



**SALMON SPAWNING GROUND SURVEYS
1993**

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INTRODUCTION

Each year chinook *Oncorhynchus tshawytscha* and sockeye *O. nerka* salmon return from the ocean to spawn in Idaho's streams. Effective management of anadromous salmon requires annual monitoring of the escapement into spawning areas. In Idaho it is especially difficult to enumerate all salmon returning to each of the spawning areas due to the vast geographic area used by these fish and limited access to the spawning habitat.

In response to the difficulty of quantifying total spawner escapement to each tributary, the Idaho Department of Fish and Game (IDFG) developed a program to index annual spawning escapements by enumerating salmon redds in selected areas. The areas surveyed represent a large portion of available chinook salmon spawning habitat, and the number of redds counted in these areas provides an index of the annual spawning escapement. Time-series trends in escapement and production can be assessed from the redd count data. Spawner carcass surveys are conducted while making redd counts to collect length data for age composition determinations and to determine the sex composition of the annual escapement. Marked fish are noted, and the snouts of all adipose-clipped salmon are collected during the carcass surveys. The adipose clip indicates the fish was coded wire-tagged prior to release.

Chinook salmon redd counts in Idaho were made as early as 1947 (Zimmer 1950, Schoning 1953). However, consistent trend counts, for existing populations with the longest history of counts, date back to 1957. Since 1957, the redd count program was expanded to include additional spawning areas to support expanded monitoring activities and management requirements.

Hassemer (1993a) summarized and reviewed the Idaho redd count data for the years 1957-1992. In this report, redd counts from 1993 are made available for trend analysis and management and research use. Additionally, length-frequency and sex composition information is reported for 1993.

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OBJECTIVES

To monitor chinook and sockeye salmon spawning escapements in trend areas and determine sex and age composition of selected runs.

METHODS

Chinook Salmon

Areas where chinook salmon redds are counted have been established on streams in the Clearwater River and Salmon River drainages of Idaho. The purpose of counting redds is to provide an index of annual spawning escapement and identify general trends in spawning escapements. Redd counts are reported for "trend areas," which are important production areas for various stocks and represent a large portion of available spawning habitat. A trend area may be divided into a number of separate transects, each of which is counted. Trend area and transect boundaries generally have remained constant from year to year. Count methods used and trend area boundary changes made from 1957-92 are described by Hassemer (1993a).

Single peak-count surveys are made over each trend area each year. The surveys are timed to coincide with the period of maximum spawning activity on a particular stream, and each transect is therefore assigned a target count-time window based on historic observations. Redd count observations are made using low-flying fixed-wing aircraft, helicopters, or ground surveys conducted on foot, depending on the best visual technique for a particular trend area. IDFG has developed and implemented standardized procedures for counting chinook salmon redds (Hassemer 1993b). The consistency and accuracy of redd counts is maintained over time by following these standard procedures, and bias caused by observer changes and hydrologic events can be minimized.

Chinook salmon redd count trend areas are classified as either wild (not influenced by plants of hatchery-reared fish), natural, or hatchery-influenced. This separation, based on the origin or rearing history of the fish, was first used for counts made in 1986 (Hall-Griswold and Cochnauer 1988). The Salmon River drainage contains five wild spring chinook and five wild summer chinook salmon trend areas. Releases of hatchery-reared spring chinook salmon have been made in the vicinity of three of the five wild summer chinook salmon trend areas (Lower Salmon River, Lower Valley Creek, Lower East Fork). It is believed that wild summer chinook and hatchery-influenced spring chinook salmon do not mix as spawning adults in these areas. In the Clearwater River drainage, the Selway drainage is classified as natural (the run was supplemented with non-endemic wild and hatchery fish), and the Lochsa and South Fork Clearwater drainages are classified as hatchery-influenced.

In 1985, additional redd count transects were established in the Salmon River drainage. These transects are not included with the historic trend areas and are categorized as nontraditional trend areas. Counts from these areas will be used for comparisons in future years. The number of nontraditional trend areas may change in the future as dictated by management and research requirements.

Spawner carcass surveys are conducted on selected streams to determine the sex ratio and length-frequency distribution of returning adults. Length-frequency information is used to estimate the age composition of the run. Also, returning adults intercepted at weirs on the South Fork Salmon River, East Fork Salmon River, at Sawtooth Hatchery in the Salmon River drainage, and Red River in the Clearwater drainage are sexed and measured.

Sockeye Salmon

Snake River sockeye salmon were listed as endangered under the Endangered Species Act in December 1991. In response to the critical status of the stock and Endangered Species Act concerns, a weir was installed in 1991 and all returning sockeye salmon were trapped (1991-1993) for development of a captive broodstock program. No redd counts have been made since 1989. Hassemer (1993a) reviews sockeye redd counts made before the species was listed.

RESULTS

Salmon River Drainage

Numbers of total spring and summer chinook salmon redds counted in all Salmon River drainage trend areas generally remained at depressed levels in 1993. The total number of spring and summer chinook salmon redds counted in 1993 was 2,060, about twice the 1989-1992 average of 1,004, but only 31% of the 1960-1968 average of 6,627 (Tables 1-4; Figure 1). Chinook redd counts in this drainage have improved since 1992, but are still critically low.

The number of spring chinook salmon redds counted in wild trend areas in 1993 was greater than in 1992, and the highest count since 1988 (Table 2; Figure 2). Spring chinook redd counts in natural and hatchery-influenced trend areas, however, remained at less than half of the 1987-1991 average (Table 1, Figure 2). This pattern was reversed for summer chinook. Counts of 1993 summer chinook redds in wild trend areas remained low, while counts in natural and hatchery-influenced areas were greater than in 1992 (Tables 3 and 4; Figure 3). The high redd counts in hatchery-influenced areas are a result of the release of a large number of fish over the South Fork Salmon River weir after the McCall Fish Hatchery requirements were met, in addition to releases across the entire run (Table 5).

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Table 1. Numbers of spring chinook salmon redds counted in Salmon River drainage hatchery-influenced trend areas, 1957-1993. NC = no count.

YEAR	ALTURAS LAKE CREEK ^a	LEMHI RIVER	UPPER EAST FORK ^b	UPPER SALMON RIVER	UPPER VALLEY CREEK	UPPER YANKEE FORK	TOTALS	FIVE YEAR AVERAGE
1993	6	23	21	65	7	0	122	
1992	2	15	10	51	1	1	80	
1991	3	55	21	83	2	0	164	
1990	0	80	NC	97	3	3	183	
1989	7	32	NC	102	23	7	171	243
1988	1	179	NC	146	12	1	339	
1987	9	155	NC	162	31	0	357	
1986	14	157	NC	134	13	15	333	
1985	7	93	NC	120	1	5	226	
1984	3	35	NC	71	6	NC	115	253
1983	27	46	121	161	8	0	363	
1982	9	149	28	42	1	0	229	
1981	4	115	76	404	2	4	605	
1980	7	25	6	47	6	0	91	
1979	29	146	57	205	25	18	480	1264
1978	303	703	841	1707	141	33	3728	
1977	85	443	168	698	18	6	1418	
1976	16	227	75	378	NC	40	736	
1975	60	365	348	509	189	60	1531	
1974	42	237	346	338	127	54	1144	1482
1973	153	433	665	411	125	104	1891	
1972	143	473	448	748	182	115	2109	
1971	50	392	370	619	89	57	1577	
1970	68	344	468	432	202	67	1581	
1969	41	328	174	313	35	53	944	1905
1968	110	572	622	637	330	234	2505	
1967	74	786	614	943	253	250	2920	
1966	119	738	511	581	219	112	2280	
1965	101	433	138	472	204	77	1425	
1964	80	1038	405	706	199	146	2574	2184
1963	86	364	646	638	141	128	2003	
1962	138	1309	334	638	157	60	2636	
1961	30	1720	618	723	227	192	3510	
1960	33	1262	122	579	87	43	2126	
1959	18	468	75	486	23	10	1080	2067
1958	96	555	141	469	63	38	1362	
1957	110	719	61	1101	219	47	2257	

a Influenced by trapping at Sawtooth Hatchery site beginning 1981.
b Influenced by trapping at East Fork Weir beginning 1984.

Table 2. Numbers of spring chinook salmon redds counted in Salmon River drainage wild trend areas, 1957-1993. NC = no count.

YEAR	BEAR VALLEY CREEK	ELK CREEK	MARSH CREEK DRAINAGE	SULPHUR CREEK	UPPER BIG CREEK	TOTAL	FIVE YEAR AVERAGE
1993	148	242	120	25	56	591	
1992	41	57	65	5	22	190	
1991	47	54	40	26	13	180	
1990	62	42	57	22	20	203	
1989	15	35	44	2	30	126	386
1988	283	330	217	41	101	972	
1987	102	149	150	11	36	448	
1986	74	55	101	65	67	362	
1985	134	28	108	10	70	350	
1984	55	27	60	0	42	184	231
1983	56	38	33	8	27	162	
1982	39	9	40	3	7	98	
1981	60	23	63	7	22	175	
1980	15	8	9	2	NC	34	
1979	69	49	47	15	15	195	310
1978	184	208	270	64	95	821	
1977	129	86	98	5	9	327	
1976	76	61	48	14	22	221	
1975	215	169	201	50	77	712	
1974	130	108	210	30	28	506	754
1973	387	375	518	78	96	1454	
1972	221	212	312	71	60	876	
1971	108	173	281	58	32	652	
1970	334	302	456	93	68	1253	
1969	356	349	222	138	65	1130	1301
1968	574	483	466	142	90	1755	
1967	445	420	650	134	67	1716	
1966	534	525	406	142	123	1730	
1965	301	203	404	32	73	1013	
1964	576	425	709	49	51	1810	1576
1963	460	654	372	140	148	1774	
1962	484	426	341	78	223	1552	
1961	675	581	526	121	377	2280	
1960	386	346	299	39	155	1225	
1959	381	458	88	41	88	1056	1575
1958	312	359	262	131	129	1193	
1957	661	398	458	381	225	2123	

Table 3. Numbers of summer chinook salmon redds counted in Salmon River drainage wild trend areas, 1957-1993. NC = no count.

YEAR	LOON CREEK	SECESH RIVER LAKE CR.	LOWER SALMON RIVER	LOWER VALLEY CREEK	LOWER EAST FORK	TOTAL	FIVE YEAR AVERAGE
1993	31	130	48	16	41	266	
1992	22	125	26	6	16	195	
1991	16	112	68	3	23	222	
1990	NC	55	52	9	19	135	
1989	16	78	77	26	51	248	300
1988	5	155	150	33	85	428	
1987	23	121	200	59	62	465	
1986	21	115	104	16	41	297	
1985	28	105	82	1	9	225	
1984	4	xx	51	15	7	77	205
1983	7	98	111	28	27	271	
1982	23	65	39	8	19	154	
1981	30	53	75	17	43	218	
1980	9	20	11	4	0	44	
1979	NC	20	NC	15	33	68	282
1978	29	91	359	219	NC	698	
1977	62	27	94	63	136	382	
1976	31	17	44	43	39	174	
1975	32	10	45	80	38	205	
1974	47	21	40	45	49	202	402
1973	78	62	224	77	138	579	
1972	150	87	412	39	161	849	
1971	79	80	220	147	149	675	
1970	43	63	150	41	123	420	
1969	110	104	120	22	138	494	657
1968	135	58	223	63	235	714	
1967	164	140	365	79	234	982	
1966	49	140	390	184	216	979	
1965	166	134	201	57	131	689	
1964	361	181	415	71	306	1334	1030
1963	261	163	195	50	265	934	
1962	157	281	467	115	195	1215	
1961	131	191	356	158	559	1395	
1960	334	510	811	137	403	2195	
1959	123	240	352	70	240	1025	2058
1958	193	355	460	47	345	1400	
1957	425	328	2533	331	656	4273	

a "xx" = count not comparable to other years.

Table 4. Numbers of summer chinook salmon redds counted in Salmon River drainage natural (Johnson Creek) and hatchery-influenced (South Fork Salmon River) trend areas, 1957-1993.

YEAR	JOHNSO CREEK	S. FORK SALMON RIVER	TOTAL	FIVE YEAR AVERAGE
1993	142	939	1081	
1992	76	685	761	
1991	64	393	457	
1990	56	386	442	
1989	42	217	259	567
1988	137	718	855	
1987	72	752	824	
1986	53	289	342	
1985	75	323	398	
1984	17	165	182	264
1983	63	185	248	
1982	37	111	148	
1981	45	126	171	
1980	24	116	140	
1979	36	115	151	227
1978	113	251	364	
1977	81	226	307	
1976	68	241	309	
1975	69	238	307	
1974	107	218	325	517
1973	271	586	857	
1972	220	567	787	
1971	183	421	604	
1970	130	527	657	
1969	273	636	909	800
1968	127	515	642	
1967	286	902	1188	
1966	110	980	1090	
1965	116	656	772	
1964	310	1124	1434	1301
1963	266	1057	1323	
1962	295	1589	1884	
1961	201	1058	1259	
1960	486	2290	2776	
1959	278	1305	1583	1991
1958	82	1206	1288	
1957	319	2732	3051	

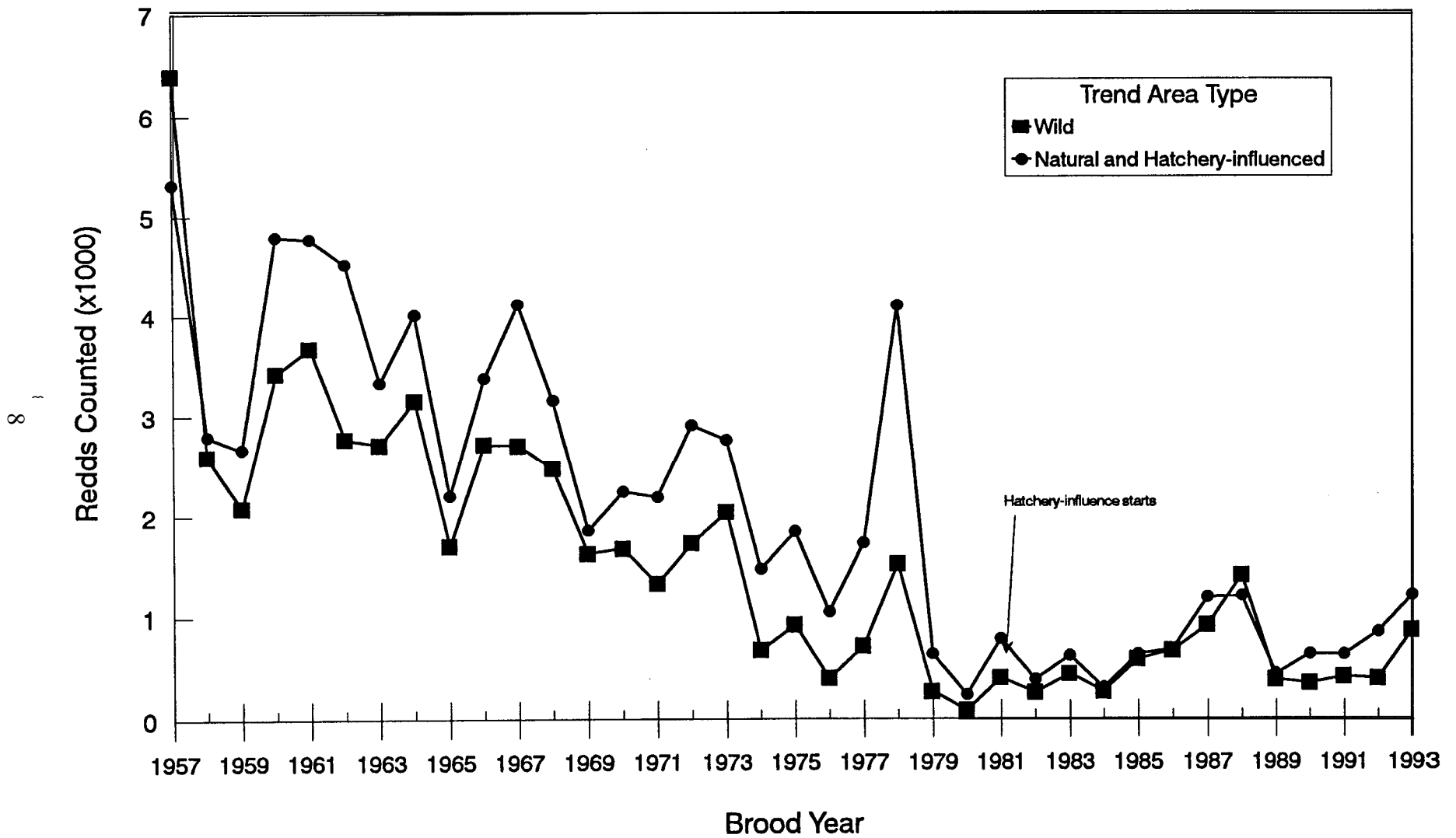


Figure 1. Numbers of combined spring and summer chinook salmon redds counted in Salmon River drainage wild and natural/hatchery influenced trend areas, 1957-1993. Hatchery influence in spring chinook salmon areas began in 1981, and in 1980 in summer chinook salmon trend areas.

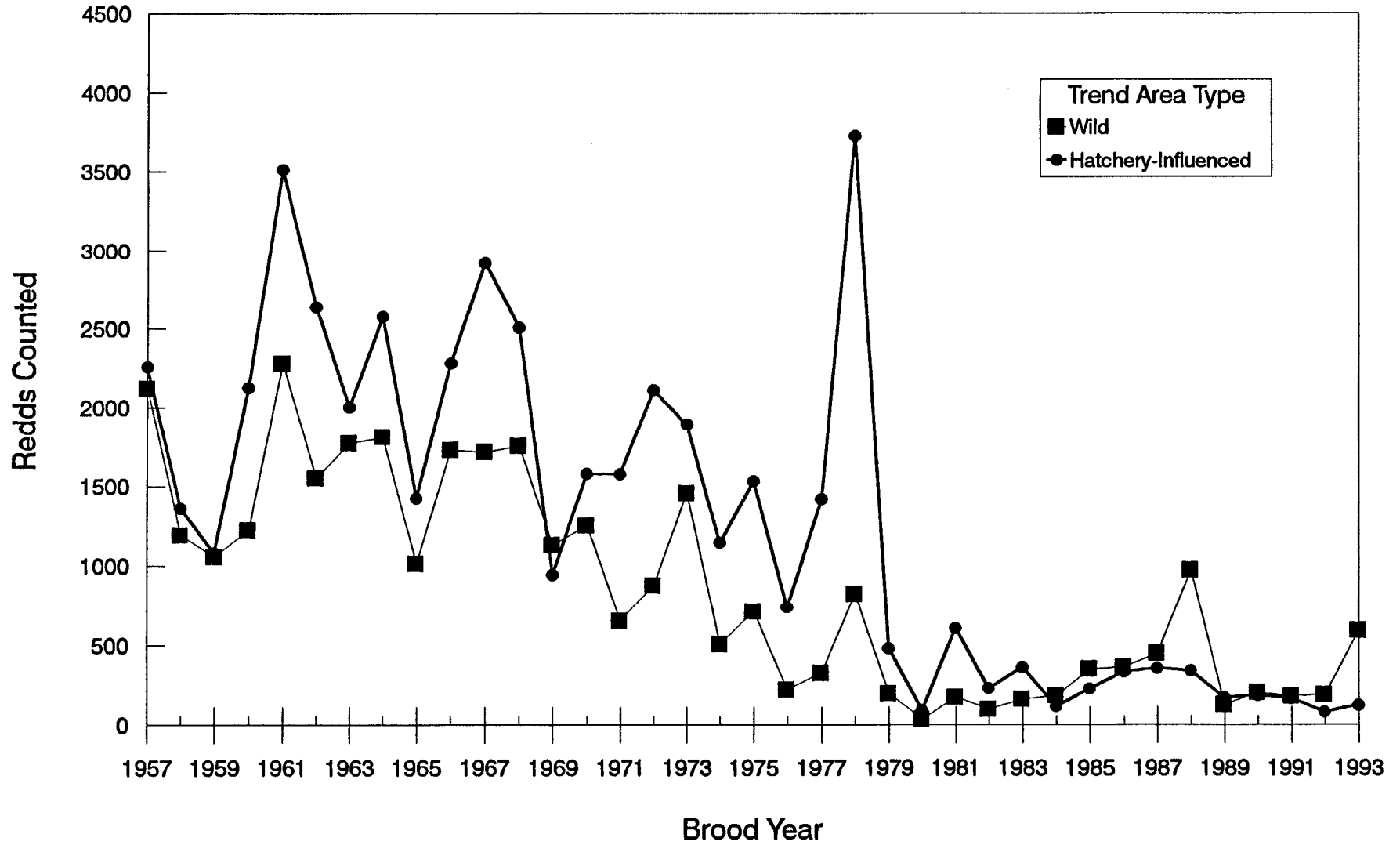


Figure 2. Numbers of spring chinook salmon redds counted in Salmon River drainage wild and hatchery-influenced trend areas, 1957-1993. Hatchery influence began in 1981 at the Sawtooth hatchery weir and in 1984 at the East Fork Salmon River weir.

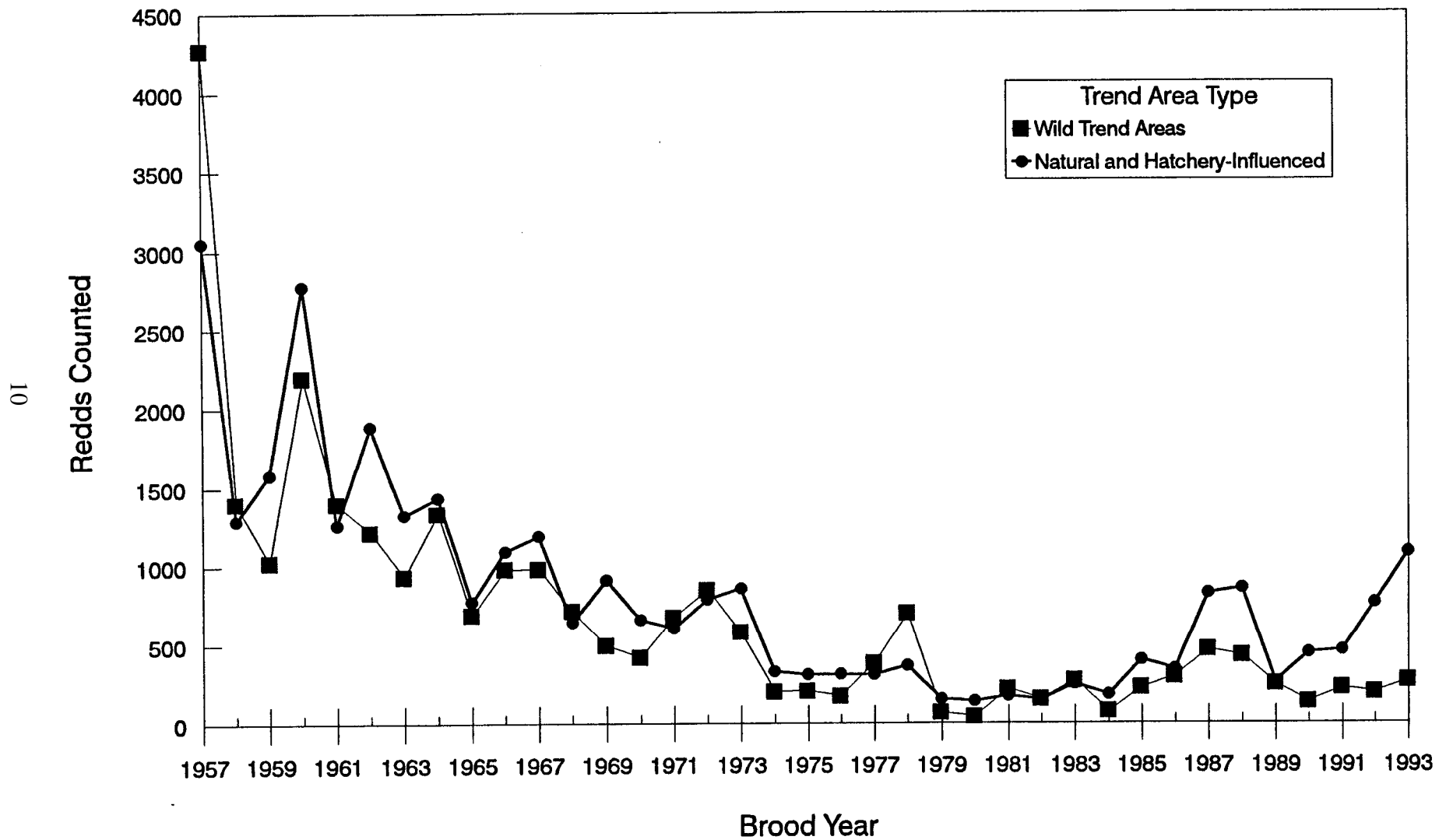


Figure 3. Numbers of summer chinook salmon redds counted in Salmon River drainage wild, natural, and hatchery-influenced trend areas, 1957-1993. Hatchery influence began at the South Fork Salmon River weir in 1980.

Table 5. Numbers of adult and jack spring and summer chinook salmon trapped at weirs on the Salmon and Clearwater River drainages in 1993, and the number of salmon released above these weirs to spawn.

Weir	Run	Number trapped			Number released		
		Total	Adults	Jacks	Total	Males	Females
Powell	Spring Chinook	500	492	8	40	25	15
Red River	Spring Chinook	139	138	1	91	49	42
Crooked River	Spring Chinook	402	395	7	152	77	75
Sawtooth	Spring Chinook	587	558	29	423	214	209
E.F. Salmon	Spring Chinook	90	85	5	65	44	21
McCall (S.F. Salmon)	Summer Chinook	2,703	2,675	28	1,668	740	928

In general, few redds were counted in non-traditional areas (Table 6), with no redds counted on many transects. More redds were counted in 1993 in the Sulphur Creek and Johnson Creek nontraditional areas than in 1992, but counts in all other areas either remained at similar levels to 1992 or decreased. Similarly, few redds were counted in unclassified chinook salmon spawning areas in 1993 (Table 7), although the count in Camas Creek was higher than in 1992. Redd counts in these unclassified areas in 1993 are much lower than historical levels.

Length-frequency and age composition data for spring and summer chinook salmon are included in Appendix A. Appendix A includes length-frequency data for spring chinook salmon trapped at the Sawtooth Fish Hatchery and East Fork Salmon River weirs and summer chinook salmon trapped at the South Fork Salmon River weir. Length-frequency data gathered during spawner carcass surveys on East Fork South Fork Salmon River, Secesh River, and Big, Elk, Bear Valley, Capehorn, and Beaver creeks of the Middle Fork Salmon River drainage are also included.

Redd count maps for the Salmon River drainage are presented in Appendix B.

Clearwater River Drainage

The total number of spring chinook salmon redds counted in the Clearwater River drainage natural spawning areas in 1993 was 61, about twice the number counted in 1992 (Table 8, Figure 4), but only about 38% of the 1972-76 average count. Redd counts in the hatchery-influenced spawning areas in 1993 were higher than 1992 counts in all cases except Red River, where counts remained about the same. The total number of redds counted in the hatchery-influenced areas is the highest on record (Table 9, Figure 5).

More redds were counted in the Clearwater River drainage nontraditional trend areas in 1993 than in 1992, but fewer than in 1987-1988 (Table 9).

Length-frequency and age composition data for spring chinook salmon intercepted at the Red River, Crooked River, and Powell (Lochsa River) weirs are listed in Appendix A.

Redd count maps for the Clearwater River drainage are presented in Appendix B.

Sockeye Salmon

Eight sockeye salmon (6 male, 2 female) were captured at the Redfish Lake weir and held until spawned at the Sawtooth Fish Hatchery.

Table 6. Numbers of chinook salmon redds counted in Salmon River drainage nontraditional trend areas, 1985-1993. NC = no count, - = not routinely counted.

Stream	Section	Year									
		85	86	87	88	89	90	91	92	93	
<u>Upper Salmon River System</u>											
Alturas Lake Creek	Cabin Cr. bridge to diversion dam	0	0	1	0	1	0	0	2	0	
	Diversion dam to Alturas Lake	0	0	0	2	3	2	0	1	0	
	Alturas Lake inlet to Alpine Creek	1	1	5	0	0	0	0	2	0	
Salmon River	Breckenridge diversion dam to mouth of Pole Creek	4	0	1	2	0	NC	NC	0	4	
	Mouth of Pole Creek to headwaters	0	0	0	0	0	NC	NC	0	1	
Pole Creek	Mouth to diversion screen	1	0	0	0	0	2	0	0	0	
	Fish screen to road crossing at upper end of meadow.	-	-	-	-	-	3	0	0	0	
<u>Middle Fork Salmon River System</u>											
Middle Fork Salmon river	Mouth to mouth of Loon Creek	-	-	1 ^a	- ^b	0	0	0	0	0	
Sulphur Creek	Ranch upstream to island	-	-	-	99	8	18	24	0	36	
<u>Main Salmon River Canyon</u>											
Chamberlain Creek	Mouth of West Fork to Flossie Creek	9	NC	12	20	14	17	NC	17	12	
West Fork Chamberlain Creek	Mouth_ to Game Creek	16	NC	12	6	30	35	NC	22	8	
<u>East Fork Salmon River System</u>											
Herd Creek	Bennett Ranch to mouth of East Pass Cr.	1	6	-	-	-	-	-	-	-	
<u>East Fork of South Fork Salmon River (EFSF)</u>											
Johnson Creek	Mouth of whiskey Creek to head of canyon	-	-	0	0	15	0	12	16	40	
Sand Creek	Sand Creek from mouth to bridge	-	-	0	0	0	0	0	0	0	
EFSF	Yellow Pine to Sugar Creek	-	-	-	-	-	-	-	23	19	
	Profile Creek to Tamarack Creek	-	-	-	-	-	-	-	9	14	

^a Mouth of Loon Creek to mouth of Big Creek.

^b Forest fire prevented aerial survey in 1988.

Table 7. Numbers of chinook salmon redds counted in Salmon River drainage unclassified trend areas, 1960-1993. Camas Creek is defined as a wild stream and Yankee Fork as a hatchery-influenced system. Ground counting method was used except as indicated (A = air count, G = ground count for years where two methods were used). "NC" indicates transect was not counted.

YEAR	Camas Creek ^a	Lower Yankee Fork ^a	West Fork Yankee Fork ^b
1993	26(A)	5(A)	4(A)
1992	7(A)	9(A)	3(A)
1991	11(A)	6(A)	4(A)
1990	3(A)	10(A)	7(A)
1989	29(A)	0(A)	8(A)
1988	NC	2(A)	16(A)
1987	32(A)	5(A)	12(A)
1986	11(A)	2(A)	6(A)
1985	21(A)	0(A)	1(A)
1984	6(A)	NC	0(A)
1983	26(A)	0(A)	7(A)
1982	29(A)	1(A)	0(A)
1981	61	16(A)	19
1980	11	0(A)	2
1979	13	NC	13
1978	102	27	98
1977	65	12	37
1976	21	5	11
1975	98	35	55
1974	132	28	20
1973	176	71	86
1972	123	78	117
1971	69	41	31
1970	49	79	112
1969	50	44	17
1968	164	97	284
1967	109	65	283
1966	118	132	210
1965	22	63	93
1964	177	54	78
1963	151	92	142
1962	124(G), 61(A)	68(G), 32(A)	127(G), 33(A)
1961	142	59(G), 31(A)	59(G), 44(A)
1960	112	43A	15

a 1960-62: mouth to Jordan Creek; 1963-78: Pole Flat Forest Camp to Jordan Creek; 1980- 85: Pole Flat Forest Camp to West Fork Yankee Fork; 1986-92: Polecamp Creek to Jordan Creek

b 1961-62 and 1986-91: mouth to Cabin Creek; 1977-85: mouth to Deadwood Creek; 1960 and 1963-76: mouth to Lightning Creek

Table 8. Numbers of spring chinook salmon redds counted in Clearwater River drainage natural trend areas, 1966-1993. NC = no count.

YEAR	SELWAY RIVER	BEAR CREEK	RUNNING CREEK	WHITECAP CREEK	MOOSE CREEK	TOTALS	FIVE YEAR AVERAGE
1993	33	13	0	5	10	61	
1992	18	9	0	0	2	29	
1991	12	8	0	1	2	23	
1990	13	6	1	2	2	24	
1989	5	7	0	3	3	18	38
1988	38	10	2	5	7	62	
1987	36	9	4	6	8	63	
1986	30	10	NC	7	9	56	
1985	15	NC	NC	NC	NC	15	
1984	30	6	NC	6	7	49	44
1983	26	8	NC	4	6	44	
1982	38	8	NC	3	5	54	
1981	47	8	NC	4	6	65	
1980	40	7	1	3	4	55	
1979	21	3	0	2	4	30	90
1978	125	13	6	NC	17	161	
1977	97	18	2	1	23	141	
1976	58	14	3	4	15	94	
1975	21	5	NC	1	4	31	
1974	66	10	4	2	15	97	160
1973	261	26	21	7	32	347	
1972	175	25	11	8	13	232	
1971	55	14	8	NC	NC	77	
1970	65	19	10	4	NC	98	
1969	57	6	21	NC	NC	84	63
1968	16	7	4	NC	NC	27	
1967	22	7	NC	NC	NC	29	
1966	36	8	NC	NC	NC	44	

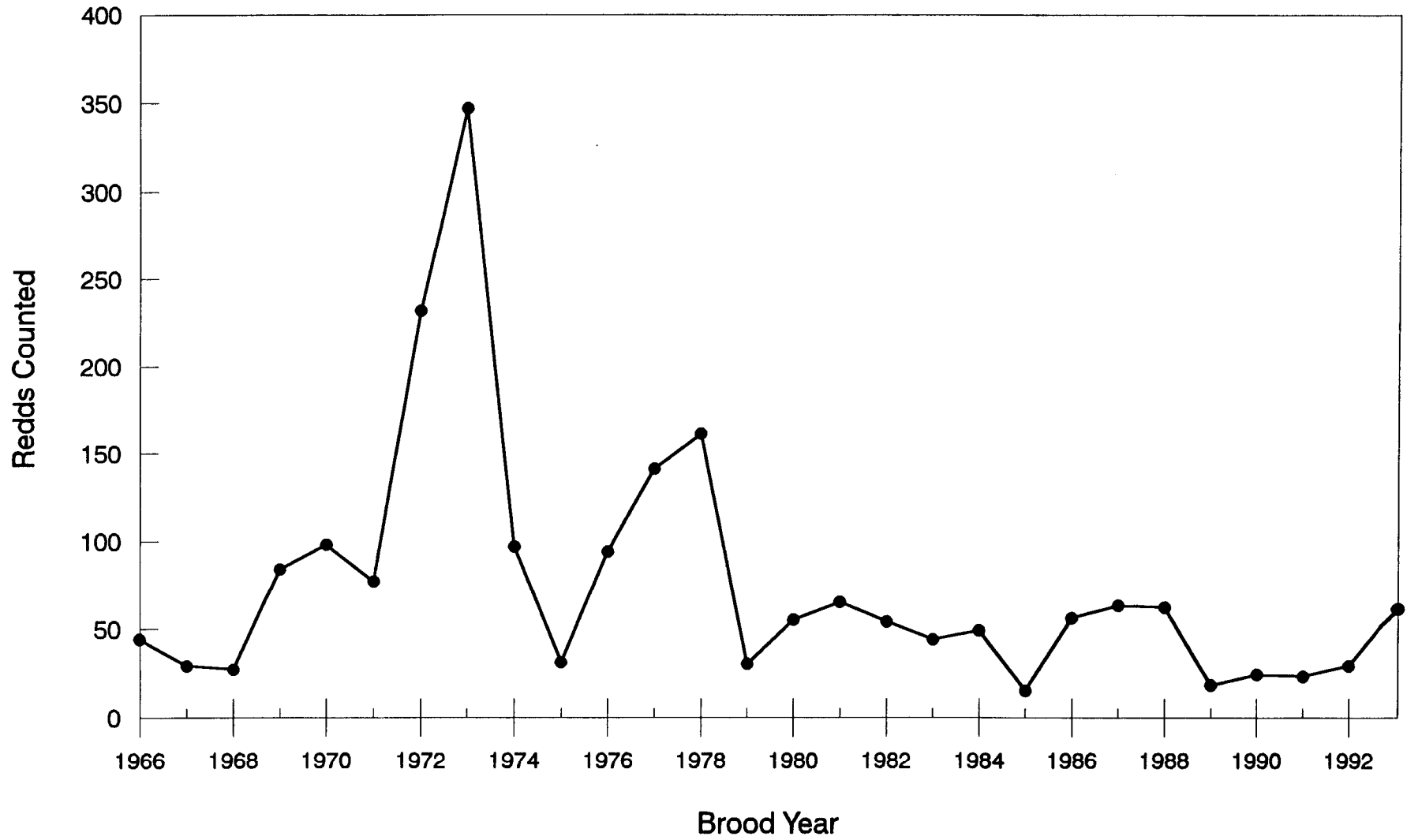


Figure 4. Numbers of spring chinook salmon redds counted in Clearwater River drainage natural trend areas, 1966-1993.

Table 9. Numbers of spring chinook salmon redds counted in Clearwater River drainage hatchery-influenced trend areas, 1967-1992. NC = no count, - = not routinely counted.

YEAR	CROOKED FORK	BRUSHY FORK	LOCHSA RIVER DRAINAGE		NEWSOME CREEK	CROOKED RIVER	RED RIVER	AMERICAN RIVER	SOUTH FORK DRAINAGE		CLEARWATER RIVER DRAINAGE	
			TOTAL	FIVE YR.					TOTAL	FIVE YR.	TOTAL	FIVE YR.
1993	34	29	63		64	27	43	75	209		272	
1992	22	1	23		0	NC	46	1	47		70	
1991	9	1	10		0	NC	5	1	6		16	
1990	16	4	20		0	10	66	2	78		98	
1989	8	9	17	27	4	3	45	1	53	78	70	105
1988	42	9	51		20	27	51	12	110		161	
1987	28	10	38		15	17	81	31	144		182	
1986	30	11	41		6	9	82	14	111		152	
1985	47	14	61		7	10	92	23	132		193	
1984	28	9	37	41	1	22	65	NC	88	111	125	152
1983	7	6	13		7	12	85	9	113		126	
1982	34	17	51		5	4	82	21	112		163	
1981	27	25	52		7	9	47	12	75		127	
1980	16	10	26		7	6	31	7	51		77	
1979	6	12	18	45	9	4	20	-	33	69	51	114
1978	37	25	62		22	17	52		91		153	
1977	51	15	66		26	21	50		97		163	
1976	33	13	46		5	13	15		33		79	
1975	22	4	26		6	33	20		59		85	
1974	22	6	28	45	-	5	12		17	22	45	66
1973	60	-	60						0		60	
1972	32	31	63						0		63	
1971	1		1						0		1	
1970	34		34						0		34	
1969	112		112	32					0	0	112	32
1968	15		15						0		15	
1967	0		0						0		0	

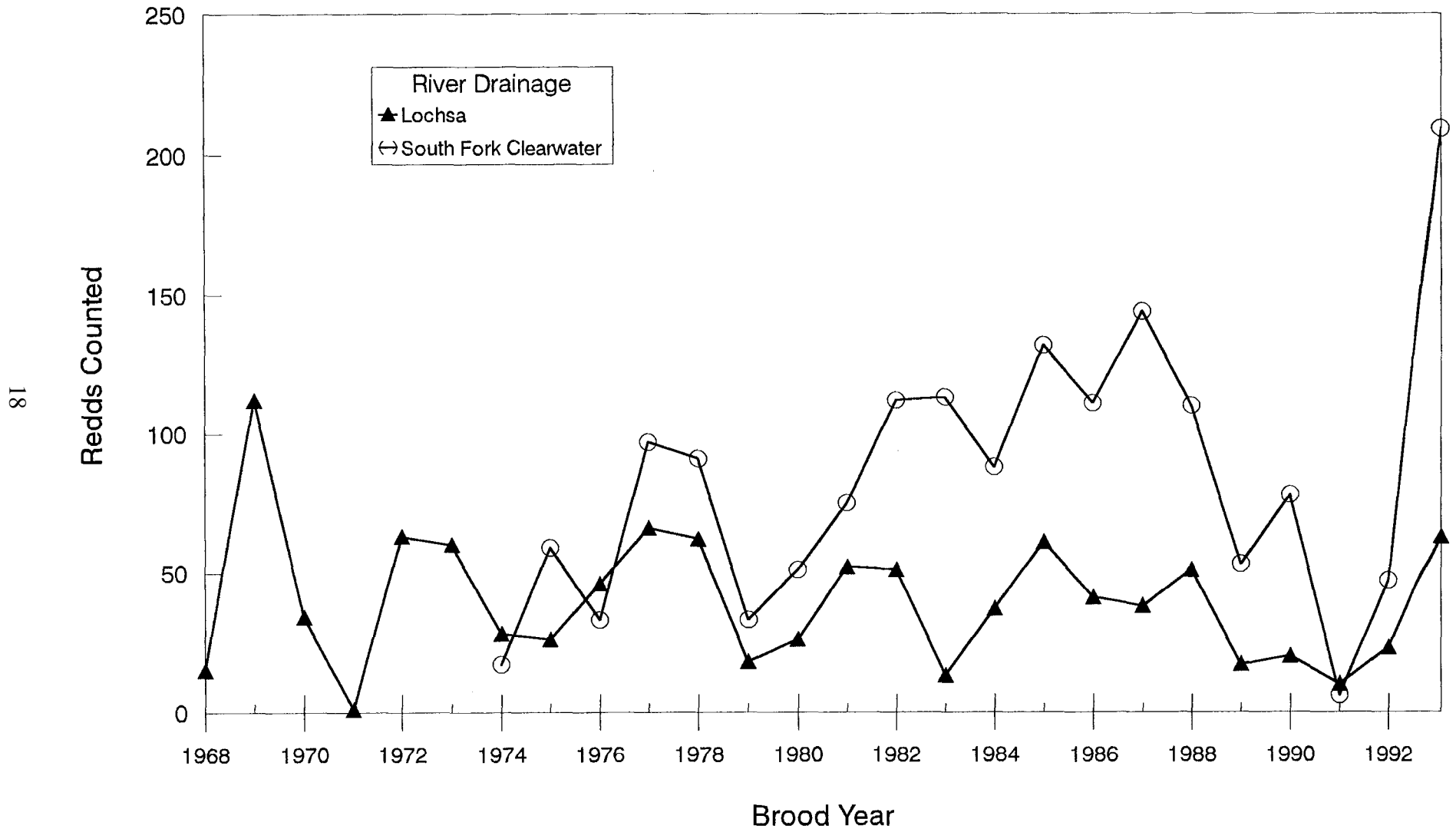


Figure 5. Numbers of spring chinook salmon redds counted in Clearwater River drainage hatchery-influenced trend areas, 1968-1993

Table 10. Numbers of spring chinook salmon redds counted in Clearwater River drainage nontraditional trend areas, 1987-1993. NC = no count, - = not routinely counted.

Stream	Section	Year						
		1987	1988	1989	1990	1991	1992	1993
S.F. Red River		0	0	NC	NC	NC	NC	NC
Crooked Fork Cr.	Mouth to Brushy Fork	12	12	0				
	Brushy Fk. to Shotgun Cr.	36	59	7				
	Shotgun Cr. to Boulder Cr.	4	5	0				
	Boulder Cr. to Hopeful Cr.	NC	NC	NC				
	Mouth to Hopeful Creek				6	10	32	49
Brushy Fork Cr.	Mouth to Twin Cr.	14	10	0				
	Twin Cr. to Spruce Cr.	12	19	6				
	Mouth to Spruce Creek				6	5	9	28
White Sand Creek	Mouth to Big Flat Cr.	NC	NC	NC	0	0	0	4
Lolo Creek	White Cr. bridge to uppermost K-dam	31	31	15	27	11	14	
Total		109	136	28	39	26	55	81

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APPENDICES

Table A1. Length frequency of spring chinook salmon trapped at the Sawtooth Fish Hatchery weir, 1993.

Fork Length (cm)	Males			Fork Length (cm)	Females		
	Total Number Recovered	Percent of Total	Age Class		Total Number Recovered	Percent of Total	Age Class
38	1	0.3%		38	0	0.0%	
40	0	0.0%		40	0	0.0%	
42	0	0.0%		42	0	0.0%	
44	0	0.0%		44	0	0.0%	
46	4	1.3%		46	0	0.0%	
48	3	1.0%	Jacks	48	0	0.0%	
50	3	1.0%	n=24	50	0	0.0%	n=2
52	4	1.3%	7.8%	52	0	0.0%	0.7%
54	6	2.0%		54	1	0.4%	
56	1	0.3%		56	0	0.0%	
58	1	0.3%		58	0	0.0%	
60	1	0.3%		60	1	0.4%	
62	0	0.0%		62	0	0.0%	
64	5	1.6%		64	0	0.0%	
66	5	1.6%		66	0	0.0%	
68	11	3.6%	Age 4	68	2	0.7%	Age 4
70	6	2.0%	n=42	70	5	1.8%	n=21
72	5	1.6%	13.7%	72	2	0.7%	7.5%
74	2	0.6%		74	5	1.8%	
76	4	1.3%		76	6	2.1%	
78	4	1.3%		78	1	0.4%	
80	2	0.6%		80	6	2.1%	
82	6	2.0%		82	5	1.8%	
84	7	2.3%		84	20	7.1%	
86	7	2.3%		86	32	11.4%	
88	9	2.9%		88	49	17.5%	
90	26	8.5%	Age 5	90	57	20.4%	Age 5
92	21	6.8%	n=241	92	47	16.8%	n=257
94	34	11.1%	78.5%	94	21	7.5%	91.8%
96	34	11.1%		96	13	4.6%	
98	31	10.1%		98	2	0.7%	
100	31	10.1%		100	5	1.8%	
102	15	4.8%		102	0	0.0%	
104	18	5.8%		104	0	0.0%	
Total	307			Total	280		

Table A2. Length frequency of spring chinook salmon trapped at the East Fork Salmon River weir, 1993.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
38	0	0.0%		38	0	0.0%	
40	0	0.0%		40	0	0.0%	
42	0	0.0%		42	0	0.0%	
44	0	0.0%		44	0	0.0%	
46	0	0.0%		46	0	0.0%	
48	0	0.0%	Jacks	48	0	0.0%	
50	0	0.0%	n=3	50	0	0.0%	n=1
52	0	0.0%	5.3%	52	0	0.0%	3.0%
54	0	0.0%		54	0	0.0%	
56	0	0.0%		56	0	0.0%	
58	1	1.8%		58	0	0.0%	
60	0	0.0%		60	0	0.0%	
62	2	3.5%		62	1	3.0%	
64	2	3.5%		64	0	0.0%	
66	2	3.5%		66	0	0.0%	
68	3	5.3%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=13	70	0	0.0%	n=4
72	2	3.5%	22.8%	72	0	0.0%	12.1%
74	1	1.8%		74	0	0.0%	
76	2	3.5%		76	2	6.1%	
78	1	1.8%		78	2	6.1%	
80	1	1.8%		80	0	0.0%	
82	1	1.8%		82	2	6.1%	
84	0	0.0%		84	0	0.0%	
86	2	3.5%		86	2	6.1%	
88	1	1.8%		88	7	21.2%	
90	1	1.8%	Age 5	90	7	21.2%	Age 5
92	4	7.0%	n=241	92	5	15.2%	n=257
94	2	3.5%	71.9%	94	0	0.0%	84.8%
96	6	10.5%		96	2	6.1%	
98	2	3.5%		98	1	3.1%	
100	10	17.5%		100	1	3.1%	
102	7	12.3%		102	1	3.1%	
104	4	7.0%		104	0	0.0%	
Total	57			Total	33		

Table A3. Length frequency of summer chinook salmon trapped at the South Fork Salmon River weir, 1993.

Fork Length (cm)	Males			Fork Length (cm)	Females		
	Total Number Recovered	Percent of Total	Age Class		Total Number Recovered	Percent of Total	Age Class
36	0	0.0%		36	0	0.0%	
38	0	0.0%		38	0	0.0%	
40	0	0.0%		40	0	0.0%	
42	0	0.0%		42	0	0.0%	
44	0	0.0%		44	0	0.0%	
46	0	0.0%		46	0	0.0%	
48	2	0.2%	Jacks	48	0	0.0%	
50	2	0.2%	n= 21	50	0	0.0%	n=0
52	3	0.2%	1.7%	52	0	0.0%	0.0%
54	3	0.2%		54	0	0.0%	
56	2	0.2%		56	0	0.0%	
58	4	0.3%		58	0	0.0%	
60	2	0.2%		60	0	0.0%	
62	3	0.2%		62	0	0.0%	
64	2	0.2%		64	0	0.0%	
66	6	0.5%		66	1	0.1%	
68	9	0.7%	Age 4	68	2	0.1%	Age 4
70	14	1.2%	n=306	70	6	0.4%	n=241
72	45	3.7%	25.2%	72	24	1.6%	16.2%
74	67	5.5%		74	32	2.2%	
76	69	5.7%		76	84	5.6%	
78	94	7.7%		78	92	6.2%	
80	82	6.7%		80	117	7.9%	
82	78	6.4%		82	93	6.3%	
84	48	3.9%		84	72	4.8%	
86	44	3.6%		86	87	5.9%	
88	48	3.9%		88	154	10.4%	
90	30	2.5%	Age 5	90	201	13.5%	Age 5
92	44	3.6%	n=889	92	243	16.3%	n=1246
94	76	6.3%	73.1%	94	156	10.5%	83.8%
96	81	6.6%		96	89	6.0%	
98	91	7.5%		98	26	1.8%	
100	91	7.5%		100	8	0.5%	
102	70	5.8%		102	0	0.0%	
104	69	5.7%		104	0	0.0%	
106	25	2.1%					
108	12	9.9%					
Total	1216			Total	1487		

Table A4. Length frequency of spring chinook salmon trapped at the Red River weir, 1993.

Fork Length (cm)	Males			Fork Length (cm)	Females		
	Total Number Recovered	Percent of Total	Age Class		Total Number Recovered	Percent of Total	Age Class
38	0	0.0%		38	0	0.0%	
40	0	0.0%		40	0	0.0%	
42	0	0.0%		42	0	0.0%	
44	0	0.0%		44	0	0.0%	
46	0	0.0%		46	0	0.0%	
48	0	0.0%	Jacks	48	0	0.0%	
50	0	0.0%	n= 1	50	0	0.0%	n=0
52	0	0.0%	1.3%	52	0	0.0%	0.0%
54	0	0.0%		54	0	0.0%	
56	0	0.0%		56	0	0.0%	
58	0	0.0%		58	0	0.0%	
60	0	0.0%		60	0	0.0%	
62	1	1.3%		62	0	0.0%	
64	2	2.7%		64	0	0.0%	
66	2	2.7%		66	1	1.5%	
68	3	4.0%		68	5	7.6%	
70	6	8.0%	Age 4	70	6	9.7%	Age 4
72	5	6.7%	n=49	72	5	7.6%	n=52
74	7	9.3%	65.3%	74	11	16.7%	78.8%
76	8	10.7%		76	12	18.2%	
78	9	12.0%		78	4	6.1%	
80	5	6.7%		80	6	9.1%	
82	2	2.7%		82	2	3.0%	
84	1	1.3%		84	6	9.1%	
86	1	1.3%		86	3	4.5%	
88	4	5.3%		88	3	4.5%	
90	7	9.3%		90	1	1.5%	
92	1	1.3%	Age 5	92	0	0.0%	Age 5
94	3	4.0%	n=25	94	1	1.5%	n=14
96	4	5.3%	33.3%	96	0	0.0%	21.2%
98	3	4.0%		98	0	0.0%	
100	1	1.3%		100	0	0.0%	
102	0	0.0%		102	0	0.0%	
104	0	0.0%		104	0	0.0%	
Total	75			Total	66		

Table A5. Length frequency of spring chinook salmon trapped at the Powell (Lochsa River) weir, 1993.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
38	0	0.0%		38	0	0.0%	
40	0	0.0%		40	0	0.0%	
42	0	0.0%		42	0	0.0%	
44	0	0.0%		44	0	0.0%	
46	0	0.0%		46	0	0.0%	
48	2	0.8%	Jacks	48	0	0.0%	
50	0	0.0%	n=6	50	0	0.0%	n=0
52	0	0.0%	2.3%	52	0	0.0%	0.0%
54	0	0.0%		54	0	0.0%	
56	0	0.0%		56	0	0.0%	
58	1	0.4%		58	0	0.0%	
60	1	0.0%		60	0	0.0%	
62	2	0.8%		62	0	0.0%	
64	3	1.1%		64	1	0.4%	
66	3	1.1%		66	6	2.6%	
68	6	2.3%		68	7	3.0%	
70	9	3.4%	Age 4	70	23	9.8%	Age 4
72	12	4.5%	n= 86	72	22	9.4%	n=116
74	8	3.0%	32.5%	74	14	6.0%	49.4%
76	20	7.5%		76	12	5.1%	
78	12	4.5%		78	11	4.7%	
80	10	3.8%		80	5	2.1%	
82	3	1.1%		82	15	6.4%	
84	10	3.8%		84	23	9.8%	
86	14	5.3%		86	22	9.4%	
88	19	7.2%		88	39	16.6%	
90	22	8.3%		90	15	6.4%	
92	33	12.5%	Age 5	92	16	6.8%	Age 5
94	24	9.1%	n=173	94	2	0.9%	n=119
96	19	7.2%	65.3%	96	1	0.4%	50.6%
98	17	6.4%		98	1	0.4%	
100	10	3.8%		100	0	0.0%	
102	0	0.0%		102	0	0.0%	
104	5	1.9%		104	0	0.0%	
Total	265			Total	235		

Table A6. Length frequency of spring chinook salmon trapped at the Crooked River weir, 1993.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
38	1	0.5%		38	0	0.0%	
40	0	0.0%		40	0	0.0%	
42	0	0.0%		42	0	0.0%	
44	0	0.0%		44	0	0.0%	
46	0	0.0%		46	0	0.0%	
48	0	0.0%	Jacks	48	0	0.0%	
50	0	0.0%	n= 5	50	0	0.0%	n= 1
52	1	0.5%	2.5%	52	0	0.0%	0.5%
54	0	0.0%		54	0	0.0%	
56	0	0.0%		56	0	0.0%	
58	1	0.5%		58	0	0.0%	
60	1	0.5%		60	0	0.0%	
62	1	0.5%		62	1	0.5%	
64	8	4.0%		64	1	0.5%	
66	7	3.5%		66	1	0.5%	
68	7	3.5%		68	6	3.0%	
70	8	4.0%	Age 4	70	8	4.0%	Age 4
72	6	3.0%	n= 57	72	10	5.0%	n=64
74	9	4.5%	28.5%	74	6	3.0%	32.0%
76	5	2.5%		76	4	2.0%	
78	2	1.0%		78	3	1.5%	
80	0	0.0%		80	7	3.5%	
82	5	2.5%		82	18	9.0%	
84	7	3.5%		84	24	12.0%	
86	12	6.0%		86	26	13.0%	
88	12	6.0%		88	38	19.0%	
90	23	11.5%		90	28	14.0%	
92	19	9.5%	Age 5	92	10	5.0%	Age 5
94	27	13.5%	n=138	94	8	4.0%	n=135
96	17	8.5%	69.0%	96	0	0.0%	67.5%
98	11	5.5%		98	0	0.0%	
100	5	2.5%		100	1	0.5%	
102	1	0.5%		102	0	0.0%	
104	4	2.0%		104	0	0.0%	
Total	200			Total	200		

Table A7. Length frequency and age composition of spring chinook salmon carcasses recovered from Big Creek (Middle Fork Salmon River drainage spawning ground surveys, 1993^a).

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	1	5.9%	Jacks	58	0	0.0%	
60	0	0.0%	n=1	60	0	0.0%	n=0
62	0	0.0%	5.9%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=2	70	0	0.0%	n=0
72	2	11.8%	11.8%	72	0	0.0%	0.0%
74	0	0.0%		74	0	0.0%	
76	0	0.0%		76	0	0.0%	
78	0	0.0%		78	0	0.0%	
80	0	0.0%		80	0	0.0%	
82	0	0.0%		82	1	5.6%	
84	0	0.0%		84	2	11.1%	
86	2	11.8%		86	0	0.0%	
88	1	5.9%		88	2	11.1%	
90	0	0.0%		90	5	27.8%	
92	0	0.0%	Age 5	92	2	11.1%	Age 5
94	0	0.0%	n=14	94	4	22.2%	n=18
96	0	0.0%	82.6%	96	2	11.1%	00.0%
98	2	11.8%		98	0	0.0%	
100	0	0.0%		100	0	0.0%	
102	2	11.8%		102	0	0.0%	
104	2	11.8%		104	0	0.0%	
106	2	11.8%		106	0	0.0%	
108	1	5.9%		108	0	0.0%	
110	0	0.0%		110	0	0.0%	
112	1	5.9%		112	0	0.0%	
114	0	0.0%		114	0	0.0%	
116	1	5.9%		116	0	0.0%	
Total	17				18		

^a All fish were sampled by Nez Perce Tribe personnel except for two fish (male - 88cm, female - 84cm) which were sampled by Idaho Department of Fish and Game personnel.

Table A8. Length frequency and age composition of spring chinook salmon carcasses from Capehorn Creek (Middle Fork Salmon River drainage) during spawning ground surveys, 1993^a. All fish were sampled by Idaho Department of Fish and Game personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=0	70	0	0.0%	n=0
72	0	0.0%	0.0%	72	0	0.0%	0.0%
74	0	0.0%		74	0	0.0%	
76	0	0.0%		76	0	0.0%	
78	0	0.0%		78	0	0.0%	
80	0	0.0%		80	0	0.0%	
82	0	0.0%		82	0	0.0%	
84	0	0.0%		84	0	0.0%	
86	0	0.0%		86	2	14.3%	
88	0	0.0%		88	4	28.6%	
90	0	0.0%		90	2	14.3%	
92	0	0.0%	Age 5	92	2	14.3%	Age 5
94	1	14.3%	n=7	94	4	28.6%	n=14
96	0	0.0%	100.0%	96	0	0.0%	100.0%
98	0	0.0%		98	0	0.0%	
100	1	14.3%		100	0	0.0%	
102	2	28.6%		102	0	0.0%	
104	3	42.9%		104	0	0.0%	
106	0	0.0%		106	0	0.0%	
108	0	0.0%		108	0	0.0%	
110	0	0.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
114	0	0.0%		114	0	0.0%	
116	0	0.0%		116	0	0.0%	
Total	7				14		

^aTen additional fish were sampled: (8) males, (1) female, and (1) sex unknown, with only hyperal lengths taken and are not included in the table. Hyperal lengths may be obtained from the CIS Database, NRPB, Idaho Department of Fish and Game.

Table A9. Length frequency and age composition of spring chinook salmon carcasses recovered from Beaver Creek (Middle Fork Salmon River drainage) during spawning ground surveys, 1993^a. All fish were sampled by Idaho Department of Fish and Game personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=0	70	1	25.0%	n=1
72	0	0.0%	0.0%	72	0	0.0%	25.0%
74	0	0.0%		74	0	0.0%	
76	0	0.0%		76	0	0.0%	
78	0	0.0%		78	0	0.0%	
80	0	0.0%		80	0	0.0%	
82	0	0.0%		82	0	0.0%	
84	0	0.0%		84	0	0.0%	
86	0	0.0%		86	0	0.0%	
88	0	0.0%		88	2	50.0%	
90	0	0.0%		90	0	0.0%	
92	0	0.0%	Age 5	92	1	25.0%	Age 5
94	0	0.0%	n=2	94	0	0.0%	n=4
96	0	0.0%	100.0%	96	0	0.0%	75.0%
98	0	0.0%		98	0	0.0%	
100	1	50.0%		100	0	0.0%	
102	0	0.0%		102	0	0.0%	
104	1	50.0%		104	0	0.0%	
106	0	0.0%		106	0	0.0%	
108	0	0.0%		108	0	0.0%	
110	0	0.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
114	0	0.0%		114	0	0.0%	
116	0	0.0%		116	0	0.0%	
Total	2				4		

^a Three additional fish were sampled: (2) females - hyperal lengths only, and (1) sex unknown and length unknown, and are not included in the table. Hyperal lengths are available from CIS Database, NRPB, Idaho Department of Fish and Game.

Table A10. Length frequency and age composition of spring chinook salmon carcasses recovered from Bear Valley Creek (Middle Fork Salmon River drainage) during spawning ground surveys, 1993^a.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	1	2.4%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=3	70	0	0.0%	n=4
72	1	2.4%	7.2%	72	0	0.0%	5.6%
74	1	2.4%		74	1	1.4%	
76	0	0.0%		76	2	2.8%	
78	0	0.0%		78	1	1.4%	
80	1	2.4%		80	0	0.0%	
82	0	0.0%		82	4	5.6%	
84	0	0.0%		84	10	14.1%	
86	1	2.4%		86	7	8.5%	
88	2	4.9%		88	9	12.7%	
90	2	4.9%		90	13	18.3%	
92	3	7.3%	Age 5	92	14	19.7%	Age 5
94	4	9.8%	n=38	94	5	7.0%	n=68
96	9	22.0%	92.6%	96	3	4.2%	94.3%
98	6	14.6%		98	3	4.2%	
100	3	7.3%		100	0	0.0%	
102	1	2.4%		102	0	0.0%	
104	2	4.9%		104	0	0.0%	
106	1	2.4%		106	0	0.0%	
108	2	4.9%		108	0	0.0%	
110	1	2.4%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
114	0	0.0%		114	0	0.0%	
116	0	0.0%		116	0	0.0%	
Total	41			Total	71		

^a Eighty-three fish were sampled by Shoshone-Bannock Tribe personnel. Sixteen of these fish were sampled but not measured and are not included in the table: (7) males, (4) females), (4) sex unknown and (1) sex unknown with hyperal length only measured.

Table A 1 1. Length frequency and age composition of spring chinook salmon carcasses recovered from Elk Creek (Middle Fork Salmon River drainage) during spawning grounds surveys, 1993. All fish were sampled by Idaho Department of Fish and Game personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=1	70	1	1.3%	n=6
72	1	2.9%	2.9%	72	0	0.0%	7.9%
74	0	0.0%		74	1	1.3%	
76	0	0.0%		76	3	4.0%	
78	0	0.0%		78	1	1.3%	
80	0	0.0%		80	2	2.7%	
82	0	0.0%		82	2	2.7%	
84	0	0.0%		84	2	2.7%	
86	3	8.8%		86	17	22.7%	
88	4	11.8%		88	14	18.7%	
90	2	5.9%		90	12	16.0%	
92	2	5.9%	Age 5	92	9	12.0%	Age 5
94	3	8.8%	n=33	94	3	4.0%	n=69
96	5	14.7%	97.0%	96	5	6.7%	92.2%
98	7	20.6%		98	3	4.0%	
100	2	5.9%		100	0	0.0%	
102	1	2.9%		102	0	0.0%	
104	1	2.9%		104	0	0.0%	
106	2	5.9%		106	0	0.0%	
108	1	2.9%		108	0	0.0%	
110	0	0.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
114	0	0.0%		114	0	0.0%	
116	0	0.0%		116	0	0.0%	
Total	34				75		

Table A12. Length frequency and age composition of spring chinook salmon carcasses recovered from Sulphur Creek (Middle Fork Salmon River drainage) during spawning ground surveys, 1993. All fish were sampled by Idaho Department of Fish and Game personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=0	70	0	0.0%	n=0
72	0	0.0%	0.0%	72	0	0.0%	0.0%
74	0	0.0%		74	0	0.0%	
76	0	0.0%		76	0	0.0%	
78	0	0.0%		78	0	0.0%	
80	0	0.0%		80	0	0.0%	
82	0	0.0%		82	0	0.0%	
84	0	0.0%		84	1	14.3%	
86	0	0.0%		86	1	14.3%	
88	0	0.0%		88	0	0.0%	
90	0	0.0%		90	3	42.9%	
92	0	0.0%	Age 5	92	1	14.3%	Age 5
94	0	0.0%	n=0	94	1	14.3%	n=7
96	0	0.0%	0.0%	96	0	0.0%	100.0%
98	0	0.0%		98	0	0.0%	
100	0	0.0%		100	0	0.0%	
102	0	0.0%		102	0	0.0%	
104	0	0.0%		104	0	0.0%	
106	0	0.0%		106	0	0.0%	
108	0	0.0%		108	0	0.0%	
110	0	0.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
114	0	0.0%		114	0	0.0%	
116	0	0.0%		116	0	0.0%	
Total	0				7		

Table A13. Length frequency and age composition of spring chinook salmon carcasses from Marsh Creek (Middle Fork Salmon River drainage) during spawning ground surveys, 1993'. All fish were sampled by Idaho Department of Fish and Game personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	1	2.2%		64	0	0.0%	
66	0	0.0%		66	2	4.7%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	1	2.2%	n=4	70	1	2.3%	n=4
72	1	2.2%	8.8%	72	0	0.0%	9.3%
74	1	2.2%		74	0	0.0%	
76	0	0.0%		76	1	2.3%	
78	0	0.0%		78	0	0.0%	
80	0	0.0%		80	1	2.3%	
82	0	0.0%		82	1	2.3%	
84	0	0.0%		84	3	7.0%	
86	2	4.4%		86	6	14.0%	
88	1	2.2%		88	8	18.6%	
90	4	8.9%		90	7	16.3%	
92	2	4.4%	Age 5	92	8	18.6%	Age 5
94	5	11.1%	n=41	94	3	7.0%	n=39
96	7	15.6%	91.0%	96	0	0.0%	90.8%
98	5	11.1%		98	2	4.7%	
100	7	15.6%		100	0	0.0%	
102	3	6.7%		102	0	0.0%	
104	1	2.2%		104	0	0.0%	
106	2	4.4%		106	0	0.0%	
108	2	4.4%		108	0	0.0%	
110	0	0.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
114	0	0.0%		114	0	0.0%	
116	0	0.0%		116	0	0.0%	
Total	45			Total	43		

^a Three additional fish were sampled, but not measured and are not included in the table: (2) males and (1) female.

Table A14. Length frequency and age composition of spring chinook salmon carcasses recovered from W.Fk. Chamberlain Creek (Salmon River drainage) during spawning ground surveys, 1993^a. All fish were sampled by Idaho Department of Fish and Game personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	1	50.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=2	70	0	0.0%	n=2
72	0	0.0%	100.0%	72	0	0.0%	100.0%
74	1	50.0%		74	1	50.0%	
76	1	50.0%		76	0	0.0%	
78	0	0.0%		78	0	0.0%	
80	0	0.0%		80	0	0.0%	
82	0	0.0%		82	0	0.0%	
84	0	0.0%		84	0	0.0%	
86	0	0.0%		86	0	0.0%	
88	0	0.0%		88	0	0.0%	
90	0	0.0%		90	0	0.0%	
92	0	0.0%	Age 5	92	0	0.0%	Age 5
94	0	0.0%	n=0	94	0	0.0%	n=0
96	0	0.0%	0.0%	96	0	0.0%	0.0%
98	0	0.0%		98	0	0.0%	
100	0	0.0%		100	0	0.0%	
102	0	0.0%		102	0	0.0%	
104	0	0.0%		104	0	0.0%	
106	0	0.0%		106	0	0.0%	
108	0	0.0%		108	0	0.0%	
110	0	0.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
114	0	0.0%		114	0	0.0%	
116	0	0.0%		116	0	0.0%	
Total	2			Total	2		

^a One additional fish was sampled but not measured and not included in the table: (1) female.

Table A15. Length frequency and age composition of spring chinook salmon from Valley Creek (Salmon River drainage) during spawning ground surveys, 1993^a. All fish were sampled by Shoshone-Bannock Tribe personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=1	60	0	0.0%	n=0
62	1	8.3%	8.3%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=2	70	0	0.0%	n=1
72	1	8.3%	16.6%	72	0	0.0%	5/3%
74	1	8.3%		74	0	0.0%	
76	0	0.0%		76	0	0.0%	
78	0	0.0%		78	1	5.3%	
80	0	0.0%		80	1	5.3%	
82	0	0.0%		82	2	10.5%	
84	0	0.0%		84	1	5.3%	
86	0	0.0%		86	2	10.5%	
88	0	0.0%		88	3	15.8%	
90	0	0.0%		90	3	15.8%	
92	1	8.3%	Age 5	92	2	10.5%	Age 5
94	0	0.0%	n=9	94	1	5.3%	n=18
96	0	0.0%	75.0%	96	2	10.5%	94.8%
98	0	0.0%		98	0	0.0%	
100	2	16.7%		100	0	0.0%	
102	2	16.7%		102	1	5.3%	
104	0	0.0%		104	0	0.0%	
106	2	16.7%		106	0	0.0%	
108	1	8.3%		108	0	0.0%	
110	1	8.3%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
Total	12				19		

^aEight additional fish were sampled, but not measured: (2) males, (1) female, and (5) sex unknown and are not included in the table.

Table A16. Length frequency and age composition of spring chinook salmon carcasses recovered from American River (S.Fk. Clearwater River drainage) during spawning ground surveys, 1993. All fish were sampled by Idaho Department of Fish and Game personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	2	8.3%	n=4	70	2	6.5%	n=13
72	0	0.0%	16.7%	72	4	12.9%	42.0%
74	1	4.2%		74	4	12.9%	
76	0	0.0%		76	0	0.0%	
78	1	4.2%		78	3	9.7%	
80	0	0.0%		80	2	6.5%	
82	0	0.0%		82	3	9.7%	
84	1	4.2%		84	3	9.7%	
86	3	12.5%		86	3	9.7%	
88	1	4.2%		88	3	9.7%	
90	4	16.7%		90	3	9.7%	
92	3	12.5%	Age 5	92	0	0.0%	Age 5
94	2	8.3%	n=20	94	1	3.2%	n=18
96	4	16.7%	83.4%	96	0	0.0%	58.2%
98	2	8.3%		98	0	0.0%	
100	0	0.0%		100	0	0.0%	
102	0	0.0%		102	0	0.0%	
104	0	0.0%		104	0	0.0%	
106	0	0.0%		106	0	0.0%	
108	0	0.0%		108	0	0.0%	
110	0	0.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
114	0	0.0%		114	0	0.0%	
116	0	0.0%		116	0	0.0%	
Total	24				31		

Table A17. Length frequency and age composition of spring chinook salmon carcasses recovered from Red River (S.Fk. Clearwater River drainage) during spawning ground surveys, 1993^a. All fish were sampled by Idaho Department of Fish and Game personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	0	0.0%		64	1	7.1%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=1	70	2	14.3%	n=5
72	0	0.0%	14.3%	72	1	7.1%	35.6%
74	0	0.0%		74	1	7.1%	
76	0	0.0%		76	0	0.0%	
78	1	14.3%		78	0	0.0%	
80	0	0.0%		80	2	14.3%	
82	0	0.0%		82	1	7.1%	
84	1	14.3%		84	3	21.4%	
86	1	14.3%		86	1	7.1%	
88	1	14.3%		88	2	14.3%	
90	0	0.0%		90	0	0.0%	
92	0	0.0%	Age 5	92	0	0.0%	Age 5
94	0	0.0%	n=6	94	0	0.0%	n=9
96	1	14.3%	85.8%	96	0	0.0%	64.2%
98	1	14.3%		98	0	0.0%	
100	1	14.3%		100	0	0.0%	
102	0	0.0%		102	0	0.0%	
104	0	0.0%		104	0	0.0%	
106	0	0.0%		106	0	0.0%	
108	0	0.0%		108	0	0.0%	
110	0	0.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
114	0	0.0%		114	0	0.0%	
116	0	0.0%		116	0	0.0%	
Total	7				14		

^a Forty eight additional fish were sampled: (31) males and (17) females, with only hyperal lengths taken and are not included in the table. Hyperal lengths may be obtained from the CIS Database, NRPB, Idaho Department of Fish and Game.

Table A18. Length frequency and age composition of spring chinook salmon carcasses from the E.Fk. Salmon River during spawning ground surveys, 1993. All fish were sampled by Shoshone-Bannock Tribe personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=0	70	0	0.0%	n=0
72	0	0.0%	0.0%	72	0	0.0%	0.0%
74	0	0.0%		74	0	0.0%	
76	0	0.0%		76	0	0.0%	
78	0	0.0%		78	0	0.0%	
80	0	0.0%		80	0	0.0%	
82	0	0.0%		82	0	0.0%	
84	0	0.0%		84	0	0.0%	
86	0	0.0%		86	0	0.0%	
88	0	0.0%		88	0	0.0%	
90	0	0.0%		90	0	0.0%	
92	0	0.0%	Age 5	92	0	0.0%	Age 5
94	0	0.0%	n=0	94	1	50.0%	n=2
96	0	0.0%	0.0%	96	1	50.0%	100.0%
98	0	0.0%		98	0	0.0%	
100	0	0.0%		100	0	0.0%	
102	0	0.0%		102	0	0.0%	
104	0	0.0%		104	0	0.0%	
106	0	0.0%		106	0	0.0%	
108	0	0.0%		108	0	0.0%	
110	0	0.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
114	0	0.0%		114	0	0.0%	
116	0	0.0%		116	0	0.0%	
Total	0				2		

Table A19. Length frequency and age composition of spring chinook salmon carcasses recovered from Herd Creek (E.Fk. Salmon River drainage) during spawning ground surveys, 1993^a. All fish were sampled by Shoshone-Bannock Tribe personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
44	1	20.0%		44	0	0.0%	
46	0	0.0%		46	0	0.0%	
48	0	0.0%		48	0	0.0%	
50	0	0.0%	Jacks	50	0	0.0%	
52	0	0.0%	n=1	52	0	0.0%	n=0
54	0	0.0%	20.0%	54	0	0.0%	0.0%
56	0	0.0%		56	0	0.0%	
58	0	0.0%		58	0	0.0%	
60	0	0.0%		60	0	0.0%	
62	0	0.0%		62	0	0.0%	
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=0	70	0	0.0%	n=0
72	0	0.0%	0.0%	72	0	0.0%	0.0%
74	0	0.0%		74	0	0.0%	
76	0	0.0%		76	0	0.0%	
78	0	0.0%		78	0	0.0%	
80	0	0.0%		80	0	0.0%	
82	0	0.0%		82	0	0.0%	
84	0	0.0%		84	1	12.5%	
86	0	0.0%		86	1	12.5%	
88	0	0.0%		88	0	0.0%	
90	0	0.0%		90	2	25.0%	
92	0	0.0%	Age 5	92	4	50.0%	Age 5
94	1	20.0%	n=4	94	0	0.0%	n=8
96	1	20.0%	80.0%	96	0	0.0%	100.0%
98	0	0.0%		98	0	0.0%	
100	0	0.0%		100	0	0.0%	
102	0	0.0%		102	0	0.0%	
104	1	20.0%		104	0	0.0%	
106	1	20.0%		106	0	0.0%	
108	0	0.0%		108	0	0.0%	
110	0	0.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
Total	5				8		

^a One additional fish was sampled but not measured and is not included in the table: (1) female.

Table A20. Length frequency and age composition of spring chinook salmon carcasses recovered from Brushy Fork (Lochsa River drainage) during spawning ground surveys, 1993^a. All fish were sampled by Idaho Department of Fish and Game personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=0	70	0	0.0%	n=1
72	0	0.0%	0.0%	72	1	16.7%	16.7%
74	0	0.0%		74	0	0.0%	
76	0	0.0%		76	0	0.0%	
78	0	0.0%		78	0	0.0%	
80	0	0.0%		80	0	0.0%	
82	0	0.0%		82	2	33.3%	
84	0	0.0%		84	1	16.7%	
86	0	0.0%		86	2	33.3%	
88	0	0.0%		88	0	0.0%	
90	1	33.3%		90	0	0.0%	
92	0	0.0%	Age 5	92	0	0.0%	Age 5
94	0	0.0%	n=3	94	0	0.0%	n=5
96	1	33.3%	00.0%	96	0	0.0%	83.3%
98	0	0.0%		98	0	0.0%	
100	0	0.0%		100	0	0.0%	
102	0	0.0%		102	0	0.0%	
104	1	33.3%		104	0	0.0%	
106	0	0.0%		106	0	0.0%	
108	0	0.0%		108	0	0.0%	
110	0	0.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
Total	3				6		

Four additional fish were sampled: (2) males and (2) females, with only hyperal lengths taken and are not included in the table. Hyperal lengths may be obtained from the CIS Database, NRPB, Idaho Department of Fish and Game.

Table A21. Length frequency and age composition of spring chinook salmon carcasses recovered from Crooked Fork (Lochsa River drainage) during spawning ground surveys, 1993^a. All fish were sampled by Idaho Department of Fish and Game personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=0	70	0	0.0%	n=0
72	0	0.0%	0.0%	72	0	0.0%	0.0%
74	0	0.0%		74	0	0.0%	
76	0	0.0%		76	0	0.0%	
78	0	0.0%		78	0	0.0%	
80	0	0.0%		80	0	0.0%	
82	0	0.0%		82	0	0.0%	
84	0	0.0%		84	0	0.0%	
86	0	0.0%		86	0	0.0%	
88	1	25.0%		88	0	0.0%	
90	0	0.0%		90	0	0.0%	
92	0	0.0%	Age 5	92	0	0.0%	Age 5
94	1	25.0%	n=4	94	0	0.0%	n=0
96	0	0.0%	100.0%	96	0	0.0%	0.0%
98	0	0.0%		98	0	0.0%	
100	1	25.0%		100	0	0.0%	
102	0	0.0%		102	0	0.0%	
104	0	0.0%		104	0	0.0%	
106	0	0.0%		106	0	0.0%	
108	0	0.0%		108	0	0.0%	
110	1	25.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
Total	4				0		

^a Fourteen additional fish were sampled: (6) males, (7) females, and (1) sex unknown, with only hyperal lengths taken and are not included in the table. Hyperal lengths may be obtained from the CIS Database, NRPB, Idaho Department of Fish and Game.

Table A22.

Length frequency of and age composition of spring chinook salmon carcasses recovered from Rapid River during spawning ground surveys, 1993. All fish were sampled by Idaho Department of Fish and Game personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=0	70	0	0.0%	n=1
72	0	0.0%	0.0%	72	0	0.0%	25.0%
74	0	0.0%		74	0	0.0%	
76	0	0.0%		76	0	0.0%	
78	0	0.0%		78	1	25.0%	
80	0	0.0%		80	1	25.0%	
82	1	50.0%		82	0	0.0%	
84	0	0.0%		84	1	25.0%	
86	0	0.0%		86	0	0.0%	
88	0	0.0%		88	0	0.0%	
90	0	0.0%		90	0	0.0%	
92	0	0.0%	Age 5	92	0	0.0%	Age 5
94	1	50.0%	n=2	94	1	25.0%	n=3
96	0	0.0%	100.0%	96	0	0.0%	75.0%
98	0	0.0%		98	0	0.0%	
100	0	0.0%		100	0	0.0%	
102	0	0.0%		102	0	0.0%	
104	0	0.0%		104	0	0.0%	
106	0	0.0%		106	0	0.0%	
108	0	0.0%		108	0	0.0%	
110	0	0.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
Total	2				4		

Table A23. Length frequency and age composition of summer chinook salmon carcasses recovered from S.Fk. Salmon River during spawning ground surveys, 1993^a.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
48	2	2.3%		48	0	0.0%	
50	0	0.0%		50	0	0.0%	
52	0	0.0%	Jacks	52	0	0.0%	
54	0	0.0%	n=5	54	0	0.0%	n=0
56	1	1.1%	5.7%	56	0	0.0%	0.0%
58	2	2.3%		58	0	0.0%	
60	0	0.0%		60	0	0.0%	
62	0	0.0%		62	0	0.0%	
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=20	70	0	0.0%	n=23
72	5	5.7%	22.7%	72	3	1.3%	10.0%
74	6	6.8%		74	5	2.1%	
76	3	3.4%		76	9	3.8%	
78	6	6.8%		78	6	2.5%	
80	3	3.4%		80	9	3.9%	
82	6	6.8%		82	13	5.6%	
84	4	4.5%		84	10	4.3%	
86	7	8.0%		86	20	8.6%	
88	1	1.1%		88	17	7.3%	
90	2	2.3%		90	35	15.1%	
92	9	10.2%	Age 5	92	35	15.1%	Age 5
94	2	2.3%	n=63	94	27	11.6%	n=209
96	1	1.1%	71.4%	96	18	7.8%	90.1%
98	5	5.7%		98	15	6.5%	
100	9	10.2%		100	6	2.6%	
102	4	4.5%		102	1	0.4%	
104	3	3.4%		104	1	0.4%	
106	0	0.0%		106	2	0.9%	
108	3	3.4%		108	0	0.0%	
110	3	3.4%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
114	1	1.1%		114	0	0.0%	
Total	88			Total	232		

^aOne hundred and eight fish were sampled by Nez Perce Tribe personnel. Five of these fish are not included in the table as sex was undetermined. An addition, fifty-eight fish were sampled by Idaho Department of Fish and Game personnel, but not measured and are not included in the table: (4) males and (54) females. Please see CIS Database, NRPD, IDFG for more detailed information.

NOTE: Three fish were counted on the E.Fk. S.Fk. Salmon River (S.Fk. Salmon River drainage) during spawning ground surveys in 1993 and are not included in the above table: (1) male - 96cm and (2) females - 84cm, 90cm. These fish were sampled by Idaho Department of Fish and Game personnel.

Table A24. Length frequency and age composition of summer chinook salmon carcasses recovered from Lake Creek (S.Fk. Salmon River drainage) during spawning ground surveys, 1993. All fish were sampled by Nez Perce Tribe personnel.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	0	0.0%		66	0	0.0%	
68	0	0.0%	Age 4	68	0	0.0%	Age 4
70	0	0.0%	n=1	70	0	0.0%	n=0
72	0	0.0%	16.7%	72	0	0.0%	0.0%
74	0	0.0%		74	0	0.0%	
76	0	0.0%		76	0	0.0%	
78	1	16.7%		78	0	0.0%	
80	0	0.0%		80	0	0.0%	
82	0	0.0%		82	0	0.0%	
84	0	0.0%		84	0	0.0%	
86	0	0.0%		86	2	33.3%	
88	1	16.7%		88	2	33.3%	
90	1	16.7%		90	0	0.0%	
92	0	0.0%	Age 5	92	1	16.7%	Age 5
94	1	16.7%	n=5	94	1	16.7%	n=6
96	2	33.3%	83.4%	96	0	0.0%	100.0%
98	0	0.0%		98	0	0.0%	
100	0	0.0%		100	0	0.0%	
102	0	0.0%		102	0	0.0%	
104	0	0.0%		104	0	0.0%	
106	0	0.0%		106	0	0.0%	
108	0	0.0%		108	0	0.0%	
110	0	0.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
Total	6				6		

Table A25. Length frequency and age composition of summer chinook salmon carcasses recovered from the Secesh River (S.Fk. Salmon River drainage) during spawning ground surveys, 1993^a.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks n=0	58	0	0.0%	n=0
60	0	0.0%		60	0	0.0%	
62	0	0.0%		62	0	0.0%	
64	0	0.0%	Age 4 n=12	64	0	0.0%	Age 4 n=6
66	0	0.0%		66	0	0.0%	
68	1	3.6%		68	1	2.6%	
70	0	0.0%		70	0	0.0%	
72	2	7.1%		72	0	0.0%	
74	4	14.3%		74	0	0.0%	
76	4	14.3%		76	0	0.0%	
78	1	3.6%		78	5	13.2%	
80	1	3.6%	Age 5 n=16	80	2	5.3%	Age 5 n=32
82	2	7.1%		82	2	5.3%	
84	0	0.0%		84	10	26.3%	
86	2	7.1%		86	4	10.5%	
88	1	3.6%		88	5	13.2%	
90	1	3.6%		90	7	18.4%	
92	1	3.6%		92	1	2.6%	
94	2	7.1%		94	0	0.0%	
96	1	3.6%		96	1	2.6%	
98	1	3.6%		98	0	0.0%	
100	3	10.7%		100	0	0.0%	
102	0	0.0%		102	0	0.0%	
104	0	0.0%	104	0	0.0%		
106	0	0.0%	106	0	0.0%		
108	0	0.0%	108	0	0.0%		
110	1	3.6%	110	0	0.0%		
112	0	0.0%	112	0	0.0%		
Total	28			38			

^a Forty fish were sampled by Nez Perce Tribe personnel: (20) males and (20) females.








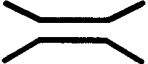
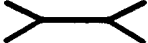
Table A26. Length frequency and age composition of summer chinook salmon carcasses recovered from Johnson Creek (S.Fk. Salmon River drainage) during spawning ground surveys, 1993^a.

Males				Females			
Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class	Fork Length (cm)	Total Number Recovered	Percent of Total	Age Class
58	0	0.0%	Jacks	58	0	0.0%	
60	0	0.0%	n=0	60	0	0.0%	n=0
62	0	0.0%	0.0%	62	0	0.0%	0.0%
64	0	0.0%		64	0	0.0%	
66	1	1.5%		66	0	0.0%	
68	0	0.0%	Age 4	68	1	1.0%	Age 4
70	0	0.0%	n=7	70	0	1.0%	N=9
72	1	1.5%	10.5%	72	1	1.0%	9.3%
74	3	4.5%		74	2	2.1%	
76	2	3.0%		76	2	2.1%	
78	0	0.0%		78	3	3.1%	
80	4	6.1%		80	6	6.3%	
82	3	4.5%		82	5	5.2%	
84	5	7.6%		84	12	12.5%	
86	4	6.1%		86	13	13.5%	
88	3	4.5%		88	11	11.5%	
90	9	13.6%		90	13	13.5%	
92	7	10.6%	Age 5	92	12	12.5%	Age 5
94	5	7.6%	n=59	94	4	4.2%	n=87
96	6	9.1%	89.3%	96	6	6.3%	90.7%
98	2	3.0%		98	0	0.0%	
100	6	9.1%		100	4	4.2%	
102	1	1.5%		102	0	0.0%	
104	1	1.5%		104	0	0.0%	
106	2	3.0%		106	0	0.0%	
108	1	1.5%		108	1	1.0%	
110	0	0.0%		110	0	0.0%	
112	0	0.0%		112	0	0.0%	
Total	66				96		

^a One hundred and forty-nine fish were sampled by Nez Perce Tribe personnel: (61) males and (85) females. Included in these fish are (3) sex unknowns, which are not included in the table.

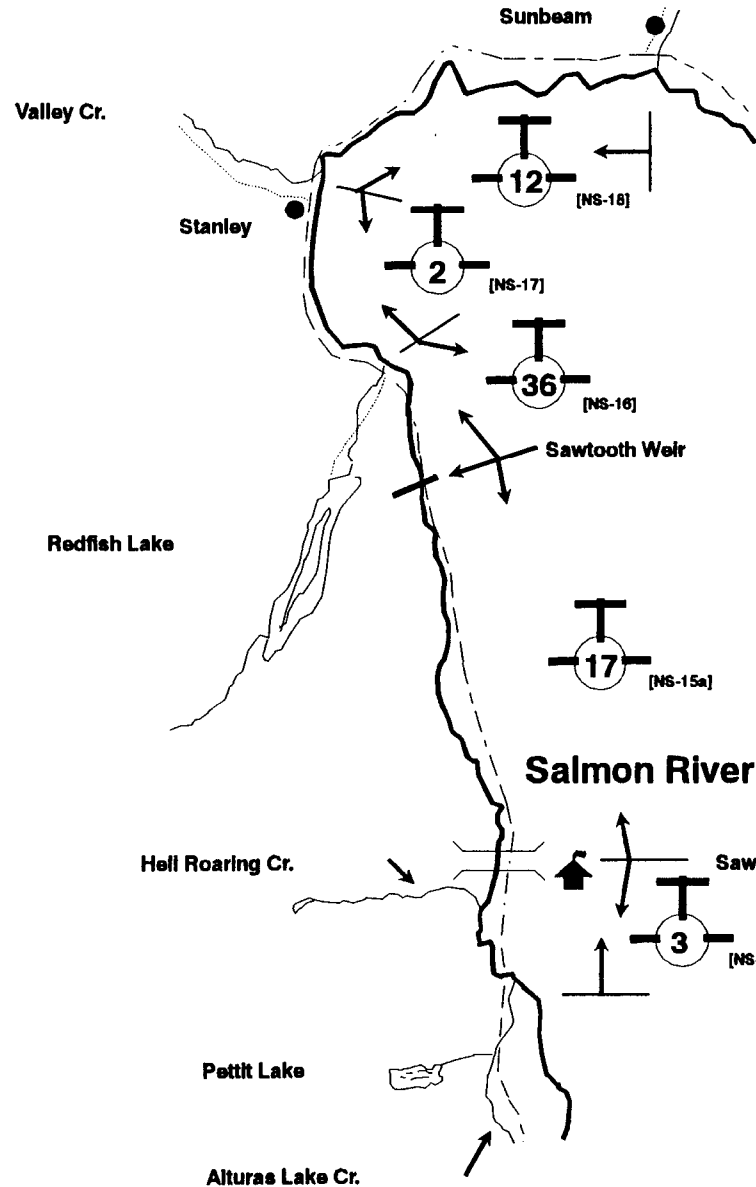
APPENDIX B. Maps showing 1989 chinook salmon redd count transects and numbers of redds counted.

LEGEND

Transect Boundaries	
Ground Redd Counts	
Helicopter Redd Counts	
Road	
Trail	
Forest Service Station	
Campground	
Road or Highway Bridge	
Pack Bridge	
Transect Codes (See Appendix B)	[WS-##], [NS-##], [WC-##], etc.

DRAINAGE Salmon River
STREAM Salmon River
OBSERVATION CONDITIONS Good
TIMING Early On Time Late

SURVEY DATE 9/1-4/93
MAP SCALE 0.78 cm = 1 mile
OBSERVER Lukens, Liter, Curet
REMARKS Helicopter



Salmon River

Number of Spring Chinook released above Sawtooth weir:

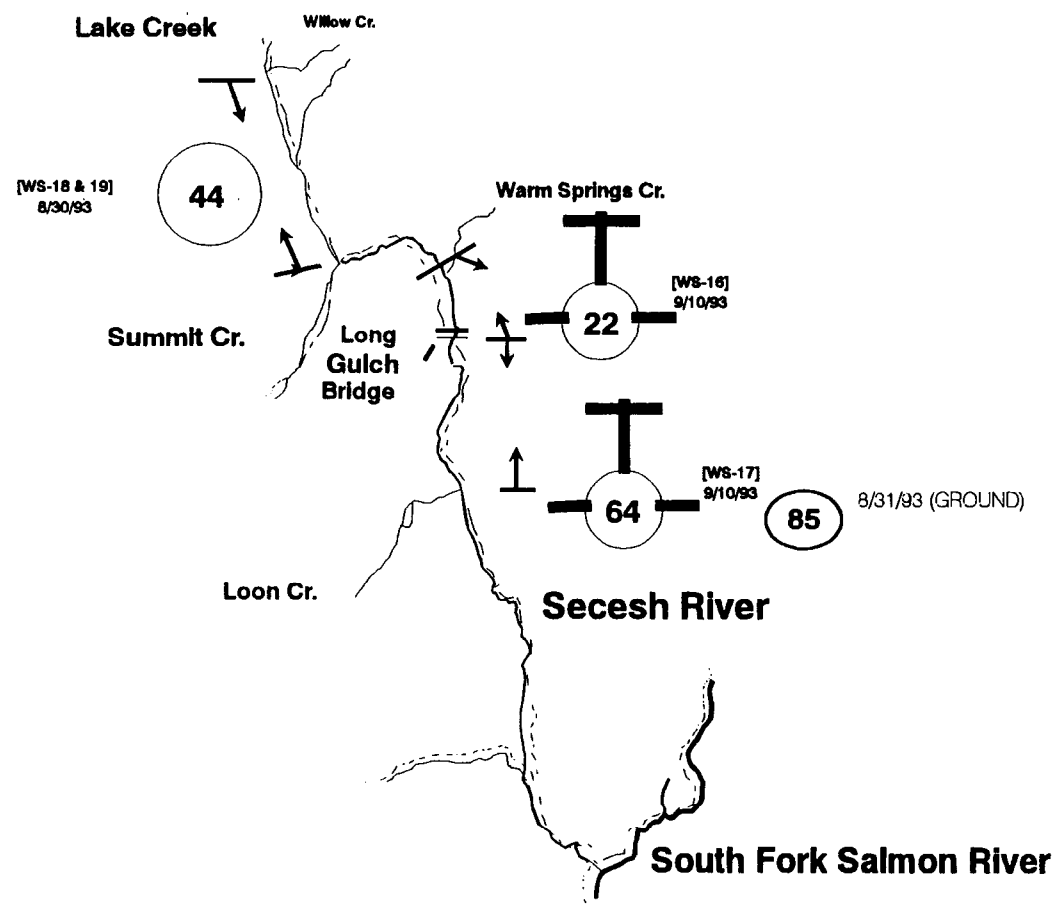
Males 207
Jacks 7
Females 209
Total trap count = 587

Salmon River

B-2

DRAINAGE South Fork Salmon River
STREAM Lake Creek - Secesh River
OBSERVATION CONDITIONS Good
TIMING Early On Time Late

SURVEY DATE indicated
MAP SCALE 0.65 cm = 1 mile
OBSERVER Anderson
REMARKS Ground - Helicopter



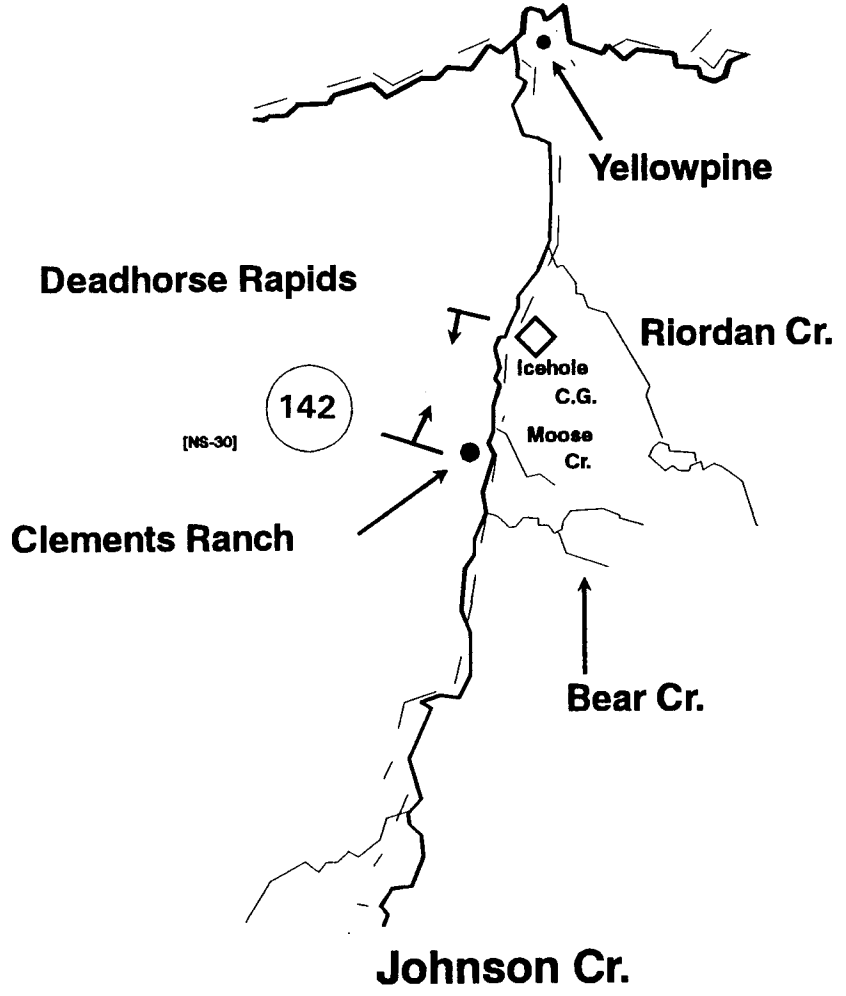
B-4

DRAINAGE E.F. of South Fork Salmon
STREAM Johnson Creek
OBSERVATION CONDITIONS Excellent
TIMING Early On Time Late

SURVEY DATE 8/25/93
MAP SCALE 0.95 cm = 1 mile
OBSERVER Anderson
REMARKS Ground

B-5

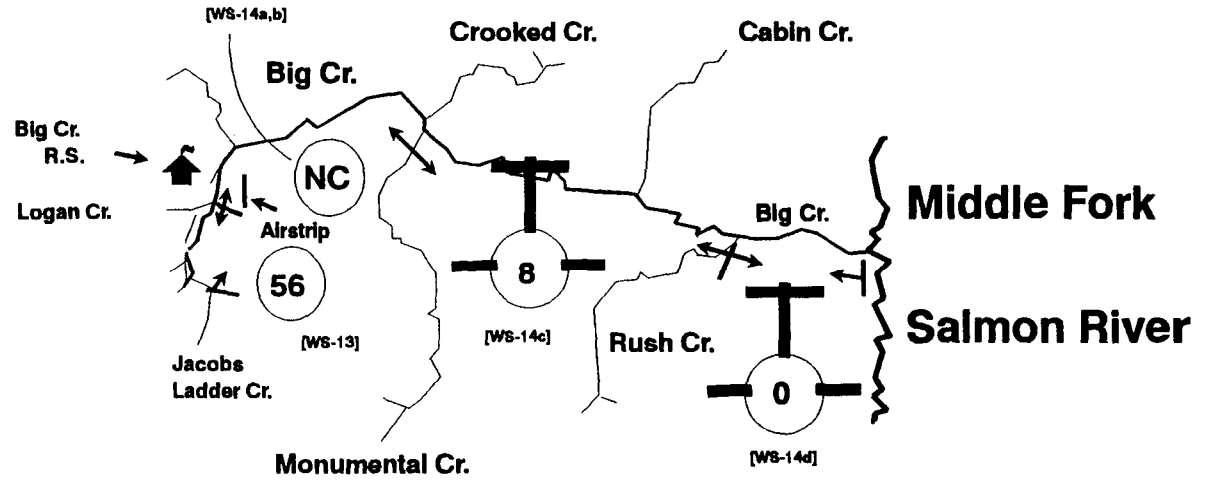
East Fork South Fork Salmon River



DRAINAGE Middle Fork Salmon River
STREAM Big Creek
OBSERVATION CONDITIONS _____
TIMING Early On Time Late

SURVEY DATE WS-14, 9/1-4/93; WS13, 9/2/93
MAP SCALE 0.45 cm = 1 mile
OBSERVER Anderson, Lukens, Lliter, Curet
REMARKS Ground, Helicopter

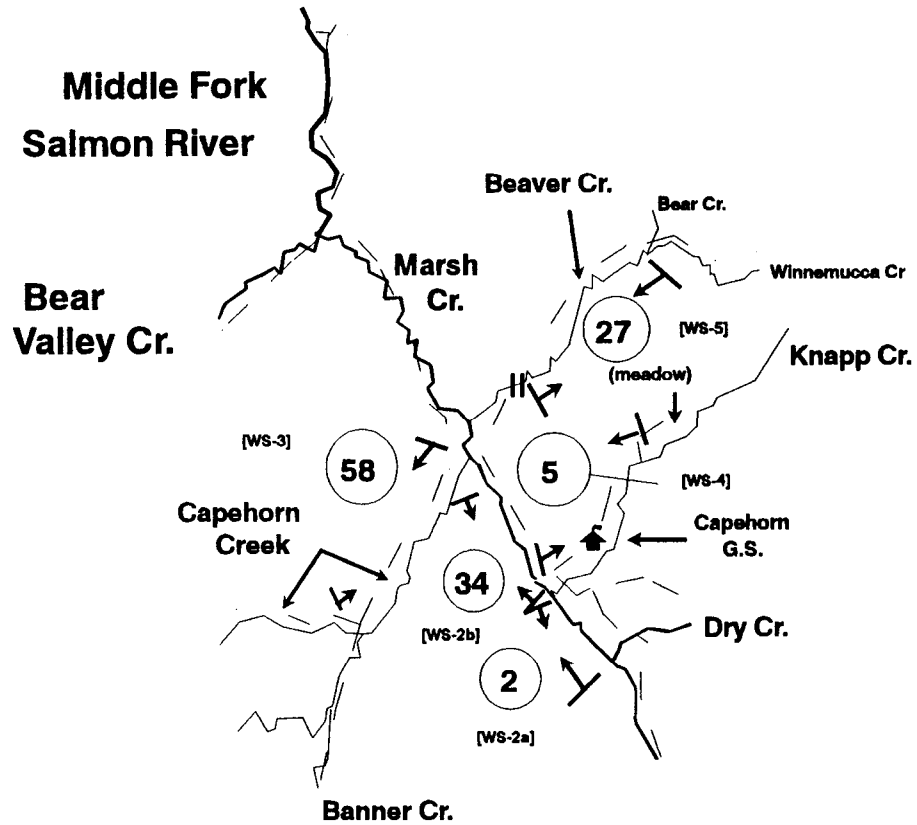
B-6



DRAINAGE Middle Fork Salmon River
STREAM Marsh, Beaver, Knapp, and Capehorn Cks.
OBSERVATION CONDITIONS Good
TIMING Early On Time Late

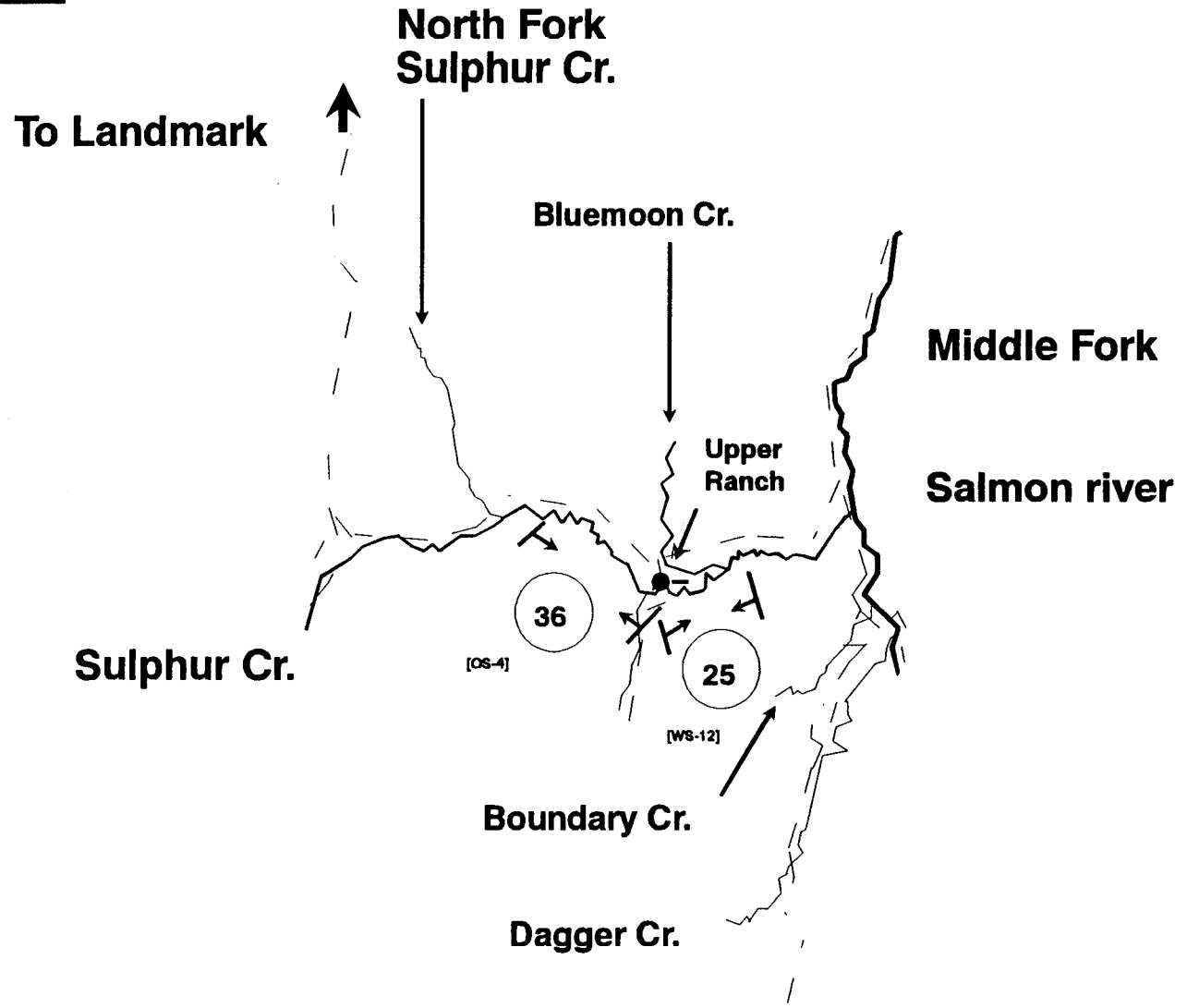
SURVEY DATE 8/18-19-93
MAP SCALE 1.15 cm = 1 mile
OBSERVER IDFG
REMARKS Ground

B-7



DRAINAGE Middle Fork Salmon River
STREAM Sulphur Creek
OBSERVATION CONDITIONS Good
TIMING Early On Time Late

SURVEY DATE 8/26/93
MAP SCALE 1.3 cm = 1 mile
OBSERVER Yundt, Allen
REMARKS Ground

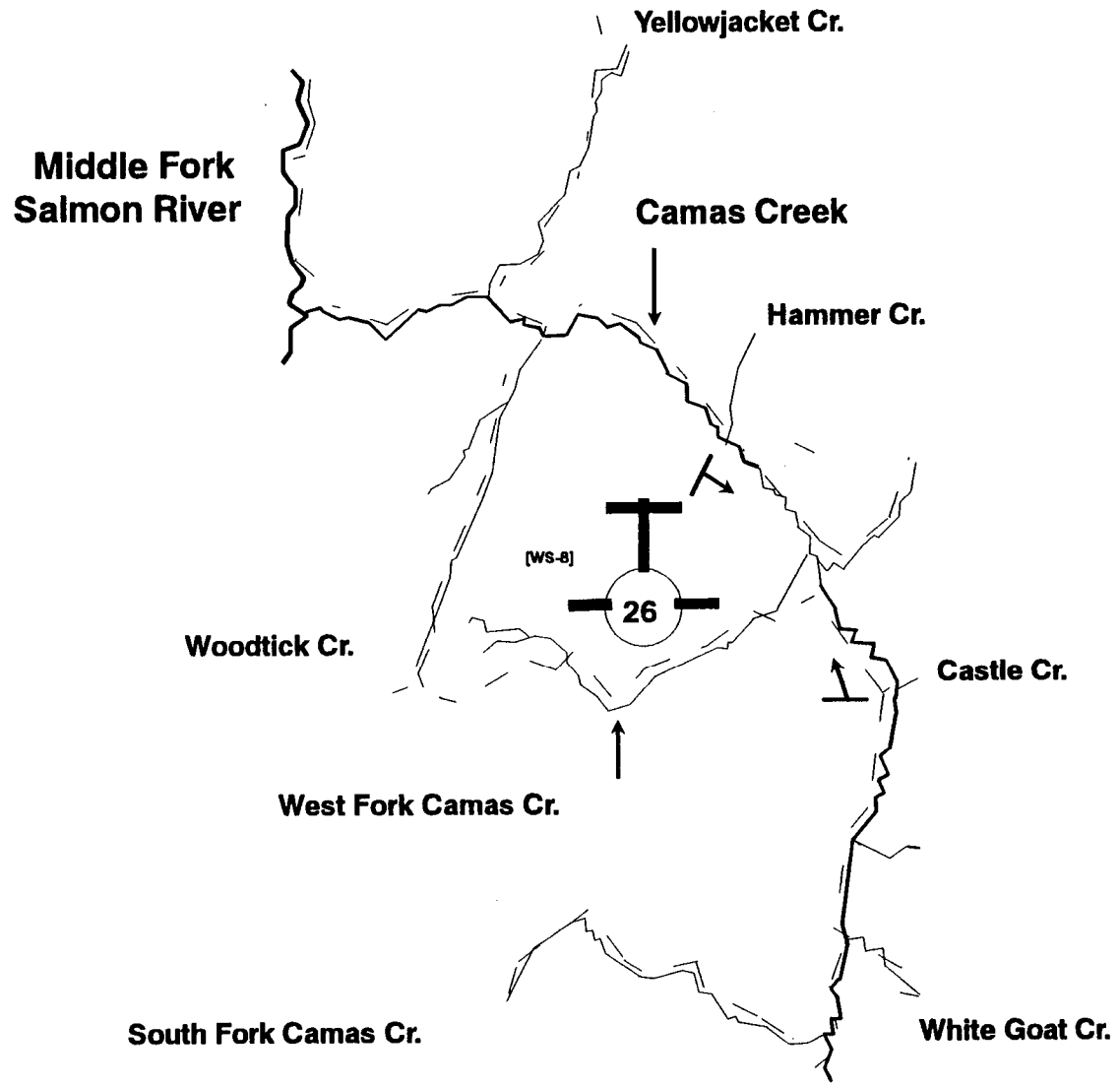


B-8

DRAINAGE Middle Fork Salmon River
STREAM Camas Creek
OBSERVATION CONDITIONS _____
TIMING Early On Time Late

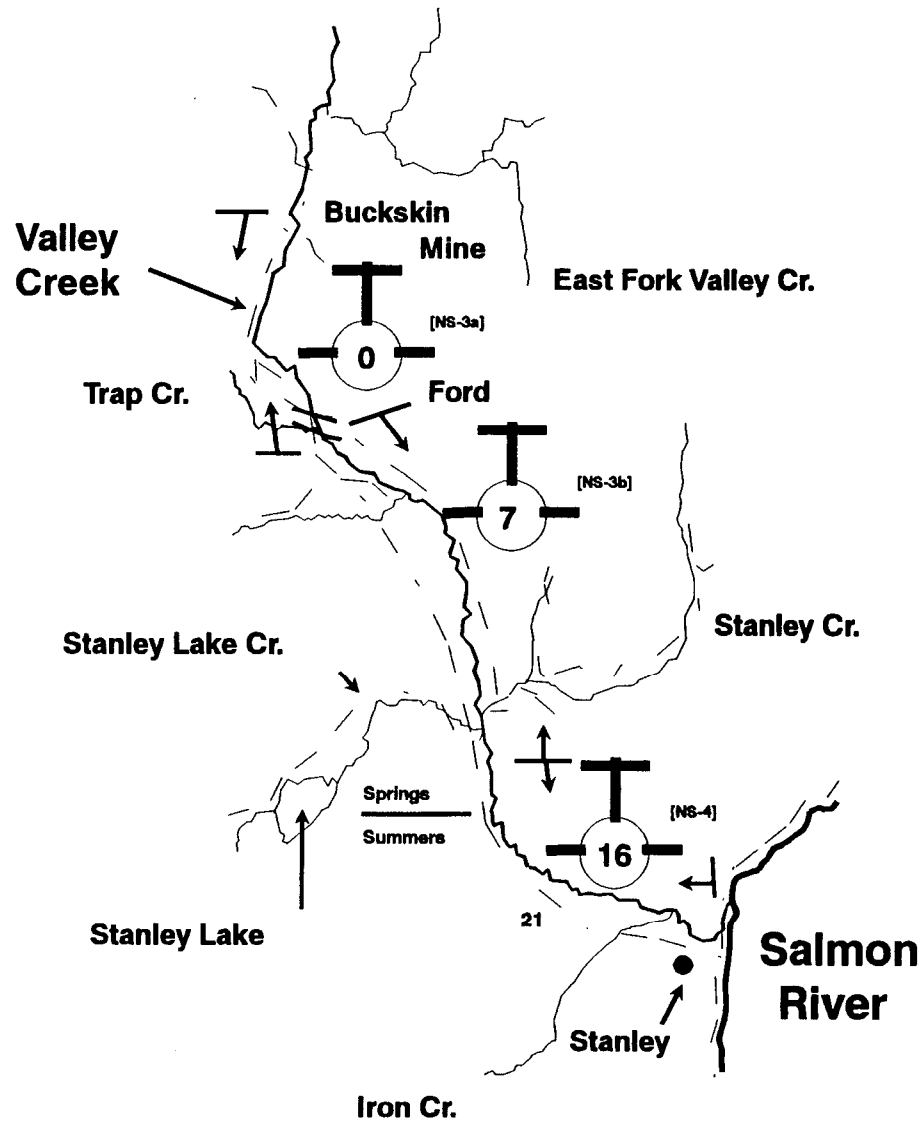
SURVEY DATE 9/1-4/93
MAP SCALE 1.10 cm = 1 mile
OBSERVER Lukens, Liter, Curet
REMARKS Helicopter

B-9



DRAINAGE Salmon River
STREAM Valley Creek
OBSERVATION CONDITIONS _____
TIMING Early On Time Late

SURVEY DATE 9/1-4/93
MAP SCALE 1.6 cm = 1 mile
OBSERVER Lukens, Litter, Curet
REMARKS Helicopter

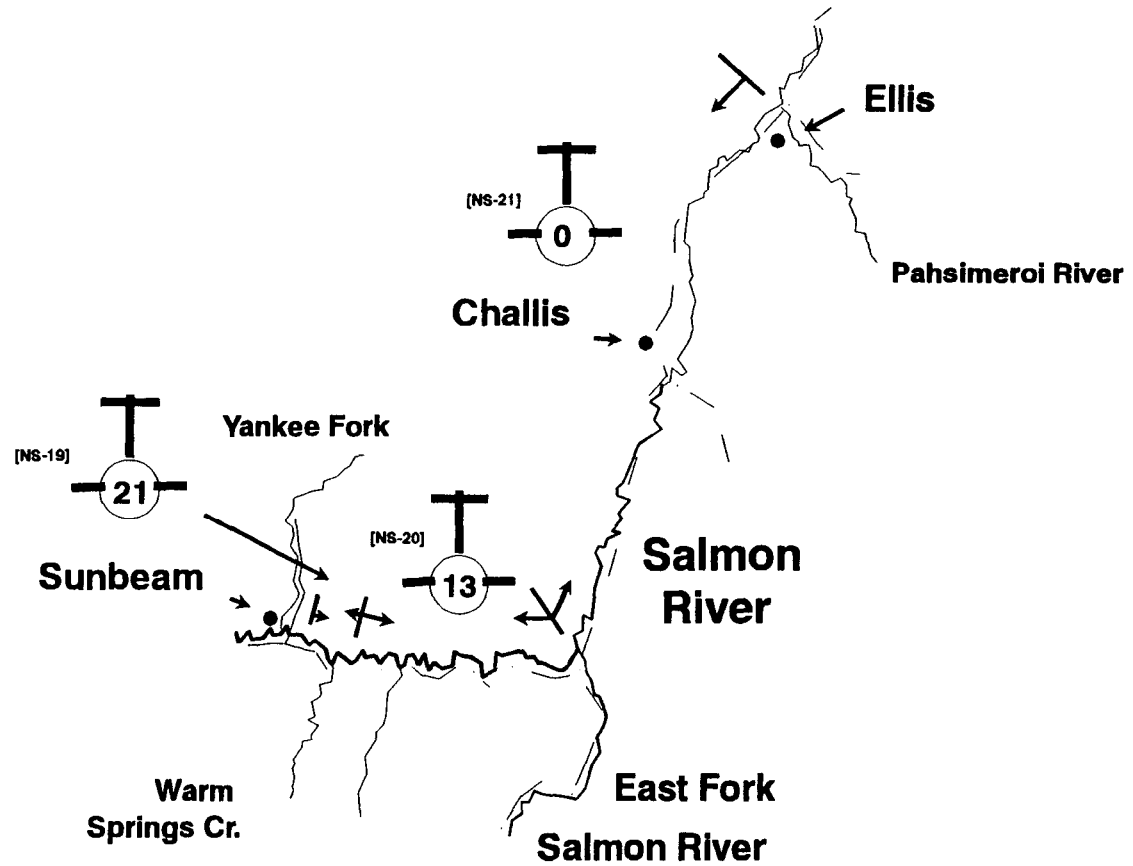


B-10

DRAINAGE Salmon River
STREAM Salmon River
OBSERVATION CONDITIONS _____
TIMING Early On Time Late

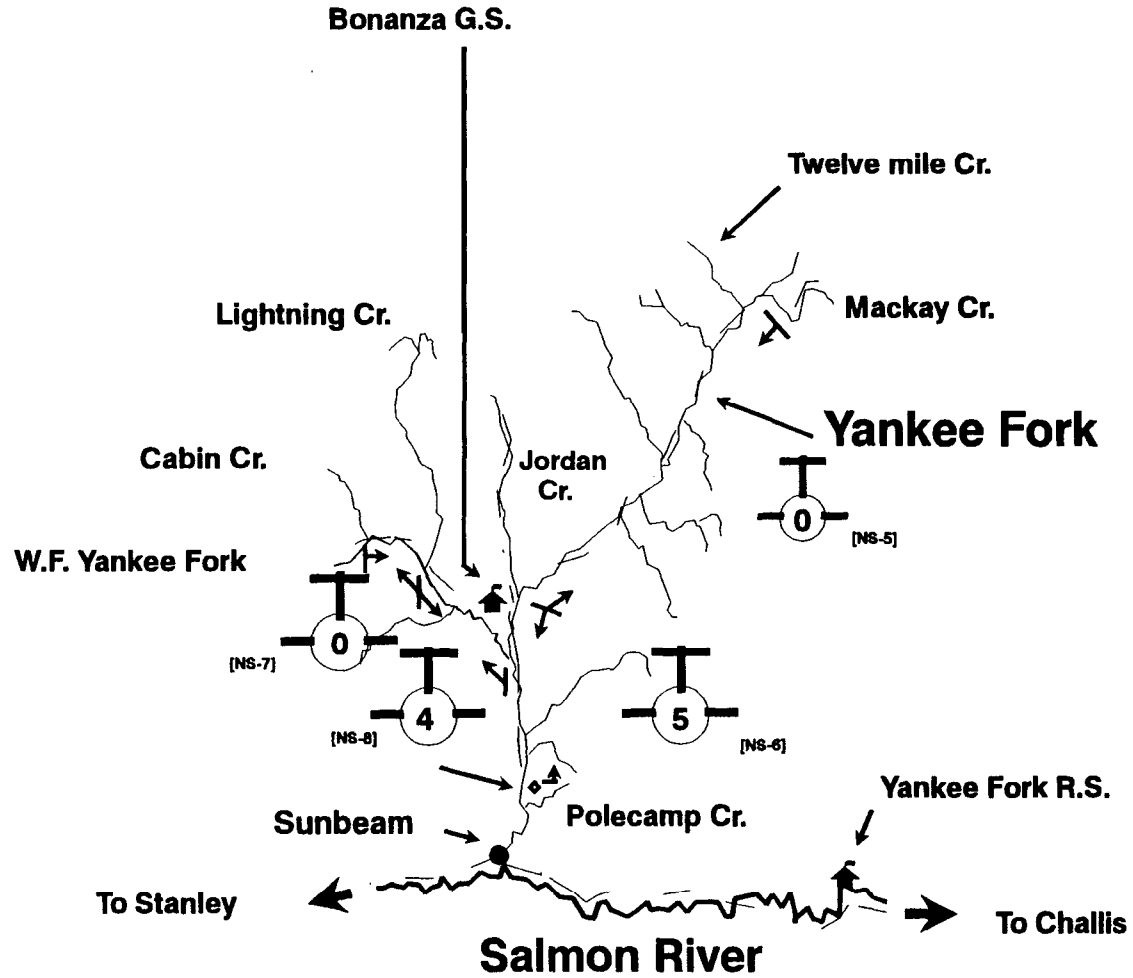
SURVEY DATE 9/1-4/93
MAP SCALE 0.35 cm = 1 mile
OBSERVER Lukens, Lifer, Curet
REMARKS Helicopter

B-11



DRAINAGE Salmon River
STREAM Yankee Fork
OBSERVATION CONDITIONS _____
TIMING Early On Time Late

SURVEY DATE 9/1-4/93
MAP SCALE 0.70 cm = 1 mile
OBSERVER Lukens, Liter, Curet
REMARKS Helicopter



B-12

DRAINAGE Salmon River
STREAM East Fork Salmon River
OBSERVATION CONDITIONS _____
TIMING Early On Time Late

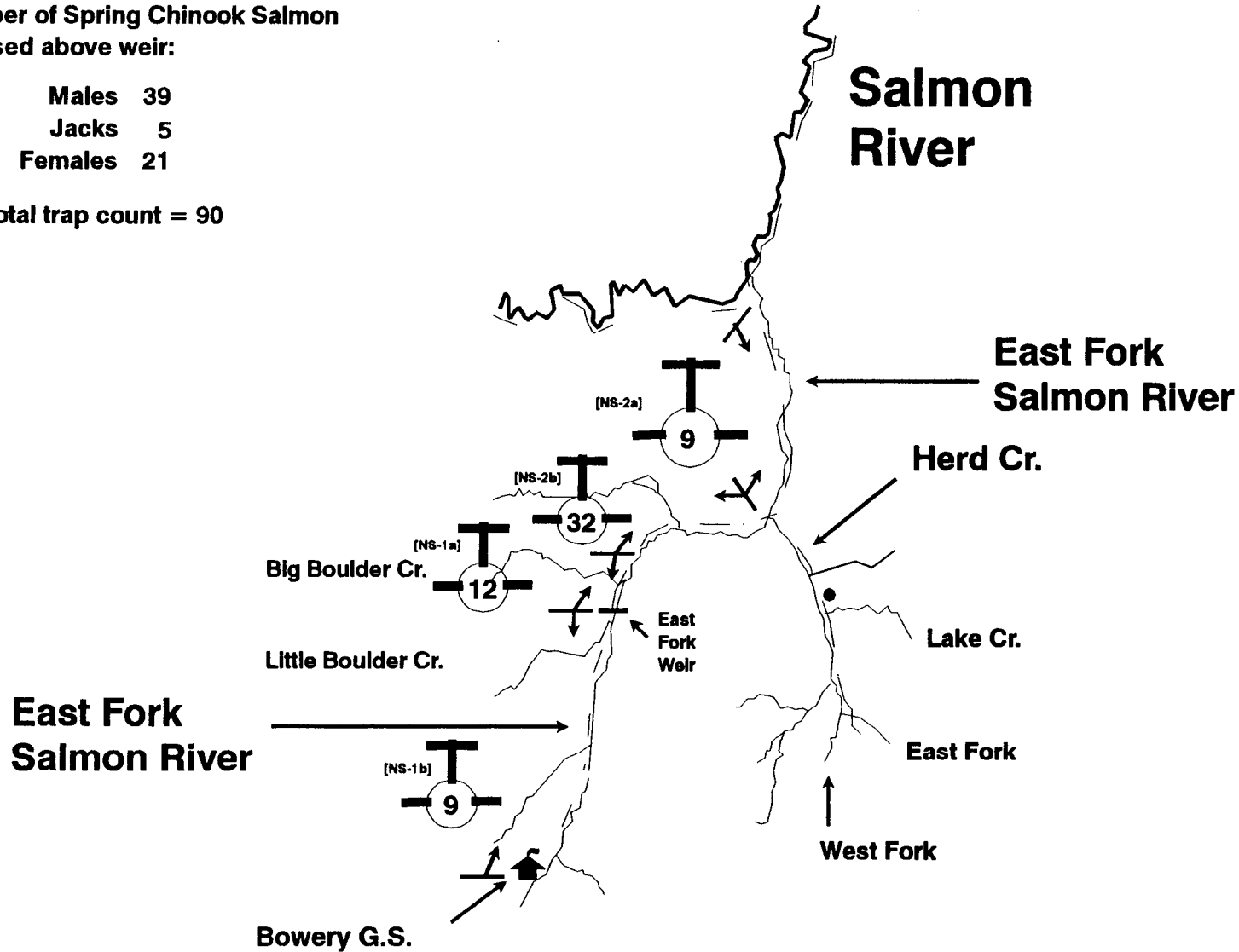
SURVEY DATE 9/1-4/93
MAP SCALE 0.6 cm 1 = mile
OBSERVER Lukens, Litter, Curet
REMARKS Helicopter

Number of Spring Chinook Salmon released above weir:

Males 39
 Jacks 5
 Females 21

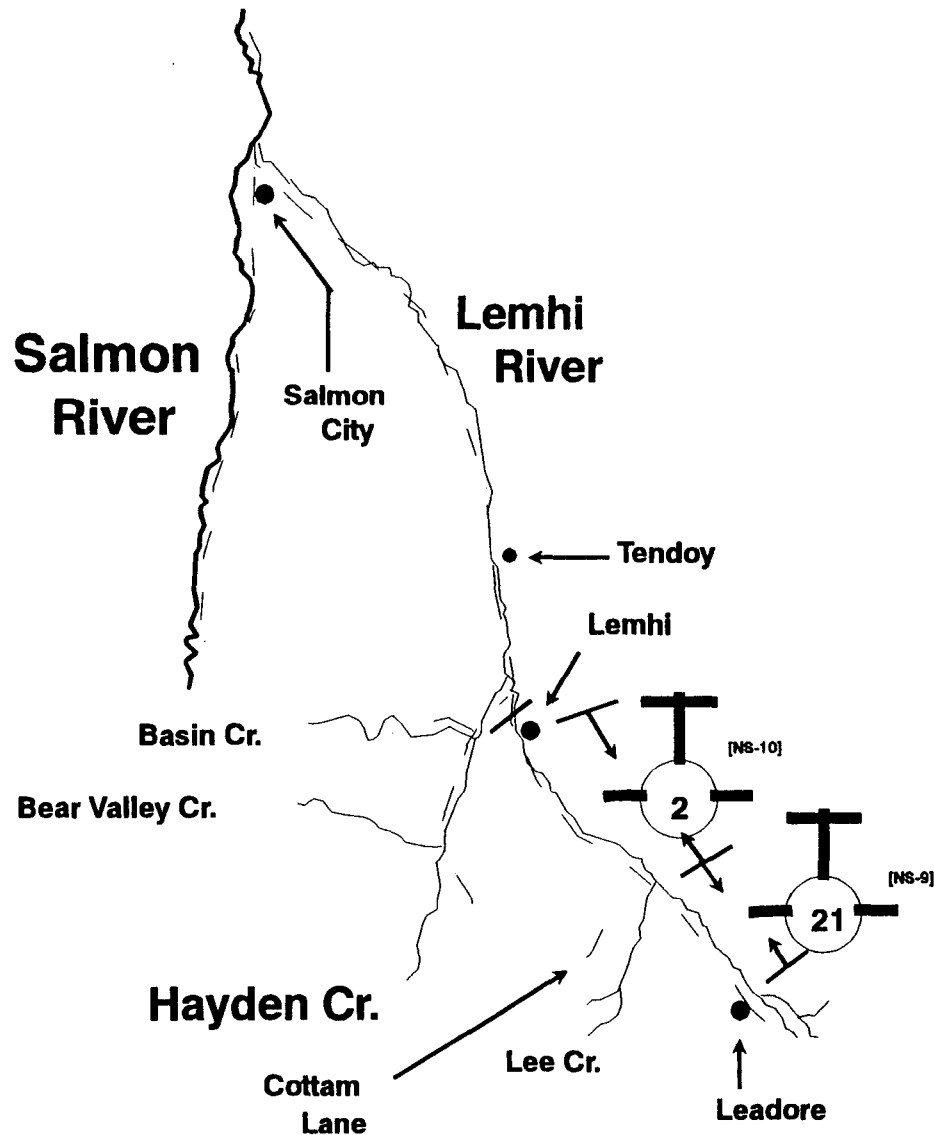
Total trap count = 90

B-13



DRAINAGE Salmon River
STREAM Lemhi River
OBSERVATION CONDITIONS _____
TIMING Early On Time Late

SURVEY DATE 9/1-4/93
MAP SCALE 0.40 cm = 1 mile
OBSERVER Lukens, Liter, Curet
REMARKS Helicopter

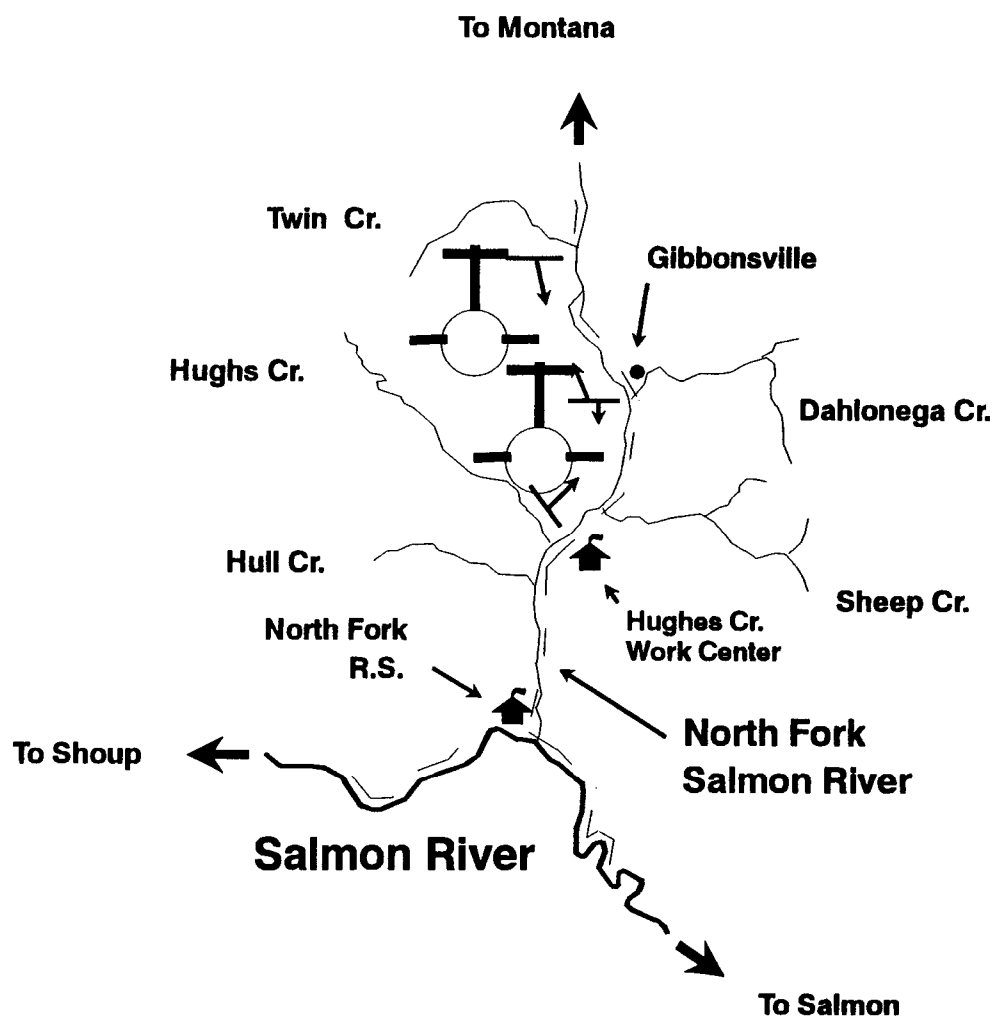


B-14

DRAINAGE Salmon River
STREAM North Fork Salmon River
OBSERVATION CONDITIONS _____
TIMING Early On Time Late _____

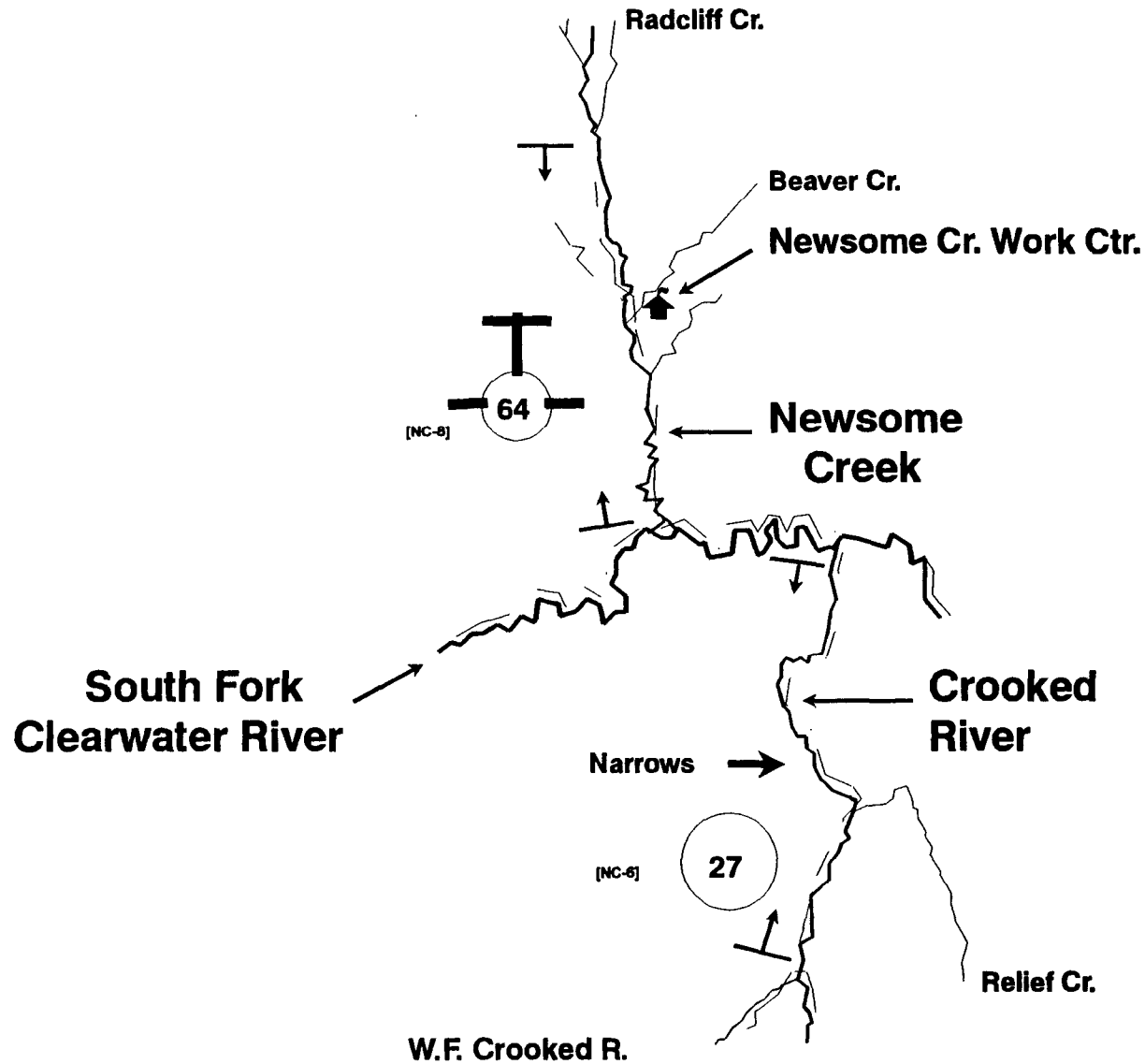
SURVEY DATE _____
MAP SCALE 0.6 cm = 1 mile
OBSERVER _____
REMARKS Dropped from survey 1987.

B-15



DRAINAGE Clearwater River
STREAM Crooked River & Newsome Creek
OBSERVATION CONDITIONS _____
TIMING Early On Time Late

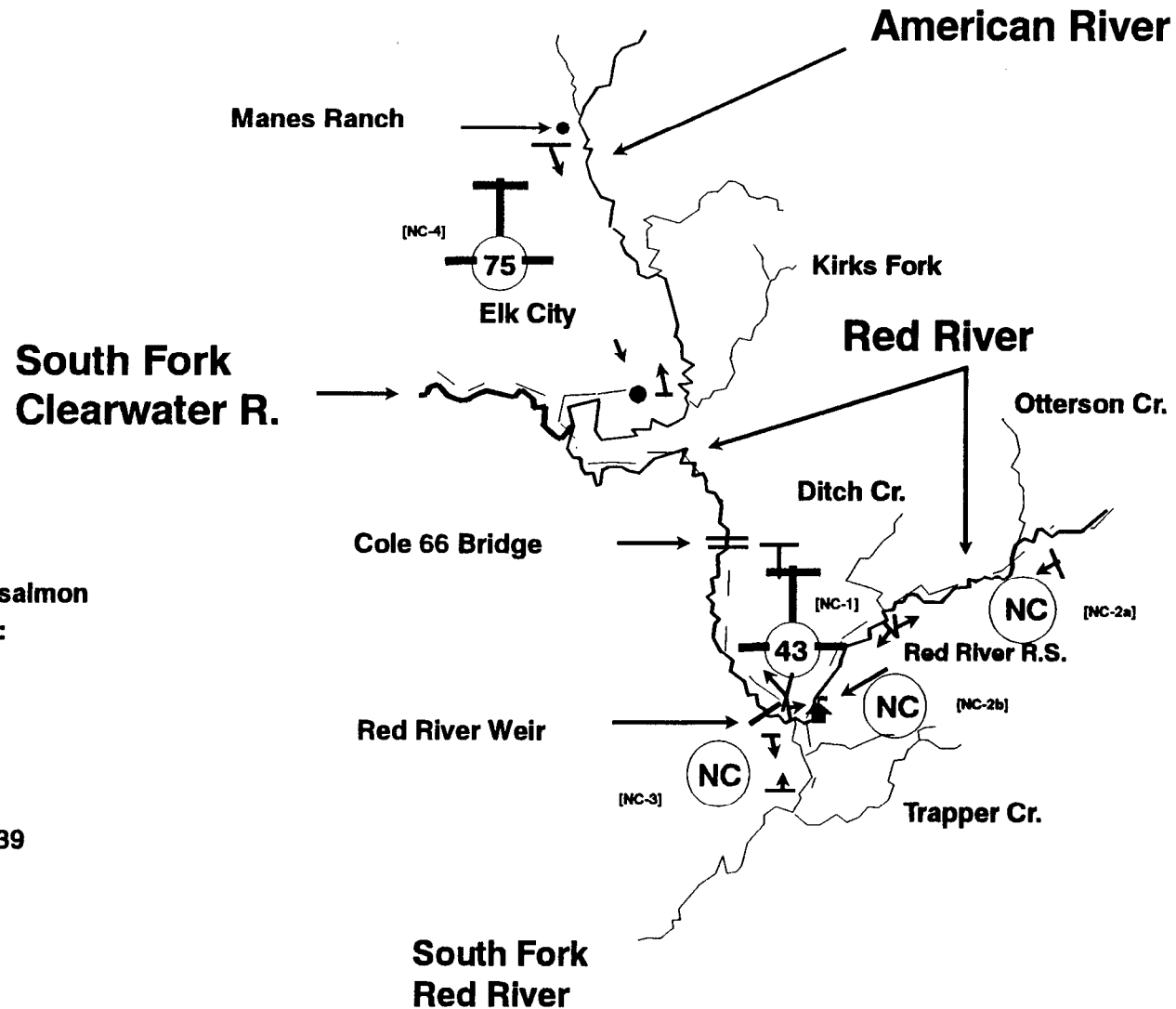
SURVEY DATE 8/29/93
MAP SCALE 0.85 cm = 1 mile
OBSERVER Schriever
REMARKS Helicopter



B-16

DRAINAGE Clearwater River
STREAM Red R. and American River
OBSERVATION CONDITIONS _____
TIMING Early On Time Late

SURVEY DATE 8/29/93
MAP SCALE 0.75 cm = 1 mile
OBSERVER Schriever
REMARKS _____



Number of Chinook salmon released above weir:

Males 48
Jacks 1
Females 42

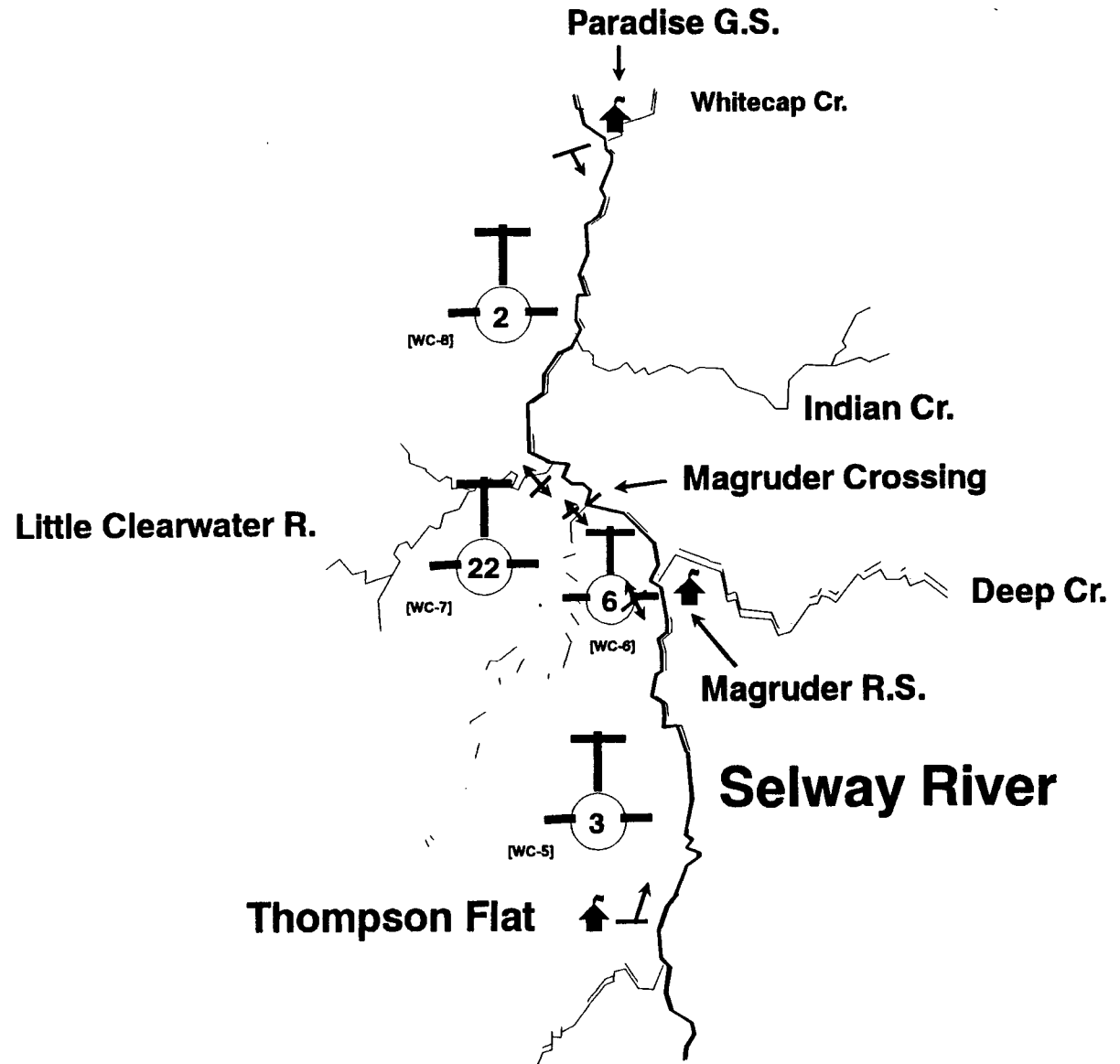
Total trap count = 139

B-17

DRAINAGE Clearwater River
STREAM Upper Selway River
OBSERVATION CONDITIONS _____
TIMING Early On Time Late

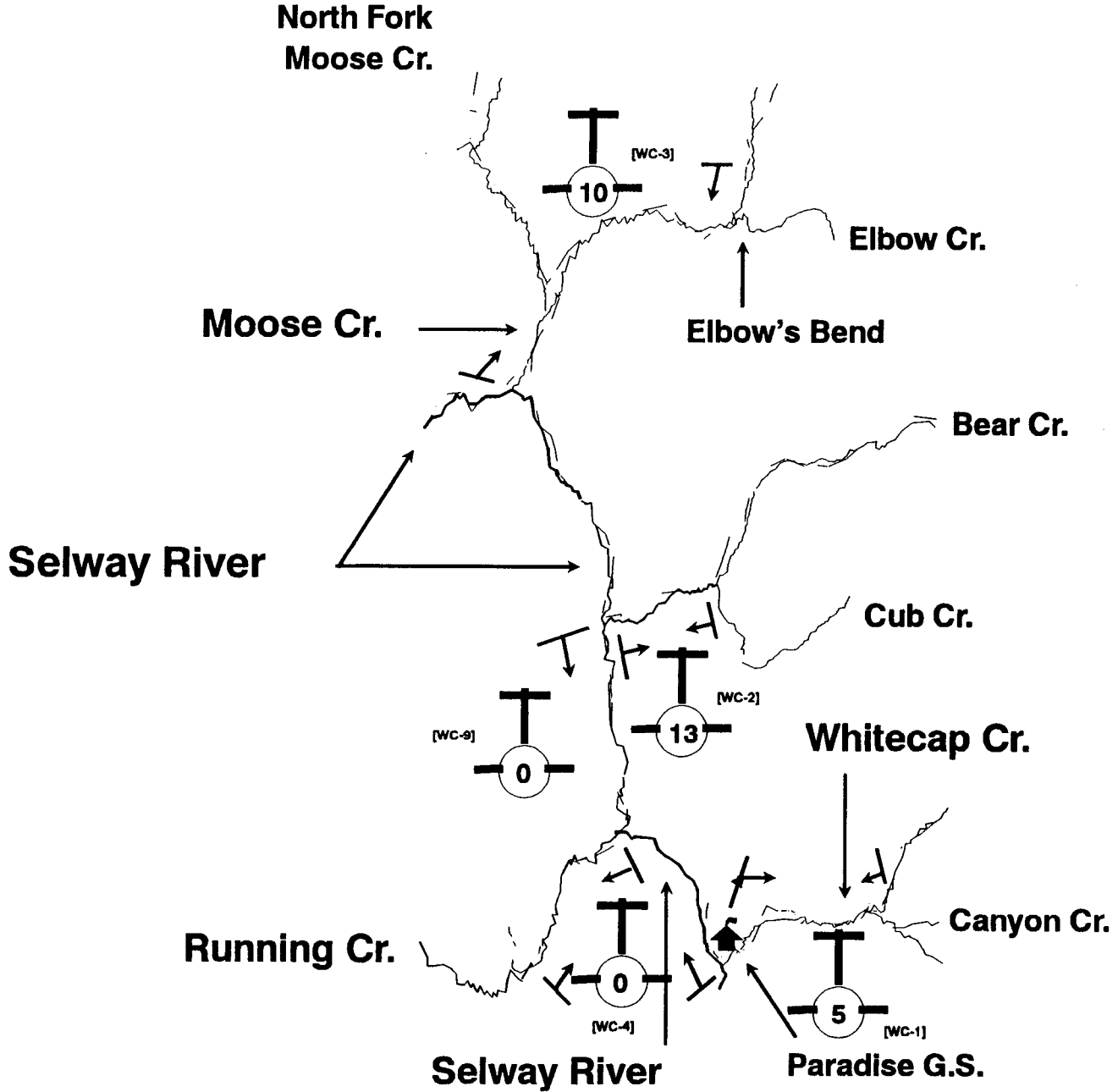
SURVEY DATE 8/30/93
MAP SCALE 0.85 cm = 1 mile
OBSERVER Schriever
REMARKS _____

B-18



DRAINAGE Clearwater River
STREAM Selway River & tributaries
OBSERVATION CONDITIONS _____
TIMING Early On Time Late

SURVEY DATE 8/30/93
MAP SCALE 0.65 cm = 1 mile
OBSERVER Schriever
REMARKS Helicopter

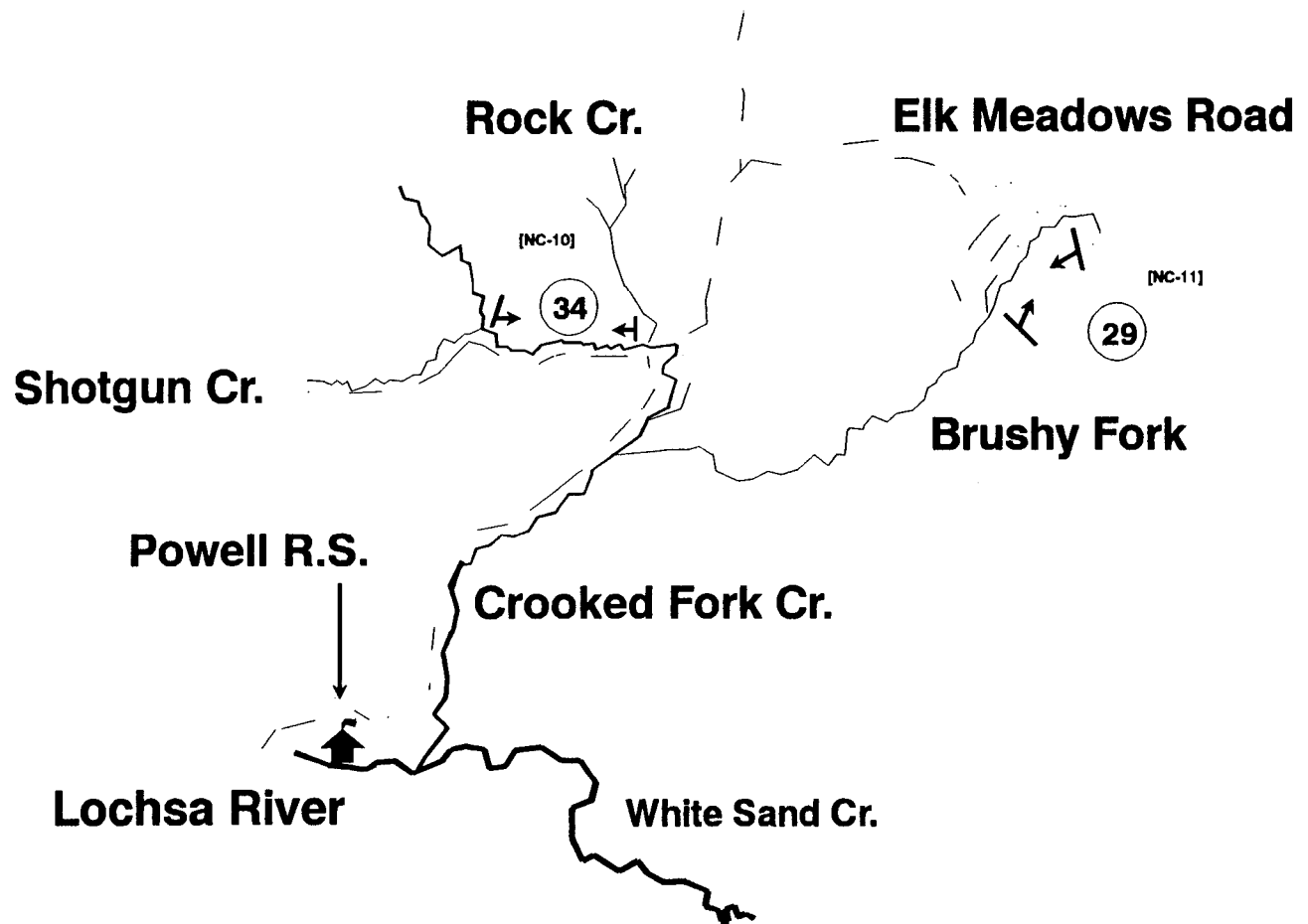


B-19

DRAINAGE Clearwater River
STREAM Crooked Fork & Brushy Fork
OBSERVATION CONDITIONS _____
TIMING Early On Time Late

SURVEY DATE 8/25/93
MAP SCALE 0.95 cm = 1 mile
OBSERVER Schriever
REMARKS Ground

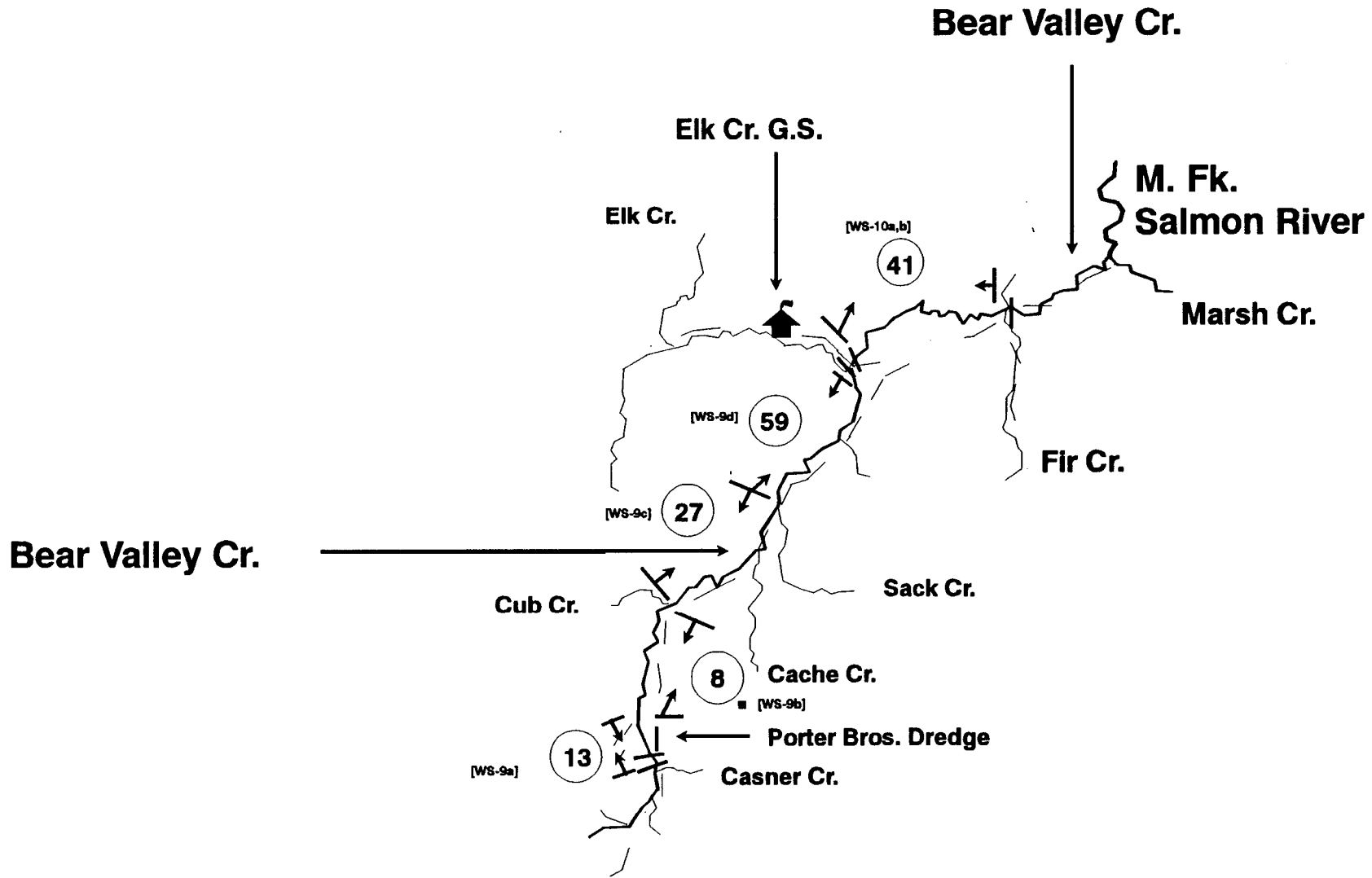
B-20



DRAINAGE Middle Fork Salmon River
STREAM Bear Valley Creek
OBSERVATION CONDITIONS Good
TIMING Early On Time Late

SURVEY DATE 8/26-27/93
MAP SCALE 0.90 cm = 1 mile
OBSERVER Yundt, Allen
REMARKS Ground

B-21



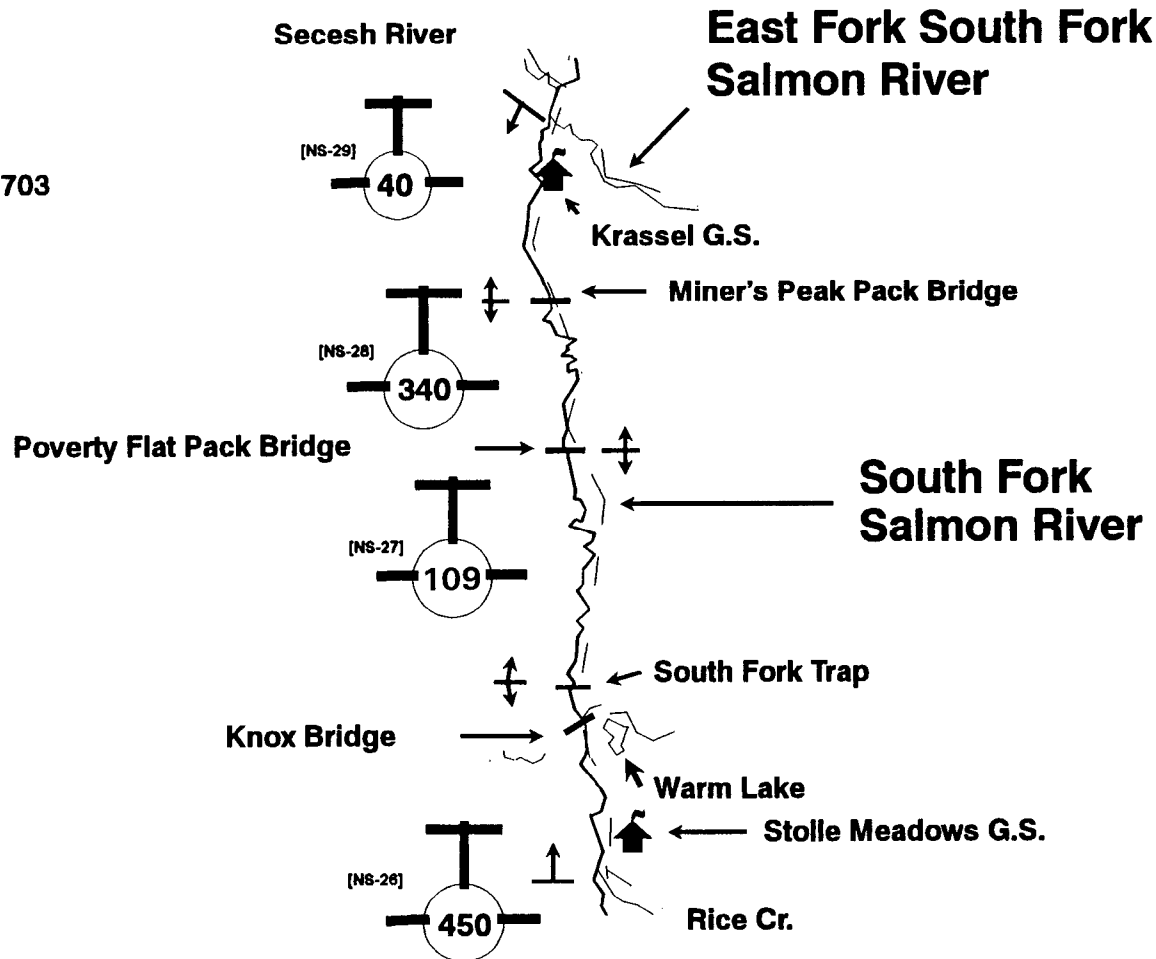
DRAINAGE Salmon River
STREAM South Fork Salmon River
OBSERVATION CONDITIONS Good
TIMING Early On Time Late

SURVEY DATE 9/10/93
MAP SCALE 0.40 cm = 1 mile
OBSERVER Anderson
REMARKS Helicopter

**Number of Chinook Salmon
released above South Fork
Salmon Trap:**

Males 733
Jacks 7
Females 928

Total trap count = 2703

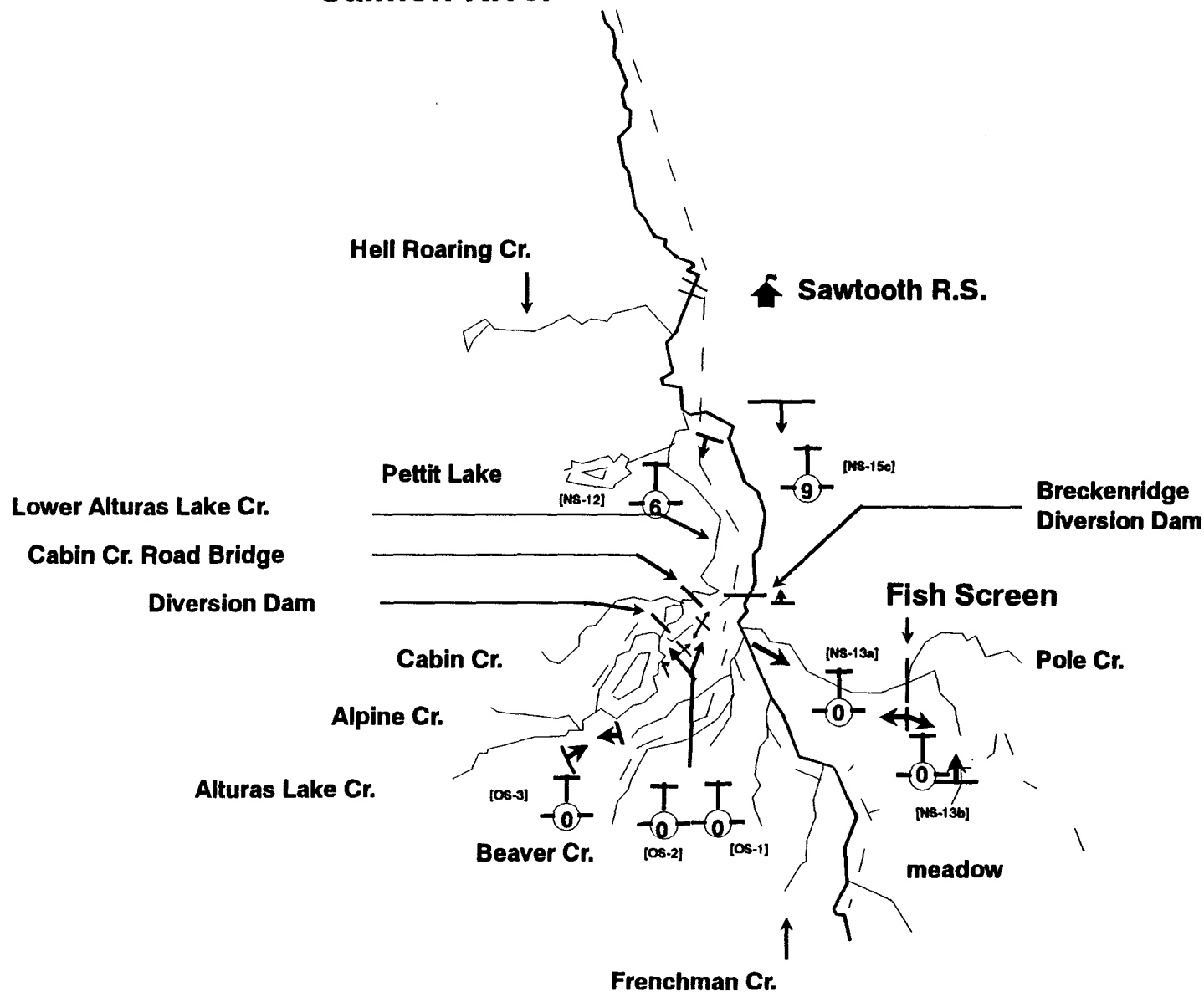


B-22

DRAINAGE Salmon River
STREAM Salmon R. & Tributaries
OBSERVATION CONDITIONS _____
TIMING Early On Time Late

SURVEY DATE 9/1-4/93
MAP SCALE 0.78 cm = 1 mile
OBSERVER Lukens, Liter, Curet
REMARKS Helicopter

Salmon River



B-24

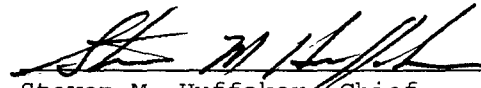
Submitted by:

Stephen C. Riley
Fishery Research Biologist

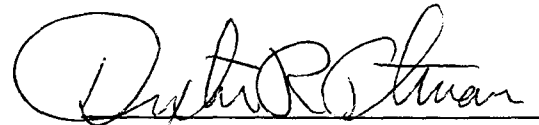
Terry Elms-Cockrum
Senior Fishery Technician

Approved by:

IDAHO DEPARTMENT OF FISH AND GAME



Steven M. Huffaker, Chief
Fisheries Bureau



Dexter R. Pitman
Anadromous Fishery Manager