

# IDAHO DEPARTMENT OF FISH AND GAME

Jerry M. Conley, Director

**FEDERAL AID IN FISH RESTORATION  
1994 Job Performance Report  
Program F-71-R-19**



**REGIONAL FISHERIES MANAGEMENT INVESTIGATIONS  
SALMON REGION (Subprojects I-H, 11-H)**

<b>PROJECT I.</b>	<b>SURVEYS AND INVENTORIES</b>
Job a.	Salmon Region Mountain Lakes Investigations
Job b.	Salmon Region Lowland Lakes Investigations
Job c.	Salmon Region Rivers and Streams Investigations
<b>PROJECT II.</b>	<b>TECHNICAL GUIDANCE</b>

By

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IDFG 96-17

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## **JOB PERFORMANCE REPORT**

State of: Idaho

Program: Fisheries Management F-71-R-19

Project I: Surveys and Inventories

Subproject I-H: Salmon Region

Job: a

Title: Mountain Lakes Investigations.

Contract Period: July 1, 1994 to June 30, 1995

### **ABSTRACT**

No mountain lakes were stocked in the Salmon Region during summer 1994 due to the extreme fire season, smoke, and lack of available helicopters.

Surveys were conducted on 15 alpine lakes in the Frank Church River of No Return Wilderness area. Each lake was surveyed for use, status of fishery, and fish population.

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LAKE LOCATION

Lake name: Terrace Lake #1 Survey date: 7/15/94  
IDFG catalog no.: 07-0626 Primary drainage: MFSR  
Secondary drainage: Waterfall Creek County: Lemhi  
USFS ranger district: Cobalt Wilderness area: FCRNR  
Section: 29 Township: T21N Range: R16E Elevation(ft): 8694

USE

No. campsites: 1 No. firepits: 1 Litter: l x m      h       
Trail around lake: complete      partial x trampled      yes      no x  
Access: good trail(mi) 11.1 poor trail(mi)      cross country(mi)       
Trailhead location: Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. fishermen: 2 Hours fished: 2 No. fish caught: 26  
Fish/hour: 13 Fish abundance: l      m      h x

Length Frequency

Species	Total Length (mm)								
	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	>400
CT			2	3	4	6			
RBT				2	5	2	1	1	
TOTAL			2	5	9	8	1	1	

Stocking History

Year	Species	Number of fish	Comments
1992	CT	750	Fry
1989	CT	1,000	Fry
1952	RBT	2,750	Fry

COMMENTS

Terrace Lake #1 is isolated from the other Terrace lakes. No natural reproduction potential exists.

LAKE LOCATION

Lake name: Terrace Lake #2 Survey date: 7/16/94  
IDFG catalog no.: 07-0627 Primary drainage: MFSR  
Secondary drainage: Waterfall Creek County: Lemhi  
USFS ranger district: Cobalt Wilderness area: FCRNR  
Section: 29 Township: T21N Range: R16E Elevation(ft): 8694

USE

No. campsites: 1 No. firepits: 1 Litter: l x m      h       
Trail around lake: complete      partial x trampled      yes      no       
Access: good trail(mi) 11.1 poor trail(mi)      cross country(mi)       
Trailhead location: Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. fishermen: 1 Hours fished: .33 No. fish caught: 7  
Fish/hour: 21 Fish abundance: l      m      h x

Length Frequency

Total Length (mm)

Species	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	>400
CT			4			1			
RBT			1						
RBT/CT					1				
TOTAL			5		1	1			

Stocking History

Year	Species	Number of fish	Comments
1992	CT	375	Fry
1989	CT	500	Fry
1952	RBT	2750	Fry

COMMENTS

Small fry 2"-3" were found in streams connecting the Terrace Lake. Outlet temp. 66°F at 3pm.

LAKE LOCATION

Lake name: Terrace Lake #3 Survey date: 7/15/94  
IDFG catalog no.: 07-0628 Primary drainage: MESR  
Secondary drainage: Waterfall Creek County: Lemhi  
USFS ranger district: Cobalt Wilderness area: FCRNR  
Section: 29 Township: T21N Range: R16E Elevation(ft): 8694

USE

No. campsites: 1 No. firepits: 1 Litter: 1 x m      h       
Trail around lake: complete      partial x trampled      yes      no  
Access: good trail(mi) 11.1 poor trail(mi)      cross country(mi)       
Trailhead location: Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. fishermen: 2 Hours fished: 1 No. fish caught: 17  
Fish/hour: 17 Fish abundance: 1      m      h x

Length Frequency

Total Length (mm)

Species	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	>400
CT			3	8		1			
RBT			3	1	1				
TOTAL			6	9	1	1			

Stocking History

Year	Species	Number of fish	Comments
1992	CT	375	Fry
1989	CT	500	Fry

COMMENTS

Spawning in streams between lakes may be adequate to sustain populations. Limited spawning habitat exists in outlet. Outlet temp. 66° F at 3:00 pm.

LAKE LOCATION

Lake name: Terrace Lake #4 Survey date: 7/15/94  
IDFG catalog no.: 07-0629 Primary drainage: MFSR  
Secondary drainage: Waterfall Creek County: Lemhi  
USFS ranger district: Cobalt Wilderness area: FCRNR  
Section: 29 Township: T21N Range: R16E Elevation(ft): 8694

USE

No. campsites: 1 No. firepits: 1 Litter: l x m      h       
Trail around lake: complete      partial x trampled      yes      no       
Access: good trail(mi) 11.1 poor trail(mi)      cross country(mi)       
Trailhead location: Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. fishermen: 2 Hours fished: 2 No. fish caught: 28  
Fish/hour: 14 Fish abundance: l      m      h x

Length Frequency

Total Length (mm)

Species	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	>400
CT			4	9	1	2	3		
RBT			4	1		2	2		
TOTAL			8	9	1	4	5		

Stocking History

Year	Species	Number of fish	Comments
1992	CT	500	Fry
1989	CT	375	Fry

COMMENTS

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LAKE LOCATION

Lake name: Gentian Lake Survey date: 7/16/94  
 IDFG catalog no.: 07-1195 Primary drainage: Panther Creek  
 Secondary drainage: Clear Creek County: Lemhi  
 USFS ranger district: Cobalt Wilderness area: FCRNR  
 Section: 21 Township: T21N Range: R16E Elevation(ft): 8530

USE

No. campsites: 3 No. firepits: 3 Litter: 1 x m      h       
 Trail around lake: complete      partial x trampled      yes      no  
 Access: good trail(mi) 7.5 poor trail(mi)      cross country(mi)       
 Trailhead location: Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. fishermen: 2 Hours fished: 1.5 No. fish caught: 12  
 Fish/hour: 8 Fish abundance: 1      m      h x

Length Frequency

Species	Total Length (mm)								
	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	>400
CT					2	4	2		
RBT				1	1	2			
TOTAL				1	3	6	2		

Stocking History

Year	Species	Number of fish	Comments
1992	CT	375	Fry

COMMENTS

The cutthroat from Gentian were heavy bodied and robust, however, no natural reproduction was apparent.

LAKE LOCATION

Lake name: Heart Lake Survey date: 7/15/94  
 IDFG catalog no.: 07-0793 Primary drainage: MFSR  
 Secondary drainage: Wilson Creek County: Lemhi  
 USFS ranger district: Cobalt Wilderness area: FERNR  
 Section: 28 Township: T21N Range: R16E Elevation(ft): 8530

USE

No. campsites: 2 No. firepits: 2 Litter: l x m      h       
 Trail around lake: complete      partial x trampled      yes      no       
 Access: good trail(mi) 8.1 poor trail(mi)      cross country(mi)       
 Trailhead location: Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. fishermen: 2 Hours fished: 3 No. fish caught: 56  
 Fish/hour: 18.6 Fish abundance: l      m      h x

Length Frequency

Species	Total Length (mm)								
	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	>400
CT	No length data available.								
TOTAL									

Stocking History

Year	Species	Number of fish	Comments
1992	CT	1,700	Fry
1989	CT	2,000	Fry
1986	RB	2,000	Fry
1983	RB	2,000	Fry

COMMENTS

Inlet contains approximately 80 feet of suitable spawning habitat.  
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LAKE LOCATION

Lake name: Ship Island Lake Survey date: 7/15/94  
 IDFG catalog no.: 07-0616 Primary drainage: MFSR  
 Secondary drainage: Ship Island Creek County: Lemhi  
 USFS ranger district: Cobalt Wilderness area: FCRNR  
 Section: 12 Township: T21N Range: R16E Elevation(ft): 7874

USE

No. campsites: 2 No. firepits: 2 Litter: l x m      h       
 Trail around lake: complete      partial x trampled      yes      no x  
 Access: good trail(mi) 11.7 poor trail(mi)      cross country(mi)       
 Trailhead location: Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. fishermen: 3 Hours fished: 3.75 No. fish caught: 19  
 Fish/hour: 5.06 Fish abundance: l      m x h     

Length Frequency

Species	Total Length (mm)								
	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	>400
RBT/GN			3	4	3	2			
CT/RBT			2	2	1	2			
TOTAL			5	6	4	4			

Stocking History

Year	Species	Number of fish	Comments
1963	CT	900	1"
1937	RBT	60,000	unk.

COMMENTS

Other anglers reported catches of 12-20 inch cutthroat.

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LAKE LOCATION

Lake name: Ship Island Lake #2 Survey date: 7/15/94  
 IDFG catalog no.: 07-0613 Primary drainage: MFSR  
 Secondary drainage: Ship Island Creek County: Lemhi  
 USFS ranger district: Cobalt Wilderness area: FCRNR  
 Section: 7 Township: T21N Range: R16E Elevation(ft): 8038

USE

No. campsites: \_\_\_\_\_ No. firepits: 0 Litter: 1 \_\_\_\_\_ m \_\_\_\_\_ h \_\_\_\_\_  
 Trail around lake: complete \_\_\_\_\_ partial x trampled \_\_\_\_\_ yes \_\_\_\_\_ no \_\_\_\_\_  
 Access: good trail(mi) 11 poor trail(mi) 1 cross country(mi) \_\_\_\_\_  
 Trailhead location: Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. fishermen: 2 Hours fished: 1.75 No. fish caught: 21  
 Fish/hour: 12 Fish abundance: 1 \_\_\_\_\_ m \_\_\_\_\_ h x

Length Frequency

Species	Total Length (mm)								
	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	>400
No data available.									
<b>TOTAL</b>									

Stocking History

Year	Species	Number of fish	Comments
1992	CT	750	Fry
1989	CT	1,000	Fry
1970	GN	2,500	1"
1969	GN	2,970	0-3"

COMMENTS

Upper Ship Island Lake has 2 inlets, one of which has fair spawning habitat. The golden trout sampled appeared to be pure stock.  
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 \_\_\_\_\_  
 \_\_\_\_\_

LAKE LOCATION

Lake name: Welcome Lake Survey date: 7/15/94  
 IDFG catalog no.: 07-0790 Primary drainage: MFSR  
 Secondary drainage: Wilson Creek County: Lemhi  
 USFS ranger district: Cobalt Wilderness area: FCRNR  
 Section: 28 Township: T21N Range: R16E Elevation(ft): 8530

USE

No. campsites: 5 No. firepits: 5 Litter: 1 x m      h       
 Trail around lake: complete x partial      trampled      yes x no  
 Access: good trail(mi) 7 poor trail(mi)      cross country(mi)       
 Trailhead location: Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. fishermen: 3 Hours fished: 3.75 No. fish caught: 31  
 Fish/hour: 8.3 Fish abundance: 1      m      h x

Length Frequency

Species	Total Length (mm)								
	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	>400
CT			12	15	1	2	1		
<b>TOTAL</b>			12	15	1	2	1		

Stocking History

Year	Species	Number of fish	Comments
1992	CT	1,700	Fry
1989	CT	3,000	Fry
1986	RBT	2,000	Fry
1983	RBT	2,000	Fry

COMMENTS

Inlet has limited spawning habitat. Lake area appears to receive heavy camping and fishing pressure. Outhouse present.

LAKE LOCATION

Lake name: Barking Fox Lake Survey date: 7/16/94  
 IDFG catalog no.: \_\_\_\_\_ Primary drainage: MFSR  
 Secondary drainage: Waterfall Creek County: Lemhi  
 USFS ranger district: Cobalt Wilderness area: FCRNR  
 Section: 29 Township: T21N Range: R16E Elevation(ft): 8530

USE

No. campsites: 1 No. firepits: 1 Litter: 1 x \_\_\_\_\_ m \_\_\_\_\_ h \_\_\_\_\_  
 Trail around lake: complete \_\_\_\_\_ partial \_\_\_\_\_ trampled \_\_\_\_\_ yes \_\_\_\_\_ no \_\_\_\_\_  
 Access: good trail(mi) 11 poor trail(mi) 1 cross country(mi) 1  
 Trailhead location: \_\_\_\_\_

FISHERY AND FISH POPULATIONS

Creel Survey

No. fishermen: 1 Hours fished: 35 min. No. fish caught: 5  
 Fish/hour: 9 Fish abundance: 1 \_\_\_\_\_ m \_\_\_\_\_ x \_\_\_\_\_ h \_\_\_\_\_

Length Frequency

Species	Total Length (mm)								
	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	>400
CT					3	2			
<b>TOTAL</b>					3	2			

Stocking History

Year	Species	Number of fish	Comments
No records	of stocking found.		

COMMENTS

Excellent inlet spawning stream with 24+ redds. Also found silted outlet stream with 3+ redds and 1 male still on redd. Lake appears to have adequate depth. Inlet water temp. 50°F and outlet water temp. 68°F at 2 pm. The outlet, Waterfall Creek, contains small WSCT up to 4" from lake downstream about 1/2 mile. Waterfall Creek has a high gradient with a series of 4 ft.+ waterfalls.

LAKE LOCATION

Lake name: Shoban Lake Survey date: 7/15/94  
 IDFG catalog no.: 07-0619 Primary drainage: MFSR  
 Secondary drainage: Ship Island Creek County: Lemhi  
 USFS ranger district: Cobalt Wilderness area: FCRNR  
 Section: 21 Township: T21N Range: R16E Elevation(ft): 8530

USE

No. campsites: 1 No. firepits: 1 Litter: 1 x m h  
 Trail around lake: complete partial x trampled yes no  
 Access: good trail(mi) 10 poor trail(mi) cross country(mi) 1/4  
 Trailhead location: Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. fishermen: 1 Hours fished: 1.25 No. fish caught: 18  
 Fish/hour: 14.4 Fish abundance: 1 m x h

Length Frequency

Total Length (mm)

Species	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	>400
CT					12	6			
TOTAL					12	6			

Stocking History

Year	Species	Number of fish	Comments
1992	CT	750	Fry
1989	CT	1,000	Fry
1986	CT	1,000	Fry
1983	CT	1,000	Fry

COMMENTS

No spawning inlet present.

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LAKE LOCATION

Lake name: Airplane Lake Survey date: 7/15/94  
 IDFG catalog no.: 07-0618 Primary drainage: MFSR  
 Secondary drainage: Ship Island Creek County: Lemhi  
 USFS ranger district: Cobalt Wilderness area: FCRNR  
 Section: 16 Township: T21N Range: R16E Elevation(ft): 8366

USE

No. campsites: 6 No. firepits: 6 Litter: 1  m  h   
 Trail around lake: complete  partial  trampled  yes  no  
 Access: good trail(mi) 10 poor trail(mi)  cross country(mi)   
 Trailhead location: Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. fishermen: 1 Hours fished: 1.5 No. fish caught: 14  
 Fish/hour: 9.3 Fish abundance: 1  m  h

Length Frequency

Species	Total Length (mm)								
	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	>400
CT				2	2	5			
RBT				2	2				
TOTAL				4	4	5			

Stocking History

Year	Species	Number of fish	Comments
1992	CT	750	Fry
1989	CT	1,000	Fry

COMMENTS

Area heavily used by the Bighorn Ourfitter camps.  
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 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

LAKE LOCATION

Lake name: Wilson Lake Survey date: 7/19/94  
IDFG catalog no.: 07-0794 Primary drainage: MFSR  
Secondary drainage: Wilson Creek County: Lemhi  
USFS ranger district: \_\_\_\_\_ Wilderness area: FERNR  
Section: 21 Township: T21N Range: R16E Elevation(ft): 8858

USE

No. campsites: 3 No. firepits: 3 Litter: l  m \_\_\_\_\_ h \_\_\_\_\_  
Trail around lake: complete \_\_\_\_\_ partial  trampled \_\_\_\_\_ yes \_\_\_\_\_ no   
Access: good trail(mi) 7 poor trail(mi) \_\_\_\_\_ cross country(mi) \_\_\_\_\_  
Trailhead location: Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. fishermen: 1 Hours fished: .5 No. fish caught: 4  
Fish/hour: 8 Fish abundance: l \_\_\_\_\_ m  h \_\_\_\_\_

Length Frequency

Total Length (mm)

Species	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	>400
CT			1	2		1			
TOTAL			1	2		1			

Stocking History

Year	Species	Number of fish	Comments
1992	CT	750	Fry
1989	CT	1,000	Fry
1986	CT	1,000	Fry
1983	CT	1,000	Fry

COMMENTS

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LAKE LOCATION

Lake name: Harbor Lake Survey date: 7/16/94  
IDFG catalog no.: 07-0796 Primary drainage: MFSR  
Secondary drainage: Wilson Creek County: Lemhi  
USFS ranger district: Cobalt Wilderness area: FCRNR  
Section: 21 Township: T21N Range: R16E Elevation(ft): 8858

USE

No. campsites: 1 No. firepits: 1 Litter: l  m  h   
Trail around lake: complete  partial  trampled  yes  no   
Access: good trail(mi) 8.3 poor trail(mi)  cross country(mi)   
Trailhead location: Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. fishermen: 2 Hours fished: 3.5 No. fish caught: 31  
Fish/hour: 8.9 Fish abundance: l  m  h

Length Frequency

Total Length (mm)

Species	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	>400
CT			2	9		12	8		
TOTAL			2	9		12	8		

Stocking History

Year	Species	Number of fish	Comments
1992	CT	2,550	Fry
1989	CT	3,000	Fry
1986	RBT	3,000	Fry
1983	RBT	3,000	Fry

COMMENTS

Lake has little spawning habitat.

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## **JOB PERFORMANCE REPORT**

State of: Idaho

Program: Fisheries Management F-71-R-19

Project I: Surveys and Inventories

Subproject I-H: Salmon Region

Job: b

Title: Lakes and Reservoirs Investigations

Contract Period: July 1, 1994 to June 30, 1995

### **ABSTRACT**

No formal sampling was conducted by regional fishery personnel in lowland lakes during 1994.

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## JOB PERFORMANCE REPORT

State of: Idaho

Program: Fisheries Management F-71-R-19

Project I: Surveys and Inventories

Subproject I-H: Salmon Region

Job: c

Title: Rivers and Streams Investigations

Contract Period: July 1, 1994 to June 30, 1995

### ABSTRACT

During summer 1994, 25 tributaries in the Salmon River drainage were surveyed in order to assess fish populations and size structure of salmonids. Tributaries surveyed included those draining into the North Fork of the Salmon River, East Fork of the Salmon River, Pahsimeroi River, Lemhi River, and mainstem Salmon River between the towns of Stanley and Shoup. Tributaries to the mainstem Salmon River were divided into two categories, those entering downstream of the town of Salmon, and those entering upstream.

Each stream was sampled by electrofishing, using multiple-pass removals to derive population estimates. Age 0 fish (< 70 mm) were not included in the population estimates due to their reduced capture probability. In all but two cases, streams were sampled at two sites, one site within 1 km of the mouth, and the second site further up the drainage above geographic features such as major side streams, steep gradient sections, or significant mining activity.

Rainbow/steelhead trout *Oncorhynchus mykiss* were the most abundant fish, observed in 19 of the 25 streams sampled. Cutthroat trout *O. clarki* were sampled in 15 streams, bull trout *Salvelinus confluentus* in 8, brook trout *S. fontinalis* in 4, and juvenile chinook salmon *O. tshawytscha* in 2. Sculpin *Coitus sp.* (16 streams) and mountain whitefish *Prosopium williamsoni* (four streams) were also enumerated but not included in population estimates.

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Mike Larkin  
Regional Fishery Manager

## OBJECTIVE

1. To determine species composition, relative abundance, and size structure of fish populations in selected Salmon Region tributaries.

## STUDY AREA AND METHODS

### All 1994 Electrofishing Transects

Fish were captured by electrofishing using a Smith-Root SR-15 backpack unit. We attempted to catch all sizes of game and non-game fish. Block nets were set at either end of the transects unless natural barriers were present (i.e., waterfall, beaver dam, or high-gradient riffle). Passes were made going upstream, with each consecutive pass being made immediately after and with equal effort to the previous pass. Two passes were generally made, with a third occasionally being needed to achieve reduction.

Captured fish were measured to fork length, placed in holding pens, and monitored for recovery until all passes were completed. Once electrofishing was completed, each fish was returned to the habitat it was captured from. We estimated relative abundance from all fish captured, and assumed that capture probabilities did not vary with species. No attempt was made to differentiate between rainbow and steelhead trout. We used the maximum likelihood estimator to estimate fish abundance and probability of capture.

Density estimates were reported as fish sampled per 100 m<sup>2</sup> of transect surface area. Because smaller fish were not efficiently sampled, only fish 70 mm and larger were used in the population estimates. All trout species were combined to derive each density estimate.

### Mainstem Salmon River Tributaries Below Salmon

Carmen, Freeman, Tower, Indian, Spring, and Squaw creeks were sampled in June 1994. Sites were chosen based on habitat representative of the stream, and fell on private, U.S. Forest Service (USFS), and U.S. Bureau of Land Management (BLM) property. Specific transect locations are on file at the Salmon Region office.

### **Mainstem Salmon River Tributaries Above Salmon**

Basin, Bayhorse, Big Hat, Challis, Garden, Morgan, Slate, Squaw, and Thompson creeks were sampled in June 1994. Transects were chosen based on habitats contained within, and fell on private, USFS, and BLM property.

### **North Fork Salmon River Tributaries**

Anderson, Deep, Hughes, and Twin creeks were sampled in June 1994, and Sheep Creek was sampled in August 1994. Transects were chosen based on habitat, and were located on private and Forest Service property. The lower Anderson Creek transect was the only one located near the mouth; the lower sites on all others were located between  $1/2$  and 2 miles above the mouths.

### **East Fork Salmon River Tributaries**

Bowery, Germania, and Sheep creeks were sampled in June 1994. All transects were located on USFS property.

### **Pahsimeroi River Tributaries**

Big Creek was sampled in July, the only Pahsimeroi River tributary we sampled in 1994. Three transects were selected in the vicinity of a proposed hydroelectric site. The uppermost transect was on Forest Service property, the lower two on BLM property.

### **Lemhi River Tributaries**

Haynes Creek was sampled in June and was the only Lemhi River tributary sampled in 1994. Two transects were sampled, both above the reservoir located four miles up from the mouth, and both on Forest Service property.

## RESULTS AND DISCUSSION

### Mainstem Salmon Tributaries Below Salmon

Rainbow/steelhead trout *Oncorhynchus mykiss* were the predominant game fish collected in five streams and were present in all six. Bull trout *Salvelinus confluentus* was the predominant species in one stream, Carmen Creek, and was present in three streams. Cutthroat trout *O. clarki* were also present in three streams, while sculpin *Cottus sp.* were present in four. These were the only species found in these tributaries (Table 1).

Indian Creek had the highest diversity, containing all four species. Squaw Creek contained all three trout species. Rainbow/steelhead were the only trout found in Freeman and Tower creeks, while bull trout *Salvelinus confluentus* was the only species found in upper Carmen Creek (Table 1).

Mean total length of all trout species captured at the 12 electrofishing transects ranged from 92.1 mm to 161.3 mm. Few fish larger than 200 mm were captured, the largest being a 275 mm bull trout found in lower Squaw Creek (Table 2).

Densities of age 1 and older (> 70 mm) trout ranged from 5.1 fish/100 m<sup>2</sup> in lower Indian Creek to 35.0 fish/100 m<sup>2</sup> in lower Squaw Creek. The two sites sampled with habitat improvements placed by the USFS, lower Squaw Creek and lower Spring Creek (28.2 fish/100 m<sup>2</sup>), yielded the two highest density estimates. A highly variable estimate of 45.3 fish/100 m was obtained in upper Tower Creek (Table 3).

Carmen Creek, with 12.0 fish/100 m<sup>2</sup> at the upper transect, had the greatest bull trout density of the 25 streams sampled this season (Table 2).

### Salmon River Tributaries Above Salmon

Rainbow/steelhead, cutthroat trout, bull trout, and brook trout *Salvelinus fontinalis* were found, along with juvenile chinook salmon *O. tshawytscha*, sculpin, and mountain whitefish *Prosopium williamsoni*. Rainbow/steelhead were present in eight of the nine streams sampled, cutthroat trout in five, brook trout in three, juvenile chinook in two, and bull trout in one. Sculpin were also present in six streams, while whitefish were found in three (Table 1).

Thompson Creek had the highest diversity, containing three game species. The remainder of the streams all contained two, with the exception of Morgan and Squaw creeks, where rainbow/steelhead was the only game species found. Cutthroat was the only species found at the lower Garden Creek site (Table 4).

Table 1. Fish species composition and relative abundance for Salmon River, East Fork Salmon River, Pahsimeroi River, North Fork Salmon River, and Lemhi River tributaries upstream of Salmon, Idaho, 1994.

Tributary, Site	Date of Survey	# Fish Captured	Fish Captured per Species							Relative Abundance						
			ck <sup>a</sup>	ct	rb/sh	bu	bk	sc	wf	ck	ct	rb/sh	bu	bk	sc	wf
Basin Crk	6/11/94	5			2	2			1			50	50			
Bayhorse, Upper	6/8/94	13		13							100					
Bayhorse, Lower	6/8/94	22		21'	1						96 <sup>b</sup>	4				
Big Hat Crk, Upper	6/12/94	5		1	4						20	80				
Big Hat Crk, Lower	6/12/94	28		1	27						4	96				
Challis Crk, Upper	6/7/94	7		3			4				43			57		
Challis Crk, Lower	6/7/94	39			6			33				100				
Garden Crk, Upper	6/8/94	56		13			22	21			37			63		
Garden Crk, Lower	6/7/94	33		11				22			100					
Morgan Crk, Upper	6/6/94	49			37			12				100				
Morgan Crk, Lower	6/6/94	30			4			26				100				
Slate Crk, Upper	6/11/94	83			9		2	72				82		18		
Slate Crk, Lower	6/11/94	47	1		37			9				100				
Squaw Crk, Upper	6/10/94	14			5			8	1			100				
Squaw Crk, Lower	6/10/94	23			1			22				100				
Thompson Crk, Upper	6/12/94	37		5	1			31			83	17				
Thompson Crk, Lower	6/12/94	51	6		7			34	4			100				

Table 1. Continued.

Tributary, Site	Date of Survey	# Fish Captured	Fishes Captured									Relative Abundance					
			ck	ct	rb/sh	bu	bk	sc	wf	ck	ct	rb/sh	bu	bk	sc	wf	
Carmen Crk, Upper	6/21/94	36				36								100			
Carmen Crk, Lower	6/3/94	17			12	1		4					92	8			
Freeman Crk, Upper	6/3/94	0															
Freeman Crk, Lower	6/21/94	33			13			20					100				
Indian Crk, Upper	6/22/94	28		3	8	1		16			25		67	8			
Indian Crk, Lower	6/22/94	26			7			19					100				
Spring Crk, Upper	6/23/94	7		3	4						43		57				
Spring Crk, Lower	6/23/94	26		2	24						8		92				
Squaw Crk, Upper	6/22/94	19		8	1	10					42		5	53			
Squaw Crk, Lower	6/22/94	31		3	27	1					10		87	3			
Tower Crk, NF	6/21/94	31			13			18					100				
Tower Crk	6/21/94	44			19			25					100				

Table 1. Continued.

Tributary, Site	Date of Survey	# Fish Captured	Fish Captured per Species							Relative Abundance						
			ck	ct	rb/sh	bu	bk	sc	wf	ck	ct	rb/sh	bu	bk	sc	wf
<b>EAST FORK SALMON RIVER TRIBUTARIES</b>																
Bowery Crk, Upper	6/10/94	4		3	1						75	25				
Bowery Crk, Lower	6/10/94	12		2	9	1					17	75	8			
Germania Crk, Upper	6/9/94	18		1		1		15	1		50		50			
Germania Crk, Lower	6/9/94	27			3			23	1			100				
Sheep Crk, Upper	6/9/94	4		4							100					
Sheep Crk, Lower	6/9/94	0														
<b>PAHSIMEROI RIVER TRIBUTARIES</b>																
Big Crk, Upper	7/26/94	13		5		8					39		61			
Big Crk, Middle	7/26/94	10		5		5					50		50			
Big Crk, Lower	7/26/94	13		2		5					29		71			

Table 1. Continued.

Triburary, Site	Date of Survey	# Fish Captured	Fish Captured per Species									Relative Abundance				
			ck	ct	rb/sh	bu	bk	sc	wf	ck	ct	rb/sh	bu	bk	sc	wf
<b>NORTH FORK SALMON RIVER TRIBUTARIES</b>																
Anderson Crk, Upper	6/23/94	18		1	9			8			10	90				
Anderson Crk, Lower	6/24/94	36			20		7	9				74		26		
Deep Crk	6/24/94	8		8							100					
Hughes Crk, Upper	6/23/94	14		2	4			8			33	67				
Hughes Crk, Lower	6/23/94	21			5			16				100				
Sheep Creek	8/11/94	23		1		4		18			20		80			
Twin Crk, Upper	6/24/94	13				3		10					100			
Twin Crk, Lower	6/24/94	16				12		4					100			
<b>LEMHI RIVER TRIBUTARIES</b>																
Haynes Crk, Upper	6/30/94	3			2			1				100				
Haynes Crk, Lower	6/30/94	39			11			28				100				

<sup>a</sup> ck = chinook salmon, ct =cutthroat trout, rb/sh = rainbow/steelhead, bu = bull trout, bk = brook trout, sc = sculpin, wf=mountain whitefish

<sup>b</sup> Rainbow/cutthroat hybrid.

` Species present but not enumerated.

Table 2. Trout population estimates for Salmon River tributaries upstream of Salmon, Idaho, 1994. Calculations for all trout > 70 mm total length.

Tributary, Site	Survey Date	Site Area (m <sup>2</sup> )	Sample Size	Density fish/100 m <sup>2</sup>	95% CI		Capture Probability	Size Range (mm)	Mean (mm)
					Lower	Upper			
Basin Crk	6/11/94	527.7	4	0.8	0.6	0.9	.80	115-210	164.8
Bayhorse, Upper	6/8/94	226.2	13	5.7	5.5	6.0	.93	100-195	152.7
Bayhorse, Lower	6/8/94	294.4	22	8.5	5.4	11.6	.63	85-140	103.8
Big Hat Crk, Upper	6/12/94	85.3	4	4.7	2.4	7.0	.80	110-165	135.0
Big Hat Crk, Lower	6/12/94	73.6	20	29.9	20.5	39.3	.67	90-168	116.0
Challis Crk, Upper	6/7/94	106.8	6	5.6	4.5	6.8	.86	87-106	97.5
Challis Crk, Lower	6/7/94	647.2	7	1.1	0.7	1.4	.78	78-259	156.8
Garden Crk, Upper	6/8/94	596.8	34	8.0	2.8	13.2	.45	82-253	131.3
Garden Crk, Lower	6/7/94	221.7	10	4.5	4.2	4.9	.91	105-155	131.0
Morgan Crk, Upper	6/6/94	245.5	31	17.9	5.5	30.3	.45	70-160	104.9
Morgan Crk, Lower	6/6/94	224.4	3	1.3	-	2.8	.75	125-175	154.7
Slate Crk, Upper	6/11/94	259	11	5.4	0.7	10.1	.38	115-215	167.3
Slate Crk, Lower	6/11/94	450.7	37	10.7	5.9	15.6	.51	125-265	213.2
Squaw Crk, Upper	6/10/94	361	5	1.6	-	4.2	.39	75-195	118.2
Squaw Crk, Lower	6/10/94	279.1	1	-	-	-	1.0	85	85.0
Thompson Crk, Upper	6/12/94	230.8	6	2.6	1.4	3.8	.75	103-235	180.7
Thompson Crk, Lower	6/12/94	329.9	7	2.1	0.2	4.7	.58	98-210	150.4

Table 2. Continued.

Tributary, Site	Survey Date	Site Area (m <sup>2</sup> )	Sample Size	Density fish/100 m <sup>2</sup>	95% CI		Capture Probability	Size Range (mm)	Mean (mm)
					Lower	Upper			
LOWER SALMON RIVER TRIBUTARIES									
Carmen Crk, Upper	6/21/94	317.1	33	12.0	8.7	15.3	.48	57-205	132.6
Freeman Crk, Lower	6/21/94	113.1	13	14.1	3.7	24.6	.54	78-170	110.2
Indian Crk, Upper	6/22/94	173.7	12	7.5	4.3	10.7	.67	125-270	161.3
Indian Crk, Lower	6/22/94	137.5	7	5.1	3.4	6.8	.78	87-205	137.1
Spring Crk, Upper	6/23/94	44.25	6	13.4	10.8	16.3	.86	110-210	149.2
Spring Crk, Lower	6/23/94	92.3	26	29.3	24.7	33.8	.77	70-147	100.4
Squaw Crk, Upper	6/22/94	124.2	13	11.3	7.1	15.5	.68	74-210	141.2
Squaw Crk, Lower	6/22/94	85.7	26	35.0	23.0	47.0	.62	70-275	115.7
Tower Crk, NF	6/21/94	143.6	13	45.3	-	420.7	.07	71-137	92.1
Tower Crk, Lower	6/21/94	210.9	19	9.0	8.2	9.8	.86	95-200	136.0
PAHSIMEROI RIVER TRIBUTARIES									
Big Crk, Upper	7/26/94	420.2	13	3.1	2.9	3.3	.81	80-285	183.4
Big Crk, Middle	7/26/94	233.8	10	4.3	4.1	4.5	.83	140-270	216.0
Big Crk, Lower	7/26/94	332.7	7	2.4	0.2	4.6	.58	75-235	158.6

Table 2. Continued.

Tributary, Site	Survey Date	Site Area (m <sup>2</sup> )	Sample Size	Density fish/100 m <sup>2</sup>	95% CI		Capture Probability	Size Range (mm)	Mean (mm)
					Lower	Upper			
EAST FORK SALMON RIVER TRIBUTARIES									
Bowery Crk, Upper	6/10/94	197.5	3	1.5	-	3.1	.75	115-250	146.3
Bowery Crk, Lower	6/10/94	117	12	10.3	8.3	12.3	.80	110-244	140.0
Germania Crk, Upper	6/9/94	501.7	2	0.4	-	1.2	.75	95-160	127.5
Germania Crk, Lower	6/9/94	554.6	2	0.4	-	1.1	.75	130-135	132.5
Sheep Crk, Upper	6/9/94	83.3	4	4.8	-	10.4	.50	77-105	90.3
NORTH FORK SALMON RIVER TRIBUTARIES									
Anderson Crk, Upper	6/23/94	57.8	4	6.9	3.6	10.3	.80	70-120	94.3
Anderson Crk, Lower	6/24/94	64.8	16	38.5	-	85.2	.28	73-230	110.8
Deep Crk	6/24/94	40	8	20	13.8	26.2	.62	118-165	135.5
Hughes Crk, Upper	6/23/94	236.0	5	2.5	-	6.4	.39	70-155	122.0
Hughes Crk, Lower	6/23/94	148.4	3	2.0	-	4.8	.75	80-145	104.3
Sheep Crk	8/11/94	185.9	5	2.7	1.5	3.9	.63	105-220	172.0
Twin Crk, Upper	6/24/94	168.8	3	1.8	-	3.7	.75	134-191	163.3
Twin Crk, Lower	6/24/94	289.3	12	4.2	3.3	5.0	.80	110-205	143.6
LEMHI RIVER TRIBUTARIES									
Haynes Crk, Upper	6/30/94	184.5	2	1.1	1.1	3.4	.75	90-135	112.5
Haynes Crk, Lower	6/30/94	375.8	10	2.7	2.5	2.9	.91	95-165	126.0

Table 3. Population densities of rainbow/steelhead trout in Salmon Region tributaries, 1994.

Tributary, Site	Sample Size	Density fish/100 m <sup>2</sup>	95% CI		Size Range (mm)	Mean (mm)
			Lower	Upper		
Anderson, Lower	9	18.5	-	40.5	73-160	90.8
Bowery, Lower	9	7.7	5.2	10.2	110-154	131.0
Big Hat, Upper	3	3.5	-	7.3	110-165	139.3
Big Hat, Lower	19	27.2	19.7	33.4	90-160	113.3
Freeman, Lower	13	14.1	3.7	24.6	80-170	110.2
Haynes, Lower	10	2.7	2.5	2.9	95-165	126.0
Hughes, Upper	3	2.1	-	13.5	70-125	105.0
Hughes, Lower	3	2.0	-	4.2	80-145	104.3
Indian, Upper	8	4.6	2.7	6.5	125-200	161.3
Indian, Lower	7	5.1	3.4	6.8	87-205	137.1
Morgan, Upper	31	17.9	<b>5.5</b>	30.3	70-160	104.5
Morgan, Lower	3	1.3	-	2.8	125-175	154.7
Slate, Lower	37	10.7	5.9	15.6	125-265	213.2
Spring, Upper	4	9.0	4.6	13.4	125-170	140.0
Spring, Lower	24	26.0	23.3	28.7	70-147	100.4
Squaw <sup>a</sup> , Upper	5	1.6	-	4.2	75-195	118.2
Squaw <sup>b</sup> , Lower	22	28.0	20.6	35.4	70-275	115.7
Thompson, Lower	7	2.1	0.2	4.7	98-210	150.4
Tower, Lower	19	9.0	8.2	9.8	95-200	136.0
Tower, Upper	13	45.3	-	420.7	71-137	92.1

<sup>a</sup> = tributary above Challis

<sup>b</sup> = tributary below Salmon

Table 4. Population densities of cutthroat trout in Salmon Region tributaries, 1994.

Tributary, Site	Sample Size	Density		95% CI		Size Range (mm)	Mean (mm)
		fish/100 m <sup>2</sup>		Lower	Upper		
Bayhorse, Upper	13	5.7	5.5	6.0		100-195	152.7
Big Crk, Upper	5	1.2	1.1	1.3		80-250	152.4
Big Crk, Middle	5	2.1	1.9	2.3		195-275	235.0
Deep Crk	8	20.0	13.8	26.2		118-165	135.5
Garden, Upper	13	2.3	1.5	3.2		82-253	144.3
Garden Lower	10	4.5	4.2	4.9		105-155	131.0
Hughes, Upper	2	0.85		2.9		140-155	147.5
Indian, Upper	3	1.7	-	3.6		125-270	175.0
Sheep <sup>a</sup> , Upper	4	4.8		10.4		77-105	90.3
Spring, Upper	3	6.9	- -	14.0		110-210	158.3
Squaw <sup>b</sup> , Upper	5	4.0	2.8	5.2		96-210	126.2
Squaw <sup>b</sup> , Lower	3	3.5	-	14.5		115-162	144.0
Thompson, Upper	5	2.2	0.7	3.6		103-225	169.8

<sup>a</sup>= tributary to East Fork Salmon River

<sup>b</sup>= tributary to Salmon River below Salmon, ID

The mean total length of fish found in lower Slate Creek, 213.1 mm, was due to the recent planting of hatchery steelhead. The mean total length at the other 15 sampling sites ranged from 97.5 mm to 180.7 mm (Table 2).

Densities of age 1 and older (>70 mm) fish ranged from 0.8 fish/100 m<sup>2</sup> in Basin Creek to 29.9 fish/100 m<sup>2</sup> in lower Big Hat Creek. Not enough fish were found in lower Squaw Creek to provide a density estimate (Table 2).

Cutthroat trout were found in greatest density (5.7 fish/100 m<sup>2</sup>) at the upper Bayhorse Creek site, where they were the only salmonids present. The two largest individuals, 252 mm and 253 mm long, were both captured in upper Garden Creek (Table 2).

Juvenile chinook salmon were found in Slate and Thompson creeks. All chinook captured measured less than 60 mm in length.

Rainbow x cutthroat hybridization appeared to be occurring in lower Bayhorse Creek. All but 1 of the 22 fish captured (96%) displayed at least some degree of hybridization.

### **North Fork Salmon River Tributaries**

Rainbow/steelhead were the predominant trout in two of four streams sampled. Cutthroat were found in three streams, while bull trout and brook trout were each found in one. Sculpin were found in three streams (Table 1).

Mean total length of the seven transects ranged from 94.3 mm to 163.3 mm. Few fish larger than 175 mm were seen, the largest being a 230 mm brook trout in lower Anderson Creek (Table 2).

Densities of age 1 and older fish (>70 mm) ranged from 1.8 fish/100 m<sup>2</sup> in upper Twin Creek to 38.5 fish/100 m<sup>2</sup> in lower Anderson Creek (Table 2).

Bull trout were the only salmonids found in Twin Creek, and were most numerous in the habitat improvement structures placed by the Forest Service (Table 5).

Deep Creek, with 20.0 fish/100 m<sup>2</sup>, had the highest cutthroat trout density of any of the 25 streams sampled this season (Table 2).

Table 5. Population densities of bull and brook trout in Salmon Region tributaries, 1994.

Tributary, Site	Sample Size	Density	95 % CI		Size Range (mm)	Mean (mm)
		fish/100 m <sup>2</sup>	Lower	Upper		

**BULL TROUT**

Big Crk, Upper	8	1.9	1.6	2.2	155-285	202.8
Big Crk, Middle	5	2.1	1.6	2.7	140-240	197.0
Big Crk, Lower	5	1.5	1.1	1.9	75-220	147.0
Carmen, Upper	33	12.0	8.7	15.3	90-205	132.6
Sheep Crk <sup>a</sup>	4	2.2	0.5	3.8	105-220	170.0
Twin Crk, Upper	3	1.8	-	3.7	134-191	163.3
Twin Crk, Lower	12	4.2	3.3	5.0	110-205	153.2

**BROOK TROUT**

Anderson, Lower	7	12.3	1.4	23.3	93-230	136.4
Challis, Upper	4	3.7	1.9	5.6	87-98	94.0
Garden, Upper	21	5.5	-	11.8	92-183	123.3

<sup>a</sup>= tributary to North Fork Salmon River

### **East Fork Salmon River Tributaries**

Cutthroat trout were found in all three creeks sampled, while rainbow/steelhead and bull trout were each found in two streams. Sculpin and mountain whitefish were each found in one stream (Table 1).

Both Bowery and Germania creeks contained all three trout species; Sheep Creek contained only cutthroat trout (Table 1).

Mean total lengths found at the six sampling sites ranged from 90.3 mm to 146.3 mm; the largest individual was a 244 mm cutthroat trout captured in Bowery Creek (Table 2).

Densities of age 1 and older ( $> 70$  mm) fish ranged from 0.4 fish/100 m<sup>2</sup> on Germania Creek to 10.3 fish/100 m<sup>2</sup> on lower Bowery Creek. No fish were found at the lower Sheep Creek transect (Table 2).

A hatchery steelhead was captured at the upper Bowery Creek transect, indicating that fish are successfully passing the barrier on lower Bowery Creek.

At the time of sampling, Sheep Creek was dried out before reaching the East Fork Salmon River.

### **Pahsimeroi River Tributaries**

Bull trout was the predominant species captured at the Big Creek transects, accounting for 67% of the trout captured. Cutthroat trout composed the other 33 %; sculpin were also present (Table 1).

Nearly half (44%) of the bull trout captured were  $> 200$  mm in length, with the largest individual measuring 285 mm. Exactly half of the cutthroat trout were also over 200 mm, with the largest measuring 270 mm (Table 2).

Trout densities at the three transects ranged from 2.4 fish/100 m<sup>2</sup> to 4.3 fish/100 m<sup>2</sup>. Bull trout densities ranged from 1.5 to 2.1 fish/100 m<sup>2</sup> (Table 2).

## JOB PERFORMANCE REPORT

State of: Idaho

Program: Fisheries Management F-71-R-19

Project II: Technical Guidance

Subproject II-H: Salmon Region

Contract Period: July 1, 1994 to June 30, 1995

### ABSTRACT

During 1994, technical assistance was provided to all state and federal agencies upon request. Comments were submitted to various agencies and private entities concerning stream alterations, bank stabilizations, mining operations and reclamation plans, fish rearing proposals, private ponds, water right applications, grazing allotments, timber sales, highway reconstruction, habitat improvements, bridge construction, and hydropower projects. On-site inspections of proposed, on-going, and completed projects were conducted.

Also, we responded to the general public in person, by telephone, and by mail to inquiries about fishing opportunities, techniques, regulations, and area specifics.

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## OBJECTIVES

1. To furnish technical assistance, advice, guidance, and comments to other federal, state and local agencies, organizations, or individuals regarding any items, projects, or activities associated with or potentially affecting fishery resources and habitat in the region.
2. To provide information on all aspects of fisheries and aquatic habitat as requested.

## METHODS

We responded to all requests for data, expertise, and recommendations from individuals, government agencies, and corporations. Meetings were attended, field inspections conducted, and responses generated as appropriate.

## RESULTS

From July 1, 1993 to June 30, 1994 we responded in writing to requests for technical assistance or comments on various water and fishery-related matters as follows:

Agency	Number of requests
Idaho Department of Water Resources	24
U.S. Forest Service	18
Private and Miscellaneous	10
Idaho Outfitters & Guides Licensing Board	2
Trout Unlimited	1
Idaho Dept. of Transportation	1

Telephone communication was the major mode of interagency contact. Commonly, we responded to stream alteration proposals by meeting with the applicant on-site, determining the nature of the situation, and sending written comments to the appropriate agency. Due to the remoteness of the Salmon Region, we were often the only agency representatives available to conduct on-site inspections.

We responded to numerous inquiries from the public (by telephone, letter, and in person) about when, where, and how to participate in various fisheries in the region, ranging from steelhead angling to alpine lake fishing.

We reported weekly steelhead fishing results on the local radio station and in area newspapers throughout the season.

### **RECOMMENDATIONS**

1. Technical guidance on issues involving fishery resources in the Salmon Region should be continued to assist in maintaining fishery resources in the region.
2. Because of the number of requests for technical guidance and the potential impacts of projects to remaining fish resources in Salmon the Region, consideration should be given to adding additional staff in the region to administer to habitat issues.

**Submitted by:**

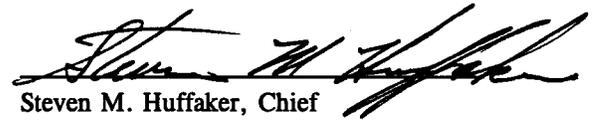
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