively blocked by the structure. Mortality to downstream-migrants in the ditch is likely. The interagency partnership has contracted Dan Axness from HDR Consultants to design screening for the Thomas Fork Diversion. Construction of the Thomas Fork Diversion screen is planned for 2004.

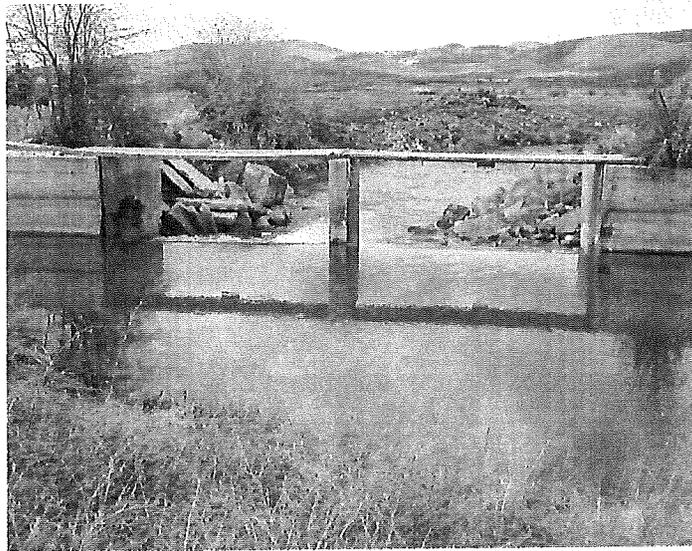
Photo 9. Thomas Fork/Mumford Diversion on the Thomas Fork, view from above



TAYLOR DIVERSION

The Taylor Diversion is the furthest upstream structure. See Photo 10. This diversion occurs near the town of Geneva, approximately 11 miles north of the Bear River. Structurally, it appears to be the easiest of the three structures to correct. The structure backs up head to the ditch and is at least a partial barrier to upstream-migrating fish. The diversion head is unscreened and fish kill of downstream-migrants has been documented. Nearly 50% of the downstream-migrating, post-spawn, fluvial Bonneville cutthroat trout tagged in the upper Thomas Fork were entrained in this ditch. The interagency partnership has contracted Dan Axness from HDR Consultants to design screening for the Taylor Diversion. Providing availability of funding and cooperation of landowner, construction may occur in 2005.

Photo 10. Taylor Diversion on the Thomas Fork, view from above



Logan River Drainage Fish Surveys

The purpose of these surveys was to determine presence/absence of Bonneville cutthroat trout in the Idaho portion of the Logan River and in some of its Idaho tributaries: White Canyon Creek, Hodge Nibley Creek, and Boss Creek. Thriving populations of Bonneville cutthroat trout were found in all of these previously unsurveyed locations. See Photos 11-14.

Photo 11. Portion of Logan River in Idaho

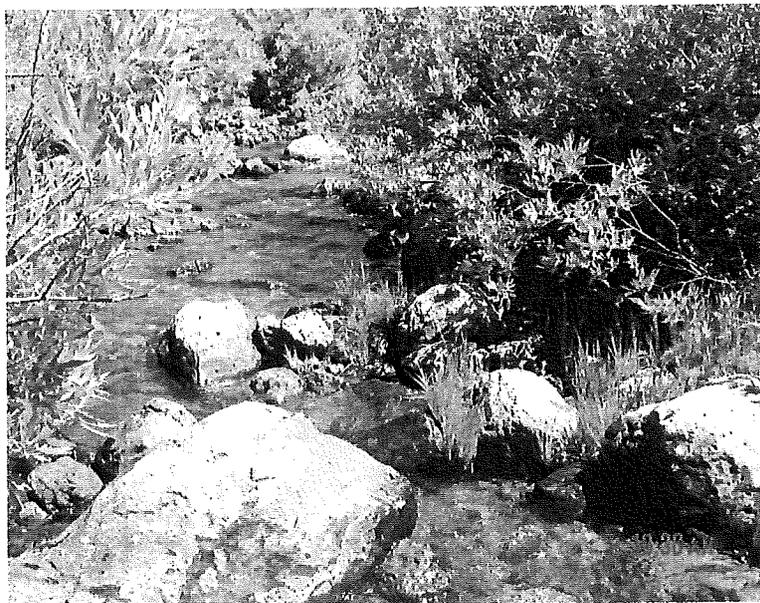


Photo 12. White Canyon Creek

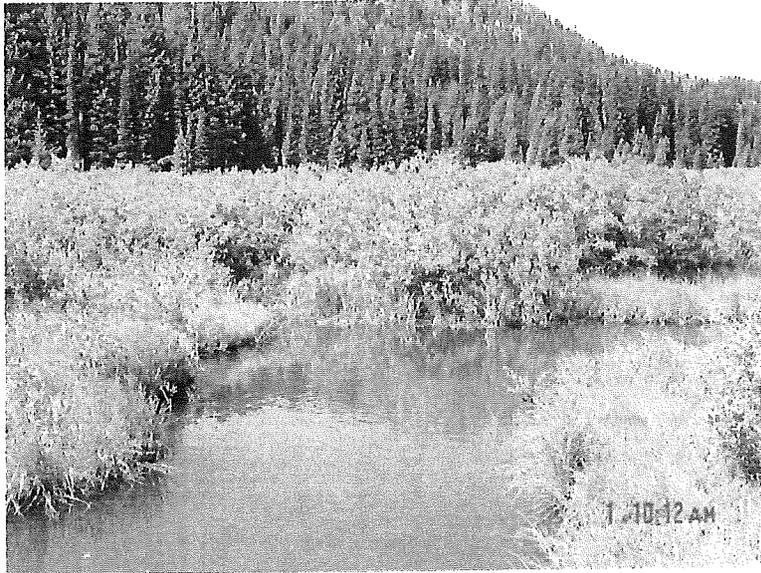


Photo 13. Hodge Nibley Creek



Photo 14. Boss Creek



Beaver Creek Sediment Reduction

The purpose of this project was to reduce riparian area damage and sediment input to Beaver Creek resulting from motorized vehicle use at dispersed campsites, at a parking area, and along a user-created road, in order to enhance a population of Bonneville cutthroat trout. A backhoe was used to place boulders at three dispersed campsites and in front of the user-created road to keep motorized vehicles off from stream banks. Boulders were also placed to eliminate the existing parking area next to the stream and create a new one farther from the stream. TRTR53 funds of \$1,629 were used for heavy equipment costs and operator wages. NFWF53 funds of \$1,284 covered fisheries biologist salary and expenses in planning and coordinating the project. The project should result in improvement of Bonneville cutthroat trout habitat along approximately 0.8 mile of Beaver Creek. See Photos 15-17.

Photos 15 and 16. Boulders placed to keep motorized Vehicles out of an old parking area next to Beaver Creek and create a new parking area farther from the stream

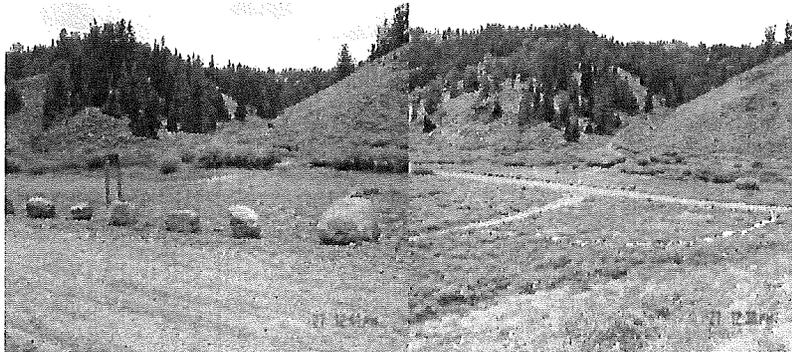


Photo 17. Boulders placed at a dispersed campsite along Beaver Creek to keep motorized vehicles from traveling/ parking on the stream bank



Cub River Sediment Reduction

The purpose of this project was to reduce riparian area damage and sediment input to the Cub River resulting from motorized vehicle use at a dispersed campsite, in order to enhance a population of Bonneville cutthroat trout. A backhoe was used to place boulders in front of a tributary to the Cub River, keeping vehicles from driving through and along that stream and onto the bank of the Cub River. TRTR53 funds of \$390 were used to rent heavy equipment and operator. NFWF53 funds of \$963 covered fisheries biologist salary and expenses in planning and implementing the project. The project should result in improvement of Bonneville cutthroat trout habitat along approximately 0.1 mile of the Cub River. See Photo 18.

Photo 18. Boulders placed at a dispersed campsite along the Cub River to keep motorized vehicles from traveling through and along a tributary and onto the bank of the river



2003 Bonneville Cutthroat Trout Accomplishments

Wyoming Game and Fish Department

Bear River

Bear River, tributary to the Great Salt Lake

- Bonneville cutthroat trout were captured in cooperation with students from the University of Wyoming for a study of fish movement and their loss to canals.

Twin Creek, tributary to Bear River

- Fish assemblage data were collected, and a qualitative habitat assessment was made in cooperation with personnel from Fossil Butte National Monument. Water temperatures were high, fine sediment was abundant, and no trout were captured.

Chicken Creek, tributary to Twin Creek (Bear River Drainage)

- A visual evaluation of habitat availability and the potential to establish a trout population was made in cooperation with personnel from Fossil Butte National Monument. A few beaver ponds held the only water in the upper reach, while only one pool in the lower reach held water. No trout were found in these pools.

Millet Canyon, tributary to Rock Creek (Bear River Drainage)

- A visual evaluation of habitat availability and the potential to establish a trout population was made in cooperation with personnel from Fossil Butte National Monument. Three beaver ponds held the only water in the drainage. No trout were observed in these ponds.

Smith's Fork River

Smiths Fork River, tributary to the Bear River

- Data were collected in September for a population estimate of cutthroat trout. Samples for whirling disease analysis and genetic analysis were collected at the same time.
- Bonneville cutthroat trout were captured in cooperation with students from the University of Wyoming for a study of fish movement and their loss to canals.

Coal Creek, tributary to Smiths Fork River

- Cattle were in the exclosure this year and grazed most of the new willow leaders. The herbaceous component still looked good in the exclosure.

Trespass Creek, tributary to Smiths Fork River

- Data for a population estimate were collected in October. Numerous young of year were encountered.
- Discharge was calculated in October in an effort to verify that the numbers requested in the instream flow application were appropriate.

Pine Creek, tributary to Bruner Creek

- Data were collected in September for a population estimate of cutthroat trout. Samples for whirling disease analysis were collected at the same time.

Lake Alice, Smiths Fork Drainage

- Trend netting was conducted in August. A limited sample of fin clips was collected for genetic testing.

Dry Fork of Smiths Fork, tributary to Smiths Fork River

- Adult and young of year Bonneville cutthroat trout were observed in two locations during efforts to find amphibians and non-game fish. However, these habitats were nearly dry by October, so these fish may not survive through the winter.

Hobble Creek, tributary to Smiths Fork River

- Data for a population estimate were collected in August. The section sampled had little pool habitat, nearly no cover, and held very few trout.
- The FS completed phase 1 of the Hobble Creek project. This project was partially funded through the WGFD Trust Fund.

Thomas Fork

Little Muddy Creek, tributary to Coal Creek (Thomas Fork Drainage)

- Survival of willows planted in 2002 was assessed, and information gained from this effort was used to select appropriate planting sites for 2003. Additional willow stems were planted in the large livestock enclosure, and the perimeter fence was repaired. However, The fence was cut later in the year, so the vegetation in the enclosure (including the newly planted willow stems) received heavy livestock damage again. The fence was not maintained by the BLM this year.
- Several rock sills were constructed on a headwater tributary stream in order to keep a head cut from moving further up the drainage.
- No Bonneville cutthroat trout were found in these areas. {Which areas?}

Huff Creek, tributary to Thomas Fork River

- Survival of willows planted in 2002 was assessed. Types and locations of successful plantings were noted for use in future planting efforts.
- Rocks were stockpiled at a head cut where a stabilization project will be constructed.

Raymond Creek, tributary to Thomas Fork River

- Habitat was monitored in the enclosure. The boundary fence is not working and cattle were in the enclosure this summer. A ½ mile of fence needs to be built on State Land in order for the BLM to better manage their lands. The BLM has yet to address the cattle trespass issues.

**Bonneville Cutthroat Trout Activities in the Central Region,
Utah Division of Wildlife Resources
2003**



Bonneville cutthroat, Birch Creek-Deep Creek Mountains

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Regional Aquatics Biologist**

**Richard Hepworth
Regional Aquatics Biologist**

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November 2003

**Utah Department of Natural Resources
Division of Wildlife Resources
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**Kevin K. Conway
Director**

Table 1. Conservation activities implemented within the Jordan River subunit.

State Water ID#	Stream/Section	Implemented Conservation Actions
IV AA 020	Red Butte Creek	On September 3, 2003 a Habitat Quality Index (HQI) survey and population estimates was made near Brush Basin (head waters). No adult fish were sampled here only young of the year cutthroat. A population estimate was also made at the gaging station just above the reservoir. Here the estimate for all cutthroat was 196±91 fish per mile. Unlike years in the past cutthroat trout were not assisted over migration barriers in order to facilitate population estimate efforts by Utah State University.
IV AA 040B	Lambs Canyon Creek	Eggs collected from Little Dell Reservoir were placed in stream side incubators by TU volunteers in May 2003. Population estimates were made at two stations and an HQI survey was completed near the headwaters in August 2003. Multiple young cutthroat were observed at the upper station which was just below where the incubator was located. The population estimate for all cutthroat (mostly small) here was 773±64. The population estimate for the lower station was 275±24.
IV AA 040A	Mountain Dell Creek	On August 26, 2003 population estimates were made at two locations Affleck Park and below bridge where BCT were stocked in October 2002. An HQI survey was conducted at the Affleck Park location. Multiple young of the year BCT were observed at the Affleck Park site and some YOY BCT were observed at the lower site where brook trout were the dominant species present. Population estimates at these sites were 1,816±111 and 647±45 cutthroat per mile respectively. Two of the 3,000 BCT stocked in 2002 were observed in the 300ft long lower station.

IV 414B	Little Dell Reservoir	<p>Between May 27 and June 6, 2003, approximately 59,750 eggs were collect from cutthroat caught in a trap in Mountain Dell creek just above Little Dell Reservoir. Approximately 24,400 of those eggs were deposited into stream side incubators by TU volunteers along Mountain Dell Creek and Lambs Canyon Creek. The remaining 35,351 went to Mantua hatchery to hatch and then to Glenwood Hatchery to be raised until stocking. In early October 2003, 5,986 two-three inch BCT from the 2003 Little Dell lot of fish were stocked into three high lakes in Little Cottonwood Canyon (Twin Lake, Upper Bells Reservoir, and White Pine Lake). No BCT were stocked into Upper Red Pine Lake in order to allow the Northern Region of UDWR to have more BCT to meet some of their stocking needs. In May 2003, 7,623 BCT from the 2002 Little Dell egg take were stocked into Little Dell Reservoir. On January 2, 2003, 5000 BCT were marked (adipose fin clipped) and stocked into Sixth Water Creek. Trap nets were set in October 2003 in an effort to sample the brook and cutthroat in Little Dell Reservoir. The netting was ineffective for trout and Little Dell will be sampled again in the future, possibly with different gear. In late May 2003, 60 fish were collected to continue disease certification; disease pathogens were checked using primarily resident brook trout. Ovarian fluid samples were taken from spawning adult cutthroat. Five of fifteen samples were positive for <i>M. cerebralis</i>.</p>
IV 423	White Pine Lake	<p>A gill net was set in White Pine Lake to determine success of BCT stocking in the lake. The only fish observed were a male and female in the outlet channel where they were trying to spawn and a few that hit the surface in the evening.</p>

		Approximately 1,150 BCT were stocked by foot rather than aurally to prevent fish from spilling out the reservoir and try to help stocked fish imprint on the tributary rather than the outlet channel. Success of this effort will be monitored over the next couple of years.
IV 421A	Upper Bells Reservoir	Several fish were observed rising and hitting the surface in the evening. A gill net was set overnight to determine success of BCT stocking in the Reservoir. Healthy BCT were observed throughout the lake and in the net. Mean size of trout caught in the net were 329 mm and weighed 351g. Aerial stocking of BCT appears to be successful and will continue in the future. One thousand two-hundred and forty-four BCT were stocked in early October 2003.
IV 421	Twin Lake	Twin Lake near Brighton Ski Resort was sampled in July 2003 using a gill net to determine survival and success of stocked BCT. Several reidside shiners and Mountain suckers were observed from shore and anglers were reporting success on catching cutthroat. Few BCT were caught in the net and several reidside shiners were sampled in the net. Mean size of BCT caught were 266mm and weighed 198g. Based on the low number of BCT caught in the net the number of BCT from 2003 Little Dell spawn was increased. In October 2003, 3,592 BCT were stocked into Twin Lake.

Table 2. Conservation activities implemented within the Utah Lake/Provo River subunit.

State Water ID#	Stream/Section	Implemented Conservation Actions
V AF 190	Provo River	A Habitat Quality Index (HQI) survey and population estimate was completed on Sept. 23, 2002. The fish population included 54 cutthroat and 17 brook trout in 300 feet of stream resulting in a total

		of 1038 ± 149 cutthroat/mile. Thirty cutthroat and 30 brook trout were sacrificed for whirling disease testing.
V AK 020H	Sixth Water Creek	Ten stream surveys and population estimates were completed during the spring and fall of 2003 as part of a study to evaluate BCT survival and reproduction potential in Sixth Water Creek. At least four age classes of cutthroat have been identified. Three age classes represent fish stocked in 2001, 2002 and 2003. The fourth is believed to have come from eggs collected from the Red Butte Reservoir broodstock, transported to Sixth Water Creek, and placed in Whitlock-Vibert Boxes in 1999. The fish population estimates varied from 0 to 1,252 cutthroat/mile at the ten study sites. BCT stocked in 2001, 2002 and 2003 appeared healthy with the exception of poor fin condition. An additional 2,500 BCT from the 2002 Little Dell Reservoir spawn were stocked in May 2003 and appeared healthy when sampled in September 2003, with the exception of poor fin condition. Of the 2,500 cutthroat stocked on January 2, 2003 only three were observed in sampling conducted in 2003.
V AF 170 01	Bench Creek	A population estimate and an HQI survey was completed in September 2003. The fish population included 36 cutthroat and 1 rainbow trout in 300 feet of stream resulting in a total of 650 ± 40 cutthroat/mile. The mean size of cutthroat was 132 mm and weighed 41g.
V AF 040 A	So. Fork Little Deer Creek	In August 2003, sixteen fin clips from cutthroat were collected to complete a 30 fish sample for genetic analysis.
V AM 05	Peteetneet Creek (Payson Canyon)	In July 2003, 20 fin clips were taken to complete a 30 fish sample for genetic analysis.
IV AA 090A 01	Dry Creek (Bell Canyon)	In July 2003, 11 fin clips were taken to nearly complete a 30 fish sample for genetic analysis.

V AK 020G 01	Cottonwood Creek (Tributary to Diamond Fork)	In July 2003, only three of the needed 20 fin clips were collected to complete a 30 fish sample for genetic analysis. Several sulfur springs were observed in the area and may explain why there were so few fish in the stream.
V AK 040 H 01	Right Fork Clear Creek	In July, 2003, 20 fin clips were collected to complete a 30 fish sample for genetic analysis.
V AK 020	Halls Fork	In August, 2003 ten whole fish and one fin clip from cutthroat were collected to complete a 30 fish sample for genetic analysis.

Fish Related Projects
(Bear River GMU)

1. Fire impacts monitoring in the East Fork Bear and the Mill Creek Drainage, Summit County. Monitoring has occurred and results should be available in January.
2. Repeating surveys conducted back in 1994 in the Headwater of the Bear River for Forest Plan Monitoring. Streams to be surveyed:
 - West Fork Bear: Brook and rainbow trout that had been stocked in Beaver Lake and Whitney Reservoir were found in three of the primary tributaries of Whitney Reservoir. They were not found in the main West Fork above Whitney 9 years ago. Management actions needed.
 - Humpy Creek: Cutthroat trout found. Not surveyed 9 years ago but known to exist in the stream.
 - Meadow Creek: Cutthroat trout found. Not surveyed 9 years ago but known to exist in the stream.
 - Coyote Hollow: Cutthroat trout found. Not known present until this year. One mile of habitat.
 - Mill City Creek: Cutthroat trout continue to do well.
 - Gold Hill Creek: Cutthroat trout continue to do well.
 - Hayden Fork: Cutthroat trout occur in limited numbers. Brook trout is the dominant trout.
 - Main Fork: Cutthroat trout continue to do well.
 - Stillwater Fork: Cutthroat trout continue to do well.
 - Ostler Fork: Cutthroat trout continue to do well.
 - West Basin: Cutthroat trout continue to do well.
 - Bear River (Across from Bear River Ranger Station). Found leatherside chub for the first time on the Wasatch-Cache National Forest. Cutthroat trout also present. This is a new sample site.
 - East Fork Bear: Cutthroat trout continue to do well.
 - Mill Creek: Cutthroat trout continue to do well. Qualitative observations suggest that spawning gravel has been cleaned and access into the upper drainage improved. This is as a result of increased stream flows and the blow out of some of the beaver dams.
 - N.F. Mill Creek: Cutthroat trout continue to do well.
 - Carter Creek: Cutthroat trout continue to do well. Not surveyed 9 years ago but known to exist in the stream.
3. An inventory of recreational impacts around the lakes in the Bear River Drainage was conducted during the summer of 2003. This was to look at the number of user created trails and fire rings around the lakes. The report should be ready within a couple of weeks.
4. North Rich (upper Saddle Creek) Allotment being revised. Saddle Creek (Blacksmiths Fork Drainage) – A 265 acre enclosure using buck and pole fencing was constructed in 2003. It includes over two miles of stream and associated riparian areas. Prior to fencing this section had intermittent flows. Currently, this section is supporting a large beaver colony and has perennial flows. Both Bonneville cutthroat trout and brook trout are utilizing this reach. This should improve habitat for the cutthroat trout and also the boreal toad. The EIS should be out by December 2003.

5. Fish survey on White Pine Creek and Little Bear Creek. Potential Wild & Scenic Rivers. Cutthroat trout found in both drainages. In upper White Pine from the reservoir downstream about 2 miles it is 100% brook trout. Dry for the next 1 to 1.5 miles. Then 100% cutthroat trout for the next couple of miles. There are some major water slides in the area that act as barriers for upstream migration.
6. Fencing of springs and riparian area on Wheeler Creek (Woodruff Drainage). Construction was initiated on an eight-acre enclosure in 2003. Completion is scheduled for 2004. Once completed this enclosure will provide protection approximately 0.5 miles of stream, and improve spawning conditions for Bonneville cutthroat trout.
7. Begin revision of Little Bear (Logan River) Allotment. Data gathering is currently occurring here.
8. Bear Hodges Timber Sale in the headwaters of Little Bear Creek and Spawn Creek. The nearest unit is over ¼ miles away. NEPA document due out spring 2004.

(Northern Bonneville GMU)

9. Additional survey work conducted up Mill Creek, Salt Lake County, with Central Region. An inventory was conducted up Porter Fork and upper Mill Creek on the summer homes and the instream structures found in the streams. There are a number of unauthorized structures found in the Porter Fork Drainage.
10. Ogden Ranger District Travel Plan revision. Nepa document due out in 2004.

Non Fish Related Projects

(Bear River GMU)

1. Travel Plan implementation for Evanston-Mt. View Districts "closed unless signed open". This is currently being implemented and signing has been installed. We are still seeing violation and have hired a permanent law officer for our Kamas, Evanston and Mt. View Districts to enforce Forest Service Regulations.
2. Purchase of lands in the Blacks Fork and Mill Creek drainages. This is still in the works.
3. Salvage of fire-killed trees Mill Creek and the East Fork of the Bear River. The draft EIS is due out December 2003. A number of harvest units have been dropped from consideration because of their proximity to the stream channels. Others units have been altered and road locations changed to reduce or eliminate impacts in the East Fork Bear and Mill Creek drainages. The project should have little to no impact to Bonneville cutthroat trout. The private land is currently be harvested in the Mill Creek Drainage.

(Northern Bonneville GMU)

1. Alta Ski Resort Master Development Plan revision is still occurring. This project should not impact the cutthroat trout in the drainage.
2. Prescribed burns in the Beaver Creek and Soapstone Areas (Summit County), South Fork Ogden Area, Fuels Treatment Wasatch-Front. Still in the work with some projects being implemented. Fires this year included two on the Wasatch Front near Farmington. No cutthroat trout are found in the area.
3. Removal and possible spraying of pesticide in campgrounds along the Mirror Lake Highway. Spraying did not occur this year. Are looking at this next year in the campgrounds along the entire Mirror Lake Corridor. Over 400 hazard trees were removed with 10 trees being recruited into the stream channel of the upper Provo River. These were within close proximity to the stream channel. This will continue to be an issue next year and in the years to come.
4. Forest Planning: The decision was signed in March 2003 and implemented in May 2003. We have had 12 appeals ranging from opinion letters to 75 page documents. Some of the appeal points dealt with fish and aquatic species. These appear to be lack of **understanding the current** distribution of the cutthroat trout on the Wasatch-Cache National Forest.

**TRAPPING, SPAWNING, AND TREND SURVEYS OF BONNEVILLE CUTTHROAT
TROUT CONDUCTED AT MANNING MEADOW RESERVOIR, 2003**

A Sport Fish and Native Cutthroat Trout Restoration Project

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An equal opportunity employer

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August 2003

Introduction

This report covers results for the year 2003, the 12th consecutive year Bonneville cutthroat trout were trapped and spawned at Manning Meadow Reservoir, and makes comparisons among all years for spawning, trapping, and trend-netting activities. Bonneville cutthroat trout were introduced into the reservoir with transplants from Pine Creek in 1990 and 1991. Eggs were collected from spawning trout for the first time in 1992. Trout were trapped at either the reservoir inflow or at the spillway outflow. Eggs were taken manually from wild trout and incubated, hatched, and reared at state facilities.

Methods

The inflow trap was set on 13 June and operated until 25 June, 2003. The reservoir spilled for several weeks during early June and some fish were also trapped at the outlet. Spawning trout were trapped at the inlet and outlet where they were attracted to moving water. The inlet trap included compartmentalized pens where fish could be collected, sorted, and held until spawning. Utah Division of Wildlife Resources personnel or other government agency volunteers were stationed at the reservoir for 24 hours per day while the inflow trap was in operation.

Spawning was conducted on June 18 and 25. The overall project and schedule was supervised by Glenwood Fish Hatchery personnel. Spawning was conducted by personnel from Egan Fish Hatchery. All fish were sorted and ripe fish were spawned using standard state methods. Females were spawned 10 fish at a time, with enough fish spawned to easily exceed 20 paired matings. Females and males were spawned at a ratio of about 2:1. Five males were deemed sufficient to fertilize eggs from 10 females. Eggs were water hardened for at least an hour and then transported to the Fish Lake isolation station for incubation. Loa Hatchery personnel were responsible for egg care during incubation, until the eggs were fully eyed and then moved to the Glenwood Fish Hatchery for further rearing.

Disease certification was completed as required by standard protocol, including a 60-fish lethal sample and ovarian fluids from 60 different females. Disease work was conducted by personnel from the Fisheries Experiment Station, Logan, Utah. Some of the lethal sample for disease certification was obtained from gill-net surveys conducted concurrently with spawning activities. The remainder of the 60-fish sample was taken from the spawning trap. Gill-net surveys were used to compare population trend data and condition of fish among years.

Data was recorded and tabulated to keep records on spawning times, number of trout trapped, number of fish spawned, size of trout, and number of eggs taken. In addition, data was recorded on relative fish densities and condition (K_{TL}) of fish in the reservoir to allow adjustments in reservoir stocking rates and management of the brood stock. Measurements and estimates of various parameters are presented, at times, in English and metric units. English units were generally used to facilitate comparisons among fish culture aspects of the project. Trend data was reported in metric units, allowing consistency in comparisons among related data.

Results and Discussion

Spawning during 2003 occurred during mid-June, about mid-range for all years that spawning was conducted at Manning Meadow Reservoir (Table 1). Total number of eggs taken was the third highest for all years, but less than the last two years (Tables 2 and 3). The project was completed by spawning on two days, scheduled a week apart, compared to some years when eggs were collected over 3 weeks. Total number of trout trapped peaked in 2001 at 1,809 and decreased to 753 in 2003. Size of trout and number of eggs per female continued to increase through 2003, reaching the highest values since 1994-1995. Reservoir stocking since 1998 was adjusted to reduce overall fish density, increase mean age and size of trout, and maximize egg-taking potential. Since trend netting data was first conducted in 2000, mean fish length increased from 296 to 359 mm and mean weight more than doubled from 280 to 596 g (Table 4). Also, condition improved from 1.05 to 1.29.

Of concern, however, the overall gill-net catch dropped to 8 fish per net-night in 2003 (Table 4). Catches of 20-30 trout per net-night are considered good with higher values thought to be excessive enough to impair growth and condition of trout. Fish density at Manning Meadow Reservoir during the years from 2000 to 2002 was higher than desired but then suddenly dropped to a lower than desired level in 2003. Netting data may have been influenced by poor conditions for catching fish, resulting in sampling error, but trends in trout numbers collected in the spawning trap, overall increases in average fish size, and increased mean condition seem to verify a substantial reduction in reservoir fish density.

Discontinued stocking of "holdovers" (age 1 fish held over-winter in the hatchery) since 1998 was the main means of reducing overall trout abundance (Table 5). Since then, replacement of the reservoir brood stock was totally dependent on stocking of "fry" (age 0 fish stocked the same year eggs are taken). Fry are deemed a better alternative to stocking holdovers (providing that survival is adequate) because: (1) fry minimize any potential selection on the brood stock due to hatchery rearing; (2) they have an appearance similar to wild trout with little fin damage compared to holdovers; and (3) stocking of fry minimizes the chance of inadvertently stocking other nonnative trout from a hatchery source compared to holdovers because they spend substantially less time in the hatchery.

The abundance of holdovers (identifiable by fin condition) in gill-net samples and spawning traps declined to 25 % during 2003 (Table 4). Holdovers were at least 6 years old -- the last time they were stocked was 1998 (Table 5). Conversely, 75% of all the fish observed during 2003 resulted from fry stocking. Holdovers have been observed to spawn at ages 2-3, having the advantage of extra growth from being held in a hatchery over-winter. It is expected that trout stocked as fry generally would not mature until age 3 or 4. This being the case, most trout spawned during 2003 that were stocked as fry, were likely introduced into the reservoir in 1999 and 2000 when over 12,000 fry were stocked each year. After that, stocking was reduced to approximately 10,000 fish in 2001 and no stocking at all in 2002.

A review of the stocking history, gill-net results, and spawning totals suggests that further

declines in the population of spawning adults might occur over the next year or two. It is recommended that stocking be increased to 15,000 - 20,000 fry per year. Hopefully, this will compensate for holdovers being totally displaced from the population and keep spawning and egg-taking capabilities in the range that has occurred the past 3 years. Prior to development of the native trout brood stock, which was initiated in 1990, Manning Meadow Reservoir was managed with Yellowstone cutthroat trout. A regular quota of 20,000 fry was stocked per year but adult fish had slightly less than desired mean lengths, weights, and condition factors. In recent years, Bonneville cutthroat trout numbers, size and condition have been close to desired levels, but it will likely be necessary to increase stocking of fry to maintain these levels. Achieving balance among reservoir fish density, fish size and condition, and stocking rates will likely require continual adjustments.

Table 1. Bonneville cutthroat trout spawning times at Manning Meadow Reservoir, Utah 1992-2003.

Year	Trap operation dates		Dates spawned		Number days spawned	Lake water temperature (Fahrenheit)	
	Begin	End	First	Last		First spawn	Last spawn
1992	2 June	30 June	16 June	30 June	3	55	62
1993	21 June	6 July	22 June	6 July	3	62	62
1994	14 June	22 June	16 June	22 June	2	56	60
1995	3 July	11 July	5 July	11 July	2	60	62
1996	24 June	2 July	26 June	2 July	2	58	60
1997	23 June	1 July	25 June	8 July	3	59	62
1998	29 June	13 July	1 July	13 July	3	58	63
1999	18 June	6 July	22 June	6 July	3	58	62
2000	5 June	13 June	6 June	13 June	3	58	59
2001	12 June	20 June	14 June	20 June	2	58	61
2002	7 June	18 June	11 June	18 June	2	58	61
2003	13 June	25 June	18 June	25 June	2	55	57

Table 2. Spawning totals at Manning Meadow Reservoir during 2003.

Date	Lake water temperature	Number females spawned	Number males spawned	Total eggs	Eggs per ounce	Mean number of eggs per female
18 June	55	202	100	163,836	369	811
25 June	57	68	49	59,778	369	879
Total	--	270	149	223,614	369	828

Table 3. Bonneville cutthroat trout spawning totals at Manning Meadow Reservoir for 1992-2003.

Year	Number of females spawned	Mean length (inches)		Total eggs	Eggs per fluid ounce	Mean number of eggs per female	Total number of trout trapped
		Female	Male				
1992	27	13.4	--	19,218	361	712	--
1993	61	15.2	--	61,148	328	1002	--
1994	45	15.8	--	57,000	345	1267	--
1995	218	13.5	14.4	176,896	383	811	--
1996	198	13.5	14.2	136,980	283	691	485
1997	141	14.4	14.8	92,603	368	657	271
1998	116	14.3	12.7	80,514	359	694	330
1999	296	12.4	13.1	198,895	420	672	744
2000	265	12.7	13.2	173,484	377	655	1099

2001	516	12.9	13.5	330,129	375	640	1809
2002	560	13.4	14.1	368,688	327	658	1310
2003	270	14.1	14.5	223,614	369	828	753

Table 4. Annual trend gill-net results at Manning Meadow Reservoir, 2000 - 2003 (CTSB = Southern Bonneville cutthroat trout).

Year	Number nets set overnight and (total CTSB caught)		Number CTSB caught per net-night	Mean total length (mm) (range)	Mean weight (g) (range)	Mean KTL	Number CTSB from "fry" stocking (%)	Number CTSB from "hold-over" stocking (%)
	Floaters	Divers						
2000	1 (79)	1 (86)	83	296 (187-391)	280 (67-596)	1.05	74 (45%)	91 (55%)
2001	1 (38)	1 (90)	64	310 (213-397)	320 (79-597)	1.07	84 (66%)	44 (34%)
2002	1 (46)	1 (72)	59	332 (220-380)	427 (119-636)	1.15	78 (66%)	40 (34%)
2003	1 (7)	1 (9)	8	359 (288-409)	596 (317-1050)	1.29	12 (75%)	4 (25%)

Table 5. Total number, size, and age of Bonneville cutthroat trout stocked in Manning Meadow Reservoir as brood stock replacement, 1990-2002. Transplants were of various sizes and ages, holdovers were age 1 (5-8 inches mean total length), and fry were age 0 (1.5-2.5 inches mean total length). Holdovers were stocked in June and July. Fry were stocked in October.

Year	Number fish stocked		
	Transplants	Holdovers	Fry
1990	469	--	--
1991	245	--	--
1992	--	--	--
1993	--	1,995	--
1994	--	1,999	4,648
1995	--	--	6,024
1996	--	--	5,060
1997	--	1,499	8,202

1998	--	2,008	9,506
1999	--	--	12,428
2000	--	--	12,001
2001	--	--	10,729
2002	--	--	--

To: Donna Owens, District Ranger
From: Steve Brazier, Forest Fisheries Biologist
Date: August 14, 2003
File Code: 2670
Subject: Flood effects to fisheries habitat and Bonneville cutthroat trout population in the Left Fork of Sanford Creek, 2003

Intense thunderstorms on July 27th resulted in flooding across the western slope of the Sevier Plateau of the Powell Ranger District. The Left Fork of Sanford Creek produced particularly high water flows, which resulted in increases in erosion, sediment influx, and channel movement and downcutting. Additional flooding occurred on August 1st, when another thunderstorm passed through the area. Upper portions of this area experienced substantial burning during the Sanford Fire, 2002.

The Left Fork of Sanford Creek lies within the Sanford Creek watershed (6th field HUC 160300010507). Most of this watershed experienced low to moderate burn severities during the Sanford Fire. Along the Left Fork, burn severities were less severe than those experienced in the Right Fork drainage. An informal survey was conducted on July 17, 2002 to assess the effects of the fire on the stream and the Bonneville cutthroat trout. At that time, the stream appeared to be in fairly good shape. Despite the burn effects in the uplands and some portions of the riparian experiencing active burning, the instream habitat diversity and condition were acceptable and supported Bonneville cutthroat trout (BCT). The survival of the BCT population (approximately 1.7 miles of occupied habitat) was confirmed through populations surveys conducted on July 31, 2002.

On August 11, 2003 I went to the Left Fork of Sanford Creek, to evaluate the effects of recent flood events on fisheries habitat and the Bonneville cutthroat trout population. An informal survey was conducted from the confluence of the Left and Right Forks of Sanford Creek, upstream to the Sanford Fire perimeter on the Left Fork. Mike Ottenbacher (UDWR Fisheries Biologist) and myself returned on August 13, 2003 to conduct a population survey for the BCT present within the stream.

The combined effect of the floods occurring on July 27 and August 1, 2003 on the instream fisheries habitat and BCT population is substantial. No BCT were located within the Left Fork of Sanford Creek, and they are presumed to have been eliminated as a result of the floods and associated debris flows, sediment influx, and water quality impacts. Current fisheries habitat is in poor condition. Due to increased erosion and sediment influx, most pools and holding water within the stream have been converted to riffles. Consequently, the amount of available fisheries habitat is quite low. Additionally, appreciable channel downcutting (approximately 2-4 feet in places) has occurred throughout the drainage, and several small head cuts have formed. Water quality is also presently degraded; this condition will likely persist until the channel has

adequately flushed the excess fine sediment downstream. The riparian plant community did not sustain much damage as a result of the flooding; however, channel downcutting and lateral movement could result in future shifts in plant composition within the riparian zone.

Long term impacts to the stream system as a result of this flooding will be minor. However, the flooding did substantially alter the aquatic biota community and associated habitat within the stream. No rehabilitation efforts outside of natural recovery are recommended. The condition of the stream and associated upland habitat will continue to be monitored over the next few years. The possibility of reintroducing Bonneville cutthroat trout into the system will have to be reevaluated once conditions in the stream have stabilized and upstream burned areas have more fully recovered. Additionally, culvert repair/replacement at the Left Fork Sanford Creek road crossing (downstream of Sanford Ranch), will not adversely affect sensitive fisheries habitat or species, and this action is encouraged.



Lower LF Sanford Creek (note high water mark on tree)

Don



United States
Department of
Agriculture

Forest
Service

Dixie National Forest

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Cedar City, UT 84720
(435) 865-3700

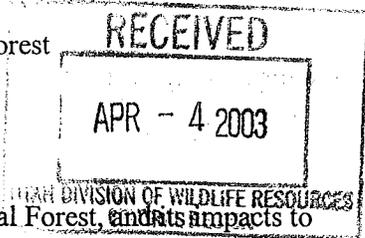
File Code: 2670-6

Date: April 2, 2003

Route To:

Subject: Status of Bonneville Cutthroat Trout on the Dixie National Forest

To: District Rangers



As a result of the 2002 fire season that we experienced on the Dixie National Forest, and its impacts to Bonneville cutthroat trout, the intent of this letter is to provide you an update on the current status of this species and its occupied habitat on the Dixie.

Prior to the 2002 fire season, Bonneville cutthroat trout (BCT) were present in 17 streams on the forest, totaling nearly 48 miles of occupied habitat. As a result of the Sanford and Sequoia Fires, and the associated post-fire effects, 43% of occupied BCT habitat was lost (nearly 21 stream miles). BCT populations currently no longer exist in Deep Creek on the Powell Ranger District, and in Leap Creek, Mill Creek, Harmon Creek, and South Ash Creek on the Pine Valley Ranger District. Due to increased rates of sedimentation, poor water quality, and high water temperatures, these streams are currently unable to support self-sustaining populations of fish. It is the goal of both the Dixie National Forest and the Utah Division of Wildlife Resources, to restock BCT into these five streams when fisheries habitat conditions are suitable.

As a result of the decreased distribution of BCT on the Dixie National Forest, it is imperative that we work together to maintain or enhance the remaining occupied streams and the populations that they support. The following is a list of streams on the forest that currently contain known populations of BCT. Please pay particular attention to these streams when administering livestock permits and in fire planning efforts.

Pine Valley Ranger District: Water Canyon (remnant population), Reservoir Canyon (remnant population), Leeds Creek, Horse Creek, Spirit Creek, and Pig Creek.

Cedar City Ranger District: Threemile Creek, DeLong Creek, Indian Hollow, and Sandy Creek.

Powell Ranger District: Left Fork of Sanford Creek

Escalante Ranger District: Ranch Creek (remnant population)

In conjunction with this letter, there is a CD enclosed which contains the cutthroat trout GIS coverage the forest. Please share this information with your district biologist and other interested district personnel. Feel free to give Steve Brazier a call at (435) 865-3726 if you would like to discuss any of these streams or current native cutthroat restoration/monitoring activities.

Stephen R. Robertson

STEPHEN R. ROBERTSON
Acting Forest Supervisor

Enclosure

cc: Ron Rodriguez, Daniel Duffield, Steve Brazier, Lydia R Allen, Nathan B Yorgason, Jake Schoppe, Lisa M Young, Joanne Stenten, Dale Hepworth - UDWR Cedar City, Tom Pettengill - UDR Salt Lake City, Don Wiley - Bonneville Chapter AFS

