

SALMONID DENSITIES IN SELECTED STREAMS IN THE
CLEARWATER RIVER, IMNAHA RIVER, GRANDE RONDE RIVER,
AND SALMON RIVER SUBBASINS: 1992 to 2000

Prepared by:

Michael L. Blenden
Paul A. Kucera

Department of Fisheries Resources Management
Nez Perce Tribe
Lapwai, Idaho

Prepared for:

U.S. Fish and Wildlife Service
Lower Snake River Compensation Plan Office
1387 South Vinnell Way, Suite 343
Boise, Idaho 83709

December 2002

ABSTRACT

A monitoring program, funded through the Lower Snake River Compensation Plan (LSRCP) program, was initiated in 1989 to provide baseline information and indices of juvenile relative abundance of naturally reproducing anadromous salmonid populations and the densities of fish pre and post release of hatchery fish in the natural environment. The Imnaha River, Lostine River, Lick Creek, Big Sheep Creek (Oregon), and Buckhorn Creek, Dollar Creek, South Fork Salmon River, Logan Creek, Eldorado Creek, Yoosa Creek, Meadow Creek, Bear Creek and Fishing Creek (Idaho) were snorkeled from 1992 to 2000 for collection of juvenile fish density information.

Snorkeling surveys indicated that chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*) were generally the most numerous fish species in the study streams with bull trout (*Salvelinus confluentus*), brook trout (*S. fontinalis*), cutthroat trout (*O. clarki*), mountain whitefish (*Prosopium williamsoni*), sculpins (*Cottus* spp.), dace (*Rhinichthys* spp.) and suckers (*Catostomus* spp.) present in some streams. Throughout the entire study period, age 0+ natural chinook salmon average densities ranged from 0 fish in several streams to 314.4 fish/100m² in upper Lick Creek pool habitat. Age 1+ chinook salmon mean density was highest (5.4/100m²) in Lick Creek pool habitat.

Natural chinook salmon densities were collected in two larger stream systems, the Imnaha River and Lostine River, within index area spawning ground reaches. Age 0+ chinook salmon mean densities in these natural production areas ranged from 0.8 to 72.4 fish/100m² in run and pool habitats. Substantial inter annual variation existed in age 0+ chinook salmon average densities, within habitat types, which ranged up to 140%. Ninety five percent confidence intervals around density point estimates, within habitat types and years, ranged from 34% to 140%. Average densities of subyearling chinook salmon were generally more abundant in pool habitats compared to run habitat types. Average densities of age 1+ natural chinook salmon ranged from 0.1 to 5.3 fish/100m² in these same stream reaches.

Juvenile chinook salmon density information was collected in Lick Creek, in the Imnaha River subbasin, to document the reproductive success of adult hatchery chinook salmon releases. The natural salmon spawning aggregate in Lick Creek is essentially locally extirpated. Chinook salmon parr densities in Lick Creek ranged from 32.5 to 224 fish/100m² the year after adult hatchery salmon releases during three different years. During three years when no adult hatchery chinook salmon were released, age 0+ chinook salmon densities the following year were zero. Outplanted adult hatchery chinook salmon were able to successfully spawn and produce progeny in Lick Creek.

Juvenile chinook salmon densities were documented during the summer pre and post release of subyearling hatchery chinook in Buckhorn Creek, Dollar Creek, North Fork Dollar Creek, and Big Sheep Creek in 1998. Pre release age 0+ chinook salmon average densities in these streams ranged between 0 and 28.7 fish/100m² in run and pool habitat. Average age 0+ salmon densities

eight days to two weeks post hatchery release were 13.1 to 113.5 fish/100m². The highest densities of hatchery chinook were observed in pool habitat. Hatchery chinook salmon parr outplanted into Buckhorn Creek, Dollar Creek and the North Fork Dollar Creek were not externally marked and were not distinguishable from natural chinook salmon parr. No consistent trends in steelhead average densities occurred following release of subyearling hatchery chinook salmon. Mean densities of age 0+ natural chinook salmon remained almost the same (1.9 versus 2.8 fish/100m²) following release of hatchery chinook psmolts in the fall in the South Fork Salmon River.

Wild steelhead average densities ranged from 11.7 to 41.4 fish/100m² in Lick Creek pool habitat. Inter annual variation in juvenile steelhead densities, within habitat types, was substantial and ranged up to 100%. Ninety five percent confidence intervals around juvenile steelhead density point estimates ranged from 40% to 144%. Hatchery rainbow, from a catchable trout program, were observed in the upper Lostine River in 1992 at mean densities of 5.1 to 5.4 fish/100m² in run and pool habitat. A limited number of residual hatchery steelhead were observed in upper Imnaha River pool habitat and in Lick Creek pool habitat.

Bull trout were observed in Big Sheep Creek, Imnaha River, Lick Creek, Lostine River, Logan Creek, Buckhorn Creek, Bear Creek, and Fishing Creek at average densities that ranged from 0.1 to 11.8 fish/100m². Brook trout, an exotic species, were observed in the Lostine River, Dollar Creek, North Fork Dollar Creek, Eldorado Creek, Bear Creek, and Yoosa Creek.

Cutthroat trout were observed only in Salmon River and Clearwater River subbasin streams. Cutthroat trout presence was documented in Logan Creek, Buckhorn Creek, West Fork Buckhorn Creek, Dollar Creek, Meadow Creek, Bear Creek, Fishing Creek, Eldorado Creek and Yoosa Creek. Average densities of cutthroat trout ranged from 0.03 to 27 fish/100m². Logan Creek, in the Middle Fork Salmon River, exhibited the highest densities of cutthroat trout observed.

Mountain whitefish were observed in the following study streams: Imnaha River, Lostine River, Big Sheep Creek, Buckhorn Creek, West Fork Buckhorn Creek Eldorado Creek, Meadow Creek, Bear Creek, and Fishing Creek. Mean densities of mountain whitefish ranged from 0.1 to 13.2 fish/100m² in run and pool habitat. The Imnaha River contained the highest densities of mountain whitefish observed during this investigation.

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INTRODUCTION

A program was initiated in 1989 to monitor indexes of population size and other life history characteristics of anadromous salmonids and co-existing resident fishes in streams throughout the Nez Perce Tribe's Territory. Streams in the Clearwater River, Imnaha River, Grande Ronde River, South Fork Salmon River, and Middle Fork Salmon River subbasins in Idaho and Oregon were chosen for monitoring. This monitoring was designed to: 1) collect baseline juvenile fish density information, over a five year period, which will provide documentation of abundance indices of naturally reproducing anadromous salmonid populations, 2) determine densities of natural juvenile chinook salmon after adult outplants, and 3) determine densities of juvenile hatchery reared chinook salmon after release. These hatchery reared fish are being stocked as part of the Lower Snake River Compensation Plan (LSRCP) mitigation for losses associated with the construction of the four dams on the lower Snake River.

STUDY SITES

In northeast Oregon, the Imnaha River, Big Sheep Creek and Lick Creek in the Imnaha River drainage (Figure 1) and the Lostine River in the Grande Ronde River drainage (Figure 2) were snorkeled by habitat type from 1992 to 2000. The Imnaha River was snorkeled at approximate river kilometer (rkm) 84 and 90 from 1992 to 1996. Big Sheep Creek was snorkeled approximately 4.5 stream kilometers (skm) above Carrol Creek from 1992-1995 and also just above Lick Creek in 1994. Lower Lick Creek was snorkeled at approximately skm 0.6 in 1994 and upper Lick Creek was snorkeled from between skm 2.4 and 5.9 from 1994-2000 excluding 1995. The Lostine River was snorkeled in two locations at approximately rkm 18 and rkm 38. In Idaho, Fishing Creek and Bear Creek in the Lochsa River drainage, Meadow Creek (1992 only) in the Selway River drainage, and Eldorado Creek and Yoosa Creek in the mainstem Clearwater River drainage (Figure 3) were snorkeled from 1992 to 1995 to determine fish densities. Fishing Creek snorkeling sites were from the mouth to the confluence of the East Fork and West Fork of Fishing Creek. Snorkeling sites on Bear Creek were from the mouth to the confluence of the East Fork and West Fork of Bear Creek. Meadow Creek was snorkeled at approximately skm 2.4. Eldorado Creek snorkeling sites were from the mouth to Dollar Creek bridge. Snorkeling sites on Yoosa Creek were from the mouth to Camp Creek. Logan Creek in the Middle Fork Salmon River drainage was snorkeled in 1992 and 1993 (Figure 4) at approximately skm 6 and skm 8.3 for the presence of juvenile chinook salmon. Buckhorn Creek in the South Fork Salmon River drainage was snorkeled in 1994 (skm 1.6 to skm 8) and 1998 (approximately skm 1 to skm 10) prior to the release of hatchery reared chinook salmon parr. A post-release snorkeling survey was conducted in Buckhorn Creek in 1998. The West Fork of Buckhorn was snorkeled within 100 meters from the mouth in 1998. The South Fork Salmon River was snorkeled in 1998 from approximately one kilometer above Knox Bridge to 11 kilometers below the South Fork Salmon fish weir before and after the release of hatchery chinook salmon presmolts (Figure 5). Fish from Big Sheep Creek were sampled by electrofishing in 1992 and 1993. In 1994 a limited amount of electrofishing and dipnetting was done in Lick Creek to document the reproductive success of adult hatchery chinook salmon outplanted in 1993. Streams sampled with snorkeling location sites and mean stream width of streams snorkeled from 1992 to 2000 are contained in Table 1.

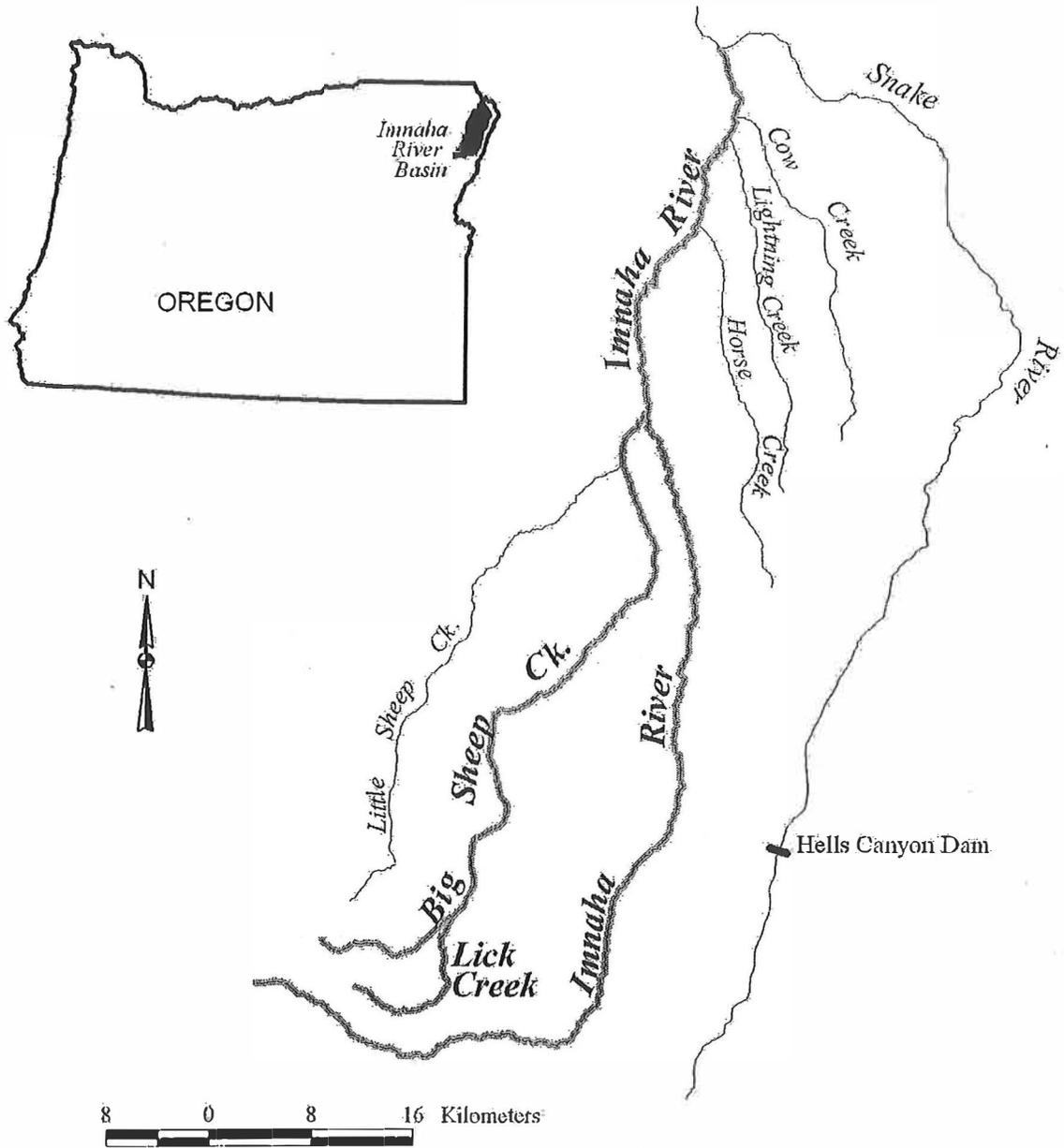


Figure 1. Streams sampled (in bold) in the Innaha River subbasin.

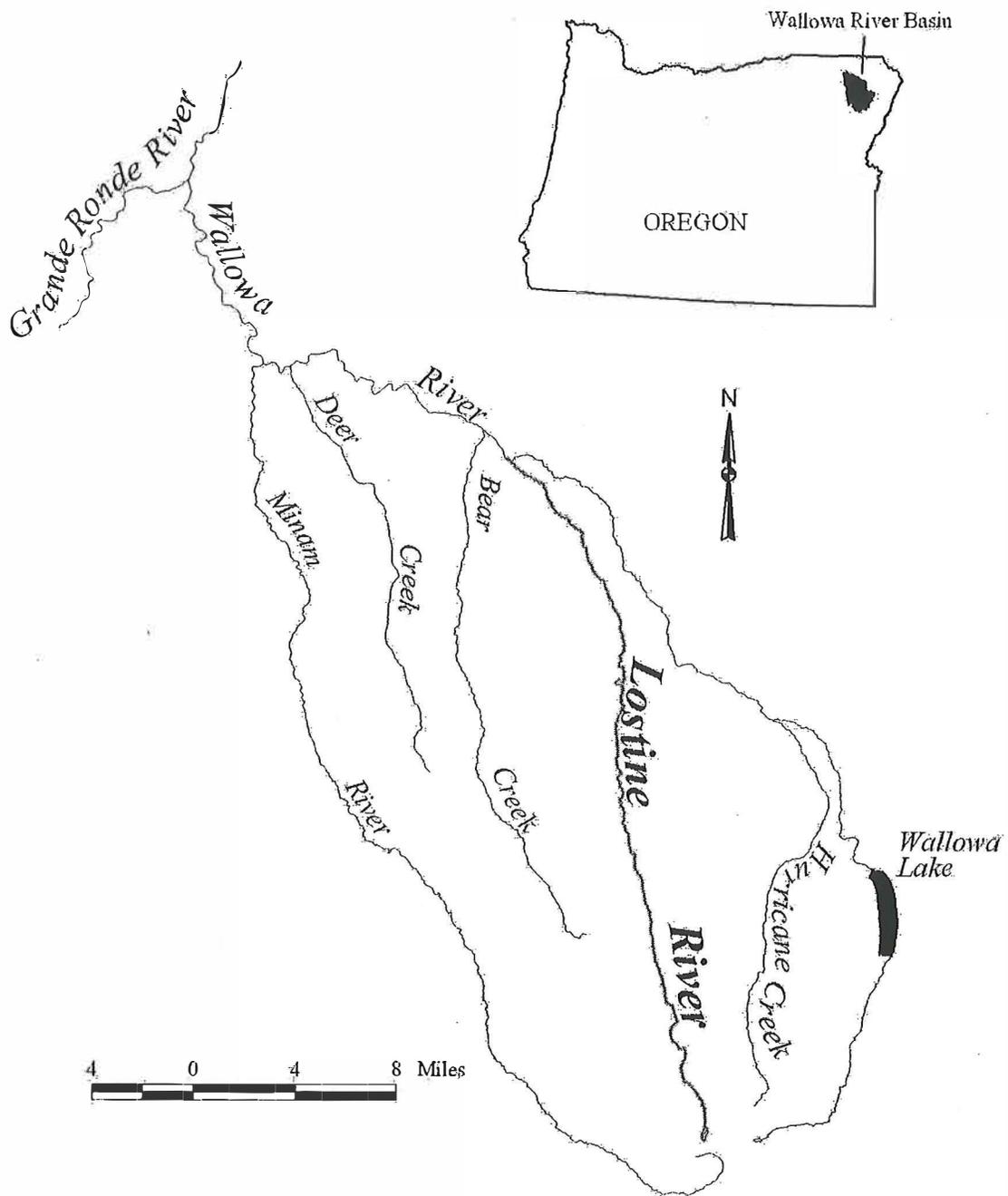


Figure 2. Stream sampled (in bold) in the Grande Ronde River subbasin.

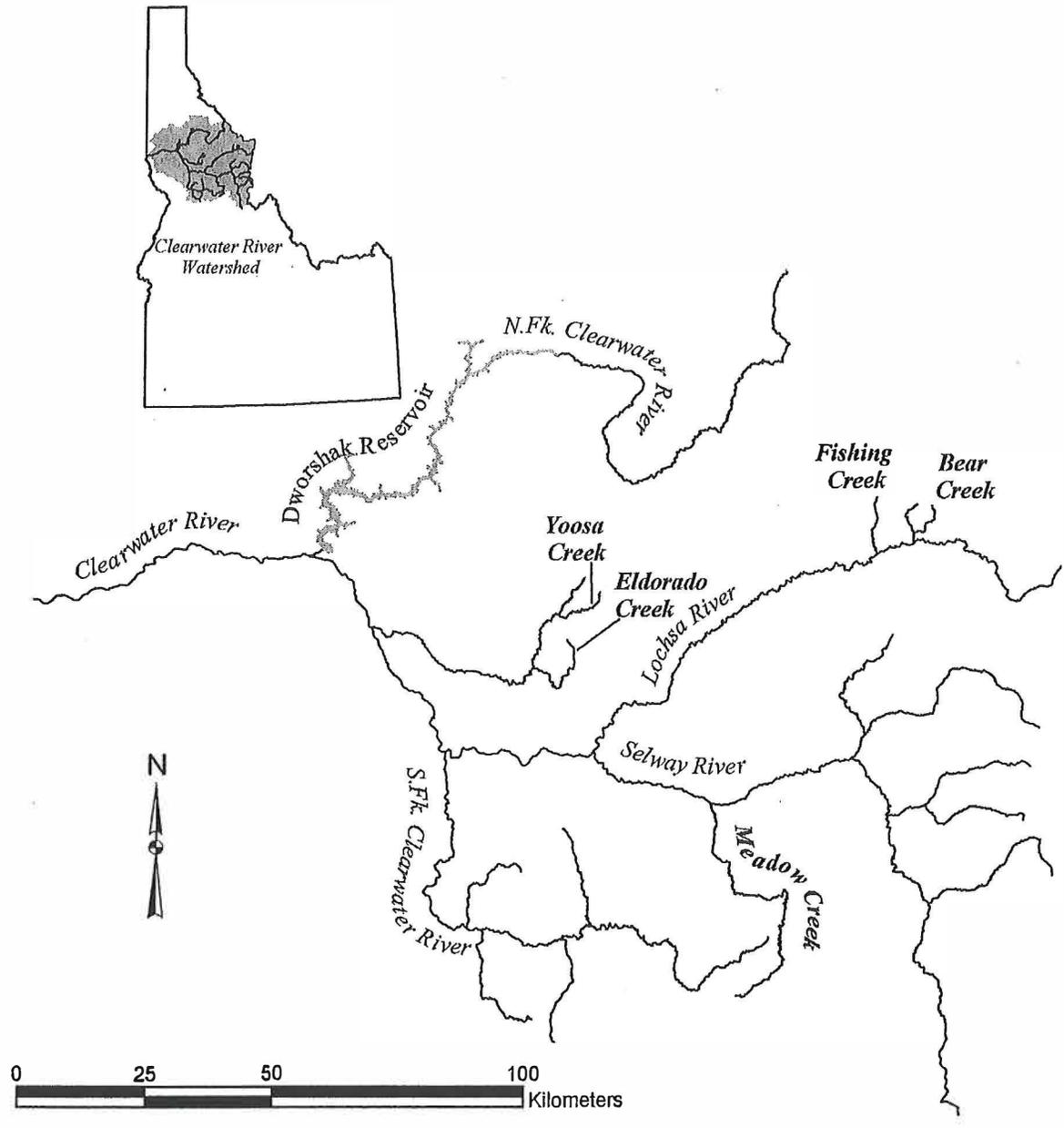


Figure 3. Streams sampled (in bold) in the Clearwater River subbasin .

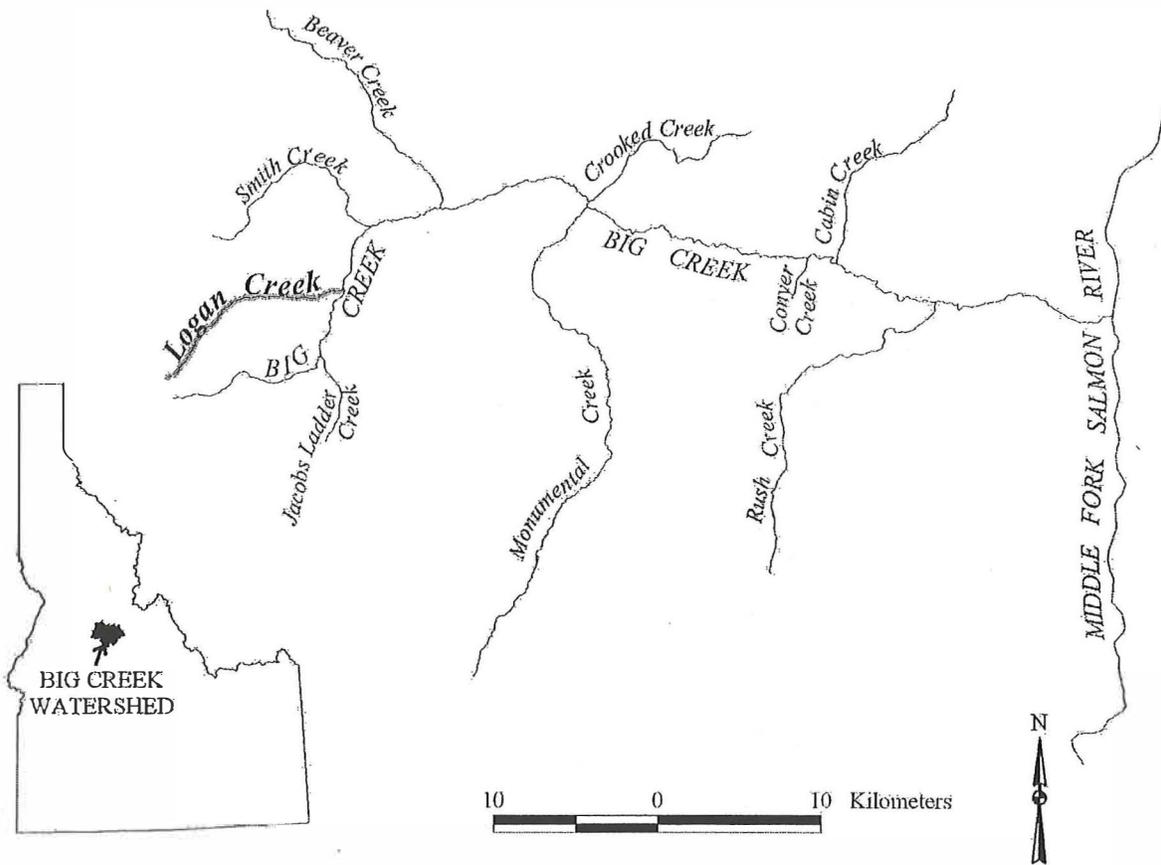


Figure 4. Stream sampled (in bold) in the Middle Fork Salmon River subbasin.

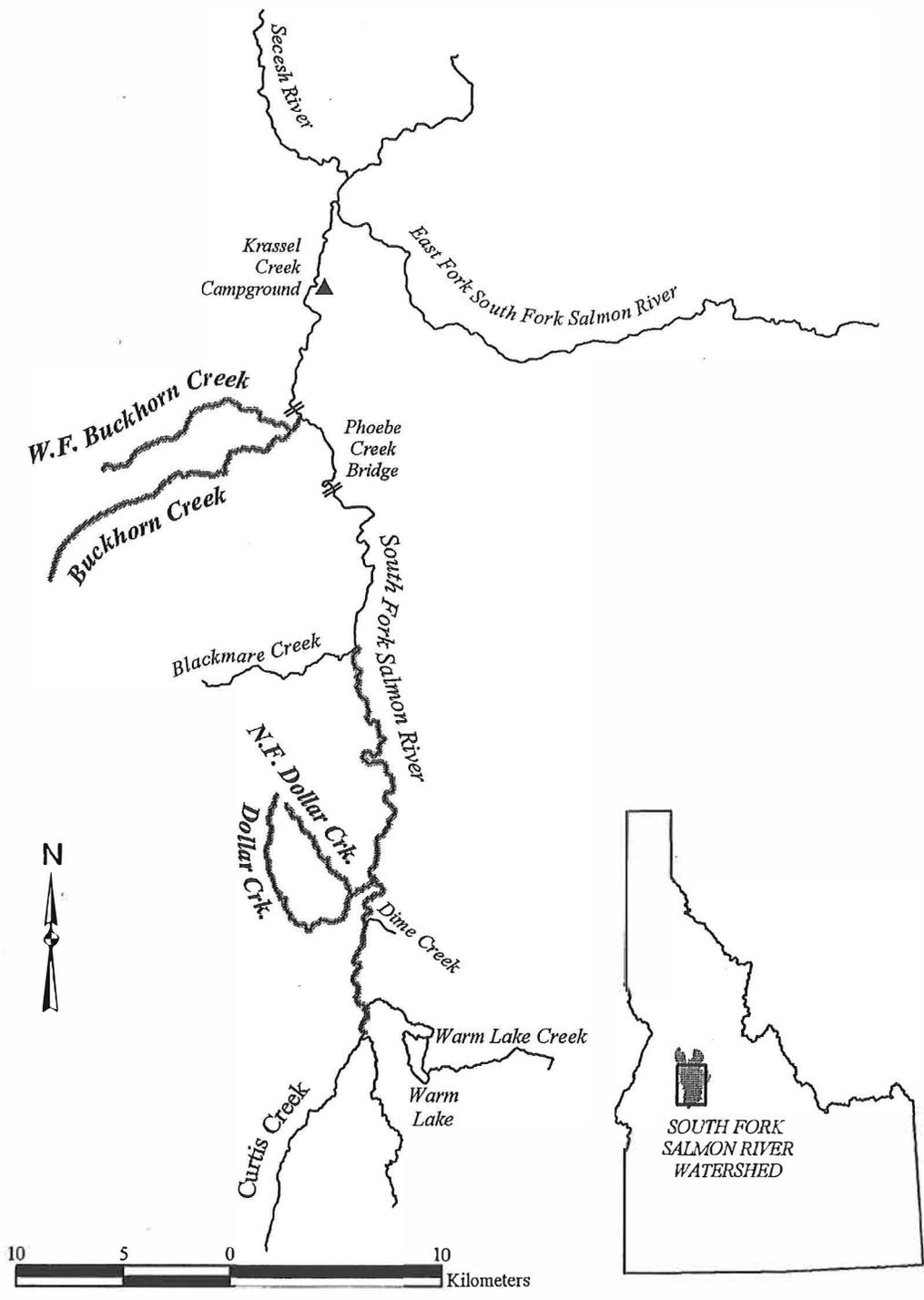


Figure 5. Streams sampled (in bold) in the South Fork Salmon River subbasin.

Table 1. Streams sampled, snorkeling location sites and mean stream width of streams snorkeled from 1992 to 2000.

Stream	Year Sampled	Snorkeling Location (rkm)	Mean Stream Width (m)
lower Big Sheep Creek	1992-1995	37	6.0
upper Big Sheep Creek	1994	46	5.4
Imnaha River	1992-1996	84 and 90	10.8
upper Lick Creek	1994-2000	2.4 to 5.9	3.4
lower Lick Creek	1994	0.6	3.3
lower Lostine River	1992-1995	18	12.4
upper Lostine River	1992-1995	38	8.5
Bear Creek	1994-1995	0 to 3.0	9.1
Fishing Creek	1994-1995	0 to 6.0	7.6
Meadow Creek	1992	2.0	21.8
Eldorado Creek	1994-1995	0 to 7.9	8.6
Yoosa Creek	1994-1995	0 to 4.4	8.3
lower Logan Creek	1991-1993	5.5	4.1
upper Logan Creek	1993	8.2	3.3
Buckhorn Creek	1994 and 1998	0.8 to 9.3	6.9
West Fork Buckhorn Creek	1994	0.1	5.5
Dollar Creek	1998	0.1 to 2.9	5.5
North Fork Dollar Creek	1998	0.1	4.8
South Fork Salmon River	1998	89.6 to 128.0	16.2

METHODS

Indices of Abundance

In each stream chosen for juvenile density estimation, one or two reaches were selected. Within each reach, individual habitat types (i.e.; a single pool, run, riffle or pocket water) were delineated and snorkeled from the downstream end to the upstream end with the number of snorkelers dependant on stream width and water clarity. Each habitat types length was measured to the nearest 0.1 m, and several width measurements were taken to the nearest 0.1 m. Stream depths were recorded to the nearest 5 cm along the stream width in the habitat type. The surface area (length x mean width) of each habitat type was calculated and used to determine the density of each species in each habitat type.

Each fish encountered while snorkeling a transect was identified to species when possible, and placed in a category according to estimated length (under three inches, inch groups to 13 inches, or over 13 inches). Dace (*Rhinichthys* spp.) and sculpins (*Cottus* spp.) were not enumerated for this report. Steelhead (*Oncorhynchus mykiss*, anadromous form) and rainbow trout (*O. mykiss*, resident form) numbers were pooled for the analysis. The term "steelhead" is used to refer to this complex. It is assumed that most of the steelhead encountered were juvenile steelhead unless otherwise noted. Steelhead and cutthroat trout coexist in Clearwater River and Salmon River tributary streams. Young-of-the-year (YOY) steelhead and cutthroat trout could not be visually identified to species and separated when observed during snorkeling activities. All YOY steelhead or cutthroat were recorded as steelhead, which may bias the estimated densities of these two species. Some fish species have multiple age groups present in the stream such as cutthroat trout, steelhead, mountain whitefish and bull trout. Reported densities for those species are for all age groups combined and do not represent individual age groups. Usually, two or more transects of each available habitat type were snorkeled in each stream. In such cases, the mean of the individual transects' densities for each species are reported (Appendix A).

Snorkeling methods from 1992 to 1995 in Bear Creek (Papoose Creek), Fishing Creek (Squaw Creek), Yoosa Creek and Eldorado Creek snorkeled by the Nez Perce Tribe under the Idaho Salmon Supplementation studies followed methods described in Bowles and Leitzinger (1991).

Big Sheep Creek, a tributary to the Imnaha River, was snorkeled for fish densities from 1992 to 1995 (1992- 3 pools, 4 runs; 1993- 2 pools, 3 runs; and 1995- 3 pools, 3 runs) and limited electroshocking was conducted in 1992 and 1993 to collect biological information. The upper mainstem Imnaha River was snorkeled (1992-1994- 5 pools and 8 runs; 1995-1996- 5 pools and 7 runs) from 1992 to 1996 in two stream reaches. The snorkeling locations were located within the chinook salmon redd count index area from Indian Crossing to Mac's Mine. The spatial distance and similarity of habitat allowed us to combine these two reaches for data analysis purposes. Lick Creek was snorkeled in 1994 and from 1996 through 2000. Two stream reaches were snorkeled (3 pools and 3 runs in each reach) on July 7 and again on August 16, 1994. The two reaches were determined to be of different channel types as described by Rosgen (1985,

1994), and therefore were not combined for data analysis purposes. Snorkeling activities in 1996 through 2000 were conducted in only one stream reach (1996 - 7 pools and 7 runs; 1997 - 6 pools and 5 runs; 1998 to 2000 6 pools and 4 runs). In each of the three cases snorkeling was conducted the year following adult hatchery chinook salmon releases, substantial age 0+ salmon parr densities were documented. The Lostine River was snorkeled in an upper river reach (1992- 2 pools and 4 runs; 1993 and 1994- 1 pool and 4 runs; 1995- 2 pools and 3 runs) and a lower river reach (1992- 5 pools and 1 run; 1993- 4 pools and 2 runs; 1994 and 1995- 4 pools and 1 run). Buckhorn Creek (1 pool and 3 runs) and West Fork Buckhorn Creek (2 pools) were snorkeled in 1994. In 1998 pre and post release snorkel surveys were conducted in Buckhorn Creek (4 pools and 5 runs). Eldorado Creek was snorkeled from 1992 to 1995 (1992- 1 pocket water, 6 pools, 7 riffles, and 10 runs; 1993- 1 pocket water, 4 pools, 2 riffles, and 11 runs; 1994- 2 pocket water, 5 pools, 3 riffles, and 11 runs; 1995- 1 pocket water, 11 pools, 4 riffles, and 13 runs). Yoosa Creek was snorkeled from 1992 to 1995 (1992- 3 pools, 7 riffles and 7 runs; 1993- 2 riffles and 8 runs; 1994- 4 pools, 6 riffles and 7 runs; 1995- 3 pools, 5 riffles and 7 runs). The lower part of Meadow Creek in the Selway River drainage was snorkeled in 1992 (2 pools and 2 runs) MOVE. Bear Creek (Papoose Creek), in the Lochsa River drainage, was snorkeled from 1992 to 1995 (1992 - 4 pools, 7 riffles, and 9 runs; 1993 - 7 riffles and 8 runs; 1994 - 3 pocket waters, 6 pools, 6 riffles, and 7 runs; 1995 - 1 pocket water, 8 pools, 7 riffles and 10 runs). Fishing Creek (Squaw Creek), a tributary to the Lochsa River, was snorkeled from 1992 to 1995 (1992 - 6 pocket waters, 4 pools, 7 riffles and 8 runs; 1993- 5 pocket waters, 3 pools, 6 riffles and 8 runs; 1994 - 6 pocket waters, 6 pools, 7 riffles and 8 runs; 1995 - 6 pocket waters, 7 pools, 3 riffles and 12 runs).

Biological Characteristics

In each stream chosen for monitoring, one to two reaches were selected for electrofishing in 1992 to 1994 and 2000. At each selected reach fish were electrofished with a Smith-Root Type VII Electrofisher powered by a 12 volt battery. In Lick Creek in 1994 young-of-the-year chinook salmon were also captured using a dipnet. No attempt was made to sample by habitat type. Fish were anesthetized, measured to the nearest millimeter in total length and weighed to the nearest 0.1 gram on an Ohaus model ct 1200-s scale. Fish were returned to the stream after recovering from the effects of the anesthesia. Fulton's condition factor (K) was calculated for each sample using the formula $K=10^5 \times (\text{weight}/\text{length}^3)$. Mean condition factors are presented by species and origin.

RESULTS AND DISCUSSION

Snorkeling surveys indicated that steelhead and chinook salmon were the most numerous fish species in the study streams with bull trout (*Salvelinus confluentus*), brook trout (*S. fontinalis*), cutthroat trout (*Salmo* spp.), mountain whitefish (*Prosopium williamsoni*), sculpins (*Cottus* spp.), dace (*Rhinichthys* spp.) and suckers (*Catostomus* spp.) present in some streams. Table 2 shows the mean densities (number/100 m²) of chinook salmon and steelhead by habitat type from 1992 to 2000.

Table 2. Mean densities (number/100m²) of chinook salmon and steelhead by habitat type from 1992 to 2000. Hatchery fish numbers and densities are in parenthesis. p.w.=pocketwater

Stream	Year	Habitat Type/ No. of Transects	Total Area (M ²)	Number of Chinook Age 0+	Mean Density of Chinook Age 0+	Number of Chinook Age 1+	Mean Density of Chinook Age 1+	Number of Chinook Adults	Mean Density of Chinook Adults	Number of Steelhead	Mean Density of Steelhead
Big Sheep Creek	1992	pool (3)	277.1	49	20.2	8	2.7	0	0.0	30	12.6
		run (4)	308.2	83	24.7	15	3.9	0	0.0	78	24.1
Big Sheep Creek	1993	pool (2)	161.6	29	17.2	6	4.6	1	0.5	38	25.4
		run (3)	344.3	21	5.6	18	5.3	0	0.0	53	15.5
U. Big Sheep Creek 7/7	1994	pool (2)	112.8	0	0.0	0	0.0	0	0.0	42	36.2
		run (2)	80.4	0	0.0	0	0.0	0	0.0	21	26.2
U. Big Sheep Creek 8/16	1994	pool (2)	89.6	7	8.3	0	0.0	0	0.0	22	24.9
		run (2)	94.5	(295) 2 (151)	(317.6) 2.4 (166.4)	0	0.0	0	0.0	15	16.0
L. Big Sheep Creek 7/8	1994	pool (2)	133.6	22	18.6	0	0.0	0	0.0	37	28.0
		run (4)	360.5	49	13.5	7	1.8	0	0.0	73	20.8
L. Big Sheep Creek 8/17	1994	pool (2)	138.8	31	22.2	0	0.0	0	0.0	30	19.5
		run (4)	357.5	(19) 57 (9)	(12.8) 16.1 (1.7)	6	1.2	0	0.0	84	25.5
Big Sheep Creek	1995	pool (3)	263.6	0	0.0	5	1.8	0	0.0	51	18.9
		run (3)	318.1	0	0.0	2	0.6	0	0.0	70	22.0
Buckhorn Creek	1994	pool (1)	93.1	0	0.0	0	0.0	0	0.0	1	1.1
		run (3)	295.3	0	0.0	0	0.0	0	0.0	3	1.0
W.F. Buckhorn Creek	1994	pool (2)	80.7	0	0.0	0	0.0	0	0.0	1	1.5
Buckhorn Creek 7/15	1998	pool (4)	458.9	1	0.2	0	0.0	0	0.0	84	28.5
		run (5)	890.1	1	0.1	0	0.0	0	0.0	60	5.9
Buckhorn Creek 8/12	1998	pool (4)	357.7	152	90.5	0	0.0	0	0.0	76	27.3
		run (5)	739.3	75	13.1	0	0.0	0	0.0	54	5.6

Table 2. (continued)

Stream	Year	Habitat Type/ No. of Transects	Total Area (M ²)	Number of Chinook Age 0+	Mean Density of Chinook Age 0+	Number of Chinook Age 1+	Mean Density of Chinook Age 1+	Number of Chinook Adults	Mean Density of Chinook Adults	Number of Steelhead	Mean Density of Steelhead
Dollar Creek 7/16	1998	pool (3)	132.8	56	28.7	0	0.0	0	0.0	2	1.4
		run (3)	371.1	24	4.9	0	0.0	0	0.0	1	0.3
N.F. Dollar Creek 7/16	1998	pool (1)	55	0	0.0	0	0.0	0	0.0	3	5.5
		run (1)	31.2	0	0.0	0	0.0	0	0.0	3	9.6
Dollar Creek 8/13	1998	pool (3)	120.7	97	113.5	0	0.0	0	0.0	7	10.8
		run (3)	329.7	82	22.3	0	0.0	0	0.0	3	0.6
N.F. Dollar Creek 8/13	1998	pool (1)	47.4	41	86.5	0	0.0	0	0.0	10	21.1
		run (1)	19.6	6	30.6	0	0.0	0	0.0	1	5.1
Eldorado Creek	1992	p.w. (1)	580.9	0	0.0	0	0.0	0	0.0	7	1.2
		pool (6)	1611.6	0	0.0	0	0.0	0	0.0	13	1.0
		riffle (7)	881.6	0	0.0	0	0.0	0	0.0	16	2.1
		run (10)	3146.9	3	0.2	1	0.1	0	0.0	50	2.6
Eldorado Creek	1993	p.w. (1)	589.2	0	0.0	0	0.0	0	0.0	2	0.3
		pool (4)	1349.3	0	0.0	0	0.0	0	0.0	5	1.9
		riffle (2)	304.5	0	0.0	0	0.0	0	0.0	9	2.2
		run (11)	5069.3	0	0.0	0	0.0	0	0.0	48	1.9
Eldorado Creek	1994	p.w. (2)	989.8	63	6.7	1	0.1	0	0.0	11	1.1
		pool (5)	2057.3	0	0.0	0	0.0	0	0.0	9	0.4
		riffle (3)	509.3	6	1.0	0	0.0	0	0.0	9	1.6
		run (11)	2818.7	34	1.8	0	0.0	0	0.0	35	2.1
Eldorado Creek	1995	p.w. (1)	543	0	0.0	0	0.0	0	0.0	7	1.3
		pool (11)	2094.1	0	0.0	0	0.0	0	0.0	11	1.0
		riffle (4)	991.2	0	0.0	0	0.0	0	0.0	13	1.4
		run (13)	2495.9	4	0.1	0	0.0	0	0.0	19	1.0
Imnaha River	1992	pool (5)	1808.8	748	40.6	14	0.7	0	0.0	32	2.0
		run (8)	1975.3	363	16.3	3	0.2	0	0.0	49	2.8
Imnaha River	1993	pool (5)	1445.8	995	61.7	22	1.5	1	0.1	49	2.9
		run (8)	2193.5	423	17.9	27	1.1	1	0.0	32	1.5

Table 2. (continued)

Stream	Year	Habitat Type/ No. of Transects	Total Area (M ²)	Number of Chinook Age 0+	Mean Density of Chinook Age 0+	Number of Chinook Age 1+	Mean Density of Chinook Age 1+	Number of Chinook Adults	Mean Density of Chinook Adults	Number of Steelhead	Mean Density of Steelhead
Imnaha River	1994	pool (5)	1830	1566	72.4	46	2.2	0	0.0	5	0.4
		run (8)	2505	960	38.0	4	0.1	0	0.0	10	0.5
Imnaha River	1995	pool (5)	1633.3	612	36.2	18	1.1	0	0.0	30	1.8
		run (7)	3426.9	554	16.5	43	1.2	1	0.0	65	1.6
Imnaha River	1996	pool (5)	1957.2	640	30.4	113	5.3	1	0.1	53	2.5
		run (7)	3294	273	9.8	46	1.6	1	0.0	71	2.4
U. Lick Creek 7/7	1994	pool (3)	165.7	522	314.4	0	0.0	0	0.0	47	13.4
		run (3)	97.8	190	200.8	0	0.0	0	0.0	30	19.5
U. Lick Creek 8/16	1994	pool (3)	156.3	357	224.0	0	0.0	0	0.0	37	23.9
		run (3)	92.6	206	208.8	0	0.0	0	0.0	29	30.2
L. Lick Creek 7/7	1994	pool (3)	41.2	0	0.0	0	0.0	0	0.0	17	41.4
		run (3)	47.5	1	2.0	0	0.0	0	0.0	14	29.4
L. Lick Creek 8/16	1994	pool (3)	42.3	15	37.2	0	0.0	0	0.0	15	38.0
		run (3)	45.3	18 (1)'	39.0 (2.4)'	0	0.0	0	0.0	17	37.7
Lick Creek	1996	pool (7)	328.5	0	0.0	0	0.0	0	0.0	65	19.0
		run (7)	489	0	0.0	0	0.0	0	0.0	42	9.8
Lick Creek	1997	pool (6)	352.5	0	0.0	0	0.0	(1)'	(0.3)'	80	21.3
		run (5)	289.9	0	0.0	0	0.0	(1)'	(0.3)'	45	15.9
Lick Creek	1998	pool (6)	347.1	525	149.3	3	1.0	(2)'	(0.7)'	70	24.0
		run (4)	179.2	161	76.0	0	0.0	0	0.0	20	13.9
Lick Creek	1999	pool (6)	324.9	161	47.3	14	5.4	0	0.0	33	11.7
		run (4)	208.4	83	32.5	5	2.1	0	0.0	22	13.7

Table 2. (continued)

Stream	Year	Habitat Type/ No. of Transects	Total Area (M ²)	Number of Chinook Age 0+	Mean Density of Chinook Age 0+	Number of Chinook Age 1+	Mean Density of Chinook Age 1+	Number of Chinook Adults	Mean Density of Chinook Adults	Number of Steelhead	Mean Density of Steelhead
Lick Creek	2000	pool (6)	376.4	0	0.0	5	1.6	1	0.2	65 (3)'	17.9 (1.0)'
		run (4)	244.2	0	0.0	1	0.3	0	0.0	34	11.8
Logan Creek	1992	pool (7)	187	0	0.0	0	0.0	0	0.0	1	0.5
		run (4)	155.4	0	0.0	0	0.0	0	0.0	0	0.0
Logan Creek	1993	pool (7)	212.1	0	0.0	0	0.0	0	0.0	4	1.6
		run (4)	136.2	0	0.0	0	0.0	0	0.0	4	2.4
U. Lostine River	1992	pool (2)	382.8	0	0.0	0	0.0	0	0.0	0 (33)'	0.0 (5.3)'
		run (4)	847.3	0	0.0	0	0.0	0	0.0	1 (40)'	0.1 (5.1)'
U. Lostine River	1993	pool (1)	287.5	0	0.0	0	0.0	0	0.0	3	1.0
		run (4)	873.4	0	0.0	0	0.0	0	0.0	1	0.2
U. Lostine River	1994	pool (1)	280	0	0.0	0	0.0	0	0.0	3	1.1
		run (4)	914.9	0	0.0	0	0.0	0	0.0	3	0.9
U. Lostine River	1995	pool (2)	822	1	0.1	0	0.0	0	0.0	1	0.1
		run (3)	1069.1	0	0.0	0	0.0	0	0.0	3	0.3
L. Lostine River	1992	pool (5)	2279.3	465	19.4	13	0.7	2	0.1	91	4.4
		run (1)	244.2	2	0.8	1	0.4	0	0.0	16	6.6
L. Lostine River	1993	pool (4)	2881.7	988	34.8	60	3.8	0	0.0	89	4.5
		run (2)	734.2	179	40.1	8	1.2	0	0.0	19	3.9
L. Lostine River	1994	pool (4)	2662.3	843	43.1	119	5.1	0	0.0	113	5.7
		run (1)	475.5	58	12.2	4	0.8	0	0.0	72	15.1
L. Lostine River	1995	pool (4)	2927.8	605	21.0	40	1.4	0	0.0	272	10.0
		run (1)	679.2	22	3.2	4	0.6	0	0.0	194	28.6

Table 2. (continued)

Stream	Year	Habitat Type/ No. of Transects	Total Area (M ²)	Number of Chinook Age 0+	Mean Density of Chinook Age 0+	Number of Chinook Age 1+	Mean Density of Chinook Age 1+	Number of Chinook Adults	Mean Density of Chinook Adults	Number of Steelhead	Mean Density of Steelhead
Meadow Creek	1992	pool (2)	2636.5	4	0.2	0	0.0	0	0.0	6	0.2
		run (2)	1697.5	35	2.0	12	0.8	0	0.0	20	1.3
Bear Creek	1992	pool (4)	450.4	0	0.0	4	1.2	0	0.0	161	39.2
		riffle (7)	904.6	0	0.0	1	0.1	0	0.0	164	18.8
		run (9)	1284.7	0	0.0	11	0.7	0	0.0	245	19.9
Bear Creek	1993	riffle (7)	949.8	55	5.2	0	0.0	0	0.0	99	12.0
		run (8)	1764.6	314	18.1	0	0.0	7	0.5	257	14.3
Bear Creek	1994	p.w. (3)	551.5	31	5.2	0	0.0	0	0.0	22	9.3
		pool (6)	841.6	309	44.7	1	0.1	1	0.2	47	28.1
		riffle (6)	855.5	111	23.5	1	0.1	0	0.0	45	16.3
		run (7)	844.4	304	38.3	5	0.4	0	0.0	70	20.3
Bear Creek	1995	p.w. (1)	115	0	0.0	0	0.0	0	0.0	2	1.7
		pool (8)	612.3	0	0.0	1	0.2	0	0.0	147	31.0
		riffle (7)	766.6	0	0.0	0	0.0	0	0.0	108	14.7
		run (10)	1230.5	0	0.0	5	0.3	0	0.0	288	23.3
S.F. Salmon River 9/24	1998	all habitats (6)	7160.85	96	1.9	0	0.0	0	0.0	0	0.0
S.F. Salmon River 10/22	1998	all habitats (6)	7070.2	79	2.8	0	0.0	0	0.0	0	0.0
Fishing Creek	1992	p.w. (6)	925.3	1	0.2	0	0.0	0	0.0	105	11.9
		pool (4)	510.6	14	2.6	0	0.0	0	0.0	151	30.5
		riffle (7)	1287.8	6	0.9	0	0.0	0	0.0	149	12.2
		run (8)	1171.1	10	0.4	0	0.0	0	0.0	163	15.4
Fishing Creek	1993	p.w. (5)	819.5	0	0.0	0	0.0	0	0.0	48	6.3
		pool (3)	179.2	0	0.0	0	0.0	0	0.0	17	10.5
		riffle (6)	1065.5	0	0.0	0	0.0	0	0.0	84	7.5
		run (8)	1895.7	0	0.0	0	0.0	0	0.0	191	16.9

Table 2. (continued)

Stream	Year	Habitat Type/ No. of Transects	Total Area (M ²)	Number of Chinook Age 0+	Mean Density of Chinook Age 0+	Number of Chinook Age 1+	Mean Density of Chinook Age 1+	Number of Chinook Adults	Mean Density of Chinook Adults	Number of Steelhead	Mean Density of Steelhead
Fishing Creek	1994	p.w. (6)	874.67	94	8.7	4	0.5	0	0.0	74	13.5
		pool (6)	461.2	93	23.3	5	0.6	0	0.0	29	13.7
		riffle (7)	1075.4	182	19.3	1	0.1	0	0.0	78	8.3
		run (8)	1050.7	118	13.3	4	0.3	0	0.0	106	14.4
Fishing Creek	1995	p.w. (6)	666.4	0	0.0	0	0.0	0	0.0	63	8.9
		pool (7)	434.6	0	0.0	0	0.0	0	0.0	72	15.3
		riffle (3)	519.1	0	0.0	0	0.0	0	0.0	27	6.9
		run (12)	1996.7	0	0.0	0	0.0	0	0.0	229	12.1
Yoosa Creek	1992	pool (3)	450.8	0	0.0	0	0.0	0	0.0	2	1.6
		riffle (7)	890.4	1	0.1	0	0.0	0	0.0	37	4.9
		run (7)	1727.2	37	2.4	2	0.1	0	0.0	196	13.5
Yoosa Creek	1993	riffle (2)	395.2	0	0.0	0	0.0	0	0.0	1	0.2
		run(8)	2900.3	0	0.0	0	0.0	0	0.0	55	2.2
Yoosa Creek	1994	pool (4)	444.2	58	7.8	0	0.0	0	0.0	16	7.0
		riffle (6)	791.1	46	7.1	1	0.1	0	0.0	26	2.4
		run (7)	1711.3	156	12.3	3	0.3	0	0.0	76	4.9
Yoosa Creek	1995	pool (3)	662.1	0	0.0	5	0.4	0	0.0	35	10.7
		riffle (5)	780.6	0	0.0	0	0.0	0	0.0	14	1.9
		run (7)	1557.1	0	0.0	3	0.3	0	0.0	37	3.3

¹ Hatchery origin fish

Natural chinook salmon (age 0+) densities were highest in upper Lick Creek pool habitat (313.5/100m²) in 1994 and were believed to be the progeny of 49 Imnaha River hatchery adult chinook salmon released in 1993. Age 1+ natural chinook salmon mean density was highest (5.4/100m²) in Lick Creek pool habitat in 1999 and are most likely the result of 107 adult hatchery chinook salmon released into Lick Creek in 1997. Big Sheep and Lick Creek in 1994 and Buckhorn Creek, Dollar Creek, and the South Fork Salmon River in 1998 had hatchery chinook salmon present. These hatchery chinook salmon came from 151,332 outplanted in Big Sheep Creek on July 20, 1994, 10,434 outplanted in Dollar Creek on July 30, 1998, 34,687 outplanted in Buckhorn Creek on August 5, 1998, and 158,240 outplanted in the South Fork Salmon River on October 7 and 8, 1998. The hatchery fish released into Buckhorn, Dollar, and the North Fork Dollar creeks were not marked externally and were therefore not readily distinguishable from natural chinook salmon parr. The highest densities of age 0+ hatchery chinook salmon observed were 317.6/100m² in upper Big Sheep Creek pool habitat.

Natural steelhead densities were highest in lower Lick Creek pool habitat in 1994 (41.4/100m²) while no natural steelhead were seen in Logan Creek run habitat or upper Lostine River pool habitat during 1992. Hatchery steelhead, from a catchable trout program, were observed in the upper Lostine River and had mean densities of 5.4/100m² in pool habitat and 5.1/100m² in run habitat. Two hatchery steelhead were observed in the Imnaha River during 1994 and three were observed in Lick Creek during 2000. They are likely residuals from hatchery releases into Little Sheep Creek.

Imnaha River Subbasin

Big Sheep Creek

Lower Big Sheep Creek was snorkeled from 1992 to 1995 to develop baseline relative abundance (density) and fish species composition information. Juvenile steelhead and natural chinook salmon were the two most abundant species present, in order of priority. Average densities of multiple age groups of steelhead, in pool habitat, ranged from 12.6 to 25.4 fish/100m² from 1992 to 1995 (Table 2, Figure 6). Steelhead density increased by 100% between 1992 and 1993, from 12.6 to 25.4 fish/100m², and remained at approximately 19 fish/100m² in 1994 and 1995. Mean density of steelhead in run habitat varied from 15.5 to 25.5 fish/100m² during the study period (Figure 6, Appendix Tables 1-4). Juvenile steelhead density was higher in run habitat, compared to pool habitat, in three out of the four years snorkeling was conducted in lower Big Sheep Creek. Subyearling steelhead were not abundant in pool and run habitat types during any year, and did not contribute significantly to the density estimates. Average densities of natural steelhead in upper Big Sheep Creek decreased by about 10 fish/100m², in run and pool habitat, after the release of subyearling hatchery chinook salmon. The effect, if any, that subyearling hatchery chinook salmon may have on steelhead densities is unknown.

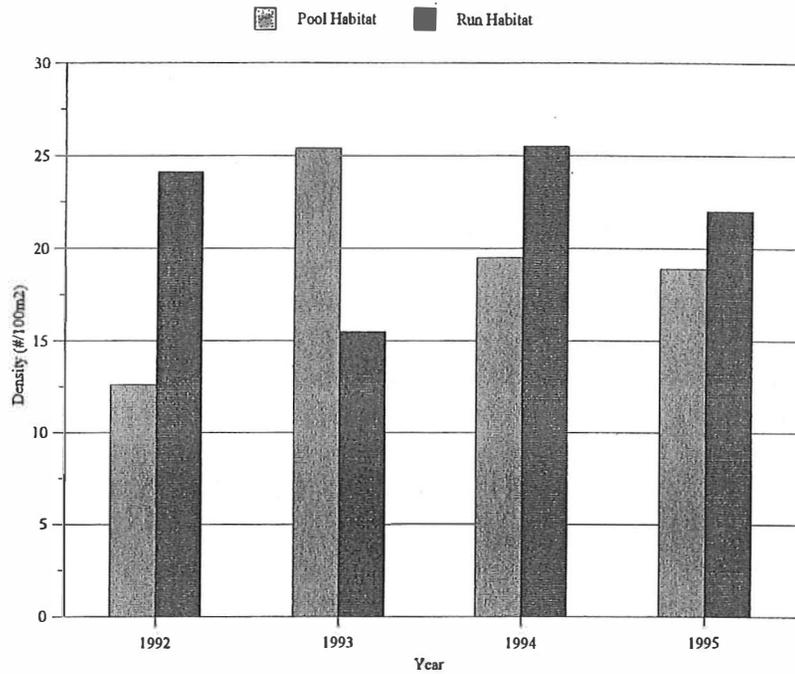


Figure 6. Average density of juvenile steelhead in pool and run habitat in lower Big Sheep Creek from 1992 to 1995.

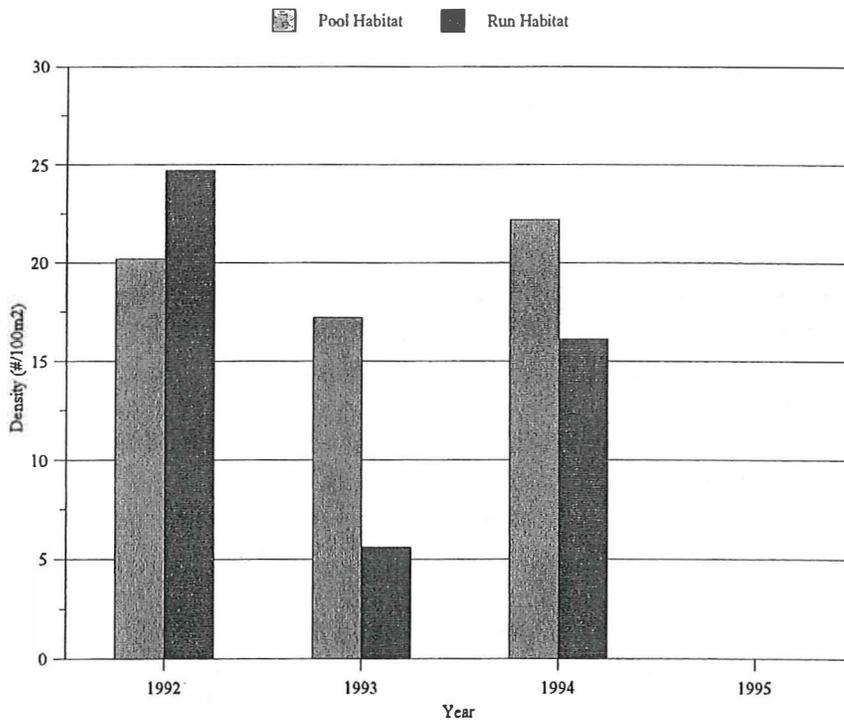


Figure 7. Average density of age 0+ chinook salmon in pool and run habitat in lower Big Sheep Creek from 1992 to 1995.

Average density of age 0+ natural chinook salmon in pool habitat varied from 17.2 to 22.2 fish/100m² from 1992 to 1994 (Figure 7, Appendix Tables 1-4). No natural chinook salmon were observed in lower Big Sheep Creek in 1995 in either pool or run habitat. Age 0+ chinook salmon mean density in run habitat ranged from 5.6 to 24.7 fish/100m² (Figure 7). Annual variation in subyearling chinook salmon density in run habitat varied as much as three fold. Age 1+ natural chinook salmon mean density (5.3 fish/100m²) was highest in 1993 run habitat and followed the relative higher densities of chinook salmon parr observed in 1992. One adult chinook salmon was observed in 1993 in pool habitat.

In 1994, Big Sheep Creek was snorkeled in two stream reaches (upper reach- 2 pools, 2 runs and lower reach- 2 pools, 4 runs) to document fish density pre and post release of 151,332 subyearling hatchery chinook salmon from the bridge on the Forest Service 140 road. Pre release density of juvenile natural chinook salmon in upper Big Sheep Creek, on July 7, 1994, was 0 fish/100m². On August 16 age 0+ natural chinook salmon average density ranged from 2.4 fish/100m² in run habitat, to 8.3 fish/100m² in pool habitat. These fish may have been misidentified hatchery chinook salmon since no natural chinook salmon were observed on July 7. In lower Big Sheep Creek, the pre release density of age 0+ natural chinook salmon was 13.5 fish/100m² and 18.6 fish/100m² in run and pool habitat, respectively. Post release density of age 0+ natural chinook increased slightly to 16.1 fish/100m² in run habitat, and 22.2 fish/100m² in pool habitat (Appendix Table 3). Average density of subyearling hatchery chinook salmon in 1994 was highest in upper Big Sheep Creek, ranging from 166.4 fish/100m² in run habitat to 317.6 fish/100m² in pool habitat. Subyearling hatchery chinook salmon mean density in lower Big Sheep Creek was 1.8 fish/100m² in run habitat and 12.9 fish/100m² in pool habitat. No age 1+ natural chinook salmon parr were observed in upper Big Sheep Creek in 1994.

Bull trout were observed in 1992 through 1994 in Big Sheep Creek. Average densities of bull trout ranged from 0.5 to 11.8 fish/100m².

Imnaha River

The Imnaha River snorkeling sites were located within the chinook salmon redd count index area from Indian Crossing to Mac's Mine. Juvenile natural chinook salmon was the most abundant fish species observed, followed by mountain whitefish, steelhead and bull trout. Mean densities of age 0+ chinook salmon (72.4/100m²) were highest in 1994 pool habitat and were lowest in 1996 run habitat (9.8/100m²). Average density of age 0+ chinook salmon was highest in pool habitat, and ranged from 30.4 to 72.4 fish/100m² from 1992 to 1995 (Figure 8, Appendix Tables 1-5). Mean densities of subyearling chinook salmon within pool habitat differed substantially between years, varying as much as 100%. Confidence intervals (95% C.I.'s) around pool habitat mean densities were substantial, ranging from 56% to 101.6% (Appendix Table 6). Between year statistical comparison of pool habitat mean density was not performed due to low sample sizes of snorkeled habitat (n=5 to 6). In each year, observed densities of age 0+ chinook salmon in pool habitat was two to 3.4 times higher than run habitat average densities. Pool habitat appeared to be preferred over run habitat by age 0+ chinook in the Imnaha River. The mean density of age 0+ chinook salmon in run habitat ranged from 9.8 to 38 fish/100m² over the study period (Figure 8). Average densities of subyearling chinook salmon in run habitat types

did not vary substantially between years. The exception occurred in 1994 when density (38 fish/100m²) was twice that of any other years' observed average density. Ninety five percent confidence intervals surrounding age 0+ chinook salmon average densities (run habitat) ranged from 29.8% to 86.7% (Appendix Table 6). Age 1+ chinook salmon mean densities were highest in 1996 pool habitat (5.3/100m²) and lowest in 1994 run habitat (0.1/100m²). Juvenile emigrant trapping investigations in the upper Imnaha River (rkm 74) in 1992 and 1993 indicated that thousands of age 0+ chinook salmon had emigrated from natural production areas prior to initiation of snorkeling activities in mid August (Blenden - unpublished data). Chinook salmon density information presented in this report represent only those juvenile chinook that remained in the area through mid August of each year. Five adult chinook salmon were observed while snorkeling; one in 1993 pool habitat, one in 1993 run habitat, one in 1995 run habitat, one in 1996 pool habitat, and one in 1996 run habitat.

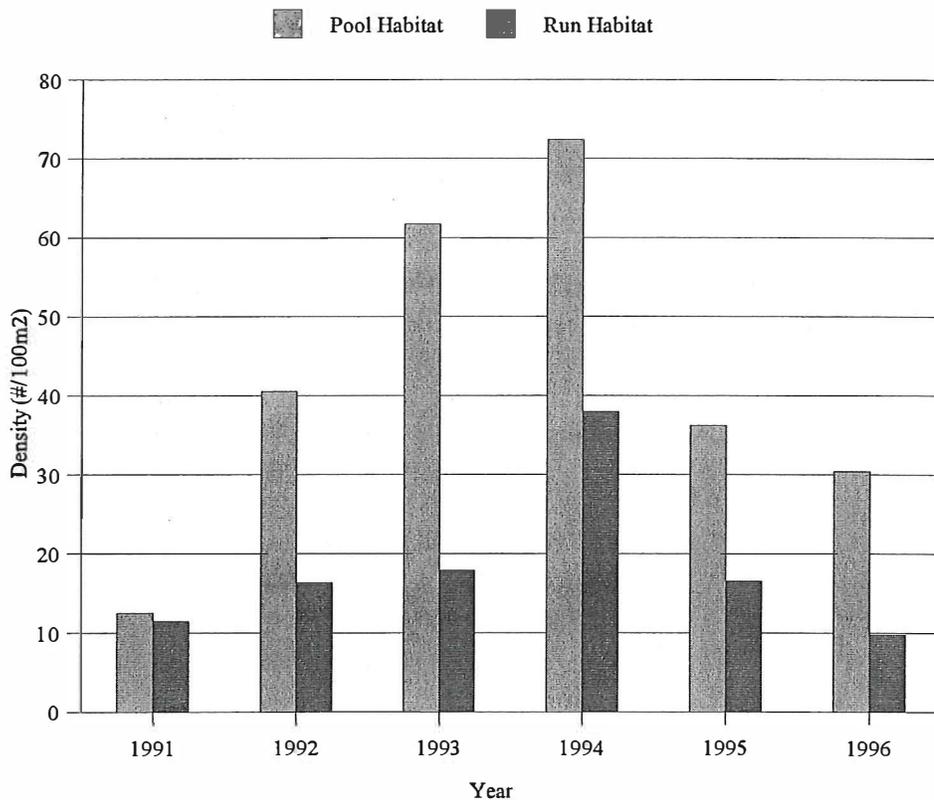


Figure 8. Average density of age 0+ chinook salmon in pool and run habitat in the Imnaha River from 1991 to 1996.

Natural steelhead mean densities ranged from 0.4/100m² in 1994 pool habitat to 2.9/100m² in 1993 pool habitat. Two residual hatchery steelhead were observed in 1994 pool habitat for a mean density of 0.1/100m². These fish were probably from hatchery steelhead released in Little Sheep Creek or directly into the Imnaha River at the town of Imnaha approximately 48 rkm downstream of the snorkeling location. Bull trout were observed at low densities, generally less than 1 fish/100m², during every year of this investigation (Appendix Tables 1-5).

Mountain whitefish was the second most abundant fish species in the upper Imnaha River. Mean density of mountain whitefish was highest in pool habitat, and varied from 6.8 to 13.2 fish/100m² from 1992 to 1996 (Figure 9, Appendix Tables 1-5). Confidence intervals (95% C.I.'s) around pool habitat mean whitefish densities were robust, and varied from 45.6% to 132% (Appendix Table 7). Whitefish densities in pool habitat was relatively constant between 1992 and 1994 ranging from 11 to 13.2 fish/100m². Densities between 1994 and 1995 declined by 50%, to 6.8 fish/100m², and then increased to 8.7 fish/100m² in 1996. Average whitefish densities in pool habitat were consistently higher than run habitat, ranging from 1.4 to 3 times higher. Average densities of mountain whitefish in run habitat ranged from 2.9 to 8.0 fish/100m². Ninety five percent confidence intervals bracketing whitefish mean densities (run habitat) were substantial, and ranged from 56 % to 91% (Appendix Table 7). Density of whitefish in run habitat declined by 54% from 8 fish/100m² in 1992 to 4.3 fish/100m² in 1993. Whitefish densities in run habitat remained fairly constant from 1994 to 1996 when density ranged from 2.9 to 4.4 fish/100m².

Mountain whitefish are reported to sexually mature between the ages of 2 and 4 (Scott and Crossman 1973, Carlander 1969) depending on water temperature and species range. A number of authors have reported on size at age III that ranged from 163 to 297 mm in total length (Scott and Crossman 1973, Northcote 1957, Sigler 1951, Hagen 1956). If we examine the percentage of mountain whitefish observed in the Imnaha River that are greater than 300 mm (12 inches), it should provide a reasonable estimate of the percentage of adult whitefish observed during snorkel surveys. Adult mountain whitefish (> 300 mm) represented between 67.7% and 69.7% of all whitefish observed in 1992 and 1993 pool and run habitat combined. The percentage of adult whitefish seen in 1994 to 1996 surveys, was 25.3 to 46% of the total whitefish observed. Young-of-the-year whitefish were relatively more abundant in 1993, 1995, and 1996 in pool habitat. They accounted for 29.2%, 28.7%, and 39.2% of all whitefish observed in pool habitat, respectively, during those years.

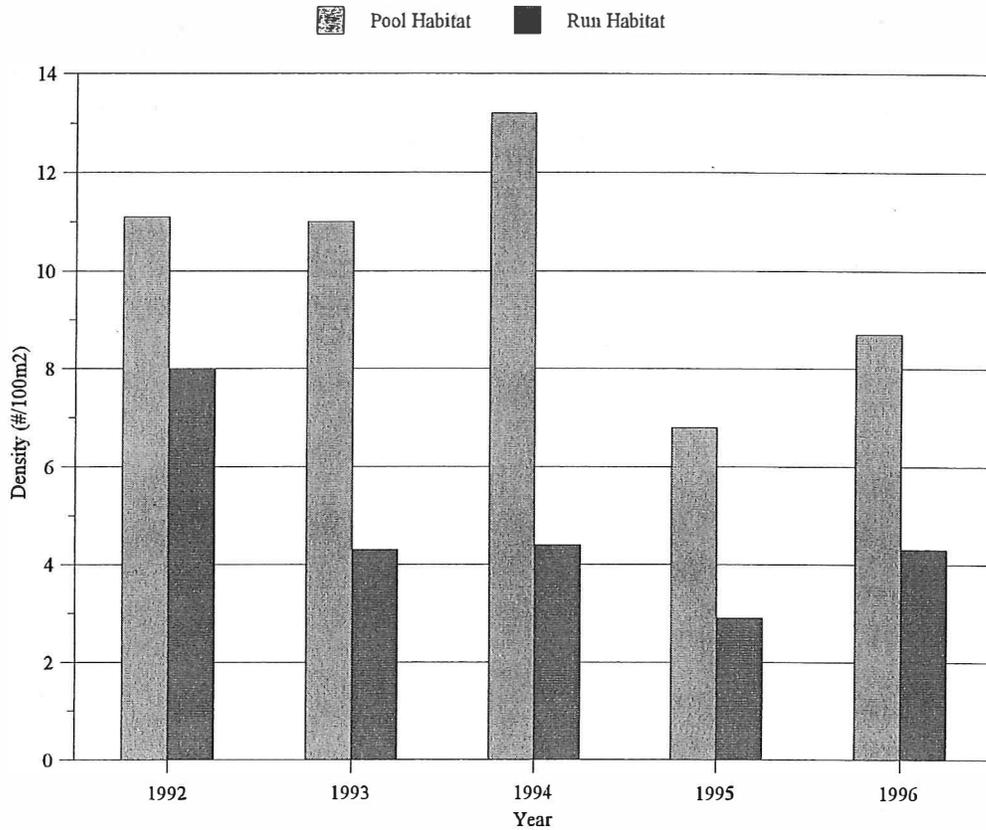


Figure 9. Average density of mountain whitefish in pool and run habitat in the Imnaha River from 1992 to 1996.

Lick Creek

The chinook salmon spawning aggregate in Lick Creek has been locally extirpated. Chinook salmon index area redd counts in Lick Creek have ranged from 0 to 51 redds from 1964 to 2000 (Olsen et al. 1994) (Table 3). The most recent year's redd counts have been zero, other than when adult hatchery chinook salmon from the upper mainstem Imnaha River were outplanted into the stream to enhance natural production. Snorkeling activities in Lick Creek were initiated to determine if adult hatchery chinook were successful in reproducing and to document parr densities that resulted from releasing hatchery adults in the wild. Snorkeling was also conducted pre and post release of 151,332 hatchery chinook salmon parr into Big Sheep Creek in 1994 to determine if salmon parr moved upstream into Lick Creek.

Table 3. Chinook salmon index area redd counts, number of adult hatchery chinook salmon released, and range in age 0+ and age 1+ chinook salmon densities observed in Lick Creek from 1964 to 2000.

Year	Index Area Redd Counts	Number of Adult Hatchery Salmon Released	Range in Age 0+ Chinook Densities (No./100m ²)	Range in Age 1+ Chinook Densities (No./100m ²)
2000	0	0	0	0
1999	0	0	32.5-47.3	2.1-5.4
1998	11	14	76-149.3	37621
1997	51	106	0	0
1996	0	0	0	0
1995	0	0	NA	NA
1994	0	0	208.8-224	0
1993 ¹	24	49	--	--
1992 ²	0	--	--	--
1991	1	--	--	--
1990	0	--	--	--
1989	0	--	--	--
1988	0	--	--	--
1987	0	--	--	--
1986	2	--	--	--
1985	3	--	--	--
1984	2	--	--	--
1983	0	--	--	--
1982	0	--	--	--
1981	2	--	--	--
1980	4	--	--	--
1979	4	--	--	--
1978	32	--	--	--
1977	5	--	--	--
1976	17	--	--	--
1975	11	--	--	--
1974	12	--	--	--
1973	16	--	--	--
1972	27	--	--	--
1971	13	--	--	--
1970	50	--	--	--
1969	4	--	--	--
1968	34	--	--	--
1967	30	--	--	--
1966	47	--	--	--
1965	25	--	--	--
1964	14	--	--	--

¹ - Snorkeling densities not collected prior to 1994.

² - No known adult hatchery chinook salmon releases into Lick Creek prior to 1993.

Forty nine hatchery chinook salmon adults were outplanted in Lick Creek in 1993 between August 28 and September 8 (Table 4). This release was comprised of 16 males and 33 females. The majority of the females released were in running ripe spawning condition. A spawning ground survey on September 3 revealed that seven of the outplanted hatchery females in Lick Creek were prespawning mortalities (Kucera and Blenden 1999). In 1997, 69 male and 37 female hatchery chinook salmon were released into Lick Creek between August 7 and September 3. A total of 14 adult hatchery chinook salmon were outplanted in Lick Creek in 1998, eight males and six females, between the dates of August 4 and September 1. Another 81 adult hatchery salmon (45 M and 36 F) were released in Big Sheep Creek in 1997 and 25 hatchery salmon (14 M and 11 F) were outplanted in 1998 (Table 4). Juvenile chinook salmon density estimates were not collected in Big Sheep Creek in 1998 to 2000 to document parr production from adult hatchery salmon releases.

Subyearling chinook salmon densities ranged between 32.5 to 314.4 fish/100m² in run and pool habitat types (Table 2, Appendix Tables 1-5 and 8-11). In 1994, 1998, and 1999, years following adult hatchery salmon releases, age 0+ chinook densities ranged from 32.5 to 224 fish/100m² (Table 3). In 1996, 1997 and 2000, years following no adult hatchery salmon releases, densities of age 0+ chinook salmon were zero in Lick Creek (Tables 2 and 3). Outplanted adult hatchery chinook salmon were able to successfully spawn and produce progeny in Lick Creek.

Densities in Lick Creek, by species and habitat type, are presented below. Age 0+ chinook salmon mean densities in upper Lick Creek on July 7, 1994, were 314.4/100m² in pool habitat and 200.8/100m² in run habitat. On August 16 mean densities of age 0+ chinook salmon were 224.0 and 208.8/100m² in pool and run habitat, respectively. These were the highest densities of natural chinook observed in any of the study streams and documents the successful spawning of adult hatchery chinook salmon in a natural setting. Natural chinook salmon parr mean densities in lower Lick Creek on July 7 was 0 and 2.0/100m² for pool and run habitats. Natural chinook salmon parr densities, on August 16 in lower Lick Creek, were 37.2/100m² in pool habitat and 39.0 in run habitat. The snorkeling on two occasions was to document pre and post release densities of chinook salmon parr after their release into Big Sheep Creek of which Lick Creek is a tributary. Three hatchery chinook salmon were observed in lower Lick Creek from the parr releases into Big Sheep Creek. No age 1+ chinook were observed in 1994. Mean densities of natural steelhead in 1994 ranged from 13.4/100m² in pool habitat in upper Lick Creek on July 7 to 41.4/100m² in pool habitat in lower Lick Creek on July 7. Steelhead mean densities were generally higher on August 16 than July 7.

No juvenile chinook salmon were observed in 1996 or 1997 and no sub-yearling chinook salmon were observed in 2000. Two hatchery adult chinook salmon were observed in 1997 and 1998. They were from the outplanting of 106 adults in 1997 and 14 adults in 1998. One natural adult chinook salmon was observed in 2000. Most if not all juvenile chinook production appears to be from the release of hatchery origin adults. Sub-yearling mean densities in 1998 were 149.3/100m² in pool habitat and 76.0/100m² in run habitat. In 1999 sub-yearling mean densities were 47.3 and 32.4/100m² in pool and run habitat, respectively. Age 1+ chinook salmon mean densities from 1998 to 2000 ranged from 0.0/100m² in 1998 run habitat to 5.4/100m² in 1999 pool habitat.

Table 4. Number of adult hatchery chinook salmon released into Lick Creek and Big Sheep Creek, Imnaha River subbasin, by date and sex in 1993, 1997 and 1998.

Year	Location	Date	Jacks	Males	Females
1993	Lick Creek	Aug. 28	1	15	24
		Aug. 31	0	0	6
		Sept. 8	0	0	3
1997	Lick Creek	Aug. 7	0	40	26
		Aug. 8	0	14	7
		Aug. 19	0	11	4
		Sept. 3	0	4	0
	Big Sheep Cr.	Aug. 7	0	39	26
		Aug. 13	0	0	1
		Aug. 27	0	6	9
1998	Lick Creek	Aug. 4	1	0	1
		Aug. 11	0	1	0
		Aug. 18	0	1	1
		Aug. 25	0	3	2
		Sept. 1	0	2	2
	Big Sheep Cr.	July 13	0	2	6
		July 17	0	3	3
		July 21	0	5	0
		July 28	0	4	2

Natural steelhead mean densities in pool habitat ranged from 11.7 to 23.9 fish/100m² from 1994 to 2000 (Figure 10, Appendix Table 3 and 5-10). Densities in pool habitat generally ranged between 17.9 to 23.9 fish/100m² over the study period. The exception occurred when average density varied by 100% (declined) from 1998 to 1999 (Figure 10). Ninety five percent confidence intervals bracketing density point estimates in pool habitat varied substantially, from 38.9% to 102.6% (Appendix Table 12). Average steelhead density in run habitat ranged from 9.8 to 30.2 fish/100m² (Figure 10). Steelhead densities generally ranged between 9.8 and 15.9 fish/100m² from 1996 to 2000. Confidence intervals (95% C.I.'s) surrounding density values were variable, ranging from 40.1% to 144.5% (Appendix Table 12). Young-of-the-year steelhead made up 52.8% and 64.6% of all steelhead observed in 1997 and 2000, and contributed significantly to estimated densities in those years. Three hatchery steelhead were observed in 2000 pool habitat for a mean density of 1.0 fish/100m². They most likely represent residual hatchery steelhead that dispersed upstream from the Little Sheep Creek acclimation facility.

Bull trout were observed in Lick Creek in 1994 and 1996 to 2000. Mean bull trout densities ranged from 0.6 to 4.2 fish/100m² in pool habitat.

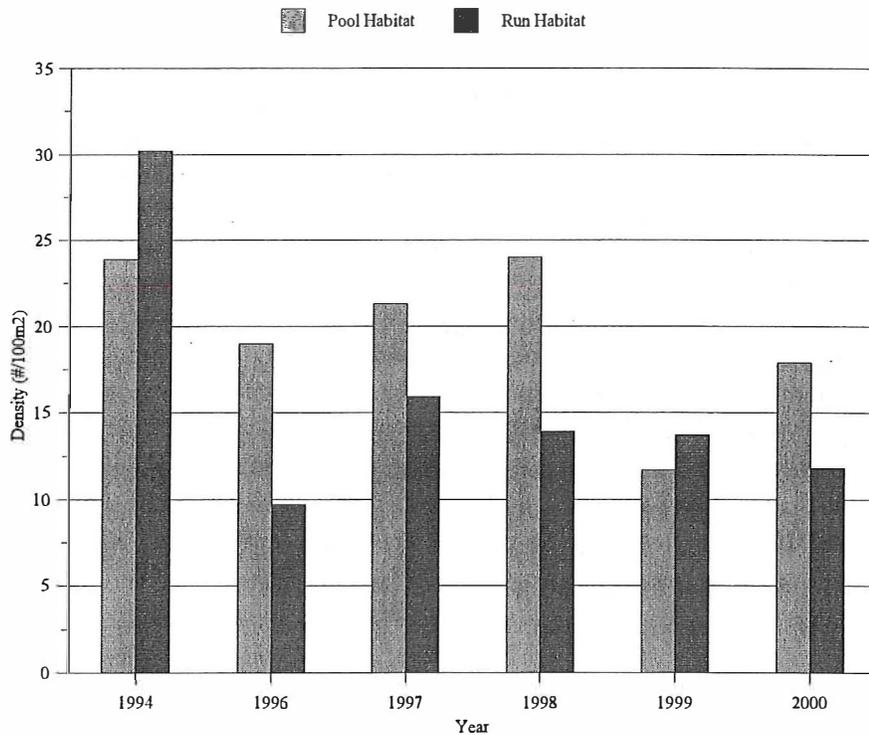


Figure 10. Average density of juvenile steelhead in pool and run habitat in upper Lick Creek from 1994 to 2000.

Grande Ronde River Subbasin

Lostine River

The Lostine River was snorkeled in an upper river reach and a lower river reach. The spatial distance and the wide variation in the amount of spawning that takes place in these two reaches precluded us from combining them for data analysis purposes. In the upper Lostine River from 1992 to 1995 only one age 0+ chinook salmon was observed in pool habitat (1995) for a mean density of 0.1/100m². No age 1+ chinook salmon were observed from 1992-1995. Natural steelhead densities in the upper Lostine River were low ranging from zero in 1992 pool habitat to 1.1/100m² in 1994 pool habitat. Mean densities of catchable rainbow trout outplanted in the upper Lostine River by Oregon Department of Fish and Wildlife (ODFW) had mean densities of 5.3/100m² in pool habitat and 5.1/100m² in run habitat. Mean bull trout densities in run habitat ranged from 0.7 to 4.0 fish/100m² (Appendix Tables 1-4). Brook trout were observed at low mean densities, from 1992 to 1995, ranging from 0.2 to 1.6 fish/100m² in both run and pool habitats. No mountain whitefish were observed in the upper Lostine River snorkeling transects.

The lower Lostine River snorkel site was located within the chinook salmon redd count index area. Clearly, the most abundant fish species at this location were juvenile chinook salmon, followed by steelhead, mountain whitefish and brook trout. Age 0+ chinook salmon mean density in lower Lostine River pool habitat ranged from 19.4 to 43.1 fish/100m² from 1991 to 1995 (Figure 11, Appendix Tables 1-5). Snorkeling density information from 1991 is located in Kucera et al. (1994). Mean densities of subyearling chinook salmon in pool habitat differed substantially between year, varying as much as 100%. Ninety five percent confidence intervals around age 0+ chinook salmon mean densities in Lostine River pool habitat were substantial, ranging from 34.2% to 140% (Appendix Table 6). Between year statistical comparison of age 0+ chinook salmon mean density in pool habitat was not performed due to low sample sizes of snorkeled habitat (n = 4 to 5). In general, observed densities of age 0+ chinook salmon in pool habitat was higher than densities in run habitat types. Density of age 0+ chinook salmon in run habitat ranged from 0.8 to 40.1 fish/100m² over the study period (Figure 7). Only one run habitat was snorkeled in each of 1992, 1994 and 1995 in the lower Lostine River. Therefore average densities were not available for comparison during those years. The low density in run habitat came from only one transect and may not be indicative of all run habitat. Age 1+ chinook salmon ranged from 0.4/100m² in 1992 run habitat to 5.1/100m² in 1994 pool habitat. Two (0.1/100m²) adult chinook salmon were observed in 1992 pool habitat.

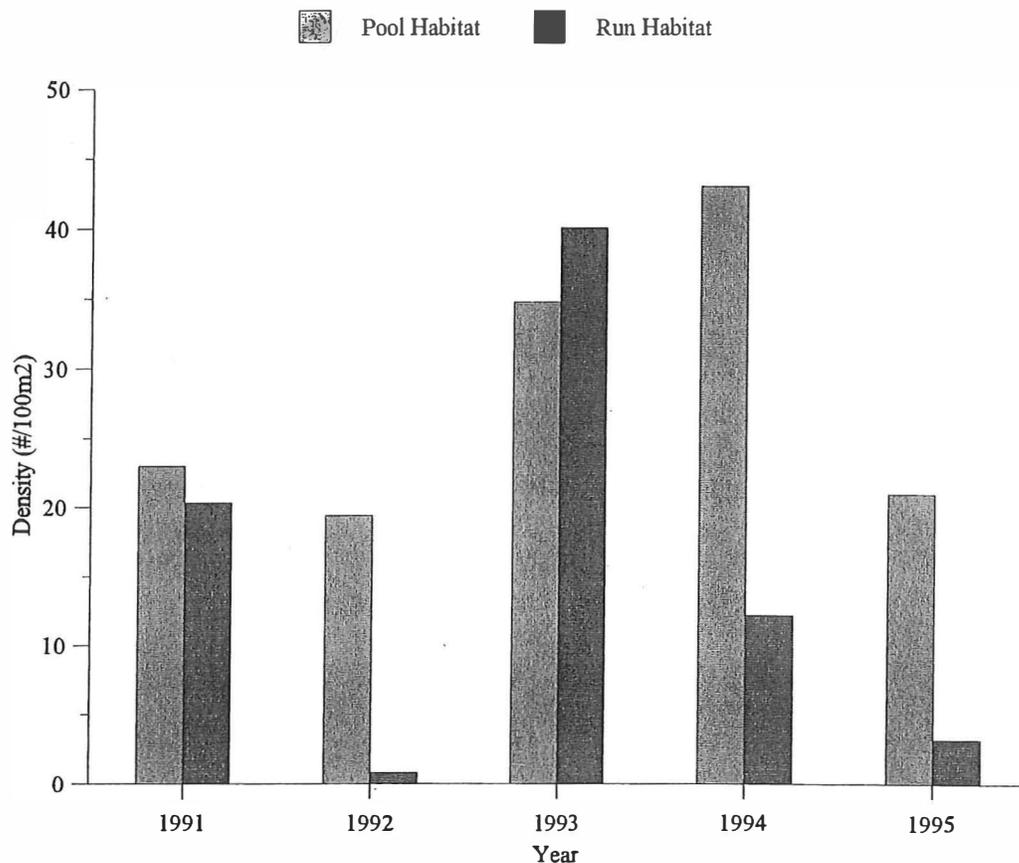


Figure 11. Average density of age 0+ chinook salmon in pool and run habitat in the lower Lostine River from 1991 to 1995. NOTE: Only one run habitat type was snorkeled in 1992, 1994, and 1995 and therefore is not an average density.

Juvenile steelhead was the second most abundant fish species observed in the lower Lostine River. Average densities of multiple age groups of steelhead ranged from 4.4 to 10 fish/100m² in pool habitat from 1992 to 1995 (Figure 12, Appendix Tables 1-4). Observed densities of steelhead in pool habitat did not vary substantially from 1992 to 1994, ranging from 4.4 to 5.7 fish/100m². Steelhead density in 1995 increased 75%, to 10 fish/100m², from densities observed in 1994 (Figure 12). Confidence intervals (95% C.I.'s) bracketing the annual density estimates varied substantially ranging from 61.4% to 137% (Appendix Table 12). Mean density of steelhead in run habitat was 3.9 fish/100m² in 1993 (Figure 12). Steelhead densities in run habitat in 1992, 1994, and 1995, when only one run was snorkeled, ranged between 5.7 and 28.6 fish/100m². Young-of-the-year (YOY) steelhead (< 75 mm) comprised a substantial percentage of all steelhead observed during 1994 and 1995 snorkel surveys. YOY steelhead accounted for 80.5 to 86.4% of all steelhead seen in those years, respectively. The percentage of YOY steelhead observed in 1993 was 12.3%, and in 1992 was 52.7%.

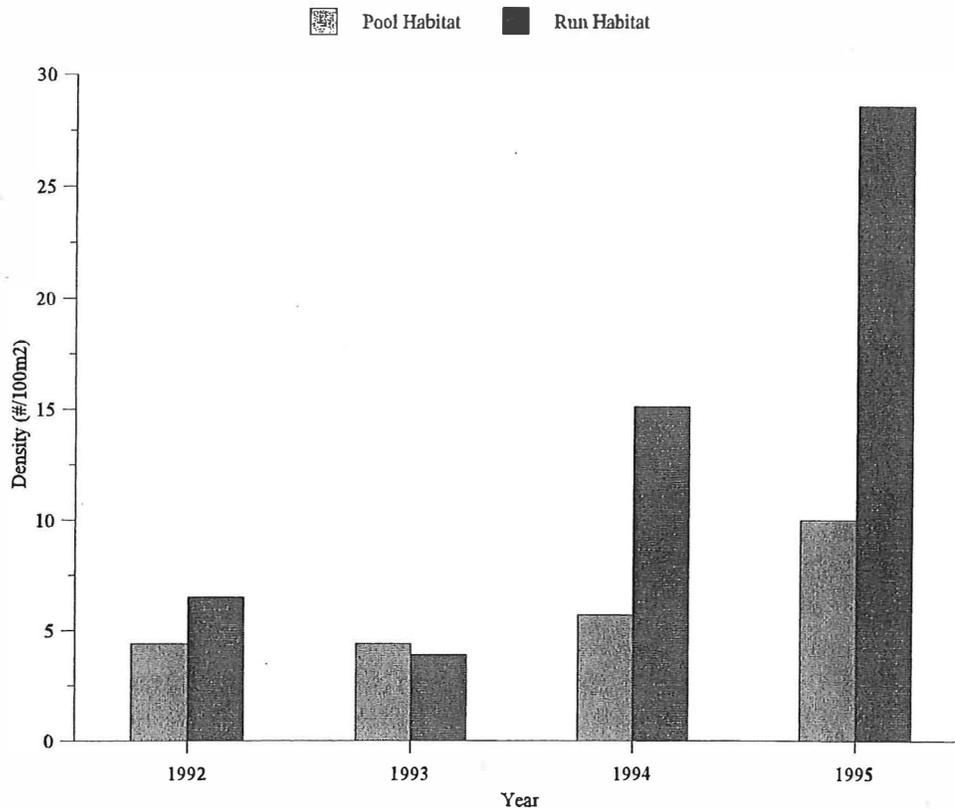


Figure 12. Average density of juvenile steelhead in pool and run habitat in the lower Lostine River from 1992 to 1995. NOTE: Only one run habitat type was snorkeled in 1992, 1994, and 1995 and therefore is not an average density.

Average densities of mountain whitefish ranged from 1.2 to 3.1 fish/100m² in lower Lostine River pool habitat and 0 to 7.8 fish/100m² in run habitat. The percentage of mountain whitefish observed in Lostine River pool habitat that are greater than 300 mm (12 inches), should provide a reasonable estimate of the adult whitefish population. Adult mountain whitefish (> 300 mm) in 1992, 1993 and 1995 represented between 77.5% and 98.7% of all whitefish observed in pool habitat. The percentage of adult whitefish seen in 1994 was 39.5% of the total whitefish observed. Young-of-the-year (YOY) mountain whitefish accounted for 30.2% of all whitefish observed in 1994. This was the only year that YOY mountain whitefish were observed in any number in lower Lostine River pool habitat.

Bull trout and brook trout (an introduced exotic species) were observed in both the upper and lower Lostine River snorkeling transects. Mean bull trout densities ranged from 0.2 to 1.8 fish/100m² in pool habitat from 1992 to 1995. Brook trout mean densities were generally low, ranging from 0.1 to 1.0 fish/100m² in pool habitat, but ranged as high as 5.4 fish/100m² in run habitat.

Interactions with exotic brook trout are considered to represent a significant threat to bull trout populations (Ratliff and Howell 1992). In addition to potential direct competition for food and habitat, brook trout have been observed to hybridize with bull trout (Markle 1992; Ratliff and Howell 1992; Kitano et al. 1994). Potential for hybridization between these two species is an area of concern given that bull trout are a listed species under the Endangered Species Act.

South Fork Salmon River

Buckhorn Creek

The purpose of the snorkeling in Buckhorn Creek was to document fish presence and relative abundance prior to release of hatchery chinook salmon parr. No natural chinook salmon were observed in either Buckhorn Creek or the West Fork Buckhorn Creek in 1994. On July 15, two natural chinook parr were observed for a mean density of 0.2 and 0.1 fish/100m² in pool and run habitat, respectively. After the release of 34,687 hatchery chinook parr on August 5, the mean chinook densities increased to 90.5 fish/100m² in pool habitat and 13.1 fish/100m² in run habitat. The majority of the age 0+ chinook salmon parr were assumed to be hatchery fish but it is uncertain due to the lack of external marks on these fish. No age 1+ chinook salmon were observed in 1994 or 1998.

Wild steelhead densities were low in 1994 and ranged from 1.0/100m² (n=3) in Buckhorn Creek run habitat to 1.5/100m² (n=1) in West Fork Buckhorn Creek pool habitat (Table 2). Wild steelhead densities in 1998 were 28.5/100m² in pool habitat prior to hatchery chinook salmon outplants and post release densities were 27.3/100m². In run habitat the mean wild steelhead densities were 5.9 and 5.6/100m² before and after the outplants. Buckhorn Creek has the available capacity to provide rearing habitat for outplanted juvenile chinook salmon but the amount of spawning habitat is limited. Bull trout were observed at low densities in Buckhorn Creek, less than 1 fish/100m², during 1994 and 1998 snorkel investigations. Mean density of mountain whitefish in West Fork Buckhorn Creek pool habitat in 1994 was 1.5 fish/100m². Densities of mountain whitefish in Buckhorn Creek pool habitat ranged from 0.5 to 2.5 fish/100m², and average densities in run habitat was 1.8 to 3.6 fish/100m² in 1998. Cutthroat trout mean densities in Buckhorn Creek run habitat was 6.7 fish/100m² in 1994 and 0.3 fish/100m² in 1998. Observed average densities of cutthroat trout in pool habitat was 1.9 fish/100m² in 1998. Mean cutthroat trout densities in the West Fork Buckhorn Creek in 1994 was 2.5 fish/100m² in available pool habitat.

Dollar Creek

Dollar Creek (3 pools and 3 runs) and the North Fork Dollar Creek (1 pool and 1 run) were snorkeled in 1998 before (July 16) and after (August 13) the outplanting of 10,434 unmarked hatchery reared chinook salmon parr on July 30. No age 0+ or 1+ chinook salmon were observed in the North Fork Dollar Creek before the outplants. Mean densities of chinook salmon parr after

the outplants in North Fork Dollar Creek were 86.5/100m² in pool habitat and 30.6/100m² in run habitat. Wild steelhead densities in the North Fork Dollar Creek ranged from 5.1/100m² in run habitat after the outplants to 21.1/100m² in pool habitat after the outplants. Wild steelhead numbers in the North Fork Dollar Creek increased from six to eleven after the outplanting of chinook salmon. Brook trout were observed in run habitat types with a density of 5.1 fish/100m².

Mean densities of age 0+ natural chinook salmon parr in Dollar Creek before hatchery releases were 28.7/100m² (n=56) in pool habitat and 4.9/100m² (n=24) in run habitat. All natural chinook parr observed before the outplants were in the two lowest transects approximately one quarter of a mile from the mouth. After hatchery parr release, the mean densities of age 0+ chinook salmon in pool and run habitats were 113.5 and 22.3/100m², respectively. No age 1+ chinook salmon were observed in Dollar Creek. Wild steelhead densities ranged from 0.3/100m² in run habitat before the outplants to 10.8/100m² in pool habitat after the outplants. Cutthroat trout average densities ranged from 0.9 to 1.2 fish/100m² in pool habitat and from 0 to 0.2 fish/100m² in run habitat. Brook trout were also observed in run habitat and averaged 0.3 fish/100m² in 1998.

South Fork Salmon River

The South Fork Salmon River was snorkeled pre and post release of hatchery chinook salmon due to a concern expressed by the Idaho Department of Fish and Game that juvenile chinook carrying capacity may be exceeded due to hatchery releases. IDFG methodology was used to snorkel six transects which were a combination of habitat types, and fish densities are reported as all habitat types combined. On September 24, 96 subyearling chinook salmon were observed for a mean density of 1.9/100m². The majority of these fish (n=61) were observed in one pool upstream of Knox bridge which was outside of the planned release area. Stream temperature ranged from 8 to 11 degrees Celsius, and at these temperatures it was possible that all fish may not have been observed. Low densities of age 0+ chinook salmon alleviated concerns over taxing the stream environment carrying capacity from hatchery presmolt releases. On October 7 and 8, 1998, approximately 158,240 chinook salmon presmolts from McCall Hatchery were scatter planted by helicopter and truck from the adult weir downstream to Goat Creek. On October 22, there were 79 chinook salmon presmolts observed with a mean density of 2.8/100m². As during pre-release sampling, the majority of juvenile chinook were observed in the pool upstream of Knox bridge. From visual bank observations, made after truck releases, it was believed that the hatchery presmolts dispersed downstream rapidly. Water temperatures were cold ranging from 3 to 3.5 Celsius. No steelhead or age 1+ chinook salmon were observed during either snorkeling period. As water temperatures decline, stream-dwelling salmonids typically seek cover or migrate (Everest and Chapman 1972; Hillman et al. 1987; Griffith and Smith 1993). Therefore all fish may not have been observed.

Middle Fork Salmon River Subbasin

Logan Creek

Logan Creek in the Big Creek drainage of the Middle Fork Salmon River was snorkeled in an upper reach and a lower stream reach in 1991, 1992 and 1993 (7 pools and 4 runs). The purpose of this activity was to document baseline fish species composition and density information upstream and downstream of pending mineral development in the upper portion of the Logan Creek drainage. Cutthroat trout were the most abundant species observed. No juvenile chinook salmon were observed during the three year period. Low numbers of juvenile steelhead were observed with density being highest in run habitat (2.4/100m²) during 1993 while no steelhead were observed in run habitat during 1992 (Table 2). Cutthroat trout mean density in pool habitat in upper Logan Creek ranged from 2.9 fish/100m² to 27 fish/100m² from 1992 to 1993 (Appendix Tables 1, 2 and 13). Cutthroat trout densities were less than 3 fish/100m² in two out the three years surveyed. Average cutthroat trout densities in pool habitat at the lower Logan Creek site ranged from 4.4 fish/100m² in 1991 to 17.4 fish/100m² in 1992. Only one run was snorkeled at the upper site, and observed cutthroat density was 36.3 fish/100m² (1992) and 0 fish/100m² in 1991 and 1993. Average densities of cutthroat trout in run habitat in lower Logan Creek ranged from 1.9 fish/100m² in 1991 to 15.8 fish/100m² in 1992. Bull trout were observed in both the upper and lower study sites. Bull trout average density varied from 0.3 to 2 fish/100m² in pool habitat at the upper site. Mean density of bull trout in lower Logan Creek was 0.6 fish/100m² in pool habitat and 1.2 fish/100m² in run habitat in 1991. Water temperature in 1993 was nine degrees Celsius and observed fish were closely associated with the substrate. All fish may not have been observed.

Clearwater River Subbasin

Eldorado Creek

Eldorado Creek was snorkeled from 1992 to 1995. Fish densities after 1995 are reported in Idaho Salmon Supplementation reports. Few chinook salmon were observed in Eldorado Creek from 1992 to 1995 with the exception of 1994. Three age 0+ and one age 1+ juvenile chinook were observed in run habitat during 1992. No juvenile chinook salmon were observed in 1993 (Table 2). Four age 0+ chinook salmon were observed in run habitat during 1995. In 1994, age 0+ chinook salmon densities were 6.7, 0, 1.0, and 1.8 per 100m² in pocket water, pool, riffle, and run habitat types, respectively. One age 1+ chinook salmon was observed in pocket water habitat in 1994. Steelhead densities remained fairly consistent over the four year period and ranged from 0.3/100m² in 1993 pocket water habitat to 2.6/100m² in 1992 run habitat (Table 2). Brook trout were observed in Eldorado Creek at very low average densities in both pool habitat (0.13 fish/100m²) and run habitat (0.05 fish/100m²) in 1993. Their presence may be a concern relative to potential hybridization with listed bull trout. Both mountain whitefish and cutthroat trout were observed in Eldorado Creek, but at low average densities (less than 1 fish/100m²).

Yoosa Creek

Yoosa Creek was snorkeled from 1992 to 1995. No age 0+ chinook salmon were observed in 1993 or 1995. Mean densities of age 0+ chinook salmon were highest in 1994 being 7.8, 7.1, and 12.3/100m² in pool, riffle, and run habitat, respectively (Table 2). In 1992, run habitat had a mean density of age 0+ chinook salmon of 2.4/100m² and one juvenile chinook salmon was observed in riffle habitat. Mean densities of age 1+ chinook salmon ranged from zero in 1993 to 0.4/100m² in 1995 pool habitat. Age 1+ chinook salmon were most numerous in 1995 which followed the relatively high age 0+ mean densities in 1994. Age 1+ chinook salmon were observed in 1994 even though no age 0+ chinook salmon were observed in 1993. Steelhead mean densities ranged from 0.2/100m² in 1993 riffle habitat to 13.5/100m² in 1992 run habitat. Low densities of brook trout were observed in Yoosa Creek (Appendix Tables 1-4). Cutthroat trout average densities ranged from 0 to 0.1 fish/100m². No bull trout were observed during snorkeling investigations in Yoosa Creek from 1992 to 1995.

Meadow Creek

The lower part of Meadow Creek in the Selway River drainage was snorkeled in 1992. After 1992, Meadow Creek evaluation was taken over by the Nez Perce Tribal Hatchery monitoring and evaluation program. Data collected by this program is not reported here due to the differences in methods. Age 0+ and 1+ chinook salmon densities, 2.0/100m² and 0.8/100m² respectively, were highest in run habitat (Appendix Table 1). Mean densities in pool habitat were 0.2/100m² for age 0+ chinook salmon while no age 1+ chinook salmon were observed in pool habitat. Juvenile steelhead densities were also highest in run habitat at 1.3/100m². Mean densities for steelhead in pool habitat was 0.2/100m². Mountain whitefish mean densities ranged from 0.1 to 1.7 fish/100m² in run and pool habitat. Cutthroat were also observed at average densities of 0.03 to 0.4 fish/100m².

Bear Creek

Bear Creek (Papoose Creek), in the Lochsa River drainage, was snorkeled from 1992 to 1995. The fish species complex in Bear Creek, in order of abundance, was comprised of juvenile steelhead, cutthroat trout and juvenile chinook salmon, bull trout, mountain whitefish and brook trout. No age 0+ chinook salmon were observed in 1992 or 1995. Mean density of age 0+ chinook salmon in 1993 was 5.2/100m² in riffle habitat and 18.1/100m² in run habitat (Table 2). In 1994 mean densities were 5.2, 44.7, 23.5, and 38.3/100m² in pocket water, pool, riffle, and run habitats, respectively. The higher densities in 1993 and 1994 were reflective of an increased number of chinook salmon redds in 1992 (n=10) and 1993 (n=15). Average densities of age 1+ chinook salmon were generally low, with the highest being 1.2/100m² in 1992 pool habitat and none observed in 1993. Seven (0.5/100m²) adult chinook salmon were observed in run habitat in 1993 and one (0.2/100m²) was observed in pool habitat during 1994. Juvenile steelhead mean densities ranged from 1.7/100m² in 1995 pocket water habitat to 39.2/100m² in 1992 pool

habitat. Steelhead mean densities from 1992 to 1995 were highest in pool habitat followed by run, riffle, and pocket water habitats, respectively. Cutthroat trout average densities were highest in pool environments, ranging from 2.5 to 7.8 fish/100m² from 1992 to 1995. Mean densities of cutthroat in run habitat ranged from 2.4 to 6.6 fish/100m² over the same time period. Bull trout average densities were low, ranging from 0.4 to 0.8 fish/100m² in pool habitat and from 0.05 to 0.5 fish/100m² in run habitat. Mountain whitefish were observed infrequently but had a mean density of 0.2 fish/100m² in pocket water habitat. Brook trout were also observed in Bear Creek in 1994 at lower densities (Appendix Tables 1-4).

Fishing Creek

Fishing Creek (Squaw Creek), a tributary to the Lochsa River, was snorkeled from 1992 to 1995. The most abundant fish species in Fishing Creek were juvenile steelhead, juvenile chinook, cutthroat trout, bull trout, and mountain whitefish. No age 0+ or 1+ chinook salmon were observed in 1993 or 1995. In 1992 minimal numbers of age 0+ chinook salmon were observed with mean densities being lowest in pocket water habitat (0.2/100m²) and highest in pool habitat (2.6/100m²) (Table 2). Age 0+ chinook salmon mean densities in 1994 ranged from 8.7/100m² in pocket water habitat to 23.3/100m² in pool habitat. Hatchery chinook salmon parr were released into Fishing Creek prior to snorkeling in 1994 and they were not differentiated from natural chinook. Mean densities of age 1+ chinook salmon in 1994 pocket water, pool, riffle, and run habitat were 0.5, 0.6, 0.1, and 0.3/100m², respectively. No yearling chinook salmon were observed in 1992, 1993, or 1995. Steelhead mean densities ranged from 6.3/100m² in 1993 pocket water habitat to 30.5/100 m² in 1992 pool habitat. Steelhead mean densities were the highest in all habitat types in 1992 with the exception of pocket water habitat in 1994 and run habitat in 1993 (Table 2). Average densities of cutthroat trout ranged from 1.5 to 5.5 fish/100m² in pool habitat, and from 0.8 to 1.3 fish/100m² in run habitats. Observed mean density of bull trout ranged from 0.4 to 1.9 fish/100m² in pool habitat, and ranged from 0.1 to 0.4 fish/100m² in run habitat. Mountain whitefish were observed only in 1992 and at extremely low densities (Appendix Table 1).

Biological Characteristics

Mean length of natural chinook salmon sampled in Big Sheep Creek in 1992 was 78 mm and ranged from 64 to 114 mm (Table 5). Their mean weight was 7.1 g and ranged from 3.1 to 20.1 g with a mean condition factor of 1.21. Two of the nine natural chinook salmon sampled in 1992 were yearlings. Only one juvenile chinook salmon was sampled from Big Sheep Creek in 1993 that was 77 mm in length and weighed 5.9 g. One juvenile chinook salmon mortality occurred as a result of sampling in both 1992 and 1993. Fifty three juvenile chinook salmon were sampled from Lick Creek on July 7, 1994 with a mean length of 41 mm and ranged from 37 to 48 mm (Table 5). They had a mean weight of 0.8 g (n=27) and a mean condition factor of 1.10. Four mortalities of juvenile chinook salmon occurred while sampling Lick Creek in 1994. One yearling chinook salmon was sampled in Lick Creek during 2000. It was 125 mm in fork length, weighed 24.7 g, and had a condition factor of 1.26 and was also a mortality.

Table 5. Mean length, weight and condition factor of chinook salmon (CHS) captured by electrofishing in Big Sheep Creek and Lick Creek from 1992 to 1994.

Stream	Date	Species	Origin	Sample Size	Mean Length (mm)	Mean Weight (g)	Mean Condition Factor
Big Sheep Creek	7/13/92	CHS	Natural	9	78	7.1	1.21
Big Sheep Creek	8/18/93	CHS	Natural	1	77	5.9	1.29
Lick Creek	7/07/94	CHS	Natural	53 ^a	41	0.8	1.10
Lick Creek	8/22/00	CHS	Natural	1	125	24.7	1.26

^a53 lengths and 27 weights taken

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ACKNOWLEDGMENTS

The Nez Perce Tribal Executive Committee authorized this research with funding provided through the Lower Snake River Compensation Plan by the U.S. Fish and Wildlife Service. Thanks are due to the numerous Nez Perce Tribal employees who assisted with field work. Thanks are due to Bill Arnsberg, Jay Hesse and their crews for collecting and summarizing the data for Bear, Fishing, Yoosa and Eldorado Creeks. Idaho Department of Fish and Game provided assistance on South Fork Salmon River snorkeling surveys. We would finally like to thank Jeff Cronce from the Nez Perce Tribe Land Services for the maps.

APPENDIX

Table 1. Fish densities (number/100m2) by transect in streams snorkeled in 1992. p.w. = pocket water.

Stream	Habitat Type	Area (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Yoosa Creek	pool	88.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	pool	22.3	0.00	0.00	0.00	4.48	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	pool	340.3	0.00	0.00	0.00	0.29	0.00	0.00	0.29	0.00	0.00
	mean		0.00	0.00	0.00	1.59	0.00	0.00	0.10	0.00	0.00
Yoosa Creek	riffle	41.2	0.00	0.00	0.00	12.14	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	riffle	85.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	riffle	305.4	0.00	0.00	0.00	3.93	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	riffle	80.1	0.00	0.00	0.00	3.75	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	riffle	104.9	0.00	0.00	0.00	10.49	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	riffle	127.9	0.00	0.00	0.00	0.00	0.00	0.00	2.35	0.00	0.00
Yoosa Creek	riffle	145.5	0.69	0.00	0.00	4.12	0.00	0.00	0.00	0.00	0.00
	mean		0.10	0.00	0.00	4.92	0.00	0.00	0.34	0.00	0.00
Yoosa Creek	run	192.5	6.75	0.52	0.00	7.27	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	282.7	0.00	0.00	0.00	2.12	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	108.8	0.00	0.00	0.00	22.06	0.00	0.92	1.84	0.00	0.00
Yoosa Creek	run	271.9	5.15	0.00	0.00	30.89	0.00	0.00	0.37	0.00	0.00
Yoosa Creek	run	204.2	4.90	0.49	0.00	26.44	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	580.2	0.00	0.00	0.00	1.90	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	86.9	0.00	0.00	0.00	3.45	0.00	0.00	0.00	0.00	0.00
	mean		2.40	0.14	0.00	13.45	0.00	0.13	0.32	0.00	0.00
Eldorado Creek	p.w.	580.9	0.00	0.00	0.00	1.21	0.00	0.00	0.00	0.00	0.00

Table 1. (continued).

Stream	Habitat		Chinook	Chinook	Chinook	Natural	Hatchery	Cutthroat	Brook	Bull	Mountain
	Type	Area (m ²)	Age 0+	Age 1+	Adults	Steelhead	Steelhead	Trout	Trout	Trout	Whitefish
Eldorado Creek	pool	240.2	0.00	0.00	0.00	2.08	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	316.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	395.6	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	236.2	0.00	0.00	0.00	1.27	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	267.3	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	156.2	0.00	0.00	0.00	1.92	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	riffle	51.5	0.00	0.00	0.00	5.83	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	riffle	91.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	riffle	187.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	riffle	69.4	0.00	0.00	0.00	1.44	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	riffle	121.9	0.00	0.00	0.00	2.46	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	riffle	219.1	0.00	0.00	0.00	2.28	0.00	0.00	0.00	0.00	0.46
Eldorado Creek	riffle	141.5	0.00	0.00	0.00	2.83	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.00	0.00	2.12	0.00	0.00	0.00	0.00	0.07
Eldorado Creek	run	113.2	0.00	0.88	0.00	3.53	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	593.0	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	182.8	1.64	0.00	0.00	16.41	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	269.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	358.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	211.0	0.00	0.00	0.00	3.32	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	165.4	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	161.8	0.00	0.00	0.00	0.62	0.00	0.00	0.00	0.00	0.62
Eldorado Creek	run	658.4	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	433.4	0.00	0.00	0.00	1.15	0.00	0.00	0.00	0.00	0.00
	mean		0.16	0.09	0.00	2.60	0.00	0.00	0.00	0.00	0.06

Table 1. (continued).

Stream	Habitat Type	Area (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Fishing Creek	p.w.	158.7	0.00	0.00	0.00	11.97	0.00	0.00	0.00	0.63	0.00
Fishing Creek	p.w.	86.0	11.60	0.00	0.00	17.44	0.00	2.33	0.00	1.16	0.00
Fishing Creek	p.w.	296.3	0.00	0.00	0.00	12.82	0.00	0.67	0.00	0.00	0.00
Fishing Creek	p.w.	123.3	0.00	0.00	0.00	14.60	0.00	0.00	0.00	0.81	0.00
Fishing Creek	p.w.	96.6	0.00	0.00	0.00	13.46	0.00	0.00	0.00	0.00	0.00
Fishing Creek	p.w.	164.4	0.00	0.00	0.00	1.22	0.00	1.22	0.00	1.22	0.00
	mean		1.93	0.00	0.00	11.92	0.00	0.70	0.00	0.64	0.00
Fishing Creek	pool	133.6	0.00	0.00	0.00	50.15	0.00	8.98	0.00	0.00	0.00
Fishing Creek	pool	200.1	0.00	0.00	0.00	13.49	0.00	3.50	0.00	1.00	0.00
Fishing Creek	pool	133.4	10.49	0.00	0.00	35.23	0.00	4.50	0.00	3.00	0.00
Fishing Creek	pool	43.5	0.00	0.00	0.00	22.99	0.00	2.30	0.00	2.30	0.00
	mean		2.62	0.00	0.00	30.47	0.00	4.82	0.00	1.58	0.00
Fishing Creek	riffle	195.5	2.00	0.00	0.00	9.21	0.00	0.51	0.00	0.00	0.00
Fishing Creek	riffle	153.1	2.61	0.00	0.00	26.78	0.00	1.96	0.00	0.00	0.00
Fishing Creek	riffle	150.3	1.33	0.00	0.00	9.98	0.00	0.67	0.00	0.00	0.00
Fishing Creek	riffle	248.1	0.00	0.00	0.00	2.82	0.00	0.00	0.00	0.81	0.00
Fishing Creek	riffle	94.3	0.00	0.00	0.00	9.54	0.00	0.00	0.00	0.00	0.00
Fishing Creek	riffle	190.1	0.00	0.00	0.00	16.83	0.00	1.58	0.00	0.00	0.00
Fishing Creek	riffle	256.4	0.00	0.00	0.00	10.53	0.00	0.00	0.00	0.00	0.00
	mean		0.85	0.00	0.00	9.93	0.00	0.40	0.00	0.20	0.00
Fishing Creek	run	171.3	0.00	0.00	0.00	6.42	0.00	0.00	0.00	0.00	0.00
Fishing Creek	run	108.2	0.00	0.00	0.00	6.47	0.00	2.77	0.00	0.00	0.00
Fishing Creek	run	130.2	3.07	0.00	0.00	33.79	0.00	2.30	0.00	0.77	0.00

Table 1. (continued).

Stream	Habitat Type	Area (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Fishing Creek	run	123.9	0.00	0.00	0.00	16.14	0.00	2.42	0.00	0.00	0.00
Fishing Creek	run	111.6	0.00	0.00	0.00	14.34	0.00	0.90	0.00	0.00	0.00
Fishing Creek	run	85.7	0.00	0.00	0.00	21.00	0.00	2.33	0.00	0.00	0.00
Fishing Creek	run	300.7	0.00	0.00	0.00	7.32	0.00	0.33	0.00	0.00	0.00
Fishing Creek	run	139.5	0.00	0.00	0.00	17.92	0.00	0.72	0.00	0.00	0.00
	mean		0.31	0.00	0.00	12.34	0.00	1.18	0.00	0.08	0.00
Bear Creek	pool	130.9	0.00	1.53	0.00	21.39	0.00	3.06	0.00	0.00	0.00
Bear Creek	pool	209.4	0.00	0.00	0.00	38.68	0.00	0.00	0.00	0.00	0.00
Bear Creek	pool	47.0	0.00	0.00	0.00	55.32	0.00	10.64	0.00	0.00	0.00
Bear Creek	pool	63.1	0.00	3.17	0.00	41.20	0.00	17.43	0.00	1.58	0.00
	mean		0.00	1.18	0.00	39.15	0.00	7.78	0.00	0.40	0.00
Bear Creek	riffle	101.9	0.00	0.00	0.00	7.85	0.00	0.00	0.00	0.00	0.00
Bear Creek	riffle	119.0	0.00	0.00	0.00	20.17	0.00	0.84	0.00	0.00	0.00
Bear Creek	riffle	185.5	0.00	0.54	0.00	20.49	0.00	0.54	0.00	0.00	0.00
Bear Creek	riffle	27.3	0.00	0.00	0.00	29.36	0.00	3.67	0.00	0.00	0.00
Bear Creek	riffle	147.1	0.00	0.00	0.00	18.35	0.00	0.00	0.00	0.00	0.00
Bear Creek	riffle	191.9	0.00	0.00	0.00	21.37	0.00	0.52	0.00	0.00	0.00
Bear Creek	riffle	132.0	0.00	0.00	0.00	13.64	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.08	0.00	18.75	0.00	0.80	0.00	0.00	0.00
Bear Creek	run	95.0	0.00	0.00	0.00	25.26	0.00	5.26	0.00	0.00	0.00
Bear Creek	run	111.2	0.00	0.00	0.00	19.78	0.00	3.60	0.00	0.00	0.00
Bear Creek	run	159.4	0.00	3.76	0.00	26.98	0.00	6.27	0.00	0.00	0.00
Bear Creek	run	94.0	0.00	0.00	0.00	20.21	0.00	5.32	0.00	0.00	0.00

Table 1. (continued).

Stream	Habitat Type	Area (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Bear Creek	run	259.8	0.00	0.00	0.00	12.32	0.00	4.23	0.00	0.00	0.00
Bear Creek	run	155.8	0.00	0.00	0.00	11.55	0.00	0.64	0.00	0.00	0.00
Bear Creek	run	200.4	0.00	2.50	0.00	20.96	0.00	2.99	0.00	1.00	0.00
Bear Creek	run	74.9	0.00	0.00	0.00	18.69	0.00	2.67	0.00	4.01	0.00
Bear Creek	run	134.2	0.00	0.00	0.00	23.10	0.00	4.47	0.00	0.00	0.00
	mean		0.00	0.57	0.00	16.26	0.00	3.22	0.00	0.46	0.00
Big Sheep Creek	pool	64.8	38.55	3.08	0.00	7.71	0.00	0.00	0.00	0.00	0.00
Big Sheep Creek	pool	145.7	11.66	3.43	0.00	6.18	0.00	0.00	0.00	0.00	1.37
Big Sheep Creek	pool	66.6	10.52	1.50	0.00	24.04	0.00	0.00	0.00	1.50	0.00
	mean		20.24	2.67	0.00	12.64	0.00	0.00	0.00	0.50	0.46
Big Sheep Creek	run	41.7	0.00	0.00	0.00	14.40	0.00	0.00	0.00	0.00	4.80
Big Sheep Creek	run	98.8	24.29	4.05	0.00	36.44	0.00	0.00	0.00	0.00	3.04
Big Sheep Creek	run	65.9	47.02	1.52	0.00	28.82	0.00	0.00	0.00	0.00	0.00
Big Sheep Creek	run	101.8	27.49	9.82	0.00	16.69	0.00	0.00	0.00	0.00	0.00
	mean		24.70	3.85	0.00	24.09	0.00	0.00	0.00	0.00	1.96
Imnaha River	pool	406.1	72.88	0.74	0.00	4.43	0.00	0.00	0.00	0.25	18.47
Imnaha River	pool	458.8	36.40	0.87	0.00	0.87	0.00	0.00	0.00	0.65	16.35
Imnaha River	pool	140.8	34.08	0.00	0.00	3.55	0.00	0.00	0.00	0.00	7.81
Imnaha River	pool	239.0	30.54	0.84	0.00	0.42	0.00	0.00	0.00	0.00	5.86
Imnaha River	pool	564.1	29.07	0.89	0.00	0.71	0.00	0.00	0.00	0.35	7.27
	mean		40.59	0.67	0.00	2.00	0.00	0.00	0.00	0.25	11.15

Table 1. (continued).

Stream	Habitat		Chinook	Chinook	Chinook	Natural	Hatchery	Cutthroat	Brook	Bull	Mountain
	Type	Area (m ²)	Age 0+	Age 1+	Adults	Steelhead	Steelhead	Trout	Trout	Trout	Whitefish
Imnaha River	run	303.0	21.43	0.33	0.00	2.97	0.00	0.00	0.00	0.66	15.49
Imnaha River	run	178.1	15.72	1.12	0.00	8.98	0.00	0.00	0.00	0.56	7.86
Imnaha River	run	290.9	12.03	0.00	0.00	1.38	0.00	0.00	0.00	0.00	6.88
Imnaha River	run	275.3	9.08	0.00	0.00	2.54	0.00	0.00	0.00	0.00	6.90
Imnaha River	run	224.8	22.68	0.00	0.00	3.11	0.00	0.00	0.00	0.00	16.90
Imnaha River	run	128.5	3.11	0.00	0.00	1.56	0.00	0.00	0.00	0.00	0.00
Imnaha River	run	184.6	12.46	0.00	0.00	1.08	0.00	0.00	0.00	0.00	6.50
Imnaha River	run	390.1	33.83	0.26	0.00	0.51	0.00	0.00	0.00	0.26	3.84
	mean		16.29	0.21	0.00	2.77	0.00	0.00	0.00	0.19	8.05
I. Lostine River	pool	671.3	30.38	0.15	0.00	2.68	0.00	0.00	0.60	0.60	4.62
I. Lostine River	pool	277.2	25.97	1.80	0.00	8.30	0.00	0.00	0.00	0.36	1.44
I. Lostine River	pool	409.4	13.68	1.22	0.00	3.18	0.00	0.00	0.00	0.24	0.00
I. Lostine River	pool	512.2	21.08	0.20	0.00	4.30	0.00	0.00	0.00	1.17	1.95
I. Lostine River	pool	409.2	6.11	0.24	0.00	3.67	0.00	0.00	0.00	0.24	7.33
	mean		19.44	0.72	0.00	4.43	0.00	0.00	0.12	0.52	3.07
I. Lostine River	run	244.2	0.82	0.41	0.00	6.55	0.00	0.00	0.00	0.00	0.00
u. Lostine River	pool	307.2	0.00	0.00	0.00	0.00	10.74	0.00	0.65	0.65	0.00
u. Lostine River	pool	75.6	0.00	0.00	0.00	0.00	0.00	0.00	1.32	1.32	0.00
	mean		0.00	0.00	0.00	0.00	5.37	0.00	0.99	0.99	0.00
u. Lostine River	run	289.2	0.00	0.00	0.00	0.00	1.73	0.00	0.00	0.00	0.00
u. Lostine River	run	140.5	0.00	0.00	0.00	0.00	2.85	0.00	0.00	0.00	0.00
u. Lostine River	run	172.3	0.00	0.00	0.00	0.00	11.02	0.00	0.00	0.00	0.00
u. Lostine River	run	245.3	0.00	0.00	0.00	0.41	4.89	0.00	0.82	3.67	0.00
	mean		0.00	0.00	0.00	0.10	5.12	0.00	0.21	0.92	0.00

Table 1. (continued).

Stream	Habitat Type	Area (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Meadow Creek	run	991.2	2.22	0.10	0.00	0.71	0.00	0.00	0.00	0.00	0.00
Meadow Creek	run	706.3	1.84	1.56	0.00	1.84	0.00	0.85	0.00	0.00	0.28
	mean		2.03	0.83	0.00	1.28	0.00	0.43	0.00	0.00	0.14
Meadow Creek	pool	932.9	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.93
Meadow Creek	pool	1703.6	0.00	0.00	0.00	0.35	0.00	0.06	0.00	0.00	1.47
	mean		0.22	0.00	0.00	0.18	0.00	0.03	0.00	0.00	1.70
u. Logan Creek	run	36.3	0.00	0.00	0.00	0.00	0.00	36.30	0.00	0.00	0.00
u. Logan Creek	pool	27.6	0.00	0.00	0.00	3.62	0.00	25.36	0.00	0.00	0.00
u. Logan Creek	pool	17.8	0.00	0.00	0.00	0.00	0.00	28.17	0.00	0.00	0.00
u. Logan Creek	pool	5.8	0.00	0.00	0.00	0.00	0.00	34.72	0.00	0.00	0.00
u. Logan Creek	pool	25.2	0.00	0.00	0.00	0.00	0.00	19.84	0.00	7.94	0.00
	mean		0.00	0.00	0.00	0.91	0.00	27.02	0.00	1.99	0.00
I. Logan Creek	run	46.7	0.00	0.00	0.00	0.00	0.00	17.12	0.00	0.00	0.00
I. Logan Creek	run	34.6	0.00	0.00	0.00	0.00	0.00	14.44	0.00	0.00	0.00
I. Logan Creek	run	37.7	0.00	0.00	0.00	0.00	0.00	15.90	0.00	0.00	0.00
	mean		0.00	0.00	0.00	0.00	0.00	15.82	0.00	0.00	0.00
I. Logan Creek	pool	30.7	0.00	0.00	0.00	0.00	0.00	16.31	0.00	0.00	0.00
I. Logan Creek	pool	30.5	0.00	0.00	0.00	0.00	0.00	9.85	0.00	0.00	0.00
I. Logan Creek	pool	49.6	0.00	0.00	0.00	0.00	0.00	26.20	0.00	0.00	0.00
	mean		0.00	0.00	0.00	0.00	0.00	17.45	0.00	0.00	0.00

Table 2. Fish densities (number/100m²) by transect in streams snorkeled in 1993. p.w. = pocket water

Stream	Habitat Type	Area (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Yoosa Creek	riffle	59.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	riffle	335.72	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	174.00	0.00	0.00	0.00	4.02	0.00	0.00	0.57	0.00	0.00
Yoosa Creek	run	543.86	0.00	0.00	0.00	1.84	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	501.84	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	238.08	0.00	0.00	0.00	2.52	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	301.72	0.00	0.00	0.00	3.31	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	397.44	0.00	0.00	0.00	2.52	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	370.44	0.00	0.00	0.00	0.81	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	372.90	0.00	0.00	0.00	2.41	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.00	0.00	2.20	0.00	0.00	0.07	0.00	0.00
Eldorado Creek	p.w.	589.18	0.00	0.00	0.00	0.34	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	595.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	426.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	262.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	65.01	0.00	0.00	0.00	7.69	0.00	0.00	0.50	0.00	0.00
	mean		0.00	0.00	0.00	1.92	0.00	0.00	0.13	0.00	0.00
Eldorado Creek	riffle	98.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	riffle	205.81	0.00	0.00	0.00	4.37	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.00	0.00	2.19	0.00	0.00	0.00	0.00	0.00

Table 2. (continued).

Stream	Habitat Type	Area (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Eldorado Creek	run	484.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	152.96	0.00	0.00	0.00	1.31	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	928.35	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.11
Eldorado Creek	run	747.72	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	408.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	401.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	590.55	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	199.40	0.00	0.00	0.00	15.55	0.00	0.00	0.50	0.00	0.00
Eldorado Creek	run	394.44	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	306.67	0.00	0.00	0.33	1.30	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	454.48	0.00	0.00	0.00	1.10	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.00	0.03	1.86	0.00	0.00	0.05	0.00	0.01
Fishing Creek	p.w.	98.48	0.00	0.00	0.00	10.15	0.00	1.02	0.00	0.00	0.00
Fishing Creek	p.w.	309.15	0.00	0.00	0.00	4.85	0.00	0.00	0.00	0.32	0.00
Fishing Creek	p.w.	143.93	0.00	0.00	0.00	6.95	0.00	0.00	0.00	0.69	0.00
Fishing Creek	p.w.	132.93	0.00	0.00	0.00	8.28	0.00	0.00	0.00	0.00	0.00
Fishing Creek	p.w.	135.00	0.00	0.00	0.00	1.48	0.00	0.74	0.00	0.00	0.00
	mean		0.00	0.00	0.00	6.34	0.00	0.35	0.00	0.20	0.00
Fishing Creek	pool	86.35	0.00	0.00	0.00	6.95	0.00	0.00	0.00	1.16	0.00
Fishing Creek	pool	38.57	0.00	0.00	0.00	20.74	0.00	2.59	0.00	0.00	0.00
Fishing Creek	pool	54.23	0.00	0.00	0.00	3.69	0.00	1.84	0.00	0.00	0.00
	mean		0.00	0.00	0.00	10.46	0.00	1.48	0.00	0.39	0.00

Table 2. (continued).

Stream	Habitat Type	Area (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Steelhead Wild	Steelhead Hatchery	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Fishing Creek	riffle	183.73	0.00	0.00	0.00	5.99	0.00	0.00	0.00	0.00	0.00
Fishing Creek	riffle	181.65	0.00	0.00	0.00	24.22	0.00	1.10	0.00	0.00	0.00
Fishing Creek	riffle	156.94	0.00	0.00	0.00	1.27	0.00	0.00	0.00	0.64	0.00
Fishing Creek	riffle	116.77	0.00	0.00	0.00	2.57	0.00	0.00	0.00	0.00	0.00
Fishing Creek	riffle	245.96	0.00	0.00	0.00	6.91	0.00	0.00	0.00	0.00	0.00
Fishing Creek	riffle	180.48	0.00	0.00	0.00	3.88	0.00	0.55	0.00	0.00	0.00
	mean		0.00	0.00	0.00	7.47	0.00	0.28	0.00	0.11	0.00
Fishing Creek	run	109.01	0.00	0.00	0.00	3.67	0.00	0.00	0.00	0.00	0.00
Fishing Creek	run	292.22	0.00	0.00	0.00	16.08	0.00	4.11	0.00	0.68	0.00
Fishing Creek	run	654.00	0.00	0.00	0.00	3.06	0.00	0.76	0.00	0.00	0.00
Fishing Creek	run	158.97	0.00	0.00	0.00	7.55	0.00	1.26	0.00	0.00	0.00
Fishing Creek	run	208.03	0.00	0.00	0.00	1.44	0.00	0.00	0.00	0.00	0.00
Fishing Creek	run	78.30	0.00	0.00	0.00	5.11	0.00	0.00	0.00	0.00	0.00
Fishing Creek	run	82.94	0.00	0.00	0.00	89.22	0.00	0.00	0.00	1.21	0.00
Fishing Creek	run	312.24	0.00	0.00	0.00	8.65	0.00	0.64	0.00	0.00	0.00
	mean		0.00	0.00	0.00	16.85	0.00	0.85	0.00	0.24	0.00
Bear Creek	riffle	106.05	10.37	0.00	0.00	3.77	0.00	0.00	0.00	0.00	0.00
Bear Creek	riffle	147.55	2.71	0.00	0.00	10.84	0.00	0.00	0.00	0.00	0.00
Bear Creek	riffle	145.92	5.48	0.00	0.00	8.22	0.00	0.00	0.00	0.00	0.00
Bear Creek	riffle	186.55	0.00	0.00	0.00	13.40	0.00	5.90	0.00	0.00	0.00
Bear Creek	riffle	127.68	5.48	0.00	0.00	3.13	0.00	0.00	0.00	0.00	0.00
Bear Creek	riffle	28.25	0.00	0.00	0.00	31.86	0.00	17.70	0.00	0.00	0.00
Bear Creek	riffle	207.76	12.03	0.00	0.00	12.51	0.00	0.00	0.00	0.00	0.00
	mean		5.15	0.00	0.00	11.96	0.00	3.37	0.00	0.00	0.00

Table 2. (continued).

Stream	Habitat Type	Area (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Steelhead Wild	Steelhead Hatchery	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Bear Creek	run	142.97	2.80	0.00	1.40	21.68	0.00	2.80	0.00	0.00	0.00
Bear Creek	run	187.68	0.53	0.00	0.00	10.12	0.00	7.99	0.00	0.00	0.00
Bear Creek	run	239.99	17.50	0.00	0.00	15.00	0.00	3.33	0.00	0.00	0.00
Bear Creek	run	408.48	14.93	0.00	0.00	16.65	0.00	1.71	0.00	0.00	0.00
Bear Creek	run	219.55	44.18	0.00	0.00	14.58	0.00	4.10	0.00	0.46	0.00
Bear Creek	run	195.11	18.45	0.00	1.03	13.33	0.00	2.56	0.00	0.00	0.00
Bear Creek	run	189.00	46.56	0.00	0.53	16.40	0.00	3.70	0.00	0.00	0.00
Bear Creek	run	181.84	0.00	0.00	1.10	6.60	0.00	6.60	0.00	0.00	0.00
	mean		18.12	0.00	0.51	14.30	0.00	4.10	0.00	0.06	0.00
49 Big Sheep Creek	pool	107.33	19.57	1.86	0.93	19.57	0.00	0.00	0.00	0.00	3.73
	pool	54.27	14.74	7.37	0.00	31.32	0.00	0.00	0.00	3.69	7.37
	mean		17.16	4.62	0.47	25.45	0.00	0.00	0.00	1.85	5.55
Big Sheep Creek	run	143.42	9.06	2.79	0.00	14.64	0.00	0.00	0.00	0.00	2.09
	run	92.37	3.25	2.17	0.00	15.16	0.00	0.00	0.00	0.00	1.08
	run	108.50	4.61	11.06	0.00	16.59	0.00	0.00	0.00	0.00	2.76
	mean		5.64	5.34	0.00	15.46	0.00	0.00	0.00	0.00	1.98
Imnaha River	pool	367.33	90.93	0.00	0.27	5.44	0.00	0.00	0.00	0.27	4.90
	pool	345.45	23.74	0.87	0.00	2.03	0.00	0.00	0.00	0.00	7.24
	pool	158.91	44.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.40
	pool	215.35	19.97	3.25	0.00	2.32	0.00	0.00	0.00	0.00	6.50
	pool	358.72	129.91	3.35	0.00	4.74	0.00	0.00	0.00	0.84	31.78
	mean		61.72	1.49	0.05	2.91	0.00	0.00	0.00	0.22	10.96

Table 2. (continued).

Stream	Habitat		Chinook	Chinook	Chinook	Steelhead	Steelhead	Cutthroat	Brook	Bull	Mountain
	Type	Area (m ²)	Age 0+	Age 1+	Adults	Wild	Hatchery	Trout	Trout	Trout	Whitefish
Imnaha River	run	306.61	18.92	1.96	0.00	1.63	0.00	0.00	0.00	0.00	8.48
Imnaha River	run	206.40	22.77	0.97	0.00	1.94	0.00	0.00	0.00	0.00	2.91
Imnaha River	run	226.89	16.75	0.00	0.00	1.76	0.00	0.00	0.00	0.00	8.37
Imnaha River	run	261.33	13.78	1.91	0.00	1.15	0.00	0.00	0.00	0.00	4.21
Imnaha River	run	328.07	17.07	0.00	0.30	2.74	0.00	0.00	0.00	0.00	3.05
Imnaha River	run	182.36	15.35	1.65	0.00	1.10	0.00	0.00	0.00	0.00	0.55
Imnaha River	run	205.65	8.27	0.00	0.00	0.97	0.00	0.00	0.00	0.00	1.95
Imnaha River	run	476.15	30.03	2.31	0.00	0.63	0.00	0.00	0.00	0.00	5.04
	mean		17.87	1.10	0.04	1.49	0.00	0.00	0.00	0.00	4.32
I. Lostine River	pool	922.13	31.45	0.54	0.00	2.06	0.00	0.00	0.33	0.22	2.71
I. Lostine River	pool	276.15	26.80	8.69	0.00	9.05	0.00	0.00	3.26	0.36	1.45
I. Lostine River	pool	466.83	47.98	5.36	0.00	4.93	0.00	0.00	0.00	0.00	0.00
I. Lostine River	pool	1216.55	32.88	0.49	0.00	1.81	0.00	0.00	0.16	0.08	0.74
	mean		34.78	3.77	0.00	4.46	0.00	0.00	0.94	0.17	1.23
I. Lostine River	run	573.83	12.20	1.05	0.00	1.57	0.00	0.00	7.14	0.00	0.70
I. Lostine River	run	160.37	67.97	1.25	0.00	6.24	0.00	0.00	3.74	0.62	14.97
	mean		40.09	1.15	0.00	3.91	0.00	0.00	5.44	0.31	7.84
u. Lostine River	pool	287.49	0.00	0.00	0.00	1.04	0.00	0.00	0.35	0.35	0.00
u. Lostine River	run	341.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
u. Lostine River	run	140.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
u. Lostine River	run	275.37	0.00	0.00	0.00	0.00	0.00	0.00	2.18	5.45	0.00
u. Lostine River	run	115.73	0.00	0.00	0.00	0.86	0.00	0.00	0.00	0.86	0.00
	mean		0.00	0.00	0.00	0.22	0.00	0.00	0.55	1.58	0.00

Table 2. (continued).

Stream	Habitat Type	Area (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Steelhead Wild	Steelhead Hatchery	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
u. Logan Creek	pool	30.07	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00
u. Logan Creek	pool	24.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
u. Logan Creek	pool	6.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
u. Logan Creek	pool	35.65	0.00	0.00	0.00	0.00	0.00	5.77	0.00	0.00	0.00
	mean		0.00	0.00	0.00	0.00	0.00	2.28	0.00	0.00	0.00
u. Logan Creek	run	11.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I. Logan Creek	pool	31.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I. Logan Creek	pool	26.18	0.00	0.00	0.00	7.64	0.00	15.28	0.00	0.00	0.00
I. Logan Creek	pool	57.81	0.00	0.00	0.00	3.46	0.00	5.19	0.00	0.00	0.00
	mean		0.00	0.00	0.00	3.70	0.00	6.82	0.00	0.00	0.00
I. Logan Creek	run	40.32	0.00	0.00	0.00	2.48	0.00	7.44	0.00	0.00	0.00
I. Logan Creek	run	42.00	0.00	0.00	0.00	4.76	0.00	2.38	0.00	0.00	0.00
I. Logan Creek	run	42.03	0.00	0.00	0.00	2.38	0.00	2.38	0.00	0.00	0.00
	mean		0.00	0.00	0.00	3.21	0.00	4.07	0.00	0.00	0.00

Table 3. Fish densities (number/100m2) by transect in streams snorkeled in 1994. p.w. = pocket water

Stream	Habitat Type	Area (m ²)	Natural	Hatchery	Natural	Chinook Adults	Natural	Hatchery	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
			Chinook Age 0+	Chinook Age 0+	Chinook Age 1+		Steelhead	Steelhead				
Yoosa Creek	pool	200.20	26.47	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	pool	25.97	0.00	0.00	0.00	0.00	19.25	0.00	0.00	7.70	0.00	0.00
Yoosa Creek	pool	106.22	1.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	pool	111.80	2.68	0.00	0.00	0.00	6.26	0.00	0.00	0.00	0.00	0.00
	mean		7.76	0.00	0.00	0.00	7.00	0.00	0.00	1.93	0.00	0.00
Yoosa Creek	riffle	216.84	1.84	0.00	0.46	0.00	2.31	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	riffle	77.00	2.60	0.00	0.00	0.00	1.30	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	riffle	44.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	riffle	280.23	3.93	0.00	0.00	0.00	5.71	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	riffle	70.70	18.39	0.00	0.00	0.00	4.24	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	riffle	101.76	15.72	0.00	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
	mean		7.08	0.00	0.08	0.00	2.42	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	270.40	1.48	0.00	0.00	0.00	8.14		0.74	0.37	0.00	0.00
Yoosa Creek	run	530.70	0.00	0.00	0.00	0.00	3.96		0.00	0.00	0.00	0.00
Yoosa Creek	run	144.50	11.76	0.00	0.00	0.00	1.38		0.00	0.00	0.00	0.00
Yoosa Creek	run	253.53	26.03	0.00	0.00	0.00	5.92		0.00	0.79	0.00	0.00
Yoosa Creek	run	279.46	2.86	0.00	0.00	0.00	1.79		0.00	0.00	0.00	0.00
Yoosa Creek	run	138.37	44.08	0.00	2.17	0.00	5.78		0.00	0.00	0.00	0.00
Yoosa Creek	run	94.34	0.00	0.00	0.00	0.00	7.42		0.00	0.00	0.00	0.00
	mean		12.32	0.00	0.31	0.00	4.91		0.11	0.17	0.00	0.00
Eldorado Creek	p.w.	445.30	13.47	0.00	0.22	0.00	0.67		0.90	0.00	0.00	0.22
Eldorado Creek	p.w.	544.50	0.00	0.00	0.00	0.00	1.47		0.18	0.00	0.00	0.00
	mean		6.74	0.00	0.11	0.00	1.07		0.54	0.00	0.00	0.11
Eldorado Creek	pool	377.20	0.00	0.00	0.00	0.00	0.27		0.00	0.00	0.00	0.00
Eldorado Creek	pool	584.01	0.00	0.00	0.00	0.00	0.68		1.20	0.00	0.00	0.00
Eldorado Creek	pool	520.94	0.00	0.00	0.00	0.00	0.19		0.58	0.00	0.00	0.00
Eldorado Creek	pool	340.18	0.00	0.00	0.00	0.00	0.59		0.00	0.00	0.00	0.00
Eldorado Creek	pool	235.20	0.00	0.00	0.00	0.00	0.43		2.13	0.00	0.00	0.00
	mean		0.00	0.00	0.00	0.00	0.43		0.78	0.00	0.00	0.00

Table 3. Continued

Stream	Habitat Type	Area (m ²)	Natural	Hatchery	Natural	Chinook Adults	Natural	Hatchery	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
			Chinook Age 0+	Chinook Age 0+	Chinook Age 1+		Steelhead	Steelhead				
Eldorado Creek	rifle	207.60	2.89	0.00	0.00	0.00	3.85		0.00	0.00	0.00	0.48
Eldorado Creek	rifle	95.04	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Eldorado Creek	rifle	206.67	0.00	0.00	0.00	0.00	0.97		0.00	0.00	0.00	0.00
	mean		0.96	0.00	0.00	0.00	1.61		0.00	0.00	0.00	0.16
Eldorado Creek	run	168.89	0.00	0.00	0.00	0.00	4.14		0.59	0.00	0.00	0.00
Eldorado Creek	run	359.70	0.00	0.00	0.00	0.00	0.56		0.00	0.00	0.00	0.00
Eldorado Creek	run	106.02	0.00	0.00	0.00	0.00	0.00		0.94	0.00	0.00	0.00
Eldorado Creek	run	228.11	0.00	0.00	0.00	0.00	2.19		0.00	0.00	0.00	0.00
Eldorado Creek	run	258.09	0.00	0.00	0.00	0.00	0.77		0.00	0.00	0.00	0.00
Eldorado Creek	run	172.66	0.00	0.00	0.00	0.00	1.16		0.00	0.00	0.00	0.00
Eldorado Creek	run	117.81	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Eldorado Creek	run	334.96	0.00	0.00	0.00	0.00	0.30		0.00	0.00	0.00	0.00
Eldorado Creek	run	173.66	19.58	0.00	0.00	0.00	13.24		1.73	0.00	0.00	0.58
Eldorado Creek	run	635.31	0.00	0.00	0.00	0.00	0.31		0.00	0.00	0.00	0.00
Eldorado Creek	run	263.53	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	mean		1.78	0.00	0.00	0.00	2.06		0.30	0.00	0.00	0.05
Fishing Creek	p.w.	103.95	0.00		0.00	0.00	1.92		0.00	0.00	0.96	0.00
Fishing Creek	p.w.	293.57	28.95		0.34	0.00	6.81		0.00	0.00	0.00	0.00
Fishing Creek	p.w.	132.00	6.06		0.00	0.00	4.55		0.00	0.00	0.00	0.00
Fishing Creek	p.w.	108.60	1.84		0.92	0.00	33.15		2.76	0.00	0.00	0.00
Fishing Creek	p.w.	141.10	4.96		1.42	0.00	21.26		2.83	0.00	1.42	0.00
Fishing Creek	p.w.	95.45	10.48		0.00	0.00	8.38		0.00	0.00	0.00	0.00
	mean		8.72		0.45	0.00	12.68		0.93	0.00	0.40	0.00
Fishing Creek	pool	68.00	95.59		0.00	0.00	27.94		0.00	0.00	4.41	0.00
Fishing Creek	pool	27.45	0.00		0.00	0.00	3.64		0.00	0.00	0.00	0.00
Fishing Creek	pool	42.84	30.35		0.00	0.00	18.67		0.00	0.00	0.00	0.00
Fishing Creek	pool	48.60	4.12		0.00	0.00	6.17		4.12	0.00	0.00	0.00
Fishing Creek	pool	180.18	4.44		2.22	0.00	14.99		3.89	0.00	0.56	0.00
Fishing Creek	pool	94.09	5.31		1.06	0.00	10.63		4.25	0.00	0.00	0.00
	mean		23.30		0.55	0.00	13.67		2.04	0.00	0.83	0.00

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Table 3. Continued

Stream	Habitat		Natural	Hatchery	Natural	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
	Type	Area (m ²)	Chinook Age 0+	Chinook Age 0+	Chinook Age 1+							
Fishing Creek	riffle	185.12	13.50		0.54	0.00	16.21		0.00	0.00	1.08	0.00
Fishing Creek	riffle	173.25	0.00		0.00	0.00	4.62		1.15	0.00	0.00	0.00
Fishing Creek	riffle	92.50	65.95		0.00	0.00	6.49		1.08	0.00	0.00	0.00
Fishing Creek	riffle	148.68	26.90		0.00	0.00	5.38		0.00	0.00	0.00	0.00
Fishing Creek	riffle	165.17	4.84		0.00	0.00	7.27		1.82	0.00	0.00	0.00
Fishing Creek	riffle	91.00	3.30		0.00	0.00	8.79		0.00	0.00	1.10	0.00
Fishing Creek	riffle	219.64	20.49		0.00	0.00	9.11		0.00	0.00	1.37	0.00
	mean		19.28		0.08	0.00	8.27		0.58	0.00	0.51	0.00
Fishing Creek	run	95.85	38.60		0.00	0.00	20.87		0.00	0.00	0.00	0.00
Fishing Creek	run	116.64	3.43		0.00	0.00	12.86		2.57	0.00	0.00	0.00
Fishing Creek	run	289.43	8.29		0.00	0.00	10.02		0.35	0.00	0.69	0.00
Fishing Creek	run	167.56	0.60		2.39	0.00	13.73		1.79	0.00	0.60	0.00
Fishing Creek	run	141.11	1.42		0.00	0.00	9.21		0.00	0.00	0.00	0.00
Fishing Creek	run	86.33	42.86		0.00	0.00	34.75		0.00	0.00	1.16	0.00
Fishing Creek	run	39.72	0.00		0.00	0.00	2.52		0.00	0.00	0.00	0.00
Fishing Creek	run	114.03	11.40		0.00	0.00	11.40		2.63	0.00	0.00	0.00
	mean		13.33		0.30	0.00	14.42		0.92	0.00	0.31	0.00
Bear Creek	p.w.	139.61	0.72	0.00	0.00	0.00	7.16		1.43	0.00	0.00	0.00
Bear Creek	p.w.	152.10	7.89	0.00	0.00	0.00	9.20		1.97	0.66	0.00	0.66
Bear Creek	p.w.	259.79	6.93	0.00	0.00	0.00	11.55		0.38	0.00	0.00	0.00
	mean		5.18	0.00	0.00	0.00	9.30		1.26	0.22	0.00	0.22
Bear Creek	pool	54.87	96.59	0.00	0.00	0.00	63.79		3.64	0.00	1.82	0.00
Bear Creek	pool	63.75	45.49	0.00	0.00	0.00	18.82		4.71	0.00	3.14	0.00
Bear Creek	pool	93.73	11.74	0.00	0.00	1.07	16.00		0.00	0.00	0.00	0.00
Bear Creek	pool	276.08	17.75	0.00	0.00	0.00	18.11		2.90	3.26	0.00	0.00
Bear Creek	pool	126.14	51.53	0.00	0.79	0.00	11.89		3.96	0.00	0.00	0.00
Bear Creek	pool	227.04	44.93	0.00	0.00	0.00	40.08		0.00	0.00	0.00	0.00
	mean		44.67	0.00	0.13	0.18	28.12		2.54	0.54	0.83	0.00

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Table 3. Continued

Stream	Habitat Type	Area (m ²)	Natural Chinook Age 0+	Hatchery Chinook Age 0+	Natural Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Bear Creek	riffle	223.65	2.24	0.00	0.00	0.00	6.71		0.00	0.00	0.00	0.00
Bear Creek	riffle	157.32	4.45	0.00	0.64	0.00	13.35		0.00	0.64	0.00	0.00
Bear Creek	riffle	143.64	16.71	0.00	0.00	0.00	18.10		0.70	0.00	0.00	0.00
Bear Creek	riffle	26.50	90.57	0.00	0.00	0.00	26.42		22.64	0.00	0.00	0.00
Bear Creek	riffle	207.76	22.62	0.00	0.00	0.00	19.73		0.48	0.00	0.00	0.00
Bear Creek	riffle	96.60	4.14	0.00	0.00	0.00	13.46		0.00	0.00	0.00	0.00
	mean		23.46	0.00	0.11	0.00	16.30		3.97	0.11	0.00	0.00
Bear Creek	run	69.23	53.45	0.00	0.00	0.00	18.78		7.22	0.00	0.00	0.00
Bear Creek	run	79.80	33.83	0.00	0.00	0.00	36.34		1.25	0.00	0.00	0.00
Bear Creek	run	103.36	23.22	0.00	0.00	0.00	9.67		12.58	0.00	0.97	0.00
Bear Creek	run	130.81	32.11	0.00	0.76	0.00	23.70		5.35	0.76	0.00	0.00
Bear Creek	run	225.72	26.58	0.00	0.00	0.00	7.97		1.33	0.00	0.00	0.00
Bear Creek	run	173.90	47.15	0.00	2.30	0.00	25.88		2.30	0.00	0.58	0.00
Bear Creek	run	61.56	51.98	0.00	0.00	0.00	19.49		16.24	0.00	1.62	0.00
	mean		38.33	0.00	0.44	0.00	20.26		6.61	0.11	0.45	0.00
u. Big Sheep Creek 7/7/94	pool	44.55	0.00	0.00	0.00	0.00	31.43	0.00	0.00	0.00	0.00	4.49
u. Big Sheep Creek 7/7/94	pool	68.27	0.00	0.00	0.00	0.00	41.01	0.00	0.00	0.00	4.39	0.00
	mean		0.00	0.00	0.00	0.00	36.22	0.00	0.00	0.00	2.20	2.25
u. Big Sheep Creek 7/7/94	run	36.11	0.00	0.00	0.00	0.00	27.69	0.00	0.00	0.00	2.77	0.00
u. Big Sheep Creek 7/7/94	run	44.33	0.00	0.00	0.00	0.00	24.81	0.00	0.00	0.00	0.00	2.26
	mean		0.00	0.00	0.00	0.00	26.25	0.00	0.00	0.00	1.39	1.13
u. Big Sheep Creek 8/16/94	pool	39.42	12.68	220.70	0.00	0.00	27.90	0.00	0.00	0.00	7.61	2.54
u. Big Sheep Creek 8/16/94	pool	50.18	3.99	414.51	0.00	0.00	21.92	0.00	0.00	0.00	15.94	0.00
	mean		8.34	317.61	0.00	0.00	24.91	0.00	0.00	0.00	11.78	1.27
u. Big Sheep Creek 8/16/94	run	52.90	0.00	111.53	0.00	0.00	15.12	0.00	0.00	0.00	5.67	3.78
u. Big Sheep Creek 8/16/94	run	41.56	4.81	221.38	0.00	0.00	16.84	0.00	0.00	0.00	4.81	4.81
	mean		2.41	166.46	0.00	0.00	15.98	0.00	0.00	0.00	5.24	4.30
I. Big Sheep Creek 7/8/94	pool	79.80	7.52	0.00	0.00	0.00	26.32	0.00	0.00	0.00	2.51	0.00
I. Big Sheep Creek 7/8/94	pool	53.77	29.75	0.00	0.00	0.00	29.75	0.00	0.00	0.00	0.00	9.30
	mean		18.64	0.00	0.00	0.00	28.04	0.00	0.00	0.00	1.26	4.65

Table 3. Continued

Stream	Habitat Type	Area (m ²)	Natural Chinook Age 0+	Hatchery Chinook Age 0+	Natural Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
I. Big Sheep Creek 7/8/94	run	104.52	24.88	0.00	0.96	0.00	17.22	0.00	0.00	0.00	0.00	15.31
I. Big Sheep Creek 7/8/94	run	58.11	13.77	0.00	1.72	0.00	18.93	0.00	0.00	0.00	0.00	1.72
I. Big Sheep Creek 7/8/94	run	132.53	7.54	0.00	3.02	0.00	19.62	0.00	0.00	0.00	0.00	3.02
I. Big Sheep Creek 7/8/94	run	65.31	7.66	0.00	1.53	0.00	27.56	0.00	0.00	0.00	3.06	4.59
	mean		13.46	0.00	1.81	0.00	20.83	0.00	0.00	0.00	0.77	6.16
I. Big Sheep Creek 8/17/94	pool	50.82	21.65	9.84	0.00	0.00	11.81	0.00	0.00	0.00	0.00	15.74
I. Big Sheep Creek 8/17/94	pool	88.00	22.73	15.91	0.00	0.00	27.27	0.00	0.00	0.00	0.00	19.32
	mean		22.19	12.88	0.00	0.00	19.54	0.00	0.00	0.00	0.00	17.53
I. Big Sheep Creek 8/17/94	run	90.59	8.83	2.21	1.10	0.00	20.97	0.00	0.00	0.00	0.00	26.49
I. Big Sheep Creek 8/17/94	run	75.44	19.88	0.00	0.00	0.00	18.56	0.00	0.00	0.00	0.00	14.58
I. Big Sheep Creek 8/17/94	run	49.23	18.28	0.00	0.00	0.00	40.63	0.00	0.00	0.00	0.00	18.28
I. Big Sheep Creek 8/17/94	run	142.23	17.58	4.92	3.52	0.00	21.80	0.00	0.00	0.00	0.00	16.87
	mean		16.14	1.78	1.16	0.00	25.49	0.00	0.00	0.00	0.00	19.06
u. Lick Creek 7/7/94	pool	48.96	287.99	0.00	0.00	0.00	22.47	0.00	0.00	0.00	4.08	0.00
u. Lick Creek 7/7/94	pool	56.70	370.37	0.00	0.00	0.00	17.64	0.00	0.00	0.00	0.00	0.00
u. Lick Creek 7/7/94	pool	60.06	284.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	mean		314.36	0.00	0.00	0.00	13.37	0.00	0.00	0.00	1.36	0.00
u. Lick Creek 7/7/94	run	23.52	140.33	0.00	0.00	0.00	38.27	0.00	0.00	0.00	4.25	0.00
u. Lick Creek 7/7/94	run	49.17	170.85	0.00	0.00	0.00	20.34	0.00	0.00	0.00	0.00	0.00
u. Lick Creek 7/7/94	run	25.07	291.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	mean		200.79	0.00	0.00	0.00	19.54	0.00	0.00	0.00	1.42	0.00
u. Lick Creek 8/16/94	pool	44.75	160.88	0.00	0.00	0.00	26.81	0.00	0.00	0.00	0.00	0.00
u. Lick Creek 8/16/94	pool	55.77	363.99	0.00	0.00	0.00	25.10	0.00	0.00	0.00	1.79	0.00
u. Lick Creek 8/16/94	pool	55.77	147.03	0.00	0.00	0.00	19.72	0.00	0.00	0.00	3.59	0.00
	mean		223.97	0.00	0.00	0.00	23.88	0.00	0.00	0.00	1.79	0.00

Table 3. Continued

Stream	Habitat Type	Area (m ²)	Natural	Hatchery	Natural	Chinook Adults	Natural	Hatchery	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
			Chinook Age 0+	Chinook Age 0+	Chinook Age 1+		Steelhead	Steelhead				
u. Lick Creek 8/16/94	run	40.77	284.52	0.00	0.00	0.00	34.34	0.00	0.00	0.00	0.00	0.00
u. Lick Creek 8/16/94	run	31.68	183.08	0.00	0.00	0.00	31.57	0.00	0.00	0.00	0.00	0.00
u. Lick Creek 8/16/94	run	20.15	158.81	0.00	0.00	0.00	24.81	0.00	0.00	0.00	0.00	0.00
	mean		208.80	0.00	0.00	0.00	30.24	0.00	0.00	0.00	0.00	0.00
I. Lick Creek 7/7/94	pool	13.05	0.00	0.00	0.00	0.00	45.98	0.00	0.00	0.00	0.00	0.00
I. Lick Creek 7/7/94	pool	14.26	0.00	0.00	0.00	0.00	35.06	0.00	0.00	0.00	0.00	0.00
I. Lick Creek 7/7/94	pool	13.87	0.00	0.00	0.00	0.00	43.26	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.00	0.00	0.00	41.43	0.00	0.00	0.00	0.00	0.00
I. Lick Creek 7/7/94	run	15.91	0.00	0.00	0.00	0.00	31.43	0.00	0.00	0.00	0.00	0.00
I. Lick Creek 7/7/94	run	14.56	0.00	0.00	0.00	0.00	27.47	0.00	0.00	0.00	0.00	0.00
I. Lick Creek 7/7/94	run	17.02	5.88	0.00	0.00	0.00	29.38	0.00	0.00	0.00	0.00	0.00
	mean		1.96	0.00	0.00	0.00	29.43	0.00	0.00	0.00	0.00	0.00
I. Lick Creek 8/16/94	pool	12.74	47.10	0.00	0.00	0.00	54.95	0.00	0.00	0.00	0.00	0.00
I. Lick Creek 8/16/94	pool	10.46	38.26	19.13	0.00	0.00	38.26	0.00	0.00	0.00	0.00	0.00
I. Lick Creek 8/16/94	pool	19.13	26.14	0.00	0.00	0.00	20.92	0.00	0.00	0.00	0.00	0.00
	mean		37.17	6.38	0.00	0.00	38.04	0.00	0.00	0.00	0.00	0.00
I. Lick Creek 8/16/94	run	14.63	6.84	0.00	0.00	0.00	61.54	0.00	0.00	0.00	0.00	0.00
I. Lick Creek 8/16/94	run	13.76	50.87	7.27	0.00	0.00	21.80	0.00	0.00	0.00	0.00	0.00
I. Lick Creek 8/16/94	run	16.87	0.00	0.00	0.00	0.00	29.64	0.00	0.00	0.00	0.00	0.00
	mean		19.24	2.42	0.00	0.00	37.66	0.00	0.00	0.00	0.00	0.00
Imnaha River	pool	413.56	120.17	0.00	0.48	0.00	0.48	0.48	0.00	0.00	2.66	8.46
Imnaha River	pool	408.60	25.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	14.68
Imnaha River	pool	226.72	22.50	0.00	0.00	0.00	0.44	0.00	0.00	0.00	0.00	5.29
Imnaha River	pool	245.63	42.75	0.00	4.07	0.00	0.81	0.00	0.00	0.00	0.00	18.32
Imnaha River	pool	535.51	151.07	0.00	6.35	0.00	0.00	0.00	0.00	0.00	1.31	19.42
	mean		72.39	0.00	2.18	0.00	0.35	0.10	0.00	0.00	1.09	13.23

Table 3. Continued

Stream	Habitat Type	Area (m ²)	Natural	Hatchery	Natural	Chinook Adults	Natural	Hatchery	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
			Chinook Age 0+	Chinook Age 0+	Chinook Age 1+		Steelhead	Steelhead				
Imnaha River	run	382.99	43.60	0.00	0.26	0.00	0.78	0.00	0.00	0.00	0.00	0.78
Imnaha River	run	157.62	26.65	0.00	0.00	0.00	1.27	0.00	0.00	0.00	0.00	0.63
Imnaha River	run	256.96	40.47	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.00	3.11
Imnaha River	run	241.54	65.83	0.00	0.00	0.00	0.41	0.00	0.00	0.00	0.41	11.59
Imnaha River	run	395.17	22.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.31
Imnaha River	run	355.78	20.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84
Imnaha River	run	241.17	31.51	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.00	4.15
Imnaha River	run	473.80	52.98	0.00	0.63	0.00	0.21	0.00	0.00	0.00	0.00	8.65
	mean		37.98	0.00	0.11	0.00	0.49	0.00	0.00	0.00	0.05	4.38
I. Lostine River	pool	1165.60	12.01	0.00	1.29	0.00	1.54	0.00	0.00	0.00	0.17	4.80
I. Lostine River	pool	417.67	92.66	0.00	8.14	0.00	12.45	0.00	0.00	0.24	0.24	1.20
I. Lostine River	pool	407.48	52.76	0.00	1.23	0.00	5.89	0.00	0.00	0.00	0.00	1.96
I. Lostine River	pool	671.59	15.04	0.00	9.68	0.00	2.83	0.00	0.00	0.15	0.45	2.53
	mean		43.12	0.00	5.09	0.00	5.68	0.00	0.00	0.10	0.22	2.62
I. Lostine River	run	475.46	12.20	0.00	0.84	0.00	15.14	0.00	0.00	0.00	0.00	2.73
u. Lostine River	pool	279.99	0.00	0.00	0.00	0.00	1.07	0.00	0.00	0.36	1.79	0.00
	mean											
u. Lostine River	run	365.84	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00
u. Lostine River	run	250.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	1.60	0.00
u. Lostine River	run	168.49	0.00	0.00	0.00	0.00	1.78	0.00	0.00	4.75	4.75	0.00
u. Lostine River	run	130.00	0.00	0.00	0.00	0.00	1.54	0.00	0.00	0.77	10.00	0.00
	mean		0.00	0.00	0.00	0.00	0.90	0.00	0.00	1.58	4.09	0.00
Buckhorn Creek	pool	93.09	0.00	0.00	0.00	0.00	1.07	0.00	6.44	0.00	2.15	0.00
Buckhorn Creek	run	91.98	0.00	0.00	0.00	0.00	1.09	0.00	7.61	0.00	2.17	0.00
Buckhorn Creek	run	113.00	0.00	0.00	0.00	0.00	0.88	0.00	7.08	0.00	0.00	0.00
Buckhorn Creek	run	90.28	0.00	0.00	0.00	0.00	1.11	0.00	5.54	0.00	0.00	0.00
	mean		0.00	0.00	0.00	0.00	1.03	0.00	6.74	0.00	0.72	0.00
W.F. Buckhorn Creek	pool	34.24	0.00	0.00	0.00	0.00	2.92	0.00	2.92	0.00	0.00	2.92
W.F. Buckhorn Creek	pool	46.48	0.00	0.00	0.00	0.00	0.00	0.00	2.15	0.00	0.00	0.00
	mean		0.00	0.00	0.00	0.00	1.46	0.00	2.54	0.00	0.00	1.46

Table 4. Fish densities (number/100m²) by transect in streams snorkeled in 1995. p.w. = pocket water

STREAM	Habitat		Chinook	Chinook	Chinook	Natural	Hatchery	Cutthroat	Brook	Bull	Mountain
	Type	AREA (m ²)	Age 0+	Age 1+	Adults	Steelhead	Steelhead	Trout	Trout	Trout	Whitefish
Yoosa Creek	pool	475.02	0.00	1.05	0.00	5.47	0.00	0.00	0.21	0.00	0.00
Yoosa Creek	pool	162.89	0.00	0.00	0.00	1.84	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	pool	24.15	0.00	0.00	0.00	24.84	0.00	0.00	4.14	0.00	0.00
	mean		0.00	0.35	0.00	10.72	0.00	0.00	1.45	0.00	0.00
Yoosa Creek	riffle	144.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	riffle	295.32	0.00	0.00	0.00	0.34	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	riffle	87.60	0.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	riffle	30.50	0.00	0.00	0.00	3.28	0.00	0.00	3.28	0.00	0.00
Yoosa Creek	riffle	222.78	0.00	0.00	0.00	4.94	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.00	0.00	1.94	0.00	0.00	0.66	0.00	0.00
Yoosa Creek	run	91.20	0.00	0.00	0.00	5.48	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	497.14	0.00	0.00	0.00	2.01	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	135.00	0.00	2.22	0.00	2.22	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	391.23	0.00	0.00	0.00	1.28	0.00	0.51	0.00	0.00	0.00
Yoosa Creek	run	218.55	0.00	0.00	0.00	2.29	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	145.52	0.00	0.00	0.00	2.06	0.00	0.00	0.00	0.00	0.00
Yoosa Creek	run	78.44	0.00	0.00	0.00	7.65	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.32	0.00	3.28	0.00	0.07	0.00	0.00	0.00
Eldorado Creek	pool	94.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	255.92	0.00	0.00	0.00	0.00	0.00	3.52	0.00	0.00	0.00
Eldorado Creek	pool	363.54	0.00	0.00	0.00	0.55	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	52.08	0.00	0.00	0.00	5.76	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	53.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	93.28	0.00	0.00	0.00	1.07	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	138.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	71.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	591.48	0.00	0.00	0.00	0.00	0.00	0.85	0.00	0.00	0.00
Eldorado Creek	pool	246.82	0.00	0.00	0.00	0.41	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	pool	133.65	0.00	0.00	0.00	2.99	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.00	0.00	0.98	0.00	0.40	0.00	0.00	0.00

Table 4. (continued).

STREAM	Habitat Type	AREA (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Eldorado Creek	p.w.	542.96	0.00	0.00	0.00	1.29	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	riffle	216.58	0.00	0.00	0.00	1.85	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	riffle	385.00	0.00	0.00	0.00	1.30	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	riffle	157.53	0.00	0.00	0.00	1.90	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	riffle	232.05	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.00	0.00	1.37	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	256.28	1.56	0.00	0.00	3.12	0.00	0.00	0.00	0.00	4.68
Eldorado Creek	run	227.70	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.00
Eldorado Creek	run	58.91	0.00	0.00	0.00	0.00	0.00	6.79	0.00	0.00	0.00
Eldorado Creek	run	152.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	261.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	126.54	0.00	0.00	0.00	1.58	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	113.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	648.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	46.11	0.00	0.00	0.00	2.17	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	232.20	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	122.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	98.00	0.00	0.00	0.00	4.08	0.00	0.00	0.00	0.00	0.00
Eldorado Creek	run	152.44	0.00	0.00	0.00	0.66	0.00	0.00	0.00	0.00	0.00
	mean		0.12	0.00	0.00	0.95	0.00	0.56	0.00	0.00	0.36
Bear Creek	pool	93.28	0.00	0.00	0.00	30.02	0.00	0.00	0.00	0.00	0.00
Bear Creek	pool	73.20	0.00	0.00	0.00	34.15	0.00	5.46	0.00	0.00	0.00
Bear Creek	pool	28.40	0.00	0.00	0.00	109.15	0.00	21.13	0.00	0.00	0.00
Bear Creek	pool	90.09	0.00	0.00	0.00	25.53	0.00	2.22	0.00	2.22	0.00
Bear Creek	pool	77.77	0.00	0.00	0.00	9.00	0.00	1.29	0.00	0.00	0.00
Bear Creek	pool	68.25	0.00	1.47	0.00	8.79	0.00	5.86	0.00	2.93	0.00
Bear Creek	pool	76.26	0.00	0.00	0.00	20.98	0.00	5.25	0.00	0.00	0.00
Bear Creek	pool	105.00	0.00	0.00	0.00	10.48	0.00	3.81	0.00	0.00	0.00
	mean		0.00	0.18	0.00	31.01	0.00	5.63	0.00	0.64	0.00

Table 4. (continued).

STREAM	Habitat Type	AREA (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Bear Creek	p.w.	115.00	0.00	0.00	0.00	1.74	0.00	1.74	0.00	0.00	0.00
Bear Creek	riffle	129.87	0.00	0.00	0.00	16.94	0.00	0.00	0.00	0.77	0.00
Bear Creek	riffle	28.56	0.00	0.00	0.00	10.50	0.00	0.00	0.00	0.00	0.00
Bear Creek	riffle	59.25	0.00	0.00	0.00	10.13	0.00	0.00	0.00	0.00	0.00
Bear Creek	riffle	211.20	0.00	0.00	0.00	10.89	0.00	0.47	0.00	0.00	0.00
Bear Creek	riffle	157.50	0.00	0.00	0.00	9.52	0.00	1.27	0.00	0.00	0.00
Bear Creek	riffle	86.25	0.00	0.00	0.00	44.06	0.00	0.00	0.00	0.00	0.00
Bear Creek	riffle	94.00	0.00	0.00	0.00	1.06	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.00	0.00	14.73	0.00	0.25	0.00	0.11	0.00
Bear Creek	run	70.56	0.00	0.00	0.00	49.60	0.00	8.50	0.00	0.00	0.00
Bear Creek	run	202.74	0.00	0.00	0.00	25.16	0.00	0.00	0.00	0.00	0.00
Bear Creek	run	181.56	0.00	2.20	0.00	30.84	0.00	2.20	0.00	0.00	0.00
Bear Creek	run	197.64	0.00	0.00	0.00	10.63	0.00	1.01	0.00	0.00	0.00
Bear Creek	run	109.20	0.00	0.00	0.00	12.82	0.00	1.83	0.00	0.00	0.00
Bear Creek	run	18.29	0.00	0.00	0.00	21.87	0.00	0.00	0.00	0.00	0.00
Bear Creek	run	118.56	0.00	0.00	0.00	21.93	0.00	0.00	0.00	0.00	0.00
Bear Creek	run	206.70	0.00	0.48	0.00	30.96	0.00	1.94	0.00	0.48	0.00
Bear Creek	run	57.20	0.00	0.00	0.00	26.22	0.00	0.00	0.00	0.00	0.00
Bear Creek	run	68.00	0.00	0.00	0.00	2.94	0.00	8.82	0.00	0.00	0.00
	mean		0.00	0.27	0.00	23.30	0.00	2.43	0.00	0.05	0.00
Fishing Creek	pool	56.26	0.00	0.00	0.00	19.55	0.00	3.55	0.00	1.78	0.00
Fishing Creek	pool	51.59	0.00	0.00	0.00	5.82	0.00	1.94	0.00	0.00	0.00
Fishing Creek	pool	73.92	0.00	0.00	0.00	8.12	0.00	4.06	0.00	2.71	0.00
Fishing Creek	pool	45.36	0.00	0.00	0.00	15.43	0.00	2.20	0.00	6.61	0.00
Fishing Creek	pool	82.08	0.00	0.00	0.00	25.58	0.00	2.44	0.00	2.44	0.00
Fishing Creek	pool	97.50	0.00	0.00	0.00	21.54	0.00	24.62	0.00	0.00	0.00
Fishing Creek	pool	27.88	0.00	0.00	0.00	10.76	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.00	0.00	15.26	0.00	5.54	0.00	1.93	0.00

Table 4. (continued).

STREAM	Habitat Type	AREA (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Fishing Creek	p.w.	90.00	0.00	0.00	0.00	10.00	0.00	1.11	0.00	0.00	0.00
Fishing Creek	p.w.	121.72	0.00	0.00	0.00	16.43	0.00	1.64	0.00	0.82	0.00
Fishing Creek	p.w.	55.30	0.00	0.00	0.00	9.04	0.00	0.00	0.00	0.00	0.00
Fishing Creek	p.w.	61.74	0.00	0.00	0.00	6.48	0.00	0.00	0.00	0.00	0.00
Fishing Creek	p.w.	110.67	0.00	0.00	0.00	0.90	0.00	0.90	0.00	0.00	0.00
Fishing Creek	p.w.	226.95	0.00	0.00	0.00	10.58	0.00	0.44	0.00	0.00	0.00
	mean		0.00	0.00	0.00	8.91	0.00	0.68	0.00	0.14	0.00
Fishing Creek	riffle	138.46	0.00	0.00	0.00	7.22	0.00	0.72	0.00	0.72	0.00
Fishing Creek	riffle	84.49	0.00	0.00	0.00	10.65	0.00	1.18	0.00	0.00	0.00
Fishing Creek	riffle	296.10	0.00	0.00	0.00	2.70	0.00	0.00	0.00	0.00	0.00
	mean		0.00	0.00	0.00	6.86	0.00	0.64	0.00	0.24	0.00
Fishing Creek	run	107.20	0.00	0.00	0.00	1.87	0.00	0.93	0.00	0.93	0.00
Fishing Creek	run	266.63	0.00	0.00	0.00	27.00	0.00	1.88	0.00	0.00	0.00
Fishing Creek	run	109.61	0.00	0.00	0.00	3.65	0.00	3.65	0.00	0.00	0.00
Fishing Creek	run	126.00	0.00	0.00	0.00	15.87	0.00	0.79	0.00	0.79	0.00
Fishing Creek	run	303.36	0.00	0.00	0.00	6.59	0.00	0.66	0.00	0.00	0.00
Fishing Creek	run	166.44	0.00	0.00	0.00	12.62	0.00	0.60	0.00	0.60	0.00
Fishing Creek	run	82.94	0.00	0.00	0.00	30.14	0.00	1.21	0.00	0.00	0.00
Fishing Creek	run	77.39	0.00	0.00	0.00	14.21	0.00	2.58	0.00	0.00	0.00
Fishing Creek	run	91.20	0.00	0.00	0.00	17.54	0.00	2.19	0.00	1.10	0.00
Fishing Creek	run	291.94	0.00	0.00	0.00	8.22	0.00	1.03	0.00	0.00	0.00
Fishing Creek	run	240.50	0.00	0.00	0.00	4.16	0.00	0.00	0.00	0.00	0.00
Fishing Creek	run	133.51	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.75	0.00
	mean		0.00	0.00	0.00	12.07	0.00	1.29	0.00	0.35	0.00
Big Sheep Creek	pool	75.13	0.00	0.00	0.00	11.98	0.00	0.00	0.00	0.00	0.00
Big Sheep Creek	pool	95.48	0.00	4.19	0.00	19.90	0.00	0.00	0.00	0.00	0.00
Big Sheep Creek	pool	93.00	0.00	1.08	0.00	24.73	0.00	0.00	0.00	0.00	4.30
	mean		0.00	1.76	0.00	18.87	0.00	0.00	0.00	0.00	1.43

Table 4. (continued).

STREAM	Habitat Type	AREA (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Big Sheep Creek	run	119.26	0.00	1.68	0.00	19.29	0.00	0.00	0.00	0.00	4.19
Big Sheep Creek	run	84.18	0.00	0.00	0.00	21.38	0.00	0.00	0.00	0.00	0.00
Big Sheep Creek	run	114.70	0.00	0.00	0.00	25.28	0.00	0.00	0.00	0.00	2.62
	mean		0.00	0.56	0.00	21.98	0.00	0.00	0.00	0.00	2.27
Imnaha River	pool	336.45	81.14	4.46	0.00	3.57	0.00	0.00	0.00	0.59	8.92
Imnaha River	pool	411.09	32.11	0.00	0.00	1.70	0.00	0.00	0.00	0.00	9.24
Imnaha River	pool	350.31	22.27	0.00	0.00	0.57	0.00	0.00	0.00	0.00	4.28
Imnaha River	pool	243.14	8.23	0.41	0.00	0.41	0.00	0.00	0.00	0.00	4.11
Imnaha River	pool	292.30	37.29	0.68	0.00	2.74	0.00	0.00	0.00	0.68	7.53
	mean		36.21	1.11	0.00	1.80	0.00	0.00	0.00	0.25	6.82
Imnaha River	run	501.67	8.97	0.20	0.00	2.39	0.00	0.00	0.00	0.20	5.58
Imnaha River	run	258.56	13.15	2.32	0.00	1.93	0.00	0.00	0.00	0.00	0.39
Imnaha River	run	1002.32	12.37	1.90	0.10	2.89	0.00	0.00	0.00	0.00	3.99
Imnaha River	run	580.94	31.16	1.38	0.00	1.72	0.00	0.00	0.00	0.17	4.30
Imnaha River	run	583.59	11.48	0.34	0.00	0.69	0.00	0.00	0.00	0.17	1.20
Imnaha River	run	215.35	10.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.39
Imnaha River	run	284.49	28.47	2.46	0.00	1.76	0.00	0.00	0.00	0.00	3.16
	mean		16.55	1.23	0.01	1.63	0.00	0.00	0.00	0.08	2.86
L. Lostine River	pool	1138.32	24.86	1.84	0.00	6.85	0.00	0.00	0.00	0.70	1.76
L. Lostine River	pool	493.03	27.99	3.25	0.00	19.67	0.00	0.00	0.00	0.00	0.81
L. Lostine River	pool	408.45	19.59	0.24	0.00	4.90	0.00	0.00	0.00	0.00	1.22
L. Lostine River	pool	887.97	11.71	0.23	0.00	8.67	0.00	0.00	0.11	0.00	2.25
	mean		21.04	1.39	0.00	10.02	0.00	0.00	0.03	0.18	1.51

Table 4. (continued).

STREAM	Habitat Type	AREA (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
L. Lostine River	run	679.22	3.24	0.59	0.00	28.56	0.00	0.00	0.29	0.00	0.15
U. Lostine River	pool	424.32	0.24	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00
U. Lostine River	pool	397.73	0.00	0.00	0.00	0.25	0.00	0.00	0.50	0.75	0.00
	mean		0.12	0.00	0.00	0.13	0.00	0.00	0.37	0.38	0.00
U. Lostine River	run	297.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
U. Lostine River	run	408.12	0.00	0.00	0.00	0.25	0.00	0.00	3.43	0.49	0.00
U. Lostine River	run	364.00	0.00	0.00	0.00	0.55	0.00	0.00	0.82	1.65	0.00
	mean		0.00	0.00	0.00	0.27	0.00	0.00	1.42	0.71	0.00

Table 5. Fish densities (number/100m²) by transect in streams snorkeled in 1996.

Stream	Habitat Type	Area (m ²)	Chinook Age 0+	Chinook Age 1+	Chinook Adults	Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
Imnaha River	pool	438.61	21.66	3.88	0.00	3.42	0.00	0.00	0.00	0.91	13.00
Imnaha River	pool	431.60	43.56	7.65	0.23	1.16	0.00	0.00	0.00	0.93	6.95
Imnaha River	pool	344.40	25.55	4.36	0.00	2.03	0.00	0.00	0.00	0.00	6.68
Imnaha River	pool	237.57	14.73	2.53	0.00	1.68	0.00	0.00	0.00	0.00	13.05
Imnaha River	pool	505.00	46.34	8.32	0.00	4.36	0.00	0.00	0.00	0.40	3.76
Imnaha River	mean		30.37	5.34	0.05	2.53	0.00	0.00	0.00	0.45	8.69
Imnaha River	run	694.83	3.17	0.58	0.00	0.72	0.00	0.00	0.00	0.00	6.76
Imnaha River	run	305.35	4.58	0.65	0.00	4.91	0.00	0.00	0.00	0.00	0.98
Imnaha River	run	600.16	3.33	0.50	0.00	3.50	0.00	0.00	0.00	0.00	3.00
Imnaha River	run	396.00	9.34	1.52	0.25	1.26	0.00	0.00	0.00	0.00	12.12
Imnaha River	run	792.63	10.09	1.77	0.00	1.51	0.00	0.00	0.00	0.38	1.51
Imnaha River	run	235.42	8.50	1.27	0.00	0.85	0.00	0.00	0.00	0.00	0.42
Imnaha River	run	269.61	29.67	5.19	0.00	4.08	0.00	0.00	0.00	0.37	5.19
Imnaha River	mean		9.81	1.64	0.04	2.41	0.00	0.00	0.00	0.11	4.28
Lick Creek	pool	47.44	0.00	0.00	0.00	52.70	0.00	0.00	0.00	0.00	0.00
Lick Creek	pool	61.32	0.00	0.00	0.00	22.83	0.00	0.00	0.00	1.63	0.00
Lick Creek	pool	58.09	0.00	0.00	0.00	6.89	0.00	0.00	0.00	1.72	0.00
Lick Creek	pool	66.01	0.00	0.00	0.00	16.66	0.00	0.00	0.00	0.00	0.00
Lick Creek	pool	35.00	0.00	0.00	0.00	22.86	0.00	0.00	0.00	0.00	0.00
Lick Creek	pool	27.01	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00	0.00
Lick Creek	pool	33.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.90	0.00
Lick Creek	mean		0.00	0.00	0.00	19.01	0.00	0.00	0.00	2.18	0.00
Lick Creek	run	69.04	0.00	0.00	0.00	7.24	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	53.10	0.00	0.00	0.00	11.30	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	59.97	0.00	0.00	0.00	20.01	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	36.92	0.00	0.00	0.00	16.25	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	145.07	0.00	0.00	0.00	5.51	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	54.49	0.00	0.00	0.00	3.67	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	70.40	0.00	0.00	0.00	4.26	0.00	0.00	0.00	0.00	0.00
Lick Creek	mean		0.00	0.00	0.00	9.75	0.00	0.00	0.00	0.00	0.00

Table 6. Number of habitats snorkeled, average age 0+ and age 1+ natural chinook salmon density, 95% confidence intervals and coefficient of variation for chinook salmon in the Imnaha River and Lostine River from 1992 to 1996.

Year	<u>Age 0+ Chinook Salmon</u>				<u>Age 1+ Chinook Salmon</u>			
	Habitats Snorkeled (n)	Average Density (fish/100m ²)	95% Confidence Interval (Range)	Coefficient of Variation (CV)	Habitats Snorkeled (n)	Average Density (fish/100m ²)	95% Confidence Interval (Range)	Coefficient of Variation (CV)
<u>Imnaha River Pool Habitat</u>								
1992	5	40.6	17.8-63.3	45	5	0.7	0.2-1.1	57.3
1993	5	61.7	2.8-120.6	76.9	5	1.5	-0.6-3.5	112
1994	5	72.4	-1.2-146.0	81.9	5	2.2	-1.4-5.7	132.2
1995	5	36.2	2.1-70.3	75.8	5	1.1	-1.2-3.5	170.7
1996	5	30.4	13.0-47.6	45.8	5	5.3	2.2-8.4	46.7
<u>Imnaha River Run Habitat</u>								
1992	8	16.3	8.3-24.2	58.4	8	0.2	-0.1-0.5	180.4
1993	8	17.8	12.5-23.2	36	8	1.1	0.3-1.9	89.5
1994	8	38	24.7-51.2	41.8	8	0.1	-0.1-0.3	198.4
1995	7	16.5	8.0-25.0	55.6	7	1.2	0.2-2.2	85.8
1996	7	9.8	1.3-18.3	94	7	1.6	0.1-3.1	100.3
<u>Lostine River Pool Habitat</u>								
1992	5	19.4	7.4-31.5	49.9	5	0.7	-0.2-1.6	108.8
1993	4	34.8	20.1-49.4	26.4	4	3.8	-2.6-10.2	106.3
1994	4	43.1	-17.2-103.4	87.9	4	5.1	-2.0-12.2	88
1995	4	21	9.7-32.4	33.9	4	1.4	-0.9-3.6	105.1

Table 7. Number of habitats snorkeled, average mountain whitefish density, 95% confidence intervals Salmonid Densities in Selected Streams in the Clearwater River, Imnaha River, Grande Ronde River and Salmon River Subbasins: 1992 to 2000.

<u>Mountain Whitefish</u>				
Year	Habitats Snorkeled (n)	Average Density (fish/100m ²)	95% Confidence Interval (Range)	Coefficient of Variation (CV)
<u>Imnaha River Pool Habitat</u>				
1992	5	11.1	3.9-18.3	51.9
1993	5	11	-3.6-25.5	106.8
1994	5	13.2	5.6-20.9	46.4
1995	5	6.8	3.7-9.8	36.2
1996	5	8.7	3.5-13.8	47.6
<u>Imnaha River Run Habitat</u>				
1992	8	8	3.3-12.7	69.9
1993	8	4.3	1.9-6.7	67.4
1994	8	4.4	1.0-7.7	91.8
1995	7	2.9	1.1-4.6	66.6
1996	7	4.3	0.4-8.1	96.9

Table 8. Fish densities (number/100m²) by transect in streams snorkeled in 1997.

STREAM	Habitat Type	AREA (m ²)	Chinook Age 0+	Chinook Age 1+	Hatchery		Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish	
					Chinook Adults	Natural Steelhead					
Lick Creek	pool	50.20	0.00	0.00	1.99	17.93	0.00	0.00	0.00	0.00	0.00
Lick Creek	pool	45.90	0.00	0.00	0.00	21.79	0.00	0.00	0.00	0.00	0.00
Lick Creek	pool	68.60	0.00	0.00	0.00	43.73	0.00	0.00	0.00	0.00	0.00
Lick Creek	pool	70.10	0.00	0.00	0.00	32.81	0.00	0.00	0.00	0.00	0.00
Lick Creek	pool	75.80	0.00	0.00	0.00	9.23	0.00	0.00	0.00	1.32	0.00
Lick Creek	pool	41.90	0.00	0.00	0.00	2.39	0.00	0.00	0.00	2.39	0.00
Lick Creek	mean		0.00	0.00	0.33	21.31	0.00	0.00	0.00	0.62	0.00
Lick Creek	run	65.20	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	45.50	0.00	0.00	0.00	21.98	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	86.60	0.00	0.00	0.00	11.55	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	59.00	0.00	0.00	1.70	35.59	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	33.60	0.00	0.00	0.00	8.93	0.00	0.00	0.00	0.00	0.00
Lick Creek	mean		0.00	0.00	0.34	15.92	0.00	0.00	0.00	0.00	0.00

Table 9. Fish densities (number/100m²) by transect in streams snorkeled in 1998.

STREAM	Habitat Type	AREA (m ²)	Chinook Age 0+	Chinook Age 1+	Hatchery		Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
					Chinook Adults							
Lick Creek	pool	55.04	159.88	0.00	0.00	23.62	0.00	0.00	0.00	0.00	0.00	0.00
Lick Creek	pool	43.60	201.83	0.00	4.59	43.58	0.00	0.00	0.00	0.00	13.76	0.00
Lick Creek	pool	67.05	178.97	0.00	0.00	20.88	0.00	0.00	0.00	0.00	0.00	0.00
Lick Creek	pool	49.64	171.23	0.00	0.00	18.13	0.00	0.00	0.00	0.00	4.03	0.00
Lick Creek	pool	95.46	131.99	0.00	0.00	2.10	0.00	0.00	0.00	0.00	2.10	0.00
Lick Creek	pool	36.30	57.85	0.00	0.00	35.81	0.00	0.00	0.00	0.00	5.51	0.00
Lick Creek	mean		150.29	0.00	0.77	24.02	0.00	0.00	0.00	0.00	4.23	0.00
Lick Creek	run	70.33	129.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	32.10	77.88	0.00	0.00	12.46	0.00	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	47.99	89.60	0.00	0.00	18.75	0.00	0.00	0.00	0.00	2.08	0.00
Lick Creek	run	28.83	6.94	0.00	0.00	24.28	0.00	0.00	0.00	0.00	0.00	0.00
Lick Creek	mean		75.95	0.00	0.00	13.87	0.00	0.00	0.00	0.00	0.52	0.00
69 Dollar Creek 7/16	pool	28.08	0.00	0.00	0.00	0.00	0.00	3.56	0.00	0.00	0.00	0.00
Dollar Creek 7/16	pool	39.65	0.00	0.00	0.00	2.52	0.00	0.00	0.00	0.00	0.00	0.00
Dollar Creek 7/16	pool	65.14	85.97	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00
Dollar Creek 7/16	mean		28.66	0.00	0.00	1.35	0.00	1.19	0.00	0.00	0.00	0.00
Dollar Creek 7/16	run	107.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dollar Creek 7/16	run	98.79	0.00	0.00	0.00	1.01	0.00	0.00	1.01	0.00	0.00	0.00
Dollar Creek 7/16	run	164.45	14.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dollar Creek 7/16	mean		4.86	0.00	0.00	0.34	0.00	0.00	0.34	0.00	0.00	0.00
Dollar Creek 8/13	pool	19.53	256.02	0.00	0.00	30.72	0.00	0.00	0.00	0.00	0.00	0.00
Dollar Creek 8/13	pool	36.16	27.65	0.00	0.00	0.00	0.00	2.76	0.00	0.00	0.00	0.00
Dollar Creek 8/13	pool	64.98	56.94	0.00	0.00	1.54	0.00	0.00	0.00	0.00	0.00	0.00
Dollar Creek 8/13	mean		113.54	0.00	0.00	10.75	0.00	0.92	0.00	0.00	0.00	0.00
Dollar Creek 8/13	run	79.58	31.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dollar Creek 8/13	run	74.01	5.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dollar Creek 8/13	run	176.07	30.10	0.00	0.00	1.70	0.00	0.57	0.00	0.00	0.00	0.00
Dollar Creek 8/13	mean		22.30	0.00	0.00	0.57	0.00	0.19	0.00	0.00	0.00	0.00

Table 9. (continued)

STREAM	Habitat Type	AREA (m ²)	Chinook Age 0+	Chinook Age 1+	Hatchery		Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish	
					Chinook Adults	Natural Steelhead					
N.F. Dollar Creek 7/16	pool	55.02	0.00	0.00	0.00	5.45	0.00	0.00	0.00	0.00	0.00
N.F. Dollar Creek 7/16	run	31.16	0.00	0.00	0.00	9.63	0.00	0.00	0.00	0.00	0.00
N.F. Dollar Creek 8/13	pool	47.40	86.50	0.00	0.00	21.10	0.00	0.00	0.00	0.00	0.00
N.F. Dollar Creek 8/13	run	19.60	30.61	0.00	0.00	5.10	0.00	0.00	5.10	0.00	0.00
Buckhorn Creek 7/15	pool	186.14	0.00	0.00	0.00	14.51	0.00	0.00	0.00	0.00	0.00
Buckhorn Creek 7/15	pool	33.84	0.00	0.00	0.00	70.92	0.00	0.00	0.00	0.00	0.00
Buckhorn Creek 7/15	pool	83.16	0.00	0.00	0.00	15.63	0.00	0.00	0.00	0.00	1.20
Buckhorn Creek 7/15	pool	155.76	0.64	0.00	0.00	12.84	0.00	0.00	0.00	0.00	0.64
Buckhorn Creek 7/15	mean		0.16	0.00	0.00	28.48	0.00	0.00	0.00	0.00	0.46
70 Buckhorn Creek 7/15	run	122.83	0.00	0.00	0.00	1.63	0.00	0.00	0.00	4.07	0.00
Buckhorn Creek 7/15	run	209.61	0.00	0.00	0.00	3.82	0.00	0.95	0.00	0.48	0.00
Buckhorn Creek 7/15	run	238.44	0.00	0.00	0.00	14.26	0.00	0.00	0.00	0.00	0.42
Buckhorn Creek 7/15	run	153.34	0.00	0.00	0.00	2.61	0.00	0.00	0.00	0.00	1.96
Buckhorn Creek 7/15	run	165.92	0.60	0.00	0.00	7.23	0.00	0.60	0.00	0.00	6.63
Buckhorn Creek 7/15	mean		0.12	0.00	0.00	5.91	0.00	0.31	0.00	0.91	1.80
Buckhorn Creek 8/12	pool	160.3	0	0	0	24.33	0.00	1.25	0.00	0.00	0.00
Buckhorn Creek 8/12	pool	28.04	217.55	0.00	0.00	49.93	0.00	3.57	0.00	0.00	0.00
Buckhorn Creek 8/12	pool	59.22	133.40	0.00	0.00	30.40	0.00	0.00	0.00	0.00	1.69
Buckhorn Creek 8/12	pool	110.16	10.89	0.00	0.00	4.54	0.00	2.72	0.00	0.00	8.17
Buckhorn Creek 8/12	mean		90.46	0.00	0.00	27.30	0.00	1.89	0.00	0.00	2.47
Buckhorn Creek 8/12	run	93.44	5.35	0.00	0.00	1.07	0.00	0.00	0.00	1.07	0.00
Buckhorn Creek 8/12	run	180.77	0.55	0.00	0.00	4.98	0.00	0.00	0.00	0.55	0.00
Buckhorn Creek 8/12	run	210.24	0.00	0.00	0.00	19.02	0.00	0.95	0.00	0.00	0.00
Buckhorn Creek 8/12	run	105.61	46.40	0.00	0.00	0.95	0.00	0.00	0.00	0.00	0.00
Buckhorn Creek 8/12	run	149.23	13.40	0.00	0.00	2.01	0.00	0.67	0.00	0.00	18.09
Buckhorn Creek 8/12	mean		13.14	0.00	0.00	5.61	0.00	0.32	0.00	0.32	3.62

Table 9. (continued)

STREAM	Habitat Type	AREA (m ²)	Chinook Age 0+	Chinook Age 1+	Hatchery		Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
					Chinook Adults							
S.F. Salmon River 9/24	run	1885.40	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.05	3.98
S.F. Salmon River 9/24	rifle,pw,run	1387.80	0.14	0.00	0.00		0.00	0.00	0.00	0.00	0.00	2.38
S.F. Salmon River 9/24	run	953.60	0.73	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
S.F. Salmon River 9/24	pool	906.30	0.66	0.00	0.00		0.00	0.00	0.00	0.00	0.00	2.43
S.F. Salmon River 9/24	pw,run	1241.30	0.56	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
S.F. Salmon River 9/24	run,pool,run	787.20	9.40	0.00	0.00		0.00	0.00	0.00	0.00	0.00	2.41
S.F. Salmon River 10/22	run	2226.70	0.04	0.00	0.00		0.00	0.00	0.00	0.00	0.00	4.27
S.F. Salmon River 10/22	rifle,pw,run	1268.80	0.08	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0
S.F. Salmon River 10/22	run	934.40	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0
S.F. Salmon River 10/22	pool	829.40	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0
S.F. Salmon River 10/22	pw,run	1390.20	0.65	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0
S.F. Salmon River 10/22	run,pool,run	424.70	16.01	0.00	0.00		0.00	0.00	0.00	0.00	0.00	17.66

Table 10. Fish densities (number/100m²) by transect in streams snorkeled in 1999.

STREAM	Habitat Type	AREA (m ²)	Chinook Age 0+	Chinook Age 1+	Hatchery		Natural Steelhead	Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
					Chinook Adults	Natural Steelhead						
Lick Creek	pool	46.20	49.78	8.66	0.00	6.49	0.00	0.00	0.00	0.00	2.16	0.00
Lick Creek	pool	39.20	73.98	7.65	0.00	30.61	0.00	0.00	0.00	0.00	0.00	0.00
Lick Creek	pool	84.27	66.45	0.00	0.00	7.12	0.00	0.00	0.00	0.00	0.00	0.00
Lick Creek	pool	46.80	51.28	2.14	0.00	0.00	0.00	0.00	0.00	0.00	4.27	0.00
Lick Creek	pool	68.55	42.30	14.18	0.00	5.84	0.00	0.00	0.00	0.00	1.46	0.00
Lick Creek	pool	39.90	0.00	0.00	0.00	20.05	0.00	0.00	0.00	0.00	2.51	0.00
Lick Creek	mean		47.30	5.44	0.00	11.69	0.00	0.00	0.00	0.00	1.73	0.00
Lick Creek	run	55.16	38.07	3.62	0.00	1.81	0.00	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	73.99	54.06	1.35	0.00	5.41	0.00	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	58.40	37.67	3.42	0.00	18.84	0.00	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	20.80	0.00	0.00	0.00	28.85	0.00	0.00	0.00	0.00	0.00	0.00
Lick Creek	mean		32.45	2.10	0.00	13.73	0.00	0.00	0.00	0.00	0.00	0.00

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Table 11. Fish densities (number/100m²) by transect in streams snorkeled in 2000.

STREAM	Habitat Type	AREA (m ²)	Chinook Age 0+	Chinook Age 1+	Natural		Hatchery Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
					Chinook Adults	Natural Steelhead					
Lick Creek	pool	44.55	0.00	6.73	0.00	38.16	4.49	0.00	0.00	0.00	0.00
Lick Creek	pool	66.73	0.00	0.00	0.00	32.97	1.50	0.00	0.00	0.00	0.00
Lick Creek	pool	77.52	0.00	1.29	1.29	12.90	0.00	0.00	0.00	0.00	0.00
Lick Creek	pool	69.07	0.00	1.45	0.00	8.69	0.00	0.00	0.00	8.69	0.00
Lick Creek	pool	72.80	0.00	0.00	0.00	12.36	0.00	0.00	0.00	0.00	0.00
Lick Creek	pool	45.72	0.00	0.00	0.00	2.19	0.00	0.00	0.00	2.19	0.00
Lick Creek	mean		0.00	1.58	0.22	17.88	1.00	0.00	0.00	1.81	0.00
Lick Creek	run	86.33	0.00	1.16	0.00	12.74	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	83.70	0.00	0.00	0.00	23.89	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	50.85	0.00	0.00	0.00	1.97	0.00	0.00	0.00	0.00	0.00
Lick Creek	run	23.37	0.00	0.00	0.00	8.56	0.00	0.00	0.00	4.28	0.00
Lick Creek	mean		0.00	0.29	0.00	11.79	0.00	0.00	0.00	1.07	0.00

Table 12. Number of habitats snorkeled, average steelhead density, 95% confidence intervals, and coefficient of variation for steelhead in Lick Creek and the Lostine River from 1992 to 2000.

<u>Juvenile Steelhead</u>				
Year	Habitats Snorkeled (n)	Average Density (fish/100m ²)	95% Confidence Interval (Range)	Coefficient of Variation (CV)
<u>Lick Creek Pool Habitat</u>				
1994	3	23.9	14.6-33.1	15.5
1996	7	19	3.3-34.8	89.6
1997	6	21.3	5.4-37.2	71.1
1998	6	24	8.8-39.2	60.3
1999	6	11.7	-0.3-23.6	97.4
2000	6	17.9	2.9-32.9	80
<u>Lick Creek Run Habitat</u>				
1994	3	30.2	18.1-42.4	16.2
1996	7	9.7	3.9-15.6	64.9
1997	5	15.9	-0.5-32.3	83.2
1998	4	13.9	-2.7-30.5	75.2
1999	4	13.7	-6.1-33.5	90.8
2000	4	11.8	-2.8-26.4	77.9
<u>Lostine River Pool Habitat</u>				
1992	5	4.4	1.7-7.2	50.4
1993	4	4.4	-0.9-9.8	75
1994	4	5.7	-2.1-13.4	86.1
1995	4	10	-0.5-20.6	66.2

Table 13. Fish densities (number/100m²) by transect in Logan Creek in 1991.

STREAM	Habitat Type	AREA (m ²)	Chinook Age 0+	Chinook Age 1+	Natural Steelhead	Cutthroat Trout	Brook Trout	Bull Trout	Mountain Whitefish
lower Logan Creek	pool	24.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00
lower Logan Creek	pool	32.7	0.00	0.00	3.06	6.06	0.00	0.00	0.00
lower Logan Creek	pool	55.5	0.00	0.00	19.82	7.21	0.00	1.80	0.00
lower Logan Creek	mean		0.00	0.00	7.63	4.42	0.00	0.60	0.00
lower Logan Creek	run	47.8	0.00	0.00	10.46	2.09	0.00	0.00	0.00
lower Logan Creek	run	41.9	0.00	0.00	4.77	0.00	0.00	0.00	0.00
lower Logan Creek	run	28.4	0.00	0.00	14.08	3.52	0.00	3.52	0.00
lower Logan Creek	mean		0.00	0.00	9.77	1.87	0.00	1.17	0.00
upper Logan Creek	pool	40.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
upper Logan Creek	pool	33.7	0.00	0.00	5.93	2.97	0.00	0.00	0.00
upper Logan Creek	pool	7.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
upper Logan Creek	pool	78.5	0.00	0.00	3.82	0.00	0.00	1.27	0.00
upper Logan Creek	mean		0.00	0.00	2.44	0.74	0.00	0.32	0.00
upper Logan Creek	run	32.4	0.00	0.00	3.09	0.00	0.00	0.00	0.00