

IDAHO DEPARTMENT OF FISH AND GAME

FEDERAL AID IN FISH RESTORATION
2001 Job Performance Report
Program F-71-R-26



REGIONAL FISHERIES MANAGEMENT INVESTIGATIONS CLEARWATER REGION (Subprojects I-B, II-B, III-B, IV-B)

- PROJECT I. SURVEYS AND INVENTORIES**
- Job a. Clearwater Region Mountain Lakes Investigations
 - Job b. Clearwater Region Lowland Lakes Investigations
 - Job c. Clearwater Region Rivers and Streams Investigations

By

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JOB PERFORMANCE REPORT

State of: Idaho

Program: Fisheries Management F-71-R-26

Project I: Surveys and Inventories

Subject I-B: 2001 Clearwater Region

Job: a

Title: Mountain Lake Investigations

Contract Period: July 1, 2001 to June 30, 2002

Period Covered: January 1, 2001 to December 31, 2001

ABSTRACT

Eleven mountain lakes were surveyed in the Nez Perce National Forest during July-August 2001. None of the lakes surveyed in 2001 are recommended for stocking with hatchery-reared trout.

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INTRODUCTION

The High Lakes Fisheries Project was initiated as a cooperative program of the US Forest Service (USFS) and the Idaho Department of Fish and Game (Department) in 1986. The goal of the program is to develop baseline ecological data on high mountain lakes within the Clearwater and Salmon River drainages of north central Idaho. During the period 1986 through 2000, 431 individual mountain lakes were surveyed in the Clearwater and Nez Perce national forests (Bahls 1990, Bahls 1992, Cochnauer and Phillips 1994, Cochnauer and Murphy 1996, Cochnauer and Murphy 1997, Cochnauer and Murphy 1998, Cochnauer and Murphy 1999, Cochnauer and Peterson 2000). Of these, 211 lakes are on the Nez Perce National Forest and 220 on the Clearwater National Forest.

In 2001, the project continued on the Nez Perce National Forest as a partnership between the Nez Perce National Forest and the Department. This report presents the findings for the 11 lakes surveyed in 2001: seven draining into the Selway River and four into the Salmon River.

OBJECTIVES

The objectives of the 2001 survey were to obtain, analyze, and summarize data to be used for:

1. Biological, physical, and chemical inventory of mountain lakes;
2. Long-term monitoring;
3. Ecological effect of fish introductions; and
4. Development of fish management guidelines for individual lakes.

METHODS

The standardized high mountain lake survey methodology as described by Bahls (1991) was used to survey mountain lakes located in the Selway and Salmon River drainages (Figure 1) from July 1 to August 30, 2001.

RESULTS AND DISCUSSION

The location, description and proposed management direction based on information collected for each lake are presented in Table 1. Of the 11 lakes surveyed for the initial time, only three (lower Brandon, Oregon Butte and Running lakes) supported fish. Amphibians, spotted frogs *Rana luteiventris* and long-toed salamanders *Ambystoma macrodactylum* populations, were observed in almost all of the lakes. Salamanders, generally, were absent or in small numbers in lakes that supported fish. Detailed data for amphibians as well as other lake descriptors are found in Appendix A. Individual lake narratives as to management prescriptions follow.

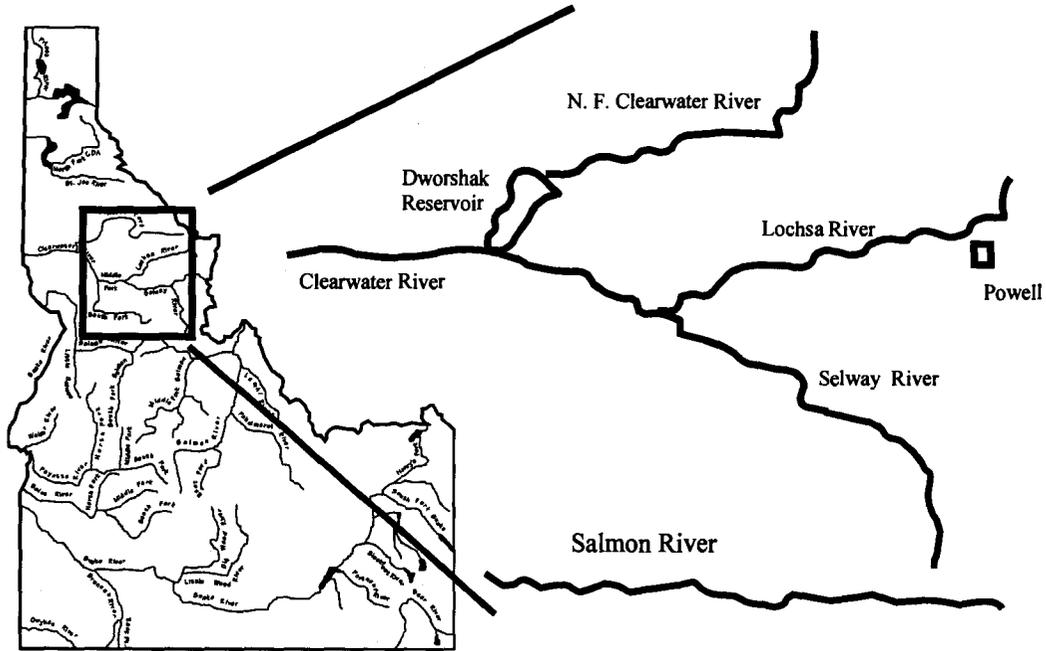


Figure 1. General location of high mountain lakes surveyed in Nez Perce National Forest, 2001.

Brandon Lake, Lower

Lower Brandon Lake is a relatively small (<1.0 ha), shallow (<3 m depth) mountain lake that supports a small population of rainbow *Oncorhynchus mykiss*, cutthroat *O. clarkii* and rainbow/cutthroat trout. One of the five inlets has abundant, high quality spawning gravel. The lake also supports a small population of spotted frogs. Fish stocking is not recommended because of the lakes' shallow nature and the existing natural reproduction of trout.

Brandon Lake, Upper

Upper Brandon Lake is a relatively small (<1.0ha), shallow (<3 m depth) mountain lake that is fishless. The lake does support small populations of spotted frogs and long-toed salamanders. Fish stocking is not recommended because of the lake's shallow nature.

Fox Peak Lake, #1

Fox Peak Lake, #1, is a small (<1 ha), shallow (90% <3 m depth) mountain lake that is fishless. The lake does support a small population of spotted frogs and long-toed salamanders. Fish stocking is not recommended because of the lake's shallow nature.

Fox Peak Lake, #2

Fox Peak Lake, #2, is a small (<1 ha), shallow (<3 m depth) mountain lake that is fishless. The lake does support small populations of spotted frogs and long-toed salamanders. Fish stocking is not recommended because of the lake's shallow nature.

Horseshoe Lake

Horseshoe Lake is a medium-sized; relatively shallow (75% <3 m depth) mountain lake that is fishless. The lake supports large populations of spotted frogs and long-toed salamanders. Fish stocking is not recommended because of the lake's shallow nature.

Lonesome Lake

Lonesome Lake is a medium-sized, shallow (<3 m depth) mountain lake that is fishless. The lake does support small populations of spotted frogs and long-toed salamanders. Fish stocking is not recommended because of the lake's shallow nature.

Oregon Butte Lake

Oregon Butte Lake is a medium-sized, deep mountain lake that supports a viable population of cutthroat trout. There appears to be some natural reproduction with two or three age classes represented in the sample. The inlet has abundant suitable spawning substrate. Fish stocking is not recommended because of the lake's shallow nature.

Running Lake

Running Lake is a relatively large (>8 ha), deep mountain lake that supports an abundant population of naturally reproducing brook trout *Salvelinus fontinalis*. The lake also supports a small population of spotted frogs. Fish stocking is not recommended for Running Lake because of the presence of brook trout.

Section 28 Lake

Section 28 Lake is a small (<1ha), shallow (<3 m depth) mountain lake that is fishless. The lake does support small populations of spotted frogs and long-toed salamanders. Fish stocking is not recommended because of the lake's shallow nature.

Squaw Lake

Squaw Lake is a small (<1.0 ha), shallow (<3 m depth) mountain lake that is fishless. The lake does support small populations of spotted frogs and long-toed salamanders. Fish stocking is not recommended because of the lake's shallow nature.

Table 1. Location and proposed management direction for mountain lakes surveyed in the Clearwater National Forest, 1999.

Lake Name	Legal Description			Class
	Town	Range	Sec.	
Brandon, Lower	T25N	R06E	09	Ila
Brandon, Upper	T25N	R06E	09	Ib
Fox Peak #1	T34N	R13E	11/12	Ib
Fox Peak #2	T34N	R13E	11/12	Ib
Horseshoe	T25N	R06E	04	Ib
Little Park	T33N	R15E	29/30	Ib
Lonesome	T31N	R12E	28/33	Ib
Oregon Butte	T25N	R06E	12	Ila
Running	T30N	R11E	23/26	Ila
Section 28	T35N	R13E	28/33	Ib
Squaw Meadows	T26N	R06E	8/9	Ib

*Lakes have not been stocked with fish and should not be added to the stocking rotation.
 Class Ib-fishless lake with no past stocking record; Ila-natural trout reproduction at moderate or high level.

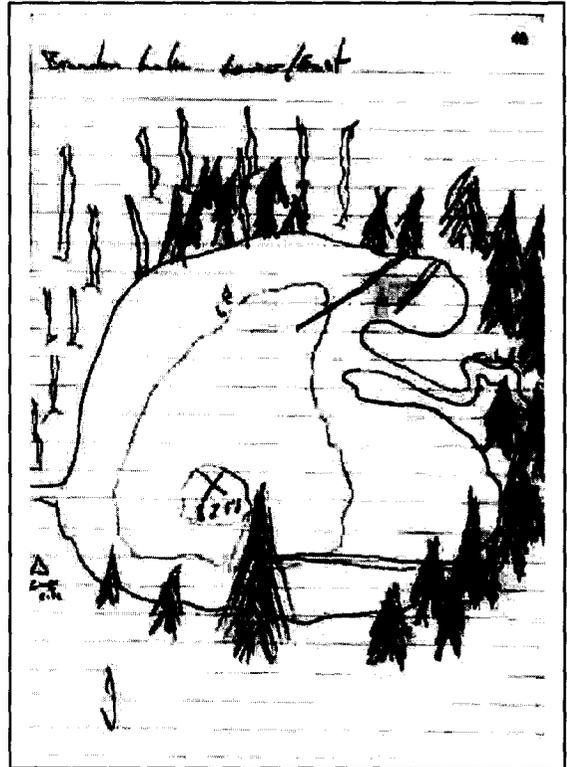
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APPENDIX

BRANDON LAKE, LOWER

Lake Description: Lower Brandon Lake is located 750 meters east of upper Brandon Lake. Lower Brandon Lake is a small (<1.00 ha), relatively shallow mountain lake that is located about 6.25 km southwest of USFS Road 233 in the Gospel Hump Wilderness Area. Access to lake is by trailhead number 202, with 0.25 km of bushwhacking. The lake has a small population of rainbow trout, westslope cutthroat trout, and rainbow/cutthroat trout hybrids that are naturally reproducing. Inlet (5) is a high quality spawning inlet, and full of gravel. The lake contains a small population of spotted frogs, and egg masses. A low impact campsite was observed.



Legal Description: Section: 9 Township: 25N Range: 6E

Survey Date: 7/08/01

HABITAT PARAMETERS

CHEMICAL DATA

Conductivity (ms): NA

pH: NA

PHYSICAL DATA

Surface Area (hectares): <1.00

Aspect: NA Lake Elevation (m): 2444

Maximum Depth (m): 2.7 Secchi Disc: NA

Water Temperature °C (shallow): 16

Percentage bottom composition of the lake shoreward of the 3 m. contour line.

Bedrock (Br)	solid rock outcrop	:	0
Boulders (Bo)	rocks > 305 mm dia.	:	2
Rubble (Ru)	304. mm > rocks > 76.1 mm dia	:	0
Gravel (Gr)	76.0 mm > rocks > 4.81 mm dia.	:	0
Sand (Sa)	4.71 mm > rocks > 0.83 mm dia.	:	0
Silt (Si)	particles < 0.83 mm dia.	:	68
Organic debris (Od)		:	28
Logs		:	2
Shallow littoral zone (< 3 m), (%) of lake surface area			100

BRANDON LAKE, LOWER

Major lake inlet(I), or outlet(O)

Stream Characteristics	1	2	3	4	5
Inlet (I), Outlet (O)	O	I	I	I	I
Width (m)	2.00	5.00	5.00	5.00	1.00
Depth (m)	0.3	0.05	0.05	0.05	0.50
Flow velocity (1-4)	1	1	1	1	1
Substrate dominate	Sa/Od/Gr	Si	Si	Si	Gr/Sa
Barrier type	Falls	Seep	Seep	Seep	Underground
% Spawn substrate (SA/GR)	3	0	0	0	75
# of fish observed	0	0	0	0	14
Number of seeps	3				

Stream data was collected to 50m from lakeshore, or to barrier.

BIOLOGICAL DATA

Zooplankton, shrimp, and aquatic invertebrates

Surface collection (hand held dip net)

Hemiptera – Family: Gerridae

Odonata – Family: Aeshnidae

Trichoptera – Family: Limnephilidae

Zooplankton sample (deep) using plankton net sampler

Cladocera – Family: Daphnidae

Copepoda – Family: Cyclopoida

Copepoda – Family: Diaptomidae

Diptera – Family: Chironomidae

Hydracarina – Family: unknown

TERRESTRIAL VEGETATION

Forest percent coverage: **55%**

Tree species and percent coverage for each: Subalpine fir 90%, Whitebark pine 10%.

Open ground percent: **45%**

Dominant types: shrubs, grass, and talus slopes

BRANDON LAKE, LOWER

ANIMAL OBSERVATIONS

Species	# Observed	Notes
Spotted Frog (adult)	8	Around lake.
Spotted Frog (egg masses)	10	In lake.
Pika	2	Calls.
Pine Squirrel	1	Around lake.

FISHERIES POPULATION DATA

Fish species present in lake (12 hour gill net set and angling)

Rainbow trout – 14 in gill net, westslope cutthroat – 6 in gill net, RBT X WCT – 7 in gill net

Stocking record for the lake: IDFG # 0255

Date Stocked	Species	# Stocked	# Fish per Surface Hectare
1969	CT	1000	1000
1975	CT	766	766
1978	CT	1000	1000
1981	RBT & CT	1000	1000
1984	WCT	996	996
1987	WCT	1000	1000

12 hour gill net results:

Fish caught	species	Length (mm)			Weight (g)		
		Min.	Max.	Mean	Min	Max.	Mean.
14	RBT	110	320	NA	NA	NA	NA
6	WCT	110	280	NA	NA	NA	NA
7	RBT X WCT	NA	NA	NA	NA	NA	NA

Note: Not every fish caught had measurements taken so the means could not be calculated. No measurements were taken on RBT X WCT.

BRANDON LAKE, LOWER

Length, weight, and age of rainbow trout collected from gill net sample in Lower Brandon Lake

<u>Length (mm)</u>	<u>Weight (g)</u>	<u>Age</u>
320	NA	NA
310	NA	NA
280	NA	NA
280	NA	NA
260	NA	NA
250	NA	NA
230	NA	NA
220	NA	NA
210	NA	NA
210	NA	NA
190	NA	NA
160	NA	NA
130	NA	NA
110	NA	NA

Length, weight, and age of Westslope cutthroat collected from gill net sample in Lower Brandon Lake.

<u>Length (mm)</u>	<u>Weight (g)</u>	<u>Age</u>
280	NA	NA
250	NA	NA
250	NA	NA
170	NA	NA
120	NA	NA
110	NA	NA

Angling:

Number of hours fished: **1** Number of fish caught: **23**
 Anglers observed: **0** Non-anglers observed: **0**

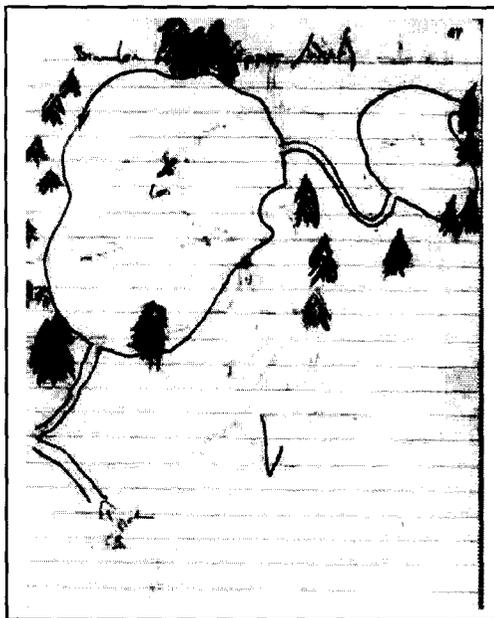
Campsite impact: #	Size (m ²)	Degree of impact	Comments
A	10	low	fire ring

Access Difficulty:

Total distance from nearest road (km): 6.25
 Distance on a minor trail: 6.0
 Distance bushwacked: 0.25

BRANDON LAKE, UPPER

Lake Description: Upper Brandon Lake is located 750 meters west of lower Brandon Lake. Upper Brandon Lake is a small (<1.00 ha), shallow mountain lake that is located about 7.0 km southwest of USFS Road 233 in the Gospel Hump Wilderness. Access to lake is by trailhead number 202, with 1 km of bushwhacking. The lake is fishless with no spawning habitat, and contains a small population of spotted frogs. A few long-toed salamanders were observed. The lake is surrounded by a large meadow and the lake margins are marshy. The bottom substrate of the lake is silt and organic matter with a low density of tall grass throughout. The lake has no observable impacts or campsites.



Legal Description: Section: 9 Township: 25N Range: 6E
 Survey Date: 7/09/01

HABITAT PARAMETERS

CHEMICAL DATA

Conductivity (ms): NA pH: NA

PHYSICAL DATA

Surface Area (hectares): <1.0

Aspect: NA Lake Elevation (m): 2476

Maximum Depth (m): 2.23 Secchi Disc: NA

Water Temperature °C (shallow): 16

Percentage bottom composition of the lake shoreward of the 3 m. contour line.

Bedrock (Br)	solid rock outcrop	:	0
Boulders (Bo)	rocks > 305 mm dia.	:	0
Rubble (Ru)	304. mm > rocks > 76.1 mm dia	:	0
Gravel (Gr)	76.0 mm > rocks > 4.81 mm dia.	:	0
Sand (Sa)	4.71 mm > rocks > 0.83 mm dia.	:	0
Silt (Si)	particles < 0.83 mm dia.	:	50
Organic debris (Od)		:	50
Logs		:	0
Shallow littoral zone (< 3 m), (%) of lake surface area			: 100

BRANDON LAKE, UPPER

Major lake inlet(I), or outlet(O)

Stream Characteristics	1	2	3	4	5	6
Inlet (I), Outlet (O)	O	I	I	I	I	
Width (m)	1.00	2.00	1.00	2.50	0.25	
Depth (m)	0.50	1.00	0.25	1.00	5.00	
Flow velocity (1-4)	1	1	1	1	1	
Substrate dominate	Od	Sa/Od	Sa/Od	Sa/Od	Sa/Od	
Barrier type	Seep	Seep	Seep	Seep	Seep	
% Spawn substrate (SA/GR)	0	5	0	0	0	
# of fish observed	0	0	0	0	0	
Number of seeps	5					

Stream data was collected to 50m from lakeshore, or to barrier.

BIOLOGICAL DATA

Zooplankton, shrimp, and aquatic invertebrates

Surface collection (hand-held dip net)

Coleoptera – Family: Dytiscidae

Ephemeroptera - Family: Baetidae

Hemiptera – Family: Corixidae

Odonata – Family: Aeshnidae

Odonata – Family: Agrionidae

Trichoptera – Family: Limnephilidae

Zooplankton sample (deep) using plankton net sampler

Cladocera – Family: Daphnidae

Cladocera - Family: Polyphemidae

Coleoptera – Family: Haliplidae

Copepoda - Family: Centropagidae

Copepoda – Family: Cyclopoida

Copepoda – Family: Diaptomidae

Diptera – Family: Chironomidae

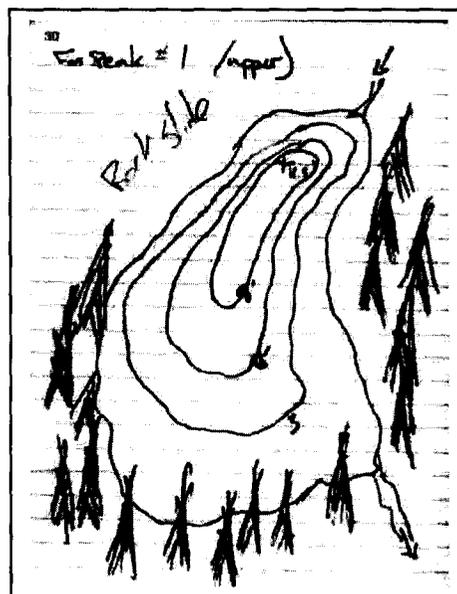
Hydracarina – Family: unknown

Hymenoptera – Family: unknown

Note: Stone fly nymph

FOX PEAK LAKE #1

Lake Description: Fox Peak Lake #1 lies west of Fox Peak Lake #2, and is a small (<1 ha), relatively shallow mountain lake. The lake is located in the Selway Bitterroot Wilderness about 21.0 km southwest of Elk Summit Road 360 in the Clearwater National Forest. Access to lake is by trailhead numbers 486 and 939, with 3 km of bushwhacking. The lake is fishless with no spawning habitat, and contains a small population of spotted frogs and long-toed salamanders. The lake has no observable impacts or campsites.



Legal Description: Section: 11/12 Township: 34N Range: 13E
Survey Date: 8/28/01

HABITAT PARAMETERS

CHEMICAL DATA

Conductivity (ms): NA

pH: NA

PHYSICAL DATA

Surface Area (hectares): < 1.00

Aspect: NA Lake Elevation (m): 2220

Maximum Depth (m): 3.7 Secchi Disc: NA

Water Temperature °C (shallow): 20

Percentage bottom composition of the lake shoreward of the 3 m. contour line.

Bedrock (Br)	solid rock outcrop	:	0
Boulders (Bo)	rocks > 305 mm dia.	:	20
Rubble (Ru)	304. mm > rocks > 76.1 mm dia	:	0
Gravel (Gr)	76.0 mm > rocks > 4.81 mm dia.	:	0
Sand (Sa)	4.71 mm > rocks > 0.83 mm dia.	:	0
Silt (Si)	particles < 0.83 mm dia.	:	20
Organic debris(Od)		:	60
Logs		:	0
Shallow littoral zone (< 3 m), (%) of lake surface area			: 90

FOX PEAK LAKE #1

Major lake inlet(I), or outlet(O)

Stream Characteristics

	1	2	3	4	5	6
Inlet (I), Outlet (O)	O	I	I			
Width (m)	Dry	Dry	Dry/Seep			
Depth (m)						
Flow velocity (1-4)						
Substrate dominate						
Barrier type						
% Spawn substrate (SA/GR)						
# of fish observed						
Number of seeps	1					

Stream data was collected to 50m from lakeshore, or to barrier.

BIOLOGICAL DATA

Zooplankton, shrimp, and aquatic invertebrates

Surface collection (hand held dip net)

Coleoptera – Family: Gyrinidae

Coleoptera – Family: Dytiscidae

Hemiptera – Family: Gerridae

Hemiptera – Family: Corixidae

Odonata – Family: Aeshnidae

Odonata – Family: Corduliidae

Trichoptera – Family: Limnephilidae

Zooplankton sample (deep) using plankton net sampler

Cladocera – Family: Daphnidae

Copepoda - Family: Diaptomidae

Diptera – Family: Chaoboridae

TERRESTRIAL VEGETATION

Forest percent coverage: 40%

Tree species and percent coverage for each: Lodgepole pine 60%, Engelmann spruce 30%, Subalpine fir 10%.

Open ground percent: **60%**

Dominant types: shrubs, grass, and talus slopes

FOX PEAK LAKE #1

ANIMAL OBSERVATIONS

Species	# Observed	Notes
Spotted Frog (adult)	26	Around lake.
Spotted Frog (subadults)	3	In lake.
Western Long-toed Salamander (subadults)	15	In lake.
Common Garter Snake	1	Around lake.
Western Terrestrial Garter Snake	2	Around lake.
Pika	2	Around lake.

FISHERIES POPULATION DATA

Fish species present in lake (12 hour gill net set and angling)

No fish present

Stocking record for the lake: No records

12 hour gill net results:

No gill net placed, too shallow

Angling:

Number of hours fished: 0 Number of fish caught: 0

Anglers observed: 0 Non-anglers observed: 0

Campsite impact: #	Size (m ²)	Degree of impact	Comments
No impacts			

Access Difficulty:

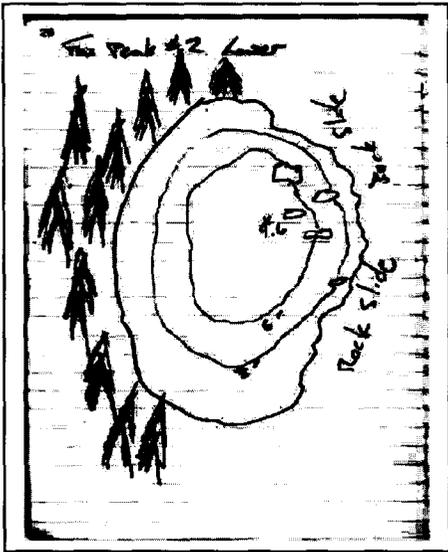
Total distance from nearest road (km): 21.0

Distance on a minor trail: 18.0

Distance bushwacked: 3.0

FOX PEAK LAKE #2

Lake Description: Fox Peak Lake #2 lies east of Fox Peak Lake #1, and is a small (<1 ha), relatively shallow mountain lake. The lake is located in the Selway Bitterroot Wilderness about 21.0 km southwest of Elk Summit Road 360 in the Clearwater National Forest. Access to lake is by trailhead numbers 486 and 939, with 3 km of bushwhacking. The lake is fishless with no spawning habitat, and contains a small population of spotted frogs and long-toed salamanders. The lake has no observable impacts or campsites.



Legal Description: Section: 11/12 Township: 34N Range: 13E
Survey Date: 8/28/01

HABITAT PARAMETERS

CHEMICAL DATA

Conductivity (ms): NA

pH: NA

PHYSICAL DATA

Surface Area (hectares): <1.00

Aspect: NA Lake Elevation (m): 2216

Maximum Depth (m): 2.53 Secchi Disc: NA

Water Temperature °C (shallow): 20

Percentage bottom composition of the lake shoreward of the 3 m. contour line.

Bedrock (Br)	solid rock outcrop	:	0
Boulders (Bo)	rocks > 305 mm dia.	:	20
Rubble (Ru)	304. mm > rocks > 76.1 mm dia	:	0
Gravel (Gr)	76.0 mm > rocks > 4.81 mm dia.	:	0
Sand (Sa)	4.71 mm > rocks > 0.83 mm dia.	:	0
Silt (Si)	particles < 0.83 mm dia.	:	30
Organic debris (Od)		:	50
Logs		:	0
Shallow littoral zone (< 3 m), (%) of lake surface area		:	100

FOX PEAK LAKE #2

Major lake inlet(I), or outlet(O)

Stream Characteristics	1	2	3	4	5	6
Inlet (I), Outlet (O)	O	I				
Width (m)	0.50	Seep				
Depth (m)	0.20					
Flow velocity (1-4)	1					
Substrate dominate	Od					
Barrier type	Seep					
% Spawn substrate (SA/GR)	0					
# of fish observed	0					
Number of seeps	2					

Stream data was collected to 50m from lakeshore, or to barrier.

BIOLOGICAL DATA

Zooplankton, shrimp, and aquatic invertebrates

Surface collection (hand held dip net)

Coleoptera – Family: Gyrinidae

Hemiptera – Family: Gerridae

Odonata – Family: Corduliidae

Trichoptera – Family: Limnephilidae

Zooplankton sample (deep) using plankton net sampler

Bivalvia – Family: unknown

Cladocera – Family: Daphnidae

Cladocera - Family: Polyphemidae

Copepoda – Family: Cyclopoida

Copepoda - Family: Diaptomidae

Diptera – Family: Chaoboridae

Diptera – Family: Chironomidae

TERRESTRIAL VEGETATION

Forest percent coverage: 40%

Tree species and percent coverage for each: Lodgepole pine 40%, Engelmann spruce 30%, Subalpine fir 30%.

Open ground percent: **60%**

Dominant types: shrubs, grass, and talus slopes

FOX PEAK LAKE #2

ANIMAL OBSERVATIONS

Species	# Observed	Notes
Spotted Frog (adult)	25	Around lake.
Spotted Frog (subadults)	11	In lake.
Spotted Frog (larvae)	13	In lake.
Western Long-toed Salamander (subadults)	3	In lake.
Common Garter Snake	1	Around lake.
Pika	3	Calls.
Chipmunk	1	Around lake.

FISHERIES POPULATION DATA

Fish species present in lake (12 hour gill net set and angling)

No fish present

Stocking record for the lake: No records

12 hour gill net results:

No gill net placed, too shallow

Angling:

Number of hours fished: **0** Number of fish caught: **0**

Anglers observed: **0** Non-anglers observed: **0**

Campsite impact: #	Size (m ²)	Degree of impact	Comments
No impacts			

Access Difficulty:

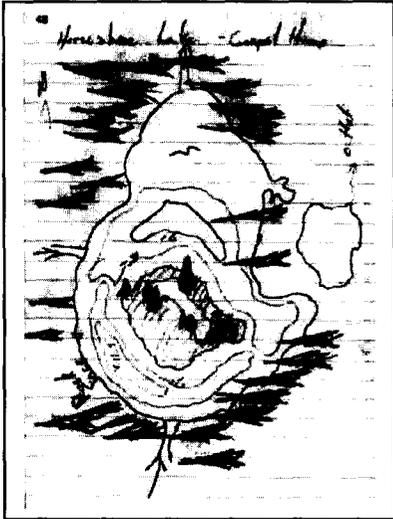
Total distance from nearest road (km): **21.0**

Distance on a minor trail: **18.0**

Distance bushwacked: **3.0**

HORSESHOE LAKE

Lake Description: Horseshoe Lake is a medium-sized (2.11 ha), relatively shallow mountain lake that is located about 7 km southwest of USFS Road 233 in the Gospel Hump Wilderness. Access to lake is by trailhead number 202, with 1 km of bushwhacking. The lake is fishless with no spawning habitat, and contains large populations of spotted frogs and long-toed salamanders. The lake has no observable impacts or campsites.



Legal Description: Section: 4 Township: 25N Range: 6E
 Survey Date: 8/16/01

HABITAT PARAMETERS

CHEMICAL DATA

Conductivity (ms): NA

pH: NA

PHYSICAL DATA

Surface Area (hectares): < 1.00

Aspect: NA Lake Elevation (m): 2557

Maximum Depth (m): 4.16 Secchi Disc: 2.00

Water Temperature °C (shallow): 19

Percentage bottom composition of the lake shoreward of the 3 m. contour line.

Bedrock (Br)	solid rock outcrop	:	10
Boulders (Bo)	rocks > 305 mm dia.	:	0
Rubble (Ru)	304. mm > rocks > 76.1 mm dia	:	0
Gravel (Gr)	76.0 mm > rocks > 4.81 mm dia.	:	0
Sand (Sa)	4.71 mm > rocks > 0.83 mm dia.	:	0
Silt (Si)	particles < 0.83 mm dia.	:	40
Organic debris (Od)		:	45
Logs		:	5
Shallow littoral zone (< 3 m), (%) of lake surface area		:	75

HORSESHOE LAKE

Major lake inlet(I), or outlet(O)

Stream Characteristics	1	2	3	4	5	6
Inlet (I), Outlet (O)	O	I	I			
Width (m)	0.20	0.10	0.50			
Depth (m)	0.10	0.05	0.01			
Flow velocity (1-4)	NA	1	1			
Substrate dominate	Si	Od	Si/Od			
Barrier type	Dry	Seep	Seep			
% Spawn substrate (SA/GR)	0	0				
# of fish observed	0	0				
Number of seeps	2					

Stream data was collected to 50m from lakeshore, or to barrier.

BIOLOGICAL DATA

Zooplankton, shrimp, and aquatic invertebrates

Surface collection (hand held dip net)

Coleoptera – Family: Dytiscidae

Coleoptera – Family: Gyrinidae

Hemiptera – Family: Corixidae

Hemiptera – Family: Gerridae

Odonata – Family: Aeshnidae

Trichoptera – Family: Limnephilidae

Zooplankton sample (deep) using plankton net sampler

Cladocera – Family: Daphnidae

Cladocera - Family: Polyphemidae

Copepoda - Family: Diaptomidae

Diptera – Family: Chaoboridae

Diptera – Family: Chironomidae

TERRESTRIAL VEGETATION

Forest percent coverage: 60%

Tree species and percent coverage for each: Engelmann spruce 20%, and Subalpine fir 20%.

Open ground percent: **40%**

Dominant types: shrubs, grass, and talus slopes.

HORSESHOE LAKE

ANIMAL OBSERVATIONS

Species	# Observed	Notes
Spotted Frog (adult)	50	Around lake.
Spotted Frog (subadults)	90	In lake.
Spotted Frog (larvae)	3	In lake.
Western Long-toed Salamander (adults)	1	In lake.
Western Long-toed Salamander (subadults)	80	In lake.
Common Garter Snake	1	Around lake.

FISHERIES POPULATION DATA

Fish species present in lake (12 hour gill net set and angling)

No fish present

Stocking record for the lake: No records

12 hour gill net results:

No gill net placed, too shallow

Angling:

Number of hours fished: **0** Number of fish caught: **0**

Anglers observed: **0** Non-anglers observed: **0**

Campsite impact: #	Size (m ²)	Degree of impact	Comments
No impacts			

Access Difficulty:

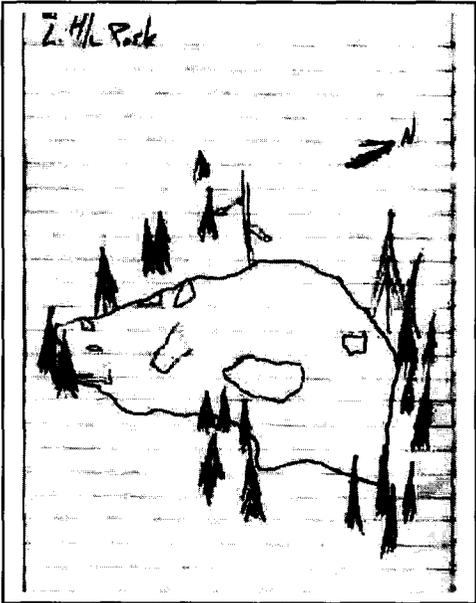
Total distance from nearest road (km): **7.0**

Distance on a minor trail: **6.0**

Distance bushwacked: **1.0**

LITTLE PARK LAKE

Lake Description: Little Park Lake is located south of Park Lake. Little Park Lake is a medium-sized (3.14 ha), relatively shallow mountain lake that is located about 16.0 km northwest of USFS Road 5605 along the Idaho and Montana border. Access to lake is by trailhead numbers 430 and 432, with 1 km of bushwhacking. The lake is fishless with no spawning habitat, and contains a small population of spotted frogs. The bottom substrate of the lake is silt and organic matter with a high density of tall grass throughout. One campsite with low impact was observed.



Legal Description: Section: 29/30 Township: 33N Range: 15E
Survey Date: 8/04/01

HABITAT PARAMETERS

CHEMICAL DATA

Conductivity (ms): NA

pH: NA

PHYSICAL DATA

Surface Area (hectares): 3.14

Aspect: NA Lake Elevation (m): 2390

Maximum Depth (m): 2.0 Secchi Disc: NA

Water Temperature °C (shallow): 16

Percentage bottom composition of the lake shoreward of the 3 m. contour line.

Bedrock (Br)	solid rock outcrop	:	0
Boulders (Bo)	rocks > 305 mm dia.	:	10
Rubble (Ru)	304. mm > rocks > 76.1 mm dia	:	0
Gravel (Gr)	76.0 mm > rocks > 4.81 mm dia.	:	0
Sand (Sa)	4.71 mm > rocks > 0.83 mm dia.	:	0
Silt (Si)	particles < 0.83 mm dia.	:	45
Organic debris(Od)		:	45
Logs		:	0
Shallow littoral zone (< 3 m), (%) of lake surface area		:	100

LITTLE PARK LAKE

Major lake inlet(I), or outlet(O)

Stream Characteristics	1	2	3	4	5	6
Inlet (I), Outlet (O)	O	O	I			
Width (m)	1.00	1.00	0.25			
Depth (m)	0.50	0.50	0.30			
Flow velocity (1-4)	1	1	1			
Substrate dominate	Silt	Silt	Silt			
Barrier type	Seep	Seep	Seep			
% Spawn substrate (SA/GR)	0	0	0			
# of fish observed	0	0	0			
Number of seeps	3					

Stream data was collected to 50m from lake shore, or to barrier.

BIOLOGICAL DATA

Zooplankton, shrimp, and aquatic invertebrates

Surface collection (hand held dip net)

Bivalvia – Family: unknown

Coleoptera – Family: Chrysomelidae

Coleoptera – Family: Dytiscidae

Ephemeroptera - Family: Siphonuridae

Hemiptera – Family: Gerridae

Hemiptera – Family: Notonectidae

Odonata – Family: Aeshnidae

Odonata – Family: Lestidae

Zooplankton sample (deep) using plankton net sampler

Cladocera – Family: Daphnidae

Cladocera – Family: Diaptomidae

Diptera – Family: Chironomidae

Note: Emerging caddis fly larvae

TERRESTRIAL VEGETATION

Forest percent coverage: 40%

Tree species and percent coverage for each: Subalpine fir 90%, Whitebark pine 10%.

Open ground percent: **60%**

Dominant types: shrubs, grass, and talus slopes

LITTLE PARK LAKE

ANIMAL OBSERVATIONS

Species	# Observed	Notes
Spotted Frog (adult)	4	Around lake.
Pika	4	Calls.
Chipmunk	3	Around lake.

FISHERIES POPULATION DATA

Fish species present in lake (12 hour gill net set and angling)

No fish present

Stocking record for the lake: IDFG # 0495

Date Stocked	Species	# Stocked	# Fish per Surface Hectare
1976	RBT	1000	318

12 hour gill net results:

No gill net placed, too shallow

Angling:

Number of hours fished: 0 Number of fish caught: 0
 Anglers observed: 0 Non-anglers observed: 0

Campsite impact: #	Size (m ²)	Degree of impact	Comments
A	20	low	

Access Difficulty:

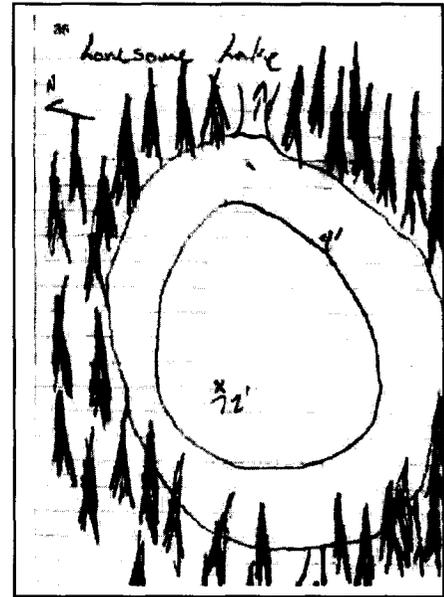
Total distance from nearest road (km): **16.0**

Distance on a minor trail: **15.0**

Distance bushwacked: **1.0**

LONESOME LAKE

Lake Description: Lonesome Lake is a medium-sized (2.43 ha), moderately deep mountain lake that is located about 18 km northeast of USFS Road 285 in the Selway Bitterroot Wilderness. Access to lake is by trailhead numbers 517, 602, and 526 with 1 km of bushwhacking. The lake is fishless, and contains a small population of spotted frogs and western long-toed salamanders. The lake has no observable impacts or campsites.



Legal Description: Section: 28/33 Township: 31N Range: 12E
Survey Date: 8/17/01

HABITAT PARAMETERS

CHEMICAL DATA

Conductivity (ms): NA

pH: NA

PHYSICAL DATA

Surface Area (hectares): 2.43

Aspect: NA Lake Elevation (m): 2250

Maximum Depth (m): 2.4 Secchi Disc: 2.4

Water Temperature °C (shallow): 21

Percentage bottom composition of the lake shoreward of the 3 m. contour line.

Bedrock (Br)	solid rock outcrop	:	0
Boulders (Bo)	rocks > 305 mm dia.	:	0
Rubble (Ru)	304. mm > rocks > 76.1 mm dia	:	0
Gravel (Gr)	76.0 mm > rocks > 4.81 mm dia.	:	5
Sand (Sa)	4.71 mm > rocks > 0.83 mm dia.	:	0
Silt (Si)	particles < 0.83 mm dia.	:	45
Organic debris(Od)		:	45
Logs		:	5
Shallow littoral zone (< 3 m), (%) of lake surface area		:	100

LONESOME LAKE

Major lake inlet(I), or outlet(O)

Stream Characteristics	1	2	3	4	5	6
Inlet (I), Outlet (O)	O	I				
Width (m)	2.00	1.00				
Depth (m)	0.20	0.05				
Flow velocity (1-4)	2	2				
Substrate dominate	Od/Sa	Gr				
Barrier type	Log jam	Shallow				
% Spawn substrate (SA/GR)	30	90				
# of fish observed	0	0				
Number of seeps	2					

Stream data was collected to 50m from lake shore, or to barrier.

BIOLOGICAL DATA

Zooplankton, shrimp, and aquatic invertebrates

Surface collection (hand held dip net)

Hemiptera – Family: Noteridae

Hemiptera – Family: Notonectidae

Hemiptera – Family: Gerridae

Odonata – Family: Aeshnidae

Trichoptera – Family: Limnephilidae

Note: Unidentified worm

Zooplankton sample (deep) using plankton net sampler

Cladocera – Family: Daphnidae

Cladocera - Family: Polyphemidae

Copepoda – Family: Cyclopoida

Copepoda - Family: Diaptomidae

Diptera – Family: Chironomidae

TERRESTRIAL VEGETATION

Forest percent coverage: 85%

Tree species and percent coverage for each: Engelmann spruce 30%, Subalpine fir 60%, and Whitebark pine 10%.

Open ground percent: **15%**

Dominant types: shrubs, grass, and talus slopes

LONESOME LAKE

ANIMAL OBSERVATIONS

Species	# Observed	Notes
Spotted Frog (adult)	9	Around lake.
Western Long-toed Salamander (adults)	1	In lake.
Western Long-toed Salamander (subadults)	2	In lake.
Chickadee	5	Around lake.

FISHERIES POPULATION DATA

Fish species present in lake (12 hour gill net set and angling)

No fish present

Stocking record for the lake: No records

12 hour gill net results:

No gill net placed, too shallow

Angling:

Number of hours fished : 0 Number of fish caught : 20

Anglers observed : 0 Non-anglers observed : 0

Campsite impact: #	Size (m ²)	Degree of impact	Comments
No impacts			

Access Difficulty:

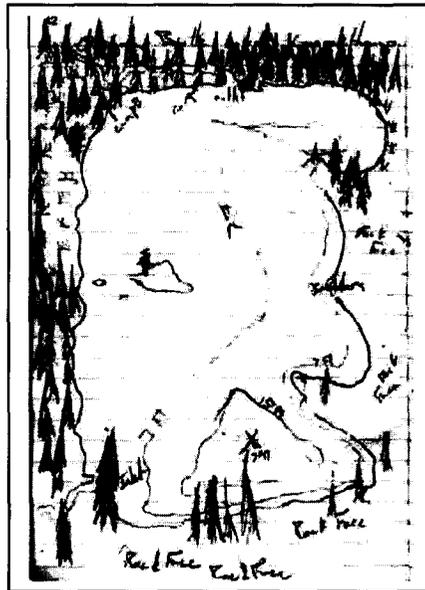
Total distance from nearest road (km): 18.0

Distance on a minor trail: 17.0

Distance bushwacked: 1.0

OREGON BUTTE LAKE

Lake Description: Oregon Butte Lake is a medium-sized (2.64 ha), deep mountain lake that is located about 7 km southwest of USFS Road 233 in the Gospel Hump Wilderness. Access to lake is by trailhead numbers 202 and 203, with 1 km of bushwhacking. The lake has a healthy population of westslope cutthroat trout, and the inlet is suitable for spawning. The lake contains a population of spotted frog adults, larvae, and egg masses in and around the lake. Two campsites with a low to moderate impact were observed, each with a fire ring.



Legal Description: Section: 12 Township: 25N Range: 6E
Survey Date: 7/10/01

HABITAT PARAMETERS

CHEMICAL DATA

Conductivity (ms): NA

pH: NA

PHYSICAL DATA

Surface Area (hectares): 2.6

Aspect: NA Lake Elevation (m): 2514

Maximum Depth (m): 10.0 Secchi Disc: 6.0

Water Temperature °C (shallow): 18

Percentage bottom composition of the lake shoreward of the 3 m. contour line.

Bedrock (Br)	solid rock outcrop	:	0
Boulders (Bo)	rocks > 305 mm dia.	:	15
Rubble (Ru)	304. mm > rocks > 76.1 mm dia	:	0
Gravel (Gr)	76.0 mm > rocks > 4.81 mm dia.	:	0
Sand (Sa)	4.71 mm > rocks > 0.83 mm dia.	:	0
Silt (Si)	particles < 0.83 mm dia.	:	40
Organic debris (Od)		:	40
Logs		:	5
Shallow littoral zone (< 3 m), (%) of lake surface area			15

OREGON BUTTE LAKE

Major lake inlet(I), or outlet(O)

Stream Characteristics	1	2	3	4	5	6
Inlet (I), Outlet (O)	O	I				
Width (m)	1.00	0.50				
Depth (m)	0.25	0.25				
Flow velocity (1-4)	1	3				
Substrate dominate	Od	Gr				
Barrier type	Seep	Falls				
% Spawn substrate (SA/GR)	0	70				
# of fish observed	0	0				
Number of seeps	1					

Stream data was collected to 50m from lakeshore, or to barrier.

BIOLOGICAL DATA

Zooplankton, shrimp, and aquatic invertebrates

Surface collection (hand held dip net)

Hemiptera – Family: Gerridae

Odonata – Family: Lestidae

Odonata – Family: Aeshnidae

Trichoptera – Family: Limnephilidae

Zooplankton sample (deep) using plankton net sampler

Bivalvia – Family: unknown

Cladocera - Family: Polyphemidae

Copepoda – Family: Cyclopoida

Copepoda - Family: Diaptomidae

Diptera – Family: Chironomidae

TERRESTRIAL VEGETATION

Forest percent coverage: 40%

Tree species and percent coverage for each: Subalpine fir 80%, Whitebark pine 20%.

Open ground percent: **60%**

Dominant types: shrubs, grass, bedrock, and talus slopes

OREGON BUTTE LAKE

ANIMAL OBSERVATIONS

Species	# Observed	Notes
Spotted Frog (adult)	25	Around lake.
Spotted Frog (tadpoles)	500's	In lake.
Spotted Frog (egg mass)	4	In lake.
Hoary Marmot	1	Around lake.
Pika	1	Calls.

FISHERIES POPULATION DATA

Fish species present in lake (12 hour gill net set and angling)

Westslope Cutthroat – 10 in gill net

Stocking record for the lake: IDFG # 0254

Date Stocked	Species	# Stocked	# Fish per Surface Hectare
1970	CT	1574	605
1971	CT	2048	787
1975	CT	766	294
1978	CT	2000	769
1981	RBT & CT	1124	432
1984	WCT	996	383
1987	WCT	1000	384
1993	WCT	630	242
1996	WCT	500	192
1999	WCT	500	192

12 hour gill net results:

Fish caught	Species	Length (mm)			Weight (g)		
		Min.	Max.	Mean	Min	Max.	Mean.
10	WCT	150	370	224	NA	NA	NA

OREGON BUTTE LAKE

Length, weight, and age of Westslope cutthroat collected from gill net sample in Oregon Butte Lake.

<u>Length (mm)</u>	<u>Weight (g)</u>	<u>Age</u>
370	NA	3
310	NA	3
300	NA	3
230	NA	3
210	NA	3
170	NA	2
170	NA	2
170	NA	2
160	NA	2
150	NA	2

Angling:

Number of hours fished: **2**

Number of fish caught: **3**

Anglers observed: **0**

Non-anglers observed: **0**

Campsite impact: #	Size (m ²)	Degree of impact	Comments
A	20	mod	Fire ring, stock impact
B	10	low	Fire ring

Access Difficulty:

Total distance from nearest road (km): **7.0**

Distance on a minor trail: **6.0**

Distance bushwacked: **1.0**

RUNNING LAKE

Lake Description: Running Lake is fairly large (8.6 ha), deep mountain lake that is located about 3 km northeast of USFS Road 285. Access to lake is by trailhead number 517, with 1 km of bushwhacking. The lake has a healthy population of brook trout that are naturally reproducing. The lake contains a small population of spotted frog adults. Two campsites with low impact were observed.



Legal Description: Section: 23/26 Township: 30N Range: 11E
Survey Date: 8/15/01

HABITAT PARAMETERS

CHEMICAL DATA

Conductivity (ms): NA

pH: NA

PHYSICAL DATA

Surface Area (hectares): 8.6

Aspect: NA Lake Elevation (m): 2200

Maximum Depth (m): 14.0 Secchi Disc: 9.5

Water Temperature °C (shallow): 24

Percentage bottom composition of the lake shoreward of the 3 m. contour line.

Bedrock (Br)	solid rock outcrop	:	0
Boulders (Bo)	rocks > 305 mm dia.	:	10
Rubble (Ru)	304. mm > rocks > 76.1 mm dia	:	0
Gravel (Gr)	76.0 mm > rocks > 4.81 mm dia.	:	50
Sand (Sa)	4.71 mm > rocks > 0.83 mm dia.	:	10
Silt (Si)	particles < 0.83 mm dia.	:	15
Organic debris (Od)		:	10
Logs		:	5
Shallow littoral zone (< 3 m), (%) of lake surface area			15

RUNNING LAKE

Major lake inlet(I), or outlet(O)

Stream Characteristics	1	2	3	4	5	6
Inlet (I), Outlet (O)	O	I				
Width (m)	5.00	0.10				
Depth (m)	0.10	0.00				
Flow velocity (1-4)	1	1				
Substrate dominate	Si/Od	NA				
Barrier type	Log jam	Waterfall				
% Spawn substrate (SA/GR)	0	0				
# of fish observed	0	0				
Number of seeps	NA					

Stream data was collected to 50m from lakeshore, or to barrier.

BIOLOGICAL DATA

Zooplankton, shrimp, and aquatic invertebrates

Surface collection (hand held dip net)

Hemiptera – Family: Gerridae

Odonata – Family: Aeshnidae

Trichoptera – Family: Limnephilidae

Zooplankton sample (deep) using plankton net sampler

Cladocera – Family: Daphnidae

Cladocera - Family: Polyphemidae

Copepoda – Family: Cyclopoida

Copepoda - Family: Diaptomidae

Diptera – Family: Chironomidae

TERRESTRIAL VEGETATION

Forest percent coverage: 70%

Tree species and percent coverage for each: Engelmann spruce 4%, Subalpine fir 95%, Whitebark pine 1%

Open ground percent: **30%**

Dominant types: shrubs, grass, and talus slopes

RUNNING LAKE

ANIMAL OBSERVATIONS

Species	# Observed	Notes
Spotted Frog (adult)	5	Around lake.
Northern Shoveler	1	Around lake.
Common Garter Snake	1	Around lake.
Pine Squirrel	2	Around lake.
Pika	2	Calls.
Chickadee	1	Calls.

FISHERIES POPULATION DATA

Fish species present in lake (12 hour gill net set and angling)

Brook Trout – 68 in gill net

Stocking record for the lake: IDFG # 0520

Date Stocked	Species	# Stocked	# Fish
	per Surface Hectare		
1987	WCT	1000	116
1990	WCT	1000	116

12 hour gill net results: Only 20 fish were measured and weighed out of 68.

Fish caught	species	Length (mm)			Weight (g)		
		Min.	Max.	Mean	Min.	Max.	Mean.
20	Brook	100	210	167	10	80	46

RUNNING LAKE

Length, weight, and age of brook trout collected from gill net sample in Running Lake.

<u>Length (mm)</u>	<u>Weight (g)</u>	<u>Age</u>
210	80	NA
210	80	2
200	75	NA
200	62	NA
190	50	NA
190	50	NA
185	45	2
185	60	NA
180	50	NA
180	55	2
180	55	2
170	60	NA
170	50	NA
160	40	NA
160	38	3
130	22	NA
120	20	NA
115	18	NA
110	17	NA
100	10	NA

Note: Due to bad scale samples some fish were unable to be aged.

Angling:

Number of hours fished: **1** Number of fish caught: **20**
 Anglers observed: **0** Non-anglers observed: **0**

Campsite impact: #	Size (m ²)	Degree of impact	Comments
A	10	low	
B	10	low	

Access Difficulty:

Total distance from nearest road (km): **3.0**
 Distance on a minor trail: **2.0**
 Distance bushwacked: **1.0**

SECTION 28 LAKE

Lake Description: Section 28 Lake is a small (<1 ha), relatively shallow mountain lake. The lake is located in the Selway Bitterroot Wilderness about 20.0 km southwest of Elk Summit Road 360 in the Clearwater National Forest. Access to the lake is by trailhead numbers 45, 30, and 60, with 1 km of bushwhacking. Trail 60 is not maintained, and the lake was reached by an alternative route. The lake is fishless with no spawning habitat, and contains small populations of spotted frogs and long-toed salamanders. The lake has no observable impacts or campsites.



Legal Description: Section: 28/33 Township: 35N Range: 13E
Survey Date: 8/30/01

HABITAT PARAMETERS

CHEMICAL DATA

Conductivity (ms): NA

pH: NA

PHYSICAL DATA

Surface Area (hectares): <1.00

Aspect: NA Lake Elevation (m): 2103

Maximum Depth (m): 1.6 Secchi Disc: NA

Water Temperature°C (shallow): 21

Percentage bottom composition of the lake shoreward of the 3 m. contour line.

Bedrock (Br)	solid rock outcrop	:	0
Boulders (Bo)	rocks > 305 mm dia.	:	0
Rubble (Ru)	304. mm > rocks > 76.1 mm dia	:	0
Gravel (Gr)	76.0 mm > rocks > 4.81 mm dia.	:	0
Sand (Sa)	4.71 mm > rocks > 0.83 mm dia.	:	0
Silt (Si)	particles < 0.83 mm dia.	:	60
Organic debris(Od)		:	30
Logs		:	10
Shallow littoral zone (< 3 m), (%) of lake surface area		:	100

SECTION 28 LAKE

Major lake inlet(I), or outlet(O)

Stream Characteristics	1	2	3	4	5	6
Inlet (I), Outlet (O)	O	I				
Width (m)	0.50	0.50				
Depth (m)	0.05	0.20				
Flow velocity (1-4)	Dry	Dry				
Substrate dominate						
Barrier type						
% Spawn substrate (SA/GR)						
# of fish observed						
Number of seeps						

Stream data was collected to 50m from lake shore, or to barrier.

BIOLOGICAL DATA

Zooplankton, shrimp, and aquatic invertebrates

Surface collection (hand held dip net)

Hemiptera – Family: Corixidae

Zooplankton sample (deep) using plankton net sampler

Copepoda - Family: Diaptomidae

Diptera – Family: Chaoboridae

Note: Dragonfly nymph

TERRESTRIAL VEGETATION

Forest percent coverage: 60%

Tree species and percent coverage for each: Lodgepole pine 5%, Engelmann spruce 15%, Subalpine fir 80%.

Open ground percent: **40%**

Dominant types: shrubs, grass, and talus slopes

SECTION 28 LAKE

ANIMAL OBSERVATIONS

Species	# Observed	Notes
Spotted Frog (adult)	160	Around lake.
Spotted Frog (subadults)	33	In lake.
Spotted Frog (larvae)	63	In lake.
Pika	10	Around lake.
Chickadee	2	Around Lake.

FISHERIES POPULATION DATA

Fish species present in lake (12 hour gill net set and angling)
No fish present

Stocking record for the lake: No records

12 hour gill net results:
No net placed, too shallow

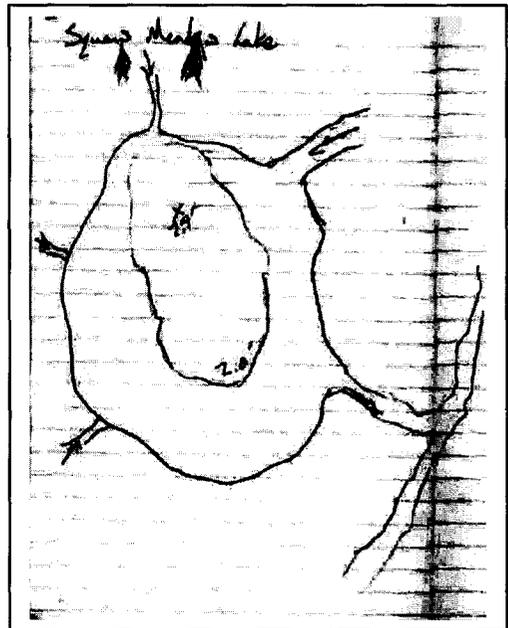
Angling:
Number of hours fished: 0 Number of fish caught: 0
Anglers observed: 0 Non-anglers observed: 0

Campsite impact: #	Size (m ²)	Degree of impact	Comments
No impacts			

Access Difficulty:
Total distance from nearest road (km): 20.0
Distance on a minor trail: 19.0
Distance bushwacked: 1.0

SQUAW LAKE

Lake Description: Squaw Lake is a small (<1.00 ha), shallow mountain lake that is located about 5.0 km west of USFS Road 233 in the Gospel Hump Wilderness. Access to the lake is by trailhead number 313 with 1 km of bushwhacking. The lake is fishless with no spawning habitat, and contains small populations of spotted frogs and long-toed salamanders. Multiple dead spotted frog adults (~30) were observed throughout lake, with a higher density in the inlets and outlets. The lake is surrounded by a large meadow and the lake margins are marshy. The bottom substrate of the lake is silt and organic matter with a low density of tall grass throughout. The lake has no observable impacts or campsites.



Legal Description: Section: 8/9 Township: 26N Range: 6E
Survey Date: 8/20/01

HABITAT PARAMETERS

CHEMICAL DATA

Conductivity (ms): NA

pH: NA

PHYSICAL DATA

Surface Area (hectares): >1.00

Aspect: NA Lake Elevation (m): 2448

Maximum Depth (m): 1 Secchi Disc: NA

Water Temperature °C (shallow): NA

Percentage bottom composition of the lake shoreward of the 3 m. contour line.

Bedrock (Br)	solid rock outcrop	:	0
Boulders (Bo)	rocks > 305 mm dia.	:	0
Rubble (Ru)	304. mm > rocks > 76.1 mm dia	:	0
Gravel (Gr)	76.0 mm > rocks > 4.81 mm dia.	:	0
Sand (Sa)	4.71 mm > rocks > 0.83 mm dia.	:	0
Silt (Si)	particles < 0.83 mm dia.	:	20
Organic debris (Od)		:	80
Logs		:	0
Shallow littoral zone (< 3 m), (%) of lake surface area			100

SQUAW LAKE

Major lake inlet(I), or outlet(O)

Stream Characteristics	1	2	3	4	5	6
Inlet (I), Outlet (O)	O	I	I			
Width (m)	0.70	1.50	0.20			
Depth (m)	0.50	0.70	0.20			
Flow velocity (1-4)	2	1	1			
Substrate dominate	Od	Od	Od			
Barrier type	Seep	Seep	Seep			
% Spawn substrate (SA/GR)	10	0	0			
# of fish observed	0	0	0			
Number of seeps	5					

Stream data was collected to 50m from lake shore, or to barrier.

BIOLOGICAL DATA

Zooplankton, shrimp, and aquatic invertebrates

Surface collection (hand held dip net)

Coleoptera – Family: Dytiscidae

Hemiptera – Family: Notonectidae

Hemiptera – Family: Gerridae

Zooplankton sample (deep) using plankton net sampler

Cladocera – Family: Daphnidae

Cladocera - Family: Polyphemidae

Copepoda - Family: Diaptomidae

Diptera – Family: Chironomidae

TERRESTRIAL VEGETATION

Forest percent coverage: 0%

Tree species and percent coverage for each: none

Open ground percent: **100%**

Dominant types: grass

SQUAW LAKE

ANIMAL OBSERVATIONS

Species	# Observed	Notes
Spotted Frog (adult)	24	Around lake.
Western Long-toed Salamander (subadults)	3	In lake
Ruffed Grouse	1	Around lake.

FISHERIES POPULATION DATA

Fish species present in lake (12 hour gill net set and angling)

No fish present

Stocking record for the lake: No records

12 hour gill net results:

No gill net placed, too shallow

Angling:

Number of hours fished: 0 Number of fish caught : 0
Anglers observed: 0 Non-anglers observed: 0

Campsite impact: #	Size (m ²)	Degree of impact	Comments
No impacts			

Access Difficulty:

Total distance from nearest road (km): 5.0
Distance on a minor trail: 4.0
Distance bushwacked: 1.0

JOB PERFORMANCE REPORT

State of: Idaho

Program: Fisheries Management F-71-R-26

Project I: Surveys and Inventories

Subproject I-B: 2001 Clearwater Region

Job: b

Title: Lowland Lakes Investigations

Contract Period: July 1, 2001 to June 30, 2002

Period Covered: January 1, 2001 to December 31, 2001

ABSTRACT

Clearwater Region fisheries management personnel and conservation officers checked 172 anglers that spent 270 hours fishing lakes, ponds and reservoirs and caught 399 game fish.

Clearwater Region fisheries management personnel used standard lake surveys to sample Elk Creek Reservoir, Mann Lake, Moose Creek Reservoir, Spring Valley Reservoir, Waha Lake, and Winchester Lake. Brook trout (24.1%), black crappie *Pomoxis nigromaculatus* (50.8%), and yellow perch *Perca flavescens* (32%) were the most abundant species in Elk Creek Reservoir, Mann Lake, and Waha Lake, respectively. Largemouth bass *Micropterus salmoides* was the most abundant species in Moose Creek Reservoir (57.5%), Spring Valley Reservoir (26%), and Winchester Lake (71.1%).

Author:

Ed Schriever
Regional Fishery Biologist

OBJECTIVES

1. Utilize hatchery-raised fish to provide or enhance fish populations for sport fishing in waters that are limited by a lack of reproduction or excessive fishing pressure or both.
2. Move naturally produced fish from other waters to provide or enhance fish populations for sport fishing in waters that are limited by a lack of reproduction or excessive fishing pressure or both.
3. Control, eradicate or remove undesirable fish from regional waters.
4. Conduct routine, impromptu creel surveys on lowland lakes and reservoirs to track fisheries composition and catch rate.

METHODS

We used tanker trucks of various sizes and standard stocking techniques to stock fish in streams, lakes, ponds and reservoirs. We collected fish for transplanting using standard electrofishing, trapping and netting techniques.

We sampled fish in lowland lakes using pulsed DC current from a portable generator and a Coffelt VVP-2E pulsator. Booms and electrodes were mounted on a 16-foot johnboat. All electrofishing took place between 2000 hours and 0300 hours. We sampled trout and kokanee *O. nerka* in lowland lakes using gill nets. We used standard floating experimental gill nets 46 m x 1.8 m deep with six panels of different size mesh. Mesh sizes were 19 mm, 25 mm, 32 mm, 38 mm, 51 mm, and 63.5 mm. One or two nets were set and fished from late afternoon until early the next morning. Total net hours were recorded with the catch.

RESULTS

Fish Stocking and Population Management

We enhanced resident fish populations and sport fishing in lowland lakes and reservoirs of the Clearwater Region by stocking approximately 97,147 fingerling size rainbow trout and 25,001 fingerling-size kokanee salmon in 2001 (Table 1). Lakes, ponds and reservoirs were stocked with 352,958 catchable size rainbow trout in 2001 (Table 2).

Clearwater Region personnel collected 625 black crappie from Mann Lake during April and May 2001. The crappie were collected with electrofishing gear and trap nets and were traded to Washington Department of Fisheries for 150 tiger muskellunge *Esox lucius* X *E. masquinongy*. Existing populations of tiger muskellunge in Spring Valley Reservoir and Winchester Lake were supplemented with 50 fish each.

Table 1. Fingerling (102 – 152 mm) rainbow trout and kokanee salmon stocked in the lowland lakes and reservoirs of the Clearwater Region, 2001.

Water	Month	Rainbow trout	Kokanee Salmon	Total
Dworshak Reservoir	May			
Mann Lake	May		10,001	10,001
Soldiers Meadow Reservoir	April / May	15,485	5,000	20,485
Spring Valley Reservoir	April	30,562		30,562
Waha Lake	April / May	15,566	5,000	20,566
Winchester Lake	May	35,534	5,000	40,534
Total		97,147	25,001	122,148

Table 2. Catchable-size (203 mm+) trout stocked in lakes, ponds, and reservoirs of the Clearwater Region, 2001.

Water	March	April	May	June	July	August	September	October	Total
Camp Grizzly Pond				540					540
Campbells Pond		2,014	2,073	2,040	1,572				7,699
Dworshak Reservoir	46,092	79,880	1,087						127,059
Elk Creek Reservoir			29,488	15,018	9,408				53,914
Fenn Pond			838	2,709	2,843				6,390
Five Mile Pond			533	1,582	805				2,920
Henrys Gulch Pond				540					540
Hordemann Pond		200							200
Karolyns Pond		1,878	1,064	2,091					5,033
Levee Pond	404	196	631	630	360	250			2,471
Mann Lake	10,336	7,500	7,398						25,234
Moose Creek Reservoir	9,690		5,008	5,040	3,065				22,803
Powell Pond			1,982	990	990				3,962
Robinson Pond		5,168		2,000					7,168
Soldiers Meadow Reservoir			4,283	7,470	4,169				15,922
Spring Valley Reservoir		17,155		7,470	8,339	3,275			36,239
Waha Lake		5,000	2,466						7,466
Wilkins Pond									0
Winchester Lake		10,030	7,398	7,470	2,500				27,398
Total	66,522	129,021	64,249	55,590	34,051	3,525			352,958

Creel Census

Clearwater Region fisheries management personnel and conservation officers checked 172 anglers that spent 270 hours fishing lakes, ponds and reservoirs and caught 399 game fish in 2001 (Table 3). These sport fisheries provided a catch rate of 1.48 fish per hour. Salmonid fishes accounted for 97.5% of the catch. The remaining 2.5% of the catch was made up of black crappie, smallmouth bass *M. dolomieu*, yellow perch, bluegill *Lepomis macrochirus* and largemouth bass.

Standard Lake Surveys

Elk Creek Reservoir

Elk Creek Reservoir is located in Clearwater County near the town of Elk River. Potlatch Corporation originally constructed Elk Creek Reservoir as a log holding pond. The original dam washed out in 1937 and was reconstructed in 1950. The Department reconstructed the dam and spillway again in 1987.

Elk Creek Reservoir holds 900 acre feet of water at full pool and is 35 acres in size. The Department owns the land surrounding Elk Creek Reservoir, and the Elk River Recreation District leases the land for management of overnight camping and day-use on the reservoir. The Department manages Elk Creek Reservoir under statewide general fishing regulations, with the exceptions of Quality Bass (protective slot limit of 12-16 inches) and electric motors only

Elk Creek Reservoir contains six species of game fish: (1) brook trout, (2) pumpkinseed *L. gibbosus*, (3) smallmouth bass, (4) black bullhead *Ameiurus melas*, (5) black crappie, and (6) rainbow trout. The only non-game fish species documented is the red-sided shiner *Richardsonius balteatus*.

Game fish, excluding rainbow trout, combined to produce 56% of the total catch and 44.2% of the biomass. Rainbow trout were not included in the total catch because they are stocked fish. All game fish (stocked and non-stocked) combined produce 99.6% of the total catch and 100% of the biomass (Table 4).

Brook trout (N=64) dominated the sample of non-stocked game fish, representing 24.1% of all fish collected and 23% of the sample biomass. Since the 2001 sample was conducted in the spring, it can be compared to the 1992 spring sample and the 1995 spring sample. In 1992 and 1995, brook trout represented 5% and 28% of all fish collected and 5% and 17.7% of the total biomass, respectively. The relative weights of brook trout in 2001 generally fell within the 80 to 100 percentile range. In 1992 and 1995, the relative weights fell within the 70 to 100 and 100 to 125 percentile range, respectively. The total length of brook trout ranges between 110 and 330 mm with 18.1% of the sample 250 mm or larger (Table 5). In the 1995 and 1992 samples, 12.2% and 21% were larger than 250 mm, respectively. A three-year-old brook trout in Elk Creek Reservoir would be 12 inches in length (Table 6). These changes in brook trout composition are positive, as improving the brook trout fishery in Elk Creek Reservoir is considered important by the angling public

Table 3. Clearwater Region Enforcement Creel Checks, Lowland Lakes and Reservoirs, 2001

Water/ Date	# Anglers	Total hours	Rainbow trout	Brook trout	Bluegill sunfish	Largemouth bass	Smallmouth bass	Kokanee salmon	Yellow perch	Bull trout	Black crappie	Total	CPUE*
Elk Cr. Res													
30-Dec	9	18	27	4								31	1.72
Fenn Pond													
28-Jul	7	7	11									11	1.57
5-Aug	4	8	11									11	1.38
subtotal	11	15	22									22	1.47
Five Mile Pond													
3-Jun	2	2	1									1	0.50
17-Jun	5	10	27									27	2.70
23-Jun	0	0	0									0	0.00
18-Aug	3	1	3									3	3.00
Subtotal	10	13	31									31	2.38

*Catch Per Unit of Effort

Table 3. Clearwater Region Enforcement Creel Checks, Lowland Lakes and Reservoirs, 2001. (continued)

Water/ Date	# Anglers	Total hours	Rainbow trout	Brook trout	Bluegill sunfish	Largemouth bass	Smallmouth bass	Kokanee salmon	Yellow perch	Bull trout	Black crappie	Total	CPUE
Moose Cr. Res.													
2-Jun	17	27	42			10						52	1.93
15-Jul	10	7	5									5	0.71
22-Dec	4	8	2									2	0.25
30-Dec	1	2	4									4	2.00
subtotal	32	44	53			10						63	1.43
Spring Valley Res.													
5-Jan	15	29	55									55	1.90
18-Jan	9	16	14									14	0.88
22-Apr	21	35	30									30	0.86
29-Apr	5	6	21									21	3.50
7-May	17	28	74									74	2.64
15-Jul	21	30	13									13	0.43
15-Oct	10	20	28									28	1.40
22-Dec	4	10	10									10	1.00
30-Dec	8	6	7									7	1.17
subtotal	110	180	252									252	1.40
Season totals	172	270	385	4		10						399	1.48

Table 4. Elk Creek Reservoir standard survey findings of fish community characteristics, June 11, 2001.

Catch per unit of combined gear sampling effort					
Species	Length-range (mm)	No.	%	Weight (kg)	%
Game Fish					
Brook Trout	150-330	64	24.1	6.4	23.0
Pumpkinseed	100-150	51	19.2	2.7	9.7
Smallmouth bass	130-280	19	7.1	1.9	6.8
Black Bullhead	190-270	15	5.6	1.3	4.7
Black Crappie	120-260	11	4.1	0.8	2.7
Subtotal		149	56.0	12.3	44.2
Stocked Game Fish					
Rainbow Trout	160-300	116	43.6	15.5	55.7
Game Fish Subtotal		265.0	99.6	27.8	100.0
Non-game Fish					
Red Sided Shiner	230	1	0.4	0.003	0.0
Grand total of all species		266.0	100.0	27.8	100.0

One hour electrofishing, one trap net night,
and one combined floating and sinking gill net night.

Table 5. Catch composition of brook trout from Elk Creek Reservoir standard survey, June 11, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80					
90					
100					
110	1	1.6	22.00	143	
120					
130					
140					
150	3	4.7	40.00	105	1+
160	4	6.3	45.00	98	1+
170	6	9.4	49.40	90	1+
180	8	12.5	63.40	97	1+,2+
190	5	7.8	61.40	80	1+,2+
200	4	6.3	72.75	82	2+
210	2	3.1	96.67	94	2+
220	5	7.8	112.75	95	2+
230	4	6.3	118.25	88	2+
240	7	10.9	145.00	95	2+
250	6	9.4	155.50	90	2+
260	7	10.9	161.25	83	2+
270	1	1.6	190.00	87	
280					
290					
300					
310					
320					
330	1	1.6	392.00	99	3+
340					
350					

Table 6. Back-calculated length at annuli of brook trout from Elk Creek Reservoir standard survey, June 11, 2001.

Back-calculated length (mm) at each annulus						
Age Group	Number Aged	I	II	III	IV	Length at Capture
I	18	148.4	0.0			171.8
II	32	163.9	201.1			228.3
III	1	191.1	255.9	304.6	0.0	337.0
III						0.0
Average Length		158.9	202.8	304.6	0.0	
Number Aged		51	33	1	0	

Pumpkinseed (N=51), the second most abundant species, represents 19.2% of all fish collected and 9.7% of the total biomass. The relative weights of pumpkinseed are generally within the 113 to 134 percentile range. The total length of pumpkinseed in Elk Creek Reservoir range between 110 and 150 mm (Table 7). A four-year-old pumpkinseed in Elk Creek Reservoir would be 140 mm in length (Table 8). There were no pumpkinseed reported in either the 1992 or the 1995 spring sample.

Smallmouth bass (N=19) represented 7.1% of all fish collected and 6.8% of the total biomass of the 2001 spring sample. In 1992 and 1995 spring samples, smallmouth bass represented 4% and 5% of all fish collected and 4% and 4% of the total biomass, respectively. The relative weights of smallmouth bass in 2001 generally fell within the low 70 to high 90 percentile range. In 1992 and 1995, relative weights fell within the 70 to 129 and 80 to 90 percentile ranges, respectively. The total lengths of smallmouth bass during 2001 are between 130 and 280 mm (Table 9). Most of the smallmouth bass population in Elk Creek Reservoir are under 240 mm long, with only 10.6% over 240 mm. A five-year-old smallmouth bass in Elk Creek Reservoir would be around 241 mm in length (Table 10).

Black bullhead (N=15) represented 5.6% of all fish collected and 4.7% of the total biomass. In the 1992 and 1995 spring samples, black bullhead represented 42% and 18% of all fish collected and 59% and 14.8% of the total biomass, respectively. The black bullhead composition in Elk Creek Reservoir has diminished since 1992. The relative weights of black bullhead in 2001 generally fell within the high 80 to low 90 percentile range. The total lengths of black bullhead in Elk Creek Reservoir are between 190 and 270 mm (Table 11).

Black Crappie (N=11) represented 4.1% of all fish collected and only 2.7% of the total biomass. The 1992 spring sample did not document any black crappie. In the 1995 spring sample, black crappie represented only 1.0% of all fish collected and 0.1% of the total biomass. The relative weights of black crappie in 2001 generally fell above the 100 percentile. In 1995, the relative weights were in the 101 percentile. The total lengths of black crappie in 2001 range between 80 and 260 mm (Table 12). A six-year-old black crappie in Elk Creek Reservoir would be 229 mm long (Table 13). Black crappie were illegally introduced into Elk Creek Reservoir, and were documented for the first time in 1995.

Rainbow trout (N=116) dominated the entire sample (stocked and non-stocked), representing 43.6% of all fish collected and 55.7% of the total biomass. In the 1992 and 1995 spring samples, rainbow trout represented 2% and 28% of all fish collected and 3% and 17.7% of the total biomass, respectively. The relative weights of rainbow trout in spring of 2001 are generally within the low 90th percentile. The relative weights of rainbow trout in the spring of 1995 were in the 100 to 117 percentile range. The total lengths of rainbow trout in 2001 range between 160 and 300 mm (Table 14). The composition of rainbow trout, though indicative of a hatchery supplemented population, has increased in both the percent of fish collected and the sample biomass.

No largemouth bass were reported in the 2001 spring sample. In the 1992 and 1995 spring samples, largemouth bass represented 26% and 36% of all fish collected and 25% and 45.6% of the sample biomass, respectively. The relative weights of largemouth bass in 1992 and 1995 generally fell within the 70 to 135 and 60 to 100 percentile range, respectively.

Table 7. Catch composition of pumpkinseed from Elk Creek Reservoir standard survey, June 11, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80					
90					
100	1	2.1	31.00	134	3+
110	10	21.3	39.00	126	3+
120	12	25.5	49.20	121	3+
130	14	29.8	64.00	123	3+,4+
140	7	14.9	74.20	113	4+
150	3	6.4	100.67	124	4+
160					
170					
180					
190					

Table 8. Back-calculated lengths at annuli of pumpkinseed from Elk Creek Reservoir standard survey, June 11, 2001.

Back-calculated length (mm) at each annulus							Length at Capture
Age Group	Number Aged	I	II	III	IV	V	
I							
II							
III	17	59.2	83.3	118.1	0.0		126.1
IV	7	65.1	96.8	119.7	139.5		147.6
V							
Average Length		60.9	87.2	118.6	139.5		
Number Aged		24	24	24	7		

Table 9. Catch composition of smallmouth bass from Elk Creek Reservoir standard survey, June 11, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80					
90					
100					
110					
120					
130	1	5.3	31.00	93	1+
140	1	5.3	24.00	58	1+
150	1	5.3	42.00	82	2+
160					
170	2	10.5	63.50	86	2+
180	5	26.3	86.20	98	2+
190	1	5.3	92.50	90	2+
200	4	21.1	110.00	92	3+
210			119.00	86	2+,3+
220					
230	1	5.3	158.00	87	3+
240	1	5.3	160.00	77	4+
250	1	5.3	185.00	79	5+
260					
270					
280	1	5.3	241.00	73	5+
290					

Table 10. Back-calculated lengths at annuli of smallmouth bass from Elk Creek Reservoir standard survey, June 11, 2001.

Age Group	Number Aged	Back calculated length (mm) at each annulus						Length at Capture
		I	II	III	IV	V	VI	
I	2	87.9						136.0
II	10	101.2	138.0					184.7
III	3	97.1	143.7	191.2	0.0			218.3
IV	1	89.9	144.6	169.2	203.5			241.0
V	2	95.4	127.9	149.8	196.0	245.3		266.0
VI								
Average Length		97.8	138.2	173.7	198.5	245.3		
Number Aged		18	16	6	3	2		

Table 11. Catch composition of black bullhead from Elk Creek Reservoir standard survey, June 11, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.
50				
60				
70				
80				
90				
100				
110				
120				
130				
140				
150				
160				
170				
180				
190	1	6.7	146.60	204
200	6	40.0	133.00	159
210	1	6.7	159.00	165
220	4	26.7	169.00	153
230	1	6.7	197.00	157
240				
250	1	6.7	247.00	154
260				
270	1	6.7	310.00	154
280				
290				
300				
310				
320				
330				

Table 12. Catch composition of black crappie from Elk Creek Reservoir standard survey, June 11, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80	2	18.2	15.00	219	
90					
100					
110					
120	1	9.1	30.00	120	2+
130	5	45.5	39.40	122	2+
140	1	9.1	42.00	103	3+
150					
160					
170					
180					
190					
200					
210	1	9.1	170.00	111	4+
220					
230					
240					
250					
260	1	9.1	320.00	104	6+
270					
280					

Table 13. Back-calculated length at annuli of black crappie from Elk Creek Reservoir standard survey, June 11, 2001.

		Back-calculated length (mm) at each annulus						
Age Group	Number Aged	I	II	III	IV	V	VI	Length at Capture
I	0							
II	6	72.6	125.1					134.7
III	1	80.9	133.5	143.8				147.0
IV	1	65.3	90.6	155.2	213.6			218.0
V	0							
VI	1	72.2	90.7	125.5	156.6	211.4	228.5	267.0
Average Length		72.6	118.3	141.5	185.1	211.4	228.5	
Number Aged		9	9	3	2	1	1	

Table 14. Catch composition of rainbow trout from Elk Creek Reservoir standard survey, June 11, 2001.

Length Range (mm)	No. Unit Effort	Per Percent of Sample	Mean Weight (grams)	Relative Wt.
50				
60				
70				
80				
90				
100				
110				
120				
130				
150				
150				
160	1	0.9	40.00	88
170	1	0.9	49.00	90
180				
190	3	2.6	68.00	91
200	9	7.8	79.00	91
210	8	6.9	90.00	90
220	15	12.9	104.00	91
230	17	14.7	118.00	90
240	20	17.2	137.00	93
250	17	14.7	151.00	91
260	7	6.0	171.00	92
270	6	5.2	191.00	92
280	10	8.6	213.00	92
290	1	0.9	239.00	93
300	1	0.9	264.00	93
310				

Mann Lake

Mann Lake is located approximately 3.2 km east of Lewiston, Idaho with an elevation of 549 m. The reservoir is 58 ha with a mean depth of 6.4 m and a maximum depth of 15 m. Mann Lake is the final storage basin for the Lewiston Orchards Irrigation District's (LOID) watershed.

The annual water level fluctuations are common in Mann Lake. The magnitude of these fluctuations depends on the water yield of the LOID-managed watershed and irrigation demands. Water levels generally reduce during the summer months when residential irrigation demands are high. The reservoir will remain below full pool until the following spring run-off.

Spawning success of warm water species can be greatly effected by these annual water level fluctuations. Largemouth bass production and predator/prey interactions are both benefited by dropping the water level late in the summer.

Mann Lake contains seven species of game fish: (1) black crappie, (2) pumpkinseed, (3) largemouth bass, (4) bluegill *L. macrochirus*, (5) kokanee, (6) channel catfish, and (7) rainbow trout. The only non-game fish species documented is the largescale sucker *Catostomus macrocheilus*. Statewide general fishing regulations apply for all species in Mann Lake.

Game fish, excluding rainbow trout, combined to produce 71.8% of the total catch and 58.2% of the biomass. Rainbow trout were not included in total catch because they are stocked fish. All game fish (stocked and non-stocked) combined produced 99.7% of the total catch and 96.7% of the catch biomass (Table 15).

Black Crappie (N=155) dominated the sample representing 50.8% of all fish collected and 30.3% of the total biomass. Since the 2001 sample was conducted in the spring, it can be compared to the 1993 spring sample. In the 1993 survey of Mann Lake, black crappie were the second most abundant species representing 23.8% of all fish collected and 15.6% of the sample biomass. The relative weights for black crappie in 2001 are generally within the 80 to 112 percentile range. In 1993, the relative weights for black crappie were within the 65 to 100 percentile range. The total length of black crappie in 2001 range between 140 and 240 mm (Table 16). In 1993, the total length of black crappie ranged between 70 and 300 mm. In 2001, a four-year-old black crappie in Mann Lake would be almost 229 mm (Table 17).

Largemouth bass (N=30) represented 9.8% of the total catch and 13.6% of the total biomass. In 1993, largemouth bass dominated the sample representing 35.6% of all fish collected and 56.0% of the total biomass. The relative weights for largemouth bass in 2001 generally fell within the mid-50 to the mid-70 percentile range. In 1993, the relative weights of largemouth bass generally fell within the mid-70 to upper-90 percentile range. The percentages of largemouth bass, and the relative weights, have decreased since 1993. The total lengths of largemouth bass in 2001 range between 80 and 270 mm (Table 18). In 1993, the total lengths of largemouth bass range between 150 and 390 mm. A 305 mm largemouth bass in Mann Lake in 2001 would be four years old (Table 19). In the 1993 survey, a 305 mm largemouth bass would be five years old.

Table 15. Mann Lake standard survey findings of fish community characteristics, May 14, 2001

Catch per unit of combined gear sampling effort					
Species	Length-range (mm)	No.	%	Weight (kg)	%
Game Fish					
Black Crappie	80-240	155	50.8	10	30.3
Largemouth bass	80-390	30	9.8	4.5	13.6
Pumkinseed	70-370	21	6.9	1.19	3.6
Bluegill	120-220	5	1.6	0.6	1.8
Kokanee	80-100	4	1.3	0.2	0.6
Channel catfish	190-570	4	1.3	2.7	8.2
Subtotal		219	71.8	19.19	58.2
Stocked Game Fish					
Rainbow Trout	110-350	85	27.9	12.7	38.5
Game fish subtotal		304	99.7	31.89	96.7
Non-game fish					
Largescale sucker	480	1	0.3	1.1	3.3
Grand total of all species		305	100.0	32.99	100.0

One hour electrofishing, one trap net night,
and one combined floating and sinking gill net night.

Table 16. Catch composition of black crappie from Mann Lake standard survey, May 14, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80					
90					
100					
110					
120					
130					
140	5	3.3	43.33	106	1+
150	54	35.3	49.00	96	1+,2+
160	69	45.1	70.40	112	2+
170	14	9.2	64.80	84	2+
180	0	0.0	75.00	81	2+,3+
190	2	1.3	105.00	95	3+
200	2	1.3	112.33	86	3+
210	5	3.3	127.60	84	4+
220	1	0.7	160.00	90	4+
230					
240	1	0.7	160.00	68	4+
250					
260					

Table 17. Back-calculated lengths at annuli of black crappie from Mann Lake standard survey, May 14, 2001.

Age Group	Number Aged	I	II	III	IV	V	Length at Capture
I	6	117.3					150.3
II	15	81.0	137.2				169.9
III	4	129.0	169.8	193.8			199.5
IV	3	93.6	140.0	172.3	203.5		223.3
V	4	68.4	134.2	171.8	190.1	207.4	219.5
VI	0						
Average Length		93.4	142.1	180.0	195.8	207.4	
Number Aged		32	26	11	7	4	

Table 18. Catch composition of largemouth bass from Mann Lake standard survey, May 14, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80	1	3.3	8.00	76	1+
90	3	10.0	15.00	100	1+
100					
110					
120					
130	1	3.3	15.00	33	2+
160	1	3.3	55.00	63	2+
170					
180	1	3.3	70.00	56	2+
190	1	3.3	90.00	61	2+
200	5	16.7	114.00	65	2+
210	4	13.3	125.00	62	2+
220	8	26.7	158.75	68	2+,3+
230	2	6.7	146.67	54	2+
240					
250	1	3.3	220.00	63	2+
260					
270	1	3.3	310.00	70	4+
280					
290					

Table 19. Back-calculated length at annuli of largemouth bass from Mann Lake standard survey, May 14, 2001.

Back-calculated length (mm) at each annulus							Length at Capture
Age Group	Number Aged	I	II	III	IV	V	
I	2	82.8					94.0
II	17	117.1	164.3				209.2
III	4	94.3	138.7	185.0			210.3
IV	2	116.2	189.8	237.4	299.0		334.0
Average Length		110.6	162.1	202.5	299.0		
Number Aged		25	23	6	2		

Pumpkinseed (N=21) represented 6.9% of the total catch and 3.6% of the total biomass. In the 1993 survey, pumpkinseed represented 14.4% of the total catch and only 2.8% of the sample biomass. The relative weights for pumpkinseed in 2001 generally fell above the 100 percentile. No relative weights for pumpkinseed were given in the 1993 spring sample. The total lengths of pumpkinseed in 2001 range between 70 and 170 mm (Table 20). In 1993, the total lengths of pumpkinseed ranged between 80 and 220 mm. Anglers do not generally fish for pumpkinseed because their maximum size is 152 mm (Table 21). Since 1993, the abundance of pumpkinseed has gone down, while their biomass has slightly increased.

Bluegill (N=5) represented 1.6% of the total catch and 1.8% of the total biomass. In 1993, bluegill represented 10% of the total catch and 3.4% of the sample biomass. The relative weights for bluegill in 2001 fell within the high 90s percentile. In 1993, the relative weights of bluegill fell within the 63 to 110 percentile range. The total length of bluegill in 2001 range between 120 and 170 mm (Table 22). In 1993, the total length of bluegill ranged between 100 and 240 mm. A two-year-old bluegill in Mann Lake in 2001 would be 152 mm long (Table 23). The composition of bluegill has decreased by 8.4% since 1993.

Kokanee (N=4) represented 1.3% of the total catch and 0.6% of the total biomass. In the 1993 spring sample, no kokanee were reported.

Channel catfish (N=4) represented 1.3% of the total catch and 8.2% of the total biomass. In 1993, the channel catfish represented 1.3% of the total catch and 2.8% of the sample biomass. The relative weights for channel catfish in 2001 generally fell within the 90s percentile. Relative weights for channel catfish in 1993 were not given. The total lengths of channel catfish in 2001 are between 190 and 570 mm (Table 24). The 2001 findings are very similar to those found in 1993.

Rainbow trout (N=85) were the only stocked species documented representing 27.9% of the total catch and 38.5% of the total biomass. The relative weights of rainbow trout seem to increase with an increase in size, having a range within the 17 to 169-percentile. The total length of rainbow trout range between 110 and 350 mm (Table 25). In the 1993 spring sample, no rainbow trout were documented.

Moose Creek Reservoir

Moose Creek Reservoir is located in Latah County eight miles northwest of Bovill, Idaho with an elevation of 878 m. The reservoir is 11 ha and has a maximum depth of 4 m. Approximately 90% of the reservoir is less than 2.5 m deep with a large portion (80-90%) densely vegetated with a growth of aquatic macrophytes. The reservoir was last drained and refilled in 1978.

Moose Creek Reservoir is the site of an abandoned clay mining operation. The reservoir is located on land owned by the Idaho Department of Lands. Latah County Recreation District manages camping and day-use recreation on approximately 70 acres surrounding the reservoir. Moose Creek Reservoir is currently being managed for trophy bass production with a daily bag limit of two fish and a minimum length of 508 mm.

Table 20. Catch composition of pumpkinseed from Mann Lake standard survey, May 14, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70	4	19.0	12.00	154	2+
80	2	9.5	12.50	107	2+
90					
100	4	19.0	27.50	119	2+
110					
120					
130	2	9.5	70.00	134	2+,3+
140	2	9.5	60.00	91	2+
150	4	19.0	88.75	109	2+
160	2	9.5	127.50	128	2+
170	1	4.8	140.00	116	3+
180					
190					
200					
210					

Table 21. Back-calculated length at annuli of pumpkinseed from Mann Lake standard survey, May 14, 2001.

Back-calculated length (mm) at each annulus						
Age Group	Number Aged	I	II	III	IV	Length at Capture
I						
II	13	135.0	129.4	0.0		129.1
III	2	139.6	149.0	153.5		155.5
IV						
Average Length		135.6	132.0	153.5		
Number Aged		15	15	2		

Table 22. Catch composition of bluegill from Mann Lake standard survey, May 14, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80					
90					
100					
110					
120	1	33.3	50.00	132	2+
130					
140					
150	1	33.3	72.50	94	2+
160					
170	1	33.3	115.00	99	2+
180					
190					

Table 23. Back-calculated lengths at annuli of bluegill from Mann Lake standard survey, May 14, 2001.

Back-calculated length (mm) at each annulus

Age Group	Number Aged	I	II	III	IV	V	Length at Capture
I							
II	2	25.8	151.5				151.5
III							
IV							
Average Length		25.8	151.5				
Number Aged		2	2				

Table 24. Catch composition of channel catfish from Mann Lake standard survey, May 14, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.
50				
60				
70				
80				
90				
100				
110				
120				
130				
140				
150				
160				
170				
180				
190	1	25.0	58.00	97
200				
210				
220	1	25.0	88.00	92
230	1	25.0	102.00	93
240				
250				
260				
270				
280				
290				
300				
310				
320				
330				
340				
350				
360				
370				
380				
390				
400				
410				
420				
430				
440				

Table 24. continued

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.
450				
460				
470				
480				
490				
500				
510				
520				
530				
540				
550				
560				
570	1	25.0	2450.00	123
580				
590				
600				
610				
620				
630				
640				
650				

Table 25. Catch composition of rainbow trout from Mann Lake standard survey, May 14, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.
50				
60				
70				
80				
90				
100				
110	1	1.2	13.00	17
120				
130				
140				
150				
160	1	1.2	40.00	36
170				
180				
190	1	1.2	68.00	52
200	4	4.7	79.00	57
210	2	2.4	90.00	62
220	7	8.2	104.00	68
230	8	9.4	119.00	75
240	14	16.5	137.00	82
250	22	25.9	151.00	87
260	9	10.6	171.00	94
270	4	4.7	191.00	101
280	6	7.1	213.00	109
290	5	5.9	239.00	118
300				
310				
320				
330				
340				
350	1	1.2	417.00	169
360				
370				

Moose Creek Reservoir contains four species of game fish: (1) largemouth bass, (2) black crappie, (3) pumpkinseed, and (4) bluegill. The only non-game fish species documented is the largescale sucker.

Game fish combined to produce 98.8% of the total catch and 100% of the sample biomass. Non-game fish species produced 1.2% of the total catch and a negligible amount of the sample biomass (Table 26).

Largemouth bass (N=46) dominated the sample representing 57.5% of all fish collected and 89.5% of the sample biomass. Since the 2001 sample was conducted in the spring, it can be compared to the 1992 spring sample. In 1992, largemouth bass represented only 15.8% of the total catch and 22.6% of the sample biomass. The relative weights of largemouth bass in 2001 generally fell within the mid 70 to 129 percentile range (Table 27). In 1992, the relative weights fell within the 80 to 120 percentile range, which is similar to that of 2001. The total length of largemouth bass in 2001 range between 90 to 420 mm, with none of the sample at the minimum length of 508 mm. In 1992, the total length of largemouth bass ranged between 60 and 500 mm. An eight-year-old largemouth bass in Moose Creek Reservoir in 2001 would be 376 mm (Table 28). In 1992, a seven-year-old largemouth bass would be 457 mm. Since 1992, largemouth bass have increased in percentage of fish collected and percentage of sample biomass. The lengths of largemouth bass have decreased since 1992.

Black Crappie (N=17) represented 21.3% of all fish collected and 4.7% of the sample biomass. In 1992, black crappie represented 9.4% of all fish collected and only 1.9% of the sample biomass. The relative weights of black crappie in 2001 generally fell within the 80 to 109 percentile range (Table 29). In 1992, the relative weights fell within the mid 80 to 109 percentile range, which is very similar to that of 2001. The total length of black crappie in 2001 ranged between 100 and 220 mm. In 1992, the total lengths were between 90 and 230 mm. A six-year-old black crappie in Moose Creek Reservoir would be 203 mm (Table 30). Black Crappie has increased in percentage of fish collected and percentage of sample biomass since 1992, while relative weights and lengths remain similar.

Pumpkinseed (N=16) represented 20% of all fish collected and 5.8% of the sample biomass. In 1992, pumpkinseed represented 41.8% of all fish collected and 18.7% of the biomass. Pumpkinseed has decreased in both percentage of fish collected and percentage of sample biomass since 1992. The relative weights of pumpkinseed in 2001 generally fell within the 90 to 100 percentile range (Table 31). The total length of pumpkinseed in 2001 range between 100 and 160 mm. The total length of pumpkinseed in 1992 range between 60 and 150 mm. A five-year-old pumpkinseed in Moose Creek Reservoir in 2001 would be 165 mm (Table 32). The relative weights of pumpkinseed for 1992 were not available for comparison.

Bluegill (N=16) represented 20% of all fish collected and 4.7% of the sample biomass. In 1992, bluegill represented 16.2% of all fish collected and 12.7% of the sample biomass. The percentage of bluegill collected has increased since 1992; however, the percentage of biomass has decreased. The relative weights of bluegill in 2001 generally fell within the mid 80 to 100 percentile range (Table 33). In 1992, the relative weights of bluegill generally fell within the 80 to 100 percentile range. The total length of bluegill in 2001 range between 100 and 190 mm. In 1992, the total length of bluegill was between 60 and 190 mm. A five-year-old bluegill in Moose Creek Reservoir in 2001 would be almost 178 mm (Table 34).

Table 26. Moose Creek Reservoir standard survey findings of fish community characteristics, June 6, 2001.

Catch per unit of combined gear sampling effort					
Species	Length-range (mm)	No.	%	Weight (kg)	%
Game Fish					
Largemouth bass	90-420	46	57.5	15.4	89.5
Black Crappie	100-220	17	21.3	0.8	4.7
Pumpkinseed	100-160	16	20.0	1.0	5.8
Bluegill	100-190	16	20.0	0.8	4.7
Game fish subtotal		79	98.8	17.2	100.0
Nongame Fish					
Large Scale Sucker	330	1	1.2	N/A	N/A
Grand total of all species		80	100.0	17.2	100.0

One hour electrofishing, one trap net night,
and one combined floating and sinking gill net night.

Table 27. Catch composition of largemouth bass from Moose Creek Reservoir standard survey, June 6, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80					
90	2	4.3	11.00	111	1+
100	2	4.3	17.50	129	1+,2+
110	4	8.7	15.50	85	1+,2+
120	4	8.7	17.50	74	1+,2+
130	2	4.3	25.00	82	1+
140	1	2.2	30.00	79	1+
150					
160					
170					
180					
190					
200					
210					
220					
230	1	2.2	155.00	87	2+
240					
250					
260					
270	4	8.7	251.25	86	3+,4+
280	4	8.7	306.25	93	4+
290	4	8.7	321.25	87	4+,5+
300	4	8.7	370.00	91	5+,6+
310					
320	5	10.9	450.00	90	5+,6+
330	1	2.2	525.00	95	5+
340	2	4.3	600.00	99	5+
350					
360					
370					
380	2	4.3	830.00	97	6+,7+
390	1	2.2	1020.00	109	9+
400	1	2.2	970.00	96	8+
410	1	2.2	1150.00	105	9+
420	1	2.2	1175.00	100	8+
430					

Table 28. Back-calculated length at annuli of largemouth bass from Moose Creek Reservoir standard survey, June 6, 2001.

Back-calculated length (mm) at each annulus

Age Group	Number Aged	Back-calculated length (mm) at each annulus									Length at Capture
		I	II	III	IV	V	VI	VII	VIII	VIII	
I	9	85.0									122.4
II	6	83.0	118.9								135.0
III	2	79.5	139.8	222.5							276.0
IV	9	86.7	158.2	225.5	269.7						292.4
V	9	88.1	146.5	196.5	257.2	297.1					321.8
VI	5	80.1	125.2	175.2	206.2	264.9	297.2				321.0
VII	1	90.4	110.4	150.5	186.1	267.2	322.8	344.0			384.0
VIII	2	87.5	155.7	203.9	248.4	294.9	317.2	354.0	382.6	0.0	417.0
VIII	2	77.9	107.7	146.9	184.9	218.8	257.0	296.7	342.6	376.9	408.0
Average Length		84.8	138.8	199.0	243.8	278.6	295.7	329.1	362.6	376.9	
Number Aged		45	36	30	28	19	10	5	4	2	

Table 29. Catch composition of black crappie from Moose Creek Reservoir standard survey, June 6, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80					
90					
100	5	29.4	13.00	94	2+
110	5	29.4	19.80	105	2+
120	2	11.8	23.50	94	2+
130	1	5.9	35.00	109	2+
140					
150					
160					
170					
180					
190	1	5.9	111.00	101	5+
200					
210	1	5.9	122.00	80	5+
220	2	11.8	164.00	92	6+
230					
240					
250					

Table 30. Back-calculated length at annuli of black crappie from Moose Creek Reservoir standard survey, June 6, 2001.

Back-calculated length (mm) at each annulus								
Age Group	Number Aged	I	II	III	IV	V	VI	Length at Capture
I	0							
II	12	60.2	103.2					112.8
III	0							
IV	0							
V	2	53.4	87.6	111.4	158.1	187.9		204.5
VI	2	55.1	89.6	113.3	152.2	185.2	212.3	225.5
Average Length		58.8	99.6	112.4	155.1	186.6	212.3	
Number Aged		16	16	4	4	4	2	

Table 31. Catch composition of pumpkinseed from Moose Creek Reservoir standard survey, June 6, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80					
90					
100	1	6.3	18.00	78	2+
110					
120	1	6.3	42.00	103	2+
130	5	31.3	51.20	98	2+
140	4	25.0	59.50	91	3+,4+
150	4	25.0	82.25	101	4+
160	1	6.3	108.00	108	4+,5+
170					
180					
190					
200					
210					

Table 32. Back-calculated length at annuli of pumpkinseed from Moose Creek Reservoir standard survey, June 6, 2001.

Back-calculated length (mm) at each annulus								
Age Group	Number Aged	I	II	III	IV	V	VI	Length at Capture
I	0							
II	3	52.6	99.0					120.0
III	6	50.4	78.8	116.6				139.0
IV	8	50.1	83.3	118.1	142.9			153.9
V	1	52.5	75.3	111.4	140.5	163.3		168.0
VI	0							
Average Length		50.7	84.0	117.0	142.6	163.3		
Number Aged		18	18	15	9	1		

Table 33. Catch composition of bluegill from Moose Creek Reservoir standard survey, June 6, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80					
90					
100	5	31.3	21.40	100	2+
110	5	31.3	24.00	83	2+
120	2	12.5	36.00	95	4+
130					
140					
150					
160	1	6.3	82.00	86	3+,4+
170	1	6.3	100.00	86	4+
180	1	6.3	127.00	91	4+,5+
190	1	6.3	139.50	84	5+
200					
210					
220					
230					
240					
250					
260					

Table 34. Back-calculated length at annuli of bluegill from Moose Creek Reservoir standard survey, June 6, 2001.

Back-calculated length (mm) at each annulus								
Age Group	Number Aged	I	II	III	IV	V	VI	Length at Capture
I	0							
II	14	57.9	100.2					110.9
III	1	69.4	121.2	135.8				160.0
IV	4	50.7	79.8	111.0	138.3			161.0
V	5	55.7	87.0	124.5	153.6	173.7		189.6
Average Length		56.7	94.9	120.2	146.8	173.7		
Number Aged		24	24	10	9	5		

Though not represented in the 2001 sample, rainbow trout represented 13.2% of all fish collected and 26.4% of the sample biomass in 1992.

Black bullhead were not represented in the 2001 sample. In 1992, however, black bullhead represented 2.7% of all fish collected and 12.3% of the sample biomass.

Spring Valley Reservoir

Spring Valley Reservoir is located in Latah County about eight miles east of Troy, Idaho with an elevation of 726 m. The reservoir is 49 acres and has a mean depth of approximately 3.6 m with a maximum depth of 8.8 m.

Spring Valley Reservoir was originally constructed in 1961 by the Department to create a recreational fishery. In 1993, the spillway was reconfigured to meet the dam safety specifications of the Idaho Department of Water Resources. The Department maintains trout populations in the spring and fall months by stocking catchable and fingerling size trout. Spring Valley Reservoir is open to fishing year-round with statewide general fishing regulations applying to all fish species.

Spring Valley Reservoir contains four species of game fish: (1) largemouth bass, (2) bluegill, (3) black crappie, and (4) rainbow trout. Game fish, excluding rainbow trout, combined to produce 88.5% of all fish collected and 77.3% of the sample biomass. Rainbow trout were not included in the total catch because they are stocked fish. All game fish (stocked and non-stocked) combined produced 100% of the total catch and 100% of the sample biomass (Table 35).

Largemouth bass (N=111) dominated the sample with 26% of all fish collected and 34.1% of the sample biomass. Since the 2001 sample was conducted in the spring, it can be compared to the 1993 spring sample. In 1993, largemouth bass represented 57.5% of all fish collected and 71.8% of the sample biomass. Largemouth bass have decreased in percentage of all fish collected and percentage of sample biomass since 1993. The relative weights of largemouth bass in 2001 generally fell within the 80 to 120-percentile range. In 1993, the relative weights generally fell within the 70 to 110-percentile range. The total length of largemouth bass in Spring Valley Reservoir in 2001 ranges between 130 and 320 mm (Table 36). In 1993, the total lengths of largemouth bass ranged between 50 and 390 mm. A six-year-old largemouth bass in Spring Valley Reservoir in 2001 would be 254 mm (Table 37). Although the percentage of largemouth bass has decreased since 1993, the relative weights have increased.

Bluegill (N=266) represented 62.3% of all fish collected and 42.9% of the sample biomass. In 1993, bluegill represented 41.6% of all fish collected and 27.9% of the sample biomass. Bluegill has increased since 1993, in both the percentage of all fish collected and the percentage of biomass. The relative weights of bluegill in 2001 generally fell within the 100 to 130 percentile range. In 1993, the relative weights generally fell within the 80 to 90 percentile range. The relative weight of bluegill has also increased since 1993. The total length of bluegill in 2001 ranges between 80 to 200 mm (Table 38). The total length of bluegill in 1993 ranged between 50 to 200 mm. A five-year-old bluegill in Spring Valley Reservoir in 2001 would be 152 mm (Table 39). Since 1993, bluegill in Spring Valley Reservoir increased in all aspects.

Table 35. Spring Valley Reservoir standard survey findings of fish community characteristics, May 24, 2001.

Catch per unit of combined gear sampling effort					
Species	Length-range (mm)	No.	%	Weight (kg)	%
Game Fish					
Largemouth bass	130-320	111	26.0	11.7	34.1
Bluegill	80-190	266	62.3	14.7	42.9
Black Crappie	180	1	0.2	0.1	0.3
Subtotal		378.0	88.5	26.5	77.3
Stocked Game Fish					
Rainbow Trout	100-310	49	11.5	7.8	22.7
Grand total of all species		427.0	100.0	34.3	100.0

One hour electrofishing, one trap net night, and one combined floating and sinking gill net night.

Table 36. Catch composition of largemouth bass from Spring Valley Reservoir standard survey, May 23, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80					
90					
100					
110					
120					
130	1	0.9	25.00	82	2+
140	6	5.4	32.00	84	2+
150	8	7.2	45.00	95	2+,3+
160	16	14.4	52.00	90	2+,3+
170	32	28.8	65.00	94	3+
180	14	12.6	82.00	99	3+
190	15	13.5	95.00	97	3+,4+
200	2	1.8	131.67	114	4+
210	1	0.9	145.00	108	4+
220	2	1.8	170.00	110	4+
230					
240	3	2.7	242.50	119	5+
250					
260	3	2.7	288.33	110	5+
270	2	1.8	325.00	111	5+
280	2	1.8	350.00	106	6+
290					
300	3	2.7	435.00	106	6+
310					
320	1	0.9	610.00	122	6+
330					
340					

Table 37. Back-calculated length at annuli of largemouth bass from Spring Valley Reservoir standard survey, May 23, 2001.

Back-calculated length (mm) at each annulus								
Age Group	Number Aged	I	II	III	IV	V	VI	Length at Capture
I	0							
II	10	84.9	122.4					149.3
III	20	68.7	126.9	155.9				176.3
IV	5	75.0	140.5	172.7	194.4			208.2
V	6	85.2	137.0	184.2	223.6	249.7		259.2
VI	4	84.3	147.5	193.3	229.7	260.4	257.5	304.5
Average Length		76.6	130.6	167.4	215.5	254.0	257.5	
Number Aged		45	45	35	15	10	4	

Table 38. Catch composition of bluegill from Spring Valley Reservoir standard survey, May 23, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80	3	1.1	14.00	132	2+,3+
90	16	6.0	18.00	118	3+
100	46	17.3	25.00	117	3+,4+
110	48	18.0	32.00	111	3+,4+
120	35	13.2	37.40	99	4+
130	30	11.3	53.00	108	4+
140	29	10.9	69.00	111	4+
150	24	9.0	88.40	114	4+
160	7	2.6	103.00	108	4+
170	16	6.0	127.50	110	4+,5+
180	6	2.3	145.50	104	4+,5+
190	5	1.9	162.50	98	4+,5+
200	1	0.4	231.00	118	
210					

Table 39. Back-calculated length at annuli of bluegill from Spring Valley Reservoir standard survey, May 29, 2001.

Back-calculated length (mm) at each annulus								
Age Group	Number Aged	I	II	III	IV	V	VI	Length at Capture
I	0							
II	1	14.6	39.0					16.6
III	11	17.1	49.4	87.9				101.1
IV	34	28.7	71.1	106.3	132.0			146.1
V	8	33.0	70.6	108.6	139.7	160.8		182.0
VI	0							
Average Length		26.7	66.0	102.8	133.5	160.8		
Number Aged		54	54	53	42	8		

Black crappie (N=1) represented 0.2% of all fish collected and 0.3% of the sample biomass. In 1993, black crappie represented 0.86% of all fish collected and 0.22% of the sample biomass.

Rainbow trout, the only stocked game fish in Spring Valley Reservoir, represented 11.5% of all fish collected and 22.7% of the sample biomass. The relative weights of rainbow trout generally fell within the 80 and 90-percentile range. The total lengths of rainbow trout in Spring Valley Reservoir ranges between 100 and 310 mm (Table 40). Rainbow trout were not documented in the 1993 sample.

Waha Lake

Waha Lake is located in Nez Perce County, approximately 16 km southeast of Lewiston, Idaho. The 38 ha naturally formed lake is the deepest of the region's lowland lakes with a mean depth of 19.5 m and maximum depth of 33 m. Waha Lake has an elevation 1,032 m.

The LOID manages the water level at Waha Lake. The lake's primary inlet is located on the West Fork of Sweetwater Creek where LOID created a diversion dam. Waha Lake requires more time to reach full pool, with full pool often not reached until early June in most years. Minimum pool usually occurs in January when water level is reduced by subsurface outflow and pumping for summer irrigation.

Waha Lake contains six species of game fish: (1) yellow perch, (2) smallmouth bass, (3) splake *S. fontinalis* x *S. namaycush*, (4) black crappie, (5) kokanee, and (6) rainbow trout. Waha Lake is open to fishing year-round and general statewide fishing regulations apply to all fish species.

Game fish, excluding rainbow trout, combined to produce 58.8% of all fish collected and 47.2% of the sample biomass. Rainbow trout were not included in the total catch because they are not stocked fish. All game fish (stocked and non-stocked) combined to produce 100% of the total catch and 100% of the sample biomass (Table 41).

Yellow Perch (N=115) represented 32% of the total catch and 21.8% of the sample biomass. The relative weights of yellow perch generally fell within the upper 80 to 100 percentile range. Yellow perch have a total length between 150 and 220 mm in Waha Lake (Table 42). It takes yellow perch five years to reach 203 mm (Table 43). Yellow perch were illegally introduced into Waha Lake in the fall of 1994.

Smallmouth bass (N=82) represented 22.8% of all fish collected and 15.5% of the sample biomass. Since the sample was conducted in the spring, it can be compared to the 1994 spring sample. In 1994, smallmouth bass represented 58% of all fish collected and 70.7% of the sample biomass. The relative weights of smallmouth bass in 2001 generally fell within the 70 to 80 percentile range. In 1994, the relative weights were within the 70 to 126 percentile range. Smallmouth bass in Waha Lake have a total length between 80 and 440 mm (Table 44). In 1994, the smallmouth bass were generally longer, having a total length of 140 to 430 mm. Smallmouth bass take eight years to reach 380 mm (Table 45).

Table 40. Catch composition of rainbow trout from Spring Valley Reservoir standard survey, May 23, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.
50				
60				
70				
80				
90				
100	4	8.2	10.00	84
110				
120				
130				
140				
150				
160				
170				
180				
190				
200				
210	1	2.0	89.00	89
220	1	2.0	104.00	91
230	1	2.0	118.00	90
240	7	14.3	137.00	93
250	10	20.4	151.00	91
260	8	16.3	171.00	92
270	7	14.3	191.00	92
280	6	12.2	213.00	92
290	2	4.1	239.00	93
300	1	2.0	264.00	93
310	1	2.0	290.00	93
320				
330				
340				

Table 41. Waha Lake standard survey findings of fish community characteristics, May 31, 2001.

Catch per unit of combined gear sampling effort					
Species	Length-range (mm)	No.	%	Weight (kg)	%
Game Fish					
Yellow Perch	150-220	115	32.0	8.9	21.8
Smallmouth bass	100-440	82	22.8	6.3	15.5
Splake	290-450	10	2.8	3.7	9.1
Black Crappie	200	2	0.6	0.3	0.7
Kokanee	100-160	2	0.6	0.05	0.1
Subtotal		211.0	58.8	19.2	47.2
Stocked Game Fish					
Rainbow Trout	180-290	148	41.2	21.5	52.8
Grand total of all species		359.0	100.0	40.7	100.0

One hour electrofishing, one trap net night,
and one combined floating and sinking gill net night.

Table 42. Catch composition of yellow perch from Waha Lake standard survey, May 31, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80					
90					
100					
110					
120					
130					
140					
150	4	3.5	51.75	106	
160	21	18.3	57.20	96	
170	36	31.3	73.50	102	
180	28	24.3	71.33	82	
190	9	7.8	89.50	87	
200	12	10.4	114.00	95	
210	4	3.5	121.67	87	4+,5+
220	1	0.9	142.00	87	5+
230					
240					

Table 43. Back-calculated length at annuli of yellow perch from Waha Lake standard survey, May 31, 2001.

Back-calculated length (mm) at each annulus								
Age Group	Number Aged	I	II	III	IV	V	VI	Length at Capture
I	0							
II	0							
III	0							
IV	1	175.8	185.8	200.7	206.3	0.0	0.0	212.0
V	2	179.3	193.0	201.9	210.3	215.5	0.0	219.0
VI	0							
Average Length		178.1	190.6	201.5	209.0	215.5		
Number Aged		3	3	3	3	2		

Table 44. Catch composition of smallmouth bass from Waha Lake standard survey, May 31, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50	5	6.1			
60					
70					
80	1	1.2	8.00	98	
90	2	2.4	9.00	79	
100	7	8.5	11.25	72	2+
110	2	2.4	16.50	80	3+
120	7	8.5	19.40	73	3+
130	10	12.2	23.60	70	3+
140	9	11.0	29.60	71	3+
150	13	15.9	37.20	73	3+
160	8	9.8	47.80	77	3+
170					
180					
190	6	7.3	80.00	78	3+
200					
210	1	1.2	115.00	83	
220	0	0.0			
230	4	4.9	154.00	85	4+
240	1	1.2	184.00	89	5+
250	1	1.2	165.00	71	5+
260	2	2.4	196.00	75	6+
270					
280					
290					
300					
310					
320					
330					
340					
350	1	1.2	560.00	87	7+
360					
370					
380					
390					
400					
410	1	1.2	960.00	93	9+
420					
430					
440	1	1.2	1150.00	90	9+
450					
460					

Table 45. Back-calculated length at annuli of smallmouth bass from Waha Lake standard survey, May 31, 2001.

Back-calculated length (mm) at each annulus											Length at Capture
Age Group	Number Aged	I	II	III	IV	V	VI	VII	VIII	VIII	
I	0										
II	4	77.1	93.6								102.5
III	26	81.4	111.3	130.7							142.7
IV	1	97.1	145.8	174.5	214.6						239.0
V	3	83.5	129.6	167.8	195.4	216.1					242.3
VI	1	81.2	133.0	168.0	198.5	229.0	251.8				264.0
VII	1	78.7	147.0	197.9	253.1	285.1	306.9	334.6			352.0
VIII	0										
VIII	2	83.8	119.8	150.1	194.8	230.5	266.7	302.0	351.6	394.3	432.0
Average Length		81.6	113.7	139.5	205.2	231.9	273.1	312.9	351.6	394.3	
Number Aged		38	38	34	8	7	4	3	2	2	

Splake (N=10) represented 2.8% of all fish collected and 9.1% of the sample biomass. The relative weight of splake generally fell within the 100 to 120-percentile range. The splake in Waha Lake had a total length between 290 and 450 mm (Table 46). There were no splake documented in the 1994 sample.

Black Crappie (N=2) represented only 0.6% of all fish collected and 0.7% of the sample biomass. Black Crappie were not represented in the 1994 sample.

Kokanee (N=2) represented only 0.6% of all fish collected and 0.1% of the sample biomass. In 1994, kokanee represented 2.9% of all fish collected and 0.8% of the sample biomass.

Rainbow trout (N=148) dominated the sample representing 41.2% of all fish collected and 52.8% of the sample biomass. In 1994, rainbow trout represented 39.1% of all fish collected and 28.6% of the sample biomass. The relative weights of rainbow trout generally fell within the 90 percentile range. In 1994, the relative weight of rainbow trout generally fell within the 80 to 90 percentile range. The total lengths of rainbow trout in Waha Lake in 2001 were between 180 and 330 mm (Table 47). In 1994, the total lengths in 1994 were between 180 and 390 mm. The 1994 findings on rainbow trout are very similar to those found in 2001.

Winchester Lake

Winchester Lake is located approximately 48 km southeast of Lewiston, Idaho, and 0.8 km south of the town of Winchester in Lewis County. Winchester was created in 1910 by damming Lapwai Creek. The 40 ha lake is the focal point of the 318-acre Winchester Lake State Park. The reservoir and its watershed lie entirely within the Nez Perce Reservation. The Winchester Lake watershed is used for irrigation, grazing, timber harvest, and recreation.

Winchester Lake contains five species of game fish: (1) largemouth bass, (2) bluegill, (3) yellow perch, (4) black crappie, and (5) rainbow trout. The only non-game fish documented was tiger muskellunge.

Game fish, excluding rainbow trout, combined to produce 71.1% of the total catch and 61.9% of the sample biomass. Rainbow trout were not included in the total catch because they are stocked fish. All game fish (stocked and non-stocked) combined to produce 99.7% of the total catch and 100% of the sample biomass (Table 48).

Largemouth bass (N=170) dominated the sample representing 51.2% of all fish collected and 50.6% of the sample biomass. Since the 2001 sample was conducted in the spring, it can be compared to the 1997 spring sample. The relative weights of largemouth in 2001 generally fell within the mid 80 to 105 percentile range. In 1997, the relative weights were within the 100 to 140 percentile range. The total lengths of largemouth bass in Winchester Lake in 2001 were between 170 and 360 mm (Table 49). In 1997, the total lengths were between 100 and 430 mm. Largemouth bass in Winchester Lake take nine years to reach 432 mm (Table 50).

Bluegill (N=56) represented 16.9% of all fish collected and 9.5% of the sample biomass. The relative weight for bluegill generally fell within the 120 to 140 percentile range. The total lengths of bluegill in Winchester Lake are between 80 and 170 mm (Table 51). A four-year-old

Table 46. Catch composition of splake from Waha Lake standard survey, May 31, 2001

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.
50				
60				
70				
80				
90				
100				
110				
120				
130				
140				
150				
160				
170				
180				
190				
200				
210				
220				
230				
240				
250				
260				
270				
280				
290	3	30.0	215.50	118
300	2	20.0	228.00	111
310	1	10.0	251.00	109
320			260.00	101
330	1	10.0	322.00	112
340	1	10.0	297.00	93
350				
360				
370				
380				
390				
400				
410	1	10.0	685.00	110
420				
430				
440				
450	1	10.0	1010.00	116
460				

Table 47. Catch composition of rainbow trout from Waha Lake standard survey, May 31, 2001

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.
50				
60				
70				
80				
90				
100				
110				
120				
130				
140				
150				
160				
170				
180	1	0.7	57.00	92
190	4	2.7	68.00	94
200	4	2.7	78.00	93
210	7	4.7	89.00	92
220	17	11.5	104.00	94
230	19	12.8	118.00	93
240	26	17.6	137.00	96
250	18	12.2	151.00	94
260	24	16.2	171.00	95
270	13	8.8	191.00	95
280	11	7.4	213.00	95
290	3	2.0	239.00	96
300				
310				
320				
330	1	0.7	342.00	94
340				
350				

Table 48. Winchester Lake standard survey findings of fish community characteristics, June 4, 2001.

Catch per unit of combined gear sampling effort					
Species	Length-range (mm)	No.	%	Weight (kg)	%
Game Fish					
Largemouth bass	60-470	170	51.2	28.2	50.6
Bluegill	80-170	56	16.9	5.3	9.5
Yellow Perch	110-230	10	3.0	1.0	1.8
Black Crappie	230	2	0.6	0.5	0.8
Subtotal		236.0	71.1	34.5	61.9
Stocked Game Fish					
Rainbow Trout	170-570	95	28.6	21.2	38.1
Game fish subtotal		331.0	99.7	55.7	100.0
Nongame Fish					
Tiger Muskellunge	650	1.0	0.3		
Grand total of all species		332.0	100.0	55.7	100.0

One hour electrofishing, one trap net night,
and one combined floating and sinking gill net night.

Table 49. Catch composition of largemouth bass from Winchester Lake standard survey, June 4, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80					
90					
100					
110					
120					
130					
140					
150					
160					
170	2	1.2	74.00	107	2+
180	2	1.2	73.50	89	2+
190	16	9.5	102.50	105	2+,3+
200	11	6.5	106.80	93	2+,3+,4+
210	16	9.5	130.20	97	4+
220	43	25.6	140.40	91	4+,5+
230	26	15.5	166.40	94	4+,5+
240	27	16.1	182.20	90	5+
250	15	8.9	204.40	89	5+
260	5	3.0	250.20	96	5+,6+
270	3	1.8	255.00	87	6+
280					
290					
300					
310					
320					
330					
340					
350					
360	1	0.6	610.00	84	6+
370					
380					
390					
400					
410					
420					

Table 49. Catch composition of largemouth bass from Winchester Lake standard survey, June 4, 2001. (Continued)

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
430					
440					
450					
460					
470	1	0.6	2000.00	119	9+
480					
490					
500					
510					
520					
530					
540					
550					
560					
570					
580					
590					
600					
610					
620					
630					
640					
650					

Table 50 Back-calculated length at annuli of largemouth bass from Winchester Lake standard survey, June 4, 2001.

Back-calculated length (mm) at each annulus											Length at Capture
Age Group	Number Aged	I	II	III	IV	V	VI	VII	VIII	VIII	
I	0										
II	6	64.7	134.2								189.3
III	5	66.6	146.3	183.2							201.2
IV	9	58.2	111.1	157.0	196.0						221.3
V	19	59.3	120.1	161.2	200.8	229.4					247.7
VI	4	58.6	124.1	164.1	207.4	245.4	279.9				298.0
VII	0										
VIII	0										
VIII	1	55.5	116.2	180.2	254.1	305.0	329.6	387.0	421.5	441.2	474.0
Average Length		60.5	123.5	163.9	201.9	235.2	289.9	387.0	421.5	441.2	
Number Aged		44	44	38	33	24	5	1	1	1	

Table 51. Catch composition of bluegill from Winchester Lake standard survey, June 4, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80	1	1.8	10.00	95	1+
90	1	1.8	19.00	124	1+
100					
110					
120	3	5.4	53.33	140	2+,3+
130	9	16.1	62.00	127	2+
140	10	17.9	77.40	125	2+,3+
150	14	25.0	93.20	120	2+,3+
160	12	21.4	117.60	123	3+,4+
170	6	10.7	161.00	139	3+,4+
180					
190					
200					
210					

bluegill in Winchester Lake would be 152 mm (Table 52). Bluegill were not represented in the 1997 sample.

Yellow Perch (N=10) represented 3% of all fish collected and 1.8% of the sample biomass. The relative weight of yellow perch generally fell within the 90 to 110 percentile range. In 1997, the relative weight was in the 100 percentile range. The total lengths of yellow perch in Winchester Lake are between 110 and 230 mm (Table 53). In 1997, the total lengths were between 150 and 230 mm. The 1997 findings were very similar to those in 2001. Yellow perch in Winchester Lake in 2001 take three years to reach 152 mm (Table 54).

Black Crappie (N=2) represented only 0.6% of all fish collected and 0.8% of the sample biomass. The black crappie data from 1997 was not available for comparison with the 2001 findings.

Rainbow trout (N=95) represented 28.6% of all fish collected and 38.1% of the sample biomass. The relative weight of rainbow trout generally fell within the 80 to 90 percentile range. The total lengths of rainbow trout in Winchester Lake in 2001 were between 170 and 370 mm (Table 55). Rainbow trout were not represented in the 1997 sample.

Black bullhead, which was present in the 1997 sample, was not present in the 2001 sample.

Table 53. Catch composition of yellow perch from Winchester Lake standard survey, June 4, 2001.

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.	Age(s)
50					
60					
70					
80					
90					
100					
110	1	12.5	30.00	161	1+
120					
130					
140					
150					
160					
170					
180					
190					
200	4	50.0	121.75	101	2+,3+
210	1	12.5	135.00	96	3+
220	1	12.5	172.00	106	3+
230	1	12.5	177.00	94	3+
240					
250					

Table 54. Back-calculated length at annuli of yellow perch from Winchester Lake standard survey, June 4, 2001.

Back-calculated length (mm) at each annulus							
Age Group	Number Aged	I	II	III	IV	V	Length at Capture
I	1	85.4					119.0
II	1	105.9	161.5				200.0
III	5	43.7	114.9	170.3			216.0
IV	0						
V	0						
Average Length		58.5	122.7	170.3	0.0	0.0	
Number Aged		7	6	5	0	0	

Table 55. Catch composition of rainbow trout from Winchester Lake standard survey, June 4, 2001.

Length Range (mm)	no. Per Unit Effort	percent of Sample	mean Weight (grams)	relative Wt.
50				
60				
70				
80				
90				
100				
110				
120				
130				
140				
150				
160				
170	1	1.1	49.00	84
180				
190				
200				
210	1	1.1	90.00	86
220				
230	4	4.2	118.00	88
240	5	5.3	133.00	88
250	9	9.5	158.00	94
260	19	20.0	171.00	91
270	16	16.8	191.00	92
280	10	10.5	213.00	92
290	12	12.6	239.00	94
300	7	7.4	264.00	95
310	5	5.3	290.00	95
320	1	1.1	319.00	96
330				
340				
350	2	2.1	417.00	97
360	1	1.1	453.00	98
370	1	1.1	490.00	98
380				
390				
400				
410				
420				
430				

Table 55. Catch composition of rainbow trout from Winchester Lake standard survey, June 4, 2001. (Continued)

Length Range (mm)	No. Per Unit Effort	Percent of Sample	Mean Weight (grams)	Relative Wt.
440				
450				
460				
470				
480				
490				
500				
510				
520				
530				
540				
550				
560				
570	1	1.1	1796.00	108
580				
590				
600				
610				
620				
630				
640				
650				

JOB PERFORMANCE REPORT

State of: Idaho

Program: Fisheries Management F-71-R-23

Project I: Surveys and Inventories

Subproject I-B: 2001 Clearwater Region

Job: c

Title: Rivers and Streams Investigations

Contract Period: July 1, 2001 to June 30, 2002

Period Covered: January 1, 2001 to December 31, 2001

ABSTRACT

Clearwater Region fishery management personnel snorkeled or coordinated data collection for 221 stream transects within the Clearwater, Salmon and Snake river drainages to obtain data for the long-term database. One hundred seventy-seven adult chinook salmon redds were counted in traditional aerial spawning ground counts in the Selway River. Only ground counts were conducted on the Lochsa River and the South Fork of the Clearwater River. Eighty-seven adult chinook salmon redds were counted in the Lochsa River, and 458 were counted on the South Fork of the Clearwater River.

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SALMONID POPULATION TREND MONITORING

OBJECTIVES

1. Develop long-term fish population database on selected streams throughout the Clearwater Region.
2. Monitor chinook salmon redd areas.

METHODS

We used standard snorkeling techniques to monitor fish densities at established monitoring sites in regional rivers and streams. Snorkeling was conducted when stream flows were low, clear and accessible. Small streams were snorkeled upstream with one to five observers depending on stream width. Larger streams and river corridors were snorkeled either upstream or free-floating downstream with the number of observers dependent on corridor width and water depth. Population abundance is presented as fish per 100m².

RESULTS

Creel Census

Clearwater Region fisheries management personnel and conservation officers checked 56 anglers that spent 56 hours fishing lakes, ponds and reservoirs and caught 32 game fish in 2001 (Table 1). These sport fisheries provided a catch rate of 0.57 fish per hour. Salmonid fishes accounted for 100% of the catch.

Population Monitoring

Selway River

A total of 3,999 chinook salmon juveniles were observed in three tributaries in the Selway River drainage. Five bull trout *S. confluentus* were observed in the upper Selway River mainstem transects (Table 2). Coho salmon parr *O. kisutch* were stocked in selected lower Selway River tributaries, by the Nez Perce Tribe, and were observed in the snorkeled transects. Fish densities (per 100m²) are shown in Table 1.

Aerial chinook salmon spawning ground counts on September 5 revealed 177 redds, 87 in tributaries and the rest in the mainstem (Table 3).

Table 1. Clearwater Region enforcement creel checks, Rivers and Streams, 2001

Water/ Date	Anglers	Hours Fished	Cutthroat trout	Rainbow trout	Mountain whitefish	Brook trout	Steelhead trout	Smallmouth bass	Chinook Salmon	Total	*CPUE
Brushy Fork Creek											
	1	1								0	0.00
Crooked River											
3-Jun	1	1								0	0.00
18-Aug	0	0								0	0.00
Subtotal	1	1	0	0	0	0	0	0	0	0	0.00
Lochsa River											
26-Feb	2	1								0	0.00
28-Jul	2	2								0	0.00
5-Aug	16	17	12							12	0.71
10-Aug	2	6	0	1						1	0.17
13-Aug	3	4	8							8	2.00
18-Aug	1	1	0							0	0.00
Subtotal	26	31	20	1	0	0	0	0	0	21	0.68
O'Hara Creek											
27-May	1	1								0	0.00
10-Aug	4	1								0	0.00
Subtotal	5	2	0	0	0	0	0	0	0	0	0.00

*Catch Per Unit of Effort

Table 1. Clearwater Region enforcement creel checks, Rivers and Streams, 2001 (Continued)

Water/ Date	Anglers	Hours Fished	Cutthroat trout	Rainbow trout	Mountain whitefish	Brook trout	Steelhead trout	Smallmouth bass	Chinook Salmon	Total	CPUE
Red River											
15-Jun	1	1								0	0.00
7-Jul	2	2	1							1	0.50
Subtotal	3	3	1	0	0	0	0	0	0	1	0.33
Selway River											
27-May	4	2								0	0.00
29-Jul	3	3	1	2						3	1.00
10-Aug	1	2	0	3						3	1.50
Subtotal	8	7	1	5	0	0	0	0	0	6	0.86
South Fork Clearwater River											
9-Aug	4	4								0	0.00
18-Aug	2	1								0	0.00
19-Aug	6	6	0	4						4	0.67
Subtotal	12	11	0	4	0	0	0	0	0	4	0.36
Season totals	56	56	22	10	0	0	0	0	0	32	0.57

Table 2. Summary of fish densities (per 100m²) as determined by snorkeling the Selway River drainage, 2001

	Date	Section Area (m ²)	Steelhead trout						Cutthroat trout						
			Total	Age 0	Age 1	Age 2	Age >2	Total	< 305 mm	>305 mm	Brook Trout	Bull Trout	Mountain whitefish	Chinook	Coho
Gedney Cr, GPM #1	7/23/01	611.26	25.19	16.03	7.20	1.96							1.47	4.09	
Gedney Cr, GPM #2	7/23/01	569.52	23.88	14.05	7.90	1.76	0.18	0.18	0.18				0.88	1.05	
Meadow Cr, #1 Slims Camp	8/3/01	1372.00	3.06	0.07	2.26	0.73	0.00	0.29	0.22	0.07			0.73	124.78	3.28
Meadow Cr, #2	8/3/01	1467.10	3.41	0.82	1.70	0.61	0.27	0.20	0.20				0.27	36.47	15.81
O'Hara Cr, #1 Meadow	8/3/01	775.55	13.15	10.32	2.32	0.52							0.13	8.90	23.98
O'Hara Cr, #2 Canyon	8/3/01	518.95	13.10	7.90	4.82	0.39								7.52	1.73
White Cap, Strata 3, #1	7/27/01	1069.06	1.96	0.00	1.22	0.65	0.09	2.53	2.15	0.37				4.40	
White Cap, Strata 3, #2	7/27/01	1473.68											0.14		
White Cap, Strata 3, #3	7/27/01	1489.49	1.68	0.07	0.13	1.01	0.47	1.34	1.21	0.13			0.34	14.30	
Selway River, Magruder X-ing	7/26/01	3433.36	0.38	0.03	0.15	0.17	0.03	0.82	0.70	0.12	0.03		0.38	4.89	
Selway River, Beaver Point	7/26/01	2255.40	0.75	0.13	0.13	0.44	0.04	1.11	0.89	0.22			1.64	44.78	
Selway River, Hells Half Acre	7/26/01	1227.72	1.87	1.22	0.41	0.16	0.08	2.53	2.44	0.08		0.08	0.49	4.81	
Selway River, Little Clearwater	7/26/01	1399.10	0.57	0.07	0.21	0.29	0.00	1.93	1.79	0.14		0.29	1.50	4.50	
Deep Cr, Cactus	7/25/01	445.56	1.43	0.14	0.79	0.36	0.14	2.69	2.69					5.39	
Deep Cr, Scimitar	7/25/01	844.9	11.22	0.22	5.39	4.94	0.67	2.37	2.37					0.24	
Little Clearwater, #1	7/26/01	298.6	1.67	0.00	0.33	1.34	0.00	1.34	1.34					7.70	
Little Clearwater, #2	7/26/01	580.986	2.58	0.00	1.38	0.69	0.52	1.20	1.20				0.17	0.69	

Table 3. 2001 Chinook spawning ground survey summary Selway River

Drainage	Reach	Type	Description	Date	Method	Redds	Fish	
							Live	Dead
White Cap Cr.	WC-1	T	Mouth to Coopers Flat	9/5	Aerial	6	3	0
		ISS&C	Coopers Flat to Barrier	9/5	Aerial	13	5	0
Bear Cr.	WC-2	T	Mouth to Cub Cr.	9/5	Aerial	39	49	0
Moose Cr.	WC-3	T	Mouth to Cedar Cr.	9/5	Aerial	29	16	0
Running Cr.	WC-4	T	Mouth to two miles above Eagle Creek and lower one mile of Eagle Cr.	9/5	Aerial	0	0	0
Selway	WC-5	T	Thompson Flat to Magruder RS	9/5	Aerial	21	11	0
Selway	WC-6	T	Magruder RS to Magruder Crossing	9/5	Aerial	16	10	0
Selway	WC-7	T	Magruder Crossing to Little Clearwater River	8/31	Ground	74	83	13
				9/5	Aerial	45	12	0
Selway	WC-8	T	Little Clearwater R. to White Cap Cr	9/5	Aerial	3	0	0
Selway	WC-9	T	White Cap Cr. to Bear Cr.	9/5	Aerial	5	5	0
Selway Drainage Ground Count Total						74	83	13
Selway Drainage Aerial Count Total						177	111	2

Visibility good. Flights one week later than usually done. Surveys done in a Hiller 12E turbine.

Lochsa River

Fish densities (per 100m²) as determined by snorkeling 46 transects in the Lochsa River drainage are shown in Table 4. A total of 1,815 suspected natural chinook salmon juveniles were observed in the tributaries surveyed, and 23 were seen in the mainstem. Forty-six bull trout were observed in Squaw Creek (Table 4). Steelhead trout were the most abundant fish species observed in the Lochsa River drainage surveys.

Chinook salmon aerial spawning ground counts were not conducted. Ground counts found 57 redds in Crooked Fork Creek and 30 redds in Brushy Fork Creek (Table 5).

Snake River

Eight suspected hatchery chinook salmon juveniles were observed while employees were snorkeling two Snake River tributaries (Table 6). Juvenile steelhead were most abundant in these transects. No bull trout were observed.

Salmon River

Eleven tributaries of the lower Salmon River were surveyed by snorkeling in 2001 (Table 7). Cutthroats were the most abundant fish observed in these tributaries. A total of 61 juvenile Chinook salmon were found in Crooked, Sheep, Slate and Whitebird creeks. Bull trout were observed in Bargamin Creek (1), Crooked Creek (1), Sheep Creek (3), and Slate Creek (2).

North Fork Clearwater River

Fisheries management personnel snorkeled ten streams in this drainage. Cutthroat trout were the most abundant fish observed (Table 8). Kokanee salmon were found in Isabella Creek, Hemlock Creek, Little Moose Creek, and Upper Weitas Creek.

Lower Clearwater River

Two tributaries were snorkeled in the drainage, Mission Creek and the East Fork Potlatch River. Steelhead trout were the most abundant species observed (Table 9). Forty-three brook trout were observed in the East Fork Potlatch River, the Potlatch River, and Big Canyon Creek. Coho salmon were not observed in the snorkeled transects.

Table 4. Summary of fish densities (per 100m²) as determined by snorkeling the Lochsa River drainage, 2001

Stream	Date	Section Area (m ²)	Total	Steelhead trout				Cutthroat trout							
				Age 0	Age 1	Age 2	Age >2	Total	< 305 mm	>305 mm	Brook Trout	Bull Trout	Mountain whitefish	Chinook	Coho
Colt Creek	8/2/2001	170.50	0.00					21.11	21.11						
Crooked Fork Creek #1B	8/2/2001	1341.34	1.64	1.49	0.00	0.15		1.12	0.89	0.22			0.82	1.34	
Fire Creek, #1, lower	8/3/2001	558.71	13.07	6.80	5.37	0.89		0.18	0.18						
Fire Creek, #2, upper	8/3/2001	312.81	17.58	11.51	4.80	1.28									
Lochsa River, #4 at Papoose Creek	8/2/2001	4883.00	0.31	0.04	0.16	0.10		0.10	0.10				0.02	0.35	
Lochsa River, #4 at Warm Springs Creek	8/2/2001	6817.72	0.01			0.01		0.21	0.06	0.15			0.72	0.06	
Lochsa River, #4 at Fish Creek	8/2/2001	6016.50	0.28	0.03	0.12	0.13		0.05	0.02	0.03			0.68		
Lochsa River, #4 at Pete King Creek	8/1/2001	16172.00	0.01			0.01		0.07	0.02	0.05			0.19	0.01	
Old Man Creek	8/3/2001	167.48	26.87	4.78	17.32	4.78		1.19	0.60	0.60			7.17		
Post Office Creek, #1, lower	8/2/2001	212.48	44.24	30.59	12.71	0.94		2.82	2.82			0.47			
Post Office Creek, #2, upper	8/2/2001	185.68	35.55	19.39	16.16			5.39	5.39						
Split Creek, #1, lower	8/3/2001	536.27	4.66	2.05	2.05	0.56		0.56	0.37	0.19			0.19		
Split Creek, #2, upper	8/3/2001	336.30	15.17	0.30	7.73	6.84	0.30	1.19	0.89	0.30			1.19		
Warm Springs Creek	8/2/2001	1429.50	2.38	1.54	0.49	0.28	0.07	0.28	0.21	0.07				0.14	
White Sands Creek	8/2/2001	3355.80	0.92	0.21	0.21	0.36	0.15	0.77	0.69	0.09			0.12	2.06	
Papoose Creek, #1	7/19/2001	376.00	31.65	22.87	7.18	1.60		1.06	1.06					97.07	

Table 4. Summary of fish densities (per 100m²) as determined by snorkeling the Lochsa River drainage, 2001 (Continued)

Stream	Date	Section Area (m ²)	Total	Steelhead trout				Cutthroat trout					Chinook	Coho	
				Age 0	Age 1	Age 2	Age >2	Total	< 305 mm	>305 mm	Brook Trout	Bull Trout			Mountain whitefish
Papoose Creek, #2	7/19/2001	491.90	30.90	27.65	3.05	0.20		1.02	1.02						60.58
Papoose Creek, #3	7/19/2001	348.16	60.32	51.41	7.47	1.44		4.60	4.31	0.29		0.29			147.92
Papoose Creek, #4	7/20/2001	323.86	24.10	21.32	2.47	0.31		0.31	0.31						21.94
Papoose Creek, #5	7/20/2001	636.86	43.49	39.41	2.98	1.10		3.14	3.14						6.75
Papoose Creek, #6	7/20/2001	210.40	77.95	67.02	8.56	2.38		7.13	7.13			0.48			8.08
Papoose Creek, #6.5	7/20/2001	135.33	72.42	62.81	9.61			4.43	4.43						10.35
Papoose Creek, #7	7/20/2001	257.90	72.90	55.84	15.12	1.94		12.41	12.02	0.39					6.59
Papoose Creek, #8	7/20/2001	211.55	53.89	44.43	8.51	0.95		12.76	12.76						0.47
Fish Creek, #1	7/10/2001	868.92	15.54	2.30	9.44	3.80		0.12	0.12						2.99
Fish Creek, #2	7/10/2001	ND*													
Brushy Fork, Strata 3, #1	8/3/2001	411.00	5.11	4.87	0.24			3.65	3.65			0.24			
Brushy Fork, Strata 3, #2	8/3/2001	845.88	2.96	2.13	0.47	0.24	0.12	4.26	4.26						1.06
Crooked Fork Creek, Strata 1, #2A	8/3/2001	205.80	2.43	2.43				5.34	5.34						
Crooked Fork Creek, Strata 2, #3A	8/3/2001	494.49						3.03	3.03						
Crooked Fork Creek, Strata 2, #4A	8/3/2001	300.90	1.00	1.00				5.65	5.65						

Table 4. Summary of fish densities (per 100m²) as determined by snorkeling the Lochsa River drainage, 2001 (Continued)

Stream	Date	Section Area (m ²)	Steelhead trout					Cutthroat trout						
			Total	Age 0	Age 1	Age 2	Age >2	Total	< 305 mm	>305 mm	Brook Trout	Bull Trout	Mountain whitefish	Chinook
Crooked Fork Creek, Strata 3, #1	8/3/2001	798.50	1.25	1.25				0.88		0.88			0.63	4.13
Crooked Fork Creek, Strata 3, #2	8/3/2001	841.50	2.73	2.73				0.59		0.59				3.21
Crooked Fork Creek, Strata 3, #2B	8/3/2001	1622.88	3.20	2.96		0.12	0.12	2.71	2.65	0.06		0.06	0.99	7.70
Hopeful Creek, Strata 1, Boogiedwn	8/3/2001	768.21						2.47	2.47			0.13		0.00
Squaw Creek, #1	7/18/2001	516.68	46.06	41.61	3.29	1.16		0.58	0.58					9.29
Squaw Creek, #2	7/18/2001	486.15	55.95	41.35	10.70	3.91		1.23	0.82	0.41		1.23		1.23
Squaw Creek, #3	7/18/2001	270.10	27.77	13.33	11.85	2.59		2.59	2.59					0.00
Squaw Creek, #4	7/18/2001	418.40	57.60	48.52	7.65	1.43		0.24	0.24			1.20		5.26
Squaw Creek, #5	7/19/2001	224.53	17.37	12.47	4.90			1.34	1.34					19.15
Squaw Creek, #6	7/19/2001	322.58	16.12	8.37	5.58	2.17		0.31	0.31			1.55		9.92
Squaw Creek, #7	7/19/2001	126.65	30.00	24.48	3.95	1.58		0.79	0.79			1.58		2.37
Squaw Creek, #8	7/19/2001	214.65	31.68	19.57	10.25	1.86		1.40	1.40			5.59		0.93
Squaw Creek, #9	7/19/2001	286.94	36.24	34.15	1.74	0.35		4.18	4.18			1.05		3.14
Squaw Creek, #10	7/9/2001	270.65	25.86	19.58	4.80	1.11	0.37	2.22	2.22			1.48		
Squaw Creek, #11	7/19/2001	234.47	3.41	2.99	0.43			2.56	2.56			3.41		

Table 5. 2001 Chinook spawning ground survey summary Lochsa River

The number of redds and carcasses reported for the trend counts include those counted up to and including the survey data. Live fish are for those only observed on the survey date. Only ground counts were conducted in the Lochsa drainage in 2001. Ground count total uses 9/3/2001 count only.

Drainage	Reach	Type	Description	Date	Method	Redds	Fish	
							Live	Dead
Crooked Fk.	NC-9	NT	Mouth to Hopeful Cr.		Aerial	ND	ND	ND
	NC-10	T	Rock Cr. to cliff hole	9/3	Ground	57	92	73
				9/12	Ground	95	28	119
					Aerial	ND	ND	ND
Brushy Fk.	NC-11	T	Low Gap Br to one mile downstream	9/3	Ground	30	8	31
	NC-12	C	Mouth to Spruce Cr.		Aerial	ND	ND	ND
					Aerial	ND	ND	ND
Colt Killed Cr (White Sands Cr)	NC-13	NT	Mouth to Big Flat Cr.		Aerial	ND	ND	ND
Big Sand Cr		ISS	Mouth to Hidden Cr (barrier falls?)		Aerial	ND	ND	ND
Storm Cr	ND	ISS	Mouth to North Fork (6-7 miles upstream?)			Aerial	ND	ND
Lochsa Drainage Ground Count Total						87	100	104
Lochsa Drainage Aerial Count Total						ND	ND	ND

Table 6. Summary of fish densities (per 100m²) as determined by snorkeling the Snake River drainage, 2001.

Stream	Date	Section Area (m ²)	Total	Steelhead trout				Cutthroat trout		Brook Trout	Bull Trout	Mountain whitefish	Chinook	Coho
				Age 0	Age 1	Age 2	Age >2	Total	< 305 mm					
Granite Creek, #1, lower	8/15/2001	405.14	25.42	9.63	8.15	5.68	1.97	0.00					1.48	
Granite Creek, #2, upper	8/15/2001	584.79	6.67	1.88	3.93	0.51	0.34	0.00						
Sheep Creek, #1, lower	8/14/2001	247.53	60.19	27.88	18.99	11.72	1.62	0.00						
Sheep Creek, #2, upper	8/14/2001	208.28	49.93	30.25	11.04	6.72	1.92	0.00					0.96	

Table 7. Summary of fish densities (per 100m²) as determined by snorkeling the Salmon River drainage, 2001

Stream	Date	Section Area (m ²)	Steelhead trout					Cutthroat trout		Brook Trout	Bull Trout	Mountain whitefish	Chinook	Coho
			Total	Age 0	Age 1	Age 2	Age >2	Total	< 305 mm					
Bargamin Creek, #1, lower	7/21/2001	978.00	0.51	0.31	0.10	0.10		5.83	5.32	0.51		0.10	3.37	
Bargamin Creek, #2, upper	7/21/2001	776.50	1.93	1.93				3.35	3.35				1.67	
Big Mallard Creek, #1, lower	7/21/2001	204.00	10.78	10.78				14.71	14.22	0.49			0.00	
Big Mallard Creek, #2, upper	7/21/2001	478.40	2.30	2.30				7.73	7.32	0.42			0.21	
Crooked Creek, #1, lower	7/11/2001	745.42	2.01	1.74	0.13	0.13		4.96	4.96				2.55	
Crooked Creek, #2, upper	7/11/2001	913.06	5.04	5.04				4.82	4.82			0.11	1.53	0.88
Jersey Creek	7/10/2001	207.25	9.17		7.72	0.97	0.48							
John Day Creek, #1, lower	ND*													
John Day Creek, #2, upper	7/19/2001	202.80						3.94	3.94					
Race Creek	7/18/2001	288.00	4.51	4.51				6.25	6.25		0.35			
Sheep Creek, #1, lower	7/10/2001	807.10	4.83	3.72	0.37	0.50	0.25	8.05	7.93	0.12		0.25	1.61	0.12
Sheep Creek, #2, upper	7/10/2001	896.94	6.35	2.68	2.56	1.00	0.11	6.35	6.13	0.22		0.11	0.33	

Table 7. Summary of fish densities (per 100m²) as determined by snorkeling the Salmon River drainage, (Continued)

Stream	Date	Section Area (m ²)	Steelhead trout					Cutthroat trout							
			Total	Age 0	Age 1	Age 2	Age >2	Total	< 305 mm	>305 mm	Brook Trout	Bull Trout	Mountain whitefish	Chinook	Coho
Skookumchuck Cr., #1, lower	7/19/2001	341.90	10.53	10.53	0.00	0.00		8.19	8.19						
Skookumchuck Cr., #2, upper	ND*														
Slate Creek, #1	7/18/2001	652.02	1.99	0.61	0.61	0.31	0.46	8.90	8.90			0.15	0.77	1.07	
Slate Creek, #2	7/18/2001	820.00						4.88	4.88					0.24	1.46
Slate Creek, #3	7/18/2001	160.20	0.62			0.62		2.50	2.50						
Slate Creek, #4	7/19/2001	339.39	0.29		0.29	0.00		10.31	10.31						
Slate Creek, #5	7/19/2001	575.08	0.70	0.52	0.17	0.00		9.39	9.39			0.17	0.52	3.30	
Slate Creek, #6	7/19/2001	708.40						3.53	3.39	0.14				0.28	0.42
Slate Creek, #7, (Little Slate)	7/19/2001	301.76	1.66	1.33		0.33		5.63	5.30	0.33					
S.F. White Bird Creek #2	7/19/2001	238.40	12.58	12.58				14.68	14.68						
S.F. White Bird Creek #3	7/21/2001	174.49	9.74	9.74		0.00		14.90	14.90						0.57
White Bird Creek, #1	7/19/2001	354.29	5.36	4.52		0.56	0.28	11.85	11.85						2.82

* ND = No Data

Table 8. Summary of fish densities (per 100m²) as determined by snorkeling the North Fork of the Clearwater River drainage, 2001

Stream	Area (m ²)	Rainbow trout				Cutthroat trout		Bull Trout	Mountain Whitefish	Brook Trout	Kokanee	Sculpin
		Age 0	Age 1	Age 2	Age >2	<305 mm	>305 mm					
Orogrande Creek #1	118					5.08	1.69					
Orogrande Creek #3	183				1.09	2.74						
Orogrande Creek #2	90				2.22	8.89						
Ruby Creek #1	77					9.14						
Little Moose Creek #1	253			0.40	2.37	3.95	1.58		0.79		2.37	
Little Moose Creek #2	148				1.36	4.75	0.68				4.75	
Little Moose Creek #3	82				1.21	7.29					7.29	
Skull Creek #4	743				2.15	7.00	3.50		1.61		29.60	
Skull Creek #3	351					4.56	1.43	0.29	9.98			
Skull Creek #2	397				0.50	2.52	1.26		1.76			
Skull Creek #1	244				2.46	2.87						
Collins Creek #1	337			1.19	8.32	8.32						
Collins Creek #2	230			1.74	5.23	1.31						
Collins Creek #3	274			2.92	5.12	0.73						
Isabella Creek #3	69			2.89		2.89	1.45				2.89	
Isabella Creek #2	87			4.61	1.15	9.22						
Isabella Creek #1	83					18.15	1.21					
Beaver Creek #2	189					2.64		1.06				0.53
Beaver Creek #1	307					1.30						
Upper Little Weitas Creek	113					1.77	1.77					
Little Weitas Creek												
Weitas (Upper) Creek	526					2.09	0.95		4.56		0.76	
Hemlock Creek (Lower)	151										2.65	
Hemlock Creek (Middle)	202				1.49						0.50	

Table 9. Summary of fish densities (per 100m²) as determined by snorkeling the Lower Clearwater River drainage, 2001

Stream	Date	Section Area (m ²)	Total	Steelhead trout				Cutthroat trout		Brook Trout	Bull Trout	Mountain whitefish	Chinook	Coho
				Age 0	Age 1	Age 2	Age >2	Total	< 305 mm					
E.F. Potlatch, #1, lower	6/27/2001	319.55	5.63	5.63										
E.F. Potlatch, #2, middle	6/27/2001	406.70	7.62	6.64	0.98									
E.F. Potlatch, #3, upper	6/27/2001	119.00						1.68	1.68	0.84				
Mission Creek, #1	6/26/2001	225.00	16.00	11.56	4.00	0.44								
Mission Creek, #2	6/26/2001	ND*												
Big Canyon #1	6/26/2001	444.60	11.25	3.15	2.02	0.22	5.85	0.00	0.00	0.90				
Potlatch River, #1	8/15/2001	299.62	8.01	7.01	1.00									
Potlatch River, #2	8/15/2001	235.28	24.23	23.38	0.85					3.40				
Potlatch River, #3	8/15/2001	112.11	48.17	41.92	5.35	0.89				26.76				
Potlatch River, #1	6/27/2001	478.25	2.51	2.51										
Potlatch River, #2	6/27/2001	668.10	1.65	0.75	0.90									

* ND = No Data

We also snorkeled six sites on the East Fork Potlatch River on Potlatch Corporation ownership. Cutthroat trout were the most abundant species in these sites. Brook trout and steelhead were also observed (Table 10)

South Fork Clearwater River

A total of 8,900 suspected wild chinook salmon juveniles were observed while snorkeling in eighty-six traditional transects on eleven streams in the South Fork Clearwater River drainage (Table 11). Bull trout were observed in Crooked River, American River, Moore Creek, Ten Mile Creek, Johns Creek, Pilot Creek, and Baldy Creek. Chinook salmon and steelhead trout were the most abundant species observed in these streams (Table 11).

A total of 458 chinook salmon redds were counted on the South Fork of the Clearwater River using ground counts (Table 12).

Table 10. Summary of fish densities (per 100m²) as determined by snorkeling the East Fork Potlatch River, Potlatch Corp. ownership

Stream	Date	Section Area (m ²)	Steelhead trout					Cutthroat trout		Brook Trout	Bull Trout	Mountain whitefish	Chinook	Coho
			Total	Age 0	Age 1	Age 2	Age >2	Total	< 305 mm					
Site#1	6/28/200	1	311.50					0.32	0.32	0.96				
Site#2	6/28/200	1	175.32	0.57	0.57			5.13	5.13	1.14				
Site#3	6/28/200	1	153.45					5.21	5.21	3.26				
Site#4	6/28/200	1	106.75	4.68	4.68			7.49	7.49	0.94				
Site#5	6/28/200	1	114.53							6.11				
Site#6	6/28/200	1	255.15	3.53	3.53			5.49	5.49	1.18				
Site#7	6/28/200	1	16.32	18.38	18.38					18.38				
Site#8	6/28/200	1	155.40	5.79	5.79			5.79	5.79					
Site#9	6/28/200	1	215.35	5.57	5.57			6.50	6.50					

Table 11. Summary of fish densities (per 100m²) as determined by snorkeling parr monitoring sites in the South Fork Clearwater River drainage, 2001

Stream	Date	Section Area (m ²)	Steelhead trout					Cutthroat trout						
			Total	Age 0	Age 1	Age 2	Age >2	Total	< 305 mm	>305 mm	Brook Trout	Bull Trout	Mountain whitefish	Chinook
American River, Strata 1, Gravel Pit	7/22/2001	156.60	0.64	0.64				0.64	0.64		1.92		12.13	12.77
American River, Strata 1, 0.75 km	7/22/2001	198.90												
American River, Strata 1, 1.25 km	7/22/2001	181.44					1.10	1.10					1.10	3.86
American River, Strata 1, 1.75	7/22/2001	213.90					2.34	2.34		0.47			1.40	1.87
American River, Strata 1, 2.25	7/22/2001	139.80					1.43	1.43		0.00			4.29	0.72
American River, Strata 1, 2.65	7/22/2001	126.90					6.30	6.30		0.79			11.82	
American River, Strata 2, section 1	7/8/2001	423.99					1.89	1.89					1.18	6.13
American River, Strata 2, Flat Iron Ridge	7/8/2001	186.56					3.22	3.22					1.07	57.89
American River, Strata 2, Above Cattle Guard	7/8/2001	166.44					3.00	3.00					3.00	31.84
American River, Strata 2, Mon 1	7/8/2001	423.99					1.89	1.89		0.24			1.18	6.13
American River, Strata 2, Mon 2	7/8/2001	723.80	1.24	0.97	0.14	0.14	0.00	0.28	0.28	0.14	0.41			
American River, Strata 2, 1/8 mi above E.Fork	7/8/2001	152.36						2.63	2.63	0.66			0.00	27.57
American River, Strata 2, Guntley's	7/8/2001	193.28						6.73	6.73				5.69	5.69
American River, Strata 2, Cross River Lower	7/8/2001	381.00						0.26	0.26	1.05			24.67	37.01
American River, Strata 2, BW Bound and Stump Lane	7/8/2001	184.80						2.71	2.71				3.79	44.37

Table 11. Summary of fish densities (per 100m²) as determined by snorkeling parr monitoring sites in the South Fork Clearwater River drainage, 2001 (Continued)

Stream	Date	Section Area (m ²)	Total	Steelhead trout				Cutthroat trout							
				Age 0	Age 1	Age 2	Age >2	Total	< 305 mm	>305 mm	Brook Trout	Bull Trout	Mountain whitefish	Chinook	Coho
American River, Strata 3, Section 2	7/8/2001	723.80	0.97	0.97	0.00	0.00	0.00	0.28	0.28	0.00	0.00	0.00	0.41	52.09	0.00
American River, Strata 3, Buffalo Pit	7/7/2001	515.69	1.94	0.00	0.78	0.97	0.19	0.19	0.19	0.00	0.19	0.00	0.39	21.72	0.00
American River, Strata 3, Stock Sign	7/7/2001	429.40	0.23	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.47	71.50	0.00
American River, Strata 3, Stop Sign	7/7/2001	373.33	2.41	0.00	1.61	0.80	0.00	2.68	2.68	0.00	0.00	0.00	1.34	48.48	0.00
American River, Strata 3, 0.5 Below Box Sing	7/8/2001	256.07	0.00	0.00	0.00	0.00	0.00	1.56	1.56	0.00	0.78	0.00	1.17	35.15	0.00
Johns Creek #3	7/22/2001	888.30	1.35	0.00	0.00	1.13	0.23	2.81	2.81	0.00	0.00	0.11	0.00	0.00	0.00
Johns Creek #4	7/22/2001	260.00	4.62	0.00	1.92	1.92	0.77	0.77	0.77	0.00	0.00	0.00	0.00	0.00	0.00
Moore's Creek, #1, lower	7/22/2001	235.00	0.85	0.00	0.43	0.00	0.43	2.55	2.55	0.00	0.00	0.00	0.00	0.00	0.00
Moore's Creek, #2, upper	7/22/2001	259.00	4.25	1.93	1.93	0.39	0.00	13.51	13.51	0.00	0.00	1.93	0.00	0.00	0.00
Moore's Creek, #2, upper Nighttime	7/22/2001	259.00	1.54	0.00	0.00	1.16	0.39	18.92	18.92	0.00	0.00	3.86	0.00	0.00	0.00
Ten Mile Creek, #1, lower	7/5/2001	926.10	1.08	0.11	0.76	0.22	0.00	2.81	2.81	0.00	0.00	0.11	0.00	0.00	0.00
Ten Mile Creek, #2, upper	7/5/2001	954.10	2.10	0.00	1.15	0.73	0.21	2.10	2.10	0.00	0.00	0.00	0.31	0.10	0.00
Crooked River, Strata 1, Sill Log B	7/20/2001	541.10	16.63	0.00	3.14	9.98	3.51	0.92	0.92	0.00	0.00	0.18	0.18	5.91	0.00
Crooked River, Strata 1, Control B	7/7/2001	583.10	16.29	13.21	0.69	1.71	0.69	0.00	0.00	0.00	0.00	0.17	0.00	0.17	0.00
Crooked River, Strata 1, Control B	7/20/2001	448.00	13.62	0.00	8.71	4.91	0.00	0.67	0.67	0.00	0.00	0.00	0.00	2.23	0.00
Crooked River, Strata 2, Control 1	7/10/2001	731.43	8.07	0.14	2.60	4.65	0.68	0.68	0.68	0.00	0.00	0.14	3.01	21.05	0.00

Table 11. Summary of fish densities (per 100m²) as determined by snorkeling parr monitoring sites in the South Fork Clearwater River drainage, 2001 (Continued)

Stream	Date	Section Area (m ²)	Steelhead trout					Cutthroat trout						
			Total	Age 0	Age 1	Age 2	Age >2	Total	< 305 mm	>305 mm	Brook Trout	Bull Trout	Mountain whitefish	Chinook
Crooked River, Strata 2, Control 2	7/9/2001	1136.72	0.44				0.44	1.41	1.41				0.62	10.73
Crooked River, Strata 2, Treat 2	7/9/2001	966.00	5.38	0.10	1.04	3.00	1.24	1.35	1.35			0.10	1.04	22.67
Crooked River, Strata 3, Natural 1	7/9/2001	1095.81	1.00		0.27	0.27	0.46	1.92	1.55	0.37	0.37	0.09	0.91	54.94
Crooked River, Strata 3, Natural 3	7/9/2001	460.00	0.87	0.65	0.22			7.17	6.96	0.22				
Crooked River, Strata 4, B-Ponds S-2	7/9/2001	390.89						0.51	0.26	0.26			2.56	0.26
Crooked River, Strata 4, Meander 1	7/9/2001	804.95	0.99		0.25	0.12	0.62	2.24	1.99	0.25	0.50	0.25	10.19	67.33
Crooked River, Strata C, Canyon 1	7/6/2001	680.34	5.73	1.32	0.88	2.06	1.47						0.88	0.44
Crooked River, Strata C, Canyon 2	7/6/2001	663.39	11.91	3.77	1.96	3.77	2.41	0.15	0.15				0.75	0.30
Crooked River, Strata C, Canyon 3	7/6/2001	993.61	9.56	7.55	0.60	1.31	0.10	1.21	1.21				0.70	1.31
Crooked River, Orogrande 1	7/7/2001	285.64	1.75		0.70	0.35	0.70	1.05	1.05					
Crooked River, West Fork, WF1	7/7/2001	302.40	0.66		0.33	0.33		8.93	8.93			0.66		
Crooked River, West Fork, WF2	7/7/2001	357.42	1.12		0.28	0.28	0.56	1.40	1.12	0.28		1.40	0.28	
Crooked River, East Fork, EF1	7/7/2001	479.40	0.42	0.42				1.46	1.46	0.00			0.21	
Crooked River, East Fork, EF2	7/7/2001	428.28	0.23		0.23			2.80	2.57	0.23			0.47	
Five Mile Creek, Strata 1, 1-B	7/20/2001	112.89	8.86	8.86				7.09	7.09					
Relief Creek, Strata1, 1-A	7/20/2001	290.64	28.21	1.38	4.82	21.33	0.69	0.34	0.34					1.38

Table 11. Summary of fish densities (per 100m²) as determined by snorkeling parr monitoring sites in the South Fork Clearwater River drainage, 2001 (Continued)

Stream	Date	Section Area (m ²)	Steelhead trout					Cutthroat trout							
			Total	Age 0	Age 1	Age 2	Age >2	Total	< 305 mm	>305 mm	Brook Trout	Bull Trout	Mountain whitefish	Chinook	Coho
Relief Creek, Strata1, 2-A	7/20/2001	296.00						5.74	5.74						
Red River, Strata 1, Control 1	7/7/2001	506.97						0.39	0.39	5.72		1.97	0.99		
Red River, Strata 1, Control 2	7/7/2001	418.18						1.20	1.20	9.09		0.48	0.24		
Red River, Strata 1, CSUP 1	7/7/2001	280.77						1.42	1.42	17.10		0.71	0.71		
Red River, Strata 1, Goosebox	7/7/2001	193.92						1.03	1.03	11.34		1.55	0.00		
Red River, Strata 1, Upper Shissler	7/7/2001	42.84						23.34	23.34	2.33		0.00	0.00		
Red River, Strata 2, Control 2	7/7/2001	796.80	0.13				0.13			0.38		0.38	0.50		
Red River, Strata 2, Treat 2	7/7/2001	663.00	1.06	0.15			0.90	0.15	0.15	0.15		1.06	0.15		
Red River, Strata 2, CSUP 3	7/7/2001	335.59						0.89	0.89	0.60		0.30	2.98		
Red River, Strata 2, CSUP 6	7/7/2001	358.70						1.39	1.39	0.28		0.28	0.00		
Red River, Strata 3, Old Bridge	7/6/2001	440.13	1.14	0.23		0.91		0.45	0.45	0.23		0.00	81.34		
Red River, Strata 3, 1150	7/6/2001	664.46	4.06	1.50	1.50	1.05		6.32	6.32	0.15		1.35	43.64		
Red River, Strata 3, BLW Weir	7/6/2001	379.41	9.49	0.53	5.01	3.16	0.79	6.59	6.59			1.05	17.40		
Red River, Strata 4, Control 2	7/6/2001	5639.80	0.39	0.02	0.23	0.14		0.18	0.18	0.05		0.16	22.66		
Red River, Strata 4, Treat 2	7/6/2001	2108.84	1.47	0.47	0.47	0.38	0.14	0.05	0.05	0.05		0.43	70.04		
Red River, Strata 4, Log Island	7/5/2001	449.05	3.34	0.22	1.11	1.78	0.22	0.45	0.45			0.22	38.97		

Table 11. Summary of fish densities (per 100m²) as determined by snorkeling parr monitoring sites in the South Fork Clearwater River drainage, 2001
(Continued)

Stream	Date	Section Area (m ²)	Steelhead trout					Cutthroat trout							
			Total	Age 0	Age 1	Age 2	Age >2	Total	< 305 mm	>305 mm	Brook Trout	Bull Trout	Mountain whitefish	Chinook	Coho
Pilot Creek, #8.6	7/19/2001	310.00	2.26		1.29	0.97							0.65		
Baldy Creek, #6.1	7/20/2001	436.00	0.69		0.46	0.23		5.05	5.05				0.23		
Baldy Creek, #6.8	7/20/2001	320.00	5.00	3.44	1.56			7.50	7.50						
Baldy Creek, #7.6	7/20/2001	440.00	2.50	1.59	0.45	0.45		7.95	7.95						
Baldy Creek, #8.6	7/20/2001	353.00	1.42		1.13	0.28		3.40	3.40						
Red River, Middle Fork of South Fork, #1.10	7/23/2001	310.00	1.61	1.29	0.00	0.32		8.39	8.39						

Table 12. 2001 Chinook spawning ground survey summary South Fork Clearwater River

Only ground counts were conducted in 2001. The number of redds and carcasses reported for the trend counts include those counted up to and including the survey data. Live fish are for those only observed on the survey date. **NOTE: Ground counts in nontrend areas on subsequent dates are new redds only.**

Drainage	Reach	Type	Description	Date	Method	Redds	Live	Dead	Fish		
Red River	NC-1	T	Weir to Cole 66 Bridge	9/6	Ground	100	216	350			
	NC-2	NT	Otterson Cr to Ditch Cr.	9/8	Aerial	ND, included in Strata 2 count					
		NT	Ditch Cr. to weir	9/8	Aerial	ND, included in Strata 2 count					
		NT	Weir to Blanco Cr.	part of NC-1 and Strata III count							
	NC-2a	ISS&C	Strata 1 and Strata 2 (Weir to Shissler Cr)				Aerial	ND	ND	ND	
			Strata 1: Red River Campground-Shissler Creek			8/26	Ground	9	12	3	
					9/13	Ground	4	0	7		
					9/23	Ground	9	0	0		
	NC-2b		Strata 2: Weir-Red River Campground			8/25	Ground	5	99	17	
					9/13	Ground	5	6	31		
					9/23	Ground	19	0	19		
		ISS&C	Strata 3 (Little Moose Cr to weir)				Aerial	ND	ND	ND	
			IDFG personnel			8/23	Ground	20	190	360	
					9/6	Ground	49	96	176		
					9/16	Ground	1	0	74		
		ISS&C	Strata 4 (Dawson Cr to Little Moose Cr)				Aerial	ND	ND	ND	
					8/25	Ground	7	165	155		
					9/6	Ground	18	40	135		
			9/16	Ground	3	3	31				
		ISS&C	Strata 5 (Gold Point to Dawson Cr)				Aerial	ND	ND	ND	
				8/27	Ground	1	20	25			
				9/7	Ground	33	80	39			
		9/22	Ground	8	0	84					

Table 12. 2001 Chinook spawning ground survey summary South Fork Clearwater River (Continued)

Drainage	Reach	Type	Description	Date	Method	Redds	Fish			
							Live	Dead		
Red River		ISS&C	Strata 6 (Mouth to Gold Point)		Aerial	ND	ND	ND		
				8/24	Ground	0	200	29		
				9/9-11	Ground	152	131	140		
				9/17	Ground	0	2	69		
SF Red River	NC-3	NT	Mouth to Trapper Creek	8/26	Ground	2	2	0		
				9/12	Ground	3	0	0		
				9/17	Ground	0	0	0		
Red River Ground Count Total						348	1,044	1,394		
Red River Aerial Count Total						ND	ND	ND		
American River	NC-4	T	Lick Creek to Kirks Fork	9/7-9	Ground	91	167	104		
		ISS&C	Strata 1 (Corrals to Limber Luke)	8/28	Aerial	ND	ND	ND		
	9/13	Ground	30	22	24	8/28	Ground	50	66	6
						9/27	Ground	0	0	0
			ISS&C	Strata 2 (Box Sing Cr to Corrals)		Aerial	ND	ND	ND	
					8/28	Ground	16	67	14	
					9/8	Ground	61	127	75	
					9/21	Ground	13	0	25	
			ISS&C	Strata 3 (Mouth to Box Sing Creek)		Aerial	ND	ND	ND	
					8/27	Ground	36	261	30	
				9/7-9	Ground	149	152	317		
				9/20-22	Ground	35	0	139		
American River Ground Count Total						390	695	630		
American River Aerial Count Total						ND	ND	ND		

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Table 12. 2001 Chinook spawning ground survey summary South Fork Clearwater River (Continued)

Drainage	Reach	Type	Description	Date	Fish Method	Redds	Live	Dead
Crooked River	NC-5	C	Relief Cr. to upper end of airstrip	Not done				
	NC-6	T	Mouth to forks above Old Orogrande	9/10-11	Ground	87	33	46
			Mouth to weir	8/25	Ground	1	15	17
				9/10	Ground	9	4	12
				9/16	Ground	0	0	9
			Strata 3-lower (weir to bottom of meanders)	8/25	Ground	1	20	19
				9/10	Ground	10	6	16
				9/18	Ground	0	0	12
			Strata 4 (the meanders)	8/25-26	Ground	6	6	7
				9/10	Ground	16	7	9
				9/16	Ground	1	0	2
			Strata 3-upper (top of meanders to narrows)	8/25-26	Ground	0	2	1
				9/10	Ground	4	7	2
				9/16	Ground	0	0	2
			Strata Canyon (the narrows)	8/27	Ground	3	14	11
				9/10	Ground	17	12	19
				9/17	Ground	1	0	10
			Strata 2 (top of narrows to bridge)	8/27-28	Ground	4	23	8
9/11					Ground	17	1	0
9/19					Ground	1	0	0
			Strata 1 (bridge to forks)	8/28-29	Ground	22	53	69
				9/11	Ground	21	0	0
				9/20	Ground	2	5	3
Crooked River Ground Count Total						136	170	228
Crooked River Aerial Count Total						ND	ND	ND

¹ Some redds "occupied"; no count given

Table 12. 2001 Chinook spawning ground survey summary South Fork Clearwater River (Continued)

Drainage	Reach	Type	Description	Date	Method	Redds	Fish	
							Live	Dead
Newsome Cr.	NC-7	C	Nugget Cr. to Beaver Cr.		Not done			
	NC-8	T	Mouth to Glory Hole (just below Radcliff Cr, Nez Perce Tribe)	9/11	Ground	211	ND	125
		C	Radcliff Cr to headwaters	9/8	Not done			
SF Clearwater River	new 1995	ISS&C	Mouth to Stites		Aerial	ND	ND	ND
		ISS&C	Stites to Harpster		Aerial	ND	ND	ND
		ISS&C	Harpster to Mt Idaho		Aerial	ND	ND	ND
		ISS&C	Mt Idaho to Johns Cr		Aerial	ND	ND	ND
		ISS&C	Johns Cr to Tenmile Cr		Aerial	ND	ND	ND
		ISS&C	Tenmile Cr to Newsome Cr		Aerial	ND	ND	ND
		ISS&C	Newsome Cr to Crooked R		Aerial	ND	ND	ND
		ISS&C	Crooked R. to Red River		Aerial	ND	ND	ND
Tenmile Creek	new 1995	ISS&C	Mouth to Morgan Cr.		Aerial	ND	ND	ND
		ISS&C	Morgan Cr to headwaters		Aerial	ND	ND	ND
Johns Creek	new 1995	ISS&C	Mouth to Frank Brown Cr		Aerial	ND	ND	ND
		ISS&C	Frank Brown to headwaters		Aerial	ND	ND	ND
South Fork Drainage Ground Count Total						458	820	325
South Fork Drainage Aerial Count Total						ND	ND	ND

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