RECLAMATION

Managing Water in the West

Technical Report for Upper Snake River Biological Opinion # 1009.2700

Deadwood River Bull Trout Fisheries Surveys

2003 Summary Report

U.S. Department of the Interior
Bureau of Reclamation

September 2004

Technical Report for Upper Snake River Biological Opinion # 1009.2700

Deadwood River Bull Trout Fisheries Surveys

2003 Summary Report

U.S. Bureau of Reclamation, Snake River Area Office - West
230 Collins Road, Boise Idaho 83702

by

Tammy Salow, Fishery Biologist

U.S. Department of the Interior
Bureau of Reclamation
Technical Service Center
Environmental Services Division
Water Treatment Engineering and Research Group
Denver, Colorado

September 2004

Table of Contents

Introduction…….3
Study Area……...3
Methods……...5
Results……6
Summary……10

List of Tables

Table 1. Stream locations and site identification codes for all sites sampled in the Deadwood River basin with multiple pass electrofishing in 2003……...7
Table 2. Number of fish captured by species for Deadwood River electrofishing surveys….9

List of Figures

Figure 1. Deadwood River basin, headwaters to confluence with South Fork Payette…….4
Figure 2. Stream sites sampled in the Deadwood River basin in 2003……..8
Figure 3. Length frequency histogram for bull trout sampled in 2003……10

Appendix

Table 1. Deadwood total electrofish……12
Table 2. Deadwood fish capture by site……...21
Table 3. PIT tagged Deadwood……22

Introduction

The U.S. Bureau of Reclamation (USBR) works cooperatively with Boise National Forest under a Memorandum of Understanding (MOU) to complete bull trout population monitoring and distribution work in the Deadwood and Boise River basins. This MOU was created in 1999 and modified in 2003 to cover cooperative activities for both agencies that are designed to meet requirements under consultations with the U.S. Fish and Wildlife Service (FWS) for bull trout. Objectives of the 2003 field season for work covered under the permit included:

1. Determine presence and fish densities to assess population distribution and condition in tributary streams
2. Determine movement patterns and preferred habitat of bull trout using the Deadwood River below Deadwood dam

Study Area

The Deadwood River is a major tributary to the South Fork Payette River in the Boise National Forest. The Deadwood River is approximately 70 km long from headwaters (2124 meters above sea level) to mouth (1135 meters above sea level) and contains Deadwood dam at RKM 36 (Figure 1). Deadwood dam is an U.S. Bureau of Reclamation owned and operated facility constructed in 1931 with 199.8 km^3 (162,000 AF) volume. The dam is a concrete thick arch dam that is 50 m (165 feet) tall and drains 380 km^2 (111 square miles) of the Deadwood River watershed.

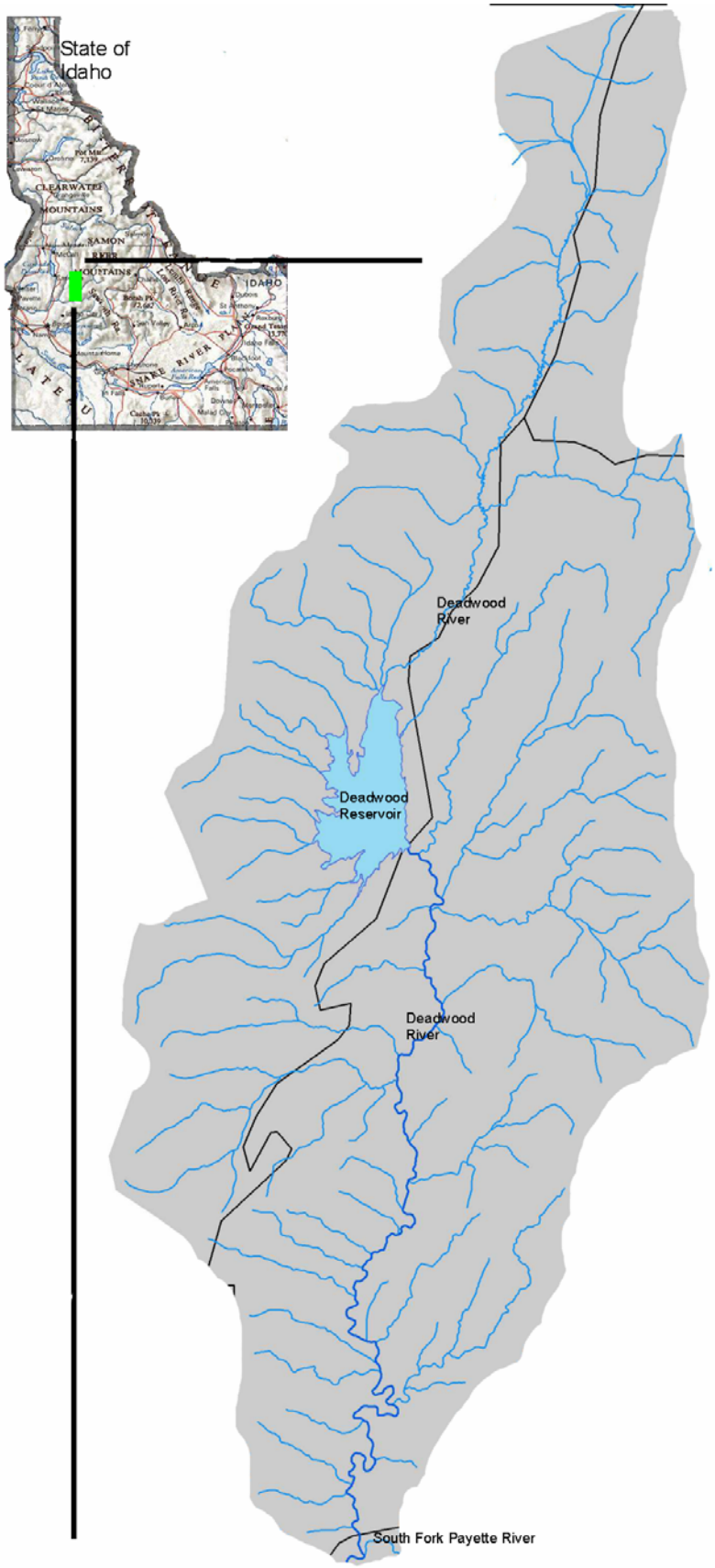

Figure 1. The Deadwood River basin from headwaters to mouth

Methods

Fish Data Collection

Stream reaches were sampled by electrofishing. Multiple-pass backpack electrofishing was performed at 36, 100-m reaches across the Deadwood River watershed. Blocknets were placed at the beginning and end of each reach prior to sampling. All block-nets were checked each pass to collect any fish that were shocked and not captured. Smith-Root™ battery-operated electrofishers were used; batteries were changed every 3,500 to 4,000 operating seconds. Electrofishers were set between 500 and 900 volts and 30 to 40 Hz, depending on stream size and conductivity. The Deadwood River and its tributaries have low conductivity, which averaged 51 µS (range: 28 µS - 90 µS). Gasoline-powered generator electrofishing units were not used during any part of the sampling. Each stream reach was electrofished with as many as four passes. The number of passes required was dependent on the percent depletion between passes. For example, 50 percent depletion must be obtained between pass one and pass two, if not, 75 percent depletion had to be obtained between the sum of passes one and two and pass three. The fourth pass was the final pass if the previous requirements were not met. Numbers of fish per site were estimated using Moran and Zippen equations for equal effort sampling (Everhart and Youngs 1981).

All captured fish were identified to species and enumerated. Total length (TL) was recorded for all species. All amphibians were counted and released and adults were differentiated from tadpoles. Bull trout were anesthetized using diluted tricaine methanesulfonate (MS-222) (approximately 100 mg/L). When a fish was considered anesthetized (could not right itself), its total length was measured and recorded. Scale samples and fin clips were taken, and the fish was scanned for Passive Integrated Transponder (PIT) tags (AVID Computer Corporation, Norco, CA 1999). All bull trout > 100 mm TL that did not carry tags were tagged with 2.5 mm x 14 mm, 125 kHz PIT tags in accordance with instruction from Idaho Department of Fish and Game personnel (Russ Kiefer, IDFG, pers. comm.). Bull trout were held and monitored in live wells until full recovery (minimum 15 minutes), and then returned to the stream in the vicinity of capture. All recaptured bull trout were measured so that data for growth over the time period for mark and recapture could be recorded.

Habitat Data Collection

Habitat condition was measured following modified R1/R4 methods of the USFS as described in Burton (1999).

Each stream site was located with a Garmin™ GPS 76, and UTM coordinates were recorded. Habitat was measured using the following methodology: waters were first categorized by the observer as slow or fast based on USFS training (Burton 1999). Different measurements are taken for either slow or fast water. A two-meter stadia rod marked in tenth meter units was used to measure all habitat variables. Field staff was trained each year for habitat measurement under guidance of the USFS.

Parameters collected for slow water habitats were: thalweg lengths, maximum depth, mean depth, crest depth, averaged wetted width, available cover area, and percent fines. Parameters collected for fast water habitats were: thalweg length, mean depth and wetted width.

Definition of Habitat Parameters Collected

Thalweg Length: thalweg length was the measured distance in the path of a stream that followed the deepest part of the channel from the crest of the slow water unit to the formative feature of the habitat unit (Armantrout 1998).

Crest depth: crest depth is the downstream point of transition of slow water habitat types. It is the shallow downstream end of the depression in scour pools and the point of greatest flow over a dam.

Maximum Depth: maximum depth was the greatest depth measured in the slow water type.

Mean Depth: mean depth was taken at the area where average width was measured.

*Depths were measured at approximately ¼, ½, and ¾ of the channel width and the average was calculated by dividing the sum by four (to account for zero depth at the banks).
Average Width: average width was the wetted width measured at location of the pool that was the the mean depth calculated from the depth at the crest and maximum depth of the pool.
Available Cover Area: cover was categorized as large wood debris, overhanging vegetation, or undercut banks. All cover types had to be at least 0.30 m in width to be measured and capable of providing refuge to fish. All aggregates of wood were measured for combined total area (each piece was added to calculate a combined total). Each habitat feature was measured by length and width and area was calculated. The area of cover is reported in square meters (m^2).
Grid Fines: percent fines were estimated at each slow water pool tail. Fines were measured using a 100-intersection grid. Field staff measured the percent of the wetted substrate area of pool tail that is made up of fine particles, defined as sand/silt less that 6 mm, by randomly tossing the grid. The cross section of the pool tail was subdivided into 3 segments: right, middle, and left. The grid intersections were counted only where substrate was smaller than 6 mm.
Elevation: site locations were mapped using UTM coordinates collected with a Garmin GPS 76 unit at each site. Waypoint locations were mapped and elevation (m) was taken from coordinates.

Results

Deadwood River bull trout distribution and density surveys (Objective 1)

Boise National Forest and Reclamation field crews conducted multiple pass electrofishing surveys at 36 sites in 27 streams (Table 1 and Figure 1). Survey work was conducted for six weeks beginning June 30 and finishing August 14, 2003. Data was also collected for water temperature, fish cover, and fine sediment.

Table 1. Stream locations and site identification codes for all sites sampled in the Deadwood River basin with multiple pass electrofishing in 2003.

Stream Name	Site ID	Zone	UTME	UTMN
Basin Cr	BASIN	11T	606741	4910787
Beaver 1	BEAV1	11T	604741	4907980
Daisy Cr.	DAISY	11T	604185	4901604
EFork Deadwood	EFDEAD	11T	613398	4927564
EF Warm Springs	EFWMSP	11T	614140	4907110
Goat Creek	GOAT	11T	609081	4916247
Habit Cr	HABIT	11T	605791	4909500
Josie CK	JOSIE	11T	607504	4887807
Lorenzo Cr.	LOREN	11T	611080	4895878
MF Warm Springs	MFWMSP	11T	612614	4909540
Moulding Cr	MOULDG	11T	605650	4904109
Nellies basin	NELLIE	11T	607515	4888082
NF Beaver	NFBEAV	11T	605039	4909043
NF Deer Cr.	NFDEER	11T	615225	4918297
Ninemile Cr.	NINEML	11T	604433	4899349
Noman1	NOMAN1	11T	612431	4900453
Noman2	NOMAN2	11T	609672	4900533
Packsaddle Cr.	PCKSDL	11T	603995	4897496
Pine CK	PINE	11T	607569	4888725
Scott Cr. DS of Smith Cr Conf.	SCOTTA	11T	602935	4896128
Scott Cr. upstream of culvert	SCOTTB	11T	601722	4894413
SFBeaver 1	SFBEV1	11T	604490	4905217
SFBeaver 2	SFBEV2	11T	604487	4905446
SF Deer Cr	SFDEER	11T	616008	4917975
Sixmile Cr.	SIXMIL	11T	607252	4901345
Stevens Cr. @ DED trail	STEVEN	11T	612467	4890714
Stratton Creek	STRATN	11T	612178	4925099
Trail Cr	TRAIL	11T	604390	4901786
Upper Deadwood	UPDEAD	11T	613197	4930671
Upper Wild Buck	WBUCK1	11T	607283	4912959
Wild Buck Cr.	WBUCK2	11T	606944	4911472
Whitehawk Ck 503	WHTHKA	11T	615954	4900917
Whitehawk Cr.	WHTHKB	11T	614439	4902720
Wilson Creek	WILSN1	11T	609627	4909062
U. Wilson	WLSN2	11T	613337	4914970
Warm Spring 510	WMSP51	11T	612577	4910286

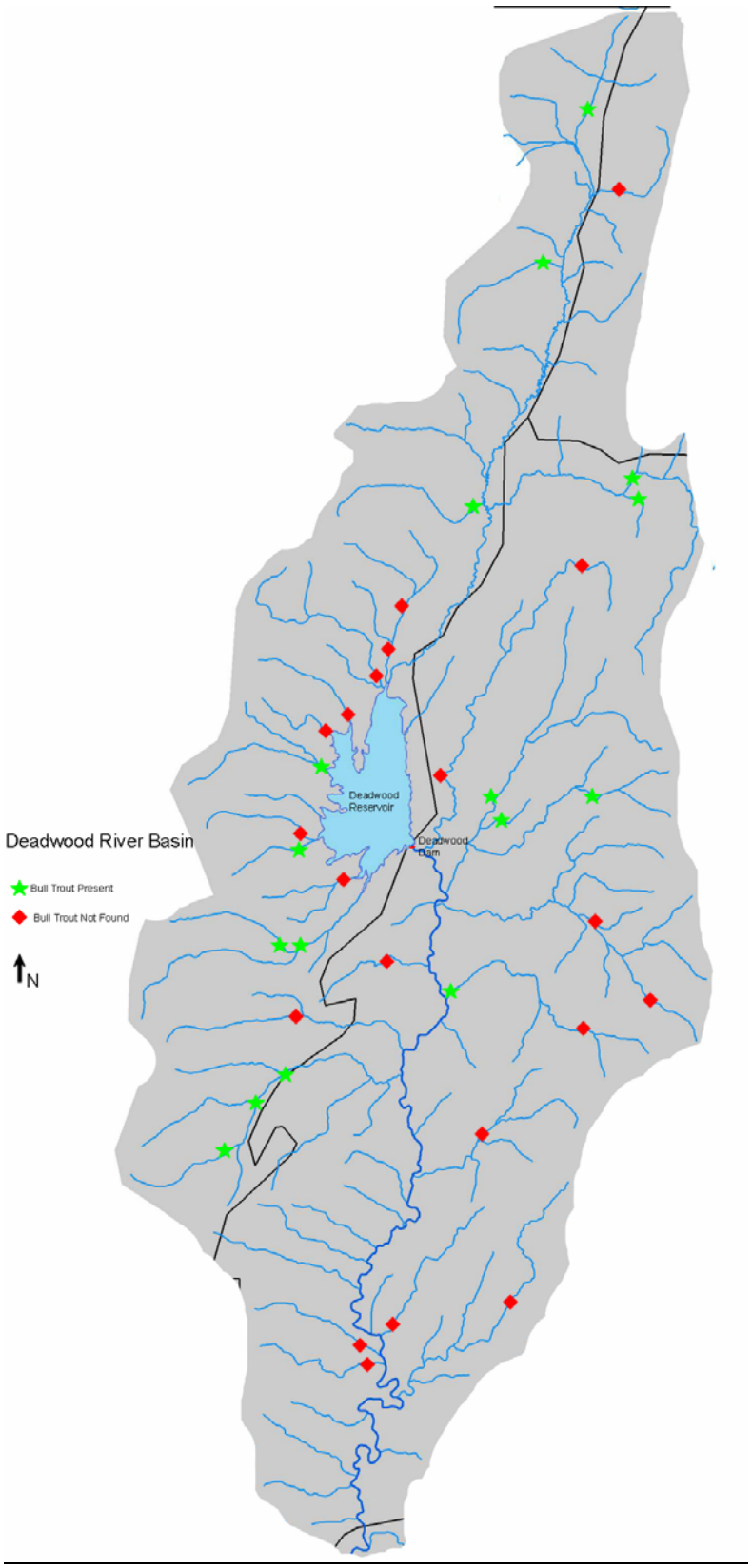

Figure 1. Stream sites sampled in the Deadwood River basin in 2003.

Sixteen of the 36 sites sampled contained bull trout with four sites containing no fish when sampled (Table 2 Appendix). Other fish species captured included kokanee, rainbow and cutthroat trout (hybridization between cutthroat trout and rainbow trout was noted when apparent) and sculpin (Table 2). All amphibians were counted and noted as adults or tadpoles. A total of 135 bull trout were captured, ranging from 25 mm total length to 260 mm total length (Figure 2). Sixty-seven were tagged with 125 kHz PIT tags (tagged fish were 100 mm to 222 mm total length).

Table 2. Number of fish captured by species for Deadwood River electrofishing surveys.

Species	**Deadwood River Electrofish Capture Data**
Bull trout (*Salvelinus confluentus*) (BT)	135
Cutthroat trout (CT) (*Oncorhynchus clarki lewisi*)	253
Largescale sucker (LSS) (*Catostomus machrocheilus*)	0
Rainbow trout (RB) (*Oncorhynchus mykiss*)	273
Brook Trout (BR) (*Salvelinus fontinalis*)	0
Pike minnow (NPW) (*Ptychocheilus oregonensis)*	0
Mountain whitefish (MWF) (*Prosopium williamsoni)*	0
Chiselmouth (CM) (*Acrocheilus alutaceus*)	0
Bridgelip sucker (BLS) (*Catostomus columbianus)*	0
Brown Bullhead (*Amieurus nebulosus*)	0
Smallmouth bass (SMB) (*Micropterus dolomieui)*	0
Kokanee (KO) (*Oncorhyncus nerka kennerlyi*)	1
Sculpin spp. (SC) (*Cottus spp.*)	145
Total Fish	803

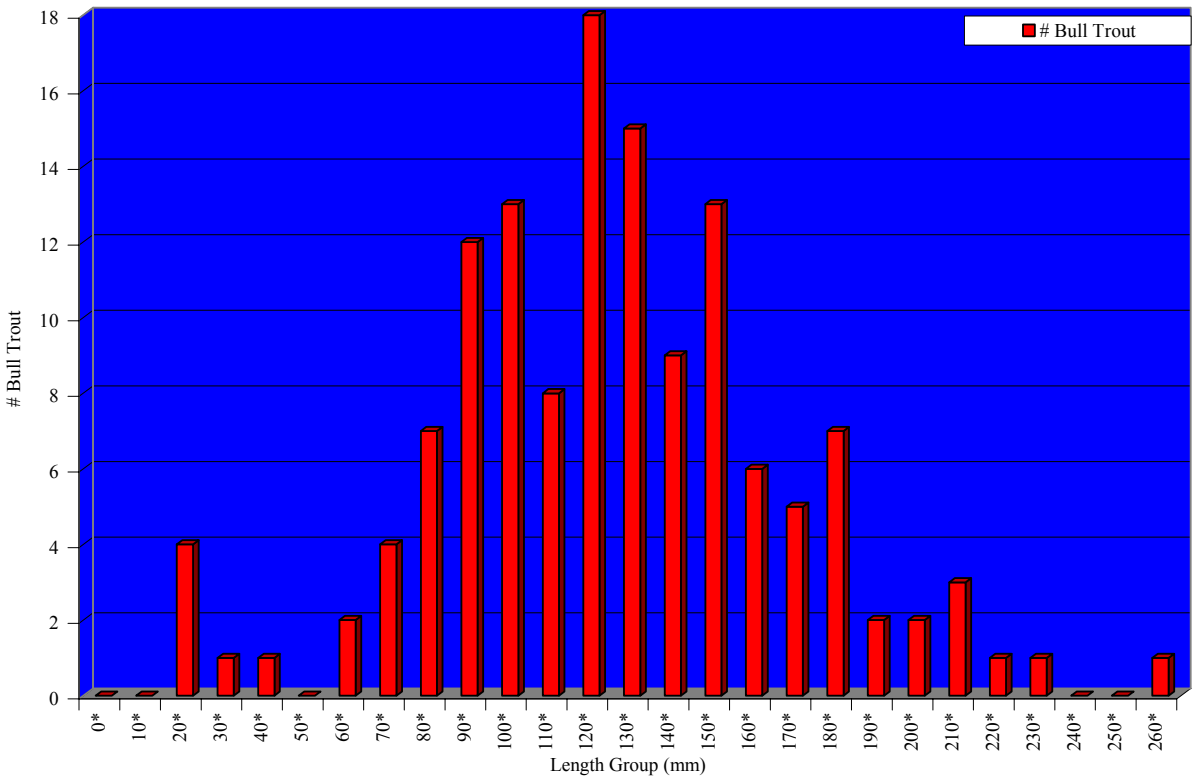

Figure 2. Length frequency chart of bull trout captured in the Deadwood River Basin 2003

Deadwood River Basin Weir and Radio Telemetry Study (Objective 2)

Due to flooding and landslides, we were unable to install the weir at near Julie Creek campground as planned in 2003. We therefore were unable to capture bull trout to tag and monitor. We plan to pursue these objectives the 2004 field season.

Summary

Boise National Forest and USBR survey teams collected 803 individual fish representing 5 species in the Deadwood River projects. Over 130 bull trout were captured, and 67 were tagged with 125 kHz PIT tags. Habitat surveys were conducted on 35 of the 36 stream sites sampled. Four streams sampled had no fish and bull trout were found in sixteen of the 32 streams sampled that did have fish. Stream sites where fish were not found were upstream of high gradient reaches on the East side of the Deadwood River and probably contain natural barriers. Culverts on Scott Creek did not appear to limit movement of large bull trout upstream but may limit movement of smaller fish upstream. Culverts were surveyed in 2003 by Boise National Forest and entered into a priority database for repair based on the probability of limiting movement of fish (M. Kellett, Boise National Forest, personal communication). Rainbow trout and cutthroat trout were found together in five streams and four of those streams also had hybrid rainbow and cutthroat trout. Fisheries and habitat data will be entered into the Boise National Forest fisheries data base used for stream assessments. We were unable to install the Deadwood River weir trap during the fall season due to flooding and landslides and were unable to complete the movement and fluvial river habitat work. Work has been planned for 2004 that

includes longitudinal temperature and bull trout distribution studies in Warmsprings Creek, Deer Creek, Scott Creek, and the Upper Deadwood River. We also plan to install the weir near the Mouth of the Deadwood River to monitor bull trout escapements and radio tag some bull trout to investigate fluvial patterns of movement and habitat use.

Literature Cited

Armantrout, N.B. compiler. 1998. Glossary of aquatic habitat inventory terminology. American Fisheries Society, Bethesda, Marylyand. 136 p.

Burton, T. 1999. Bull trout fisheries monitoring plan for the North Fork Boise River. Boise National Forest. Boise, Idaho.

Everhart, W. H., and W. D. Youngs. 1981. Principles of fishery science. 2d. ed. Cornell University Press. Ithica and London.

Appendix

Table 1. Total fish sampled by sited, Deadwood River basin 2003

Site	Date	Species	Length	Site	Date	Species	Length
900V F/8				600v F-8			
Pass # 1				Pass # 1			
Josie Cr.	6/30/03	RB	135	Nellies Basin	7/1/03	RB	132
Josie Cr.	6/30/03	RB	170	Nellies Basin	7/1/03	RB	141
Josie Cr.	6/30/03	RB	95	Nellies Basin	7/1/03	RB	56
Josie Cr.	6/30/03	RB	120	Nellies Basin	7/1/03	RB	62
Josie Cr.	6/30/03	TF	# 19	Nellies Basin	7/1/03	RB	120
Pass # 2				Nellies Basin	7/1/03	RB	134
Josie Cr.	6/30/03	RB	75	Nellies Basin	7/1/03	RB	137
Josie Cr.	6/30/03	RB	75	Nellies Basin	7/1/03	RB	110
Josie Cr.	6/30/03	RB	160	Nellies Basin	7/1/03	RB	109
Josie Cr.	6/30/03	RB	140	Nellies Basin	7/1/03	TF	# 1
Josie Cr.	6/30/03	RB	75	Pass # 2			
Josie Cr.	6/30/03	RB	65	Nellies Basin	7/1/03	RB	132
Josie Cr.	6/30/03	RB	60	Nellies Basin	7/1/03	RB	140
Josie Cr.	6/30/03	RB	110	Nellies Basin	7/1/03	RB	104
Josie Cr.	6/30/03	RB	130	Nellies Basin	7/1/03	RB	120
Josie Cr.	6/30/03	TF	# 5	Nellies Basin	7/1/03	RB	74
Pass # 3				Nellies Basin	7/1/03	TF	# 3
Josie Cr.	6/30/03	RB	57	Pass # 3			
Josie Cr.	6/30/03	RB	60	Nellies Basin	7/1/03	RB	143
Josie Cr.	6/30/03	TF	# 3	Nellies Basin	7/1/03	RB	108
	Total	RB = 15	TF = 27	Nellies Basin	7/1/03	RB	110
				Nellies Basin	7/1/03	RB	142
				Nellies Basin	7/1/03	RB	92
				Nellies Basin	7/1/03	TF	# 3
				Pass # 4			
				Nellies Basin	7/1/03	RB	120
					4th	RB	118
						RB	116
					Total	RB = 22	TF = 8
Site	**Date**	**Species**	**Length**	**Site**	**Date**	**Species**	**Length**
Pass #1				Pass #1			
Nomans1	7/7/03	No Fish		Nomans2	7/9/03	RB	121
				Nomans2	7/9/03	RB	128
				Nomans2	7/9/03	RB	169
				Nomans2	7/9/03	RB	162
				Nomans2	7/9/03	RB	122
				Nomans2	7/9/03	RB	97
				Nomans2	7/9/03	RB	114
				Nomans2	7/9/03	RB	123
				Nomans2	7/9/03	RB	114
				Nomans2	7/9/03	RB	62
				Nomans2	7/9/03	TF	# 11

				Pass #2			
				Nomans2	7/9/03	RB	118
				Nomans2	7/9/03	RB	122
				Nomans2	7/9/03	RB	127
				Nomans2	7/9/03	RB	151
				Nomans2	7/9/03	RB	153
				Nomans2	7/9/03	RB	110
				Nomans2	7/9/03	RB	116
				Nomans2	7/9/03	RB	117
				Nomans2	7/9/03	RB	146
				Nomans2	7/9/03	RB	74
				Nomans2	7/9/03	RB	100
				Nomans2	7/9/03	RB	77
				Nomans2	7/9/03	RB	72
				Nomans2	7/9/03	RB	68
				Nomans2	7/9/03	BT	232
				Nomans2	7/9/03	TF	# 12
				Pass #3			
				Nomans2	7/9/03	RB	120
				Nomans2	7/9/03	RB	130
				Nomans2	7/9/03	RB	75
				Nomans2	7/9/03	RB	75
				Nomans2	7/9/03	RB	70
				Nomans2	7/9/03	RB	105
				Nomans2	7/9/03	RB	70
				Nomans2	7/9/03	RB	75
				Nomans2	7/9/03	RB	61
				Nomans2	7/9/03	TF	# 10
					Total	RB = 33	TF = 33
						BT = 1	
Site	**Date**	**Species**	**Length**	**Site**	**Date**	**Species**	**Length**
800V F/6				800V F/6			
Pass #1				Pass #1			
Scott Cr. A	7/14/03	BT	185	Daisy Ck.	7/15/03	BT	126/133
Scott Cr. A	7/14/03	BT	185	Daisy Ck.	7/15/03	BT	71/73
Scott Cr. A	7/14/03	BT	124	Daisy Ck.	7/15/03	BT	101/105
Scott Cr. A	7/14/03	BT	110	Daisy Ck.	7/15/03	BT	93/97
Scott Cr. A	7/14/03	BT	84	Daisy Ck.	7/15/03	CT	66
Scott Cr. A	7/14/03	BT	75	Daisy Ck.	7/15/03	CT	74
Scott Cr. A	7/14/03	BT	69	Daisy Ck.	7/15/03	CT/RB	63
Scott Cr. A	7/14/03	BT	88	Daisy Ck.	7/15/03	CT	124
Scott Cr. A	7/14/03	BT	82	Daisy Ck.	7/15/03	CT	110
Scott Cr. A	7/14/03	RB	143	Daisy Ck.	7/15/03	CT	121
Scott Cr. A	7/14/03	TF	# 2+1Adult	Daisy Ck.	7/15/03	TF	# 4+1Ad.
Pass #2				Pass #2			
Scott Cr. A	7/14/03	BT	160	Daisy Ck.	7/15/03	BT	103/108
Scott Cr. A	7/14/03	BT	152	Daisy Ck.	7/15/03	BT	150/155
Scott Cr. A	7/14/03	BT	201	Daisy Ck.	7/15/03	CT/RB	103
Scott Cr. A	7/14/03	BT	162	Daisy Ck.	7/15/03	CT/RB	113

Scott Cr. A	7/14/03	BT	157	Daisy Ck.	7/15/03	CT/RB	100
Scott Cr. A	7/14/03	BT	130	Daisy Ck.	7/15/03	CT/RB	114
Scott Cr. A	7/14/03	BT	127	Daisy Ck.	7/15/03	RB	57
Scott Cr. A	7/14/03	BT	117	Pass #3			
Scott Cr. A	7/14/03	RB	103	Daisy Ck.	7/15/03	CT/RB	104
Scott Cr. A	7/14/03	TF	# 4	Daisy Ck.	7/15/03	RB	70
Pass #3				Daisy Ck.	7/15/03	BT	71/73
Scott Cr. A	7/14/03	BT	153		Total	CT/RB= 6	TF = 4
Scott Cr. A	7/14/03	BT	172			RB = 2	
Scott Cr. A	7/14/03	BT	196			BT = 7	
Scott Cr. A	7/14/03	BT	160			CT= 5	
Scott Cr. A	7/14/03	BT	137				
	Total	BT = 22	TF= 6+1Ad				
		RB = 2					
Angled by Kellet 6:30-8:30pm							
Scott Cr. A				7/15/03	BT	212	
Scott Cr. A	7/15/03	BT	211				
Scott Cr. A	7/15/03	BT	208				
	Total	BT = 3					
Site	**Date**	**Species**	**Length**	**Site**	**Date**	**Species**	**Length**
600V F/6				600V F/6			
Pass# 1				Pass# 1			
SF Beaver1	7/21/03	CT	157	SF Beaver2	7/21/03	CT	102
SF Beaver1	7/21/03	CT	123	SF Beaver2	7/21/03	CT	107
SF Beaver1	7/21/03	CT	122	SF Beaver2	7/21/03	CT	108
SF Beaver1	7/21/03	CT	107	SF Beaver2	7/21/03	CT	99
SF Beaver1	7/21/03	CT	103	SF Beaver2	7/21/03	CT	101
SF Beaver1	7/21/03	CT	97	SF Beaver2	7/21/03	CT	47
SF Beaver1	7/21/03	CT	132	SF Beaver2	7/21/03	CT	51
SF Beaver1	7/21/03	CT	92	SF Beaver2	7/21/03	YOY	48
SF Beaver1	7/21/03	CT	62	SF Beaver2	7/21/03	TF	# 15
SF Beaver1	7/21/03	CT	94	Pass #2			
SF Beaver1	7/21/03	CT	93	SF Beaver2	7/21/03	CT	108
SF Beaver1	7/21/03	CT	108	SF Beaver2	7/21/03	CT	118
SF Beaver1	7/21/03	CT	89	SF Beaver2	7/21/03	CT	57
SF Beaver1	7/21/03	CT	59	SF Beaver2	7/21/03	TF	# 3
SF Beaver1	7/21/03	CT	57		Total	CT = 10	TF = 18
SF Beaver1	7/21/03	CT	65			YOY = 1	
SF Beaver1	7/21/03	CT	62				
SF Beaver1	7/21/03	CT	93				
SF Beaver1	7/21/03	CT	95				
SF Beaver1	7/21/03	SC	78				
SF Beaver1	7/21/03	BT	97/100				
SF Beaver1	7/21/03	BT	87/93				
SF Beaver1	7/21/03	BT	117/122				
SF Beaver1	7/21/03	TF	# 18+1 Ad.				
Pass# 2							

SF Beaver1	7/21/03	CT	56				
SF Beaver1	7/21/03	CT	113				
SF Beaver1	7/21/03	CT	140				
SF Beaver1	7/21/03	CT	72				
SF Beaver1	7/21/03	CT	98				
SF Beaver1	7/21/03	CT	103				
SF Beaver1	7/21/03	CT	120				
SF Beaver1	7/21/03	CT	55				
SF Beaver1	7/21/03	CT	84				
SF Beaver1	7/21/03	CT	62				
SF Beaver1	7/21/03	CT	95				
SF Beaver1	7/21/03	CT	70				
SF Beaver1	7/21/03	CT	70				
SF Beaver1	7/21/03	CT	70				
SF Beaver1	7/21/03	SC	72				
SF Beaver1	7/21/03	TF	# 12				
Pass #3							
SF Beaver1	7/21/03	CT	117				
SF Beaver1	7/21/03	CT	108				
SF Beaver1	7/21/03	CT	68				
SF Beaver1	7/21/03	TF	# 7				
		CT = 36	TF=37+1Ad				
		SC = 2					
		BT = 3					
Site	**Date**	**Species**	**Length**	**Site**	**Date**	**Species**	**Length**
900V F/6				800V F/6			
Pass # 1				Pass # 1			
Wilson Creek	8/4/03	**RB**	135	Warm Sp-510	8/4/03	**RB**	97
Wilson Creek	8/4/03	**RB**	145	Warm Sp-510	8/4/03	**RB**	119
Wilson Creek	8/4/03	**RB**	110	Warm Sp-510	8/4/03	**RB**	130
Wilson Creek	8/4/03	**RB**	110	Warm Sp-510	8/4/03	**RB**	62
Wilson Creek	8/4/03	**RB**	70	Warm Sp-510	8/4/03	**RB**	103
Wilson Creek	8/4/03	**RB**	60	Warm Sp-510	8/4/03	**RB**	102
Wilson Creek	8/4/03	**RB**	70	Warm Sp-510	8/4/03	**RB**	104
Wilson Creek	8/4/03	**RB**	60	Warm Sp-510	8/4/03	**BT**	90/96
Wilson Creek	8/4/03	**RB**	80	Warm Sp-510	8/4/03	**BT**	129/136
Wilson Creek	8/4/03	**RB**	60	Warm Sp-510	8/4/03	**BT**	121/130
Pass # 2				Warm Sp-510	8/4/03	**RB**	56
Wilson Creek	8/4/03	**RB**	75	Warm Sp-510	8/4/03	**RB**	67
Wilson Creek	8/4/03	**RB**	85	Warm Sp-510	8/4/03	**BT**	127/133
Wilson Creek	8/4/03	**RB**	60	Warm Sp-510	8/4/03	**RB**	67
Wilson Creek	8/4/03	**RB**	60	Warm Sp-510	8/4/03	KO	68
Wilson Creek	8/4/03	**RB**	80	Warm Sp-510	8/4/03	**RB**	59
Wilson Creek	8/4/03	**RB**	70	Warm Sp-510	8/4/03	**RB**	58
Wilson Creek	8/4/03	**RB**	60	Warm Sp-510	8/4/03	**RB**	57
Pass # 3				Warm Sp-510	8/4/03	**RB**	71
Wilson Creek	8/4/03	**RB**	20	Warm Sp-510	8/4/03	**RB**	140
Wilson Creek	8/4/03	**RB**	125	Warm Sp-510	8/4/03	**RB**	160
Wilson Creek	8/4/03	**RB**	135	Warm Sp-510	8/4/03	TF	# 1+ 1Ad.

Wilson Creek	8/4/03	RB	60	Pass # 2			
Wilson Creek	8/4/03	RB	80	Warm Sp-510	8/4/03	RB	163
Wilson Creek	8/4/03	TF	# 1	Warm Sp-510	8/4/03	RB	128
Pass # 4				Warm Sp-510	8/4/03	RB	136
Wilson Creek	8/4/03	RB	75	Warm Sp-510	8/4/03	RB	84
Wilson Creek	8/4/03	RB	70	Warm Sp-510	8/4/03	RB	70
Wilson Creek	8/4/03	RB	55	Warm Sp-510	8/4/03	RB	70
Wilson Creek	8/4/03	RB	60	Warm Sp-510	8/4/03	RB	52
Wilson Creek	8/4/03	RB	45	Warm Sp-510	8/4/03	RB	60
Wilson Creek	8/4/03	RB	75	Warm Sp-510	8/4/03	RB	52
Wilson Creek	8/4/03	RB	100	Warm Sp-510	8/4/03	RB	58
Wilson Creek	8/4/03	RB	100	Warm Sp-510	8/4/03	RB	62
Wilson Creek	8/4/03	RB	60		Total	RB =27	TF = 1
Wilson Creek	8/4/03	RB	75			KO = 1	
	Total	RB = 31	TF = 1			BT = 3	
Site	**Date**	**Species**	**Length**	**Site**	**Date**	**Species**	**Length**
700V F/6				800V F/6			
Pass #1				Pass #1			
Sixmile Cr.	7/16/03	RB	100	Scott Cr. B	7/16/03	BT	115/120
Sixmile Cr.	7/16/03	RB	88	Scott Cr. B	7/16/03	BT	168/177
Sixmile Cr.	7/16/03	RB	129	Scott Cr. B	7/16/03	BT	250/262
Sixmile Cr.	7/16/03	RB	87	Scott Cr. B	7/16/03	BT	124/131
Sixmile Cr.	7/16/03	RB	87	Scott Cr. B	7/16/03	BT	139/144
Sixmile Cr.	7/16/03	RB	90	Scott Cr. B	7/16/03	RB	75
Sixmile Cr.	7/16/03	RB	66	Pass #2			
Sixmile Cr.	7/16/03	RB	50	Scott Cr. B	7/16/03	BT	127/131
Sixmile Cr.	7/16/03	TF	# 9Adult	Scott Cr. B	7/16/03	BT	142/150
Pass#2				Scott Cr. B	7/16/03	BT	133/141
Sixmile Cr.	7/16/03	RB	90	Scott Cr. B	7/16/03	BT	98/114
Sixmile Cr.	7/16/03	TF	# 2Adult	Scott Cr. B	7/16/03	BT	208/217
	Total	RB = 9	TF = 11Ad.	Scott Cr. B	7/16/03	BT	120/126
				Scott Cr. B	7/16/03	TF	# 2
				Pass # 3			
				Scott Cr. B	7/16/03	TF	#6+ 1Ad.
					Total	BT = 11	TF=8+1Ad.
						RB = 1	
Site	**Date**	**Species**	**Length**	**Site**	**Date**	**Species**	**Length**
800V F/6				800V F/6			
Pass # 1				Pass # 1			
Habit Cr.	7/23/03	CT	106	Basin Cr.	7/23/03	SC	35
Habit Cr.	7/23/03	CT	75	Basin Cr.	7/23/03	SC	73
Habit Cr.	7/23/03	CT	110	Basin Cr.	7/23/03	SC	66
Habit Cr.	7/23/03	CT	100	Basin Cr.	7/23/03	SC	62

Habit Cr.	7/23/03	CT	67	Basin Cr.	7/23/03	SC	67
Habit Cr.	7/23/03	CT	61	Basin Cr.	7/23/03	SC	80
Habit Cr.	7/23/03	CT	68	Basin Cr.	7/23/03	SC	56
Habit Cr.	7/23/03	CT	73	Basin Cr.	7/23/03	SC	51
Habit Cr.	7/23/03	CT	60	Basin Cr.	7/23/03	SC	102
Habit Cr.	7/23/03	CT	68	Basin Cr.	7/23/03	SC	30
Pass # 2				Basin Cr.	7/23/03	SC	37
Habit Cr.	7/23/03	CT	128	Basin Cr.	7/23/03	SC	34
Habit Cr.	7/23/03	CT	69	Basin Cr.	7/23/03	SC	66
Habit Cr.	7/23/03	CT	70	Basin Cr.	7/23/03	SC	32
Habit Cr.	7/23/03	CT	70	Basin Cr.	7/23/03	SC	33
Habit Cr.	7/23/03	TF	# 1	Basin Cr.	7/23/03	SC	30
	Total	CT = 14	TF = 1	Basin Cr.	7/23/03	SC	36
				Basin Cr.	7/23/03	**RB**	114
				Basin Cr.	7/23/03	**RB**	92
				Basin Cr.	7/23/03	**RB**	103
				Basin Cr.	7/23/03	**RB**	118
				Basin Cr.	7/23/03	**RB**	71
				Basin Cr.	7/23/03	**RB**	73
				Basin Cr.	7/23/03	**CT/RB**	83
				Basin Cr.	7/23/03	**CT/RB**	90
				Pass # 2			
				Basin Cr.	7/23/03	SC	32
				Basin Cr.	7/23/03	SC	63
				Basin Cr.	7/23/03	SC	65
				Basin Cr.	7/23/03	SC	82
				Basin Cr.	7/23/03	SC	38
				Basin Cr.	7/23/03	SC	62
				Basin Cr.	7/23/03	SC	39
				Basin Cr.	7/23/03	SC	31
				Basin Cr.	7/23/03	CT	108
				Basin Cr.	7/23/03	CT	74
				Basin Cr.	7/23/03	**RB**	61
					Total	SC = 25	
						CT = 2	
						CT/RB = 2	
						RB = 7	

Site	**Date**	**Species**	**Length**	**Site**	**Date**	**Species**	**Length**
				700V F/6			
Pass # 1				Pass # 1			
Whitehwk503	8/5/03	**RB**	130	U. Wilson	8/6/03	**RB**	87
Whitehwk503	8/5/03	**RB**	135	U. Wilson	8/6/03	**RB**	74
Whitehwk503	8/5/03	**RB**	165	U. Wilson	8/6/03	**RB**	125
Whitehwk503	8/5/03	**RB**	160	U. Wilson	8/6/03	**RB**	75
Whitehwk503	8/5/03	**RB**	130	U. Wilson	8/6/03	**RB**	92
Whitehwk503	8/5/03	**RB**	180	U. Wilson	8/6/03	**RB**	85
Whitehwk503	8/5/03	TF	# 12	U. Wilson	8/6/03	**RB**	105
Pass # 2				U. Wilson	8/6/03	**RB**	97
Whitehwk503	8/5/03	**RB**	120	U. Wilson	8/6/03	**RB**	82
Whitehwk503	8/5/03	**RB**	125	U. Wilson	8/6/03	**RB**	74
Whitehwk503	8/5/03	**RB**	140	U. Wilson	8/6/03	**RB**	79
Whitehwk503	8/5/03	**RB**	180	U. Wilson	8/6/03	**RB**	90
Whitehwk503	8/5/03	**RB**	130	U. Wilson	8/6/03	**RB**	117
Whitehwk503	8/5/03	TF	# 3	U. Wilson	8/6/03	**RB**	98
Pass # 3				U. Wilson	8/6/03	**RB**	80
Whitehwk503	8/5/03	TF	# 7	U. Wilson	8/6/03	**RB**	104
	Total	RB = 11	TF = 22	U. Wilson	8/6/03	**RB**	102
				U. Wilson	8/6/03	**RB**	97
				U. Wilson	8/6/03	**RB**	67
				U. Wilson	8/6/03	**RB**	95
				U. Wilson	8/6/03	**RB**	84
				U. Wilson	8/6/03	**RB**	88
				U. Wilson	8/6/03	**RB**	55
				U. Wilson	8/6/03	**RB**	53
				U. Wilson	8/6/03	**RB**	47
				U. Wilson	8/6/03	**RB**	87
				U. Wilson	8/6/03	TF	# 4
				Pass # 2			
				U. Wilson	8/6/03	**RB**	137
				U. Wilson	8/6/03	**RB**	90
				U. Wilson	8/6/03	**RB**	43
				U. Wilson	8/6/03	**RB**	47
				U. Wilson	8/6/03	**RB**	92
				U. Wilson	8/6/03	**RB**	47
				U. Wilson	8/6/03	TF	# 5
					Total	RB = 32	TF = 9
Site	**Date**	**Species**	**Length**	**Site**	**Date**	**Species**	**Length**
Pass #1	700F6			EFork Deadwood	8/12/03	CT	70
EFork Deadwood	8/12/03	CT	94	EFork Deadwood	8/12/03	SC	64
EFork Deadwood	8/12/03	CT	140	EFork Deadwood	8/12/03	SC	93
EFork Deadwood	8/12/03	CT	65	EFork Deadwood	8/12/03	SC	89
EFork Deadwood	8/12/03	CT	142	EFork Deadwood	8/12/03	SC	32

EFork Deadwood	8/12/03	CT	84	EFork Deadwood	8/12/03	SC	51		
EFork Deadwood	8/12/03	CT	72	EFork Deadwood	8/12/03	TF	#7		
EFork Deadwood	8/12/03	CT	120						
EFork Deadwood	8/12/03	CT	152		TOTAL	CT = 61			
EFork Deadwood	8/12/03	CT	132			SC = 7			
EFork Deadwood	8/12/03	CT	112			TF = 18			
EFork Deadwood	8/12/03	CT	80						
EFork Deadwood	8/12/03	CT	112						
EFork Deadwood	8/12/03	CT	68						
EFork Deadwood	8/12/03	CT	85						
EFork Deadwood	8/12/03	CT	68						
EFork Deadwood	8/12/03	CT	172						
EFork Deadwood	8/12/03	CT	68	Pass #1	900F6				
EFork Deadwood	8/12/03	CT	74	Upper Deadwood	8/12/03	BT	159		
EFork Deadwood	8/12/03	CT	100	Upper Deadwood	8/12/03	BT	188		
EFork Deadwood	8/12/03	CT	92	Upper Deadwood	8/12/03	BT	222		
EFork Deadwood	8/12/03	CT	93	Upper Deadwood	8/12/03	BT	170		
EFork Deadwood	8/12/03	CT	104	Upper Deadwood	8/12/03	BT	189		
EFork Deadwood	8/12/03	CT	122	Upper Deadwood	8/12/03	BT	188		
EFork Deadwood	8/12/03	CT	143	Upper Deadwood	8/12/03	BT	154		
EFork Deadwood	8/12/03	CT	138	Upper Deadwood	8/12/03	BT	126		
EFork Deadwood	8/12/03	CT	105	Upper Deadwood	8/12/03	BT	170		
EFork Deadwood	8/12/03	CT	84	Upper Deadwood	8/12/03	BT	192		
EFork Deadwood	8/12/03	CT	100	Upper Deadwood	8/12/03	BT	160		
EFork Deadwood	8/12/03	CT	130	Upper Deadwood	8/12/03	BT	151		
EFork Deadwood	8/12/03	CT	109	Upper Deadwood	8/12/03	BT	183		
EFork Deadwood	8/12/03	CT	80	Upper Deadwood	8/12/03	BT	183		
EFork Deadwood	8/12/03	CT	85	Upper Deadwood	8/12/03	BT	146		
EFork Deadwood	8/12/03	CT	69	Upper Deadwood	8/12/03	BT	140		
EFork Deadwood	8/12/03	CT	107	Upper Deadwood	8/12/03	BT	175		
EFork Deadwood	8/12/03	CT	91	Upper Deadwood	8/12/03	BT	129		
EFork Deadwood	8/12/03	CT	87	Upper Deadwood	8/12/03	BT	145		
EFork Deadwood	8/12/03	CT	88	Upper Deadwood	8/12/03	BT	121		
EFork Deadwood	8/12/03	CT	82	Upper Deadwood	8/12/03	BT	120		
EFork Deadwood	8/12/03	CT	62	Upper Deadwood	8/12/03	BT	48		
EFork Deadwood	8/12/03	SC	51	Upper Deadwood	8/12/03	BT	32		
EFork Deadwood	8/12/03	SC	78	Upper Deadwood	8/12/03	BT	84		
EFork Deadwood	8/12/03	TF	#11	One Pass-no nets-presence/absence					
Pass #2							TOTAL	BT = 24	
EFork Deadwood	8/12/03	CT	72						
EFork Deadwood	8/12/03	CT	69						
EFork Deadwood	8/12/03	CT	91						
EFork Deadwood	8/12/03	CT	84						
EFork Deadwood	8/12/03	CT	127						
EFork Deadwood	8/12/03	CT	82						
EFork Deadwood	8/12/03	CT	78						
EFork Deadwood	8/12/03	CT	186						
EFork Deadwood	8/12/03	CT	98						
EFork Deadwood	8/12/03	CT	101						
EFork Deadwood	8/12/03	CT	89						

EFork Deadwood	8/12/03	CT	75				
EFork Deadwood	8/12/03	CT	83				
EFork Deadwood	8/12/03	CT	73				
EFork Deadwood	8/12/03	CT	109				
EFork Deadwood	8/12/03	CT	130				
EFork Deadwood	8/12/03	CT	102				
EFork Deadwood	8/12/03	CT	101				
EFork Deadwood	8/12/03	CT	63				
EFork Deadwood	8/12/03	CT	67				
EFork Deadwood	8/12/03	CT	62				
Site	Date	Species	Length				
Pass #1	700F6						
Upper Wild Buck	8/13/03	CT	75				
Upper Wild Buck	8/13/03	CT	80				
Upper Wild Buck	8/13/03	CT	89				
Upper Wild Buck	8/13/03	CT	155				
Upper Wild Buck	8/13/03	CT	100				
Upper Wild Buck	8/13/03	CT	95				
Upper Wild Buck	8/13/03	CT	71				
Upper Wild Buck	8/13/03	CT	78				
Upper Wild Buck	8/13/03	CT	70				
Upper Wild Buck	8/13/03	CT	79				
Upper Wild Buck	8/13/03	SC	65				
Upper Wild Buck	8/13/03	SC	61				
Upper Wild Buck	8/13/03	SC	79				
Upper Wild Buck	8/13/03	SC	41				
Upper Wild Buck	8/13/03	SC	40				
Upper Wild Buck	8/13/03	SC	68				
Upper Wild Buck	8/13/03	TF	#1				
Pass #2							
Upper Wild Buck	8/13/03	CT	150				
Upper Wild Buck	8/13/03	CT	80				
Upper Wild Buck	8/13/03	CT	89				
Upper Wild Buck	8/13/03	CT	82				
Upper Wild Buck	8/13/03	CT	80				
Upper Wild Buck	8/13/03	CT	68				
Upper Wild Buck	8/13/03	SC	51				
Upper Wild Buck	8/13/03	SC	100				
Upper Wild Buck	8/13/03	SC	71				
Upper Wild Buck	8/13/03	SC	82				
Upper Wild Buck	8/13/03	SC	41				
Upper Wild Buck	8/13/03	SC	59				
Upper Wild Buck	8/13/03	SC	39				
Upper Wild Buck	8/13/03	SC	49				
Upper Wild Buck	8/13/03	TF	#5				
Pass # 3							
Upper Wild Buck	8/13/03	CT	65				
Upper Wild Buck	8/13/03	CT	72				
Upper Wild Buck	8/13/03	SC	90				
Upper Wild Buck	8/13/03	SC	58				

Upper Wild Buck	8/13/03	SC	40				
Upper Wild Buck	8/13/03	SC	41				
Upper Wild Buck	8/13/03	SC	39				
Upper Wild Buck	8/13/03	SC	58				
	TOTAL	CT = 18					
		SC = 20					
		TF = 6					

Table 2. Deadwood River Fish Capture by site sampled

Species	BASIN	BEAV1	DAISY	EFDEAD	EFWMSP	GOAT	HABIT	JOSIE	LOREN	MFWMSP	MOULDG	NELLIE	NFBEAV	NFDEER	NINEML	NOMAN1	NOMAN2	PCKSDL	PINE	SCOTTA	SCOTTB	SFBEV1	SFBEV2	SFDEER	SIXMIL	STEVEN	STRATN	TRAIL	UPDEAD	WBUCK1	WBUCK2	WHTHKA	WHTHKB	WILSN1	WLSN2	WMSP51
Bull trout	0	3	7	0	21	1	0	0	0	17	0	0	0	1	0	0	1	11	0	22	11	3	0	1	0	0	1	4	24	0	0	0	0	0	0	3
Cutthroat trout	2	18	5	61	0	29	14	0	0	0	15	0	13	0	0	0	0	0	0	0	0	36	10	0	0	0	19	8	0	18	5	0	0	0	0	0
Cutthroat trout X Rainbow trout	2	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
Rainbow trout	7	7	2	0	0	0	0	15	0	2	0	22	0	12	0	0	33	6	6	2	1	0	0	18	9	0	8	0	0	0	0	11	22	31	32	27
Kokanee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Sculpin spp.	25	10	0	7	0	0	0	0	0	0	38	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	12	0	20	31	0	0	0	0	0
Unidentified Fry	0	1	0	0	0	2	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	6	0	0	0	0	0	0	0	0	0
Total Fish	36	41	20	68	21	32	14	15	0	20	56	22	13	13	0	0	34	17	6	24	12	41	11	19	9	0	34	24	24	38	39	11	22	31	32	31
Amphibians (tailed frogs or tadpoles)	##	7	4	18	24	69	1	27	0	2	0	8	15	1	0	0	33	13	3	7	9	38	18	22	11	25	3	6	0	6	5	22	15	1	9	1

Table 3. PIT tagged bull trout in Deadwood River basin

ID	Length	Site	Date	ID	Length	Site	Date
33086521	127	Deadwood (Scott A)	7/14/2003	33064612	106	DW (EFWarmsprings)	8/5/2003
33056321	185	Deadwood (Scott A)	7/14/2003	33064627	134	DW (EFWarmsprings)	8/5/2003
33056577	153	Deadwood (Scott A)	7/14/2003	33065332	105	DW (EFWarmsprings)	8/5/2003
33058280	110	Deadwood (Scott A)	7/14/2003	33066122	119	DW (EFWarmsprings)	8/5/2003
33061874	160	DW(Scott A)	7/14/2003	33067775	101	DW (EFWarmsprings)	8/5/2003
33062260	196	DW(Scott A)	7/14/2003	33069076	143	DW (EFWarmsprings)	8/5/2003
33063073	130	DW(Scott A)	7/14/2003	33072547	142	DW (EFWarmsprings)	8/5/2003
33064846	117	DW(Scott A)	7/14/2003	33086376	141	DW (EFWarmsprings)	8/5/2003
33065617	152	DW(Scott A)	7/14/2003	33063839	108	DW (Warmsprings)	8/5/2003
33067047	162	DW(Scott A)	7/14/2003	33064363	133	DW (Warmsprings)	8/5/2003
33067574	201	DW(Scott A)	7/14/2003	33067101	107	DW (Warmsprings)	8/5/2003
33068879	172	DW(Scott A)	7/14/2003	33069619	129	DW (Warmsprings)	8/5/2003
33069087	160	DW(Scott A)	7/14/2003	33071638	151	DW (Warmsprings)	8/5/2003
33070296	185	DW(Scott A)	7/14/2003	33083890	124	DW (Warmsprings)	8/5/2003
33072887	157	DW(Scott A)	7/14/2003	33093122	113	DW (Warmsprings)	8/5/2003
33073058	124	DW(Scott A)	7/14/2003	33072363	126	DW (NF Deer)	8/6/2003
33055819	155	DW(Daisy)	7/15/2003	33053620	151	DW (Upper)	8/12/2003
33065769	133	DW(Daisy)	7/15/2003	33054376	170	DW (Upper)	8/12/2003
33063072	100	DW (SF Beaver)	7/21/2003	33055561	192	DW (Upper)	8/12/2003
33063109	122	DW (SF Beaver)	7/21/2003	33056808	183	DW (Upper)	8/12/2003
33067033	136	DW (Warmsprings@510)	8/4/2003	33058344	160	DW (Upper)	8/12/2003
33082353	133	DW (Warmsprings@510)	8/4/2003	33059596	126	DW (Upper)	8/12/2003
33083882	130	DW (Warmsprings@510)	8/4/2003	33062316	175	DW (Upper)	8/12/2003
33053611	115	DW (EFWarmsprings)	8/5/2003	33063596	140	DW (Upper)	8/12/2003
33054103	132	DW (EFWarmsprings)	8/5/2003	33063639	120	DW (Upper)	8/12/2003
33060065	135	DW (EFWarmsprings)	8/5/2003	33064298	154	DW (Upper)	8/12/2003
33060100	108	DW (EFWarmsprings)	8/5/2003				
33061012	155	DW (EFWarmsprings)	8/5/2003				