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Escapement Database for Spring Chinook in Washington Tributaries Above Bonneville Dam, 1970-1993

Columbia River Laboratory Progress Report 94-2

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Spring chinook return to ten Washington shore Columbia River tributaries and one hatchery on the mainstem Columbia River above Bonneville Dam. The tributaries are: Wind River (Carson National Fish Hatchery), Little White Salmon River (Little White Salmon National Fish Hatchery) or Drano Lake, White Salmon River, Klickitat River (Klickitat Hatchery), Yakima River, Ringold Rearing Facility, Icicle River (Leavenworth National Fish Hatchery), Wenatchee River, Entiat River (Entiat National Fish Hatchery), and Methow River (Winthrop National Fish Hatchery). The Washington Department of Fisheries (WDF) maintains a run size database to aid in the spring chinook run prediction process. The database also helps satisfy run size accountability requirements.

The database is divided by tributary. Each tributary section consists of three basic components:

1) total run size,
2) escapement estimates, and
3) juvenile releases.

The total run size component is divided into two categories, run size by return year and run size by brood year. The escapement component is divided into five categories; hatchery escapement, natural spawn escapement, sport harvest, tribal harvest, and hatchery surplus distributed to the tribes. The juvenile release component includes all yearling, fall release, and fingerling releases by brood year; however, un-fed fry and fed fry releases are not included.

This report presents the upriver spring chinook database. For a detailed description of the methods and sources used to construct the database see Columbia River Laboratory (CRL) progress report 93-4. For a description of methods and sources used to update the database for 1993 see CRL progress report 94-9. This report does not include information on the White Salmon or Snake rivers.

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Table 1. Wind River spring chinook run by return year.

Return Year	Age 2	3	4	5	6	Total	Adult Total
1970	0	208	3,928	513	0	4,649	4,441
1971	0	1,502	4,527	1,337	0	7,366	5,864
1972	0	93	5,727	3,397	0	9,217	9,124
1973	0	124	1,332	1,383	0	2,839	2,715
1974	0	413	1,141	308	15	1,877	1,464
1975	0	15	7,044	404	0	7,463	7,448
1976	0	301	169	5,260	25	5,755	5,454
1977	0	27	4,585	73	0	4,685	4,658
1978	0	21	976	3,850	8	4,855	4,834
1979	0	5	3,181	286	0	3,472	3,467
1980	0	33	623	2,804	0	3,460	3,427
1981	0	3	956	1,707	37	2,703	2,700
1982	0	22	1,137	577	0	1,736	1,714
1983	0	9	1,251	1,500	0	2,760	2,751
1984	0	86	1,412	864	11	2,373	2,287
1985	0	53	3,727	1,146	0	4,926	4,873
1986	0	54	4,943	2,573	0	7,570	7,516
1987	0	20	3,114	2,132	0	5,266	5,246
1988	9	91	420	2,263	0	2,783	2,683
1989	0	215	2,921	414	10	3,560	3,345
1990	0	52	13,006	1,650	7	14,715	14,663
1991	0	118	3,017	6,725	30	9,890	9,772
1992 *1/*	0	35	7,061	1,810	9	8,915	8,880
1993 *1/*	0	23	4,255	7,504	0	11,782	11,759

1/ Preliminary.

Table 2. Wind River spring chinook run by brood year.

Brood Year	Age 2	3	4	5	6	Total	Adult Total
1965				513	0		
1966			3,928	1,337	0		
1967		208	4,527	3,397	0	8,132	7,924
1968	0	1,502	5,727	1,383	15	8,627	7,125
1969	0	93	1,332	308	0	1,733	1,640
1970	0	124	1,141	404	25	1,694	1,570
1971	0	413	7,044	5,260	0	12,717	12,304
1972	0	15	169	73	8	265	250
1973	0	301	4,585	3,850	0	8,736	8,435
1974	0	27	976	286	0	1,289	1,262
1975	0	21	3,181	2,804	37	6,043	6,022
1976	0	5	623	1,707	0	2,335	2,330
1977	0	33	956	577	0	1,566	1,533
1978	0	3	1,137	1,500	11	2,651	2,648
1979	0	22	1,251	864	0	2,137	2,115
1980	0	9	1,412	1,146	0	2,567	2,558
1981	0	86	3,727	2,573	0	6,386	6,300
1982	0	53	4,943	2,132	0	7,128	7,075
1983	0	54	3,114	2,263	10	5,441	5,387
1984	0	20	420	414	7	861	841
1985	0	91	2,921	1,650	30	4,692	4,601
1986	9	215	13,006	6,725	9	19,964	19,740
1987	0	52	3,017	1,810	0	4,879	4,827
1988	0	118	7,061	7,504			
1989	0	35	4,255				
1990	0	23					
1991	0						

Table 3. Carson Hatchery spring chinook escapement by return year. 1/

Return Year	Age 2	3	4	5	6	Total	Adult Total
1970	0	184	3,472	454	0	4,110	3,926
1971	0	952	2,580	718	0	4,250	3,298
1972	0	49	4,123	2,469	0	6,641	6,592
1973	0	101	1,022	1,066	0	2,189	2,088
1974	0	384	905	261	13	1,563	1,179
1975	0	10	4,630	265	0	4,905	4,895
1976	0	288	161	5,025	24	5,498	5,210
1977	0	22	2,907	46	0	2,975	2,953
1978	0	12	598	2,361	5	2,976	2,964
1979	0	4	2,328	209	0	2,541	2,537
1980	0	32	606	2,730	0	3,368	3,336
1981	0	3	901	1,609	35	2,548	2,545
1982	0	21	1,085	550	0	1,656	1,635
1983	0	9	1,072	1,413	0	2,494	2,485
1984	0	79	1,274	789	11	2,153	2,074
1985	0	53	3,591	1,090	0	4,734	4,681
1986	0	48	2,664	1,536	0	4,248	4,200
1987	0	7	2,116	1,638	0	3,761	3,754
1988	0	72	252	1,786	0	2,110	2,038
1989	0	118	1,883	287	8	2,296	2,178
1990	0	7	2,578	361	0	2,946	2,939
1991	0	28	895	2,360	10	3,293	3,265
1992	0	7	2,134	745	5	2,891	2,884
1993 2/	0	8	1,009	2,060	0	3,077	3,069

1/ Excludes tribal distributions.

2/ Preliminary.

Table 4. Wind River spring chinook natural spawn escapement by return year.

Return Year	Age 2	3	4	5	6	Total	Adult Total
1970	0	11	213	28	0	252	241
1971	0	416	1,470	466	0	2,352	1,936
1972	0	19	693	401	0	1,113	1,094
1973	0	7	90	92	0	189	182
1974	0	8	63	13	0	84	76
1975	0	0	79	5	0	84	84
1976	0	4	3	77	0	84	80
1977	0	0	124	2	0	126	126
1978	0	2	50	193	0	245	243
1979	0	0	141	13	0	154	154
1980	0	1	17	74	0	92	91
1981	0	0	55	98	2	155	155
1982	0	1	52	27	0	80	79
1983	0	0	179	87	0	266	266
1984	0	7	138	75	0	220	213
1985	0	0	136	56	0	192	192
1986	0	0	89	22	0	111	111
1987	0	11	76	11	0	98	87
1988	9	0	37	127	0	173	164
1989	0	9	95	53	0	157	148
1990	0	1	153	19	0	173	172
1991	0	1	38	101	1	141	140
1992	0	0	193	55	0	248	248
1993 *1/*	0	0	129	528	0	657	657

1/ Preliminary.

Table 5. Natural spawn expansion factors for the Wind River.

Year	Expansion factor used
1980	Peak count * 2.0
1981	unavailable
1982	Peak count*2.9 (time exp. 2.0 and area exp. 1.45)
1983	Peak count*1.5
1984	Peak count*1.56
1985	Peak count*1.56
1986	Peak count*1.5
1987	Peak count*2.0
1988	Peak count*2.0
1989	Peak count*2.9 (time exp. 2.0 and area exp. 1.45)
1990	Peak count*2.4 (time exp. 2.0 and area exp. 1.2)
1991	Peak count*2.2 (time exp. 2.0 and area exp. 1.1)
1992	Peak count*1.5
1993	Peak count*1.5

Table 6. Wind River spring chinook sport harvest by return year.

Return Year	Age 2	3	4	5	6	Total	Adult Total
1970	0	13	243	31	0	287	274
1971	0	134	477	153	0	764	630
1972	0	25	911	527	0	1,463	1,438
1973	0	16	220	225	0	461	445
1974	0	21	173	34	2	230	209
1975	0	5	2,335	134	0	2,474	2,469
1976	0	9	5	158	1	173	164
1977	0	5	1,554	25	0	1,584	1,579
1978	0	7	328	1,296	3	1,634	1,627
1979	0	1	712	64	0	777	776
1980	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0
1986	0	6	1,297	500	0	1,803	1,797
1987	0	2	569	210	0	781	779
1988	0	19	131	350	0	500	481
1989	0	88	943	74	2	1,107	1,019
1990	0	25	3,504	321	7	3,857	3,832
1991	0	72	1,551	2,860	13	4,496	4,424
1992 *1/*	0	23	2,803	437	0	3,263	3,240
1993 *1/*	0	5	1,554	2,141	0	3,700	3,695

1/ Preliminary.

Table 7. Wind River spring chinook tribal harvest by return year.

Return Year	Age 2	3	4	5	6	Total	Adult Total
1987	0	0	5	4	0	9	9
1988	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0
1990	0	0	25	4	0	29	29
1991	0	8	250	659	3	920	912
1992	0	5	971	238	2	1,216	1,211
1993 *1/*	0	6	1,117	1,863	0	2,986	2,980

1/ Preliminary.

Table 8. Carson Hatchery spring chinook tribal distributions by return year.

Return Year		Age 2	3	4	5	6	Total	Adult Total
1986	*1/*	0	0	893	515	0	1,408	1,408
1987	*1/*	0	0	348	269	0	617	617
1988		0	0	0	0	0	0	0
1989		0	0	0	0	0	0	0
1990	*2/*	0	19	6,746	945	0	7,710	7,691
1991	*1/*	0	9	283	745	3	1,040	1,031
1992	1/	0	0	960	335	2	1,297	1,297
1993	3/	0	4	446	912	0	1,362	1,358

1/ Distributed to YIN.

2/ Includes 7,092 adults distributed to YIN and 599 adults distributed to CTCIR.

3/ Preliminary. Distributed to YIN.

Table 9. Releases of spring chinook by brood year into the Wind River. 1/

Brood Year	Number Yearlings	Number Fingerlings	Number Fall-rel.	Total Release
1965	2,411.6	0.0	0.0	2,411.6
1966	1,613.4	0.0	0.0	1,613.4
1967	1,534.5	0.0	0.0	1,534.5
1968	757.0	0.0	0.0	757.0
1969	1,177.7	0.0	0.0	1,177.7
1970	1,409.4	0.0	0.0	1,409.4
1971	1,540.6	0.0	0.0	1,540.6
1972	2,001.1	0.0	0.0	2,001.1
1973	1,999.5	0.0	0.0	1,999.5
1974	2,291.4	0.0	196.6	2,488.0
1975	2,812.9	0.0	253.1	3,066.0
1976	2,856.1	0.0	0.0	2,856.1
1977	1,791.8	0.0	0.0	1,791.8
1978	2,585.6	0.0	460.8	3,046.4
1979	2,598.9	0.0	0.0	2,598.9
1980	2,578.7	0.0	0.0	2,578.7
1981	1,722.1	0.0	0.0	1,722.1
1982	2,886.6	0.0	0.0	2,886.6
1983	2,391.0	80.0	0.0	2,471.0
1984	2,392.5	0.0	0.0	2,392.5
1985	2,339.2	300.0	185.0	2,824.2
1986	1,956.2	145.0	0.0	2,101.2
1987	1,983.6	411.2	0.0	2,394.8
1988	2,105.3	0.0	0.0	2,105.3
1989	2,435.6	0.0	0.0	2,435.6
1990	2,315.4	0.0	0.0	2,315.4

1/ In thousands of fish.

Table 10. Little White Salmon River spring chinook run by return year.

Return Year	Age 3.1	3.2	4.1	4.2	5.1	5.2	6.2	Total	Adult Total 1/
1970	0	38	0	48	0	139	14	239	201
1971	0	98	0	688	0	24	0	810	712
1972	0	24	0	200	0	175	0	399	375
1973	0	12	0	86	0	81	3	182	170
1974	0	16	0	16	0	36	6	74	58
1975	0	27	0	1,154	0	214	12	1,407	1,380
1976	0	664	0	1,067	0	1,321	0	3,052	2,388
1977	0	69	0	3,103	0	308	11	3,491	3,422
1978	0	219	0	353	0	1,275	22	1,869	1,650
1979	0	21	0	875	0	125	9	1,030	1,009
1980	0	115	0	600	0	374	0	1,089	974
1981	0	1	0	2,470	0	131	0	2,602	2,601
1982	0	37	0	411	0	2,651	8	3,107	3,070
1983	0	14	0	985	0	1,720	0	2,719	2,705
1984	9	44	0	249	0	275	0	577	533
1985	31	15	6	1,335	0	129	0	1,516	1,501
1986	50	189	198	583	8	254	0	1,282	1,093
1987	341	26	256	4,802	11	424	0	5,860	5,834
1988	49	87	1,293	628	0	3,750	13	5,820	5,733
1989	27	81	73	3,660	5	203	9	4,058	3,977
1990	9	30	82	3,332	10	516	0	3,979	3,949
1991	10	62	9	904	0	1,618	0	2,603	2,541
1992 2/	10	25	11	3,549	0	515	0	4,110	4,085
1993 2/	0	19	11	2,500	7	4,046	14	6,597	6,578

1/ Adult totals include 3.1's.

2/ Preliminary.

Table 11. Little White Salmon River spring chinook run by brood year.

Brood Year	Age 3.1	3.2	4.1	4.2	5.1	5.2	6.2	Total	Adult Total 1/
1964							14		
1965					0	139	0		
1966			0	48	0	24	0		
1967	0	38	0	688	0	175	3	904	866
1968	0	98	0	200	0	81	6	385	287
1969	0	24	0	86	0	36	12	158	134
1970	0	12	0	16	0	214	0	242	230
1971	0	16	0	1,154	0	1,321	11	2,502	2,486
1972	0	27	0	1,067	0	308	22	1,424	1,397
1973	0	664	0	3,103	0	1,275	9	5,051	4,387
1974	0	69	0	353	0	125	0	547	478
1975	0	219	0	875	0	374	0	1,468	1,249
1976	0	21	0	600	0	131	8	760	739
1977	0	115	0	2,470	0	2,651	0	5,236	5,121
1978	0	1	0	411	0	1,720	0	2,132	2,131
1979	0	37	0	985	0	275	0	1,297	1,260
1980	0	14	0	249	0	129	0	392	378
1981	9	44	6	1,335	8	254	0	1,656	1,612
1982	31	15	198	583	11	424	13	1,275	1,260
1983	50	189	256	4,802	0	3,750	9	9,056	8,867
1984	341	26	1,293	628	5	203	0	2,496	2,470
1985	49	87	73	3,660	10	516	0	4,395	4,308
1986	27	81	82	3,332	0	1,618	0	5,140	5,059
1987	9	30	9	904	0	515	14	1,481	1,451
1988	10	62	11	3,549	7	4,046		7,685	7,623
1989	10	25	11	2,500					
1990	0	19							

1/ Adult totals include 3.1's.

Table 12. Little White Salmon Hatchery spring chinook escapement by return year. 1/

Return Year		Age 3.1	3.2	4.1	4.2	5.1	5.2	6.2	Total	Adult Total 2/
1970		0	38	0	48	0	139	14	239	201
1971		0	96	0	688	0	24	0	808	712
1972		0	24	0	200	0	175	0	399	375
1973		0	9	0	86	0	81	3	179	170
1974		0	14	0	16	0	36	6	72	58
1975		0	27	0	1,154	0	214	12	1,407	1,380
1976		0	664	0	1,067	0	1,321	0	3,052	2,388
1977		0	69	0	3,103	0	308	11	3,491	3,422
1978		0	206	0	353	0	1,275	22	1,856	1,650
1979		0	21	0	766	0	114	9	910	889
1980	3/	0	115	0	600	0	374	0	1,089	974
1981	3/	0	1	0	2,466	0	128	0	2,595	2,594
1982		0	37	0	109	0	682	1	829	792
1983		0	14	0	939	0	1,655	0	2,608	2,594
1984		9	44	0	249	0	275	0	577	533
1985		31	12	2	824	0	77	0	946	934
1986		48	172	163	536	8	217	0	1,144	972
1987		305	26	114	2,039	6	178	0	2,668	2,642
1988		40	69	557	248	0	1,347	7	2,268	2,199
1989		24	51	57	1,641	2	112	0	1,887	1,836
1990		7	18	49	1,629	8	265	0	1,976	1,958
1991		9	57	4	671	0	1,050	0	1,791	1,734
1992		6	11	6	1,239	0	148	0	1,410	1,399
1993	4/	0	11	6	713	4	1,356	8	2,098	2,087

1/ Excludes tribal distributions.

2/ Adult totals inclue 3.1's.

3/ Age composition not based on scale analysis.

4/ Preliminary.

Table 13. Drano Lake spring chinook sport harvest by return year.

Return Year	Age 3.1	3.2	4.1	4.2	5.1	5.2	6.2	Total	Adult Total 1/
1970	0	0	0	0	0	0	0	0	0
1971	0	2	0	0	0	0	0	2	0
1972	0	0	0	0	0	0	0	0	0
1973	0	3	0	0	0	0	0	3	0
1974	0	2	0	0	0	0	0	2	0
1975	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0
1978	0	13	0	0	0	0	0	13	0
1979	0	0	0	109	0	11	0	120	120
1980	0	0	0	0	0	0	0	0	0
1981	0	0	0	4	0	3	0	7	7
1982	0	0	0	67	0	500	6	573	573
1983	0	0	0	46	0	65	0	111	111
1984	0	0	0	0	0	0	0	0	0
1985	0	3	3	137	0	17	0	160	157
1986	2	17	35	47	0	37	0	138	121
1987	36	0	49	1,108	0	102	0	1,295	1,295
1988	9	18	283	178	0	1,312	0	1,800	1,782
1989	3	30	16	1,179	3	54	9	1,294	1,264
1990	0	5	16	1,141	0	159	0	1,321	1,316
1991	0	0	5	176	0	479	0	660	660
1992 2/	0	6	0	1,366	0	248	0	1,620	1,614
1993 2/	0	0	0	919	0	1,222	0	2,141	2,141

1/ Adult totals include 3.1's.

2/ Preliminary.

Table 14. Little White Salmon Hatchery spring chinook tribal harvest and distributions by return year.

Return Year	Age 3.1	3.2	4.1	4.2	5.1	5.2	6.2	Total	Adult Total 1/
1982	0	0	0	235	0	1,469	1	1,705	1,705
1983	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0
1985	0	0	1	374	0	35	0	410	410
1986 2/	0	0	156	512	8	216	0	892	892
1987	0	0	93	1,655	5	144	0	1,897	1,897
1988 3/	0	0	453	202	0	1,091	6	1,752	1,752
1989 4/	0	0	0	840	0	37	0	877	877
1990 5/	2	7	17	562	2	92	0	682	675
1991 6/	1	5	0	57	0	89	0	152	147
1992 7/	4	8	5	944	0	119	0	1,080	1,072
1993 8/	0	8	5	868	3	1,468	6	2,358	2,350

1/ Adult totals include 3.1's.

2/ Distributed fish were spawned out carcasses, not surplus hatchery escapement.

3/ All values are distributions prior to and including 1988.

4/ Harvest from YIN Drano Lake commercial fishery.

5/ Consists of 386 fish distributed to YIN and 296 fish from YIN Drano Lake subsistence fishery.

6/ Harvest from YIN Drano Lake subsistence fishery.

7/ Consists of 838 fish distributed to YIN and 242 fish from YIN Drano Lake subsistence fishery.

8/ Preliminary. Consists of 866 fish distributed to YIN and 1,492 fish from YIN Drano Lake subsistence fishery.

Table 15. Releases of spring chinook by brood year into the Little White Salmon River. 1/

Brood Year	Number Yearlings	Number Fingerlings	Number Fall-rel.	Total Release
1967	265.1	0.0	0.0	265.1
1968	456.7	0.0	0.0	456.7
1969	696.9	0.0	0.0	696.9
1970	576.3	0.0	0.0	576.3
1971	575.9	0.0	0.0	575.9
1972	1,063.9	0.0	0.0	1,063.9
1973	707.4	300.0	0.0	1,007.4
1974	571.7	0.0	0.0	571.7
1975	694.0	0.0	0.0	694.0
1976	621.1	0.0	0.0	621.1
1977	790.4	0.0	0.0	790.4
1978	510.8	0.0	224.0	734.8
1979	645.7	0.0	0.0	645.7
1980	583.7	0.0	100.0	683.7
1981	750.3	210.5	0.0	960.8
1982	213.0	557.3	0.0	770.3
1983	1,355.0	573.6	0.0	1,928.6
1984	412.2	665.9	0.0	1,078.1
1985	516.3	1,432.1	0.0	1,948.4
1986	517.4	1,414.9	0.0	1,932.3
1987	499.8	558.1	0.0	1,057.9
1988	461.4	574.2	0.0	1,035.6
1989	1,016.7	1,050.1	0.0	2,066.8
1990	1,677.7	0.0	0.0	1,677.7

1/ In thousands of fish.

Table 16. Klickitat River spring chinook run by return year.

Return Year		Age 2	3	4	5	6	Total	Adult Total 1/
1977		*	371				778	407
1978		*	154				1,614	1,460
1979		*	2,921				3,709	788
1980		*	955				2,601	1,646
1981		441	193				3,001	2,367
1982		236	70				3,474	3,168
1983		817	173				3,363	2,373
1984		201	64	489	305	0	1,486	1,221
1985		152	94				1,063	817
1986		204	262				1,578	1,112
1987		341	111				2,437	1,985
1988	2/	143	268	1,821	2,111	2	4,345	3,934
1989	3/	291	500	4,494	762	6	6,053	5,262
1990	4/	795	393	768	1,801	20	3,777	2,589
1991		1,604	236	980	503	4	3,327	1,487
1992	5/	736	131	1,000	527	13	2,407	1,540
1993	5/	923	16	1,582	1,943	64	4,528	3,589

1/ Adult totals prior to 1988 include some jacks.
2/ Includes 120 (age 3) Carson stock.
3/ Includes 4,121 (age 4) Carson stock.
4/ Includes 1,088 (age 5) Carson stock.
5/ Preliminary.

** All 2's included in the 3's column.*

Table 17. Klickitat River spring chinook run by brood year.

Brood Year		Age 2	3	4	5	6	Total	Adult Total
1982						2		
1983					2,111	6		
1984		204	111	1,821	762	20	2,918	2,603
1985	1/	341	148	373	713	4	1,579	1,090
1986		143	500	768	503	13	1,927	1,284
1987		291	393	980	527	64	2,255	1,571
1988		795	236	1,000	1,943		3,974	2,943
1989		1,604	131	1,582				
1990		736	16					
1991		923						

1/ Excludes Carson stock returns.

Table 18. Klickitat Hatchery spring chinook escapement by return year.

Return Year		Age 2	3	4	5	6	Total	Adult Total	
1977		*	371				983	312	
1978		*	36				508	472	
1979		*	2,890				3,582	692	
1980		*	950				2,505	1,555	
1981		441	46				2,196	1,709	
1982		236	25				1,611	1,350	
1983		817	17				1,443	609	
1984		201	50	271	196	0	718	467	
1985		152	9				214	53	
1986		204	197				886	485	
1987		341	75				1,279	863	
1988	*1/*	143	109	691	776	1	1,720	1,468	*2/*
1989	*3/*	291	228	2,686	486	4	3,695	3,176	*4/*
1990	*5/*	795	243	184	388	2	1,612	574	
1991		1,604	113	421	113	0	2,251	534	
1992		736	102	495	140	0	1,473	635	
1993	*6/*	923	8	945	834	10	2,720	1,789	

1/ Includes 65 (age 3) Carson stock.

2/ Includes 73 adults and 2 jacks of Klickitat stock and 3 jacks of Carson stock distributed to YIN.

3/ Includes 2,559 (age 4) Carson stock.

4/ Includes 39 adult males and 44 jacks of Klickitat stock and 1,001 (age 4) of Carson stock distributed to YIN.

5/ Includes 321 (age 5) Carson stock.

6/ Preliminary.

* *All 2's included in the 3's column.*

Table 19. Klickitat River spring chinook natural spawn escapement by return year.

Return Year		Age 2	3	4	5	6	Total	Adult Total
1977							126	126
1978							150	150
1979							70	70
1980							63	63
1981							245	245
1982							113	113
1983							63	63
1984							102	102
1985							79	79
1986							142	142
1987							312	312
1988	*1/*	0	50	513	594	1	1,158	1,108
1989	*2/*	0	98	84	209	2	393	295
1990	*3/*	0	7	39	178	7	231	224
1991		0	4	58	179	4	245	241
1992		0	4	121	188	9	322	318
1993	*4/*	0	2	70	334	26	432	430

1/ Includes 5 (age 3) Carson Stock. Estimate includes 1,000 fish that spawned below the hatchery.

2/ Includes 30 (age 4) Carson stock.

3/ Includes 0 (age 5) Carson stock.

4/ Preliminary.

Table 20. Natural spawn expansion factors for the Klickitat River.

Year	Expansion factor used
1977	(((redds/.1 area exp.)/.5 visibility)*2.1 fish /redd)*3 fish exp.
1978	unavailable
1979	(((redds/.9 area exp.)/.3 time exp.)*2.1 fish/redd)*3 fish exp.
1980	(redds*2.1 fish/redd)*3 fish exp.
1981	((redds/.9 area exp.)*2.1 fish/redd)*3 fish exp.
1982	(redds*2.1 fish/redd)*3 fish exp.
1983	((redds/.8 area exp.)*2.1 fish/redd)*3 fish exp.
1984	((redds/.8 area exp.)*2.1 fish/redd)*3 fish exp.
1985	((redds/.8 area exp.)*2.1 fish/redd)*3 fish exp.
1986	((redds/.8 area exp.)*2.1 fish/redd)*3 fish exp.
1987	((redds/.8 area exp.)*2.1 fish/redd)*3 fish exp.
1988	redds*2.5 fish/redd
1989	(redds/.85 count efficiency)*3 fish/redd
1990	(redds/.85 count efficiency)*3 fish/redd
1991	(redds/.90 count efficiency)*2.5 fish/redd
1992	(redds/survey specific % count efficiency)*2.5 fish/redd
1993	(redds/survey specific % count efficiency)*2.5 fish/redd

Table 21. Klickitat River spring chinook sport harvest by return year.

Return Year	Age 2	3	4	5	6	Total	Adult Total
1977	0	0				9	9
1978	0	46				312	266
1979	0	31				120	89
1980	0	5				11	6
1981	0	69				221	152
1982	0	45				477	432
1983	0	156	142	141	*	439	283
1984	0	14	218	109	*	341	327
1985	0	50	99	82	*	231	181
1986	0	4	15	9	*	28	24
1987	0	36	153	9	*	198	162
1988 *1/*	0	24	106	147	*	277	253
1989 *2/*	0	89	796	43	0	928	839
1990 *3/*	0	30	109	251	2	392	362
1991	0	26	105	44	0	175	149
1992 *4/*	0	0	92	31	0	123	123
1993 *4/*	0	0	87	83	0	170	170

1/ Includes 12 (age 3) Carson stock.
2/ Includes 769 (age 4) Carson stock.
3/ Includes 204 (age 5) Carson stock.
4/ Preliminary.

* *All 6's included in the 5's column.*

Table 22. Klickitat River spring chinook tribal harvest by return year.

Return Year		Age 2	3	4	5	6	Total	Adult Total	
1977							86	86	*1/*
1978			72				712	640	
1979							0	0	
1980							61	61	*1/*
1981			78				500	422	
1982							1,343	1,343	*1/*
1983							1,462	1,462	*1/*
1984							427	427	*1/*
1985			35				570	535	
1986			61				522	461	
1987							347	347	*1/*
1988	*2/*	0	85	511	594	0	1,190	1,105	
1989	*3/*	0	85	928	24	0	1,037	952	
1990	*4/*	0	113	436	984	9	1,542	1,429	
1991		0	93	396	167	0	657	563	
1992		0	25	292	168	4	489	464	
1993	*5/*	0	6	480	692	28	1,206	1,200	

1/ Jacks included.
2/ Includes 38 (age 3) Carson stock.
3/ Includes 763 (age 4) Carson stock.
4/ Includes 563 (age 5) Carson stock.
5/ Preliminary.

Table 23. Releases of spring chinook by brood year into the Klickitat River. 1/

Brood Year	Number Yearlings	Number Fingerlings	Number Fall-rel.	Total Release
1968	400.8	0.0	0.0	400.8
1969	452.4	0.0	0.0	452.4
1970	642.5	883.6	538.5	2,064.6
1971	220.0	0.0	335.7	555.7
1972	228.1	1,049.0	511.8	1,788.9
1973	376.2	0.0	348.7	724.9
1974	431.1	50.0	453.1	934.2
1975	550.8	335.8	25.2	911.8
1976	534.1	395.3	0.0	929.4
1977	679.7	0.0	195.3	875.0
1978	581.0	160.8	0.0	741.8
1979	651.1	1,486.6	0.0	2,137.7
1980	692.2	1,002.8	296.9	1,991.9
1981	797.7	1,067.6	0.0	1,865.3
1982	500.0	557.1	0.0	1,057.1
1983	614.5	1,346.5 *2/*	232.7	2,193.7
1984	629.9	258.1	0.0	888.0
1985	669.6 *3/*	0.0	0.0	669.6
1986	603.4	0.0	0.0	603.4
1987	700.7	428.5	0.0	1,129.2
1988	783.2	1,021.4	29.5	1,834.1
1989	778.9	139.6	0.0	918.5
1990	310.8	0.0	0.0	310.8
1991	604.3	98.0	0.0	702.3

1/ In thousands of fish.
2/ 1,116.1 Cowlitz stock.
3/ 610.3 Carson stock, 59.3 Klickitat stock.

Table 24. Yakima River spring chinook run by return year. 1/

Return Year	Age 3	4	5	6	Total	Adult Total
1980	137	982	105	*	1,224	1,087
1981	189	963	181	*	1,333	1,144
1982	65	1,408	76	*	1,549	1,484
1983	140	1,026	158	*	1,324	1,184
1984	217	2,039	420	*	2,676	2,459
1985	421	3,259	847	*	4,527	4,106
1986	378	6,477	2,587	*	9,442	9,064
1987	314	2,754	1,296	*	4,364	4,050
1988	405	2,923	1,028	*	4,356	3,951
1989	290	3,462	1,165	*	4,917	4,627
1990	144	2,777	777	*	3,698	3,554
1991	134	1,737	990	*	2,861	2,727
1992	36	4,022	474	28	4,560	4,524
1993 2/	45	1,957	1,644	125	3,771	3,726

1/ Minor numbers of fish from experimental hatchery releases are included in returns from 1982-1990.

2/ Preliminary.

"*" *denotes six-year-olds included with five-year-olds.*

Table 25. Yakima River spring chinook run by brood year.

Brood Year	Age 3	4	5	6	Total	Adult Total
1975			105	*		
1976		982	181	*		1,163
1977	137	963	76	*	1,176	1,039
1978	189	1,408	158	*	1,755	1,566
1979	65	1,026	420	*	1,511	1,446
1980	140	2,039	847	*	3,026	2,886
1981	217	3,259	2,587	*	6,063	5,846
1982	421	6,477	1,296	*	8,194	7,773
1983	378	2,754	1,028	*	4,160	3,782
1984	314	2,923	1,165	*	4,402	4,088
1985	405	3,462	777	*	4,644	4,239
1986	290	2,777	990	28	4,057	3,767
1987	144	1,737	474	125	2,355	2,211
1988	134	4,022	1,644		5,800	5,666
1989	36	1,957				
1990	45					

Table 26. Yakima River spring chinook tribal harvest by return year.

Return Year	Below Prosser Dam	Above Prosser Dam	Total	Adult Total 1/
1980	23	83	106	94
1981	49	167	216	185
1982	88	346	434	416
1983	72	12	84	75
1984	119	170	289	266
1985	321	544	865	785
1986	530	810	1,340	1,286
1987	379	167	546	507
1988	333	111	444	403
1989	560	187	747	703
1990	131	532	663	637
1991	27	5	32	31
1992	184	161	345	342
1993	45	85	130	128

1/ Estimation of adult component of harvest made using Yakima basin spring chinook age composition.

Table 27. Releases of spring chinook by brood year into the Yakima River. 1/

Brood Year	Number Yearlings	Number Fingerlings	Number Fall-rel.	Total Release
1978	23.9 2/	0.0	0.0	23.9
1979	440.1 2/	0.0	0.0	440.1
1980	501.8	0.0	0.0	501.8
1981	191.5	0.0	0.0	191.5
1982	0.0	0.0	0.0	0.0
1983	121.0 2/	0.0	0.0	121.0
1984	174.7 5/	100.7 4/	203.2 4/	478.6
1985 6/	23.8 4/	0.0	0.0	23.8

1/ In thousands of fish.
2/ Klickitat stock.
3/ 7.8 Carson stock, 113.2 Leavenworth stock.
4/ Carson stock.
5/ Leavenworth stock.
6/ Releases of spring chinook into the Yakima River were suspended.

Table 28. Escapement by return year for spring chinook returning to Ringold Rearing Facility.

Return Year	Hatchery 1/ Adults	Hatchery 1/ Jacks	Tribal Distribution 2/ Adults	Tribal Distribution 2/ Jacks	Sport 3/ Adults	Sport 3/ Jacks	Total Adults	Total Jacks
1980	0	0	0	0	151	154	151	154
1981	1,459	69 4/	963	62 5/	341	68	1,800	137
1982	196	999	269	492 6/	284	287	480	1,286
1983	1,138	0	677	0 7/	535	137	1,673	137
1984	899	1 8/	436	0 9/	262	65	1,161	66
1985	315	640 10/	421	190 11/	640	366	955	1,006
1986	950	0	582	0 12/	1,525	87	2,475	87
1987	351	0	206	0 13/	645	81	996	81
1988	0	0	0	0	0	98	0	98
1989	0	0	0	0	0	12	0	12
1990	1,750	0	200	0 9/	1,585	19	3,335	19
1991	227	112 14/	0	50 9/	309	71	536	183
1992	385	144	0	0	392	77 15/	777	221
1993	1,583	37	468	0 16/	1,583	17 15/	3,166	54

1/ *Hatchery escapement includes all fish distributed to the tribes.*
2/ *Includes fish received and harvested by the Wanapum Tribe and YIN.*
3/ *Derived from catch record reports using Ringold spring chinook catch data plus upper Columbia River catch data from the same time period.*
4/ *Includes 350 adults transferred to Leavenworth Hatchery by NMFS.*
5/ *Fish removed from Priest Rapids Hatchery ladder by Wanapum Tribe.*
6/ *Includes 78 adults and 261 jacks distributed to the Wanapum Tribe and 191 adults and 231 jacks seined from the Columbia River by YIN.*
7/ *Includes 203 adults distributed to the Wanapum Tribe and 474 adults distributed to YIN.*
8/ *These fish returned to Priest Rapids Hatchery and resulted from 1980 brood yearlings released from Priest Rapids Hatchery in 1982.*
9/ *Distributed to the Wanapum Tribe.*
10/ *Includes 315 adults and 70 jacks that returned to Priest Rapids H.*
11/ *Includes 379 adult and 190 jacks distributed to the Wanapum Tribe and 42 adults distributed to YIN.*
12/ *Includes 266 adults distributed to the Wanapum Tribe and 316 adults distributed to YIN.*
13/ *Includes 70 adults distributed to the Wanapum Tribe and 136 adults distributed to YIN.*
14/ *Includes 221 adults and 14 jacks transferred to Eastbank Hatchery.*
15/ *Preliminary; based on limited sampling.*
16/ *Includes 200 adults distributed to the Wanapum Tribe, 140 adults distributed to the Warm Springs Tribe, and 128 adults distributed to YIN.*

Table 29. Releases of spring chinook by brood year into the Columbia River at Ringold Rearing Facility. 1/

Brood Year	Number Yearlings	Number Fingerlings	Number Fall-rel.	Total Release
1971	0.0	0.0	39.2 2/	39.2
1972	0.0	0.0	708.7 3/	708.7
1973	0.0	0.0	0.0	0.0
1974	520.0 2/	0.0	0.0	520.0
1975	124.0 4/	0.0	0.0	124.0
1976	153.5 4/	0.0	0.0	153.5
1977	610.0 4/	0.0	0.0	610.0
1978	350.0 4/	0.0	0.0	350.0
1979	750.0 4/	0.0	0.0	750.0
1980	196.0 5/6/	0.0	0.0	196.0
1981	0.0	0.0	900.0 4/	900.0
1982	950.0 2/	0.0	0.0	950.0
1983	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0
1986	900.0 3/	0.0	0.0	900.0
1987	0.0	0.0	0.0	0.0
1988	870.0 2/	0.0	0.0	870.0
1989	1,200.0 3/	13.0 7/	0.0	1,213.0
1990	1,050.0 3/	0.0	0.0	1,050.0
1991	669.4 3/8/9/	0.0	0.0	669.4

1/ In thousands of fish.
2/ Klickitat stock.
3/ Carson stock.
4/ Cowlitz stock.
5/ Leavenworth stock.
6/ Fish released at Priest Rapids Hatchery.
7/ Priest Rapids stock.
8/ Kalama stock.
9/ Ringold stock.

Table 30. Icicle River spring chinook run by return year. 1/

Return Year	Age 3	4	5	6	Total	Adult Total
1979	65	704	1,408	0	2,177	2,112
1980	103	893	2,205	0	3,201	3,098
1981	37	1,101	1,496	0	2,634	2,597
1982	87	870	2,041	0	2,998	2,911
1983	36	2,388	988	0	3,412	3,376
1984	252	2,986	957	0	4,195	3,943
1985	249	5,668	2,121	0	8,038	7,789
1986	241	6,523	2,425	0	9,189	8,948
1987	171	3,130	4,490	0	7,791	7,620
1988	31	2,584	3,650	0	6,265	6,234
1989	87	3,802	1,233	14	5,136	5,049
1990	68	2,269	2,036	0	4,373	4,305
1991	110	2,310	1,352	0	3,772	3,662
1992 2/	134	7,211	3,756	5	11,106	10,972
1993 2/	5	5,324	6,967	15	12,311	12,306

1/ Excludes wild spring chinook caught in the mainstem Wenatchee:

1980 minor number	*1989 13*	*1992 28*
1986 41	*1990 48*	*1993 38*
1988 28	*1991 5*	

2/ Preliminary.

* *All 6's included in the 5's column.*

Table 31. Icicle River spring chinook run by brood year.

Brood Year	Age 3	4	5	6	Total	Adult Total
1974			1,408	*		
1975		704	2,205	*		
1976	65	893	1,496	*	2,454	2,389
1977	103	1,101	2,041	*	3,245	3,142
1978	37	870	988	*	1,895	1,858
1979	87	2,388	957	*	3,432	3,345
1980	36	2,986	2,121	*	5,143	5,107
1981	252	5,668	2,425	*	8,345	8,093
1982	249	6,523	4,490	*	11,262	11,013
1983	241	3,130	3,650	14	7,035	6,794
1984	171	2,584	1,233	0	3,988	3,817
1985	31	3,802	2,036	0	5,869	5,838
1986	87	2,269	1,352	5	3,713	3,626
1987	68	2,310	3,756	15	6,149	6,081
1988	110	7,211	6,967		14,288	14,178
1989	134	5,324				
1990	5					

* *All 6's included in the 5's column.*

Table 32. Leavenworth Hatchery spring chinook escapement by return year. 1/

Return Year	Age 3	4	5	6	Total	Adult Total
1979	54	589	1,179	*	1,822	1,768
1980	79	684	1,689	*	2,452	2,373
1981	26	1,015	1,379	*	2,420	2,394
1982	81	817	1,916	*	2,814	2,733
1983	18	1,994	826	*	2,838	2,820
1984	159	2,299	786	*	3,244	3,085
1985	99	2,142	1,054	*	3,295	3,196
1986	36	2,174	1,354	*	3,564	3,528
1987 *2/*	26	1,196	1,920	*	3,142	3,116
1988 *3/*	3	843	1,375	*	2,221	2,218
1989 *4/*	3	1,652	657	12	2,324	2,321
1990 *5/*	52	1,082	1,375	0	2,509	2,457
1991 *6/*	66	1,152	881	0	2,099	2,033
1992 *7/*	62	2,213	1,307	3	3,585	3,523
1993 8/	0	939	1,591	5	2,535	2,535

1/ Does not include tribal distributions.

2/ Includes 250 adults donated to Northwest Steelheaders and 218 adults placed in the controlled channel of Icicle River.

3/ Includes 202 adults donated to Northwest Steelheaders and 146 adults placed in the controlled channel of Icicle River.

4/ Includes 184 adults donated to Northwest Steelheaders and 109 adults placed in the controlled channel of Icicle River.

5/ Includes 147 adults donated to Northwest Steelheaders and 17 adults placed in the controlled channel of Icicle River.

6/ Includes 47 adults donated to Northwest Steelheaders, 130 chinook placed in the controlled channel of Icicle River, and 16 adults poached from the holding pond.

7/ Includes 1,664 adults donated to Northwest Steelheaders and 293 chinook placed in controlled channel of Icicle River.

8/ Preliminary. Includes 722 adults donated to Northwest Steelheaders.

Table 33. Icicle River spring chinook natural spawn escapement by return year. 1/

Return Year	Age 3	4	5	6	Total	Adult Total
1979	11	115	229	*	355	344
1980	12	101	250	*	363	351
1981	1	30	41	*	72	71
1982	3	24	57	*	84	81
1983	0	43	17	*	60	60
1984	8	123	41	*	172	164
1985	11	237	117	*	365	354
1986	8	488	304	*	800	792
1987	6	305	489	*	800	794
1988	0	50	77	*	127	127
1989	0	41	17	0	58	58
1990	2	52	66	0	120	118
1991 *2/*	5	95	72	0	172	167
1992	1	55	33	0	89	88
1993 *3/*	0	47	80	0	127	127

1/ Estimated as the larger of redds multiplied by 2.4 or adults from Leavenworth NFH released into mainstem Icicle River. Leavenworth NFH age composition was used.

2/ Hatchery escapement released into Icicle River.

3/ Preliminary.

* *All 6's included in the 5's column.*

Table 34. Wenatchee River maximum potential wild spring chinook escapement. 1/

Return Year	Adults	Jacks	Index Redd Count 2/
1980	1,693	206	223
1981	1,555	0	263
1982	1,928	138	300
1983	2,789	249	542
1984	3,751	211	386
1985	8,846	264	747
1986	7,463	141	441
1987	7,431	184	545
1988	4,965	110	494
1989	2,153	167	495
1990	1,336	16	279
1991	523	125	154
1992	1,577	100	274
1993 3/	3,334	20	335

1/ Rock Island and Rocky Reach dam count difference (ACOE) minus Leavenworth NFH production, Eastbank H. broodstock (1989-93), and Wenatchee wild spring chinook catch (1986, 1988-93).

2/ Sum of highest redd counts by WDF, YIN, or Chelan PUD in five index areas in Wenatchee Basin excluding Icicle River.

3/ Preliminary.

Table 35. Icicle River spring chinook sport harvest by return year. 1/

Return Year	Age 3	4	5	6	Total	Adult Total
1979	0	0	0	*	0	0
1980	7	59	147	*	213	206
1981	10	56	76	*	142	132
1982	3	29	68	*	100	97
1983	18	173	71	*	262	244
1984	80	260	89	*	429	349
1985	62	757	219	*	1,038	976
1986	64	1,057	122	*	1,243	1,179
1987	12	554	888	*	1,454	1,442
1988	7	497	442	*	946	939
1989	36	573	126	0	735	699
1990	8	271	77	0	356	348
1991	24	477	141	0	642	618
1992 2/	19	511	188	0	718	699
1993 2/	5	662	413	0	1,080	1,075

1/ Harvest estimate in recent year from census; previous years from catch record cards.

2/ Preliminary.

* *All 6's included in the 5's column.*

Table 36. Wenatchee River sport harvest of Icicle spring chinook by return year. 1/

Return Year		Age 3	4	5	6	Total	Adult Total
1979		0	0	0	0	0	0
1980	2/	6	48	119	*	173	167
1981		0	0	0	0	0	0
1982		0	0	0	0	0	0
1983		0	0	0	0	0	0
1984		0	0	0	0	0	0
1985		0	0	0	0	0	0
1986	3/	21	345	40	*	406	385
1987		0	0	0	0	0	0
1988	4/	5	346	307	*	658	653
1989	5/	9	131	29	0	169	160
1990	6/	5	337	137	0	479	474
1991	7/	9	245	81	0	335	326
1992	8/	7	615	134	0	756	749
1993	9/	0	531	438	6	975	975

1/ Harvest in recent year from census; previous years from catch record cards.
2/ Includes an undetermined number of wild spring chinook.
3/ Includes 2 (age 3), 35 (age 4), and 4 (age 5) wild spring chinook.
4/ Includes 0 (age 3), 15 (age 4), and 13 (age 5) wild spring chinook.
5/ Includes 0 (age 3), 11 (age 4), and 2 (age 5) wild spring chinook.
6/ Includes 0 (age 3), 27 (age 4), and 21 (age 5) wild spring chinook.
7/ Includes 0 (age 3), 5 (age 4), and 0 (age 5) wild spring chinook.
8/ Preliminary. Includes 0 (age 3), 22 (age 4), and 6 (age 5) wild spring chinook.
9/ Preliminary. Includes 0 (age 3), 16 (age 4), 19 (age 5), and 3 (age 6) wild spring chinook.

* *All 6's included in the 5's column.*

Table 37. Catch and escapement of adult spring chinook in the Wenatchee River.

Year	Wild Run size 1/	Wild Harvest 2/	Total Harvest 3/	Percent Wild 4/	Percent of Wild Run Harvested
1980	1,693	no sample	167	n.a.	(10% maximum)
1986	7,463	41	385	10.6	0.5
1988	4,965	28	653	4.3	0.6
1989	2,219	13	160	8.1	0.6
1990	1,422	48	474	10.1	3.9
1991	561	5	326	1.5	0.9
1992	1,680	28	749	3.7	1.7
1993 5/	3,481	38	975	3.9	1.1

1/ Rock Island minus Rocky Reach minus Icicle/Leavenworth hatchery fish.
2/ No season 1981-1985 and 1987.
3/ 1993 from census sampling; other years from punch cards which reported "Wenatchee River" as catch area.
4/ Based on hatchery vs. wild designation from scale readings.
5/ Preliminary.

Table 38. Icicle River spring chinook tribal harvest by return year. 1/

Return Year	Age 3	4	5	6	Total	Adult Total
1987	66	375	603	*	1,044	978
1988 2/	16	646	1,108	*	1,770	1,754
1989 3/	38	1,162	304	0	1,504	1,466
1990	0	524	364	0	888	888
1991	6	340	173	0	519	513
1992 4/	42	1,558	750	0	2,350	2,320
1993 5/	0	2,280	2,936	0	5,216	5,216

1/ Harvest by YIN fishers only, except in 1988 and 1989.
2/ Includes 1,040 harvested by YIN and 730 harvested by CTCIR.
3/ Includes 1,184 harvested by YIN and 320 harvested by CTCIR. Age composition from data collected by CTCIR biologists.
4/ Includes 12 (age 3) adults.
5/ Preliminary.

** All 6's included in the 5's column.*

Table 39. Leavenworth Hatchery spring chinook tribal distributions by return year. 1/

Return Year	Age 3	4	5	6	Total	Adult Total
1983	0	178	74	*	252	252
1984	5	304	41	*	350	345
1985	77	2,532	731	*	3,340	3,263
1986	114	2,494	609	*	3,217	3,103
1987	61	700	590	*	1,351	1,290
1988 *2/*	0	217	354	*	571	571
1989 *3/*	1	254	102	2	359	358
1990 *4/*	1	30	38	0	69	68
1991	0	6	4	0	10	10
1992 *5/*	3	2,290	1,352	2	3,647	3,644
1993 *6/*	0	896	1,517	4	2,417	2,417

1/ All distributions were to YIN except 1988-1990, and 1992-1993.
2/ Includes 290 distributed to YIN and 281 distributed to CTCIR.
3/ Includes 172 distributed to YIN and 185 distributed to CTCIR.
4/ Includes 22 distributed to YIN and 47 distributed to CTCIR.
5/ Includes 2,939 distributed to YIN and 708 distributed to CTCIR.
6/ Includes 1,465 distributed to YIN and 952 distributed to CTCIR.

* *All 6's included in the 5's column.*

Table 40. Releases of spring chinook by brood year into the Icicle River.

Brood Year	Number Yearlings	Number Fingerlings	Number Fall-rel.	Total Release
1965	251.0	0.0	0.0	251.0
1966	86.0	0.0	0.0	86.0
1967	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0
1969	64.0	0.0	0.0	64.0
1970	290.0	0.0	0.0	290.0
1971	523.0	0.0	0.0	523.0
1972	480.0	0.0	0.0	480.0
1973	717.0	0.0	0.0	717.0
1974	1,370.5	0.0	0.0	1,370.5
1975	1,831.5	0.0	0.0	1,831.5
1976	1,878.6	0.0	0.0	1,878.6
1977	1,153.8	0.0	0.0	1,153.8
1978	2,229.5	0.0	0.0	2,229.5
1979	2,380.8	0.0	0.0	2,380.8
1980	1,878.3	0.0	0.0	1,878.3
1981	1,906.5	0.0	0.0	1,906.5
1982	2,316.5	0.0	0.0	2,316.5
1983	2,200.0	1,771.3	0.0	3,971.3
1984	1,969.7	0.0	52.8	2,022.5
1985	2,336.9	478.0	0.0	2,814.9
1986	2,207.3	922.9	0.0	3,130.2
1987	2,334.7	333.9	0.0	2,668.6
1988	2,287.5	533.5 *1/*	0.0	2,821.0
1989	2,258.0	534.1	0.0	2,792.1
1990	2,286.8	395.8	0.0	2,682.6

1/ 173.9 Leavenworth stock reared at Wells Hatchery and released in the Icicle River.

Table 41. Entiat Hatchery stock spring chinook run by return year.

Return Year	Age 3	4	5	6	Total	Adult Total
1983	0	251	409	*	660	660
1984	55	572	181	*	808	753
1985	0	738	174	*	912	912
1986	14	594	371	*	979	965
1987	5	610	226	*	841	836
1988	27	179	483	*	689	662
1989	17	612	40	0	669	652
1990	0	306	277	0	583	583
1991	3	308	126	0	437	434
1992	10	331	179	0	520	510
1993 *1/*	0	384	346	0	730	730

1/ Preliminary.

* *All 6's included in the 5's column.*

Table 42. Entiat Hatchery stock spring chinook run by brood year.

Brood Year	Age 3	4	5	6	Total	Adult Total
1980	0	572	174	*	746	746
1981	55	738	371	*	1,164	1,109
1982	0	594	226	*	820	820
1983	14	610	483	0	1,107	1,093
1984	5	179	40	0	224	219
1985	27	612	277	0	916	889
1986	17	306	126	0	449	432
1987	0	308	179	0	487	487
1988	3	331	346		680	677
1989	10	384				
1990	0					

Table 43. Entiat Hatchery spring chinook escapement by return year.

Return Year	Age 3	4	5	6	Total	Adult Total
1980	26	0	0	*	305	279
1981	0	0	0	*	247	247
1982	4	171	72	*	247	243
1983	0	251	409	*	660	660
1984	55	572	181	*	808	753
1985	0	738	174	*	912	912
1986	14	588	367	*	969	955
1987	0	593	220	*	813	813
1988	27	179	483	*	689	662
1989	17	612	40	0	669	652
1990	0	306	277	0	583	583
1991	3	308	126	0	437	434
1992	10	331	179	0	520	510
1993 *1/*	0	384	346	0	730	730

1/ Preliminary.

* *All 6's included in the 5,s column.*

Table 44. Entiat River spring chinook maximum potential natural spawning escapement by return year. 1/

Return Year	Maximum Potential Adults	Jacks	Total	Redd Count
1980 2/	586	0	586	
1981	1,477	38	1,515	
1982 2/	223	0	223	
1983 2/	13	0	13	
1984 2/	8	0	8	
1985	2,483	66	2,549	
1986	143	10	153	
1987	283	10	293	64
1988	964	44	1,008	67
1989 2/	797	0	797	37
1990	320	19	339	83
1991 2/	103	0	103	36
1992 2/	609	0	609	42
1993 2/	791	0	791	100

1/ The maximum potential natural spawning escapement is the Rocky Reach Dam count minus the Wells Dam count minus the sport catch and hatchery escapement to the Entiat NFH.

2/ The maximum potential formula yielded negative numbers for the jacks for these years.

Table 45. Entiat River spring chinook sport harvest by return year.

Return Year	Age 3	4	5	6	Total	Adult Total
1986	0	6	4	*	10	10
1987	5	17	6	*	28	23

* *All 6's included in the 5's column.*

Table 46. Releases of spring chinook by brood year into the Entiat River. 1/

Brood Year	Number Yearlings	Number Fingerlings	Number Fall-rel.	Total Release
1967	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0
1969	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0
1971	0.0	0.0	0.0	0.0
1972	0.0	139.2	0.0	139.2
1973	0.0	0.0	0.0	0.0
1974	0.0	50.0	0.0	50.0
1975	631.2	0.0	0.0	631.2
1976	422.7	0.0	0.0	422.7
1977	448.2	311.5	0.0	759.7
1978	658.1	0.0	0.0	658.1
1979	623.4	0.0	0.0	623.4
1980	997.8	0.0	0.0	997.8
1981	956.0	0.0	0.0	956.0
1982	645.5	0.0	0.0	645.5
1983	894.6	150.0	0.0	1,044.6
1984	835.1	0.0	0.0	835.1
1985	925.0	0.0	0.0	925.0
1986	838.9	0.0	0.0	838.9
1987	791.3	10.8	56.5	858.6
1988	585.8	116.1	0.0	701.9
1989	818.7	403.0	0.0	1,221.7
1990	343.2	377.9	0.0	721.1

1/ In thousands of fish.

Table 47. Winthrop Hatchery stock spring chinook run by return year.

Return Year	Age 3	4	5	6	Total	Adult Total
1982	49	318	234	*	601	552
1983	24	233	498	*	755	731
1984	8	442	69	*	519	511
1985	20	796	385	*	1,201	1,181
1986	9	609	218	*	836	827
1987	31	315	248	*	594	563
1988	13	611	703	*	1,327	1,314
1989	5	98	92	0	195	190
1990 1/	0	64	57	0	121	121
1991	18	51	23	0	92	74
1992	5	260	65	0	330	325
1993	0	221	425	0	646	646

1/ Age composition from average at Leavenworth and Entiat hatcheries.

* *All 6's are included in the 5's column.*

Table 48. Winthrop Hatchery stock spring chinook run by brood year.

Brood Year	Age 3	4	5	6	Total	Adult Total
1979	49	233	69	*	351	302
1980	24	442	385	*	851	827
1981	8	796	218	*	1,022	1,014
1982	20	609	248	*	877	857
1983	9	315	703	0	1,027	1,018
1984	31	611	92	0	734	703
1985	13	98	57	0	168	155
1986	5	64	23	0	92	87
1987	0	51	65	0	116	116
1988	18	260	425		703	685
1989	5	221				
1990	0					

Table 49. Winthrop Hatchery spring chinook escapement by return year.

Return Year		Age 3	4	5	6	Total	Adult Total
1982		49	318	234	*	601	552
1983		24	233	498	*	755	731
1984		8	442	69	*	519	511
1985		20	796	385	*	1,201	1,181
1986		9	609	218	*	836	827
1987		31	315	248	*	594	563
1988		13	611	703	*	1,327	1,314
1989		5	98	92	0	195	190
1990	1/	0	64	57	0	121	121
1991		18	51	23	0	92	74
1992		5	260	65	0	330	325
1993		0	221	425	0	646	646

1/ Age composition from 1990 average at Leavenworth and Entiat hatcheries.

* *All 6's included in the 5's column.*

Table 50. Methow River spring chinook maximum potential natural spawning escapement by return year. 1/

Return Year	Maximum Potential Adults	Jacks	Total	Redd Count
1980	799	223	1,022	91
1981	1,734	97	1,831	97
1982	1,710	82	1,792	116
1983	1,951	119	2,070	178
1984	2,562	205	2,767	190
1985	3,942	96	4,038	256
1986	2,162	54	2,216	186
1987	1,709	43	1,752	287
1988	1,710	89	1,799	294
1989	1,443	82	1,525	267
1990	846	14	860	252
1991	613	80	693	117
1992	1,157	26	1,183	315
1993	1695	25	1720	287

1/ The maximum potential natural spawning escapement is the Wells Dam count minus the hatchery escapement to Winthrop NFH and Methow Valley Hatchery since 1992.

Table 51. Releases of spring chinook by brood year into the Methow River. 1/

Brood Year	Number Yearlings	Number Fingerlings	Number Fall-rel.	Total Release
1975	723.2	0.0	0.0	723.2
1976	867.5	0.0	0.0	867.5
1977	427.2	0.0	0.0	427.2
1978	1,207.0	0.0	0.0	1,207.0
1979	966.3	0.0	0.0	966.3
1980	712.7	0.0	0.0	712.7
1981	953.5	0.0	0.0	953.5
1982	621.9	0.0	363.2	985.1
1983	1,167.6	281.3	0.0	1,448.9
1984	1,062.8	0.0	0.0	1,062.8
1985	1,069.3	0.0	0.0	1,069.3
1986	1,090.2	0.0	0.0	1,090.2
1987	865.7	0.0	0.0	865.7
1988	1,121.4	250.0	0.0	1,371.4
1989	1,055.1	203.5	0.0	1,258.6
1990	624.8	582.8	0.0	1,207.6

1/ In thousands of fish.