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Steven M. Huffaker, Director

REGIONAL FISHERIES MANAGEMENT INVESTIGATIONS
MAGIC VALLEY REGION (Subprojects I-E, II-E, III-E, IV-E)

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Job a.	Magic Valley Region Mountain Lakes Investigations
Job b.	Magic Valley Region Lowland Lakes Investigations
Job c.	Magic Valley Region Rivers and Streams Investigations
PROJECT II.	TECHNICAL GUIDANCE
PROJECT III:	HABITAT MANAGEMENT??
PROJECT IV.	POPULATION MANAGEMENT

By:

Fred Partridge
Regional Fishery Manager

Charles D. Warren
Regional Fishery Biologist

Karen A. Frank
Fishery Technician

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ABSTRACT

Upper Box Canyon and Lower Box Canyon lakes were gillnetted on August 21 and 22, 1995. Upper Box Canyon Lake yielded 4 bull trout *Salvelinus confluentus* and 18 brook trout *S. fontinalis*. Brook trout lengths ranged from 85 mm to 230 mm, with a mean length of 183 mm. Bull trout lengths ranged from 350 mm to 450 mm, with a mean length of 395 mm. No fish were collected although two were observed in Lower Box Canyon Lake. Limnological data and bathometric profiles were recorded at Lower Box Canyon Lake.

In 1995, four alpine lakes were stocked with 4,800 Arctic grayling *Thymallus arcticus*. Four additional alpine lakes were stocked with 5,500 Henrys Lake cutthroat trout *Oncorhynchus clarki.*

Authors:

Karen A. Frank
Fishery Technician

Fred Partridge
Regional Fishery Manager

OBJECTIVES

To obtain current information for fishery management decisions on mountain lakes, including angler use and success, fish population characteristics, spawning potential, stocking success, limnology, morphology, and notes on other aquatic life; and to develop appropriate management recommendations.

METHODS

Cutthroat trout *Oncorhynchus clarki* from Henrys Lake and Arctic grayling *Thymallus arcticus* fry were stocked in alpine lakes by fishery management personnel from a vehicle or by backpack.

Fish populations in Upper and Lower Box Canyon lakes were sampled with Swedish-made Lundgrens Type A lightweight multi-filament gill nets. These are sinking nets, measuring 1.5 m wide with six 7.6 m panels and the following bar mesh sizes: 46, 38, 33, 30, 25, and 19 mm. A small inflatable rubber raft was used for setting and retrieving gill nets and for bathometric profiles. Fish data analysis included total length frequencies.

Limnology data such as alkalinity ($CaCO^3$) and total hardness was measured at the regional office the day after collection using a HACH water chemistry kit. Specific conductivity was also measured using a Sulu Bridge conductivity meter. Water for these specific tests was collected by surface grab samples in opaque plastic bottles. Water temperatures were also recorded using a standard Celsius thermometer. Bathometric profiles were taken using nylon rope marked in 1 m increments.

RESULTS AND DISCUSSION

Alpine Lake Stocking

Eight alpine lakes were stocked with fish fry by fishery management personnel in July, August and September 1995. Independence Lake #2 was stocked on July 28, 1995 with 2,000 Arctic grayling, and Independence Lake #3 received 1,000 Arctic grayling. On August 18, 1995 Hideaway Lake was stocked with 1,000 Arctic grayling, and Big Lost Lake received 784 Arctic grayling on August 8. On August 18, 1995 Big Trinity Lake received 2,000 cutthroat trout, Little Trinity Lake received 1,000 cutthroat trout, and Titus Lake received 500 cutthroat trout. Lake Cleveland received 2,040 cutthroat trout on September 6, 1995.

Upper Box Canyon Lake

Upper Box Canyon Lake is located in the headwaters area of Box Canyon, a tributary to the Little Wood River (UTM Z 11, 736,110 E 4,845,780 N). It lies in a south-facing cirque basin

at an elevation of 2,947 m and has an area of about 0.8 ha. Bathometric profiles previously conducted in 1991 show a maximum depth of 7.5 m (Partridge and Warren 1994). On August 21, 1995, the alkalinity level was 17.3 mg/l with a hardness of 17.0 mg/l and conductivity of 40 μmhos/cm. Water temperature at 8:00 p.m. on August 21, 1995, was 12.8°C.

Prior fish stocking activities in Upper Box Canyon included 100 brown trout *Salmo trutta* at 6.8/kg stocked in September 1988 to provide a predator to reduce density of the brook trout *Salvelinus fontinalis* population (Partridge et al. 1990). This release was apparently unsuccessful, since no brown trout were captured or observed in subsequent samples (Partridge and Warren 1994). An additional effort to provide a predatory fish resulted in the stocking of 102 bull trout *S. confluentus* on September 2, 1993 (Partridge and Warren 1995). These fish were adipose fin clipped and averaged 299 mm prior to release.

Fish populations in Upper Box Canyon Lake were sampled using two gill nets on August 21, 1995. Both nets were pulled two hours after placement to reduce injury to bull trout. A total of three bull trout and 18 brook trout were netted. Additionally, one dead bull trout measuring 350 mm was found along the south side of the lake. This fish apparently was an angler-induced mortality since it had been gutted. Bull trout lengths ranged from 350 mm to 450 mm, with a mean length of 395 mm (Figure 1). Bull trout weights ranged from 530 g to 890 g with a mean of 707 g. Brook trout lengths ranged from 85 mm to 230 mm with a mean length of 183 mm. Brook trout weights ranged from 6 g to 105 g with a mean weight of 58 g. Brook trout averaged 185 mm in 1991.

From shoreline observations, brook trout numbers appear to remain abundant in Upper Box Canyon Lake, and sizes have not changed significantly since the bull trout release in 1993. However, bull trout are just beginning to reach a size where they may begin to have an impact on brook trout numbers if a sufficient number of bull trout are still present.

Lower Box Canyon Lake

Lower Box Canyon Lake is located in the headwaters area of Box Canyon, a tributary to the Little Wood River (UTM Z 11, 737,520 E, 4,844,700 N). It lies in a north facing cirque basin at an elevation of 2,690 m and has an area of about 1.2 ha with a maximum depth of 6 m (Figure 2). On August 21, 1995, the alkalinity level was 11.0 mg/l with a hardness of 10.5 mg/l and conductivity of 30 mhos/cm. Water temperature at noon on August 22, 1996 was 13.9°C.

Fish populations on Lower Box Canyon Lake were sampled using two gill nets during midday on August 22, 1995. Both nets were pulled 2 hours after placement. No fish were collected in the gill nets, but two live fish between approximately 305-355 mm were observed in the lake. One cutthroat trout mortality of about 305 mm was also observed in the lake. Anglers also had reported seeing several dead fish early in the summer shortly after ice out. The lake normally does not have a winter kill problem, but a long winter following a very dry year may have resulted in poor survival conditions. A heavy snowslide also had passed over the lake.

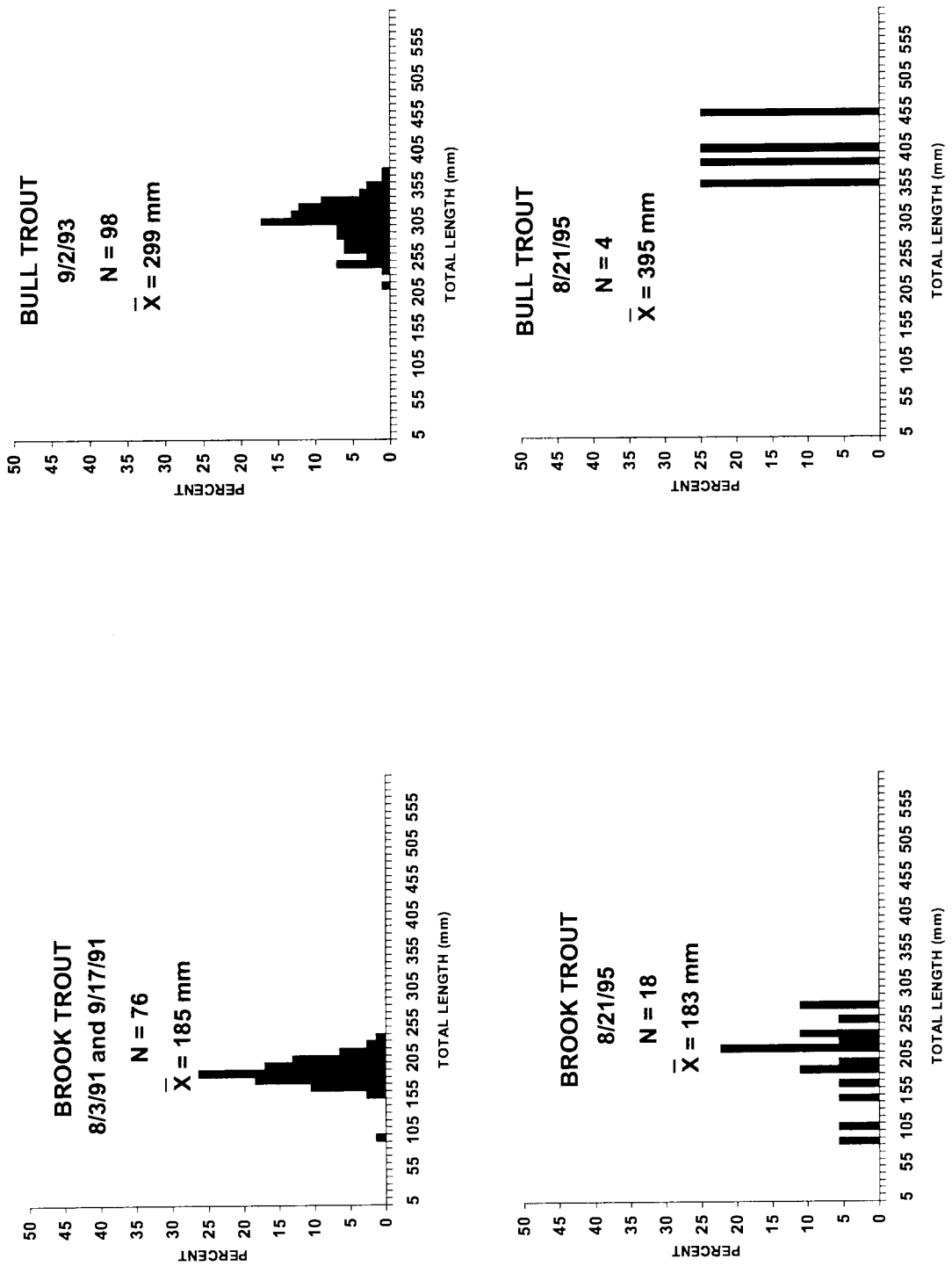

Figure 1. Total length frequencies of fish sampled from Upper Box Canyon Lake . in 1991, 1993 and 1995.

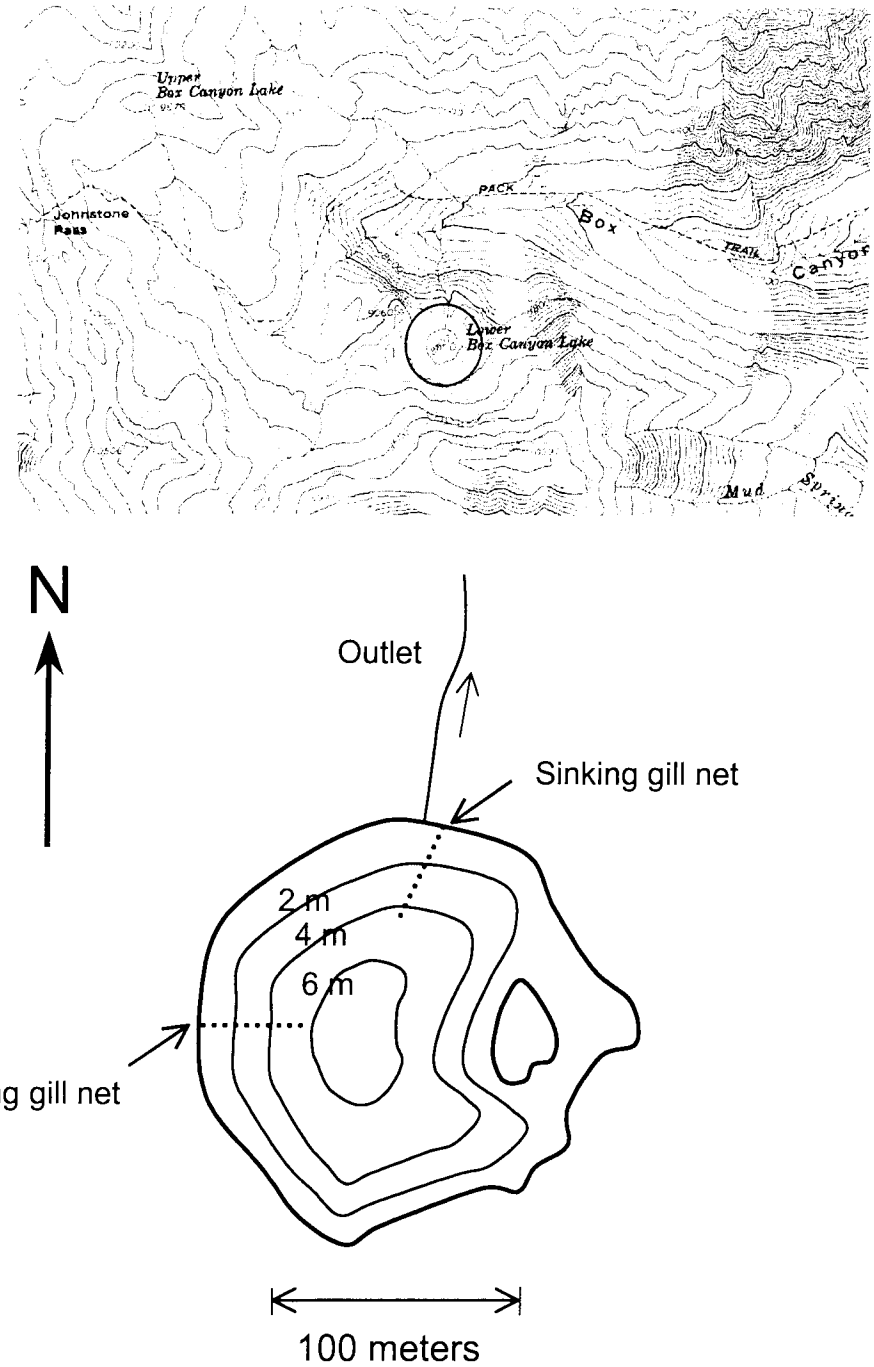

Figure 2. Map of Lower Box Canyon Lake and location of gill nets set and pulled on August 22, 1995.

ACKNOWLEDGMENTS

Biological aide Jason Cole assisted with lake sampling and stocking fry along with Conservation Officers Bob Sellers and Roger Olson.

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Partridge, Fred E. and Charles D. Warren. 1995. Regional Fisheries Management Investigations. Idaho Department of Fish and Game, Job Performance Report. Project F-71-R-17, Boise.

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Title: Lowland Lakes Investigations

Contract Period: July 1, 1995 to June 30, 1996

ABSTRACT

Nighttime midwater trawling on Anderson Ranch Reservoir estimated kokanee *Oncorhynchus nerka* densities to be 1.9 fish/ha for age 0+ fish, 11.2 fish/ha for age 1+ fish, and 24.6 fish/ha for age 2+ fish. Kokanee spawner trend surveys on the upper South Fork Boise River counted a total of 7,525 adult fish in 1995, the highest number observed since counts began in 1989.

Standardized lowland lakes sampling protocols on the Burley gravel pit pond sampled several warmwater game fish and nongame fish species. Continuously recording thermograph results for the period July through September indicate that conditions are not suitable for trout survival at that pond.

Marked largemouth bass *Micropterus salmoides* of various size classes were stocked into Lower Salmon Falls Reservoir from a small private pond in July and August 1995. Three months after stocking, 39 largemouth bass were sampled by electrofishing from the reservoir with 28% of them recaptured from the fish plant.

Electrofishing at Thorn Creek Reservoir indicated good numbers of three size classes of hatchery rainbow trout *O. mykiss* present including fish from a steelhead *O. mykiss gairdneri* fry plant earlier in the year.

An intensive creel survey on Salmon Falls Creek Reservoir estimated total daytime fishing effort to be 72,721 hours from May 27 through November 10, 1995. An estimated 48,000 fish, which included 2,900 walleye *Stizostedion vitreum* and 11,300 rainbow trout, were harvested within that period.

Author:

Charles D. Warren
Regional Fishery Biologist

OBJECTIVES

To maintain information for fishery management activities and decisions for lowland lakes and reservoirs.

METHODS

Kokanee *Oncorhynchus nerka* abundance and age structure were estimated in Anderson Ranch and Salmon Falls Creek reservoirs using a nighttime midwater trawl. Methods used for the trawling and data analysis followed those described by Rieman (1992).

General lakes and reservoirs fishery data were collected and analyzed utilizing standardized fish sampling gear and methodologies. Sampling gear included a Smith-Root Model SR-18 electrofishing boat with a Model 5.0 pulsator, a drift boat equipped with a Coffelt VVP-15 electrofisher powered by a Honda 5000 generator, variable (19 to 64 mm) bar mesh 38 x 1.8 m gill nets, 2 cm bar mesh size trap (frame) nets with a 1.8 x 0.9 m box and five 76 cm diameter hoops, and a 15.2 x 1.4 m long with 6.2 mm bar mesh beach seine. Beach seine samples were taken by holding one end of the seine stationary at the water's edge while the other end was taken straight out into the water perpendicular to the shoreline. With the shore end remaining stationary, the other end was swept shoreward with the lead line held near the bottom. Bottom trawling was done utilizing a 4.3 m wide bottom trawl which was pulled with a 5.2 m Boston Whaler boat powered with a 90 hp Evinrude engine at approximately 1700 rpm. Data analysis included total length frequencies, estimated length-at-annulus back calculated from scale measurements, and trend data used to compare with similarly acquired data from previous years.

Creel surveys were either non-structured types which were nonrandom to estimate angler catch rates or were structured utilizing the Creel Census System (McArthur 1993). For the structured creel surveys, data was obtained for the purpose of estimating total angler effort, number and species of fish caught and size and age structure of fish harvested.

Limnological samples were taken by sampling surface waters for specific conductivity, pH, total hardness, and alkalinity. A HACH kit was used for the total hardness and alkalinity measurements, a Sulu Bridge conductivity meter was used for measuring specific conductivity and an Oakton PhTestr2 was used for measuring pH. Temperature and dissolved oxygen profiles were measured in-situ using a Y.S.I. model 57 temperature/dissolved oxygen meter from a boat. A Secchi disk was used from a boat. An Onset StowAway water temperature data logger was used for continuously recorded temperature information over a period of several weeks. These were set to record temperature every 48 minutes.

RESULTS AND DISCUSSION

Anderson Ranch Reservoir

Water levels permitted partitioning the reservoir into three strata for kokanee sampling on the nights of June 29 and 30, 1995. A temperature and dissolved oxygen profile was taken at three sites a few days prior to trawling. Results indicate strong temperature stratification above 10 m in depth (Figure 1). A total of 14 transects were trawled within the three strata (Figure 2). Depths trawled ranged from 7.5 to 28.0 m (stepped) in the lower reservoir strata, 7.5 to 23.0 m in the mid-reservoir strata, and 7.5 to 18.0 m in the upper reservoir strata. Kokanee sampled less than 130 mm in total length were classified as age 0+ fish, kokanee from 130 to 200 mm long were classified as age 1+ fish, kokanee from 210 to 300 mm long were classified as age 2+ fish and kokanee greater than 300 mm were classified as age 3+ fish. Estimated densities were 1.9 fish/ha for age 0+ kokanee, 11.2 fish/ha for age 1+ kokanee, and 24.6 fish/ha for age 2+ kokanee (Table 1). Total length frequencies for each age class with weights of fish sampled are given in Table 2.

Kokanee spawning was monitored with counts of adult fish observed at 13 sites on the South Fork Boise River and Trinity Creek between August 14 and October 4, 1995. Counts have been made at these same sites for spawner trend information since 1989 except for the trap site that was added to the survey in 1990 (Partridge and Corsi 1993). A total of 7,525 spawners were observed, which is the highest number ever counted since counts began in 1989 (Table 3, Figure 3).

Burley Gravel Pit Pond

Standardized lowland lakes sampling protocols were followed for sampling fish at the gravel pit pond located northwest of the State Highway 27 and Interstate 84 interchange approximately 2.5 km north of Burley, Idaho (Figure 4). The pond surface area is approximately 18 ha and averages about 2 m deep with uniform substrate topography. The substrate is composed mostly of silt and fine sand. The pond receives irrigation return water and probably some ground water seepage. Until 1995 the Idaho Department of Fish and Game had not taken an active role in the management of the pond's fishery due to limited public access. The Department is proposing to upgrade public access there and expects to see an increase in angler use within the next few years.

One floating and one sinking gill net with one trap net were set overnight the evening of June 30, 1995. A total of 42 minutes of electrofishing effort (power on) was expended the night of August 2, 1995. The perimeter of the pond was electrofished at least twice and the middle crossed utilizing the drift boat with the VVP-15 electrofisher. Species sampled include 8 largemouth bass *Micropterus salmoides*, 9 black crappie *Pomoxis nigromaculatus*, 287 yellow perch *Perca flavescens*, 1 channel catfish *Ictalurus punctatus*, 1 brown bullhead *Ameiurus nebulosus*, 11 common carp *Cyprinus carpio*, 89 Utah sucker *Catostomus ardens*, and 50 Utah chub *Gila atraria* (Table 4). Water quality measurements of a surface sample taken from a boat were 169 mg/l for total alkalinity, 8.6 for pH, 625 μmhos/cm for specific conductivity and 220 mg/l for total hardness. Secchi disk visibility measured 33 to 48 cm. A continuously recording

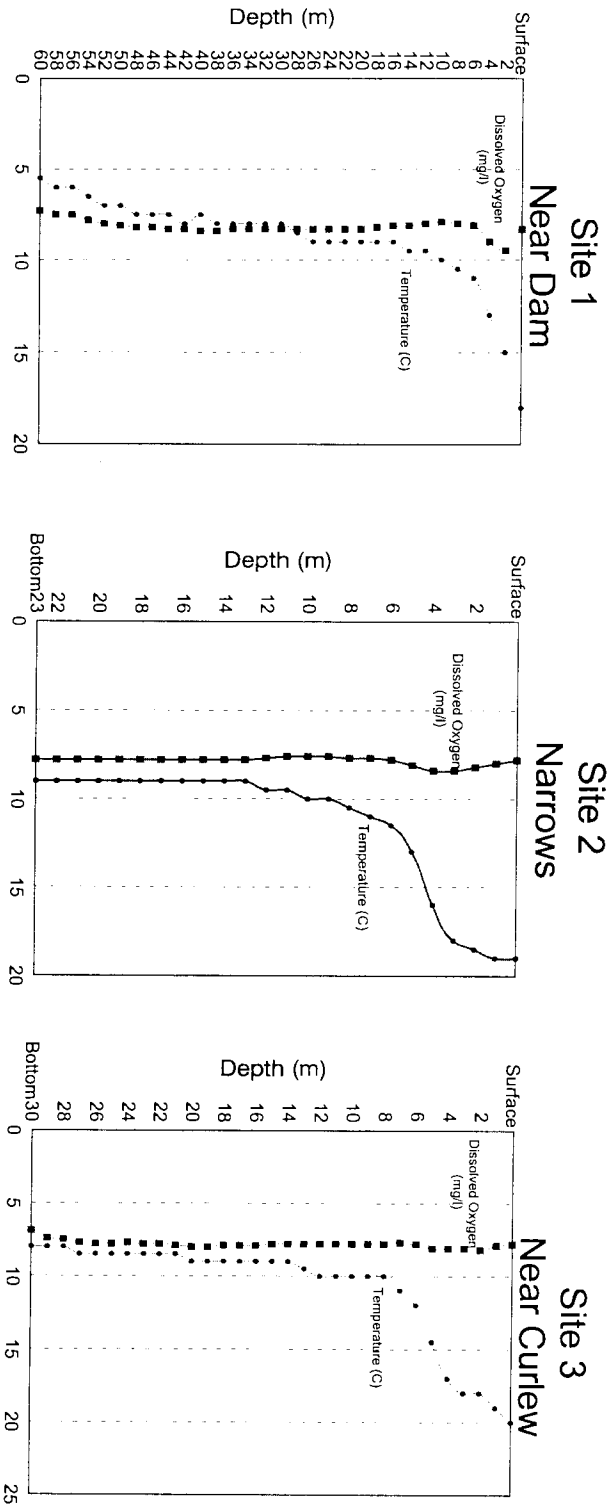

Figure 1. Daytime temperature and dissolved oxygen profiles for Anderson Ranch Reservoir, June 27, 1995.

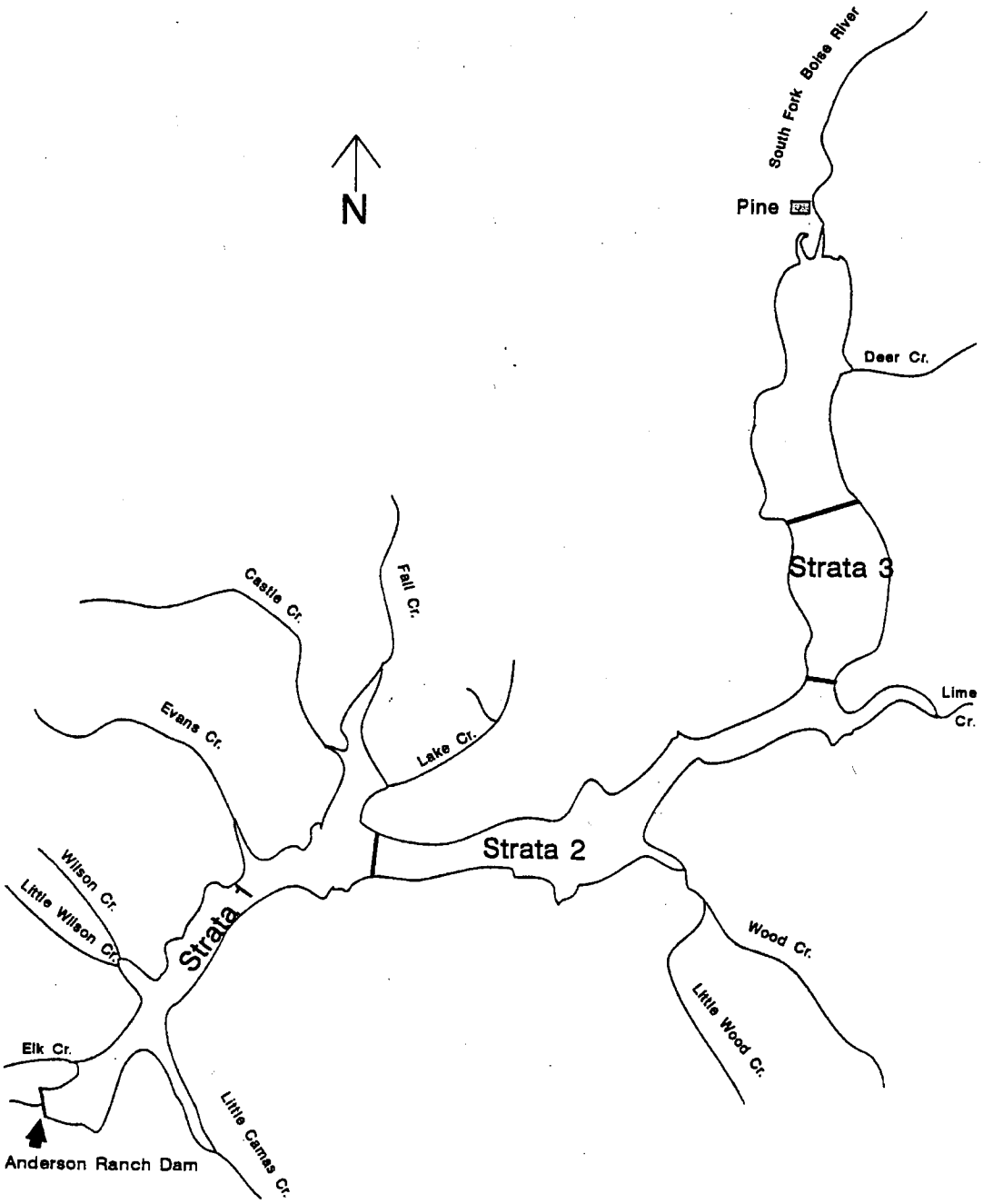

Figure 2. Map of Anderson Ranch Reservoir with boundaries for each strata trawled.

Table 1. Anderson Ranch Reservoir kokanee population and density estimates based on nighttime midwater trawling results, June 1995.

Mean number of fish/ha (variance)	Age 0+	Age 1+	Age 2+	Age 3+	# trawls
Strata 1	2.7 (7.422)	5.3 (10.590)	5.3 (10.590)	0.0 (-)	5
Strata 2	2.6 (6.691)	9.6 (19.733)	51.8 (120.310)	0.0 (-)	5
Strata 3	0.0 (-)	20.6 (170.379)	14.7 (77.970)	0.0 (-)	4
Average[a]	1.9	11.2	24.6	0.0	
Population estimate				0.0	
Strata 1	1,634	3,187	3,187	0	
Strata 2	1,500	5,597	30,026	0	
Strata 3	0	7,211	5,151	0	
Total population estimate:	3,134	15,995	38,364	0	
Variance of pop. estimate:	3×10^6	3×10^7	5×10^7	-	
Previous years' population estimates (variance)					
1994	230,411 wild (2×10^{10})	444,791 (1×10^{11})	33,709 (5×10^8)	0 -	
	126,916 hatchery (6×10^8)			..	
1993	212,788 wild (5×10^9)	2,380 (6×10^6)	1,427 (2×10^6)	660 (4×10^5)	
	33,564 hatchery (4×10^8)				
1992	No trawl performed due to low water				

[a] Weighted average based on number of transects in strata.

Table 2. Total length frequency (mm) and mean weight (g) of kokanee sampled by midwater trawling in Anderson Ranch Reservoir, June 1995.

	Kokanee							
Length range (mm)	Age 0+		Age 1+		Age 2+		Age 3+	
	no.	avg. wt.	no.	avg. wt.	no.	avg. wt.	no.	avg. wt.
0-9								
10-19								
20-29								
30-39								
40-49	2	0.5						
50-59								
60-69								
70-79								
80-89								
90-99								
100-109								
110-119								
120-129								
130-139			1	18.5				
140-149			1	23.0				
150-159			1	34.5				
160-169			2	37.0				
170-179			1	46.5				
180-189			6	55.6				
190-199			1	63.0				
200-209								
210-219					1	93.0		
220-229					4	101.2		
230-239					8	114.2		
240-249					12	124.7		
250-259					3	134.7		
260-269								
270-279								
280-289								
290-299								
Number:	2		13		28		0	
Avg. length	45		170		237			
Total sampled:	2		13		28		0	

Table 3. Number of kokanee observed at selected sites on the South Fork Boise River, during spawning ground surveys, 1995.

Location[a]	8/14	8/23	8/31	9/7	9/15	9/21	9/29	10/4
1	25	100	400	205	200	100	1	0
2	0	10	16	43	21	0	4	0
3	3	20	96	198	60	74	85	30
4	0	35	59	86	110	80	75	60
5	0	0	0	5	5	9	0	0
6	0	64	147	179	120	100	110	35
7	0	15	110	276	250	73	35	0
8	0	19	53	60	8	30	0	0
9	0	22	106	257	200	230	28	8
10	0	20	350	855	550	350	150	0
11	0	0	0	1	0	0	0	0
12	0	4	30	126	47	56	25	20
13	0	0	0	48	45	5	65	28
Total:	28	309	1,367	2,339	1,616	1,107	578	181

[a] Site Descriptions:
1 - Trap site: NW1/4, NE1/4, Sec 30, T2N, R10E
2 - Prospect hole: NW1/4, NE1/4, Sec 18, T2N, R10E
3 - Johnson hole: SW1/4, NE1/4, Sec 5, T2N, R10E
4 - Paradise hole: SW1/4, NW1/4, Sec 33, T3N, R10E
5 - Trinity Creek: SE1/4, SW1/4, Sec 9, T3N, R10E
6 - Section 10 hole: SE1/4, NE1/4, Sec 10, T3N, R10E
7 - Chaparrel hole: NE1/4, NE1/4, Sec 12, T3N, R10E
8 - Ranger station hole: NE1/4, NE1/4, Sec 8, T3N, R11E
9 - Virginia Gulch Bridge: SE1/4, SE1/4, Sec 9, T3N, R11E
10 - Baumgartner hole: SE1/4, SE1/4, Sec 7, T3N, R12E
11 - Deadwood hole: NE1/4, NE1/4, Sec 22, T3N, R12E
12 - Big hole: SE1/4, SW1/4, Sec 18, T3N, R13E
13 - Smokey Creek hole: SE1/4, SW1/4, Sec 9, T3N, R13E

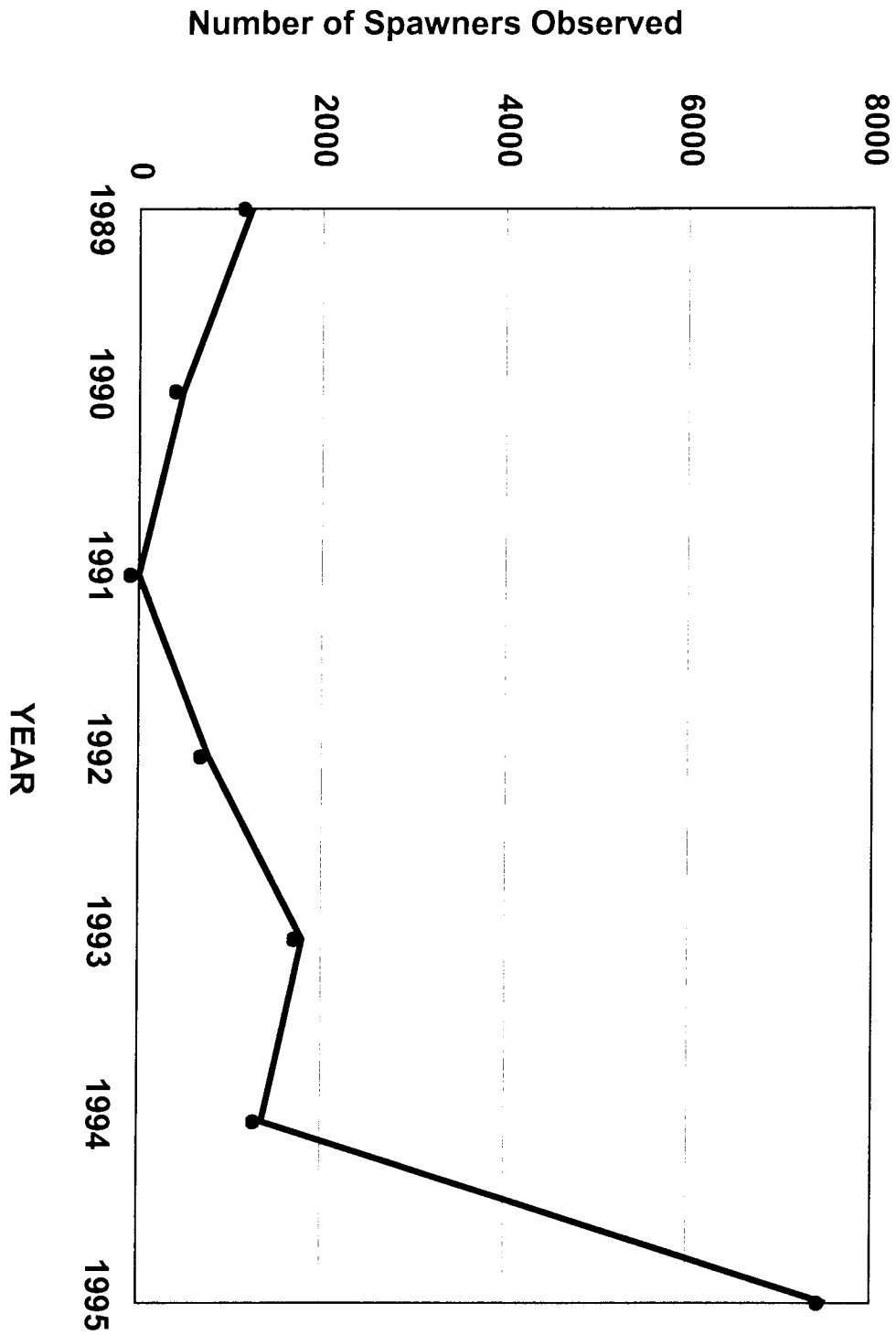

Figure 3. Total numbers of spawning kokanee observed at thirteen trend monitoring sites on the South Fork Boise River on a weekly basis during August, September and October from 1989 through 1995.

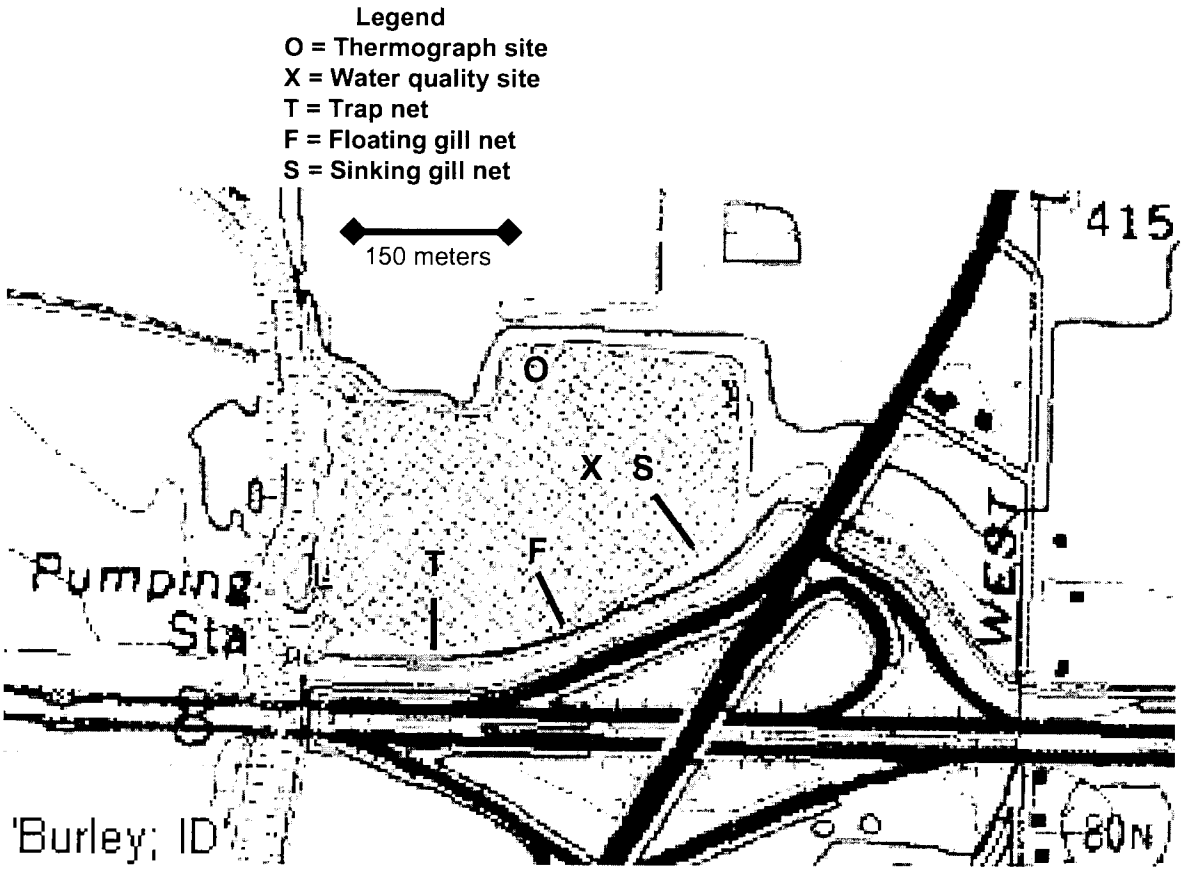

Figure 4. Map of the Burley gravel pit pond at the intersection of Interstate 84 (80N) and Highway 27. Locations of sites are depicted.

Table 4. Standardized lowland lakes fish sampling protocol results for the gravel pit pond north of Burley for July 30 and August 4, 1995.

	Largemouth bass									
Length range	Sinking gill net length		Floating gill net length		Frame net length		Electrofishing length		Average weight	
(mm)	no.	%	no.	%	no.	%	no.	%	no.	avg.
0-9										
10-19										
20-29										
30-39										
40-49										
50-59										
60-69										
70-79										
80-89										
90-99										
100-109							1	12.5	1	15
110-119							2	25.0	2	16
120-129							2	25.0	2	26
130-139							2	25.0	2	32
140-149										
150-159										
160-169										
170-179										
180-189										
190-199										
200-209										
210-219										
220-229										
230-239										
240-249							1	12.5	1	184
Number:	0		0		0		8			
Avg length:							134			
Total sampled:	0		0		0		8			

Table 4. Continued.

	Black crappie									
Length range	Sinking gill net length		Floating gill net length		Frame net length		Electrofishing length		Average weight	
(mm)	no.	%	no.	%	no.	%	no.	%	no.	avg.
0-9										
10-19										
20-29										
30-39							2	50.0		
40-49										
50-59										
60-69										
70-79										
80-89							2	50.0	2	7
90-99										
100-109					1	25.0			1	12
110-119					3	75.0			2	16
120-129										
130-139										
140-149										
150-159										
160-169										
170-179										
180-189										
190-199										
200-209										
210-219										
220-229										
230-239										
240-249			1	100.0					1	210
Number:	0		1		4		4			
Avg length:			240		111		59			
Total sampled:	0		1		4		4			

Table 4. Continued.

Yellow perch										
Length range	Sinking gill net length		Floating gill net length		Frame net length		Electrofishing length		Average weight	
(mm)	no.	%	no.	%	no.	%	no.	%	no.	avg.
50-59							1	1.3		
60-69										
70-79										
80-89										
90-99					3	4.8			1	8
100-109					27	42.9	29	37.2	10	11
110-119	1	100.0	1	100.0	28	44.4	47	60.3	17	13
120-129					5	7.9	1	1.3	4	18
130-139										
140-149										
150-159										
160-169										
170-179										
180-189										
190-199										
Number:	1		1		63		78			
Avg length:	110		115		108		108			
Total sampled:	1		1		63		222			

Table 4. Continued.

	Common carp									
Length range	Sinking gill net length		Floating gill net length		Frame net length		Electrofishing length		Average weight	
(mm)	no.	%	no.	%	no.	%	no.	%	no.	avg.
0-9 / 150-159	1	33.3							1	48
160-169			1	16.7			2	100.0	1	50
170-179										
180-189										
190-199	1	33.3	1	16.7					1	70
200-209										
210-219										
220-229			1	16.7					1	120
230-239										
240-249										
250-259 / 490-499			1	16.7					1	1,600
500-509										
510-519										
520-529										
530-539										
540-549										
550-559										
560-569										
570-579			1	16.7					1	2,300
580-589										
590-599										
600-609										
610-619										
620-629										
630-639										
640-649	1		1	16.7					2	3,300
Number:	3		6		0		2			
Avg length:	327		380				163			
Total sampled:	3		6		0		2			

Table 4. Continued.

	Utah sucker									
Length range	Sinking gill net length		Floating gill net length		Frame net length		Electrofishing length		Average weight	
(mm)	no.	%	no.	%	no.	%	no.	%	no.	avg.
0-9										
/										
100-109										
110-119										
120-129							1	16.7		
130-139							1	16.7		
140-149	1	14.3					1	16.7	1	32
150-159	2	28.6					1	16.7	2	37
160-169							1	16.7		
170-179										
180-189							1	16.7		
190-199										
200-209										
210-219			2	2.6					2	80
220-229										
230-239										
240-249			1	1.3					1	160
250-259			1	1.3					1	150
260-269										
270-279										
280-289			1	1.3					1	200
290-299										
300-309										
310-319			1	1.3					1	280
320-329			2	2.6					2	290
330-339										
340-349			3	3.9					3	407
350-359			5	6.6					5	432
360-369			4	5.3					4	510
370-379	2	28.6	5	6.6					7	546
380-389	1	14.3	9	11.8					10	587
390-399			14	18.4					14	593
400-409			6	7.9					6	688
410-419			3	3.9					3	677
420-429			2	2.6					2	760
430-439										
440-449										
450-459			3	3.9					2	1,000
460-469			2	2.6					2	1,050
470-479			2	2.6					2	1,200
480-489			2	2.6					2	1,150
490-499			1	1.3					1	1,200
500-509			1	1.3					1	1,300
510-519	1	14.3	2	2.6					3	1,367
520-529			2	2.6					2	1,525
530-539										
540-549			1	1.3					1	1,600
550-559			1	1.3					1	2,100
560-569										
570-579										
590-599										
Number:	7		76		0		6			
Avg	299		395				148			
Total sampled:	7		76		0		6			

Table 4. Continued.

	Brown bullhead									
Length range	Sinking gill net length		Floating gill net length		Frame net length		Electrofishing length		Average weight	
(mm)	no.	%	no.	%	no.	%	no.	%	no.	avg.
0-9 / 100-109										
110-119										
120-129										
130-139										
140-149										
150-159										
160-169										
170-179										
180-189										
190-199	1	100.0							1	132
200-209										
210-219										
220-229										
230-239										
240-249										
Number:	1		0		0		0			
Avg length:	195									
Total sampled:	1		0		0		0			

Table 4. Continued.

	Channel catfish									
Length range	Sinking gill net length		Floating gill net length		Frame net length		Electrofishing length		Average weight	
(mm)	no.	%	no.	%	no.	%	no.	%	no.	avg.
0-9 / 200-209										
210-219										
220-229										
230-239										
240-249										
250-259										
260-269										
270-279										
280-289										
290-299										
300-309										
310-319										
320-329			1	100.0					1	300
330-339										
340-349										
Number:	0		1		0		0			
Avg			320							
Total sampled:	0		1		0		0			

Table 4. Continued.

	Utah chub									
Length range	Sinking gill net length		Floating gill net length		Frame net length		Electrofishing length		Average weight	
(mm)	no.	%	no.	%	no.	%	no.	%	no.	avg.
0-9										
10-19										
20-29										
30-39			1	2.9						
40-49										
50-59										
60-69										
70-79										
80-89										
90-99										
100-109										
110-119							3	21.4		
120-129							9	64.3		
130-139							1	7.1		
140-149										
150-159	1	50.0					1	7.1	1	44
160-169	1	50.0	2	5.9					3	83
170-179										
180-189										
190-199										
200-209										
210-219			1	2.9					1	100
220-229			8	23.5					8	118
230-239			7	20.6					7	130
240-249			4	11.8					4	145
250-259			5	14.7					5	164
260-269			3	8.8					3	180
270-279			3	8.8					3	213
280-289										
290-299										
Number:	2		34		0		14			
Avg	160		229				124			
Total sampled:	2		34		0		14			

thermograph was operated on the north side of the pond from June 2 to September 12, 1995. Temperatures were recorded every 48 minutes with the results summarized for daily mean, maximum, and minimum temperatures as well as a standard deviation for each day's temperatures (Table 5). Daily maximum temperatures exceeded 25°C several times throughout the summer, which surpasses the maximum threshold of tolerance of most trout species but is within the range of preferred temperatures for many warm water fish species. The highest temperature recorded was 27.5°C on July 28, 1995.

Little Camas Reservoir

One floating and one sinking gill net were set in Little Camas Reservoir overnight on the afternoon of April 10, 1995. No fish were caught in either net indicating that a total fish kill may have been achieved with the rotenone project the previous fall (Warren and Partridge 1996).

Lower Salmon Falls Reservoir

A total of 459 largemouth bass averaging 158 mm in total length and 144 bluegill *Lepomis macrochirus* averaging 49 mm in total length were electrofished from a small private pond west of the town of Hagerman and transplanted into Lower Salmon Falls Reservoir on the evenings of July 12 and August 10, 1995. All largemouth bass were marked with a left maxillary clip prior to releasing into Lower Salmon Falls Reservoir south of the upper power plant.

The reservoir was sampled by electrofishing with the Smith-Root electrofishing vessel on the evenings of October 20 and November 3, 1995. The purpose of the electrofishing was to investigate the distribution, occurrence and size structure of largemouth bass within the reservoir with the presence of previously marked transplanted fish noted. Only game fish were targeted for netting. Six shoreline sites were electrofished (Figure 5).

A total of 39 largemouth bass were sampled with 11 of them bearing a left maxillary clip indicating that they were transplanted from the private pond (Table 6). The average length of recaptured largemouth bass was 219 mm. Sites 5 and 6, which were the two uppermost sites on the reservoir and nearest the release site, had 10 of the 11 recaptured largemouth bass. The other recaptured largemouth bass was sampled from site 2, which is approximately 7.5 km down reservoir from its release site. There were also 57 bluegill, 1 yellow perch, 148 hatchery rainbow trout *O. mykiss*, 4 wild rainbow trout, and 1 brown trout *Salmo trutta* sampled from the six sites (Table 7). All but one bluegill was sampled from site 5 (Buckeye Cove).

Continuously recording thermographs were installed on the boat docks at Lower Salmon Dam and at the Bell Rapids access sites as well as in Buckeye Cove. The thermographs were programmed to record temperatures every 48 minutes from May 31 to September 12, 1995. Daily mean, maximum and minimum temperatures were calculated for each day (Tables 8-10).

Table 5. Daily temperature summaries for temperatures (°C) taken every 48 minutes at the Burley gravel pit pond in 1995.

Date	Daily mean temperature	Standard deviation	Daily max. temperature	Daily min. temperature
6/2/95	18.4	0.44	19.1	17.9
6/3/95	17.9	0.30	18.4	17.5
6/4/95	18.4	1.27	20.6	17.0
6/5/95	17.7	1.14	19.3	15.5
6/6/95	14.1	0.45	15.3	13.4
6/7/95	13.7	0.49	14.4	12.8
6/8/95	13.5	0.41	14.2	12.8
6/9/95	13.4	0.40	14.2	13.1
6/10/95	14.7	1.50	16.9	12.8
6/11/95	17.1	1.58	19.5	15.1
6/12/95	20.3	1.65	23.1	18.4
6/13/95	21.0	0.79	22.3	19.8
6/14/95	21.1	0.70	22.3	20.0
6/15/95	20.7	0.97	23.1	19.6
6/16/95	19.6	0.68	21.0	18.8
6/17/95	19.1	1.15	20.6	16.9
6/18/95	18.5	0.34	19.1	17.9
6/19/95	17.2	0.37	17.9	16.6
6/20/95	17.2	0.70	18.5	16.3
6/21/95	16.4	0.27	17.0	15.8
6/22/95	16.8	1.20	18.4	15.5
6/23/95	18.9	2.09	22.3	16.6
6/24/95	20.7	1.73	23.3	18.2
6/25/95	22.3	1.83	25.1	20.0
6/26/95	23.2	1.57	26.2	21.0
6/27/95	22.1	0.61	23.8	21.0
6/28/95	20.2	0.66	21.3	19.3
6/29/95	19.5	1.23	21.1	17.7
6/30/95	20.4	1.25	22.1	18.7
7/1/95	21.3	1.10	23.6	20.0
7/2/95	20.4	0.68	21.4	19.3
7/3/95	19.2	0.40	20.0	18.4
7/4/95	18.9	1.04	20.5	17.7
7/5/95	20.2	1.58	23.6	18.4
7/6/95	21.4	0.85	22.8	20.0
7/7/95	22.2	1.66	24.7	20.3
7/8/95	23.6	1.19	25.7	21.9
7/9/95	23.2	0.83	24.8	21.8
7/10/95	22.5	0.46	23.5	21.9
7/11/95	22.4	1.04	24.1	21.1
7/12/95	22.0	0.58	23.1	21.0
7/13/95	20.7	0.91	22.3	19.5
7/14/95	21.6	1.79	24.7	19.5
7/15/95	21.8	0.86	22.9	20.3
7/16/95	22.4	1.51	24.7	20.5
7/17/95	23.3	1.81	26.0	21.1
7/18/95	22.7	0.75	24.5	21.4
7/19/95	22.8	1.24	25.1	21.3

Table 5. Continued.

Date	Daily mean temperature	Standard deviation	Daily max. temperature	Daily min. temperature
7/20/95	23.1	1.76	25.5	21.1
7/21/95	23.2	1.00	24.7	21.6
7/22/95	22.5	0.71	23.6	21.4
7/23/95	22.1	0.89	23.5	21.0
7/24/95	22.5	0.79	23.5	21.1
7/25/95	22.9	1.28	25.4	21.3
7/26/95	22.3	0.66	24.0	21.6
7/27/95	22.5	1.50	24.8	20.8
7/28/95	24.0	1.86	27.5	21.8
7/29/95	24.2	0.86	26.2	22.6
7/30/95	20.8	0.60	22.1	20.0
\	NO DATA			
8/3/95	23.1	1.85	26.6	20.8
8/4/95	23.6	1.14	25.4	21.6
8/5/95	24.0	1.55	26.9	21.9
8/6/95	24.5	1.16	26.0	22.6
8/7/95	23.9	0.75	25.0	22.1
8/8/95	20.3	0.62	21.9	19.5
8/9/95	19.8	0.68	21.0	18.8
8/10/95	20.9	1.48	23.8	19.3
8/11/95	20.7	0.83	22.3	19.5
8/12/95	21.0	1.39	23.3	19.3
8/13/95	20.0	0.97	22.3	18.7
8/14/95	20.0	1.48	22.3	18.0
8/15/95	20.9	1.47	23.6	19.0
8/16/95	21.3	0.88	22.9	19.6
8/17/95	20.2	0.50	21.3	19.5
8/18/95	19.5	0.86	21.0	18.4
8/19/95	19.5	0.87	21.0	18.2
8/20/95	20.0	1.16	22.3	18.5
8/21/95	20.8	0.71	22.1	19.6
8/22/95	20.7	0.97	22.6	19.5
8/23/95	21.3	1.19	23.8	20.1
8/24/95	21.3	0.70	22.3	20.5
8/25/95	21.7	1.04	23.5	20.3
8/26/95	22.2	0.91	23.5	20.6
8/27/95	22.2	1.01	23.6	20.6
8/28/95	22.4	1.05	24.1	20.8
8/29/95	21.4	0.59	22.9	20.6
8/30/95	21.0	1.08	22.9	19.6
8/31/95	21.0	0.66	21.9	19.8
9/1/95	21.4	1.42	24.0	20.0
9/2/95	21.5	0.70	23.1	20.6
9/3/95	21.2	0.92	22.9	20.0
9/4/95	20.4	0.44	21.3	19.5
9/5/95	19.9	0.75	21.0	18.8
9/6/95	19.9	0.77	21.4	18.7
9/7/95	19.5	0.54	20.5	18.5
9/8/95	18.5	0.43	19.1	17.7
9/9/95	18.7	1.02	21.0	17.5
9/10/95	18.9	0.95	20.6	17.5
9/11/95	18.8	0.94	20.3	17.4
9/12/95	19.0	1.18	20.8	17.2

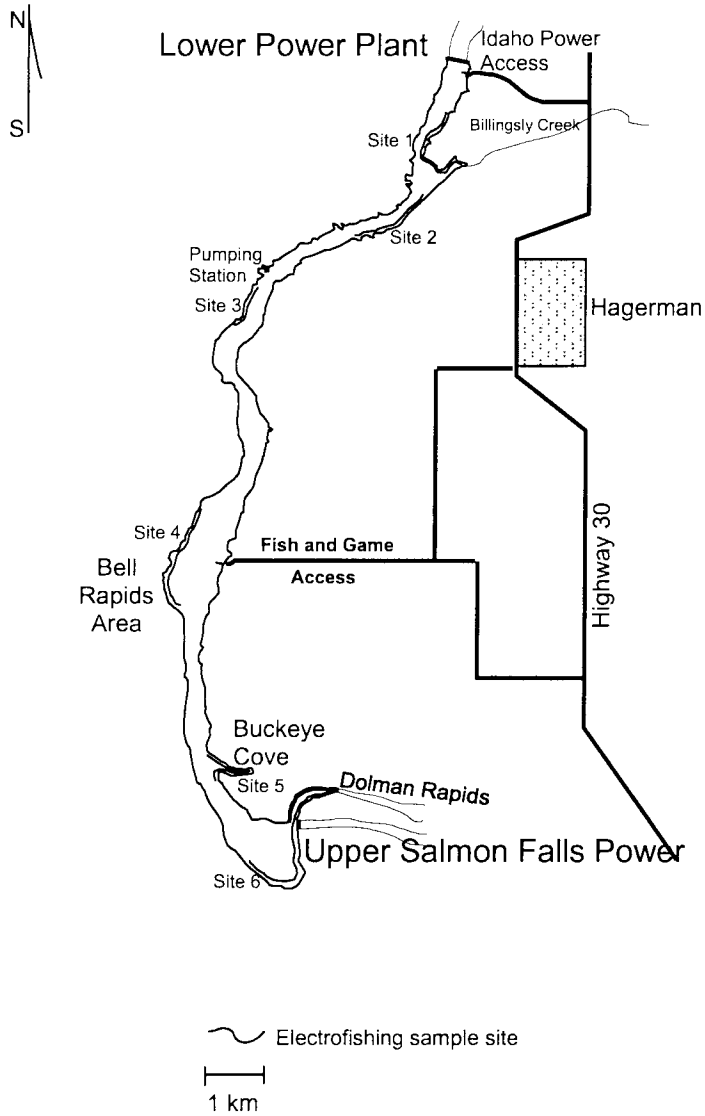

Figure 5. Map of Lower Salmon Falls Reservoir depicting electrofishing sampling sites, 1995.

Table 6. Total length frequencies (mm) and average weights (g) of all largemouth bass sampled by electrofishing six sites at Lower Salmon Falls Reservoir on October 20 and November 10, 1995. Numbers in parentheses are numbers of fish in sample that had a left maxillary clip.

Length range (mm)	Site 6		Site 5		Site 4		Site 3		Site 2		Site 1		Average weight
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	
0-9													
10-19													
20-29													
30-39													
40-49													
50-59													
60-69													
70-79			2	13.3									5
80-89			1	6.7									10
90-99													
100-109			3	20.0									14
110-119													
120-129													
130-139													
140-149													
150-159													
160-169	1 (1)	6.3	1	6.7									57
170-179													
180-189	1	6.3											94
190-199	1 (1)	6.3	1	6.7									95
200-209	2	12.5			2	28.6							116
210-219	1 (1)	6.3			1	14.3							121
220-229	5 (3)	31.3	2 (1)	13.3					1 (1)	100.0			141
230-239			2 (1)	13.3	1	14.3							179
240-249			1 (1)	6.7									174
250-259			1 (1)	6.7	2	28.6							222
260-269													
270-279	2	12.5	1	6.7									297
280-289													
290-299													
300-309	1	6.3											480
310-319													
320-329													
330-339													

Table 6. Continued.

Length range (mm)	Site 6		Site 5		Site 4		Site 3		Site 2		Site 1		Average weight
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	
340-349	1	6.3											780
350-359													
360-369													
370-379													
380-389													
390-399													
400-409													
410-419													
420-429													
430-439					1	14.3							1,850
440-449													
450-459													
460-469													
470-479													
480-489	1	6.3											2,250
490-499													
Number:	16		15		7		0		1		0		
Avg. length:	219		172		255				220				
Not measured:	0		0		0		0		0		0		

Table 7. Fish sampled by electrofishing six sites at Lower Salmon Falls Reservoir in October and November 1995. Total length frequency (mm) and mean weight (g) of some fish sampled are given.

Length range (mm)	Hatchery rainbow trout				Wild rainbow trout				Brown trout				Bluegill		Yellow perch	
	Length		Weight		Length		Weight		Length		Weight		Length		Length	
	no.	%	no.	avg.	no.	%	no.	avg.	no.	%	no.	avg.	no.	%	no.	%
0-9																
10-19																
20-29																
30-39																
40-49																
50-59													2	3.5		
60-69													1	1.8		
70-79													16	28.1		
80-89													22	38.6		
90-99													13	22.8		
100-109					1	25.0							1	1.8		
110-119	2	1.4											1	1.8		
120-129																
130-139																
140-149																
150-159	3	2.0														
160-169	1	0.7			1	25.0							1	1.8		
170-179	9	6.1	1	62												
180-189	10	6.8													1	100.0
190-199	28	18.9	2	75												
200-209	30	20.3	7	95												
210-219	23	15.5														
220-229	18	12.2	1	150	1	25.0	1	112								
230-239	7	4.7														
240-249	5	3.4														

Table 7. Continued.

Length range (mm)	Hatchery rainbow trout				Wild rainbow trout				Brown trout				Bluegill		Yellow perch	
	Length		Weight		Length		Weight		Length		Weight		Length		Length	
	no.	%	no.	avg.	no.	%	no.	avg.	no.	%	no.	avg.	no.	%	no.	%
250-259	3	2.0	1	160												
260-269	1	0.7														
270-279	4	2.7														
280-289	1	0.7														
290-299	1	0.7														
300-309	1	0.7														
310-319																
320-329																
330-339																
340-349																
350-359																
360-369																
370-379																
380-389																
390-399									1	100.0	1	670				
400-409																
410-419	1	0.7														
420-429																
430-439 / 480-489					1	25.0	1	1,300								
490-499																
Number:	148				4				1				57		1	
Avg length:	208				244				395				83		180	
Total sampled:	148				4				1				57		1	

Table 8. Daily temperature summaries for temperatures (°C) taken every 48 minutes at Idaho Power Company's Lower Salmon Dam Reservoir access site in 1995.

Date	Daily mean temperature	Standard deviation	Daily max. temperature	Daily min. temperature
6/1/95	16.4	0.24	16.7	15.9
6/2/95	16.6	0.19	16.9	16.3
6/3/95	16.8	0.14	17.0	16.6
6/4/95	16.7	0.23	17.0	16.3
6/5/95	17.0	0.21	17.5	16.7
6/6/95	17.1	0.51	17.7	16.1
6/7/95	14.9	0.44	15.9	14.5
6/8/95	14.4	0.14	14.5	14.2
6/9/95	13.8	0.42	14.5	13.3
6/10/95	13.7	0.40	14.4	13.4
6/11/95	14.5	0.49	15.3	13.9
6/12/95	15.2	0.53	16.3	14.7
6/13/95	16.1	0.58	17.2	15.5
6/14/95	16.9	0.45	17.7	16.4
6/15/95	17.1	0.30	17.7	16.7
6/16/95	17.1	0.11	17.2	16.9
6/17/95	17.0	0.11	17.2	16.7
6/18/95	17.1	0.23	17.7	16.9
6/19/95	17.3	0.13	17.7	17.2
6/20/95	17.1	0.21	17.4	16.7
6/21/95	16.7	0.17	17.0	16.4
6/22/95	15.9	0.32	16.4	15.5
6/23/95	15.7	0.45	16.4	15.3
6/24/95	16.9	0.37	17.5	16.4
6/25/95	17.7	0.21	18.2	17.4
6/26/95	18.2	0.23	18.7	17.9
6/27/95	18.8	0.16	19.0	18.5
6/28/95	18.9	0.17	19.1	18.5
6/29/95	18.7	0.28	19.0	18.0
6/30/95	18.7	0.22	19.0	18.4
7/1/95	18.5	0.17	18.8	18.2
7/2/95	18.8	0.17	19.1	18.5
7/3/95	18.5	0.19	19.0	18.2
7/4/95	18.0	0.23	18.4	17.7
7/5/95	17.8	0.18	18.2	17.5
7/6/95	18.3	0.73	19.5	17.5
7/7/95	18.8	0.38	19.5	18.4
7/8/95	19.3	0.69	20.3	18.5
7/9/95	19.9	0.51	20.8	19.1
7/10/95	19.7	0.25	20.1	19.3
7/11/95	19.6	0.36	20.3	19.1
7/12/95	19.5	0.45	20.5	19.0
7/13/95	19.6	0.43	20.5	19.1
7/14/95	19.9	1.63	23.8	18.8

Table 8. Continued.

Date	Daily mean temperature	Standard deviation	Daily max. temperature	Daily min. temperature
7/15/95	21.3	0.73	22.4	20.1
\	NO DATA			
7/21/95	19.6	0.37	20.5	19.3
7/22/95	19.3	0.30	20.0	19.1
7/23/95	19.6	0.47	20.5	19.0
7/24/95	19.8	0.48	20.5	19.1
7/25/95	19.8	0.52	20.5	19.1
7/26/95	19.8	0.37	20.5	19.3
7/27/95	19.6	0.47	20.3	19.1
7/28/95	19.8	0.52	20.6	19.1
7/29/95	19.7	0.24	20.3	19.3
7/30/95	18.6	0.29	19.1	17.9
7/31/95	18.1	0.47	18.8	17.5
8/1/95	18.5	0.49	19.3	18.0
8/2/95	18.9	0.48	19.6	18.4
8/3/95	19.3	0.56	20.1	18.7
8/4/95	19.6	0.51	20.5	19.0
8/5/95	19.9	0.51	20.8	19.3
8/6/95	20.1	0.47	21.0	19.5
8/7/95	19.8	0.29	20.5	19.5
8/8/95	18.8	0.29	19.3	18.0
8/9/95	18.1	0.37	18.7	17.7
8/10/95	18.4	0.48	19.3	17.9
8/11/95	18.3	0.31	19.0	18.0
8/12/95	18.4	0.51	19.3	17.9
8/13/95	18.0	0.27	18.5	17.4
8/14/95	17.7	0.52	18.7	17.2
8/15/95	18.2	0.55	19.1	17.5
8/16/95	18.4	0.45	19.3	18.0
8/17/95	18.4	0.25	18.8	17.9
8/18/95	17.7	0.23	18.2	17.4
8/19/95	17.8	0.40	18.4	17.4
8/20/95	17.8	0.42	18.4	17.4
8/21/95	18.3	0.52	19.3	17.7
8/22/95	18.8	0.36	19.5	18.4
8/23/95	18.9	0.17	19.3	18.7
8/24/95	18.8	0.21	19.5	18.7
8/25/95	18.8	0.34	19.5	18.5
8/26/95	19.0	0.38	19.8	18.7
8/27/95	18.7	0.29	19.3	18.5
8/28/95	18.6	0.29	19.1	18.4
8/29/95	18.5	0.24	19.0	18.0
8/30/95	18.2	0.40	19.0	17.9

Table 8. Continued.

Date	Daily mean temperature	Standard deviation	Daily max. temperature	Daily min. temperature
8/31/95	18.3	0.41	19.0	17.9
9/1/95	18.4	0.42	19.1	17.9
9/2/95	18.4	0.27	18.8	18.0
9/3/95	18.5	0.28	19.1	18.2
9/4/95	18.5	0.12	18.8	18.4
9/5/95	18.5	0.19	18.8	18.2
9/6/95	18.0	0.15	18.7	17.9
9/7/95	18.0	0.24	18.4	17.5
9/8/95	17.4	0.22	17.7	16.9
9/9/95	17.1	0.27	17.9	16.9
9/10/95	17.0	0.21	17.5	16.7
9/11/95	17.1	0.31	17.7	16.7
9/12/95	17.5	1.72	22.4	16.9

Table 9. Daily temperature summaries for temperatures (°C) taken every 48 minutes at the Bell Rapids access boat dock at Lower Salmon Falls Reservoir in 1995.

Date	Daily mean temperature	Standard deviation	Daily max. temperature	Daily min. temperature
5/31/95	16.5	0.60	17.7	15.6
6/1/95	16.7	0.46	17.5	16.1
6/2/95	16.7	0.29	17.0	16.1
6/3/95	17.0	0.97	18.7	15.6
6/4/95	17.2	0.56	17.9	16.3
6/5/95	16.5	1.01	17.9	14.5
6/6/95	14.3	0.70	15.5	13.1
6/7/95	14.0	0.75	15.0	13.0
6/8/95	13.5	0.26	14.2	13.1
6/9/95	13.9	0.72	15.0	13.1
6/10/95	14.7	0.97	15.9	13.3
6/11/95	15.8	0.97	17.0	14.5
6/12/95	16.7	1.02	18.2	15.3
6/13/95	17.3	0.95	18.5	15.9
6/14/95	17.2	0.48	18.2	16.4
6/15/95	17.2	0.65	18.7	16.4
6/16/95	17.0	0.53	17.9	16.1
6/17/95	17.2	0.72	19.3	16.3
6/18/95	17.2	0.37	17.9	16.6
6/19/95	16.9	0.76	18.5	15.8
6/20/95	16.4	0.94	17.9	14.7
6/21/95	15.2	0.49	16.1	14.4
6/22/95	15.9	1.09	17.4	14.5
6/23/95	17.1	0.70	18.0	16.1
6/24/95	17.7	0.64	18.7	16.7
6/25/95	18.3	0.64	19.3	17.4
6/26/95	18.9	0.47	19.8	18.0
6/27/95	19.0	0.82	20.3	17.9
6/28/95	18.2	1.24	19.5	16.1
6/29/95	18.5	0.42	19.1	17.7
6/30/95	18.3	0.53	19.0	17.4
7/1/95	18.6	0.49	19.6	17.9
7/2/95	18.4	0.48	19.5	17.7
7/3/95	17.8	0.60	18.8	16.9
7/4/95	17.5	1.07	19.3	15.9
7/5/95	17.9	0.48	19.0	17.2
7/6/95	18.6	0.27	19.0	18.0
7/7/95	18.8	0.32	19.6	18.4
7/8/95	19.5	0.51	20.6	18.8
7/9/95	19.4	0.36	20.3	18.8
7/10/95	19.3	0.25	19.6	18.8
7/11/95	19.3	0.43	20.5	18.7
7/12/95	19.5	0.65	21.1	18.4
7/13/95	19.7	2.74	25.7	16.7
7/14/95	21.4	0.88	23.1	20.0
\	NO DATA			
7/21/95	19.4	0.55	21.0	18.7
7/22/95	19.5	0.83	21.0	18.4
7/23/95	19.5	0.69	20.5	18.4
7/24/95	19.6	0.38	20.0	18.8

Table 9. Continued.

Date	Daily mean temperature	Standard deviation	Daily max. temperature	Daily min. temperature
7/25/96	19.3	0.43	20.0	18.5
5/31/95	16.5	0.60	17.7	15.6
7/26/95	19.4	0.49	20.1	18.5
7/27/95	19.2	0.50	20.0	18.4
7/28/95	19.4	0.53	20.3	18.5
7/29/95	19.5	0.36	20.0	18.4
7/30/95	17.9	1.07	19.6	16.3
7/31/95	17.5	0.92	18.7	16.3
8/1/95	18.0	0.81	19.1	16.7
8/2/95	18.8	0.79	20.0	17.5
8/3/95	19.0	0.51	19.6	18.0
8/4/95	19.3	0.47	20.1	18.5
8/5/95	19.5	0.45	20.1	18.7
8/6/95	19.7	0.44	20.3	18.8
8/7/95	19.4	0.59	20.6	18.4
8/8/95	17.9	0.84	19.0	16.4
8/9/95	17.7	0.84	19.0	16.4
8/10/95	18.3	0.57	19.3	17.4
8/11/95	17.8	1.11	19.5	15.9
8/12/95	18.1	0.74	19.1	16.9
8/13/95	17.3	0.81	18.5	15.8
8/14/95	17.2	0.86	18.4	15.9
8/15/95	17.8	0.74	18.8	16.6
8/16/95	18.1	0.57	19.1	17.2
8/17/95	17.9	0.62	19.1	17.0
8/18/95	16.9	1.19	18.4	15.1
8/19/95	17.2	0.79	18.2	15.8
8/20/95	17.6	0.80	18.5	16.3
8/21/95	18.3	0.62	19.3	17.4
8/22/95	18.7	0.40	19.5	18.0
8/23/95	18.8	0.25	19.3	18.5
8/24/95	18.7	0.49	19.6	17.9
8/25/95	18.5	0.66	19.5	17.2
8/26/95	18.8	0.67	20.1	17.7
8/27/95	18.4	0.70	19.3	17.2
8/28/95	18.2	0.68	19.0	16.9
8/29/95	18.1	0.81	19.0	16.4
8/30/95	17.7	0.78	19.0	16.4
8/31/95	17.7	0.82	19.0	16.4
9/1/95	18.1	0.71	19.1	17.0
9/2/95	18.4	0.53	19.1	17.4
9/3/95	18.5	0.27	18.8	18.0
9/4/95	18.5	0.16	18.8	18.2
9/5/95	18.3	0.61	19.1	17.4
9/6/95	17.9	0.60	18.7	16.9
9/7/95	17.7	0.67	18.7	16.6
9/8/95	16.8	0.99	18.4	15.1
9/9/95	16.8	0.70	17.7	15.6
9/10/95	16.9	0.75	17.9	15.6
9/11/95	16.9	0.82	18.0	15.6
9/12/95	17.2	2.37	23.1	14.4

Table 10. Daily temperature summaries for temperatures (°C) taken every 48 minutes in Buckeye Cove at Lower Salmon Falls Reservoir in 1995.

Date	Daily mean temperature	Standard deviation	Daily max. temperature	Daily min. temperature
5/31/95	19.2	3.22	26.0	16.3
6/1/95	17.4	1.03	20.0	16.3
6/2/95	17.1	0.43	17.9	16.6
6/3/95	18.2	0.63	19.3	17.4
6/4/95	20.2	0.89	21.6	19.1
6/5/95	19.3	0.86	21.3	18.0
6/6/95	18.9	0.73	20.1	17.2
6/7/95	15.4	0.59	16.9	14.5
6/8/95	14.5	0.41	15.0	13.9
6/9/95	14.6	0.15	14.8	14.4
6/10/95	14.7	0.63	15.8	14.1
6/11/95	15.6	0.88	17.0	14.5
6/12/95	17.0	0.64	18.4	16.3
6/13/95	17.9	0.86	19.5	16.7
6/14/95	18.8	0.44	20.0	17.9
6/15/95	18.9	0.80	20.0	17.5
6/16/95	19.4	0.86	20.6	18.4
6/17/95	19.2	0.54	20.1	18.4
6/18/95	19.0	0.85	20.3	17.9
6/19/95	19.1	0.48	20.0	18.0
6/20/95	18.9	0.67	20.0	18.0
6/21/95	18.6	0.65	19.5	17.5
6/22/95	16.9	0.63	18.4	16.1
6/23/95	17.0	1.44	19.1	15.6
6/24/95	18.5	0.85	19.8	17.4
6/25/95	19.4	0.59	20.3	18.5
6/26/95	20.0	0.65	21.1	19.1
6/27/95	20.6	0.69	21.8	19.5
6/28/95	21.7	0.99	23.1	20.3
6/29/95	20.9	0.86	22.3	19.6
6/30/95	19.9	0.57	20.6	18.7
7/1/95	19.5	0.65	20.3	18.0
7/2/95	20.5	0.80	21.9	19.6
7/3/95	20.5	0.77	21.6	19.5
7/4/95	20.7	0.38	21.4	20.1
7/5/95	19.8	0.91	21.1	18.5
7/6/95	19.7	0.51	20.3	18.8
7/7/95	20.0	0.53	20.8	18.7
7/8/95	20.6	0.35	21.4	20.0
7/9/95	21.0	0.60	22.4	20.1
7/10/95	20.8	0.97	22.6	19.1
7/11/95	20.9	0.78	22.4	19.8
7/12/95	21.0	0.78	22.9	20.1
7/13/95	21.6	1.05	22.9	20.3
7/14/95	21.5	1.36	26.2	19.8
7/15/95	21.4	0.85	22.8	20.1
\	NO DATA			
7/22/95	21.5	0.98	22.9	20.0

Table 10. Continued.

Date	Daily mean temperature	Standard deviation	Daily max. temperature	Daily min. temperature
7/23/95	21.5	1.24	23.3	19.5
7/24/95	21.7	1.07	23.3	20.1
7/25/95	21.6	1.20	23.6	20.1
7/26/95	20.8	0.43	21.6	20.0
7/27/95	21.8	1.15	23.6	20.6
7/28/95	21.0	0.64	22.4	20.0
7/29/95	21.2	0.42	21.8	20.6
7/30/95	21.3	0.45	22.1	20.1
7/31/95	20.0	0.84	21.6	18.7
8/1/95	19.1	0.48	20.0	18.4
8/2/95	19.3	0.49	20.5	18.7
8/3/95	20.8	1.32	22.8	19.3
8/4/95	20.3	0.68	21.4	19.1
8/5/95	20.9	0.45	21.6	20.3
8/6/95	20.5	0.44	21.4	19.8
8/7/95	20.7	0.46	22.3	20.1
8/8/95	21.7	1.30	23.3	19.8
8/9/95	20.8	0.72	22.4	19.6
8/10/95	19.3	0.64	20.1	18.0
8/11/95	19.6	0.46	20.5	19.1
8/12/95	19.6	0.78	20.8	18.4
8/13/95	19.5	0.70	20.8	18.5
8/14/95	19.0	0.66	20.3	18.0
8/15/95	18.5	0.41	19.1	17.9
8/16/95	19.3	0.84	21.0	18.5
8/17/95	19.7	0.47	20.5	19.0
8/18/95	20.0	0.59	21.0	19.0
8/19/95	18.8	0.66	19.6	17.9
8/20/95	18.7	0.55	19.6	17.7
8/21/95	18.6	0.39	19.6	18.2
8/22/95	19.6	0.64	20.6	18.8
8/23/95	20.0	0.55	20.6	18.7
8/24/95	20.0	0.60	20.8	18.7
8/25/95	20.3	0.60	21.4	19.1
8/26/95	20.3	0.42	21.3	19.6
8/27/95	20.6	0.95	22.4	19.6
8/28/95	20.0	0.58	21.3	19.1
8/29/95	19.8	0.53	21.0	19.0
8/30/95	20.4	0.75	21.6	19.3
8/31/95	19.4	0.62	20.6	18.5
9/1/95	19.3	0.39	20.0	18.7
9/2/95	19.8	1.01	21.6	18.7
9/3/95	19.8	0.50	20.8	19.1
9/4/95	19.7	0.50	20.6	19.0
9/5/95	19.6	0.64	20.6	18.7
9/6/95	20.4	0.82	21.8	19.3
9/7/95	19.4	0.74	21.0	18.4
9/8/95	19.5	0.72	20.6	18.4
9/9/95	18.5	0.68	19.6	17.4

Table 10. Continued.

Date	Daily mean temperature	Standard deviation	Daily max. temperature	Daily min. temperature
9/10/95	17.7	0.42	18.5	17.2
9/11/95	17.8	0.85	19.3	16.9
9/12/95	18.2	0.98	19.8	17.0
9/13/95	18.3	1.95	22.6	13.9

Mormon Reservoir

One sinking and one floating gill net were set overnight on the afternoon of April 10, 1995. One female yellow perch 220 mm long and two male yellow perch each 120 mm long were the only fish caught. It is suspected that no trout survived the previous year's low water conditions.

Oakley Reservoir

Forage fish presence and relative abundance were measured in Oakley Reservoir utilizing the 15.2 m long, 6.2 mm bar mesh beach seine at five sites along the west side of the reservoir on September 13, 1995. All fish sampled were identified and enumerated. A total of 113 spottail shiners *Notropis hudsonius* and five mottled sculpin *Cottus bairdi* were sampled (Table 11). Water temperature at time of seining was 17°C.

A bottom trawl was used to sample young-of-the-year (YOY) walleye *Stizostedion vitreum* from the southern third of the reservoir and the Trapper Creek arm on September 13, 1995. A total of five trawls were made which netted one walleye 225 mm long and 17 spottail shiners.

Salmon Falls Creek Reservoir

Salmon Falls Creek Reservoir fish were sampled by nighttime midwater trawling, beach seining, and bottom trawling. Daytime temperature and dissolved oxygen profiles were measured at four sites in 1995.

Kokanee were sampled using the midwater trawl on the night of June 28, 1995 north of Grey's Landing. A total of five transects were trawled with three to five steps trawled per transect for five minutes per step. Depths trawled ranged from 3.7 to 22.0 m. Trawling efforts resulted in sampling only three kokanee, two at 80 mm in length and one at 260 mm. No density or population estimates were possible with such low numbers of fish in the sample. Other species sampled in the trawl include two hatchery rainbow trout and approximately 450 age 0+ yellow perch. Results of the daytime temperature/dissolved oxygen profiles are given in Figure 6. Results indicated dissolved oxygen levels at 8 mg/l or greater from the surface to at least 15 m and temperatures 15°C or lower below 4 m deep. These conditions throughout most

of the water column may have contributed to the poor sampling with the midwater trawl if the fish were widely scattered.

Five sites were sampled with the 15.2 m long, 6.2 mm bar mesh beach seine on September 14, 1995 to monitor the presence of spottail shiner and other forage fish species. Approximately 10,900 YOY yellow perch (<70 mm total length), 26 spottail shiners, 157 YOY black crappie, and 7 YOY largescale suckers *Catostomus macrocheilus* were sampled (Table 12).

Table 11. Total length frequency and total numbers of fish sampled by beach seining at Oakley Reservoir on September 13, 1995.

Length range	Spottail shiner		Mottled sculpin	
	Length		Length	
(mm)	no.	%	no.	%
0-9				
10-19				
20-29				
30-39				
40-49	7	23.3	1	20.0
50-59	20	66.7	3	60.0
60-69	3	10.0	1	20.0
70-79				
80-89				
90-99				
Number:	30		5	
Avg length:	52		54	
Total sampled:	213		5	

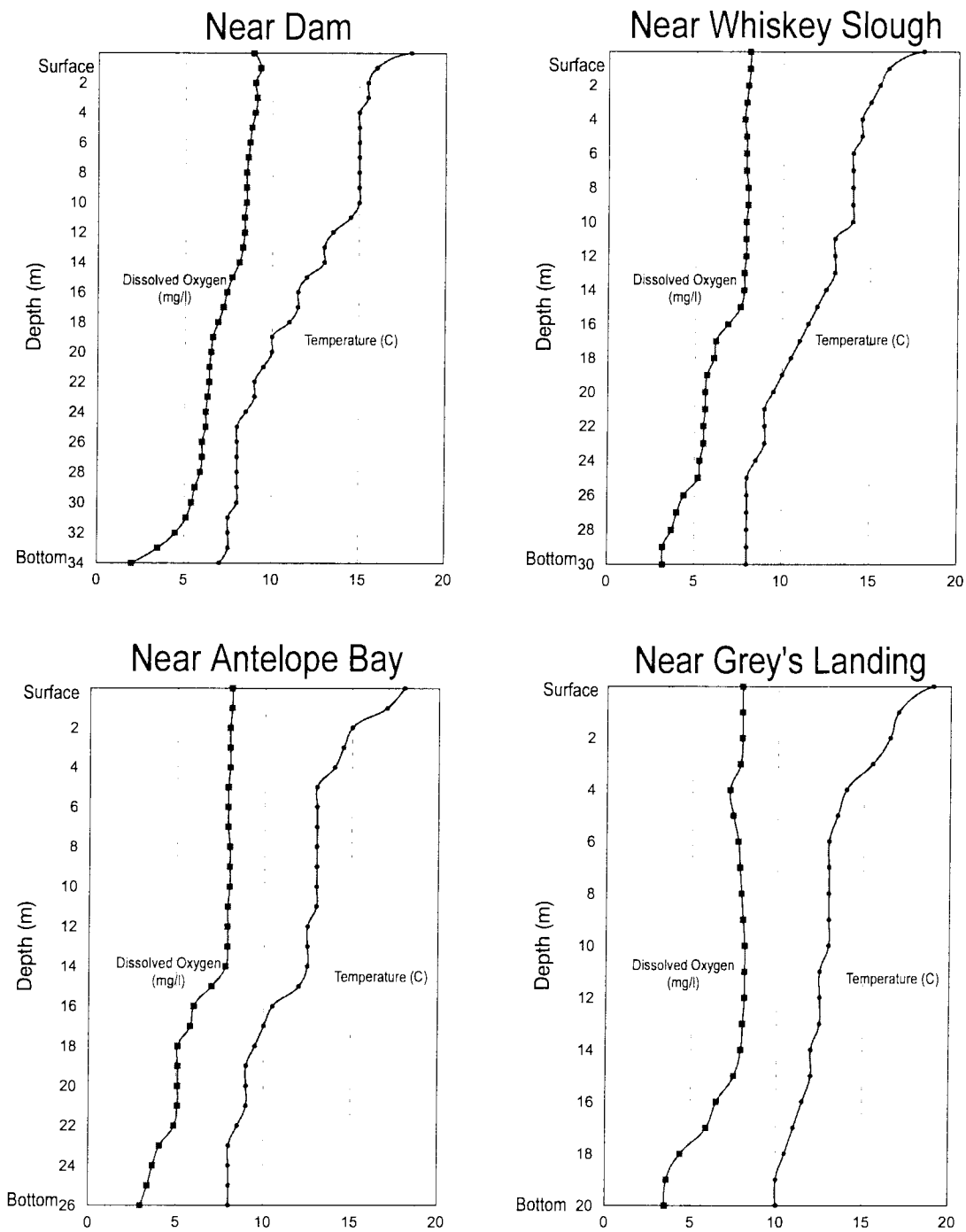

Figure 6. Daytime temperature and dissolved oxygen profiles for Salmon Falls Creek Reservoir, June 26, 1995.

Table 12. Total length frequency (mm) and numbers of fish sampled by beach seining four sites at Salmon Falls Creek Reservoir, September 1995.

Length range	Yellow perch		Black crappie		Spottail shiner		Largescale sucker	
(mm)	no.	%	no.	%	no.	%	no.	%
0-9								
10-19								
20-29								
30-39	2	4.5	9	25.0				
40-49	24	54.5	27	75.0				
50-59	9	20.5			3	11.5		
60-69	2	4.5					3	42.9
70-79	1	2.3			1	3.8	4	57.1
80-89	3	6.8			8	30.8		
90-99	2	4.5			14	53.8		
100-109								
110-119	1	2.3						
120-129								
130-139								
140-149								
Number:	44		36		26		7	
Avg length:	53		40		84		67	
Total sampled:	10,944		157		26		7	

A bottom trawl was used on two separate days in September and October 1995 to determine the presence of YOY walleye. All trawling was done within the upper end of the reservoir between Grey's Landing Bay and the bay south of Goose Island. Three transects were trawled ranging from four to seven minutes on September 14, 1995, and five transects were trawled ranging from 4.5 to 10 minutes on October 24, 1995. Depths trawled ranged from 2.5 to 13 m. Approximately 2,050 fish were sampled in the trawl, which included only one 170 mm walleye. Other species sampled included approximately 1,700 YOY yellow perch, 48 age 1+ or older yellow perch averaging 197 mm long, 219 YOY black crappie, 55 spottail shiner averaging 90 mm long, and 1 largescale sucker 150 mm long (Table 13).

Angler Survey

An intensive creel survey was conducted on Salmon Falls Creek Reservoir May 27 through November 10, 1995. The Creel Census System (McArthur 1993) was used to select angler count times and data analysis. The entire period was split up into six 28-day intervals with times from two weekday days and two weekend days randomly selected for daytime counts within each interval. One weekday night and one weekend night were also randomly selected for each interval to get an estimate of nighttime fishing effort and success rates. One to three

Table 13. Total length frequency (mm) and numbers of fish[a] sampled by bottom trawling eight sites at Salmon Falls Creek Reservoir, September 1995.

Length range (mm)	Walleye		Yellow perch		Spottail shiner		Largescale sucker	
	no.	%	no.	%	no.	%	no.	%
0-9								
10-19								
20-29								
30-39								
40-49								
50-59					1	12.5		
60-69								
70-79								
80-89								
90-99					7	87.5		
100-109								
110-119								
120-129			1	2.1				
130-139			3	6.3				
140-149			2	4.2				
150-159			2	4.2			1	100.0
160-169			1	2.1				
170-179	1	100.0	4	8.3				
180-189			3	6.3				
190-199			2	4.2				
200-209			5	10.4				
210-219			9	18.8				
220-229			8	16.7				
230-239			5	10.4				
240-249			1	2.1				
250-259			2	4.2				
260-269								
270-279								
280-289								
290-299								
Number:	1		48		8		1	
Avg length:	170		197		85		150	
Total sampled:	1		1,777		56		1	

[a] An additional 226 YOY black crappie were sampled with the bottom trawl but not measured.

counts were made at least two hours apart on each census day. The reservoir was split into three strata as indicated in Figure 7. Information gathered from each angler included hours fished, method and gear type used, and numbers of fish caught, kept, and released. All walleye and a subsample of other species retained in the creel were weighed and measured.

From May 27 through November 10, 1995 anglers fished an estimated 72,700 hours on Salmon Falls Creek Reservoir (Table 14). During the period June 24 through October 13, 1995 an estimated 57,100 hours of angler effort was expended, up 145% from a similar period in 1983 (Bell and Stevens 1984). Figure 8 shows the catch composition by age and length class of 103 walleye measured in the creel. Length-at-age estimates were based on scale analysis data from Partridge and Corsi (1993) and Warren and Partridge (1995). We made the assumption that the length frequency of fish sampled from the creel represented the length frequency of harvest for the entire 1996 fishing season. With that assumption we estimated that 15% of the walleye harvested were immature fish two years old and approximately 40% of the harvested walleye were >400 mm long. Estimated numbers of fish caught for each strata and time period are given in Table 15. Estimated catch rates were derived from the computer program for the daytime creel survey and derived by simple calculation from angler effort and catch for the nighttime creel survey due to the small sample size (Table 16).

There appears to be an insignificant amount of fishing effort and harvest during the nighttime hours on the reservoir despite the common notion by many fishermen that walleye fishing is more successful at night. A total of 21 nighttime counts were made throughout the entire survey period with 28 angler contacts made on 10 nights of surveys. An average of 1.8 anglers were counted per survey night with a maximum of nine anglers counted on July 13 and zero anglers counted 11 times. Seven walleye were counted as harvested and three were counted as caught and released from those 28 contacts, which accounted for 61 hours of fishing effort for a catch rate of 0.16 walleye/hour (Table 16).

Thorn Creek Reservoir

Fish at Thorn Creek Reservoir were sampled by nighttime electrofishing on the evening of October 19, 1995. A total of 84 hatchery rainbow trout averaging 243 mm total length were sampled after approximately two hours of electrofishing with power on and off (Table 17). A histogram of the length frequency distribution indicates three length groups sampled from the population (Figure 9). The group of fish ranging from 100 to 179 mm in total length was probably from the 32,500 steelhead *Oncorhynchus mykiss* stocked as 36 mm fry on July 6, 1995. Fish from 190 to 289 mm were probably stocked as 90 mm fingerlings on May 9, 1995, and fish greater than 290 mm were probably stocked as 230 mm catchables in late April and early May 1995.

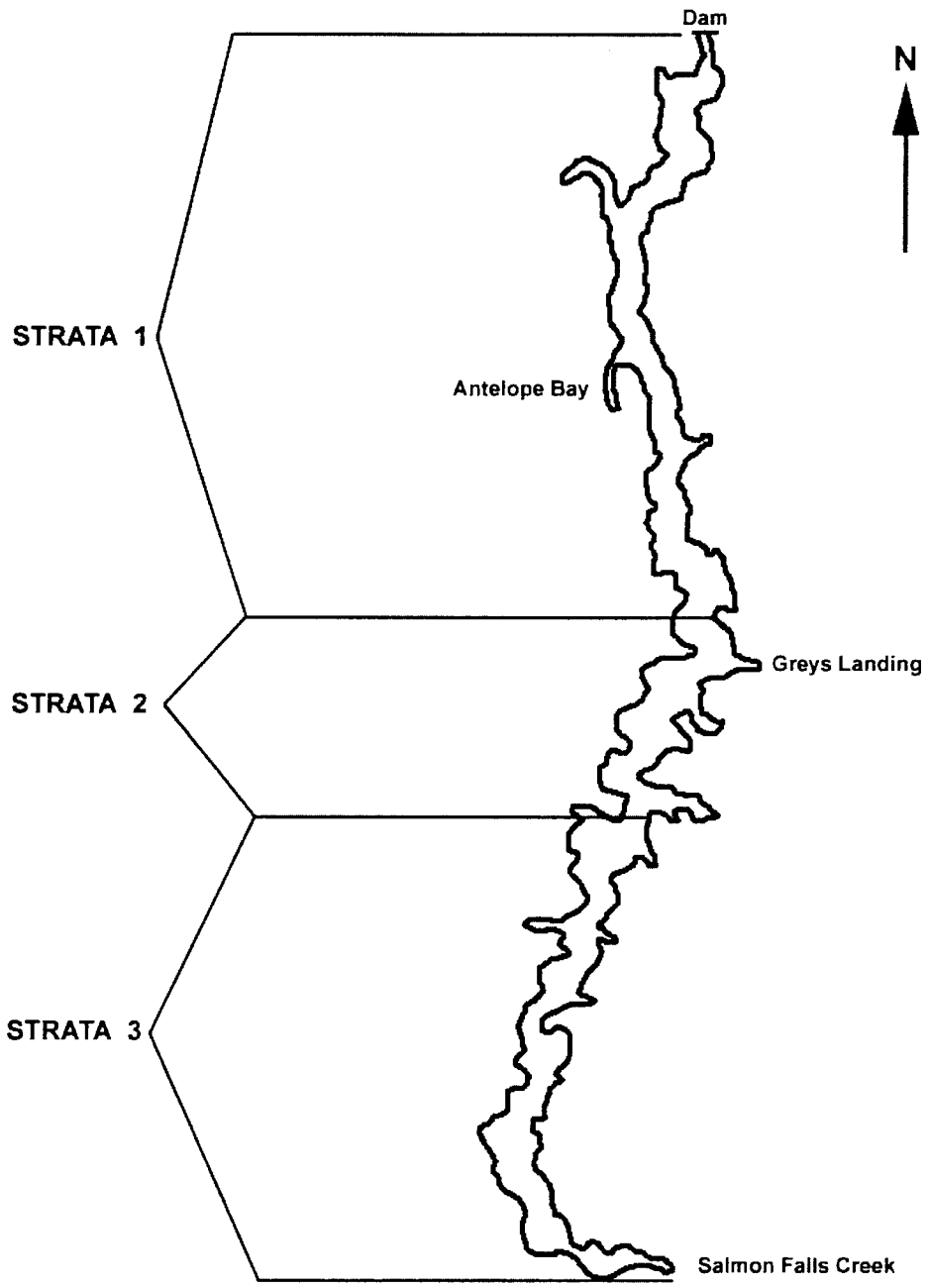

Figure 7. Map of Salmon Falls Creek Reservoir depicting strata boundaries for the 1995 intensive creel survey.

Table 14. Estimated total angler effort on Salmon Falls Creek Reservoir for May 27 through November 10, 1995. Confidence intervals are 95%.

		Angler hours			
Interval	Strata	Boat	Bank	Float tube	Total
May 27-June 23	1	2,458 ± 1,527	1,301 ± 1,052	0	3,760 ± 1,855
	2	2,115 ± 999	2,212 ± 1,524	0	4,326 ± 1,822
	3	2,932 ± 1,958	0	46 ± 91	2,978 ± 1,960
June 24-July 21	1	2,996 ± 1,598	1,836 ± 877	0	4,831 ± 1,823
	2	2,902 ± 1,676	2,370 ± 1,025	127 ± 149	5,399 ± 1,971
	3	4,048 ± 1,702	795 ± 745	0	4,842 ± 1,858
July 22-Aug 18	1	3,202 ± 1,608	3,145 ± 1,492	143 ± 177	6,489 ± 2,201
	2	1,425 ± 779	2,138 ± 500	19 ± 38	3,582 ± 926
	3	1,672 ± 1,130	76 ± 152	0	1,748 ± 1,140
Aug 19-Sept 15	1	5,717 ± 1,434	4,722 ± 1,882	20 ± 39	10,457 ± 2,366
	2	2,614 ± 1,024	5,332 ± 1,292	0	7,946 ± 1,649
	3	713 ± 674	768 ± 1,200	0	1,480 ± 1,377
Sept 16-Oct 13	1	1,555 ± 587	2,520 ± 1,021	55 ± 71	4,130 ± 1,180
	2	1,361 ± 637	4,188 ± 1,339	55 ± 71	5,604 ± 1,485
	3	375 ± 296	192 ± 278	0	567 ± 406
Oct 14-Nov 10	1	500 ± 381	1,111 ± 704	0	1,611 ± 801
	2	322 ± 253	2,387 ± 2,019	0	2,709 ± 2,035
	3	250 ± 300	12 ± 24	0	262 ± 301
Season totals by strata	1	16,428 ± 3,165	14,635 ±3,030	218 ± 194	31,278 ± 4,386
	2	10,739 ± 2,436	18,627 ±3,341	201 ± 169	29,566 ± 4,138
	3	9,990 ± 2,939	1,843 ± 1,448	46 ± 91	11,877 ± 3,278
Season totals		37,157 ± 4,959	35,105 ± 4,737	465 ± 274	72,721 ±6,864

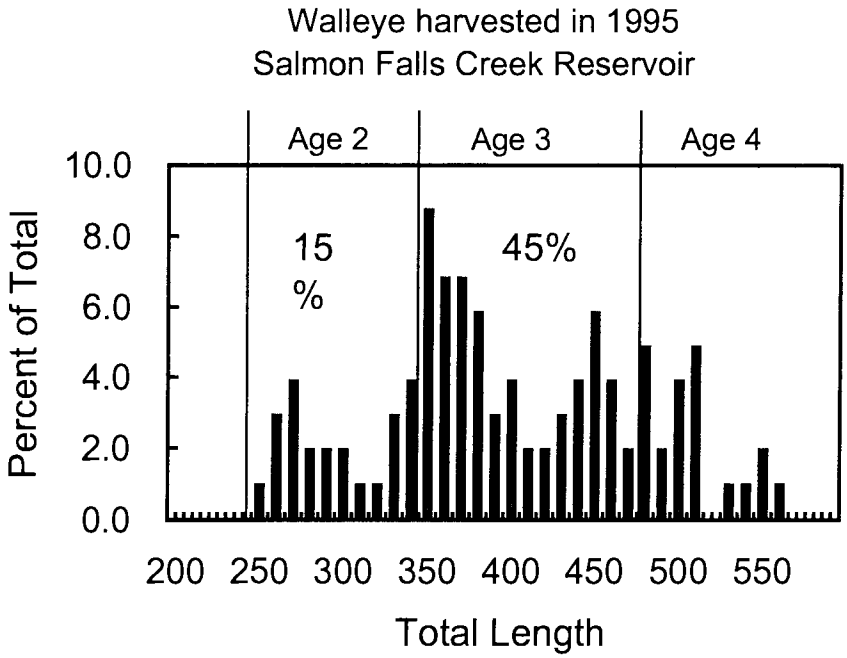

Figure 8. Catch composition by age and length class of 103 walleye in the angler creel at Salmon Falls Creek Reservoir in 1995.

Table 15. Estimated number of fish caught by anglers at Salmon Falls Creek Reservoir from May 27 through November 10, 1995. Confidence intervals are 95%.

Interval	Strata	Total no. fish caught	Total no. fish kept	Hatchery rainbow trout	Wild rainbow trout	Kokanee	Walleye	Yellow perch	Smallmouth bass	Crappie
May 27-June 23	1	1,439 ± 1,587	1,340 ± 1,567	112 ± 166	0	0	19 ± 47	1,209 ± 1,532	0	0
	2	1,677 ± 1,019	1,550 ± 996	354 ± 556	0	193 ± 371	323 ± 358	615 ±582	65 ± 82	0
	3	612 ± 453	573 ± 428	77 ± 92	0	0	243 ± 251	236 ± 228	20 ± 15	0
June 24-July 21	1	2,997 ± 2,101	1,995 ± 2,060	717 ± 814	0	53 ± 120	0	1,166 ± 1,335	53 ± 105	0
	2	6,186 ± 4,577	5,250 ± 4,107	50 ± 86	0	0	755 ± 1,144	4,382 ± 4,277	66 ± 141	0
	3	3,409 ± 2,345	3,122 ± 2,325	32 ± 43	0	0	479 ± 549	2,609 ± 2,375	0	0
July 22-Aug 18	1	6,251 ± 4,021	5,821 ± 3,983	742 ± 815	0	42 ± 96	0	4,941 ± 4,259	89 ± 192	0
	2	1,709 ± 1,143	1,659 ± 1,128	402 ± 267	0	0	146 ± 161	1,112 ± 1,074	0	0
	3	224 ± 263	224 ± 263	52 ± 100	0	0	52 ± 112	119 ± 228	0	0
Aug 19-Sept 15	1	7,814 ± 4,447	7,580 ± 4,180	4,358 ± 2,742	0	190 ± 437	117 ± 143	2666 ± 3,165	249 ± 485	0
	2	4,963 ± 3,086	4,963 ± 3,086	377 ± 329	0	0	94 ± 142	4,170 ± 2,874	0	322 ±650
	3	393 ± 338	267 ± 343	21 ± 34	0	0	0	246 ± 339	0	0
Sept 16-Oct 13	1	2,447 ± 1,446	1,419 ± 1,268	872 ± 1,028	0	0	78 ± 102	432 ± 754	40 ± 87	0
	2	5,153 ± 2,876	4,985 ± 2,856	1,495 ±1,774	0	0	230 ± 211	3,259 ± 3,050	0	0
	3	289 ± 410	289 ± 410	121 ± 101	0	0	145 ± 428	24 ± 33	0	0
Oct 14-Nov 10	1	412 ± 326	356 ± 325	356 ± 325	0	0	0	0	0	0
	2	2,111 ± 1,622	1,860 ± 1,558	1,119 ±1,074	29 ± 69	0	185 ± 247	575 ± 658	11 ± 20	0
	3	144 ± 296	128 ± 285	11 ± 25	0	0	0	117 ± 259	0	0
Season Total		48,230 ± 9,744	43,381 ± 9,328	11,268 ± 3,856	29 ± 69	478 ± 593	2,866 ± 1,477	27,818 ± 8,750	593 ± 564	322 ± 650

Table 16. Estimated daytime and nighttime catch rates at Salmon Falls Creek Reservoir from May 27 through November 10, 1995.

	Catch rates (fish/hour) for fish kept and released									
	Daytime[a]								Nighttime[b]	
	Strata 1		Strata 2		Strata 3		Season average		Season average	
Species	kept	rel.	kept	rel.	kept	rel.	kept	rel.	kept	rel.
Hatchery rainbow trout	0.20	0.05	0.19	0.00	0.03	0.00	0.14	0.02	0.03	0.00
Wild rainbow trout	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kokanee	0.01	0.00	0.05	0.00	0.00	0.00	0.02	0.00	0.00	0.00
Walleye	0.01	0.00	0.05	0.01	0.05	0.00	0.04	0.01	0.11	0.05
Yellow perch	0.24	0.02	0.40	0.01	0.18	0.03	0.27	0.02	0.02	0.00
Smallmouth bass	0.01	0.03	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00
Crappie	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

[a] Daytime creel survey catch rate estimates were derived from the Creel Census System computer program (McArthur 1993).

[b] Nighttime creel survey catch rate estimates were derived by direct calculations from angler effort and number of fish caught without stratification due to the small sample size. Nighttime anglers were specifically targeting walleye while daytime averages include anglers fishing for all species.

Table 17. Total length frequency (mm) and average weights (g) of hatchery rainbow trout sampled by nighttime electrofishing at Thorn Creek Reservoir in October 1995.

Length range	Length		Weight	
(mm)	no.	%	no.	avg.
0-9				
/				
100-109	1	1.2	1	12
110-119	1	1.2	1	16
120-129	4	4.8	4	22
130-139	6	7.1	6	27
140-149	6	7.1	6	32
150-159	3	3.6	3	39
160-169	2	2.4	2	56
170-179	1	1.2	1	64
180-189				
190-199	1	1.2	1	84
200-209	3	3.6	3	115
210-219	1	1.2	1	140
220-229	3	3.6	3	147
230-239	2	2.4	2	165
240-249	6	7.1	6	198
250-259	4	4.8	4	220
260-269	5	6.0	5	248
270-279	2	2.4	2	270
280-289	2	2.4	2	283
290-299	1	1.2	1	280
300-309	4	4.8	4	294
310-319	6	7.1	6	328
320-329	6	7.1	6	372
330-339	8	9.5	8	386
340-349	3	3.6	3	450
350-359	2	2.4	2	380
360-369	1	1.2	1	620
370-379				
380-389				
390-399				

Number:	84
Avg length:	243
Total sampled:	84

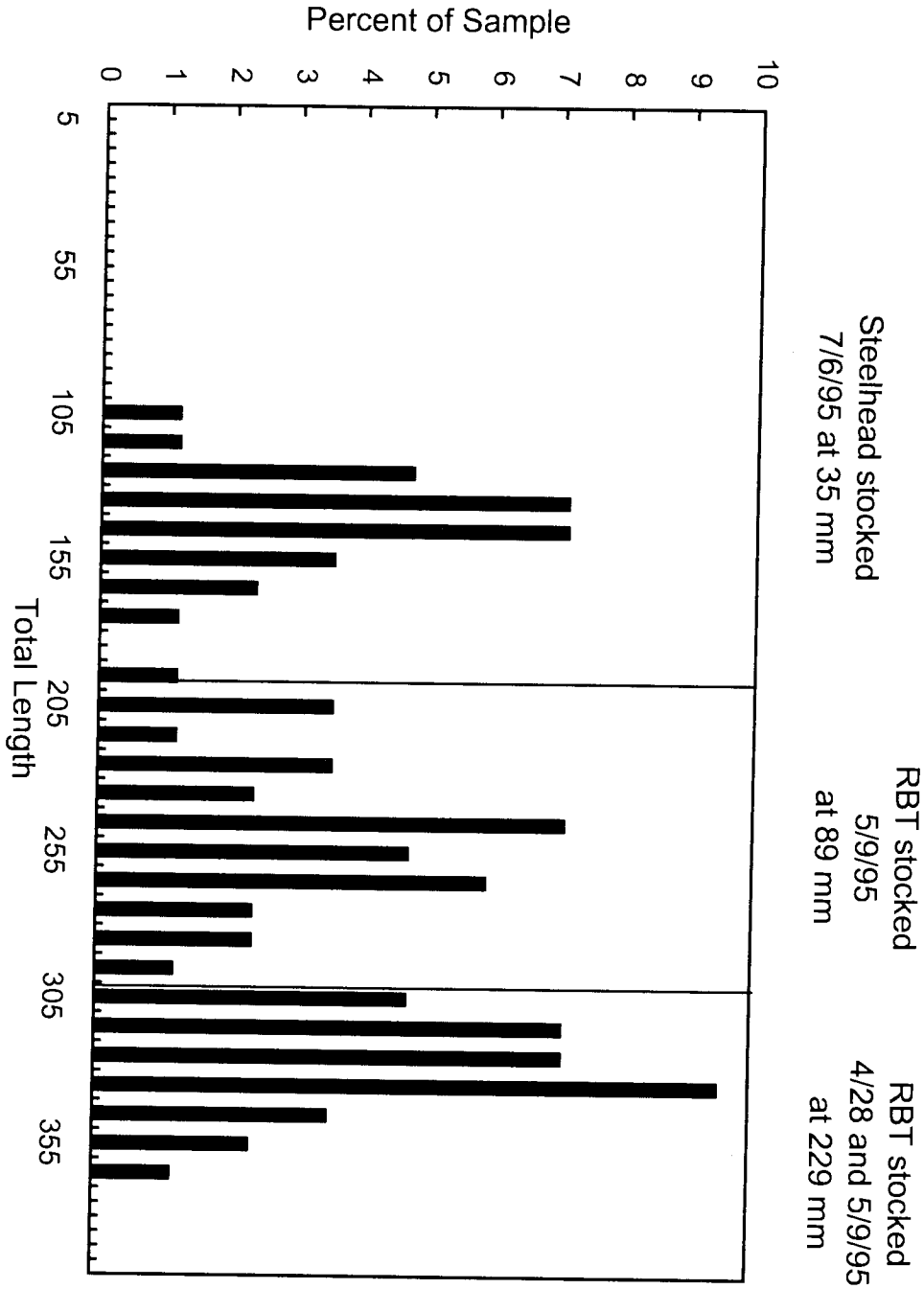

Figure 9. Total length frequency histogram of fish sampled by nighttime electrofishing at Thorn Creek Reservoir in October 1995.

Miscellaneous Regional Creel Surveys

A region wide creel survey was made on Saturday, May 27 (Memorial Day weekend) by conservation officers and other Magic Valley Region personnel (Table 18). This survey included streams open during the general fishing season as well as waters already open to fishing. There were 25 waters surveyed; a total of 851 anglers were interviewed with 2,323 hours of effort for an overall catch rate of 0.5 fish per hour. Spot creel checks were performed mostly by conservation officers and regional fishery personnel on days other than on Memorial Day weekend (Table 19). Totals of 3,012 anglers with 8,037 hours of effort and an overall catch rate of 0.38 fish per hour were reported on 32 waters throughout the region.

Table 18. Results of spot creel checks performed on Magic Valley Region waters on opening weekend (May 27 and 28) of the general fishing season, 1995.

Lake, river, stream	Anglers	Hours fished	Species[a]	Kept	Released	Catch
Billingsley Creek	10	14	ALL	8		8
			HRB	7		7
			BRN	1		1
Bruneau Sand Dunes Ponds	23	41	ALL	47	10	57
			BG	7		7
			LMB	40	10	50
Cassia Creek	10	10	ALL	13		13
			HRB	13		13
Crystal Springs	10	17	ALL	7		7
			HRB	7		7
Clyde Creek	9	10	ALL	3	2	5
			HRB	2	2	4
			EB	1		1
Dog Creek Reservoir	5	5	ALL		1	1
			HRB		1	1
Fish Creek Reservoir	9	15	ALL	3	1	4
			HRB	3	1	4
Hagerman WMA (March 1)	144	320	ALL	111	131	242
			HRB	111	131	242
Hagerman WMA (July 1)	32	114	ALL	100	50	150
			HRB	24		24
			BG	71	11	82
			LMB	1	37	38
			YP	4	2	6
Little Camas Reservoir	59	210	ALL	39		39
			HRB	39		39
Little Wood Reservoir	29	46	ALL	17		17
			HRB	17		17
Magic Reservoir	14	14	ALL	4		4
			HRB	4		4
Malad River	13	39	ALL		12	12
			WRB		12	12
Milner Reservoir	23	80	ALL	2		2
			CRP	1		1
			YP	1		1
Mormon Reservoir	47	97	ALL	5		5
			HRB	5		5

Table 18. Continued.

Lake, river, stream	Anglers	Hours fished	Species[a]	Kept	Released	Catch
Niagara Springs	2	2	ALL	2		2
			HRB	2		2
Oakley Reservoir	5	14	NO FISH			
Rock Creek	33	81	ALL	55		55
			HRB	7		7
			WRB	31		31
			BRN	17		17
Roseworth Reservoir	90	298	ALL	77		77
			HRB	77		77
Salmon Falls Creek Reservoir	111	337	ALL	55	7	62
			HRB	14		14
			WE	9	3	12
			KOK	6	1	7
			YP	26	2	28
			SMB		1	1
Silver Creek	102	336	ALL	68	214	282
			HRB	4		4
			WRB	32	206	238
			BRN	30	7	37
			EB	2	1	3
Snake River	2	1	NO FISH			
South Fork Boise River	14	24	ALL		4	4
			WRB		4	4
Sublett Creek	6	10	ALL	3	7	10
			HRB	2	2	4
			CT	1	5	6
Sublett Reservoir	43	180	ALL	24		24
			HRB	4		4
			BRN	1		1
			KOK	12		12
			C/RB	4		4
			CT	3		3
Trapper Creek	6	8	ALL	4		4
			HRB	1		1
			WRB	3		3

[a] HRB - hatchery rainbow trout, WRB - wild rainbow trout, BRN - brown trout, WE - walleye, KOK - kokanee, BG - bluegill, LMB - largemouth bass, C/RB - cutthroat-rainbow trout hybrid, SMB - smallmouth bass, CRP -carp, CT - cutthroat trout, EB- brook trout, YP - yellow perch.

Table 19. Results of spot creel checks performed on Magic Valley Region waters in 1995.

Lake, river, stream	Anglers	Hours fished	Species[a]	Kept	Released	Catch
Anderson Ranch Reservoir	32	69	ALL	69	4	73
			HRB	3		3
			KOK	63		63
			MWF		1	1
			YP	1	2	3
			SQF	2		2
			SMB		1	1
Big Smoky Creek	10	33	ALL	23		23
			HRB	20		20
			WRB	1		1
			KOK	2		2
Big Wood River	93	170	ALL	15	114	129
			MWF	15		15
			WRB		114	114
Burley Gravel Pond	5	4	ALL	2		2
			CRP	2		2
Cassia Creek	2	6	ALL	2		2
			HRB	1		1
			WRB	1		1
Cedar Draw Creek	5	11	ALL	3		3
			WRB	3		3
Crystal Lake	62	134	ALL	86		86
			HRB	85		85
			WRB	1		1
Deep Creek	8	5	ALL	7		7
			HRB	6		6
			WRB	1		1
Dierkes Lake	39	102	ALL	40	13	53
			HRB	40	10	50
			LMB		3	3
Dog Creek Reservoir	24	40	ALL	55		55
			HRB	19		19
			BG	17		17
			YP	16		16
			LMB	2		2
			BBH	1		1
Emerald Lake	141	262	ALL	18		18
			HRB	17		17
			YP	1		1
Fish Creek Reservoir	47	110	ALL	49		49
			HRB	47		47
			EB	2		2

Table 19. Continued.

Lake, river, stream	Anglers	Hours fished	Species[a]	Kept	Released	Catch
Gun Club Pond	34	45	ALL	23		23
			HRB	20		20
			BG	2		2
			YP	1		1
Hagerman WMA	28	66	ALL	32		32
			HRB	24		24
			BG	5		5
			LMB	3		3
Lake Cleveland	53	94	ALL	37	2	39
			HRB	37	2	39
Lake Walcott (near dam)	266	271	ALL	78	1	79
(Gifford Springs)	16	40	HRB	78	1	79
			ALL	1	1	2
(Smith Springs)	11	25	HRB	1	1	2
			ALL	4		4
			HRB	4		4
Little Camas Reservoir	8	40	ALL	18		18
			HRB	18		18
Little Smoky Creek	49	122	ALL	70	1	71
			HRB	68		
			EB	2		2
			BU		1	1
Little Wood Reservoir	3	21	ALL	15		15
			HRB	15		15
Little Wood Reservoir (research data)		55,000	ALL	39,000	14,000[b]	54,000
			HRB	26,000		
			RBT	13,000		
Lower Salmon Falls Reservoir	1	3	ALL		1	1
			CRP		1	1
Magic Reservoir	1	4	ALL	8		8
			WRP	1		1
			YP	7		7
Magic Reservoir (research data)		47,600	ALL	17,000	4,000[b]	21,000
			HRB	10,000		
			RBT	2,000		
			YP	5,000		
			BRN	103		

Table 19. Continued.

Lake, river, stream	Anglers	Hours fished	Species[a]	Kept	Released	Catch
Milner Reservoir	172	353	ALL	169	16	185
			HRB	7		7
			WRB	4		4
			CRP	7		7
			SMB	4	16	20
			YP	62		62
			SU	1		1
			CHU	1		1
			BBH	83		83
Mormon Reservoir	5	19	ALL	5		5
			HRB	5		5
Murtaugh Lake	30	47	ALL	3		3
			BBH	2		2
			CRP	1		1
Niagara Springs	17	26	ALL	13		13
			HRB	13		13
Oakley Reservoir	121	460	ALL	145		145
			HRB	72		72
			WE	67		67
			YP	4		4
			CT	2		2
Rock Creek	37	55	ALL	26		26
			HRB	24		24
			WRB	2		2
Rock Creek Park	6	5	ALL	1	2	3
			HRB	1	2	3
Roseworth Reservoir	233	1,004	ALL	210	16	226
			HRB	210	16	226
Salmon Falls Creek Reservoir (spot creel)	339	1,240	ALL			
			HRB	160	5	165
			WE	23	16	39
			YP	312		312
			KOK	10		10
			SMB	16		16
Salmon Falls Creek Reservoir (extensive creel)	632	1,975	ALL	1,094	155	1,249
			HRB	242	23	265
			WRB	1		1
			KOK	4	1	5
			WE	101	24	125
			YP	728	79	807
			SMB	11	26	37
			BC	7	2	9

Table 19. Continued.

Lake, river, stream	Anglers	Hours fished	Species[a]	Kept	Released	Catch
Silver Creek	8	20	ALL	1	4	5
			WRB	1	4	5
Snake River	3	6	ALL	2		2
(Bell Rapids)			HRB	2		2
(Below Minidoka)	296	662	ALL	68		68
			HRB	64		64
			SMB	1		1
			CC	1		1
			MWF	2		2
(Centennial Park)	14	26	ALL	5		5
			SU	1		1
			CHU	4		4
South Fork Boise River	33	44	ALL	23		23
			HRB	5		5
			WRB	16		16
			KOK	2		2
Stone Reservoir	34	134	ALL	93	2	95
			HRB	60		60
			YP	32		32
			BC	1		1
			LMB		2	2
Sublett Creek	7	16	ALL	2	1	3
			HRB	2		2
			CT		1	1
Sublett Reservoir	75	218	ALL	56	5	61
			HRB	32	2	34
			KOK	8	2	10
			CT	12	1	13
			BRN	4		4
Trapper Creek	12	50	ALL	18		18
			HRB	14		14
			CT	3		3
			EB	1		1

[a] RB - Hatchery rainbow trout, WRB - Wild rainbow trout, RBT - Rainbow trout of unknown origin, CT - Cutthroat, BRN - Brown trout, EB - Eastern brook trout, BT - Bull trout, KOK - Kokanee, MWF - Mountain whitefish, BG - Bluegill, LMB - Largemouth bass, SMB - Smallmouth bass, BC - Black crappie, WE - Walleye, YP - Yellow Perch, CC - Channel Catfish, BBH - Brown bullhead, SQF - Northern pikeminnow *Ptychocheilus oregonensis*, CHU - Chub, CRP - Carp, SU - Sucker.

[b] Fish not identified.

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1995 ANNUAL PERFORMANCE REPORT

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Program: Fisheries Management F-71-R-20

Project I: Surveys and Inventories

Subproject I-E: Magic Valley Region

Job: c

Title: Rivers and Streams Investigations

Contract Period: July 1, 1995 to June 30, 1996

ABSTRACT

Whirling disease parasite *Myxosoma cerebralis* was confirmed to be present in late winter 1995 in samples of wild rainbow trout *Oncorhynchus mykiss* from Warm Springs Creek, a tributary to the Big Wood River and near Hailey. An early fall fish population assessment at sites studied in previous years indicates that several year classes of wild rainbow trout are present within all reaches studied. The presence of the whirling disease pathogen within the Big Wood River drainage has not appeared to impact the trout population at any site.

Billingsley Creek was electrofished on two days within the Billingsley Creek Wildlife Management Area. Fish sampled included good numbers of rainbow trout and brown trout *Salmo trutta*, numerous Utah chub *Gila atraria*, and a few redside shiner *Richardsonius balteatus.*

Thousand Springs Creek was electrofished to assess the fish population and to determine whether or not the trout were preying on native fish species including Shoshone sculpin *Cottus greenei.* Fish sampled included rainbow trout, mountain whitefish *Prosopium williamsoni* and seven nongame fish species that are not typically piscivorous. Sixteen of the larger trout were sacrificed for stomach analysis with results indicating that none had recently consumed a vertebrate prey item.

We assisted the Idaho Department of Environmental Quality with 22 stream surveys for its Beneficial Use Reconnaissance Project. Sampling included fishery surveys on streams throughout the region.

Author:

Charles D. Warren
Regional Fishery Biologist

OBJECTIVES

To maintain information for fishery management activities and decisions for rivers and streams.

METHODS

Stream habitat data were collected using ocular and measurement techniques described by Idaho Department of Fish and Game (IDFG; 1992). Fish sampling gear included a Smith-Root Model 15-A backpack shocker and a Coffelt Model VVP-15 shocker powered by a 5,000 watt generator mounted in an aluminum canoe or drift boat. Output with the Coffelt shocker was set to unpulsed direct current (DC). Crews using the Coffelt shocker in the canoe waded with two people each using one anode and three or four other crew members netting stunned fish. Crews using the Coffelt shocker in the drift boat netted fish from within the boat as another crew member rowed and operated the generator and shocker. The backpack shocker was used with one shocker operator and two or three netters. Population estimates were made using a two step depletion method (Seber and LeCren 1967) or an adjusted (Chapman) Peterson Mark-Recapture method (Ricker 1975). The Peterson Mark-Recapture method was done by fin clipping all salmonids at least one year old with a hole punch in the caudal fin prior to release back into the sample reach. Crews returned one week later to sample for the ratio estimate. Sampled fish were identified, total lengths recorded in 10 mm groups and subsamples were weighed in grams. Scale samples were taken from some fish to estimate length-at-annulus back-calculated from scale measurements. Density estimates expressed as number of fish per unit area of surface water were based on total lengths and average widths of each site sampled. For whirling disease samples, specimens were taken by freezing the entire fish then shipping it to the IDFG fish health laboratory in Eagle, ID.

Brown trout *Salmo trutta* and rainbow trout *Oncorhynchus mykiss* redd counts were conducted on the Big Wood River by walking upstream through the prescribed reach within a week or two after the end of the spawning season. All likely spawning areas within the study reaches were either observed by wading through the reach or from a high prominent place on the bank above the area.

Water temperature was monitored with continuously recording HOBO Boxcar recording thermographs. The thermographs were programmed to record temperatures every 48 minutes for a 60-day duration, then replaced if additional data were needed. Daily mean, maximum and minimum temperatures were calculated from the daily measurements.

RESULTS AND DISCUSSION

Big Wood River

Brown Trout Redd Survey

A spawning ground survey was performed on the Big Wood River upstream of Magic Reservoir to monitor spawning activities of brown trout that had moved upstream from the reservoir. The survey was done on November 16, 1995 by walking upstream looking for redds from the mouth of Rock Creek to the outflow of a private pond on the east side of the Big Wood River approximately 1.5 km upstream of the Stanton Crossing bridge. A total of 117 redds were counted. Redd counts for 1995 within the same reach exceeded those of previous years since 1989 (Table 1). Water temperature at the time of the survey was 8°C.

Fish Populations

Concerns about whirling disease parasite *Myxosoma cerebralis* led to an investigation by Magic Valley regional and fishery research personnel to determine the presence of the pathogen and its impact on the wild fish population within the Big Wood River drainage. Samples of several wild rainbow trout collected in March from the Big Wood River at Hailey and from Warm Springs Creek, a tributary to the Big Wood River, were sent to the fish pathology lab in Eagle ID. Laboratory results indicated that *M. cerebralis* is present in a small percent of fish within the drainage (Elle 1998).

To determine impacts the pathogen may have on the Big Wood River fish population and to continue monitoring population trends since fishing rules were changed in 1990, we estimated fish populations during the fall of 1995 at five sites that had been sampled in previous years (Table 2, Figure 1; Thurow 1990, Partridge and Warren 1994). Population estimates were made both by combining 100 mm size class estimates and by pooling mark, capture and recapture numbers for all fish ≥200 mm to compare estimates made by Thurow (1990) and later studies (Partridge and Warren 1994, 1995; Warren and Partridge 1994).

Total numbers, lengths and weights of fish sampled are given in Tables 3-9. Species sampled include wild and hatchery rainbow trout, brook trout *Salvelinus fontinalis*, mountain whitefish *Prosopium williamsoni*, Wood River sculpin *Cottus leiopomus*, bridgelip sucker *Catostomus columbianus,* and longnose dace *Rhinichthys cataractae*. Population estimate data for each site with corresponding density estimates are given in Table 10 for wild rainbow trout sampled that were greater than or equal to 100 mm long. A comparison of wild rainbow trout population and density estimates for 1995 and previous years is given in Table 11. Percentages and densities of the estimated wild rainbow trout population greater than or equal to 300 mm were calculated for each 100 mm size class for each sample site for all years sampled (Table 12).

Table 1. Brown trout redd counts on the Big Wood River and Rock Creek upstream of Magic Reservoir.

	Big Wood River[a]					
Date	Reach 1	Reach 2	Reach 3	Reach 4	Total	Rock Creek
Nov. 19, 1986	--	26	-[b]	96	122	--
Nov. 19, 1987	104	62[c]	-[b]	30	196	--
Nov. 15, 1988	13	75	31	39	158	--
Nov. 18, 1989	6	20	33	8	67	1
Nov. 20, 1990	1	25	30	14	70	0
Nov. 15, 1991	3	30	38	15	86	0
Nov. 19, 1992	5	14	9	15	43	0
Nov. 24, 1993	1	28	-[b]	15	43	0
Nov. 16, 1994	9	27	56	5	97	0
Nov. 16, 1995	2	29	54	32	117	0

[a] Reach 1 - Rock Creek to Sheep Bridge.
Reach 2 - Sheep Bridge to fence at U.S.G.S. station.
Reach 3 - Fence to Stanton Crossing.
Reach 4 - Stanton Crossing to Davis Pond.
Rock Creek - Highway 20 to mouth.

[b] Combined with previous reach.

[c] A total of 42 female brown trout were trapped and spawned from this reach by Hayspur Hatchery in 1987.

Table 2. Stream reach lengths and average widths of electrofishing reaches sampled in the Big Wood River in the fall of 1995.

	Hailey	Starweather	Gimlet	Lake Creek	Hwy. channel
	Site 2	Site 3	Site 4	Site 6	Site 6A
Channel type	Meandered	Meandered	Meandered	Meandered	Meandered/ constructed
Reach length (m)	1,858	1,002	1,455	1,208	964
Reach area (ha)	3.71	2.10	2.87	1.89	1.51
Mean width (m)	19.95	20.91	19.75	15.68	15.71

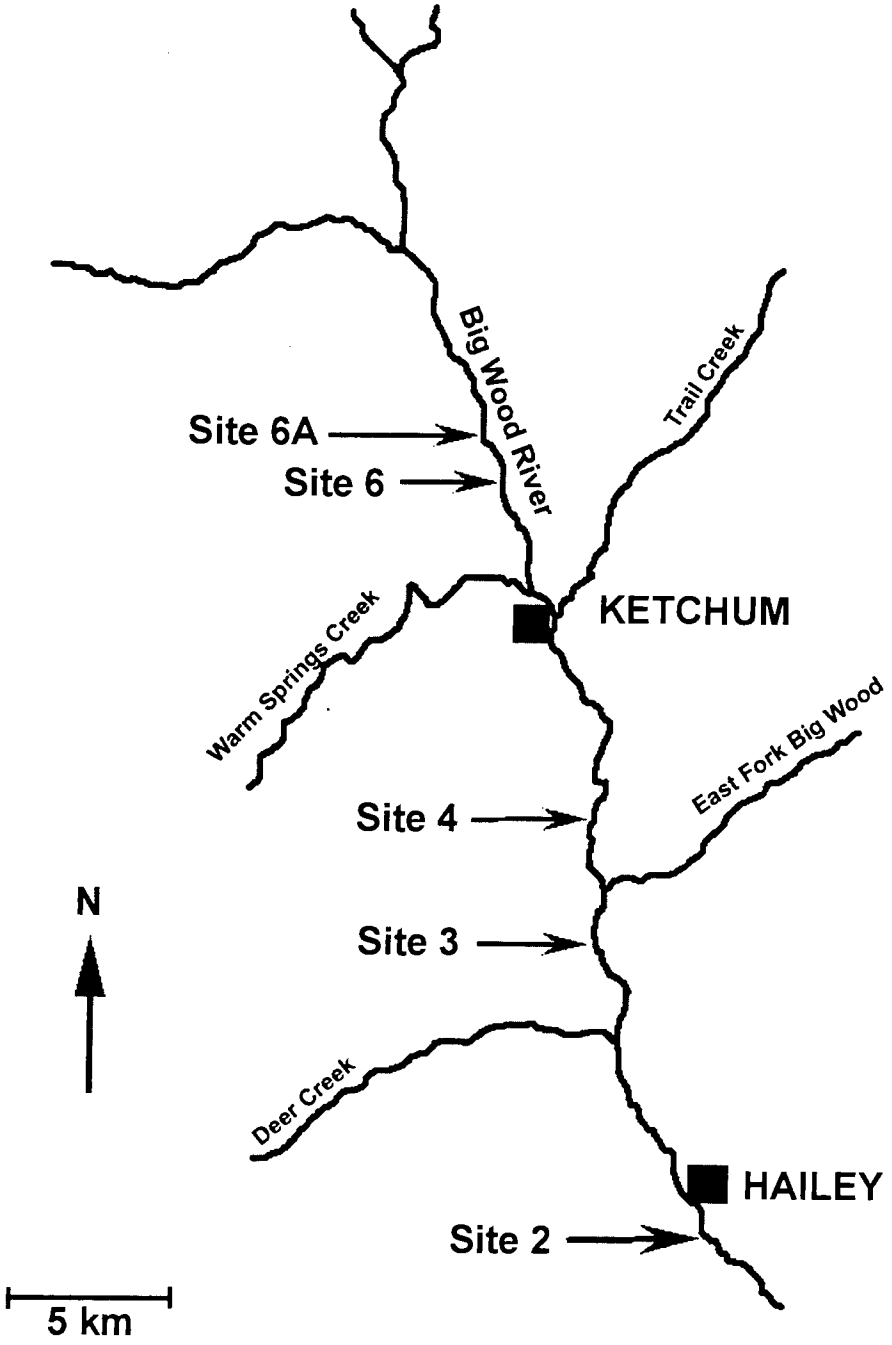

Figure 1. Map of the upper Big Wood River depicting sites sampled in 1995.

Table 3. Total length frequencies (mm) of gamefish sampled in two passes by electrofishing site 2 (at Hailey) on the Big Wood River, September 28 and October 12, 1995. Average weights (g) of a subsample of wild rainbow trout are also given.

Length Range (mm)	Hatchery rainbow trout		Wild Rainbow trout				Brook trout		Mountain whitefish	
	Length		Length		Weight		Length		Length	
	no.	%	no.	%	no.	avg.	no.	%	no.	%
0-9										
10-19										
20-29										
30-39										
40-49										
50-59			12	1.0						
60-69			19	1.5						
70-79			5	0.4					1	0.6
80-89			3	0.2			3	8.3	4	2.4
90-99			6	0.5	1	4	3	8.3	21	12.8
100-109			28	2.2			4	11.1	41	25.0
110-119			60	4.8			1	2.8	35	21.3
120-129			88	7.0					15	9.1
130-139			87	6.9	2	23	1	2.8	2	1.2
140-149			89	7.1	1	26				
150-159			85	6.7	2	33	1	2.8		
160-169			75	5.9	3	40	1	2.8		
170-179			66	5.2	2	50	2	5.6		
180-189			46	3.6	1	56	2	5.6		
190-199			68	5.4	2	61	2	5.6	2	1.2
200-209			58	4.6	1	76	1	2.8		
210-219	1	0.8	68	5.4	2	85	4	11.1	1	0.6
220-229	3	2.5	54	4.3	1	100			1	0.6
230-239	5	4.2	49	3.9	1	112	3	8.3	2	1.2
240-249	8	6.7	57	4.5					1	0.6
250-259	14	11.7	39	3.1	1	148	1	2.8		
260-269	10	8.3	37	2.9	2	178				
270-279	16	13.3	24	1.9	2	180	1	2.8		
280-289	26	21.7	23	1.8	2	208			3	1.8
290-299	15	12.5	14	1.1	1	210	2	5.6	1	0.6
300-309	13	10.8	8	0.6	1	260			2	1.2
310-319	2	1.7	8	0.6	1	280			2	1.2
320-329	3	2.5	6	0.5	1	300	3	8.3	10	6.1
330-339			4	0.3			1	2.8	2	1.2
340-349			6	0.5	1	360				

Table 3. Continued.

Length Range (mm)	Hatchery rainbow trout		Wild Rainbow trout				Brook trout		Mountain whitefish	
	Length		Length		Weight		Length		Length	
	no.	%	no.	%	no.	avg.	no.	%	no.	%
350-359	2	1.7	11	0.9					1	0.6
360-369			9	0.7	1	450				
370-379	1	0.8	3	0.2					2	1.2
380-389	1	0.8	10	0.8						
390-399			10	0.8	2	630			3	1.8
400-409			6	0.5					1	0.6
410-419			6	0.5	2	645			3	1.8
420-429			7	0.6	2	760			4	2.4
430-439			2	0.2					1	0.6
440-449			1	0.1					1	0.6
450-459									2	1.2
460-469			2	0.2						
470-479			2	0.2	1	900				
480-489										
490-499										
Number:	120		1,261				36		164	
Avg length:	276		192				187		169	
Total sampled:	120		1,261				36		164	

Table 4. Total length frequencies (mm) of nongame fish sampled in two passes by electrofishing site 2 (at Hailey) on the Big Wood River, September 28 and October 12, 1995.

Length range (mm)	Wood River sculpin Length no.	Wood River sculpin Length %	Bridgelip sucker Length no.	Bridgelip sucker Length %
0-9				
10-19				
20-29				
30-39				
40-49				
50-59	1	4.2		
60-69	3	12.5		
70-79	6	25.0	3	18.8
80-89	5	20.8		
90-99	5	20.8	2	12.5
100-109	4	16.7	3	18.8
110-119			4	25.0
120-129			2	12.5
130-139			1	6.3
140-149				
150-159				
160-169			1	6.3
170-179				
180-189				
190-199				
200-209				
210-219				
220-229				
230-239				
240-249				
250-259				
260-269				
270-279				
280-289				
290-299				
Number:	24		16	
Avg length:	81		107.38	
Total sampled:	305		17	

Table 5. Total length frequencies (mm) of fish sampled in two passes by electrofishing site 3 (at Starweather) on the Big Wood River, September 26 and October 10, 1995. Average weights (g) of a subsample of wild rainbow trout are also given.

Length range (mm)	Hatchery rainbow trout length		Wild rainbow trout length		Wild rainbow trout weight		Brook trout length		Mountain whitefish length		Wood River sculpin length	
	no.	%	no.	%	no.	avg.	no.	%	no.	%	no.	%
0-9												
10-19												
20-29												
30-39			1	0.1					1	1.9		
40-49			18	2.4								
50-59			27	3.7							1	1.7
60-69			34	4.6							8	13.6
70-79			10	1.4					3	5.6	9	15.3
80-89			7	1.0	1	7	2	16.7	2	3.7	16	27.1
90-99			10	1.4	1	7	4	33.3	4	7.4	12	20.3
100-109			33	4.5	1	11	5	41.7	15	27.8	10	16.9
110-119			69	9.4	2	14			7	13.0	3	5.1
120-129			67	9.1	2	116			4	7.4		
130-139			66	9.0	2	22						
140-149			47	6.4	1	26						
150-159			38	5.2								
160-169			32	4.4	2	45						
170-179			19	2.6	2	44						
180-189			13	1.8								
190-199			18	2.4	2	63						
200-209			24	3.3	2	72						
210-219			17	2.3								
220-229			9	1.2	2	109			2	3.7		
230-239			13	1.8	3	111			2	3.7		
240-249			16	2.2	1	140						

Table 5. Continued.

Length range (mm)	Hatchery rainbow trout length		Wild rainbow trout length		Wild rainbow trout weight		Brook trout length		Mountain whitefish length		Wood River sculpin length	
	no.	%	no.	%	no.	avg.	no.	%	no.	%	no.	%
250-259	1	100.0	17	2.3	1	144						
260-269			17	2.3	1	145						
270-279			11	1.5	2	189						
280-289			6	0.8	1	194	1	8.3				
290-299			6	0.8	2	216			1	1.9		
300-309			2	0.3					1	1.9		
310-319			4	0.5	3	263			1	1.9		
320-329			6	0.8	1	340						
330-339			4	0.5	1	335			1	1.9		
340-349			8	1.1	1	390						
350-359			10	1.4	2	418						
360-369			9	1.2	3	483						
370-379			10	1.4								
380-389			9	1.2	2	550			1	1.9		
390-399			7	1.0	2	630			3	5.6		
400-409			9	1.2	4	610						
410-419			3	0.4	2	635						
420-429			5	0.7	2	692			2	3.7		
430-439			2	0.3	2	635			2	3.7		
440-449									1	1.9		
450-459			1	0.1	1	660						
460-469												
470-479			1	0.1	1	920			1	1.9		
480-489												
490-499												
Number:	1		735				12		54		59	
Avg	255		173				109		184		85	
Total sampled:	1		735				12		54		133	

Table 6. Total length frequencies (mm) of gamefish sampled in two passes by electrofishing site 4 (at Gimlet subdivision) on the Big Wood River, September 25 and October 11, 1995. Average weights (g) of a subsample of wild rainbow trout are also given.

Length range (mm)	Hatchery rainbow trout length no.	Hatchery rainbow trout length %	Wild rainbow trout length no.	Wild rainbow trout length %	Wild rainbow trout weight no.	Wild rainbow trout weight avg.	Brook trout length no.	Brook trout length %	Mountain whitefish length no.	Mountain whitefish length %
0-9										
10-19										
20-29										
30-39			2	0.1						
40-49			27	2.0						
50-59			45	3.4					1	0.9
60-69			19	1.4			1	3.4	1	0.9
70-79			7	0.5					9	8.3
80-89			4	0.3			3	10.3	3	2.8
90-99			17	1.3	1	8	4	13.8	7	6.4
100-109			38	2.8	2	11			21	19.3
110-119			58	4.3	1	14	2	6.9	16	14.7
120-129			77	5.8	4	17			3	2.8
130-139			75	5.6	2	20			2	1.8
140-149			69	5.2	2	27				
150-159			57	4.3			1	3.4		
160-169			48	3.6	1	48				
170-179			42	3.1			2	6.9	1	0.9
180-189			44	3.3	2	52				
190-199			37	2.8	1	74				
200-209			30	2.2			4	13.8	1	0.9
210-219			30	2.2	1	98			2	1.8
220-229			36	2.7	1	102				
230-239			30	2.2	1	124	1	3.4	1	0.9
240-249			25	1.9			1	3.4	1	0.9
250-259			37	2.8						
260-269			34	2.5	4	179	1	3.4		
270-279			21	1.6	3	196	1	3.4	1	0.9
280-289			27	2.0			0	0.0	3	2.8
290-299			18	1.3	1	255	2	6.9	1	0.9

Table 6. Continued.

Length range (mm)	Hatchery rainbow trout length		Wild rainbow trout length		Wild rainbow trout weight		Brook trout length		Mountain whitefish length	
	no.	%	no.	%	no.	avg.	no.	%	no.	%
300-309			24	1.8	1	270			3	2.8
310-319			12	0.9	1	245			2	1.8
320-329	1	50.0	26	1.9	2	343	1	3.4	2	1.8
330-339	1	50.0	19	1.4	3	343	1	3.4	2	1.8
340-349			36	2.7	2	420			1	0.9
350-359			29	2.2					2	1.8
360-369			39	2.9	3	457	1	3.4	1	0.9
370-379			38	2.8	3	511.7	1	3.4	2	1.8
380-389			35	2.6	2	585			2	1.8
390-399			38	2.8	2	605				
400-409			30	2.2	3	605			1	0.9
410-419			19	1.4	1	650	2	6.9	1	0.9
420-429			24	1.8	4	730			3	2.8
430-439			7	0.5					2	1.8
440-449			4	0.3					1	0.9
450-459									7	6.4
460-469			1	0.1					1	0.9
470-479									1	0.9
480-489									1	0.9
490-499			3	0.2	2	1,200				
Number:	2		1,338				29		109	
Avg length:	325		223				207		208	
Total sampled:	2		1,338				29		109	

Table 7. Total length frequencies (mm) of nongame fish sampled in two passes by electrofishing site 4 (at Gimlet subdivision) on the Big Wood River, September 25 and October 11, 1995.

Length range (mm)	Wood River sculpin length		Bridgelip sucker length		Longnose dace length	
	no.	%	no.	%	no.	%
0-9						
10-19						
20-29						
30-39						
40-49						
50-59						
60-69	5	15.2	1	25.0	1	100.0
70-79	11	33.3				
80-89	6	18.2				
90-99	8	24.2				
100-109	3	9.1	1	25.0		
110-119			1	25.0		
120-129			1	25.0		
130-139						
140-149						
150-159						
160-169						
170-179						
180-189						
190-199						
200-209						
210-219						
220-229						
230-239						
240-249						
250-259						
260-269						
270-279						
280-289						
290-299						
Number:	33		4		1	
Avg length:	80.9		98.25		60	
Total sampled:	63		4		1	

Table 8. Total length frequencies (mm) of fish sampled in two passes by electrofishing Site 6 (Hulen Meadows) on the Big Wood River, September 27 and October 13, 1995.

Length range (mm)	Hatchery rainbow trout length no.	Hatchery rainbow trout length %	Wild rainbow trout length no.	Wild rainbow trout length %	Brook trout length no.	Brook trout length %	Mountain whitefish length no.	Mountain whitefish length %	Wood River sculpin length no.	Wood River sculpin length %
0-9										
10-19										
20-29										
30-39										
40-49			4	1.0						
50-59			20	5.0					1	12.5
60-69			8	2.0	3	11.1			3	37.5
70-79			2	0.5	5	18.5	4	7.0	1	12.5
80-89					2	7.4	2	3.5		
90-99			8	2.0	2	7.4			3	37.5
100-109			29	7.2	1	3.7	6	10.5		
110-119			30	7.5			2	3.5		
120-129			38	9.5			4	7.0		
130-139			43	10.7	1	3.7				
140-149			31	7.7						
150-159			24	6.0	4	14.8				
160-169			16	4.0	4	14.8	1	1.8		
170-179			17	4.2						
180-189			7	1.7	3	11.1				
190-199			11	2.7	1	3.7				
200-209			14	3.5						
210-219			9	2.2						
220-229			8	2.0	1	3.7				
230-239			6	1.5			1	1.8		
240-249			4	1.0						
250-259			3	0.7			2	3.5		
260-269	2	66.7	5	1.2						
270-279	1	33.3	3	0.7						
280-289			5	1.2						
290-299			5	1.2						
300-309			5	1.2						
310-319			3	0.7						
320-329							1	1.8		
330-339			3	0.7			2	3.5		
340-349							1	1.8		

Table 8. Continued.

Length range (mm)	Hatchery rainbow trout length no.	%	Wild rainbow trout length no.	%	Brook trout length no.	%	Mountain whitefish length no.	%	Wood River sculpin length no.	%
350-359			2	0.5			3	5.3		
360-369			1	0.2			2	3.5		
370-379			2	0.5			6	10.5		
380-389			5	1.2			2	3.5		
390-399			9	2.2			3	5.3		
400-409			5	1.2			2	3.5		
410-419			4	1.0			3	5.3		
420-429			3	0.7			4	7.0		
430-439			2	0.5			3	5.3		
440-449							1	1.8		
450-459			2	0.5			2	3.5		
460-469			4	1.0						
470-479										
480-489			1	0.2						
490-499										
Number:	3		401		27		57		8	
Avg length:	265		166.5		134		287		73.1	
Total sampled:	3		401		27		57		143	

Table 9. Total length frequencies (mm) of gamefish sampled in two passes by electrofishing Site 6A (at the Highway Diversion) on the Big Wood River, September 27 and October 13, 1995. Average weights (g) of a subsample of wild rainbow trout are also given.

Length range (mm)	Hatchery rainbow trout		Wild rainbow trout				Brook trout		Mountain whitefish		Wood River sculpin	
	Length		Length		Weight		Length		Length		Length	
	no.	%	no.	%	no.	avg.	no.	%	no.	%	no.	%
0-9												
10-19												
20-29												
30-39			1	0.2								
40-49			3	0.6							1	3.4
50-59			2	0.4							2	6.9
60-69							1	8.3	4	4.9	6	20.7
70-79			5	1.0					14	17.3	5	17.2
80-89			18	3.5			1	8.3	2	2.5	3	10.3
90-99			39	7.5			3	25.0			3	10.3
100-109			67	13.0	1	10	4	33.3			4	13.8
110-119			56	10.8			1	8.3	5	6.2	3	10.3
120-129			56	10.8	1	20					2	6.9
130-139			40	7.7					1	1.2		
140-149			40	7.7	1	28						
150-159			19	3.7	1	33			3	3.7		
160-169			15	2.9	1	46			2	2.5		
170-179			15	2.9	1	48	1	8.3	3	3.7		
180-189			9	1.7					1	1.2		
190-199			5	1.0	1	62						

Table 9. Continued.

Length range (mm)	Hatchery rainbow trout		Wild rainbow trout				Brook trout		Mountain whitefish		Wood River sculpin	
	Length		Length		Weight		Length		Length		Length	
	no.	%	no.	%	no.	avg.	no.	%	no.	%	no.	%
200-209			11	2.1	2	82						
210-219			11	2.1	2	102			1	1.2		
220-229			10	1.9	1	108			2	2.5		
230-239	2	22.2	6	1.2	1	140			2	2.5		
240-249			10	1.9			1	8.3	1	1.2		
250-259			9	1.7	2	163						
260-269			11	2.1	1	180			1	1.2		
270-279			3	0.6					1	1.2		
280-289	2	22.2	3	0.6								
290-299	2	22.2	4	0.8								
300-309			2	0.4	1	260						
310-319	1	11.1	4	0.8								
320-329	1	11.1	4	0.8	1	345						
330-339			5	1.0	1	425			1	1.2		
340-349			3	0.6								
350-359	1	11.1	1	0.2					1	1.2		
360-369			5	1.0	3	495			3	3.7		
370-379			4	0.8					5	6.2		
380-389			3	0.6	1	545			6	7.4		
390-399			6	1.2	1	565						

Table 9. Continued.

Length range (mm)	Hatchery rainbow trout		Wild rainbow trout				Brook trout		Mountain whitefish		Wood River sculpin	
	Length		Length		Weight		Length		Length		Length	
	no.	%	no.	%	no.	avg.	no.	%	no.	%	no.	%
400-409									5	6.2		
410-419			4	0.8					5	6.2		
420-429			1	0.2					5	6.2		
430-439			2	0.4	1	740			2	2.5		
440-449			2	0.4	2	870			4	4.9		
450-459			2	0.4	1	1,000			1	1.2		
460-469												
470-479												
480-489												
490-499												
500-509			1	0.2	1	1,175						
Number:	9		517				12		81		29	
Avg length:	289.4		162.7				114		256		83.1	
Total sampled:	9		517				12		81		79	

Table 10. Population estimates and densities of wild rainbow trout (≥100 mm) by size classes in the Big Wood River during 1995.

Reach/ size(mm)	Number marked	Number caught	Number recaptured	Population estimate	95% CI	No. 100	No./ha
Hailey, 2							
100-199	329	361	52	2,254	±555	121.5	607
200-299	249	174	47	911	±217	49.0	245
300-399	40	35	14	98	±37	5.3	26
400-499	13	13	7	25	±10	1.3	7
SUM (≥200)				1,034	±221	55.6	278
ALL ≥200	302	222	68	979	±191	52.7	263
Starweather, 3							
100-199	225	175	43	904	±229	90.2	430
200-299	84	51	15	276	±109	27.5	131
300-399	38	31	10	113	±52	11.3	54
400-499	8	13	2	42	±36	4.2	20
SUM (≥200)				431	±126	43.0	205
ALL ≥200	130	95	27	449	±138	44.7	213
Gimlet, 4							
100-199	261	281	49	1478	±368	101.6	515
200-299	139	149	43	477	±117	32.8	166
300-399	127	169	52	411	±91	28.2	143
400-499	34	54	18	101	±36	6.9	35
SUM (≥200)				989	±153	68.0	344
ALL ≥200	300	372	113	985	±150	67.7	343
Lake Creek, 6							
100-199	100	129	26	486	±160	40.2	257
200-299	34	19	6	100	±56	8.2	53
300-399	17	13	5	42	±24	3.5	22
400-499	9	7	1	40	±39	3.3	21
SUM (≥200)				182	±72	15.1	96
ALL ≥200	60	39	12	188	±81	15.6	99

Table 10. Continued.

Reach/ size(mm)	Number marked	Number caught	Number recaptured	Population estimate	95% CI	No. 100	No./ha
Highway Channel, 6A							
100-199	175	142	37	662	±178	68.7	438
200-299	43	35	10	144	±68	14.9	95
300-399	19	18	4	76	±52	7.9	50
400-499	5	6	1	21	±20	2.3	14
500	0	1	0	--	--	---	--
SUM (≥200)				241	±20	25.0	160
ALL ≥200	67	60	15	259	±106	26.9	172

Table 11. Estimated wild rainbow trout (≥200 mm) populations and densities in the Big Wood River. Data from 1986-1988 is from Thurow (1990).

Site	Year	Season	Pop. estimate	95% CI	Trout/100 m	Trout/ha
2	1986	Summer	352	218-598	17.6	97
	1987	Summer	544	292-1113	27.2	177
	1987	Fall	583	338-1093	29.2	189
	1988	Summer	1,038	749-1483	51.9	353
	1992	Fall	974	834-1114	48.7	331
	1995	Fall	979	789-1170	52.7	263
3	1986	Summer	460	254-920	43.1	211
	1986	Fall	81	42-171	7.6	37
	1987	Summer	244	147-433	22.9	137
	1987	Fall	220	128-413	20.6	123
	1988	Summer	392	278-569	36.7	232
	1991	Summer	547	350-743	45.3	191
	1993	Fall	329	221-437	30.7	92
	1995	Fall	466	320-612	46.5	222
4	1986	Summer	675	431-1898	34.1	197
	1986	Fall	455	258-878	23.0	133
	1987	Summer	955	609-1577	48.3	318
	1987	Fall	301	187-512	15.2	100
	1988	Summer	808	601-1111	40.8	276
	1992[a]	Fall	895	713-1077	79.9	406
	1993	Fall	1,001	770-1232	64.2	326
	1995	Fall	985	835-1135	67.8	343
6	1986	Summer	125	73-235	10.9	72
	1986	Fall	168	107-277	14.6	97
	1987	Summer	176	83-405	15.3	104
	1987	Fall	161	97-285	14.0	95
	1988	Summer	90	50-180	7.8	54
	1990[b]	Fall	199	141-289	12.1	86
	1991	Summer	132	94-171	11.4	81
	1992	Fall	209	171-243	18.2	129
	1993	Fall	213	141-285	17.3	118
	1995	Fall	188	106-268	15.5	100
6A	1991	Summer	126	63-189	12.9	86
	1992	Fall	113	85-141	11.6	77
	1993	Fall	269	174-364	25.2	174
	1995	Fall	259	153-365	26.9	172

[a] Section length reduced due to low river flows.
[b] Includes portion of old highway river site - Section length estimated to be 1.65 km and area of 2.32 ha.

Table 12. Estimated percentages and numbers of wild rainbow trout (≥200 mm only) which exceeded 300, 400, and 500 mm in the Big Wood River. Estimates from 1986-1988 adjusted for sampling efficiency (Thurow 1990).

		Percent			Wild rainbow trout/km		
Year	Reach	≥300	≥400	≥500	≥300	≥400	≥500
1986-1988[a]	2,3,4[a]	21	5	<0.1	76	17	0.2
1991	3	27	7	0	125	31	0
1992	2	10	1	0	51	4	0
1992	4	50	12	0	226	57	0
1993	3	28	8	0	82	22	0
1993	4	40	15	0	258	97	0
1995	2	12	2	0	66	13	0
1995	3	36	10	0	155	42	0
1995	4	52	10	0	352	69	0
1986-1988[a]	6	27	4	0.4	30	5	0.4
1990	6[b]	29	7	0	35	8	0
1991	6	21	5	0	23	5	0
1992	6	29	8	0	51	14	0
1993	6	25	2	0	51	5	0
1995	6	45	22	0	68	33	0
1991	6A	13	4	0	18	6	0
1992	6A	11	0	0	13	0	0
1993	6A	17	1	0	45	4	0
1995	6A	40	9	0	101	22	0

[a] Pooled data.
[b] Includes a portion of old highway river site, total sample length estimated to be 1.65 km.

A subsample of wild rainbow trout was observed for hook scars and the presence and incidence of the *Salmincola* sp. parasitic copepod on the gills (Table 13). Results indicate that the parasite is present on fish at all sites and that hook scars are more prevalent on fish within the catch and release area although some fish within all sites had scarring. All fish from the fall 1995 sample that were sent to the lab for pathological examination were negative for *M. cerebralis*. Although *M. cerebralis* was found in spring samples, there does not appear to be any impact on the trout population in the Big Wood River at this time.

Population and density estimates for brook trout and mountain whitefish are given in Table 14 for fish in 100 mm size classes that were greater than or equal to 100 mm. In several size classes there were not enough fish sampled for a population estimate, and many of the 95% confidence levels reflect the low numbers of fish sampled at some of the sites.

Table 13. Percent of wild rainbow trout with observed hook scars and attached parasitic copepods in the Big Wood River in 1995.

Site	Sample size	Hook scars	Number of parasites on gills			
			0	1-3	4-6	7+
2 (Hailey)	40	25%	58%	37%	5%	0%
3 (Starweather)	49	35%	31%	33%	18%	18%
4 (Gimlet)	52	46%	52%	31%	15%	2%
6 (Lake Creek)			No samples taken			
6A (Highway Channel)	42	17%	59%	22%	5%	14%

Billingsley Creek

Billingsley Creek is a spring fed stream that flows northward below the Snake River canyon rim from its origin approximately 1 km east of the Hagerman State Fish Hatchery to Lower Salmon Falls Reservoir approximately 1.2 km upriver of the dam. The stream flows for approximately 2.7 km through the Billingsley Creek Wildlife Management Area (WMA) northeast of the town of Hagerman. The average width of the stream through the WMA is approximately 20.1 m. Billingsley Creek fish were sampled by daytime electrofishing on April 27 and May 11, 1995 through the entire length of the WMA. The reach was floated with a drift boat equipped with the Coffelt VVP-15 electrofishing outfit. On April 27 all gamefish species sampled that were at least 100 mm long were marked with an upper caudal fin punch for an adjusted (Chapman) Peterson Mark-Recapture population estimate (Ricker 1975). All fish stunned were netted regardless of species for approximately three-fourths of the time electrofished. Water temperature was 15°C on both sampling days.

Table 14. Population and density estimates of brook trout and mountain whitefish (≥100 mm) by size classes in the Big Wood River during 1995.

Reach/ size (mm)	Number marked	Number caught	Number recaptured	Population estimate	95% CI	Number/ 100 m	Number/ ha
			Mountain whitefish				
Hailey, 2							
100-199	12	83	1	546	±610	29.4	147
200-299	4	5	1	15	±14	0.8	4
300-399	16	6	4	24	±10	1.3	6
400-499	7	5	4	10	±3	0.5	3
SUM (≥200)				48	±17	2.6	13
ALL ≥200	27	16	9	48	±18	2.6	13
Starweather, 3							
100-199	16	10	0	-[a]			
200-299	4	1	0	-[a]			
300-399	1	6	3[b]				
400-499	3	3	1	8	±6	0.8	4
ALL ≥200	8	10	4	20	±12	2.0	10
Gimlet, 4							
100-199	27	15	0	-[a]			
200-299	6	4	1	18	±15	1.2	6
300-399	11	6	3	21	±12	1.4	7
400-499	9	9	3	25	±17	1.7	9
SUM (≥200)				64	±26	4.4	22
ALL ≥200	26	19	7	68	±34	4.7	24
Lake Creek, 6							
100-199	20	18	2	133	±120	11.0	70
200-299	3	0	0	-[a]			
300-399	11	9	1	60	±61	5.0	32
400-499	6	9	1	35	±35	2.9	18
SUM (≥200)				99	±70	8.2	52
ALL ≥ 200	20	18	2	133	±120	11.0	70
Highway Channel, 6A							
100-199	10	5	1	33	±30	3.4	22
200-299	6	2	0	-[a]			
300-399	7	9	2	27	±27	2.8	18
400-499	4	18	4	19	±13	2.0	12
SUM (≥200)				67	±35	7.0	44
ALL ≥ 200	17	29	6	77	±47	8.0	51

Table 14. Continued.

Reach/ size (mm)	Number marked	Number caught	Number recaptured	Population estimate	95% CI	Number/ 100 m	Number/ ha
			Brook trout				
Hailey, 2							
100-199	4	10	1	28	±28	1.5	8
200-299	8	4	1	22	±20	1.2	6
300-399	3	1	1	4	-[a]	0.2	1
400-499	0	0	0	0	±0	0.0	0
SUM (≥200)				28	±20	1.5	8
ALL ≥200	11	5	2	24	±17	1.3	6
Starweather, 3							
100-199	4	1	0	-[a]			
200-299	1	0	0	-[a]			
300-399	0	0	0	0			
400-499	0	0	0	0			
Gimlet, 4							
100-199	1	4	1	5	±4	0.3	2
200-299	1	9	0	-[a]			
300-399	1	3	1	4	±3	0.3	1
400-499	0	2	1[b]	2	±1	0.1	1
SUM (≥200)				26	±26	1.8	9
ALL ≥200	2	14	2	15	±13	1.0	5
Lake Creek, 6							
100-199	9	6	0	-[a]			
200-299	1	1	0	-[a]			
300-399	0	0	0	0	±0	0	0
400-499	0	0	0	0	±0	0	0
Highway Channel, 6A							
100-199	1	5	0	0	±0	0	0
200-299	0	1	0	-[a]			
300-399	0	0	0	0	±0	0	0
400-499	0	0	0	0	±0	0	0

[a] No population estimate made due to no marked fish being recaptured.
[b] No population estimate made due to number of marked fish recaptured exceeding number of fish marked.

A total of 85 rainbow trout were sampled both days with 61 identified as fish of hatchery origin, although IDFG does not stock the stream with rainbow trout. The hatchery fish most likely escaped from some of the upstream private hatcheries. On an annual basis IDFG stocks brown trout fingerlings into the uppermost end of the WMA. Only three of the 16 rainbow trout sampled on May 11 were recaptured from the marking run, thus preventing a population estimate. A total of 24 brown trout were sampled on both days combined. There were no recaptured brown trout on May 11. Total length frequencies of all fish species sampled in both runs are given in Table 15. Nongame fish sampled included 318 Utah chub *Gila atraria* and five redside shiner *Richardsonius balteatus*.

Thousand Springs Creek

Thousand Springs Creek is a short stream originating from Snake River canyon springs approximately 58 m above the Snake River. Spring water emerges out of the canyon's formations where some is collected and diverted into a privately-owned hatchery on a bench approximately 50 m above the Snake River; the rest of it is diverted into a hydroelectric power plant operated by Idaho Power Company. The water leaves the two facilities and flows into a natural stream channel that forms Thousand Springs Creek. Immediately downstream from the power plant outflow, the stream splits into two diverging channels with approximately the same flow. The north channel averages 50 m wide and flows for approximately 800 m. The south channel averages 42 m wide and flows for approximately 550 m before entering the Snake River, thus creating an island between the Snake River and each of the channels. There is a day use park, open to the public, which is owned and maintained by Idaho Power Company near where water flows from the power plant. Most of the land surrounding the south channel of Thousand Springs Creek is owned by The Nature Conservancy, which allows public access for fishing and sightseeing.

The Nature Conservancy was concerned that some of the fish inhabiting Thousand Springs Creek, particularly nonnative brown trout, were predating on native fish species including Shoshone sculpin *Cottus greenei*. We electrofished 715 m of the north channel, 520 m of the south channel and 500 m of the Snake River adjacent to the island on the evening of June 15, 1995 for the purpose of sampling the existing fish community and to determine what some of the potentially piscivorous fish species were feeding on. A total length frequency analysis was done on all fish sampled (Tables 16-18) and a subsample of all potentially piscivorous fish species was sacrificed for stomach content analysis. Species sampled include rainbow trout of hatchery origin, rainbow trout of wild origin, mountain whitefish, speckled dace *Rhinichthys osculus* and longnose dace, peamouth chub *Mylocheilus caurinus*, redside shiner, mottled sculpin *Cottus bairdi* and unidentified sculpin species, and largescale sucker *Catostomus macrocheilus*.

A total of 16 rainbow trout ranging in total length from 215 to 440 mm (mean 295 mm) were sacrificed for stomach content analysis. Results of the analysis indicate that none of the rainbow trout consumed other fish. Food items found in the stomachs included at least two species of snails *Gastropods*, adult and larva flies *Diptera*, damselfly larva *Anisoptera*, caddisfly larva *Trichoptera*, beetle adults *Coleoptera*, water pennys *Psephenidae*, water boatmen *Corixidae*, and numerous unidentified insects. There were no vertebrates of any kind found in any of the rainbow trout stomachs.

Table 15. Fish sampled from Billingsley Creek at the wildlife management area with two electrofishing trips on April 27 and May 11, 1995. Total length frequency (mm) and mean weight (g) of some fish sampled are given.

Length range (mm)	Hatchery rainbow trout				Wild rainbow trout				Brown trout				Utah chub				Redside shiner	
	Length		Weight		Length		Weight		Length		Weight		Length		Weight		Length	
	no.	%	no.	avg.	no.	%	no.	avg.	no.	%	no.	avg.	no.	%	no.	avg.	no.	%
0-9																		
10-19																		
20-29																		
30-39																		
40-49																		
50-59																		
60-69													1	0.4				
70-79													3	1.3				
80-89													1	0.4			2	40.0
90-99					1	4.2	1	8									2	40.0
100-109					1	4.2	1	10										
110-119													5	2.1				
120-129													22	9.4	1	24	1	20.0
130-139													31	13.2	2	31		
140-149													25	10.7	7	37		
150-159													24	10.3	4	45		
160-169													7	3.0	2	49		
170-179													12	5.1	3	66		
180-189													9	3.8	2	85		
190-199													14	6.0	1	106		
200-209	1	1.6	1	77									22	9.4	3	118		
210-219					1	4.2	1	100					15	6.4	2	138		
220-229	2	3.3	2	106	1	4.2	1	110					13	5.6	1	154		
230-239	3	4.9	3	119	2	8.3	2	132					9	3.8	1	182		
240-249									1	4.2	1	154	6	2.6	1	222		
250-259	3	4.9	3	159	1	4.2	1	158					6	2.6				
260-269									1	4.2	1	190	4	1.7	1	260		
270-279	3	4.9	3	212	1	4.2	1	182	2	8.3	2	224	2	0.9				
280-289	4	6.6	4	247	1	4.2	1	219	3	12.5	3	223	1	0.4				
290-299	4	6.6	4	251					3	12.5	3	270	2	0.9				

Table 15. Continued.

Length Range (mm)	Hatchery rainbow trout				Wild rainbow trout				Brown trout				Utah chub				Redside shiner	
	Length		Weight		Length		Weight		Length		Weight		Length		Weight		Length	
	no.	%	no.	avg.	no.	%	no.	avg.	no.	%	no.	avg.	no.	%	no.	avg.	no.	%
300-309	3	4.9	3	303	1	4.2	1	210	1	4.2	1	335	234				5	
310-319	2	3.3	2	330	1	4.2	1	280	2	8.3	2	342.5	173.2				96	
320-329	4	6.6	4	411					3	12.5	3	375						
330-339	4	6.6	4	401	1	4.2	1	375	1	4.2	1	370	318				5	
340-349	2	3.3	2	350	2	8.3	2	425										
350-359	4	6.6	3	473	2	8.3	2	435										
360-369	5	8.2	5	515	2	8.3	2	460										
370-379	2	3.3	2	520	1	4.2	1	420	1	4.2	1	570						
380-389	1	1.6	1	620					1	4.2	1	475						
390-399	1	1.6	1	730	1	4.2	1	490										
400-409					1	4.2	1	615	1	4.2	1	620						
410-419	2	3.3	2	763					1	4.2	1	695						
420-429									1	4.2	1	745						
430-439	4	6.6	4	836	2	8.3	1	740										
440-449	2	3.3	2	1,100	1	4.2	1	840	1	4.2	1	960						
450-459	2	3.3	2	1,100														
460-469	3	4.9	3	1,003					1	4.2	1	1,200						
470-479																		
480-489																		
490-499																		
Number:	61				24				24									
Avg length:	336				310				328									
Total sampled:	61				24				24									

DEQ STREAM SURVEY RESULTS

The Idaho Division of Environmental Quality (DEQ) performed numerous stream surveys for its Beneficial Use Reconnaissance Project (BURP). Methods used included sampling fish with a backpack electroshocker then recording total numbers of each species of fish sampled with total length measurements on a subsample of fish. Fish sampling results are given in Table 19.

Table 16. Fish sampled by electrofishing and selectively netting for game fish species in the north channel of Thousand Springs Creek. Total length frequency in each 10 mm length group, average weight (g) of some wild rainbow trout, and percent of total sampled, June 15, 1995 are given.

Length range (mm)	Hatchery rainbow trout		Wild rainbow trout				Dace[a]		Peamouth chub		Redside shiner		Sculpin[b]	
	Length		Length		Weight		Length		Length		Length		Length	
	no.	%	no.	%	no.	avg.	no.	%	no.	%	no.	%	no.	%
0-9														
10-19														
20-29														
30-39													3	23.1
40-49													5	38.5
50-59													3	23.1
60-69							2	22.2						
70-79							4	44.4			1	100.0		
80-89							2	22.2					1	7.7
90-99			1	0.4										
100-109							1	11.1					1	7.7
110-119														
120-129									2	40.0				
130-139									3	60.0				
140-149														
150-159														
160-169														
170-179	1	100.0												
180-189			2	7.4	1	58								
190-199			2	7.4	1	68								

Table 16. Continued.

Length range (mm)	Hatchery rainbow trout		Wild rainbow trout				Dace[a]		Peamouth chub		Redside shiner		Sculpin[b]	
	Length		Length		Weight		Length		Length		Length		Length	
	no.	%	no.	%	no.	avg.	no.	%	no.	%	no.	%	no.	%
200-209			4	14.8	1	78								
210-219			4	14.8	1	95								
220-229			5	18.5										
230-239			2	7.4	2	113								
240-249			1	3.7	1	125								
250-259			1	3.7	1	148								
260-269														
270-279														
280-289														
290-299														
300-309			2	7.4	2	288								
310-319														
320-329														
330-339														
340-349			1	3.7	1	350								
350-359														
^360-369			1	3.7	1	395								
370-379														
380-389														
390-399			1	3.7	1	575								
Number:	1		27		13		9		5		1		13	
Avg. length:	175		233				74		128		75		39	
Total sampled:	1		27		13		9		5		1		13	

[a] Both longnose and speckled dace may have been present in the sample.
[b] Although mottled sculpin were confirmed to be present in the sample, several sculpin were unidentifiable to species.

Table 17. Nongame fish sampled by electrofishing the south channel and Snake River near west side of island of Thousand Springs Preserve with total length frequency in each 10 mm length group and percent of total sampled, June 15, 1995.

Length range (mm)	Largescale sucker		Dace[a]		Peamouth chub		Sculpin[b]		Redside shiner	
	Length		Length		Length		Length		Length	
	no.	%	no.	%	no.	%	no.	%	no.	%
50-59										
60-69			1	1.3			1	1.2		
70-79			4	5.0					1	100.0
80-89			4	5.0						
90-99			1	1.3						
100-109			1	1.3			1	1.2		
110-119										
120-129										
130-139					3	1.2				
140-149										
/										
200-209										
210-219	1	0.2								
220-229										
230-239										
240-249										
/										
300-309										
310-319										
320-329					1	0.4				
330-339										
340-349					2	0.8				
350-359										
360-369					1	0.4				
370-379										
380-389										
390-399										

Table 19. Synopsis of data collected in 1995 for the Idaho Department of Health and Welfare Division of Environmental Quality Beneficial Use Reconnaissance Project.

Name	EPA # 170402	Location	Mean stream width (m)	Site length (m)	Species[a] sampled (# sampled)	Max. length (mm)	Min. length (mm)	Mean length (mm)
Baker Creek (lower)	19048.00	T05N R16E S09 NE1/4 SE1/4 NW1/4	>5	140	BKT (6)	160	30	61
					RBT (2)	125	90	107.5
					SCU (6)	85	30	65
Baker Creek (upper)	19050.00	T04N R15E S11 NW1/4 NW1/4 SE1/4	<5	120	NONE			
Boulder Creek	19041.00	T05N R16E S11 NE1/4 NW1/4 SE1/4	<5	100	BKT (2)	95	90	92.5
					Unknown (2)	30	25	27.5
					SCU (27)	80	25	45.5
Cottonwood Creek	13104.00	T15S R18E S22 SE1/4 SW1/4 NW1/4	<5	100	LND (2)	60	60	60
					SD (42)	75	30	52
					SD (75)	--	--	--
					RSS (40)	95	35	56
					RSS (6)	--	--	--
					Unknown (3)	--	--	--
Cove Creek	19020.00	T04N R19E S33 SW1/4 NE1/4 NW1/4	<5	132	NONE			
Croy Creek	19058.00	T02N R17E S34 NW1/4 NE1/4 SE1/4	<5	100	WRBT (8)	190	70	152.5
Dry Creek (lower)	12043.00	T11S R20E S07 SE1/4 SE1/4 SE1/4	<5	120	LND (2)	110	80	95
					RSS (24)	120	45	82
					SD (52)	105	45	59
					Unknown (1)	110	110	110
Dry Creek (upper)	12039.00	T12S R19E S24 NE1/4 SE1/4 SE1/4	<5	100	CT (7)	200	120	

Table 19. Continued.

Name	EPA # 170402	Location	Mean stream width (m)	Site length (m)	Species[a] sampled (# sampled)	Max length (mm)	Min length (mm)	Mean length (mm)
Eagle Creek (lower)	19035.00	T05N R17E S12 SW1/4 NE1/4 SW1/4	<5	100	BKT (9) SCU (37)	115 90	50 40	61 55
Eagle Creek (upper)	19034.00	T05N R18E S01 SW1/4 NE1/4 NW1/4	<5	100	RBT (1) BKT (14)	135 220	135 55	135 110
Ellison Creek	12034.00	T09S R16E S15	<5	50	NONE			--
Greenhorn Creek	10980.00	T03N R17E S15 NE1/4 NE1/4 SW1/4	<5	100	WRBT (1) BKT (1) SCU (13)	185 255 95	185 255 45	185 255 73
Indian Creek	19079.00	T03N R18E S33 SW1/4 NW1/4 NE1/4	<5	100	BKT (14)	215	145	177
Lake Creek	19031.00	T05N R18E S17 NE1/4 SE1/4 NE1/4	<5	100	BKT (3) RBT (1) SCU (45)	130 240 110	100 240 45	113 240 71
Little Cottonwood Creek	XXX	T14S R20E S14 NE1/4 SW1/4 SW1/4	<5	100	NONE			--
Owens Creek	XXX	T02N R14E S29 NW1/4 NW1/4 SE1/4	<5	100	NONE			--
Pole Camp Creek	XXX	T14S R17E S12 SE1/4 SE1/4 SE1/4	<5	110	WRBT (3) RSS (2) SD (49)	105 100 65	40 80 45	62 90 53

Table 19. Continued.

Name	EPA # 170402	Location	Mean stream width (m)	Site length (m)	Species[a] sampled (# sampled)	Max length (mm)	Min length (mm)	Mean length (mm)
Quigley Creek	19078.00	T03N R19E S31 NW1/4 SW1/4 SW1/4	<5	100	BKT (17)	200	70	136
					SCU (1)	110	110	110
Riley Creek (lower)	12011.00	T08S R14E S06 NW1/4 SE 1/4 NW1/4	>5	400	WRBT (22)	280	50	127
					SCU (9)	80	45	65
Shoshone Creek	13091.00	T16S R16E S19 SE1/4 NW1/4 NW1/4	>5	180	SMB (3)	90	20	43
					CMC (15)	200	45	103
					SQF (8)	200	95	145
					RBT (1)	155	155	155
					WRBT (3)	125	120	123
					SCU (18)	75	30	59
					RSS (18)	135	55	93
					Unknown Suckers (71)	225	60	118
					Unknown (1)	20	20	20
Slaughter House Creek	10915.00	T02N R20E S17 SE1/4 NW1/4 SW1/4	<5	100	BKT (47)	230	50	118
Grindstone Creek	13XXX	T03N R14E S27 SE1/4 SE1/4 SE1/4	<5	130	RBT (4)	200	95	129
					WRBT (1)	140	140	140
					SCU (30)	110	40	68
					SCU (1)	--	--	--

[a] BKT=Brook trout, LND=Longnose dace, WRBT=Wild rainbow trout, RBT=Rainbow trout, SD=Speckled dace, SMB=Smallmouth bass, SCU=Sculpin, RSS=Redside shiner, CMC=Chiselmouth chub.

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1995 ANNUAL PERFORMANCE REPORT

State of: Idaho

Program: Fisheries Management F-71-R-20

Project II: Technical Guidance

Subproject II-E: Magic Valley Region

Contract Period: July 1, 1995 to June 30, 1996

ABSTRACT

Magic Valley Region fishery management personnel furnished verbal and written technical guidance to other agencies, consultants, and private individuals and organizations. Fishing information was provided to anglers in the forms of brochures, angler guides, public meetings, news releases, by telephone and in person.

Personnel commented on, participated in, or otherwise addressed and attended meetings regarding many miscellaneous fisheries activities.

Author:

Fred E. Partridge
Regional Fishery Manager

OBJECTIVE

To furnish technical assistance, advice, guidance, and comments to other agencies, organizations, and individuals regarding any items, projects, or activities associated with or potentially affecting fishery resources and habitat in the region.

RECOMMENDATIONS

Technical guidance on issues involving fishery resources in the Magic Valley Region should be continued to assist in maintaining fishery resources.

METHODS

Reviews, field inspections, comments, expertise, and recommendations were furnished to all governmental agencies, private organizations, consultants and individuals upon request. We participated in meetings, tours, and gave presentations where requested or necessary. Expertise on regional fisheries was provided to the Regional Environmental Coordinator to assist in commenting on the numerous habitat-related projects in the region.

FINDINGS

Magic Valley regional fishery management personnel collected data, inspected, commented on and\or provided advice on the following major projects in 1995:

1. Hydroelectric projects - Time was spent on ten hydro projects in the Magic Valley Region during 1995. Five of the projects are located on the Snake River and one each on the Little Wood River, Big Wood River, Malad River, Niagara Springs and Cedar Draw Creek.

2. Public information - Prepared and provided input on fishing, recreation and access brochures for the Region including Magic and Anderson Ranch reservoir brochures and the statewide angler guide. Worked with the BLM and regional tourism council on a Snake River Recreational brochure. Provided regional fishing information for ASKFISH 1-800 service and as requested by public and media. Provided information to local fishing clubs and elementary school classes on regional fisheries and basic habitat needs of fish in the Magic Valley Region.

3. Stream alterations - Evaluations of a spawning gravel site found spring and fall use by trout where a landowner had improved trout spawning in Silver Creek. Assistance was provided for the Regional Environmental Coordinator with site inspections and comments on projects on five different streams and rivers in the region.

4. Agency assistance - Regional fishery personnel provided equipment and assistance to US Geological Service, Idaho Division of Environmental Quality, US Forest Service and Bureau of Land Management in the collection of fish to provide long term monitoring of water quality conditions in rivers and streams and to document the presence or absence of fish species. Comments and data were provided to federal agencies for the Eastside Columbia Basin Assessment, various bull trout projects, and the BLM Riverwood management plan.

5. Water rights - Provided information to and worked with the Natural Resources Policy Bureau, the Department of Water Resources and private individuals on water rights and minimum flows for Billingsley Creek, Cedar Draw Creek and Jarbidge River.

6. Worked with personnel from Rupert, Albion, Featherville, and Jerome on the development and/or improvement of fishing ponds.

7. Continued to work with personnel from Amalgamated Sugar Company regarding mitigation of its spill into Rock Creek. Investigated a minor, non-lethal spill by Avonmore Cheese Company into Little Wood River.

1996 ANNUAL PERFORMANCE REPORT

State of: Idaho

Program: Fisheries Management F-71-R-20

Project III: Habitat Management

Subproject II-E: Magic Valley Region

Contract Period: July 1, 1995 to June 30, 1996

ABSTRACT

No habitat management activities were performed during this time period.

Author:

Fred E. Partridge
Regional Fishery Manager

1995 ANNUAL PERFORMANCE REPORT

State of: Idaho

Program: Fisheries Management F-71-R-20

Project IV: Population Management

Subproject IV-E: Magic Valley Region

Contract Period: July 1, 1995 to June 30, 1996

ABSTRACT

Fish populations and fishing in the Magic Valley Region were enhanced by stocking approximately 3.0 million put-and-grow and 0.6 million put-and-take size fish into lakes, reservoirs, rivers and streams accessible by vehicle. High mountain lakes were stocked with 5,500 Henrys Lake cutthroat trout *Oncorhynchus clarki* and 4,800 Arctic grayling *Thymallus arcticus* fingerlings.

Author:

Fred E. Partridge
Regional Fishery Manager

OBJECTIVES

To maintain suitable fish populations by supplementing or reestablishing desirable species and/or removal of undesirable species to provide the angling public with diverse fishing opportunities.

METHODS

Trout populations in the Magic Valley Region were supplemented with both put-and-grow (51-202 mm) and put-and-take (203-660 mm) kokanee *Oncorhynchus nerka*, rainbow trout *O. mykiss*, cutthroat trout *O. clarki*, and brown trout *Salmo trutta* which were reared primarily in Idaho Department of Fish and Game hatcheries. Other facilities which supplied trout released in the region included a private hatchery. Channel catfish *Ictalurus punctatus* were provided by Idaho Power Company mitigation for Milner Reservoir and walleye *Stizostedion vitreum* for Salmon Falls Creek Reservoir were obtained from Garrison National Fish Hatchery. Except for roadless alpine lakes and the following listed waters, all waters were stocked from hatchery trucks by hatchery personnel. Listed waters and alpine lakes, which were stocked by backpacking plastic bags of fish and water, were planted by regional personnel and volunteers.

RESULTS AND DISCUSSION

Hatchery Releases

Eight high mountain lakes were stocked with 10,300 fingerling trout and Arctic grayling *Thymallus arcticus* in the region in 1995. Independence #2 and #3, Big Lost and Hideaway lakes received 4,800 Arctic grayling and Titus, Cleveland, Big Trinity and Little Trinity lakes were stocked with 5,500 cutthroat trout. The Trinity Lakes and Lake Cleveland also receive catchable rainbow trout for diversity. Additionally, 19 rivers, streams and canals and 41 reservoirs, lakes and ponds were stocked with approximately 2.04 million put-and-grow and 0.55 million put-and-take size kokanee, rainbow and brown trout (IDFG 1996).

Little Camas Reservoir

Following a fish eradication project in Little Camas Reservoir in 1994 (Warren and Partridge In Press), trout and smallmouth bass were reestablished in 1995. A total of 14,560 catchable sized and 50,250 fingerling rainbow trout were stocked in April, 1995 and 40,950 rainbow trout fingerlings were released in September, 1995. A total of 261 smallmouth bass *Micropterus dolomieu* which were captured by Magic Valley Bass clubs fishing in Salmon Falls Creek Reservoir were released in Little Camas Reservoir on July 15, 1995.

Lower Salmon Falls Reservoir

On July 12 and August 10,1995, a total of 459 largemouth bass *Micropterus salmoides* averaging 158 mm and 144 bluegill *Lepomis macrochirus* averaging 49 mm were moved from a nearby private pond to Lower Salmon Falls Reservoir. The fish were obtained by a local fishing club for stocking into the reservoir. All the bass were marked with a left maxillary clip to monitor survival and impacts on reservoir populations.

Milner Reservoir Canals

In late October and early November, 1995 three attempts were made to salvage game fish from the upper end of the north and south side canals below Milner Reservoir by regional personnel and volunteers. Relatively few trout (<100) were collected although a few were of large size (up to 2 kg). Other game fish found were yellow perch *Perca flavescens*, brown bullhead *Ameiurus nebulosus*, mountain whitefish *Prosopium williamsoni* and channel catfish. One large catfish was estimated to weigh more than 10 kg.

Salmon Falls Creek Reservoir

Approximately one million walleye sac-fry obtained from Garrison National Fish Hatchery in North Dakota were stocked into Salmon Falls Creek Reservoir on May 20, 1995.

ACKNOWLEDGEMENTS

Numerous people assisted regional fishery personnel with work on the previous projects. Specifically, we thank Technician Karen Frank and Aide Jason Kohl who did much of the field work and data analysis, and John DerHovanisian, Jeff Dillon, Chuck Alexander and their fishery research field crew who assisted on several of the field projects. We also thank personnel in the Magic Valley Region Enforcement Bureau with their assistance and input on numerous field projects as well as volunteers with the Reservists program who put in several hours of their own time for some of our projects. Officers Roger Olson and Bob Sellers assisted with mountain lake stocking. Hatchery personnel from Hagerman and Hayspur hatcheries did the bulk of the fish rearing and distribution in the region as well as assisting on projects as needed. We also thank Sue Coughlin and Sherri Moedl who assisted with the preparation of this report.

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Submitted by:

Fred Partridge
Regional Fishery Manager

Charles D. Warren
Regional Fishery Biologist

Karen A. Frank
Fishery Technician

Approved by:

David Parrish, Regional Supervisor