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APPENDIX A
COLUMBIA RIVER COMMERCIAL FISHERY STATISTICS, RUN SIZE ESTIMATES, AND REDD AND DAMS COUNTS

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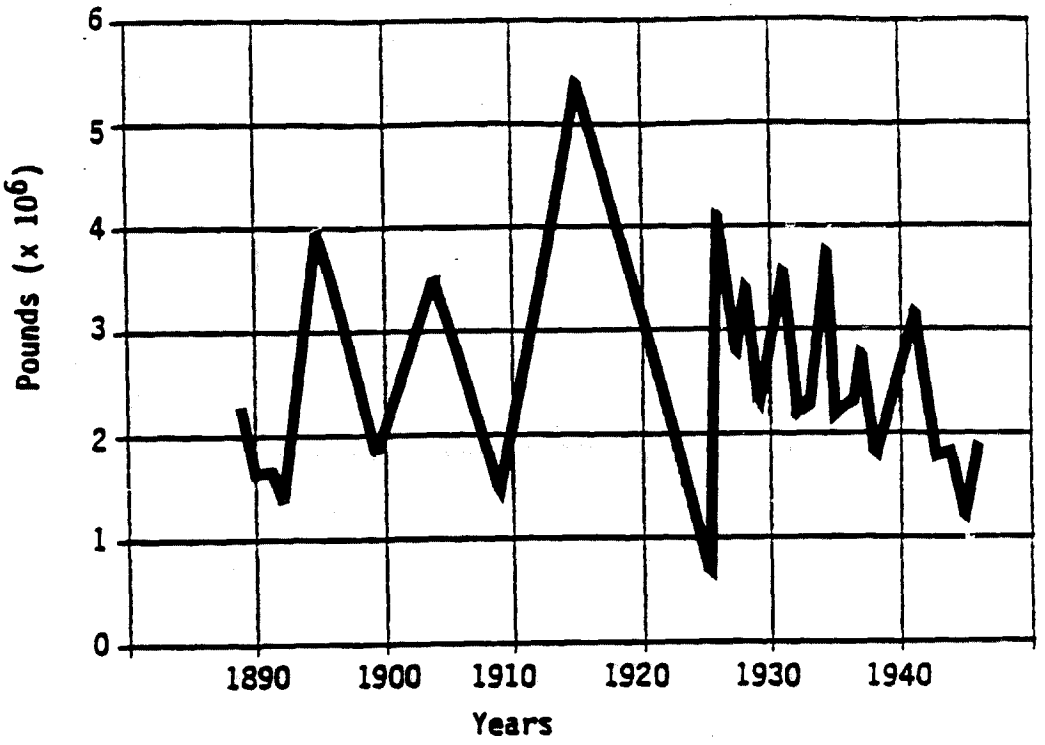

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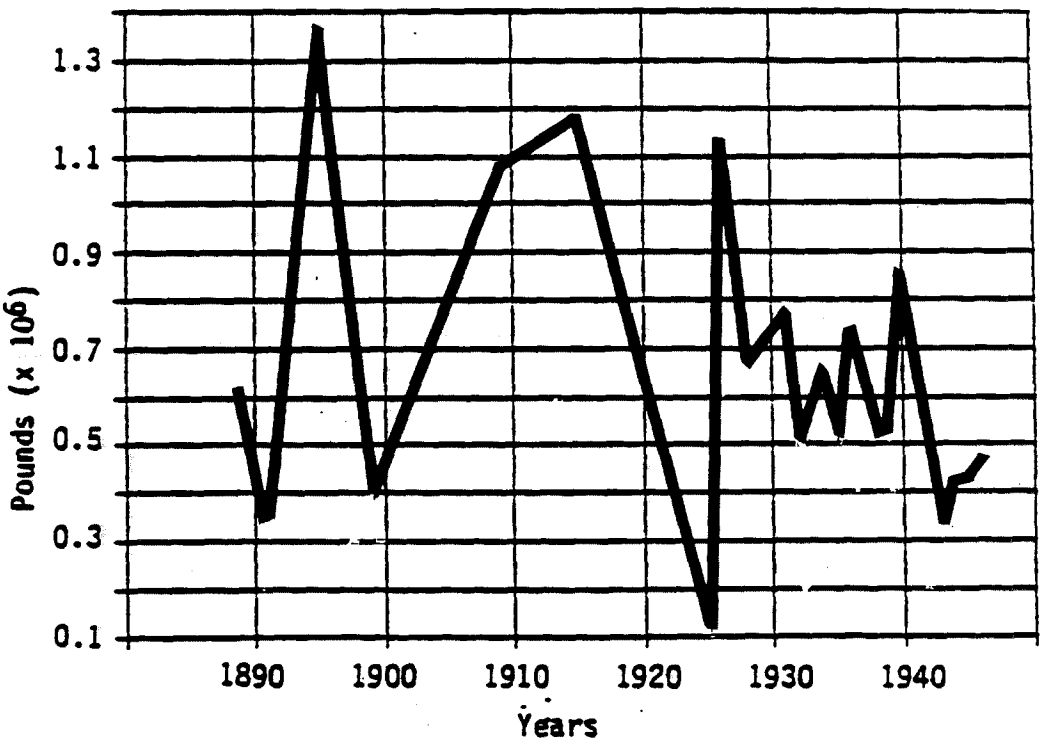

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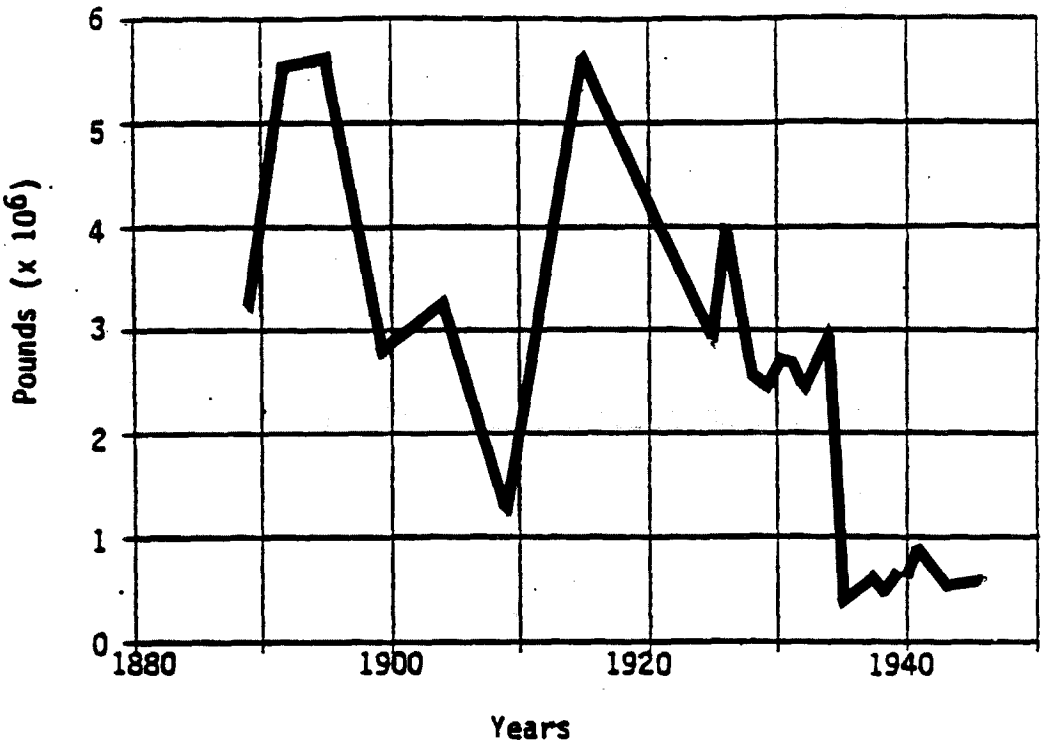

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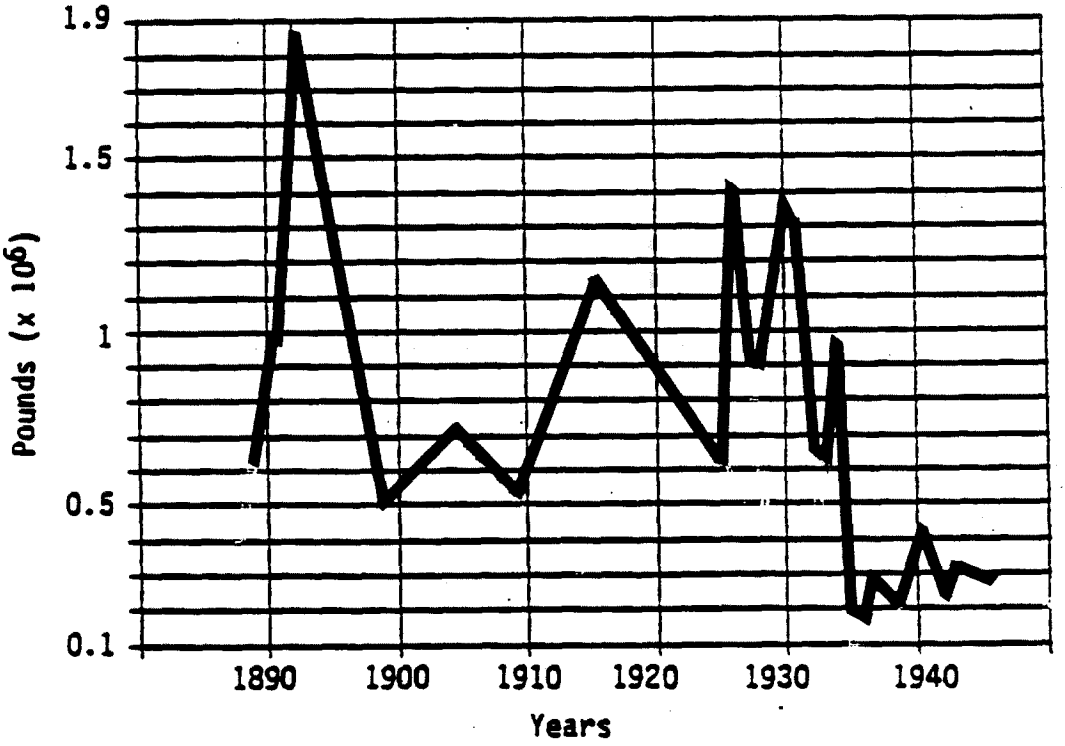

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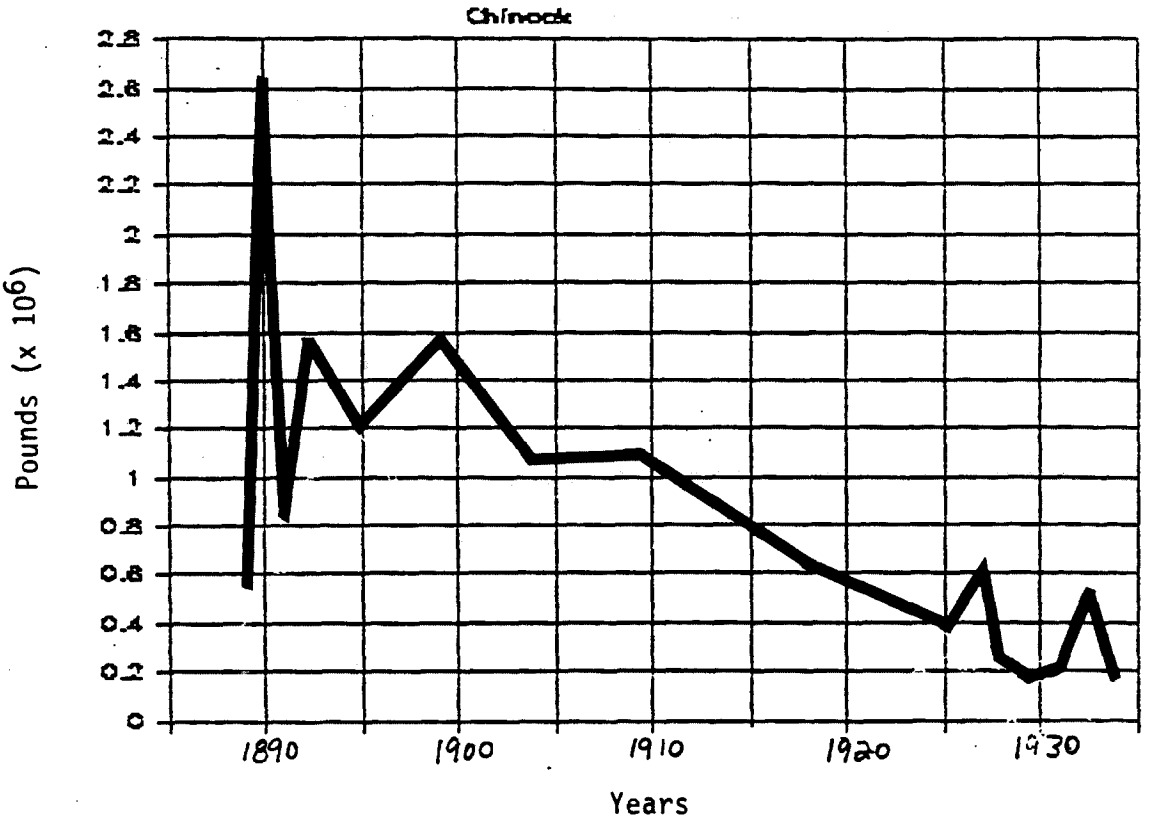

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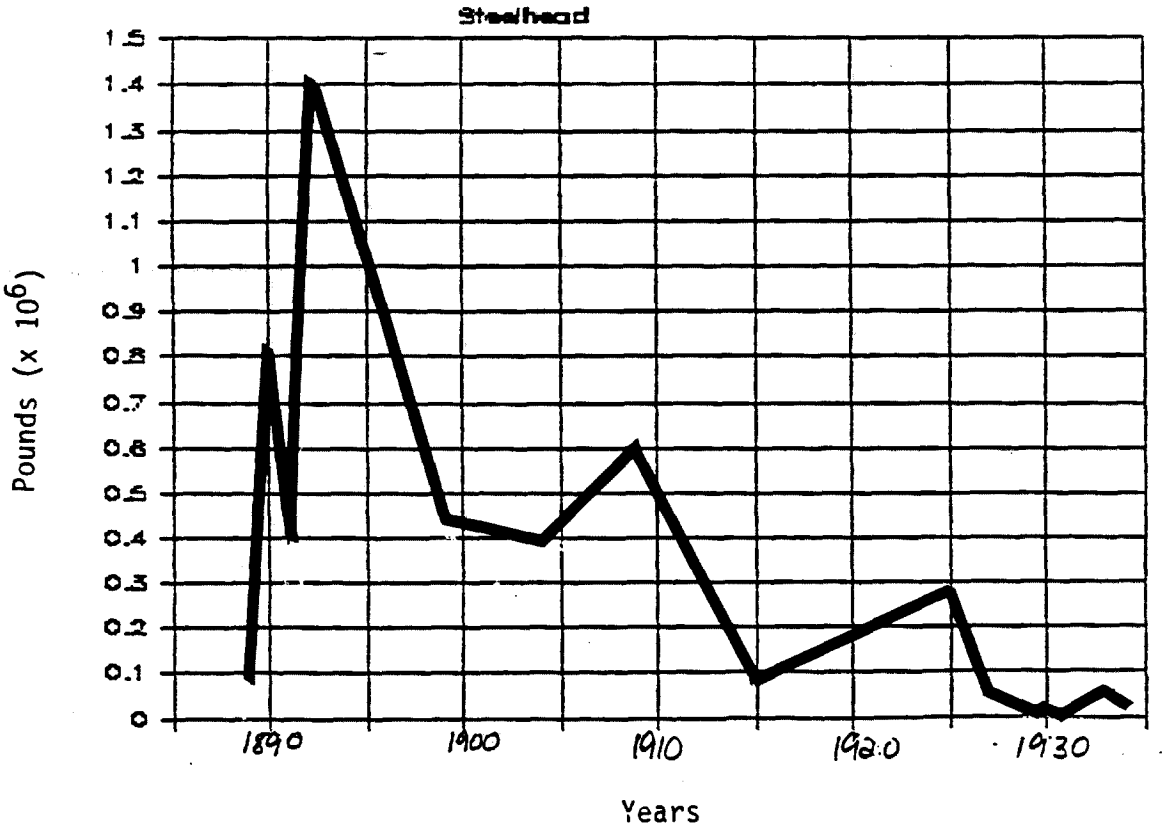

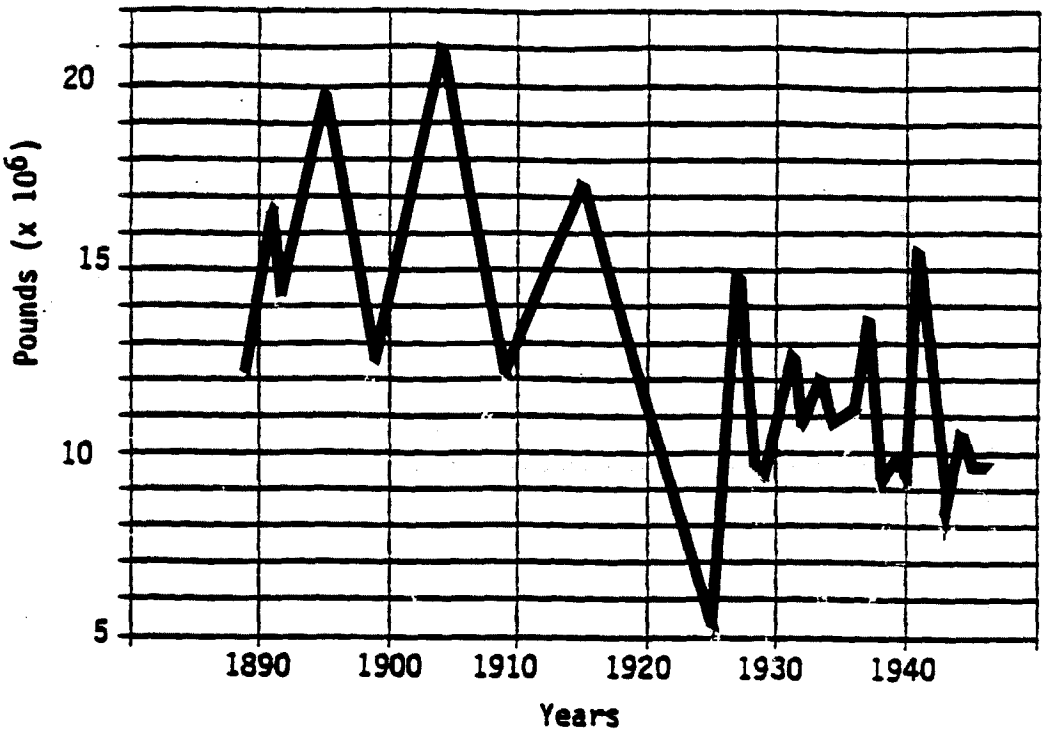

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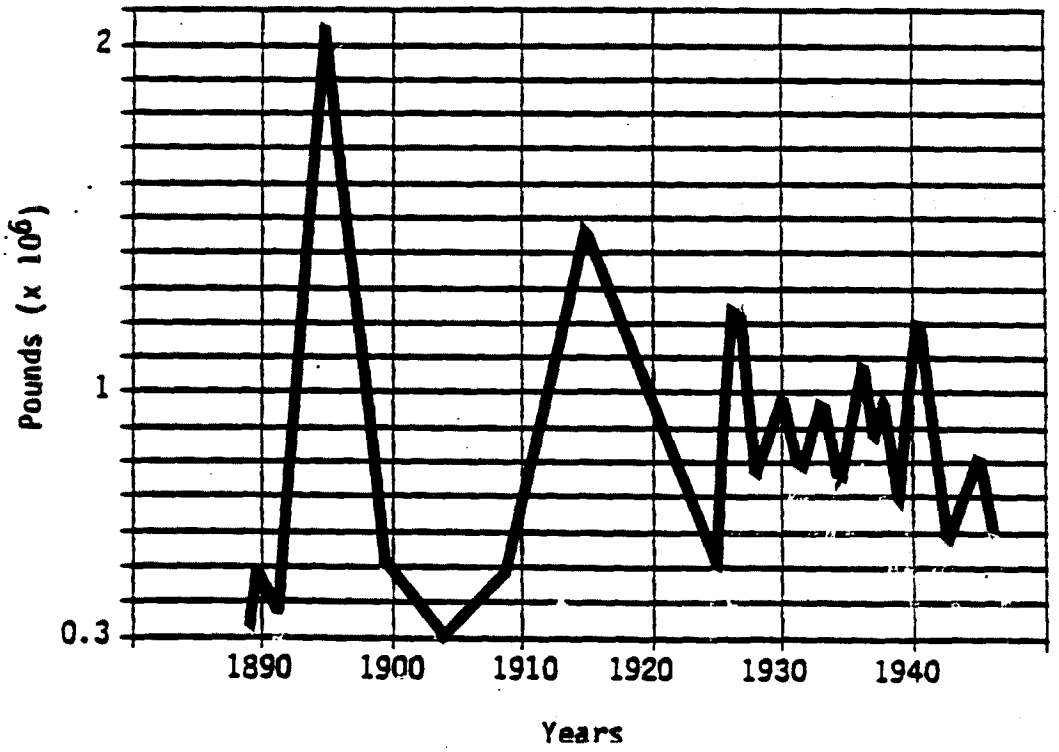

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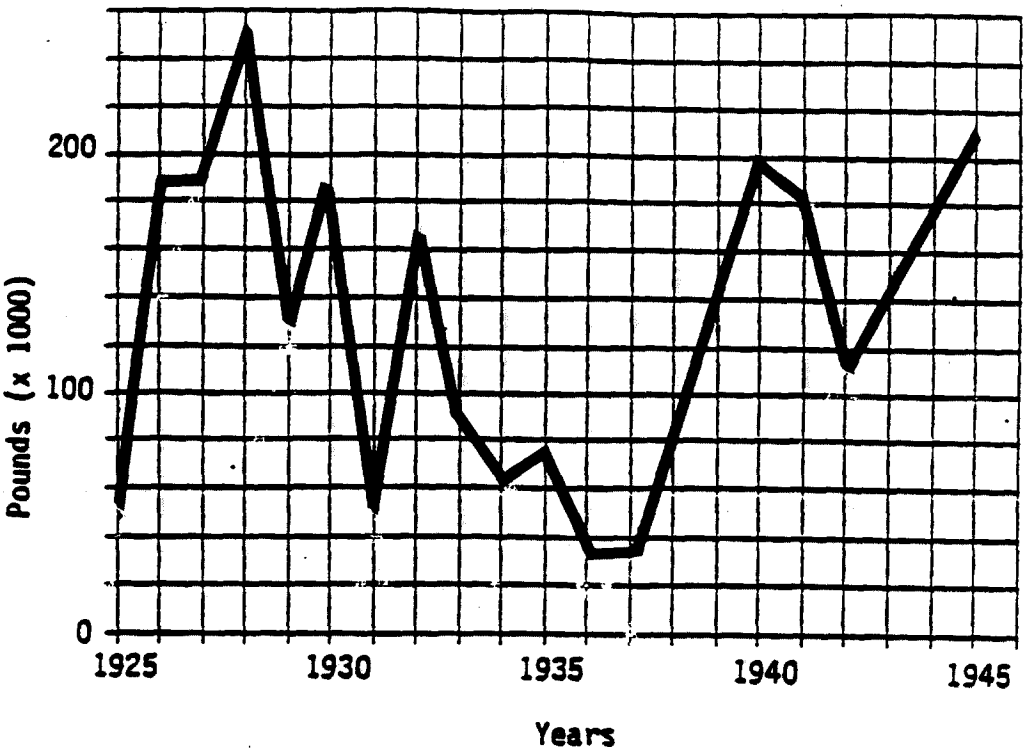

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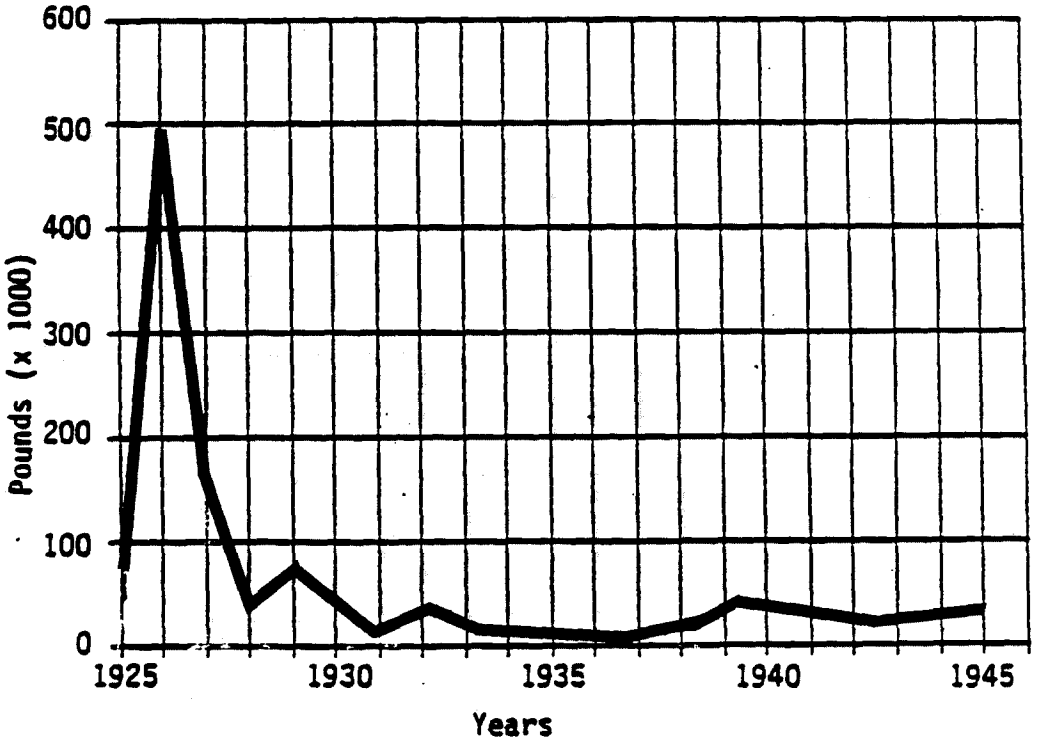

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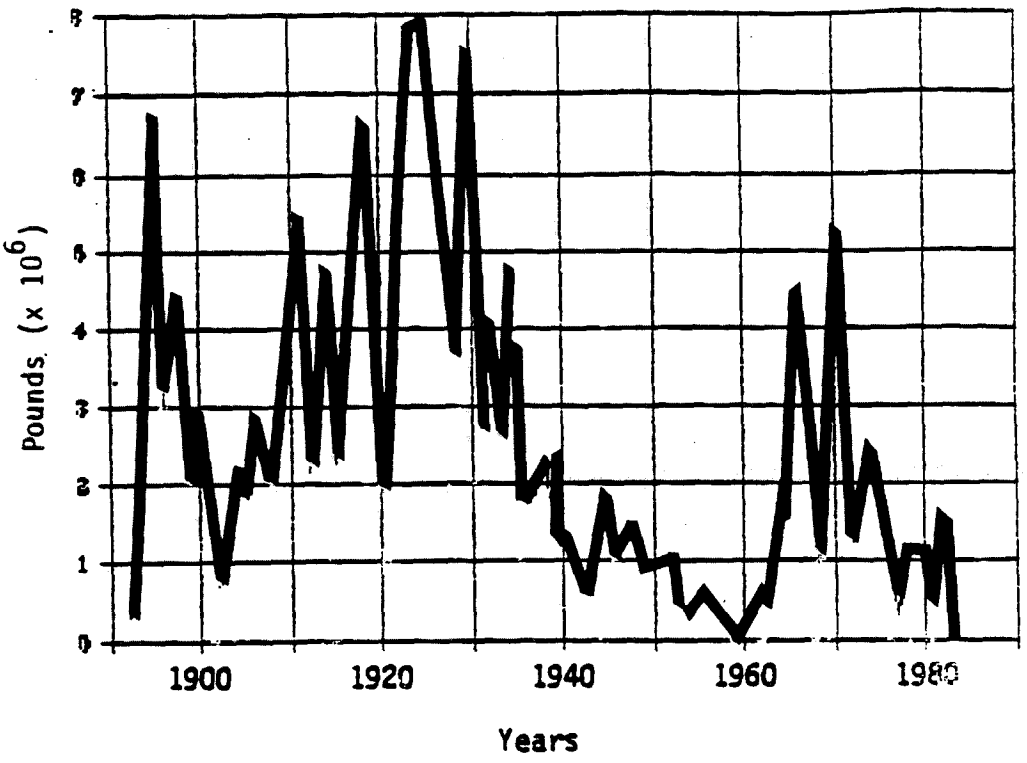

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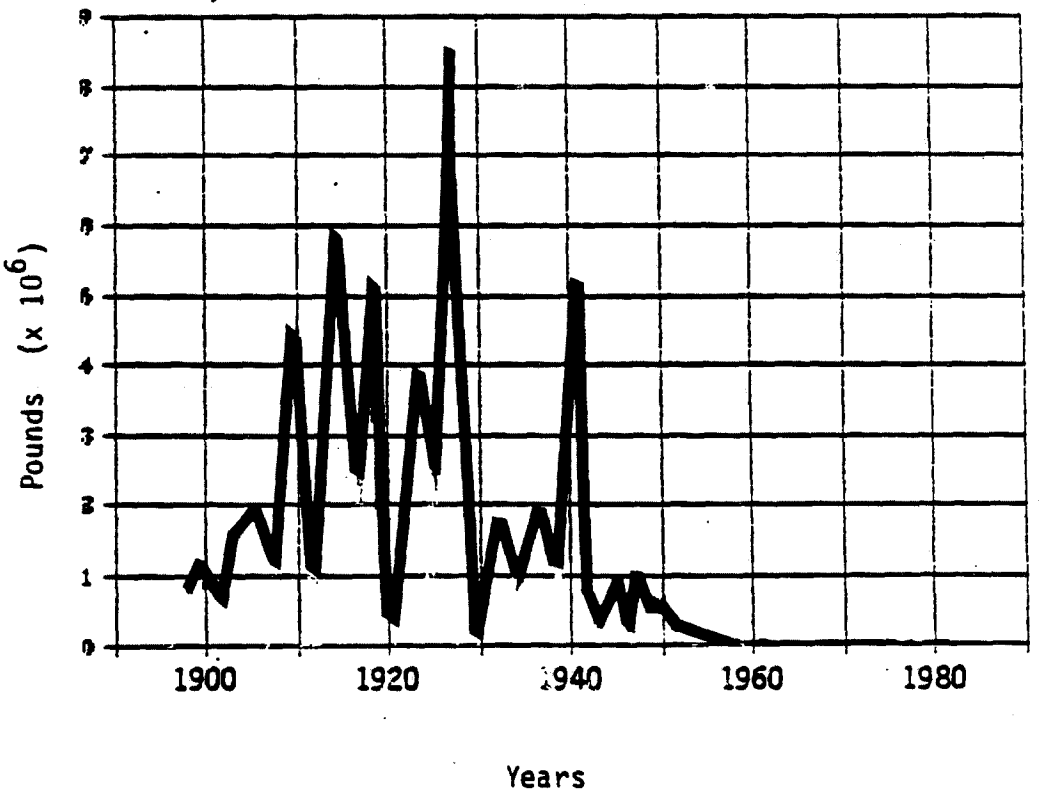

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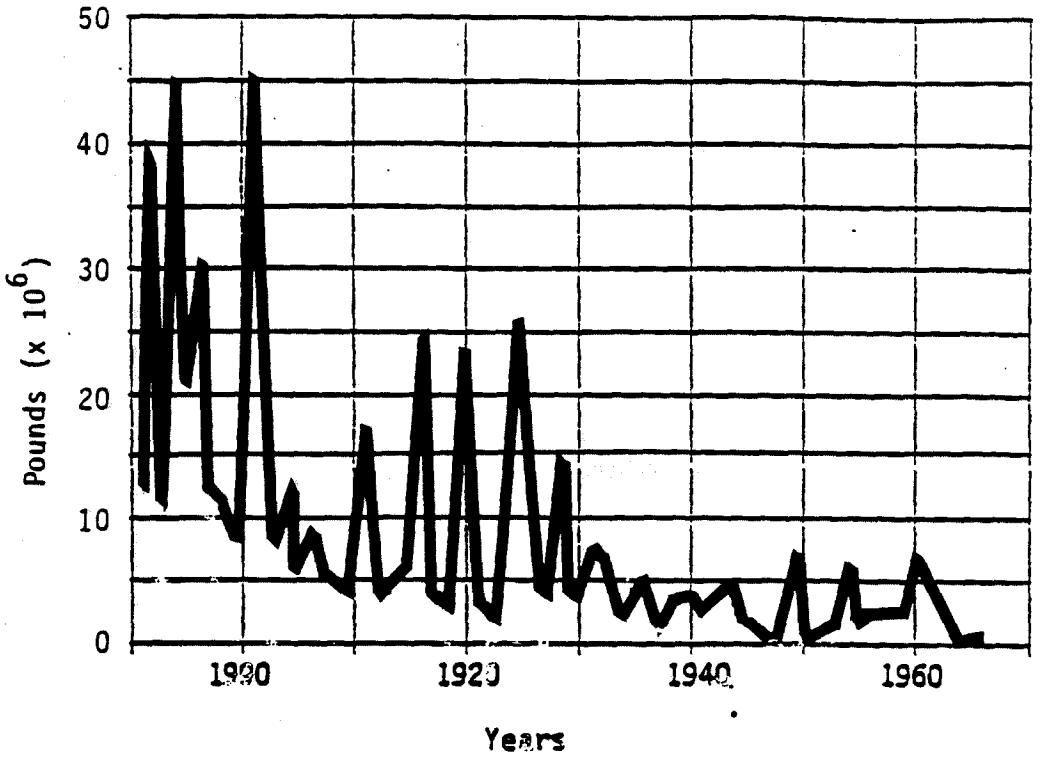

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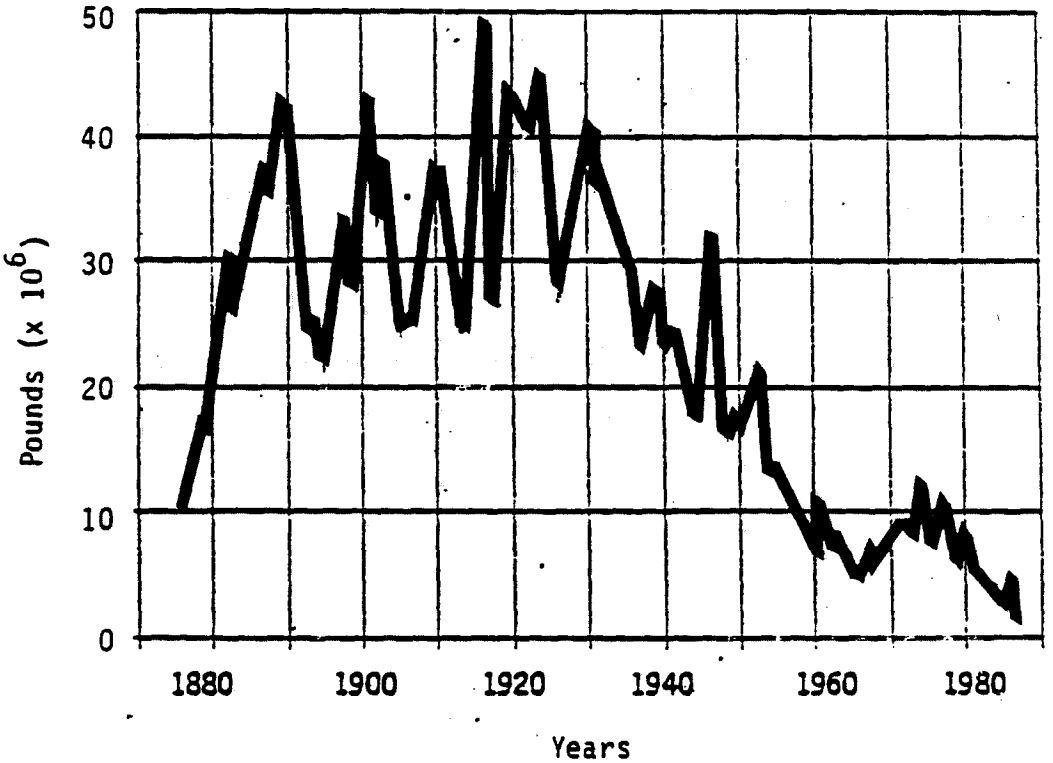

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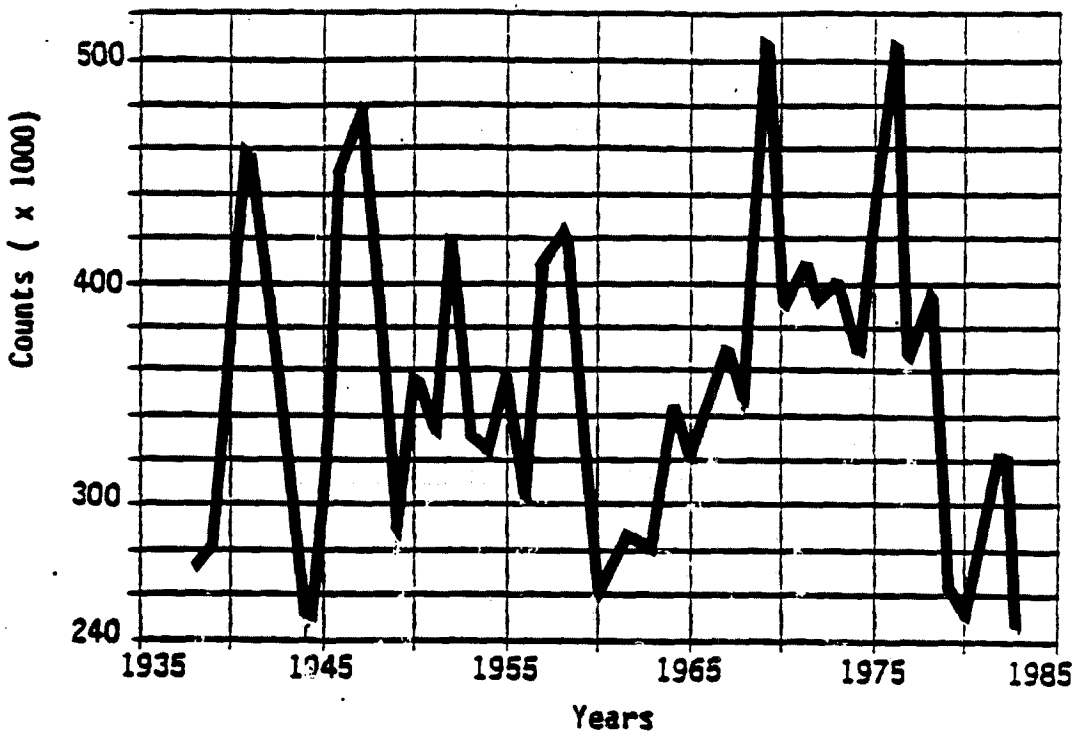

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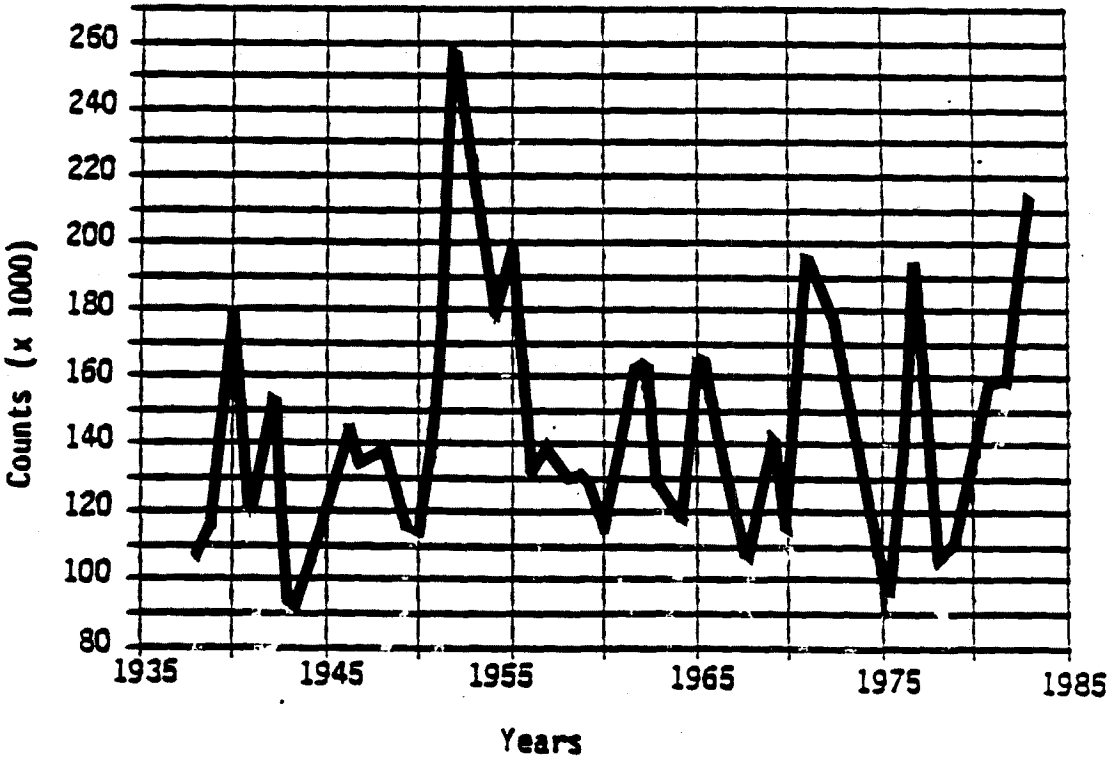

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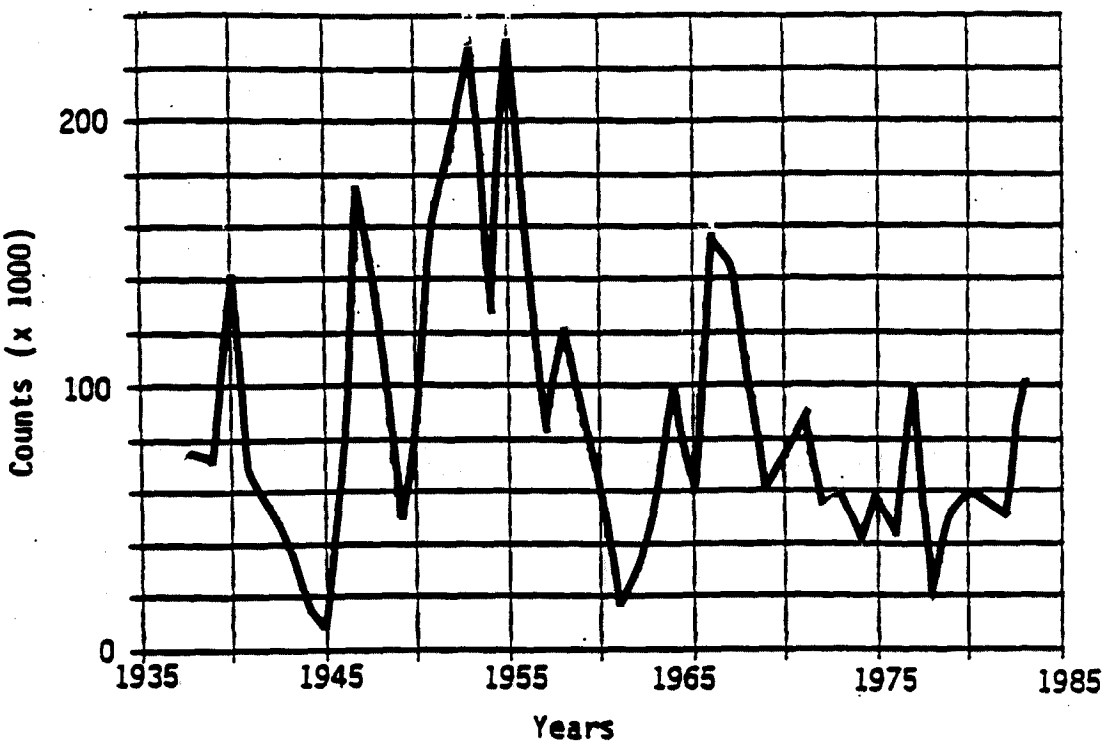

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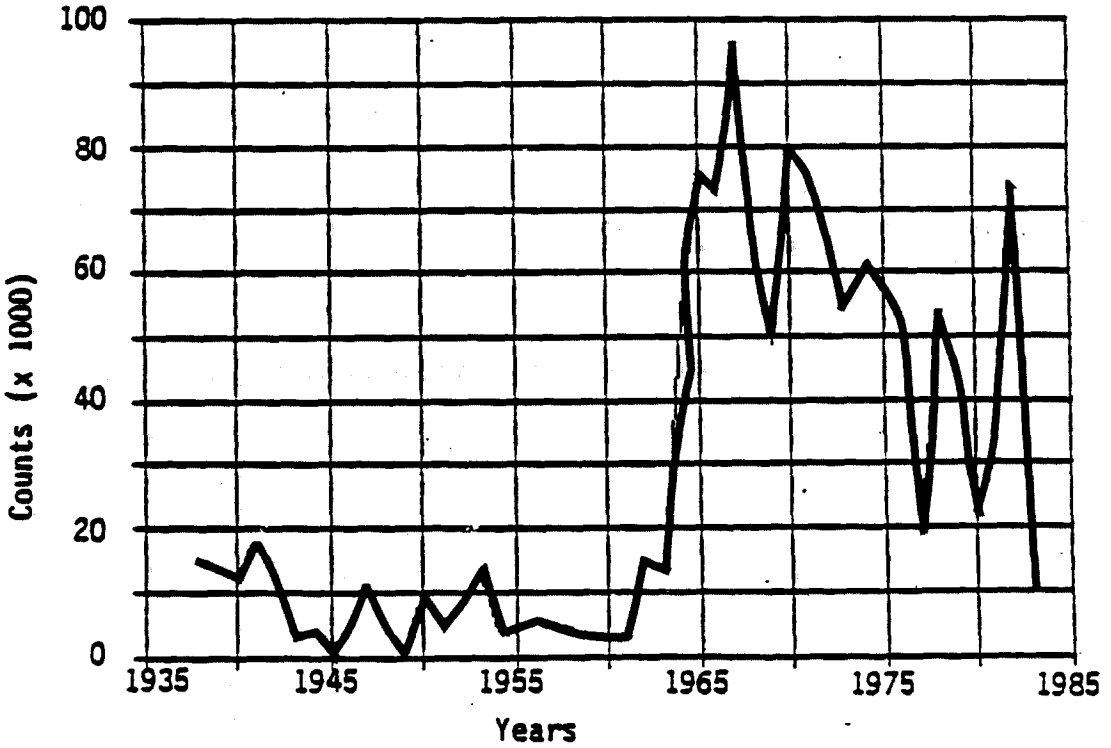

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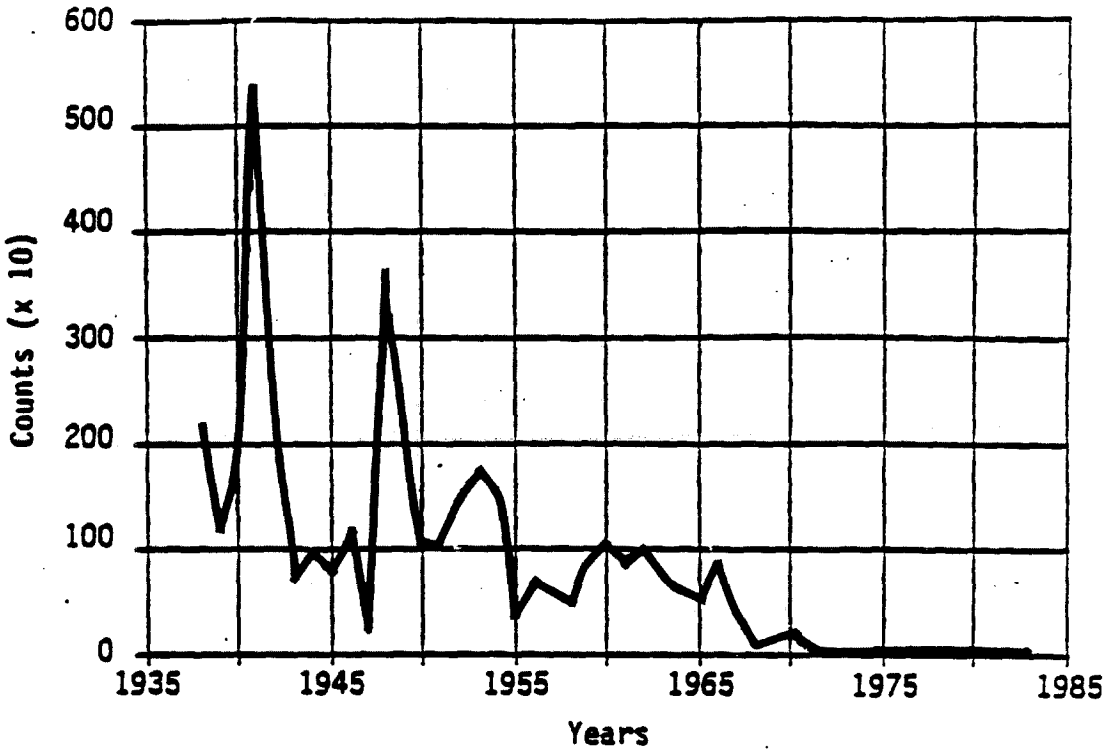

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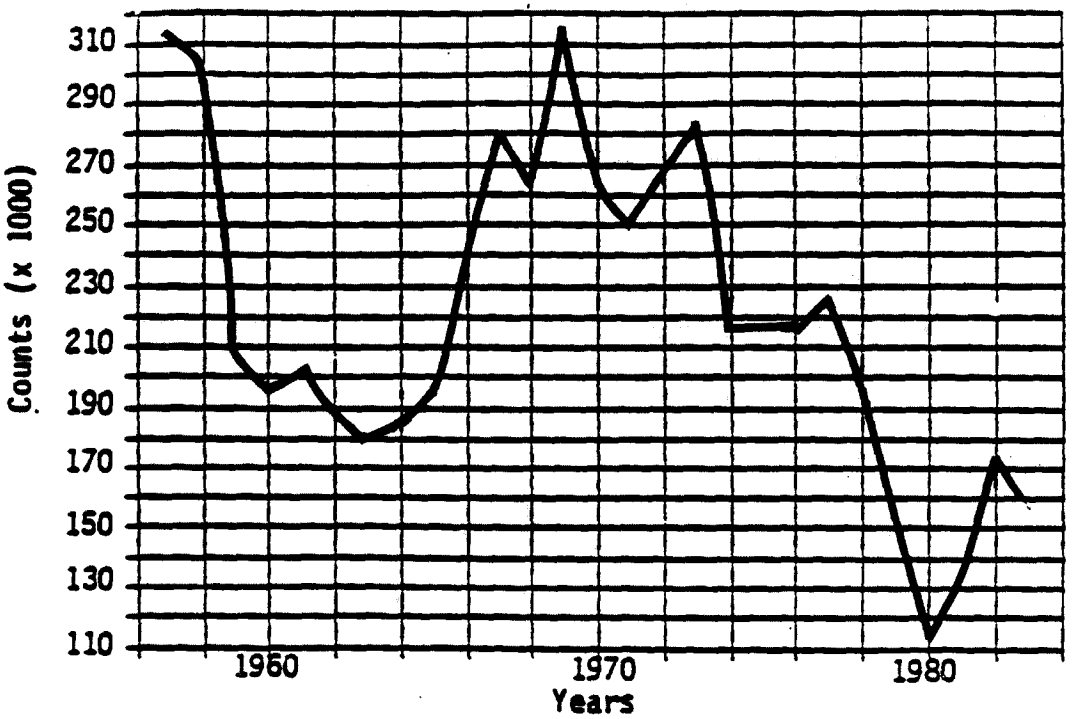

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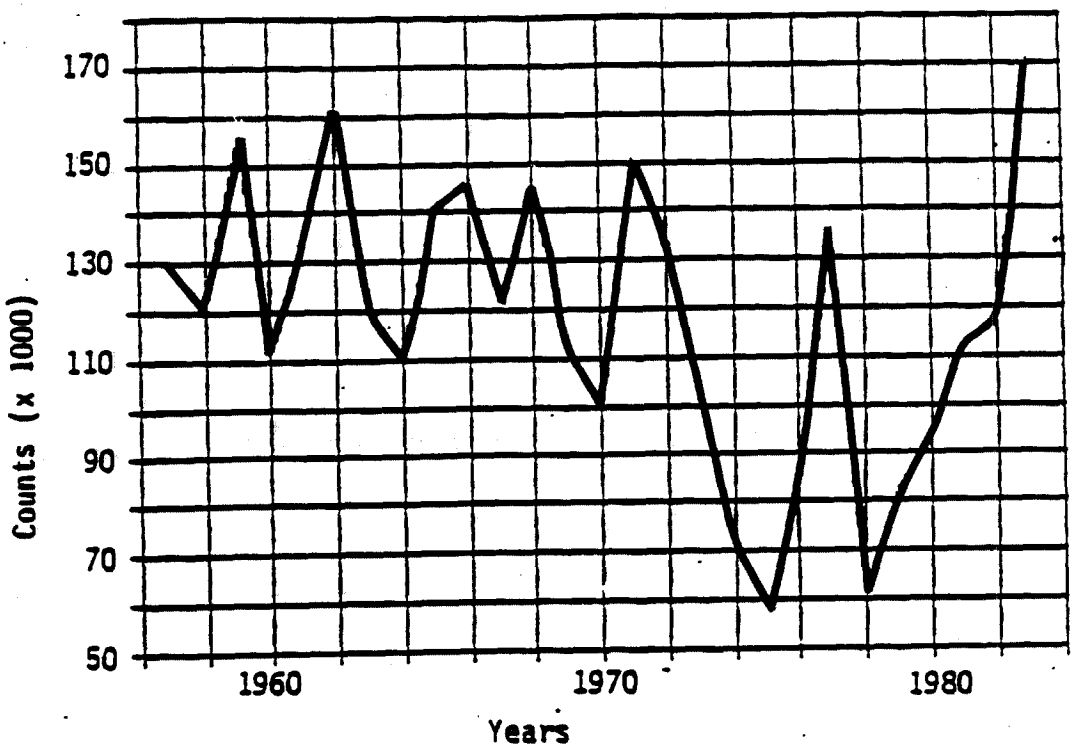

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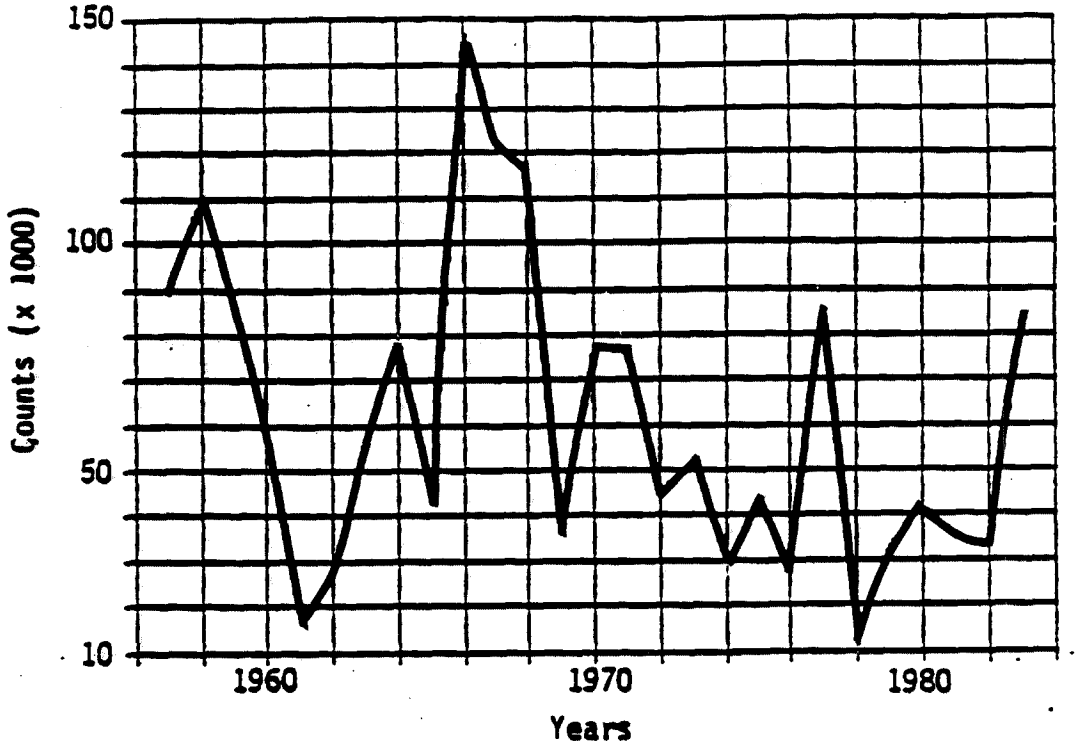

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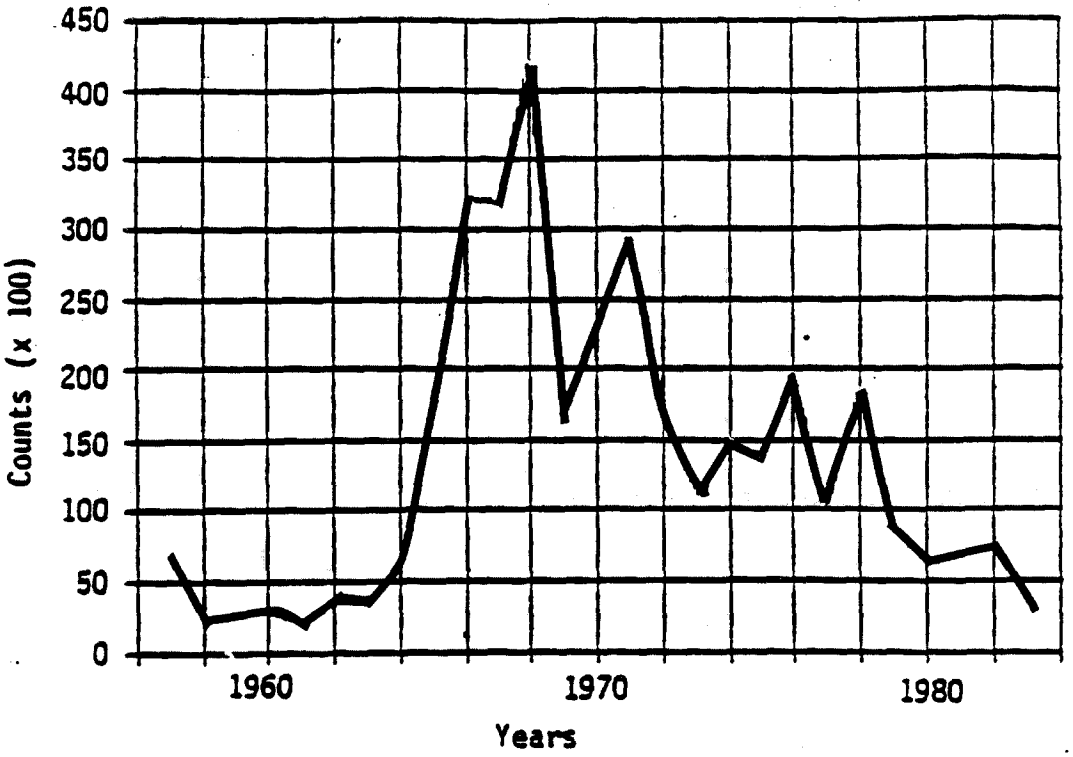

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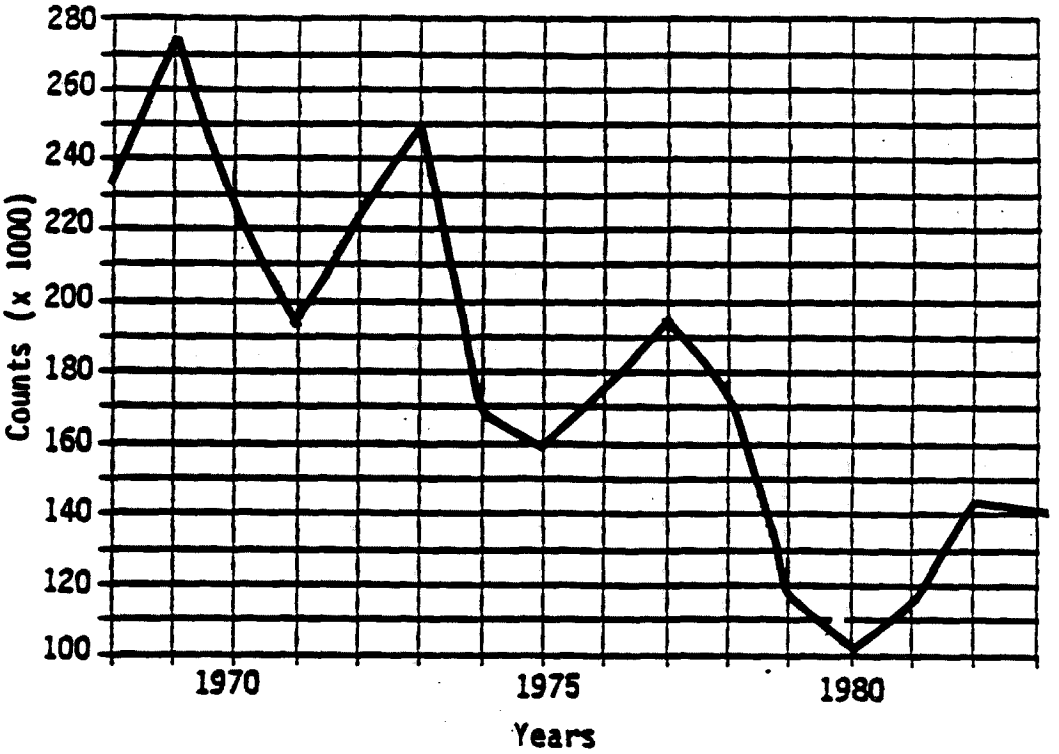

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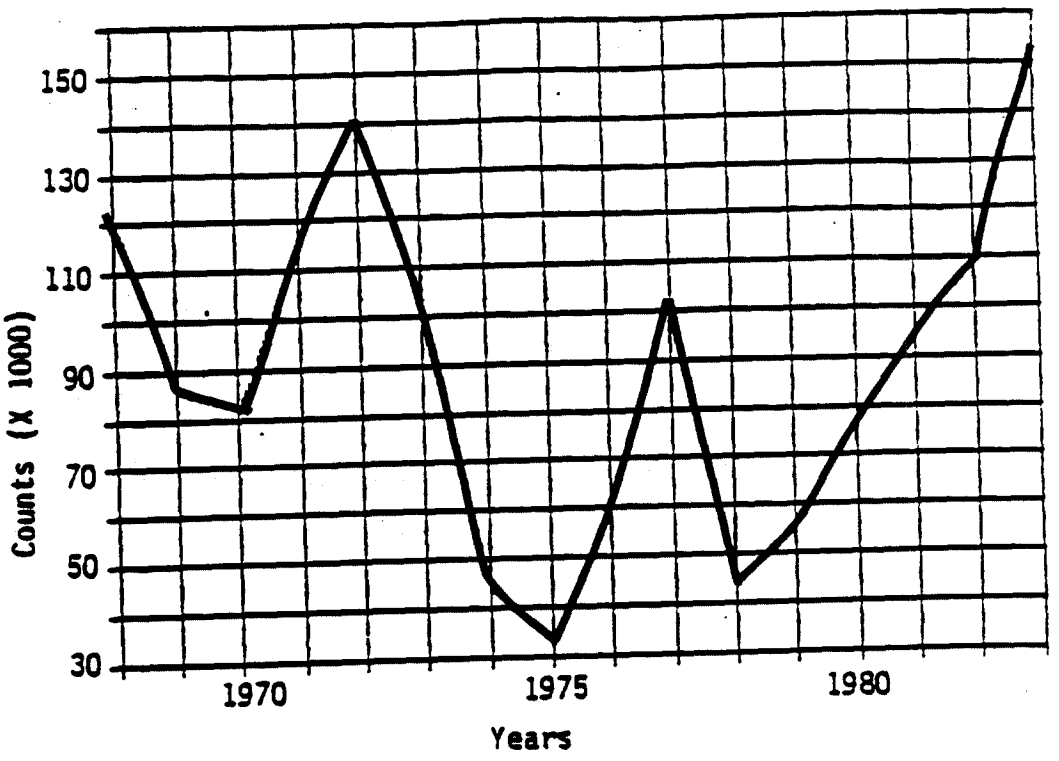

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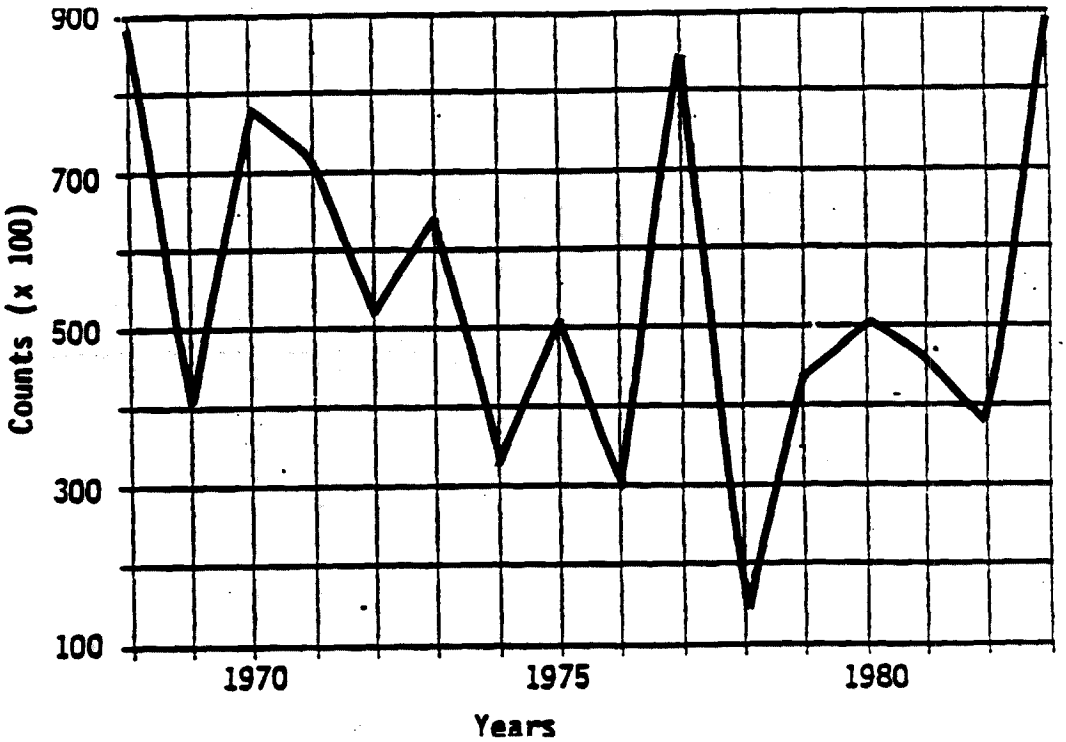

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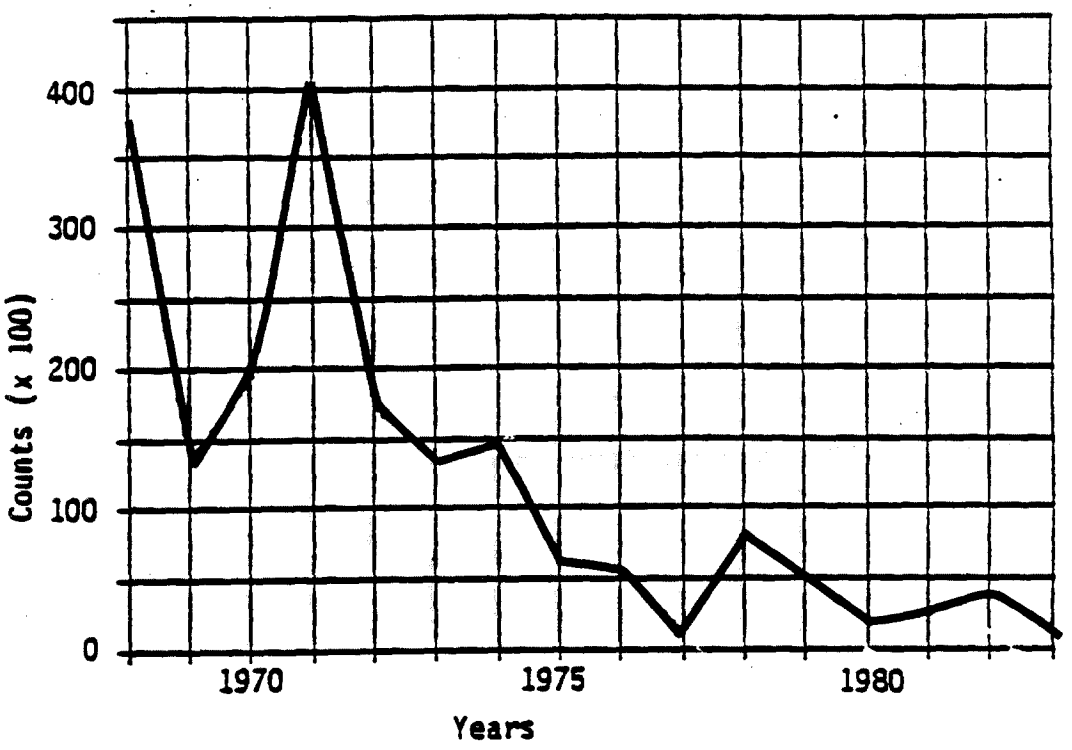

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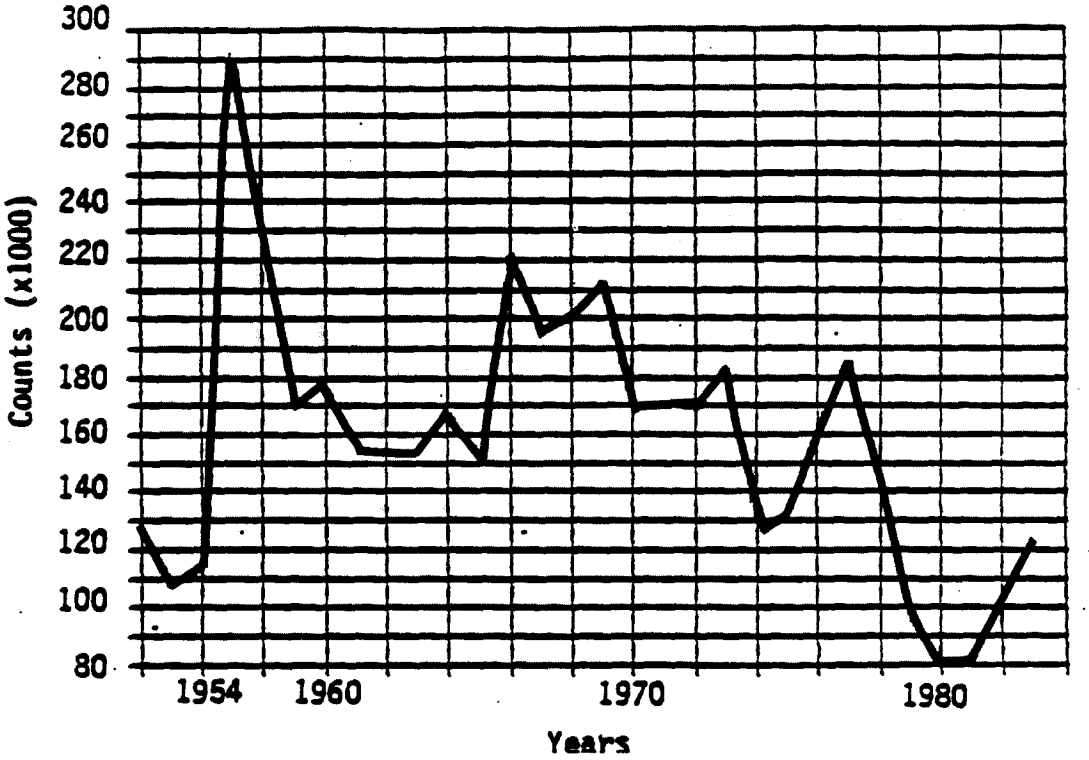

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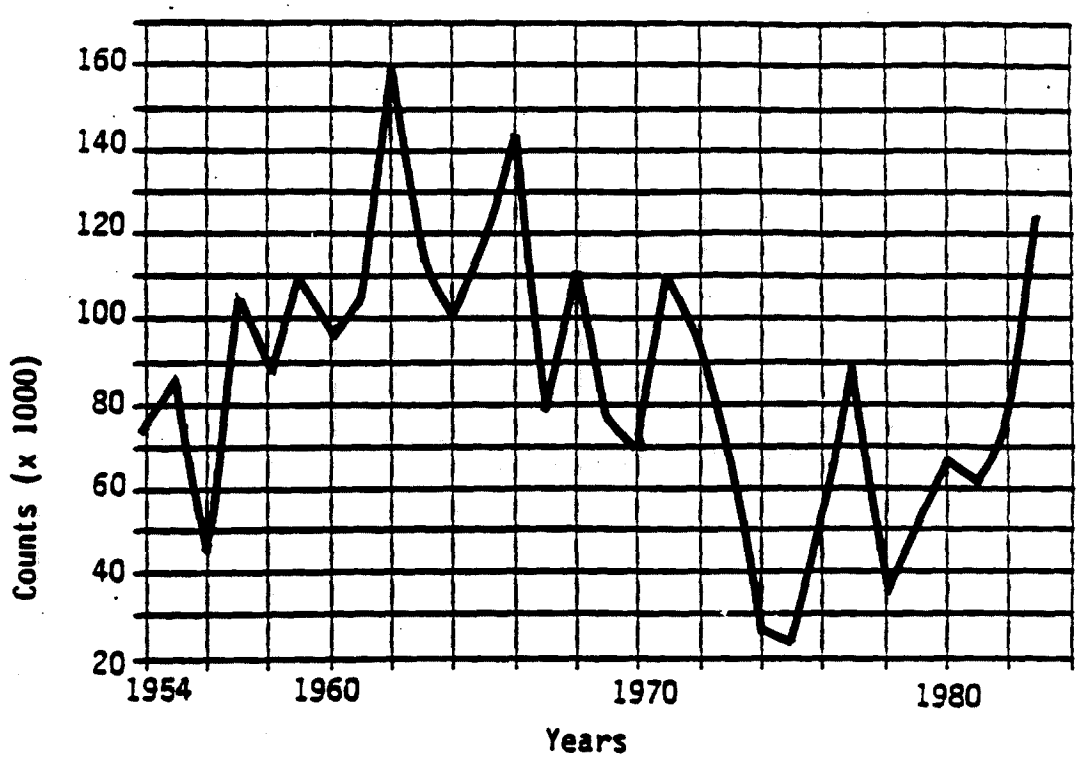

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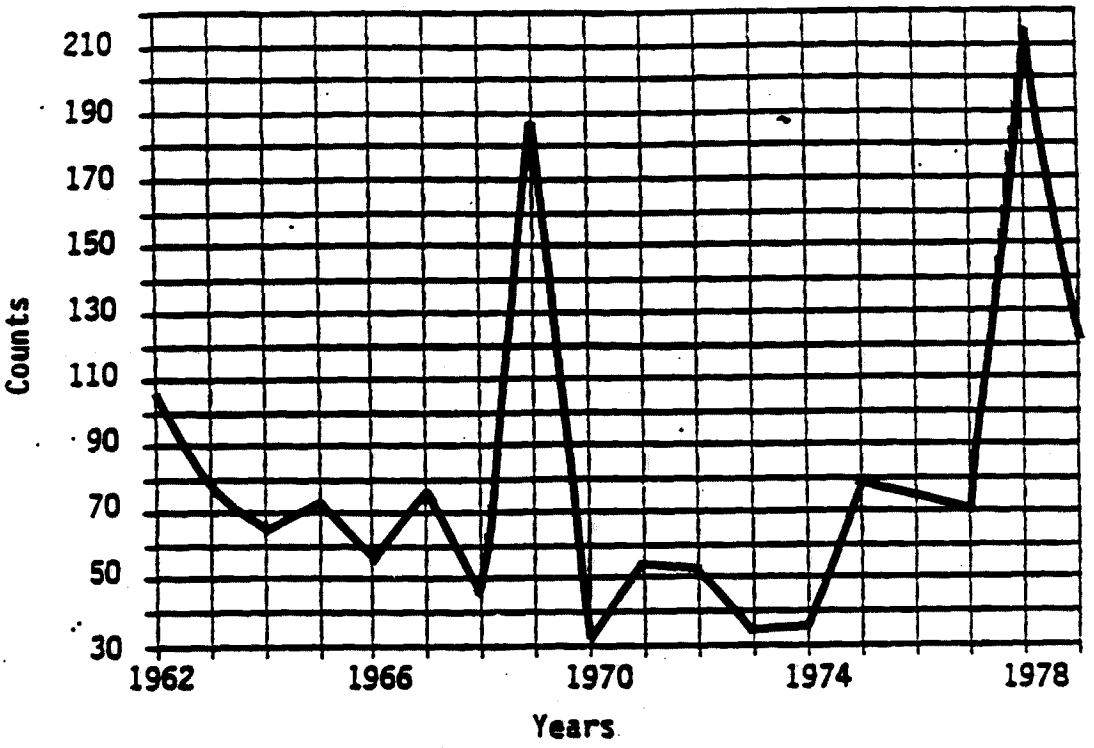

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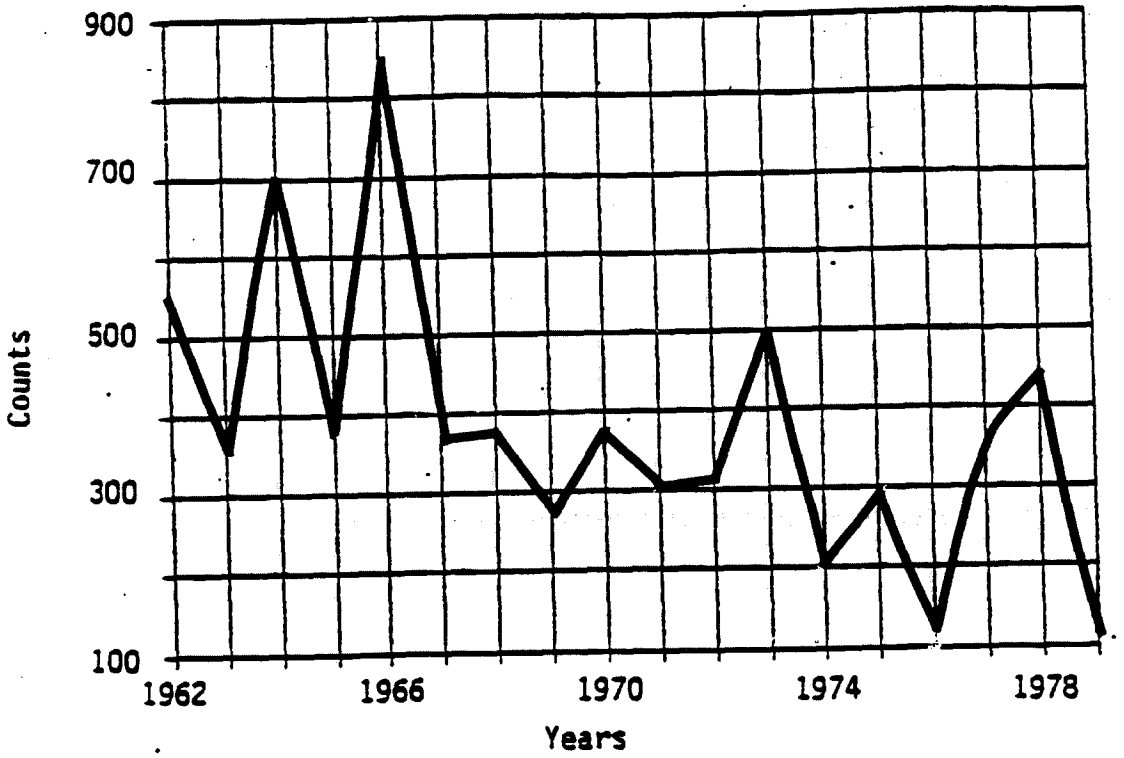

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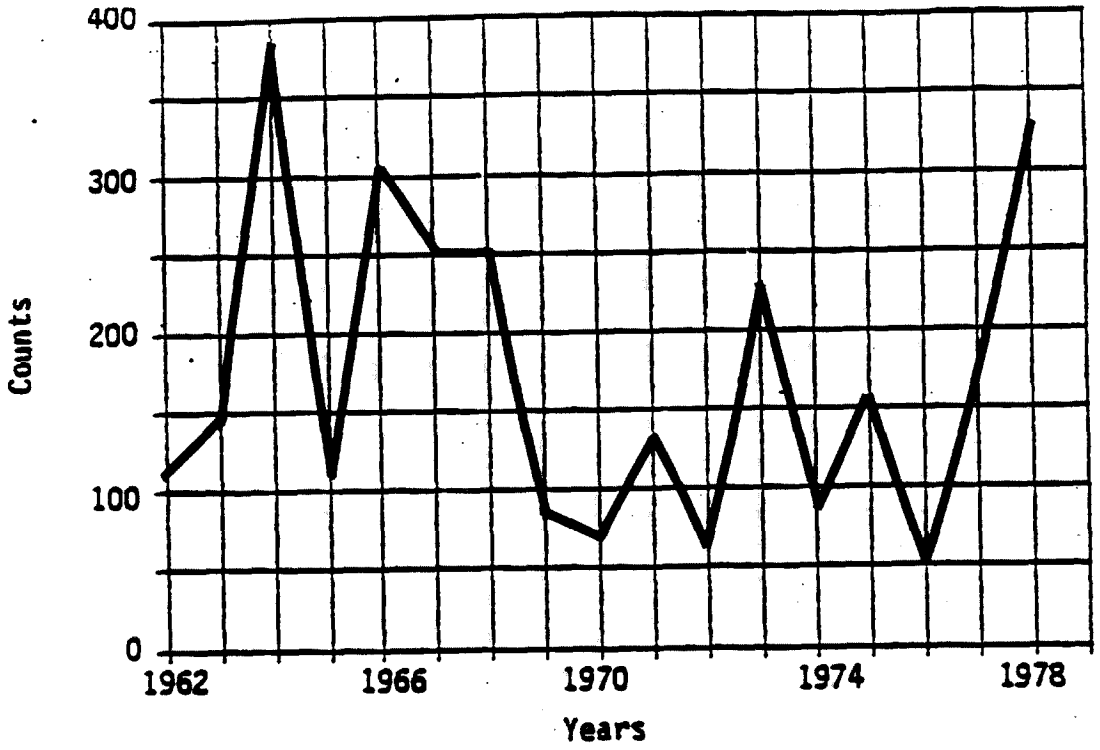

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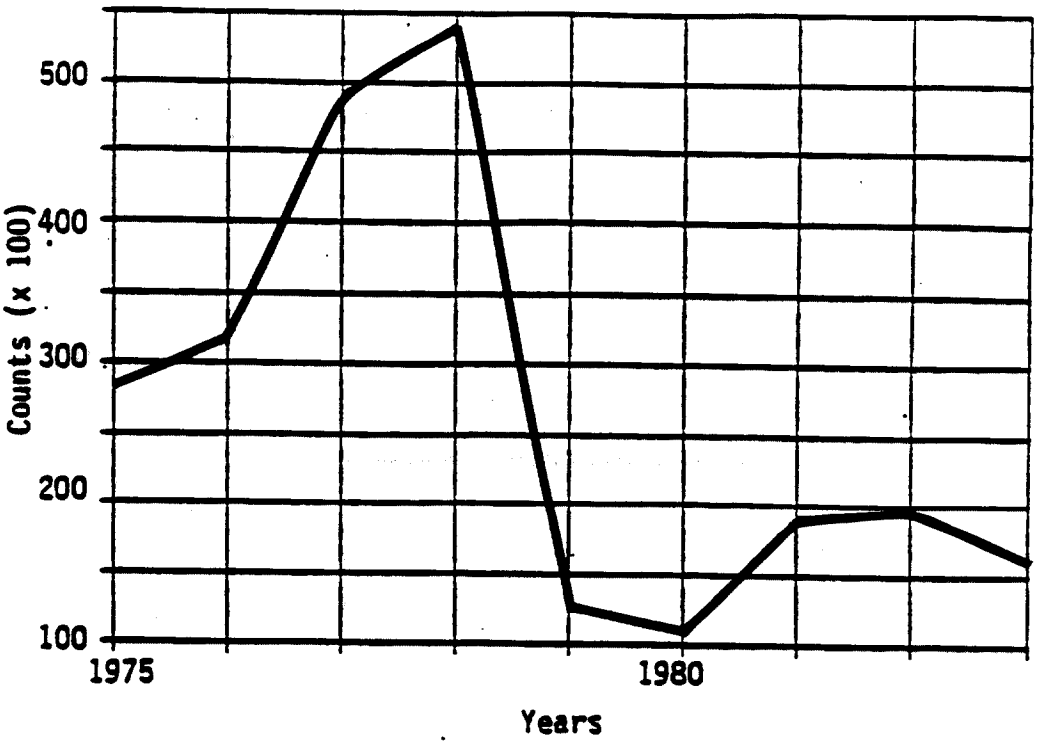

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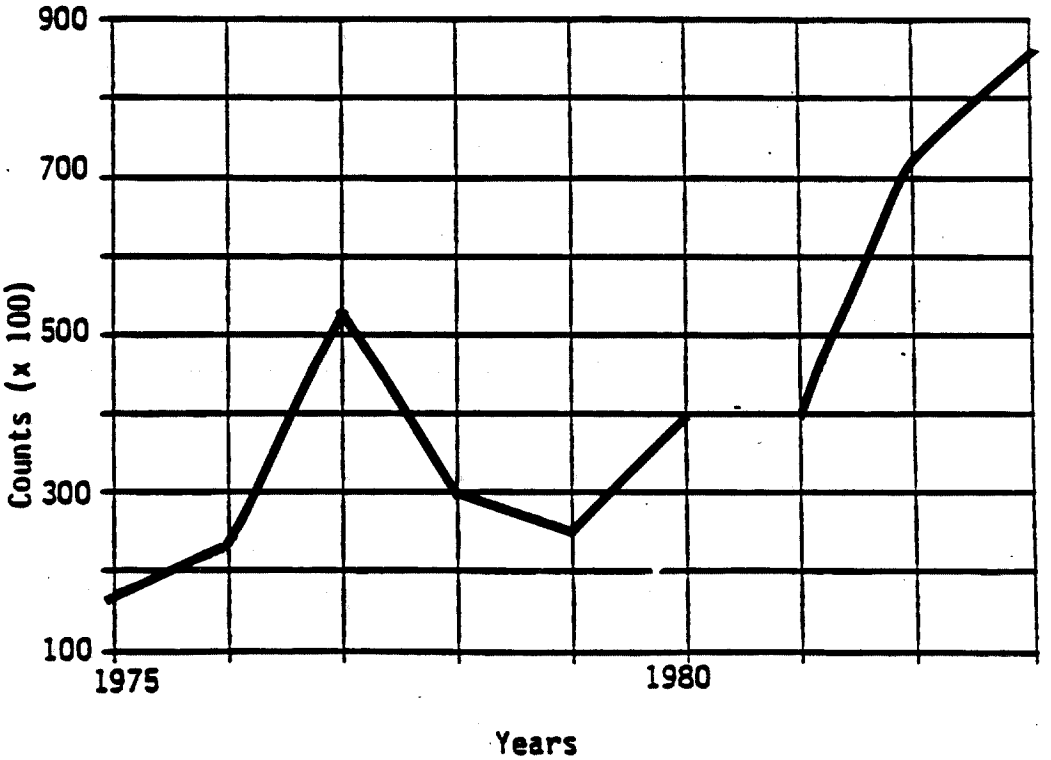

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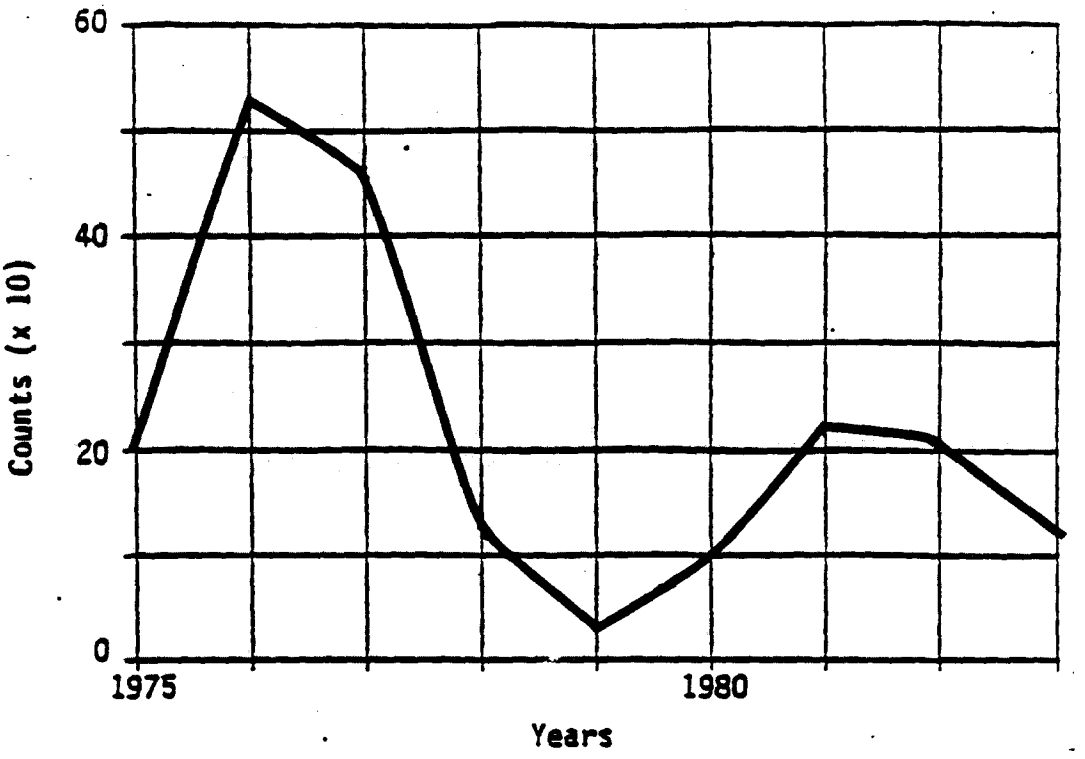

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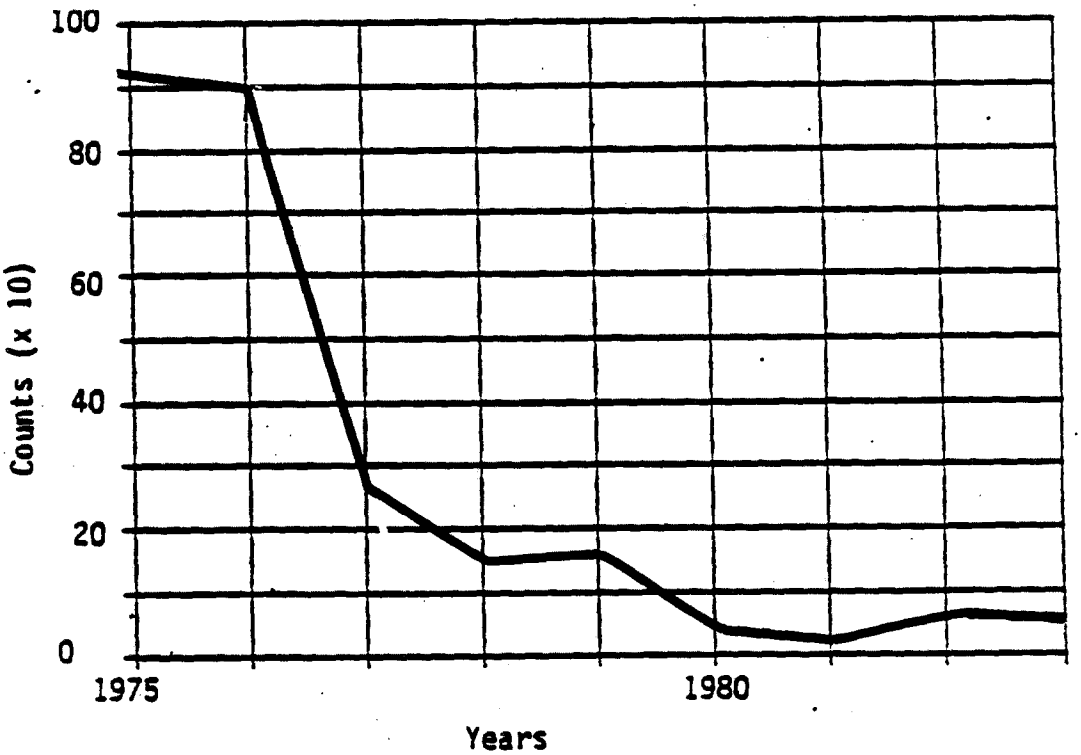

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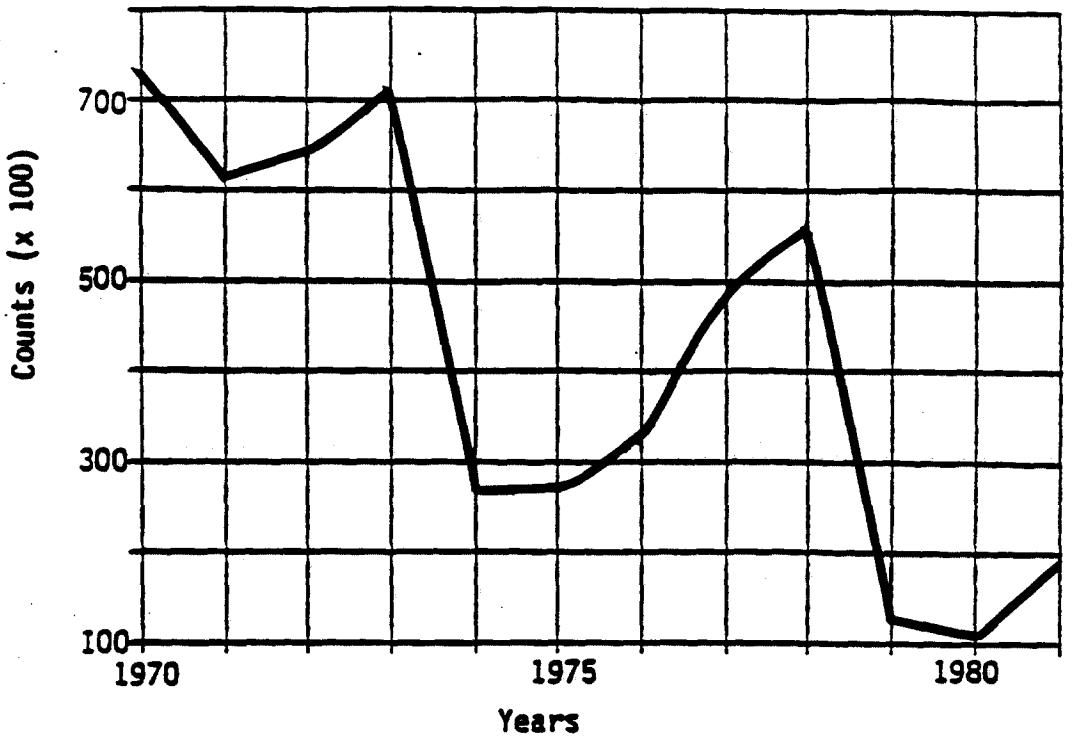

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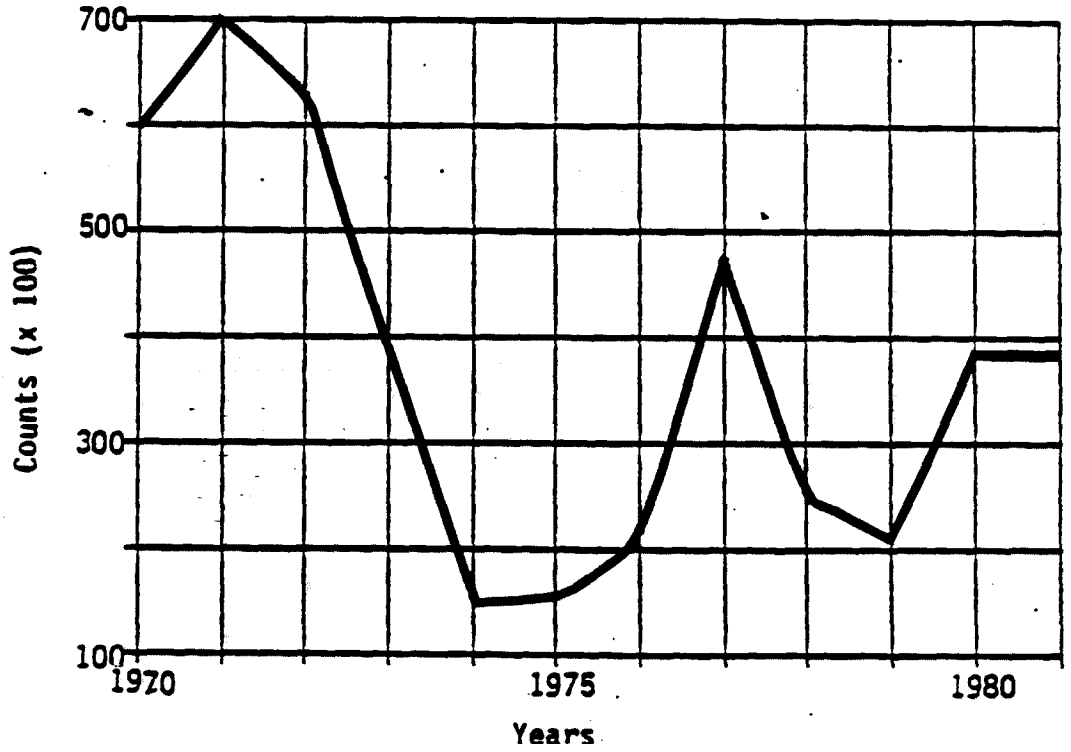

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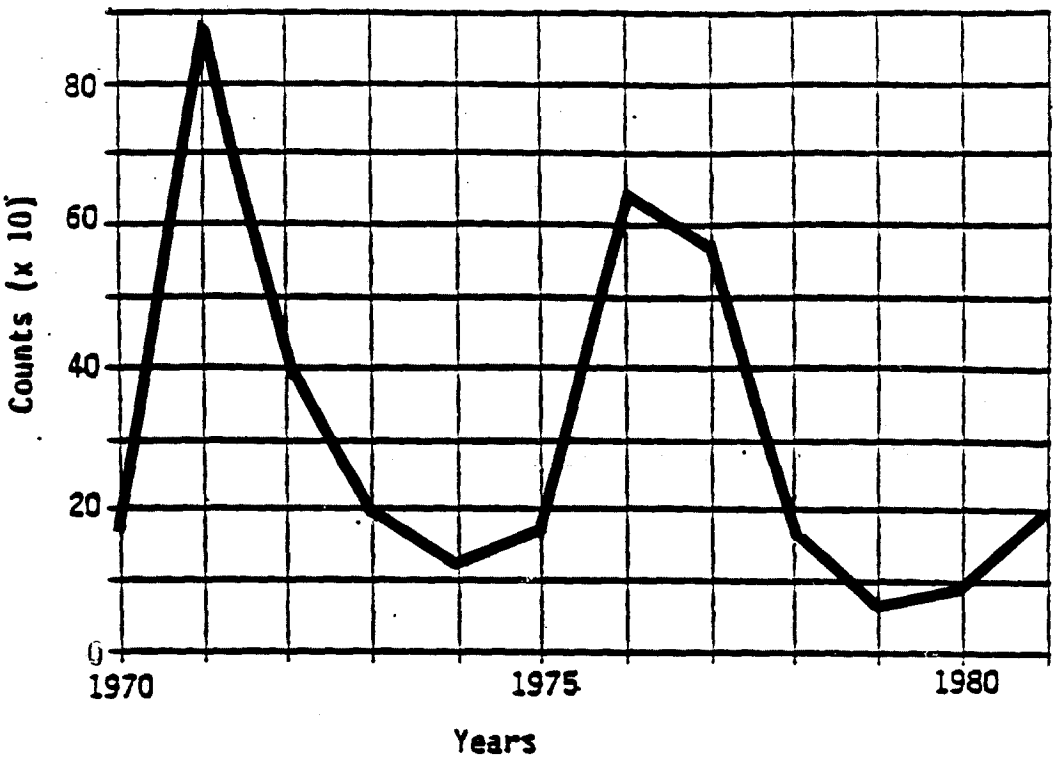

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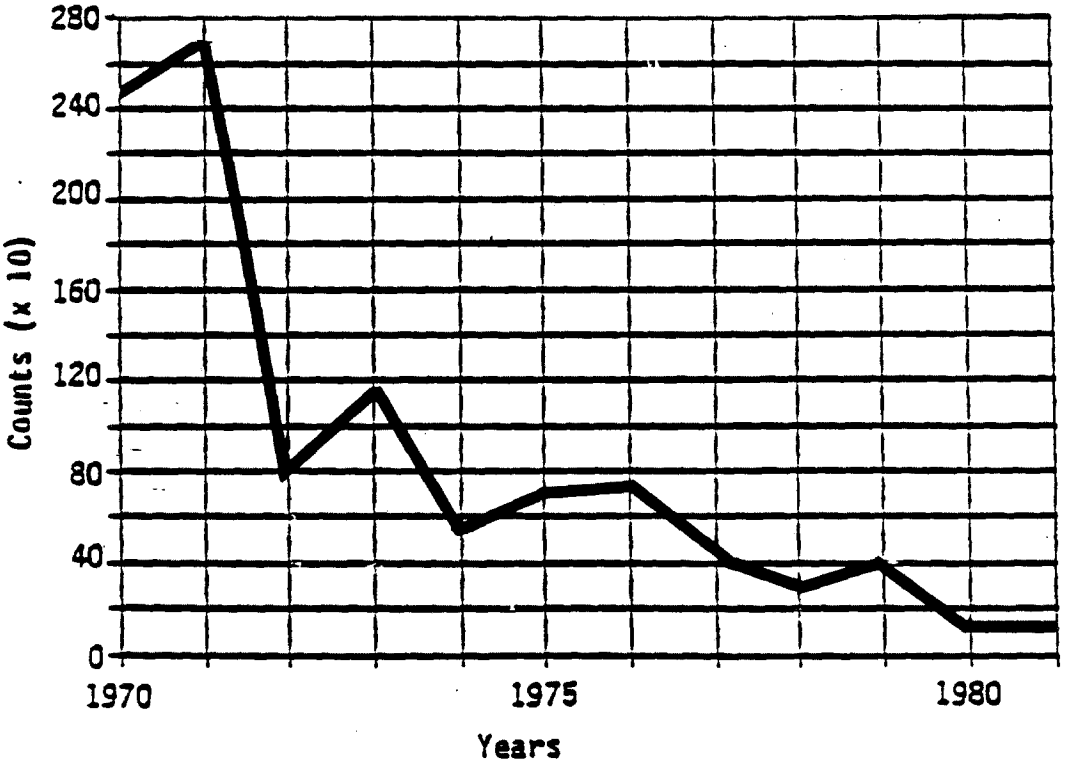

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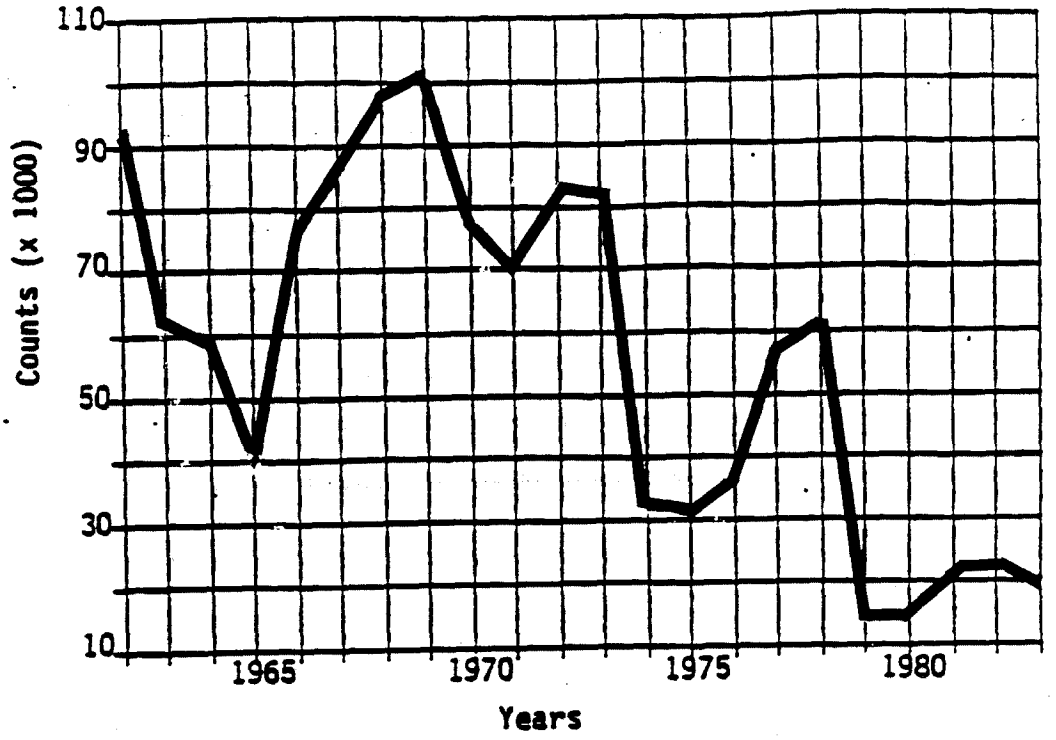

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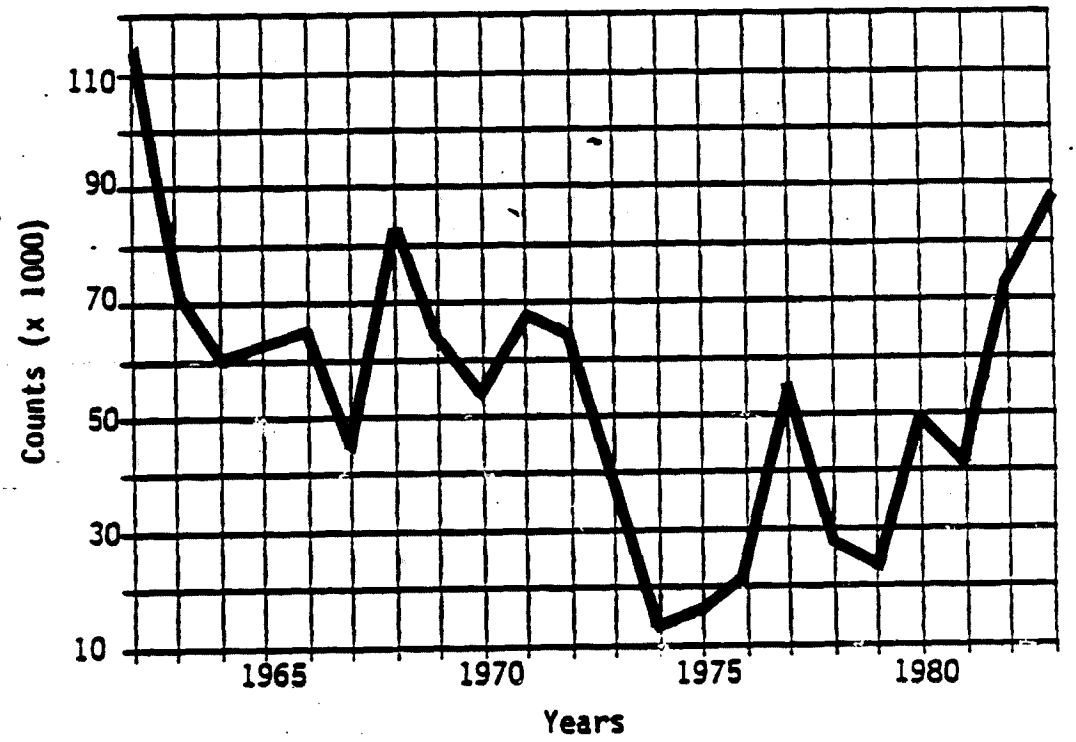

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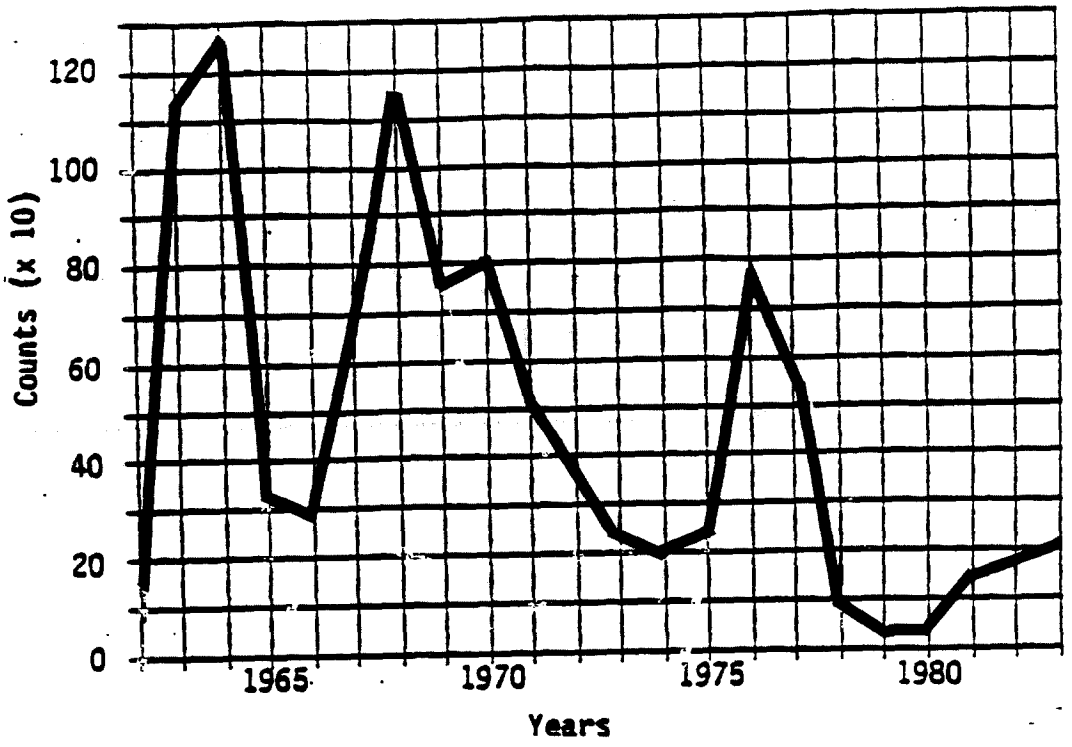

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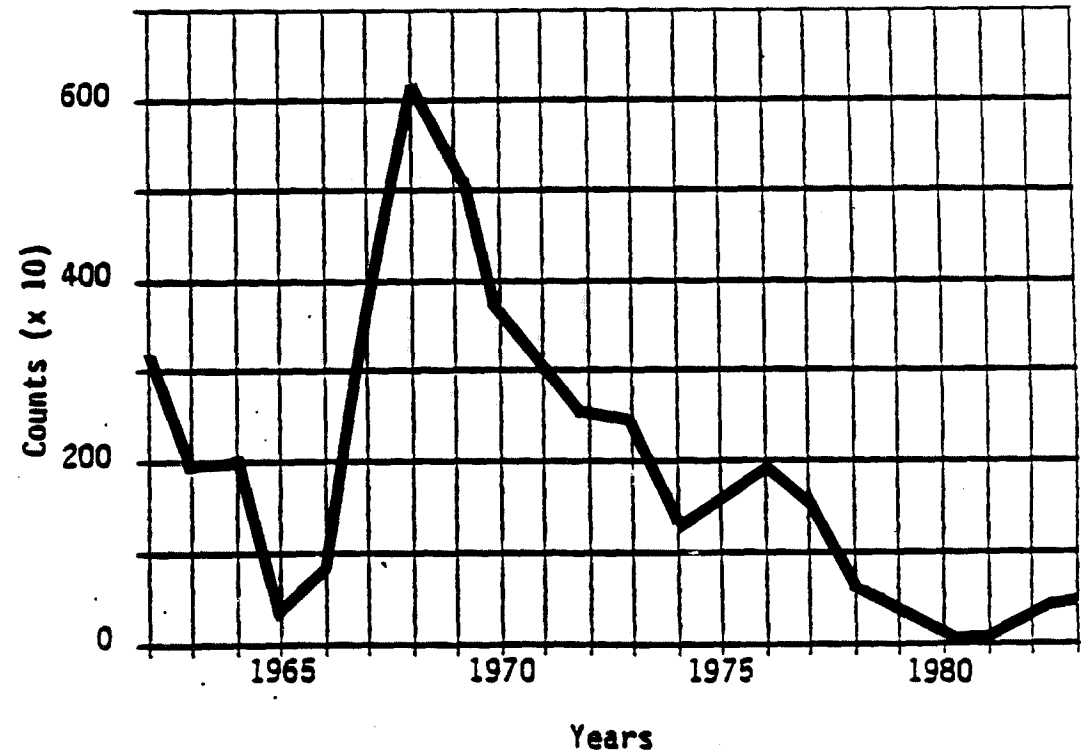

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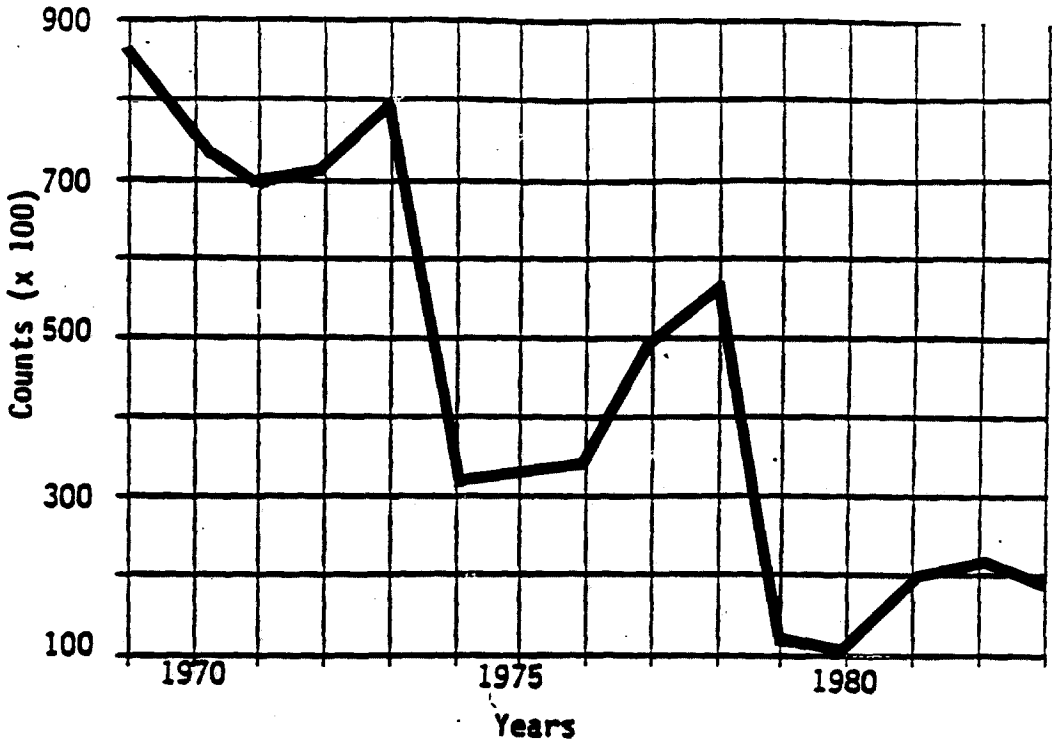

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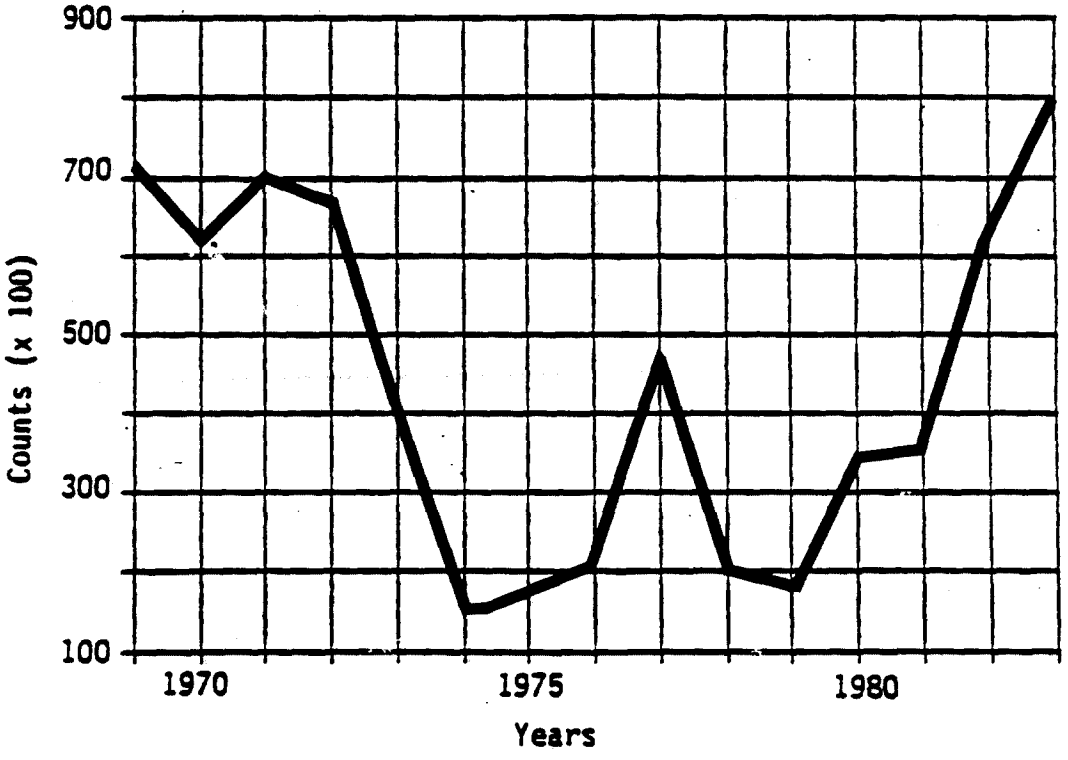

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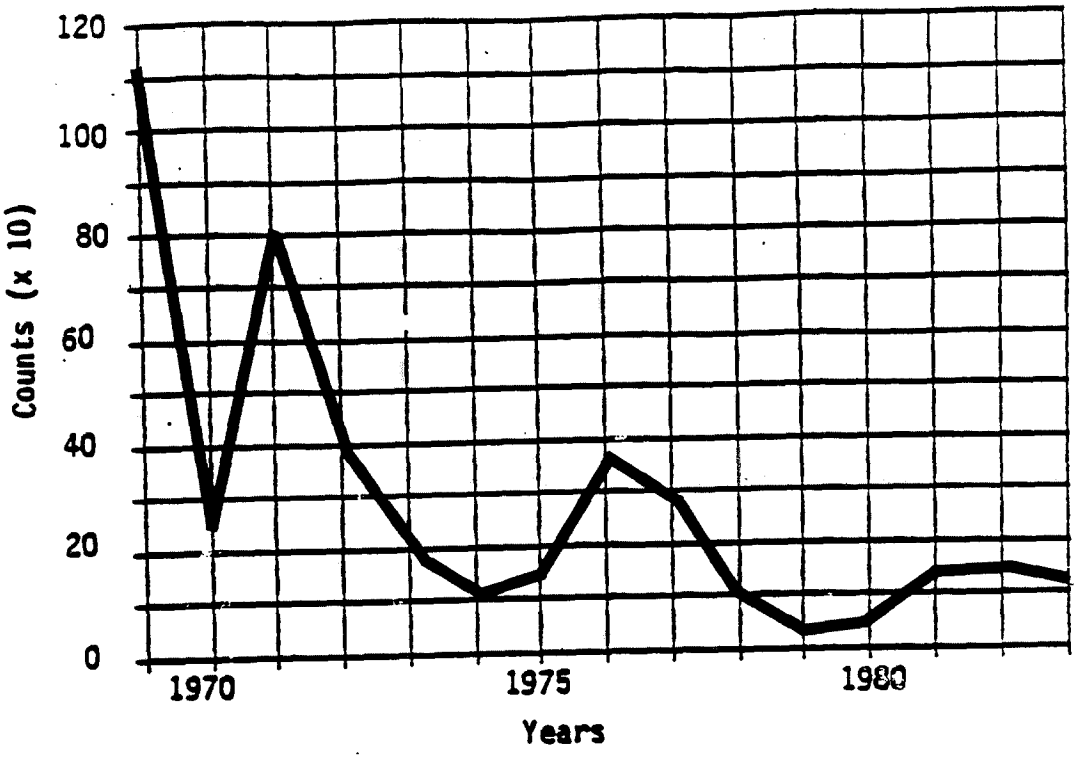

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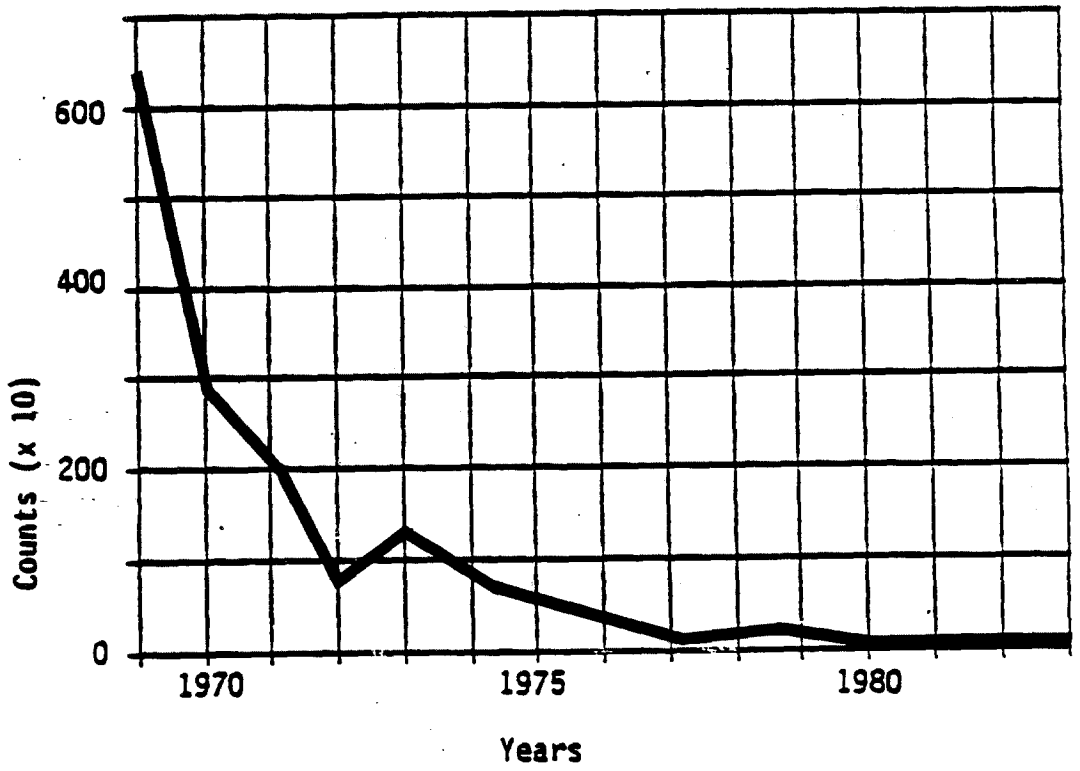

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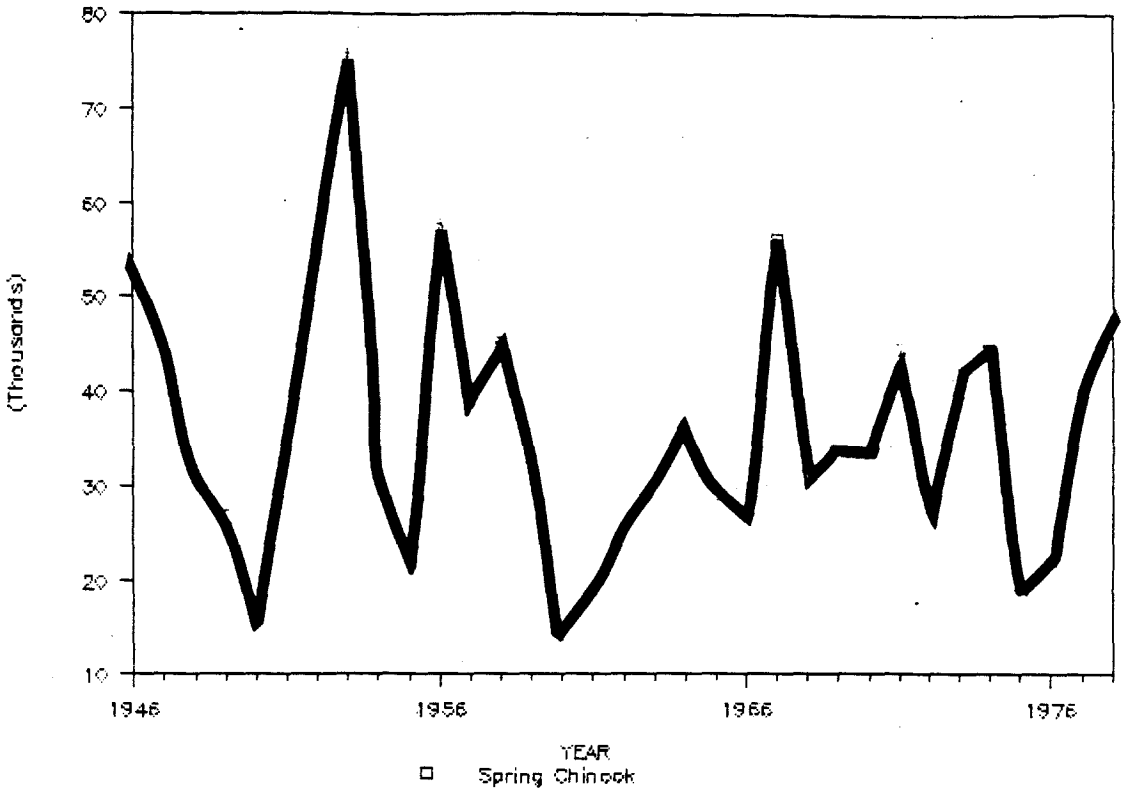

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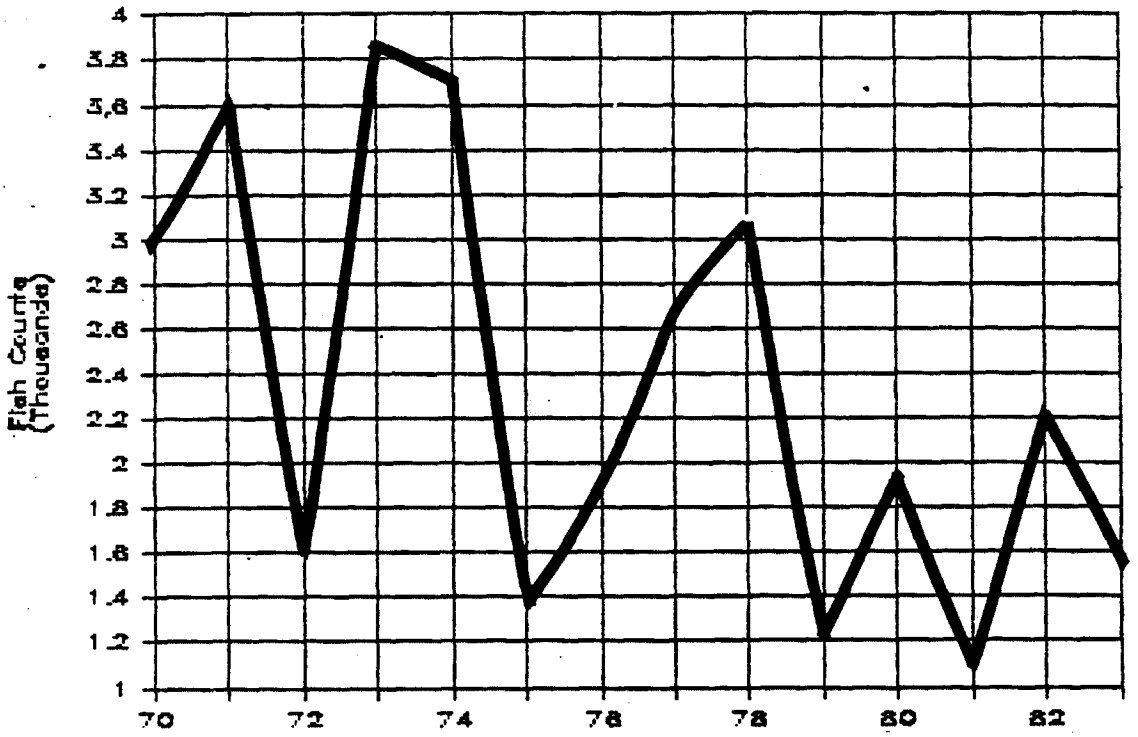

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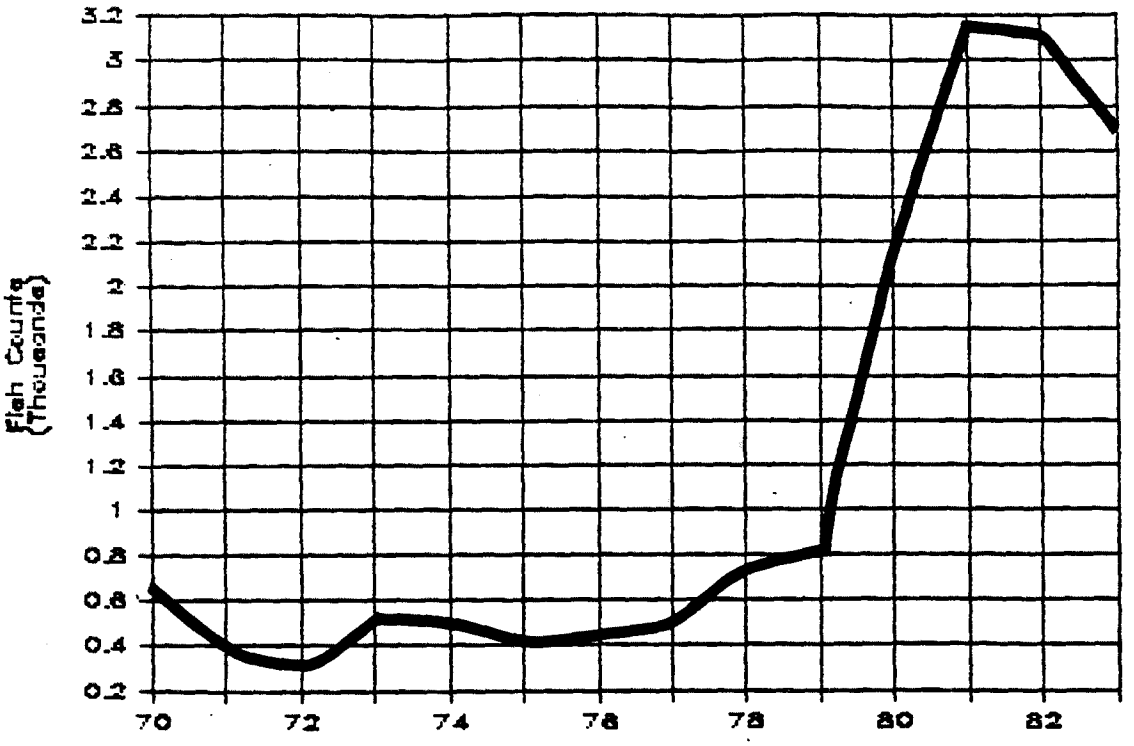

Figure A-51 . North Fork Dam Adult Spring Chinook Counts (Bennett 1984).

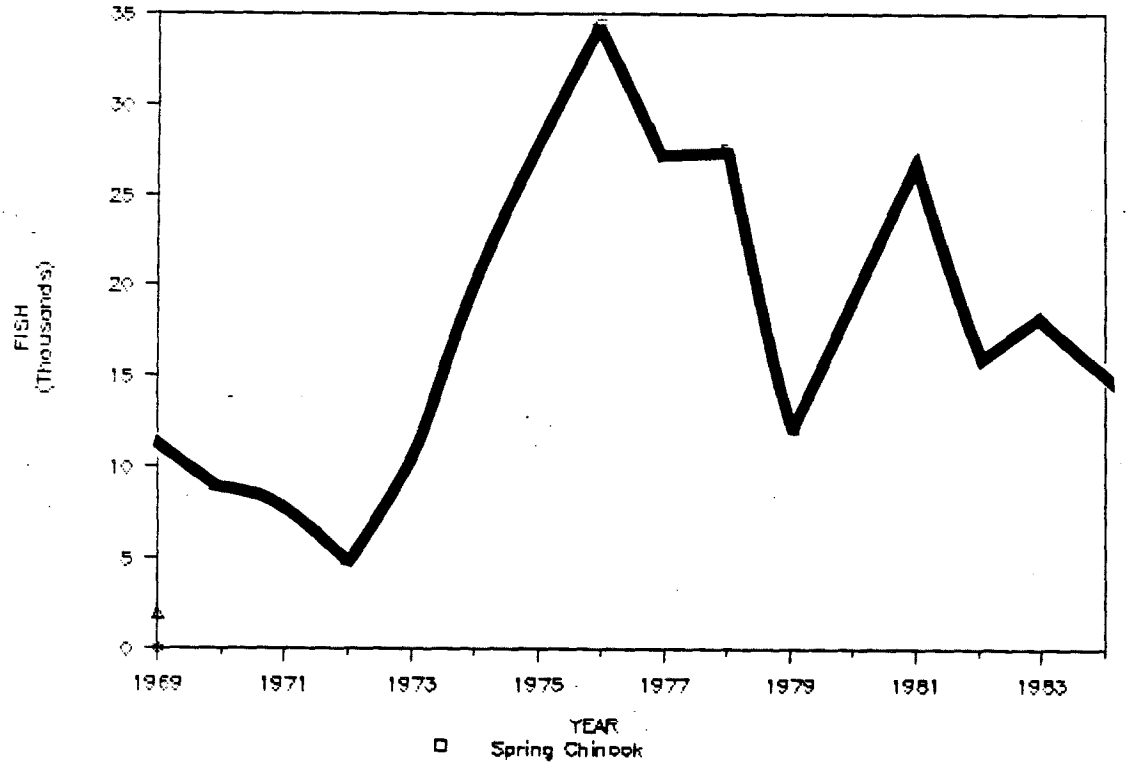

Figure A-52 . Cowlitz Hatchery Spring Chinook Returns (ODFW 1985b).

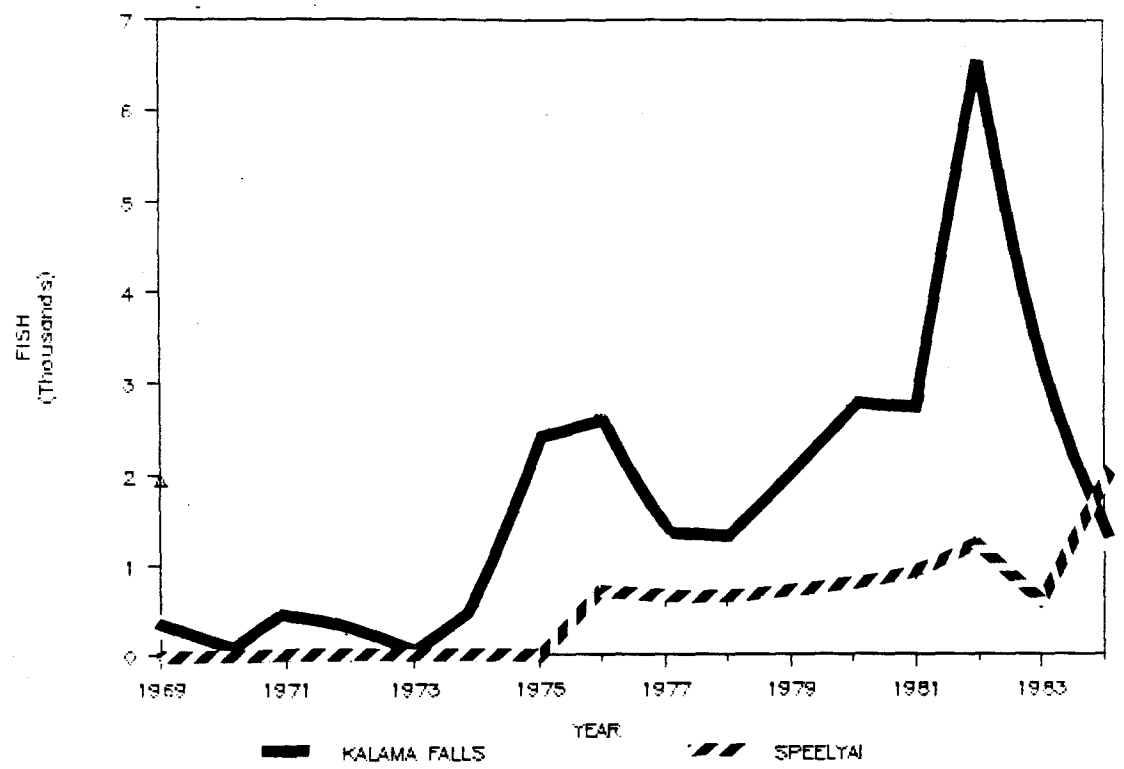

Figure A-53 . Kalama & Lewis Rivers Spring Chinook Hatchery Returns (ODFW 1985b).

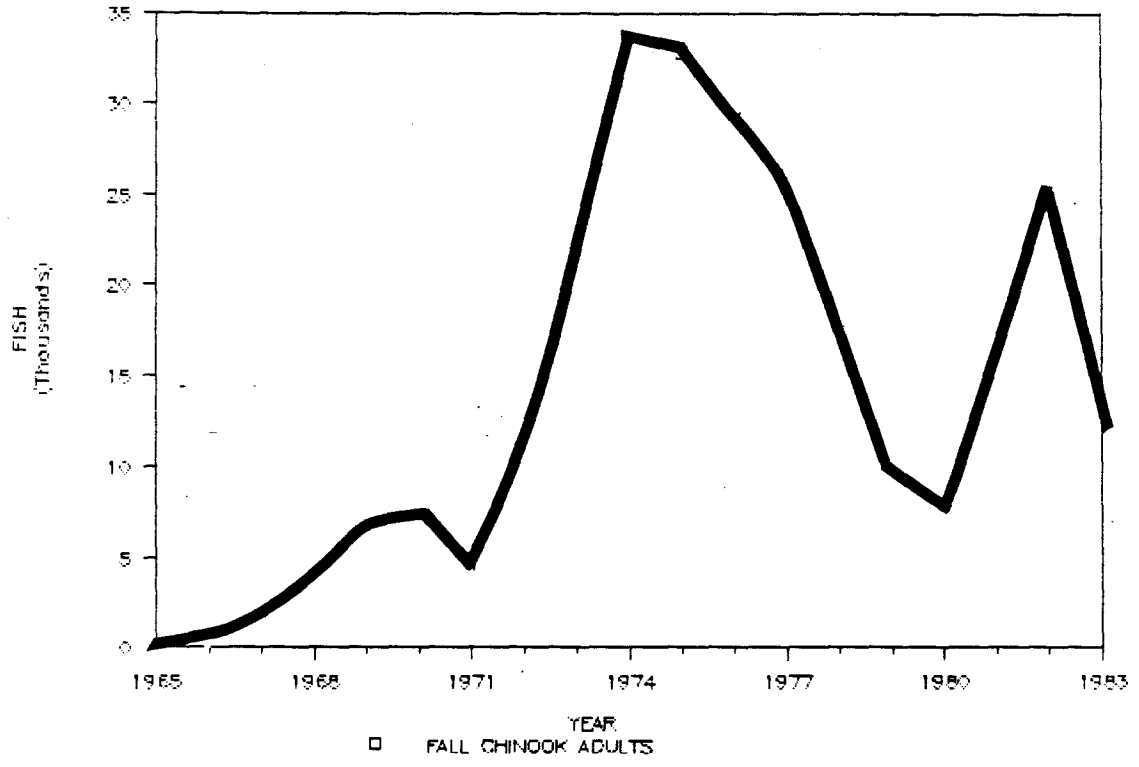

Figure A-54 . Willamette Falls Fall Chinook Escapement (ODFW 1985b).

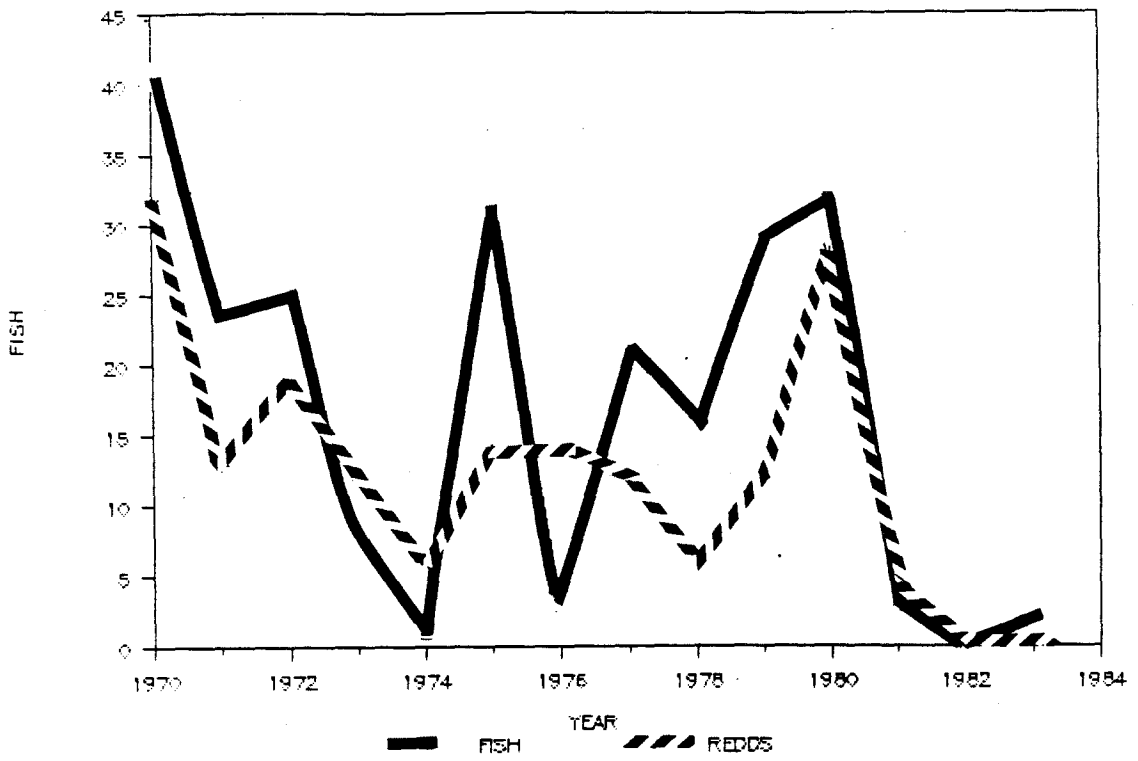

Figure A-55. Counts of Late Spawning Chinook & Redds in Trout & Gordon Creeks - Sandy River (ODFW 1985b).

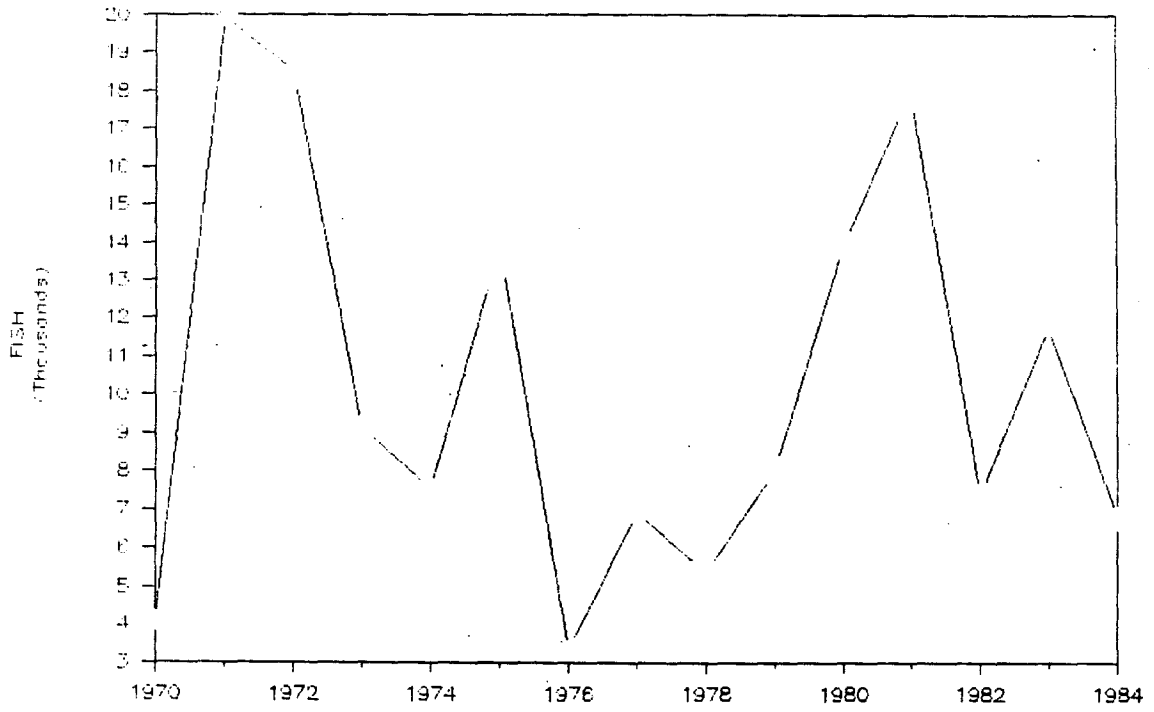

Figure A-56 . North Fork Lewis River Wild Fall Chinook Run Size (ODFW 1985b).

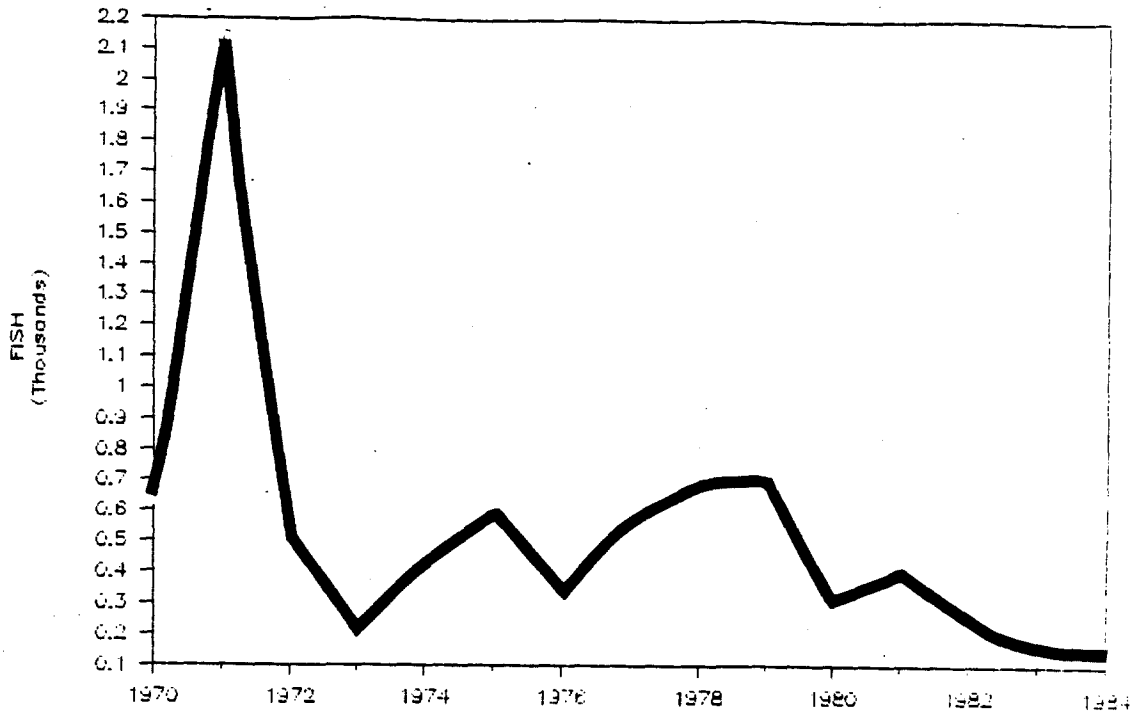

Figure A-57 . East Fork Lewis River Wild Fall Chinook Run Size (ODFW 1985b).

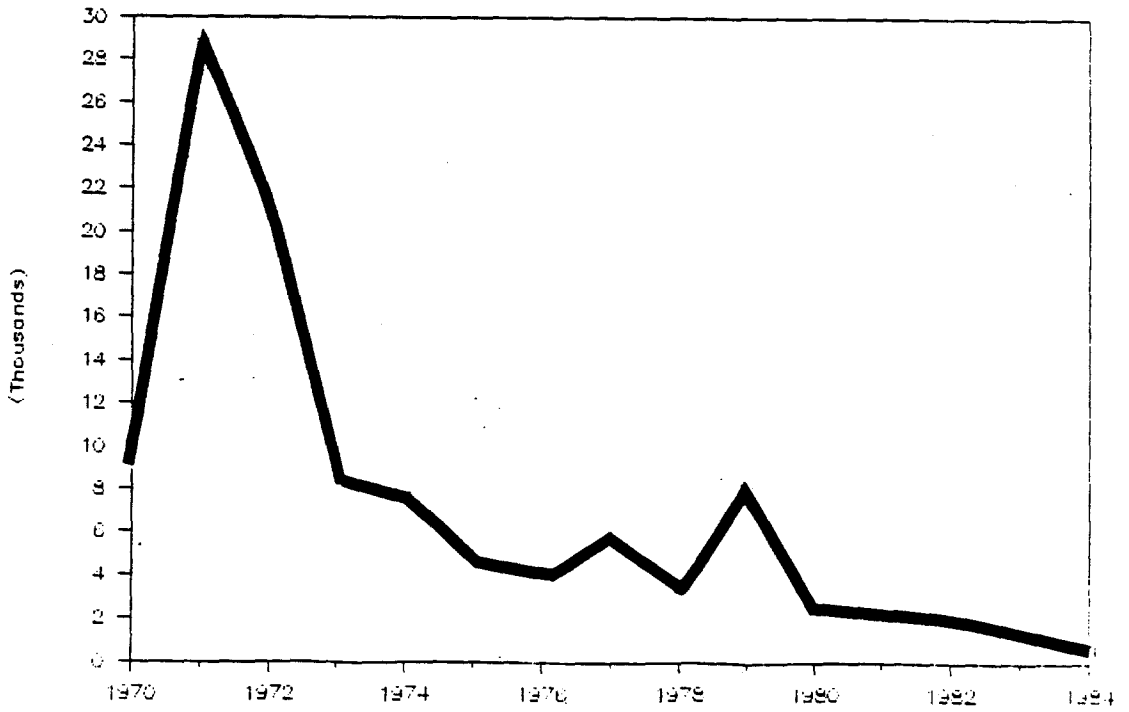

Figure A-58 . Cowlitz River Wild Fall Chinook Run Size (ODFW 1985b).

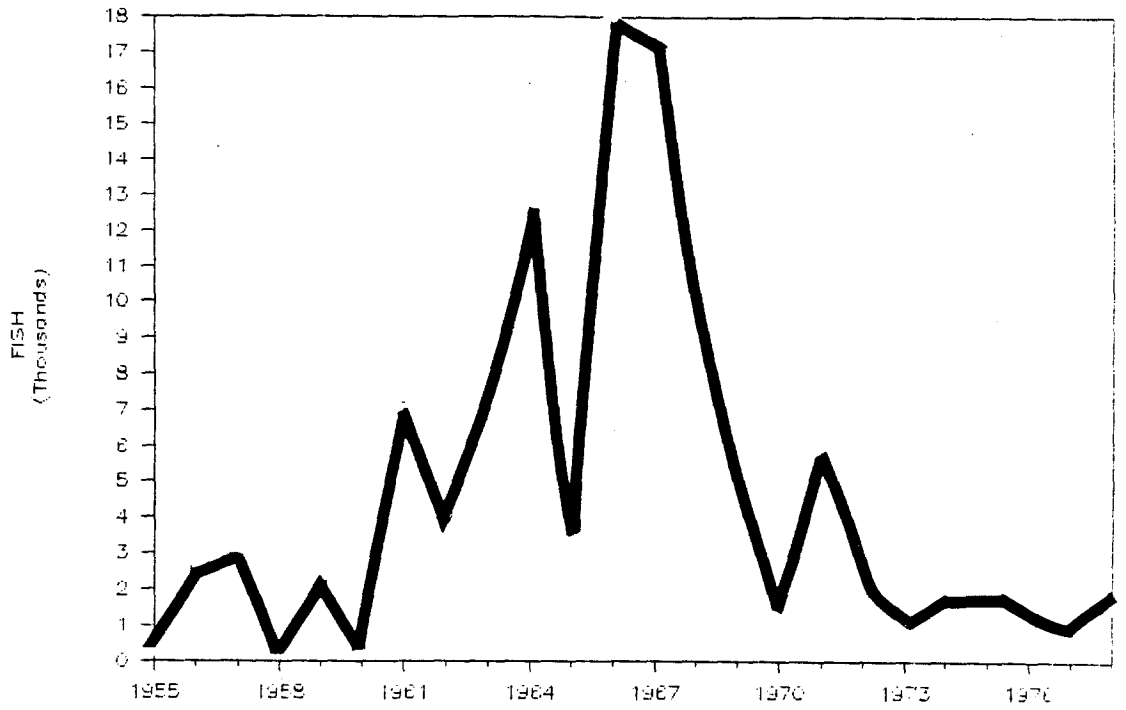

Figure A-59 . Willamette Falls Counts Adult Coho Salmon (ODFW 1985b)..

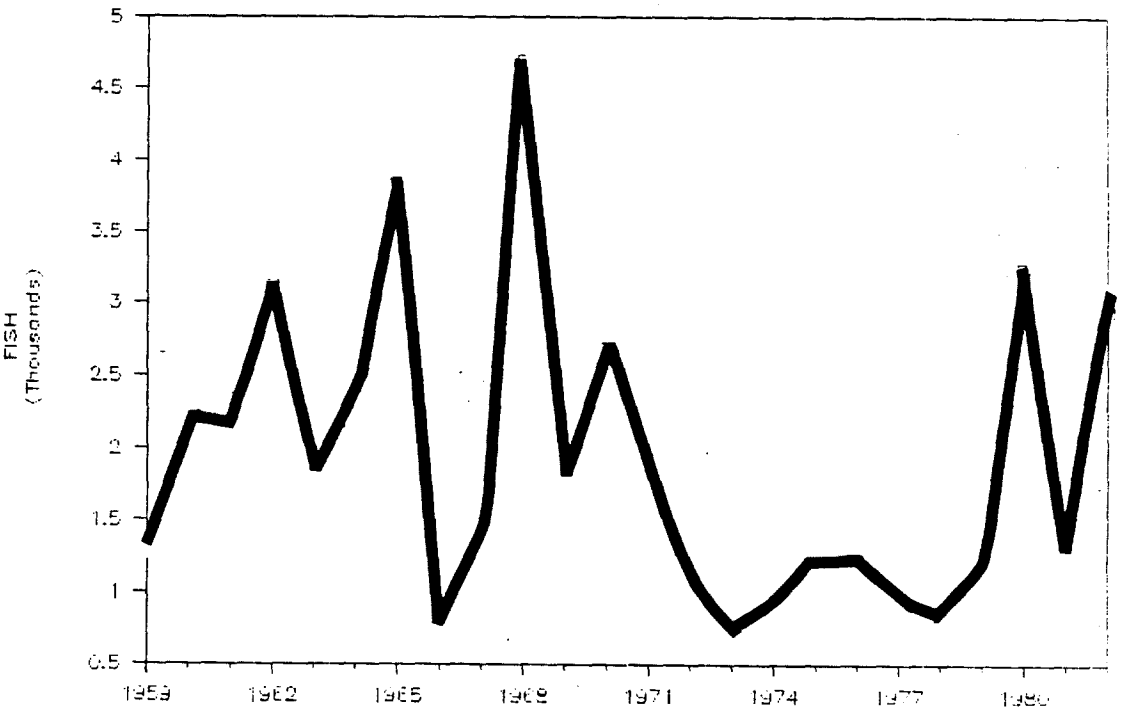

Figure A-60 . North Fork Dam (Clackamas River) Coho Salmon Counts (ODFW 1985b).

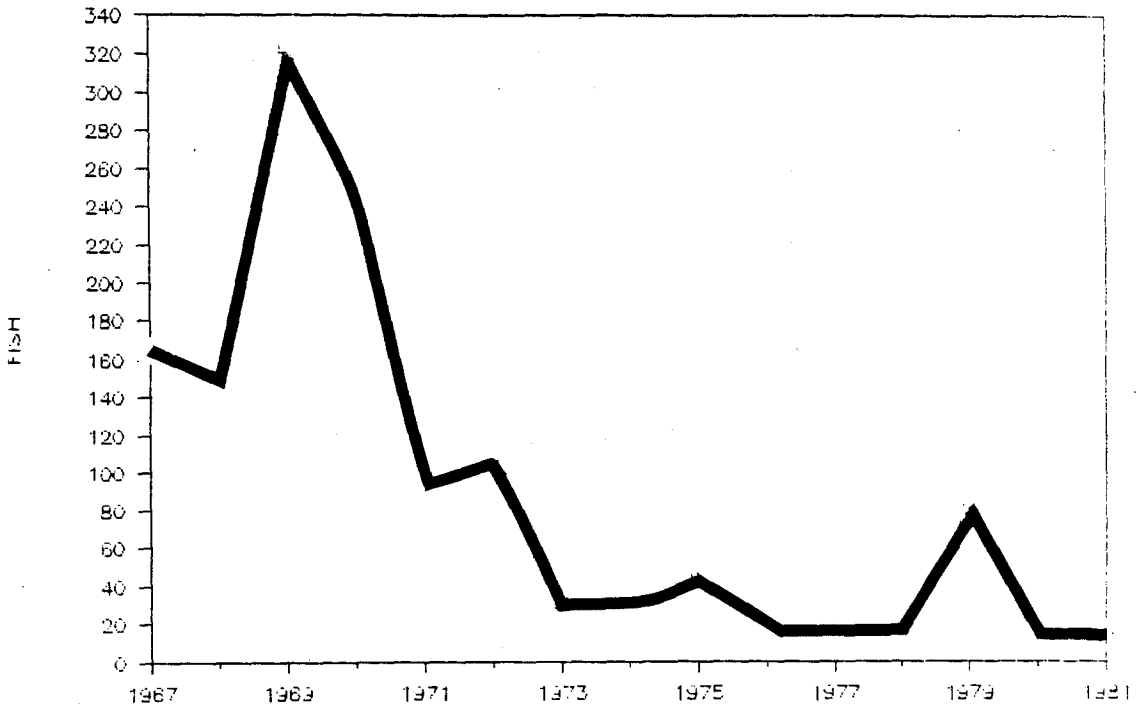

Figure A-61 . Lower Columbia River Coho Spawning Ground Counts (Hirose 1983).

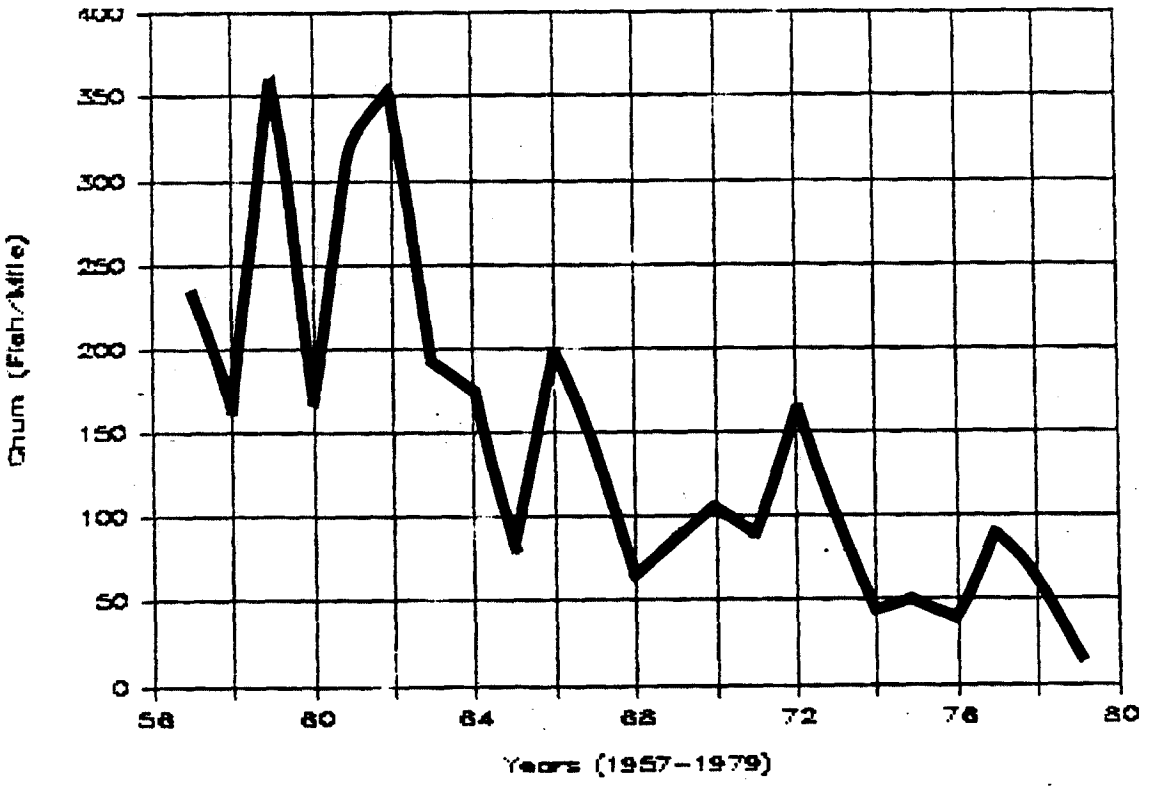

Figure A-62 . Spawning Ground Counts of Chum Salmon in Lower Columbia River Tributaries (ODFW 1981).

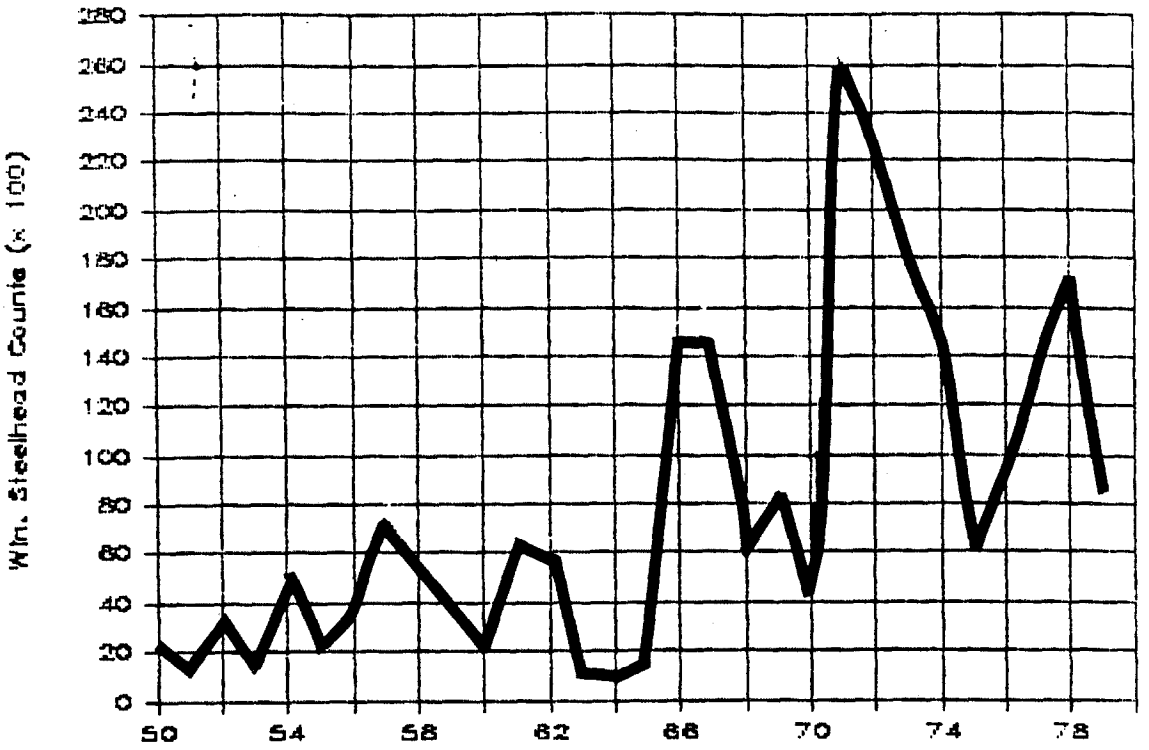

Figure A-63 . Willamette Falls Winter Steelhead Counts (Collins 1971; NMFS 1981).

Figure A-64 . Returns of Winter Steelhead to Eagle Creek National Hatchery (ODFW 1985c).

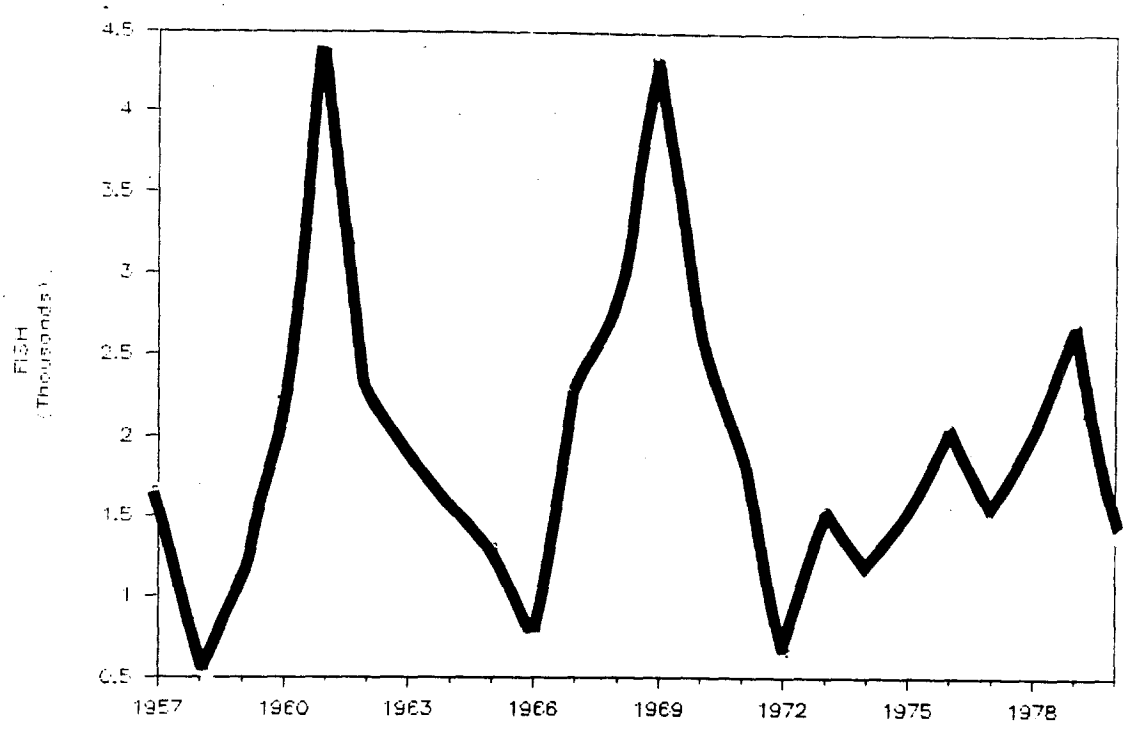

Figure A-65 . Adult Winter Steelhead Counts at North Fork Dam Clackamas River (ODFW 1985c).

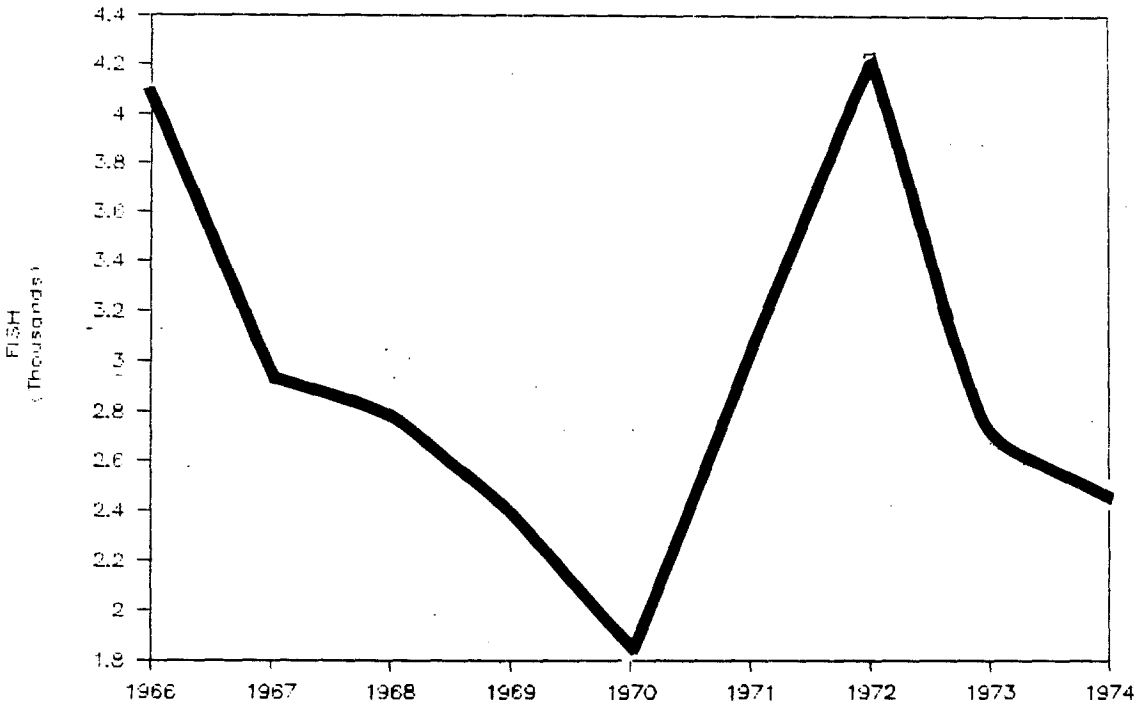

Figure A-66 . Marmot Dam Winter Steelhead Counts - Sandy River (ODFW 1985c).

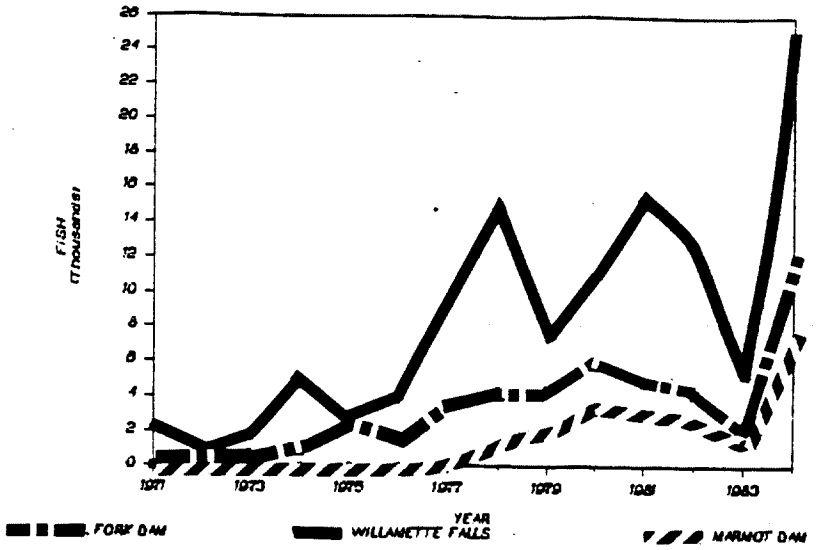

Figure A-67. Numbers of Summer Steelhead Counted at Dams in the Willamette river system (ODFW 1985c).

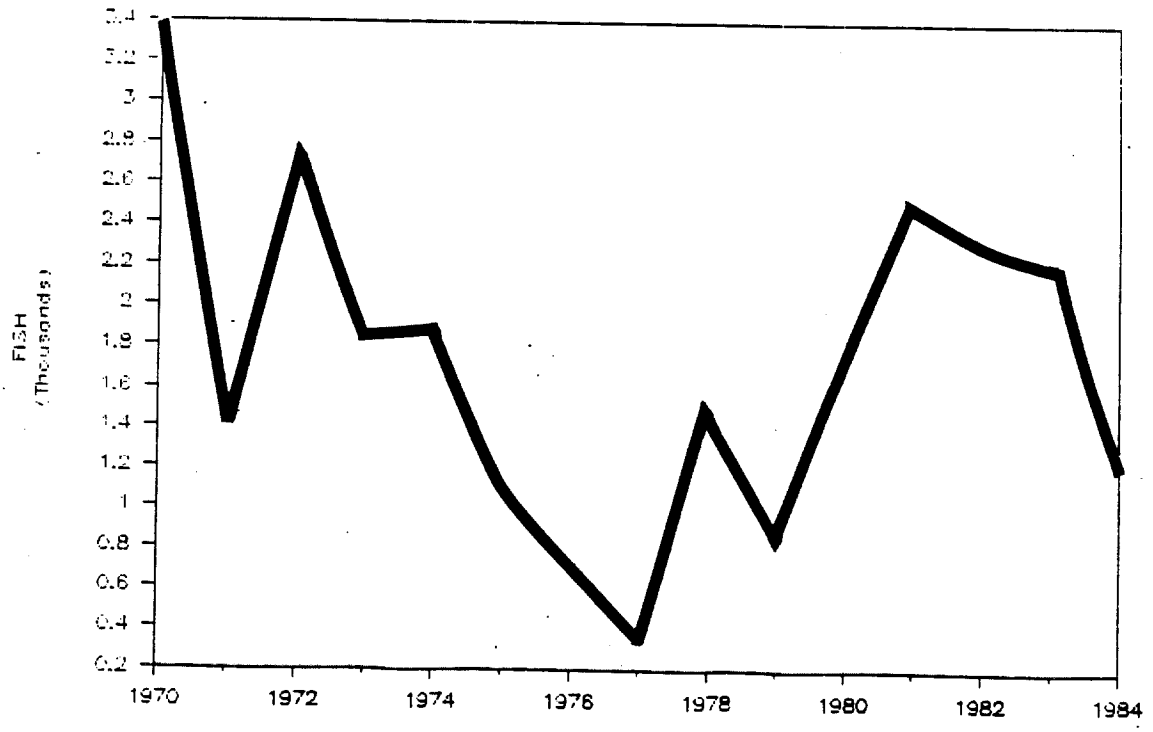

Figure A-68. Klickitat River spring chinook run size (ODFW 1985b).

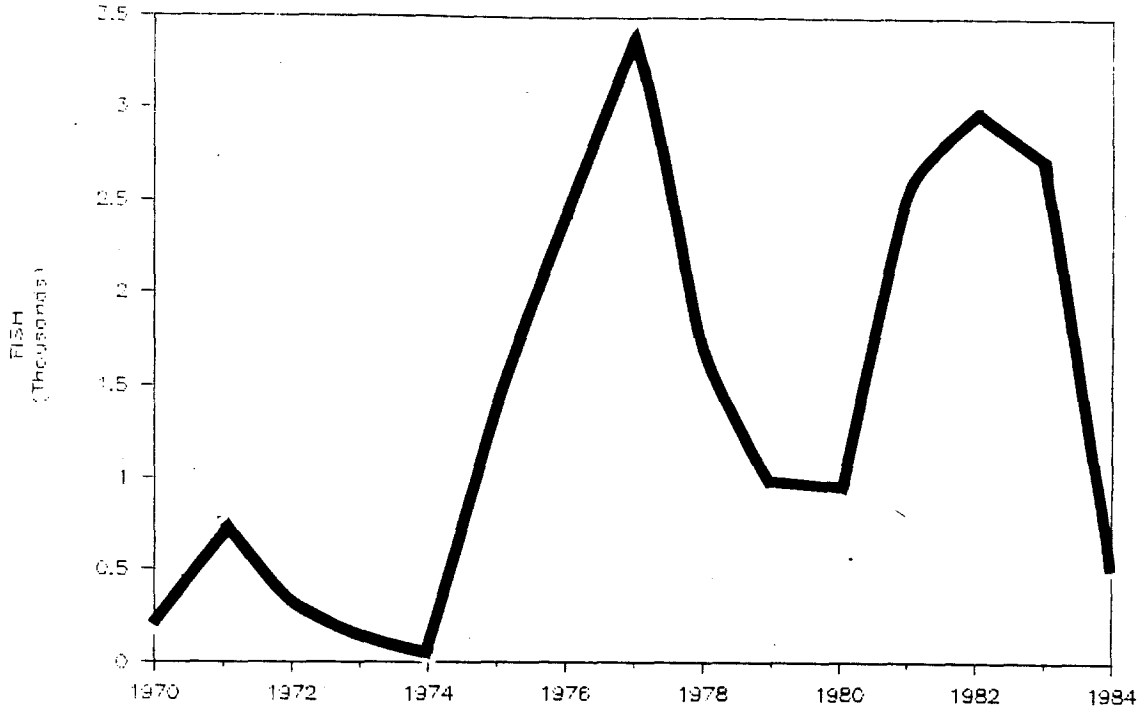

Figure A-69 . Little White Salmon River Spring Chinook Adult Run Size (ODFW 1985b).

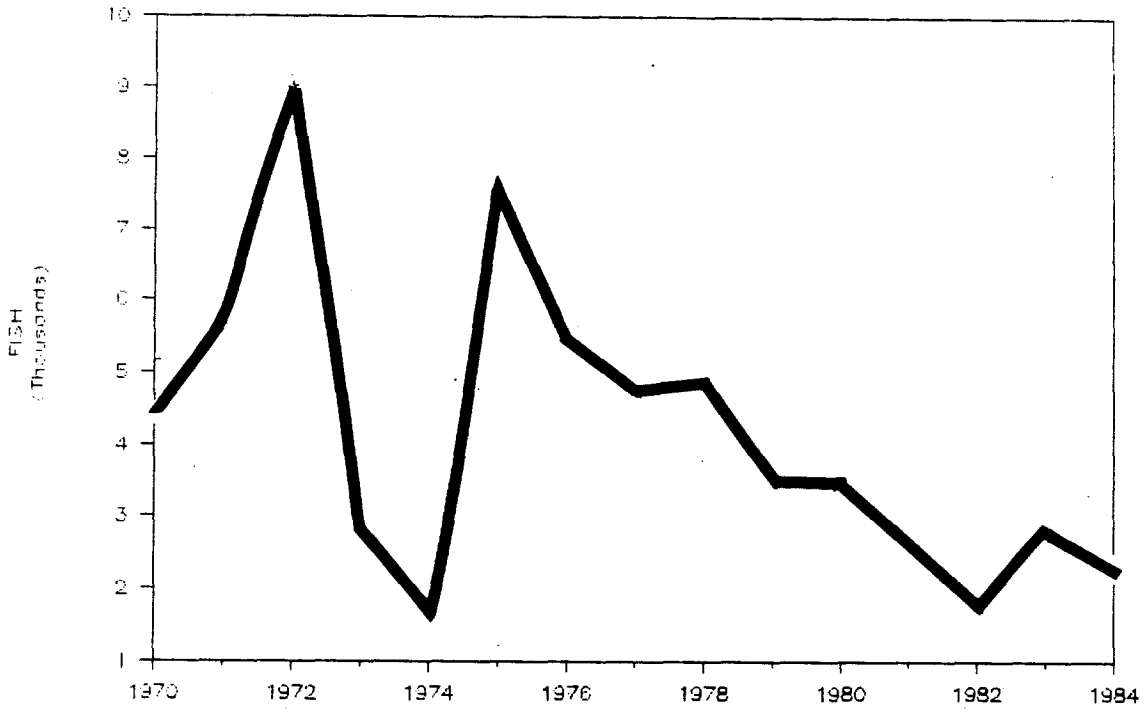

Figure A-70 . Wind River Spring Chinook Run Size (ODFW 1985b).

Figure A-71 . Warmsprings River Spring Chinook Redd Counts (Cates 1980, 81, 84; Stainbrook 1984).

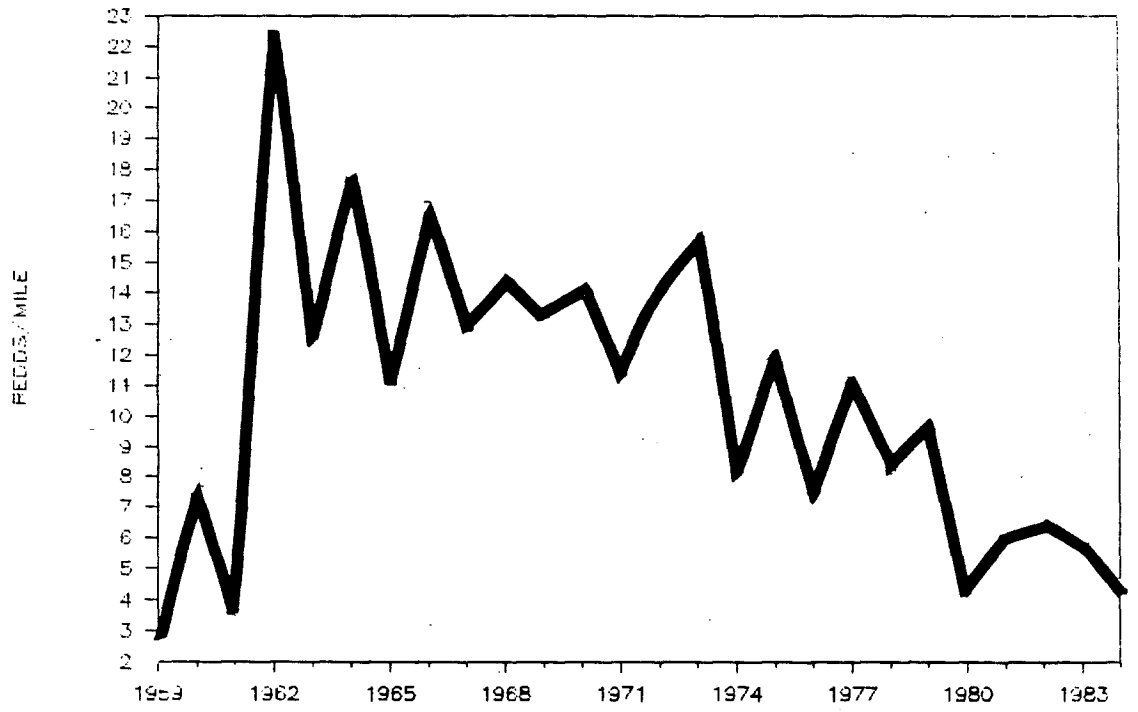

Figure A-72 . John Day Basin Spring Chinook Average Redds/Mile (Claire 1983).

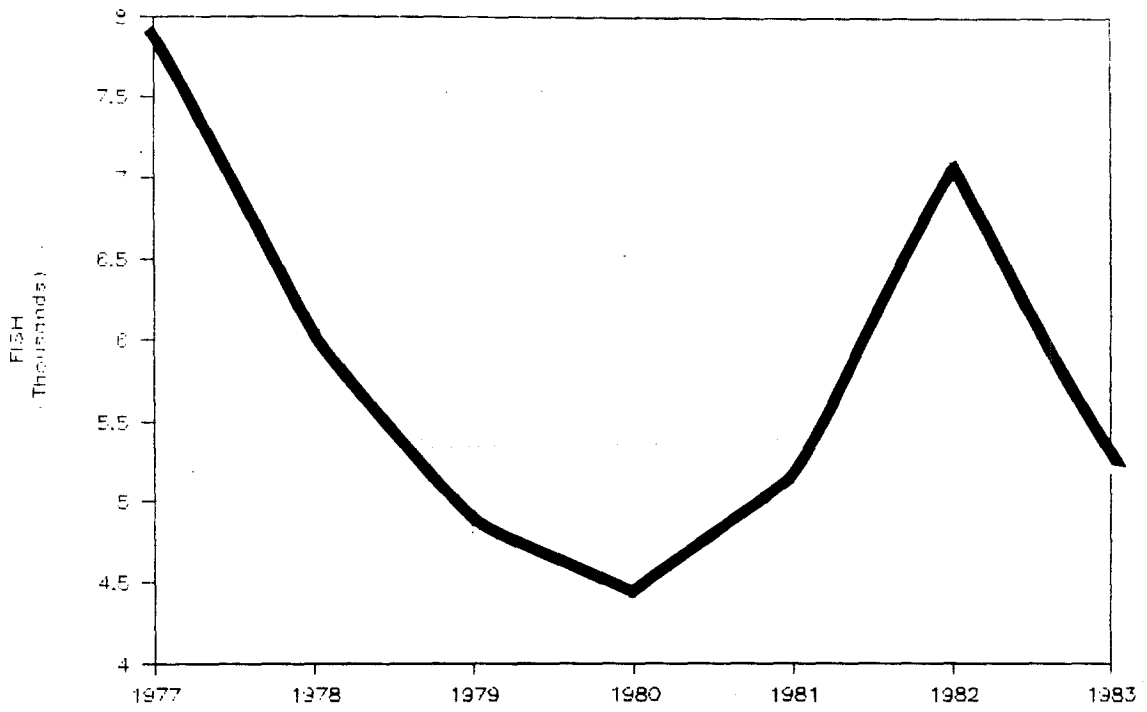

Figure A-73 . Deschutes River Adult Fall Chinook Run Size (Jonasson and Lindsay 1983).

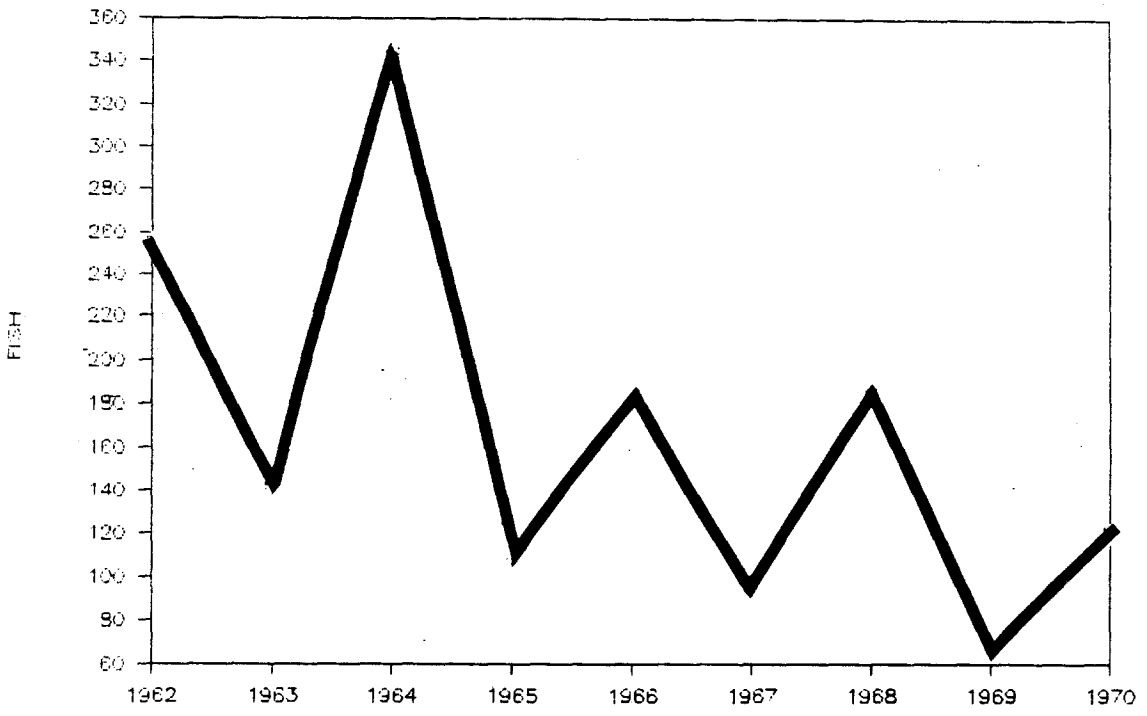

Figure A-74 . Powerdale Dam Coho Salmon Counts - Hood River (ODFW 1985b).

Figure A-75 . Three Mile Dam Adult Summer Steelhead Counts (James 1984).

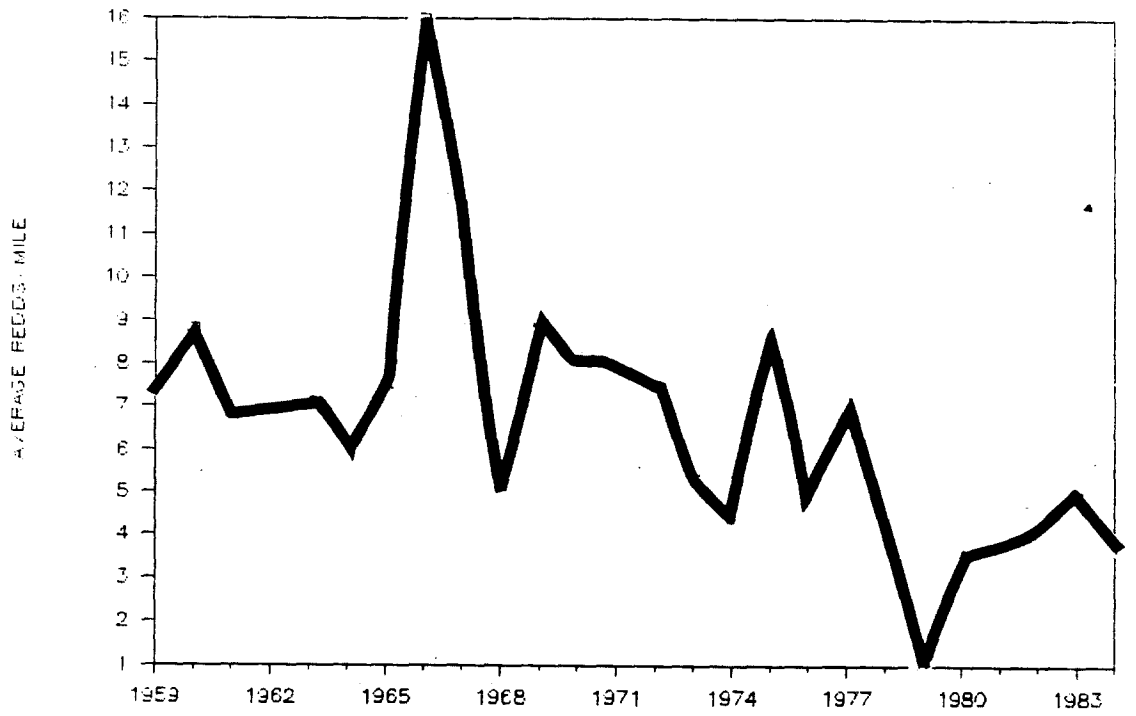

Figure A-76 . John Day Basin Summer Steelhead Average Redds Per Mile (James 1984).

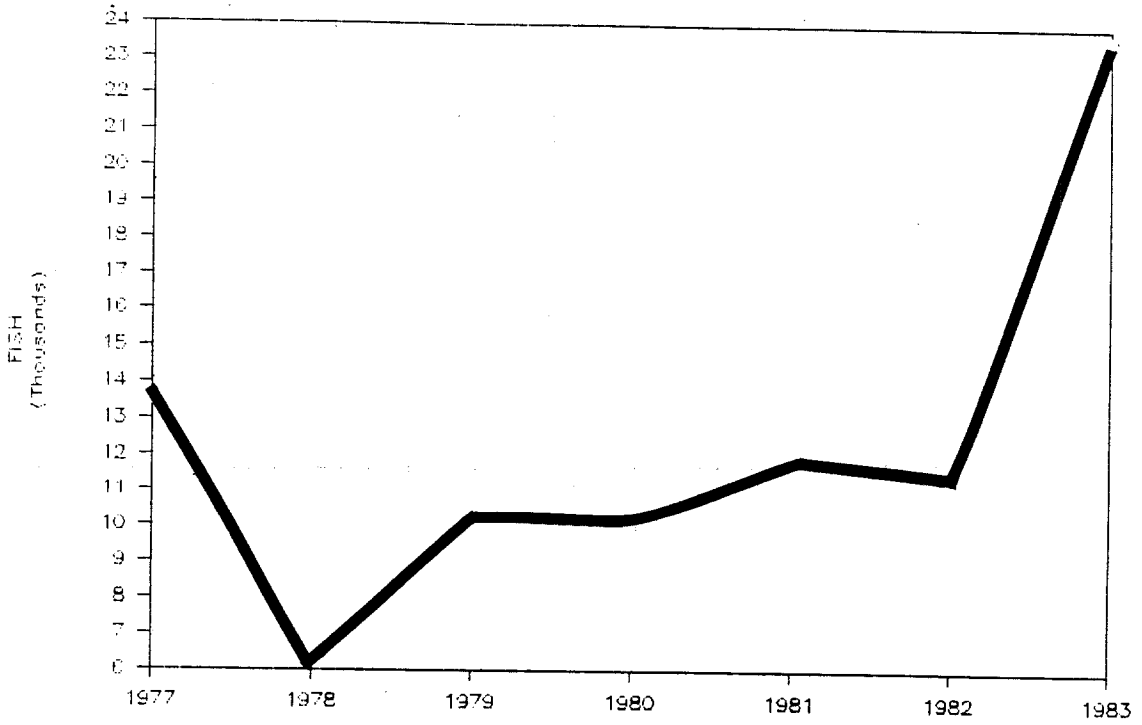

Figure A-77 . Deschutes River Wild Summer Steelhead Counts (Jonasson & Lindsay 1983).

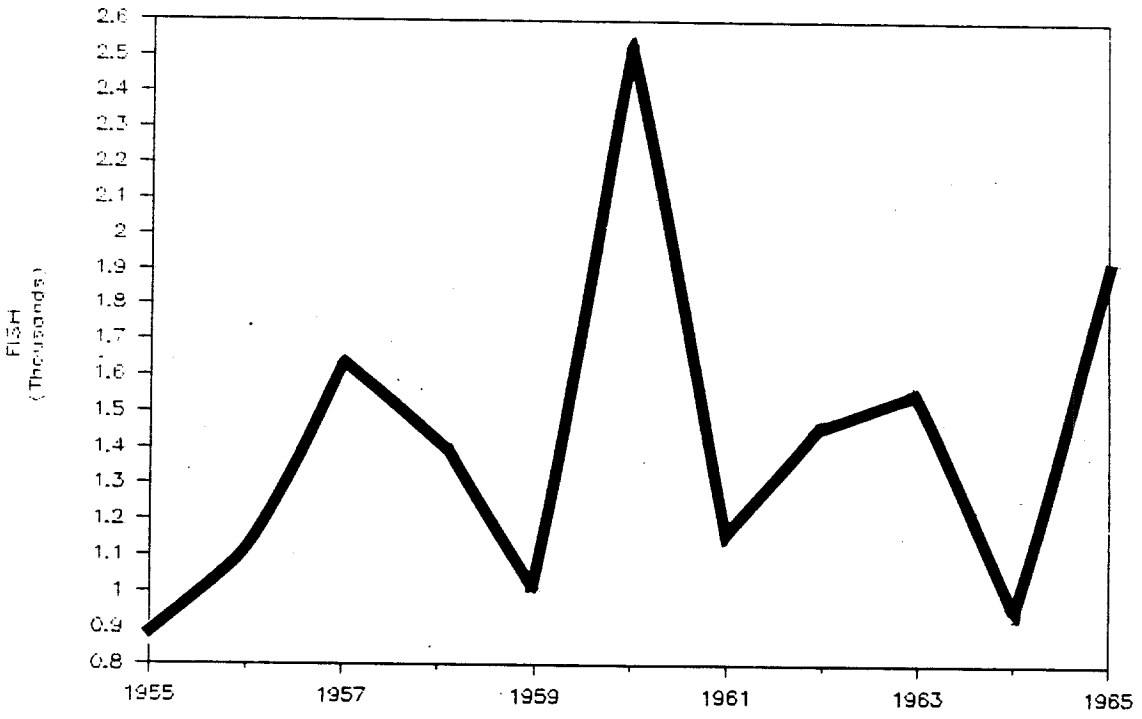

Figure A-78 . Powerdale Dam Steelhead Counts (ODFW 1985c).

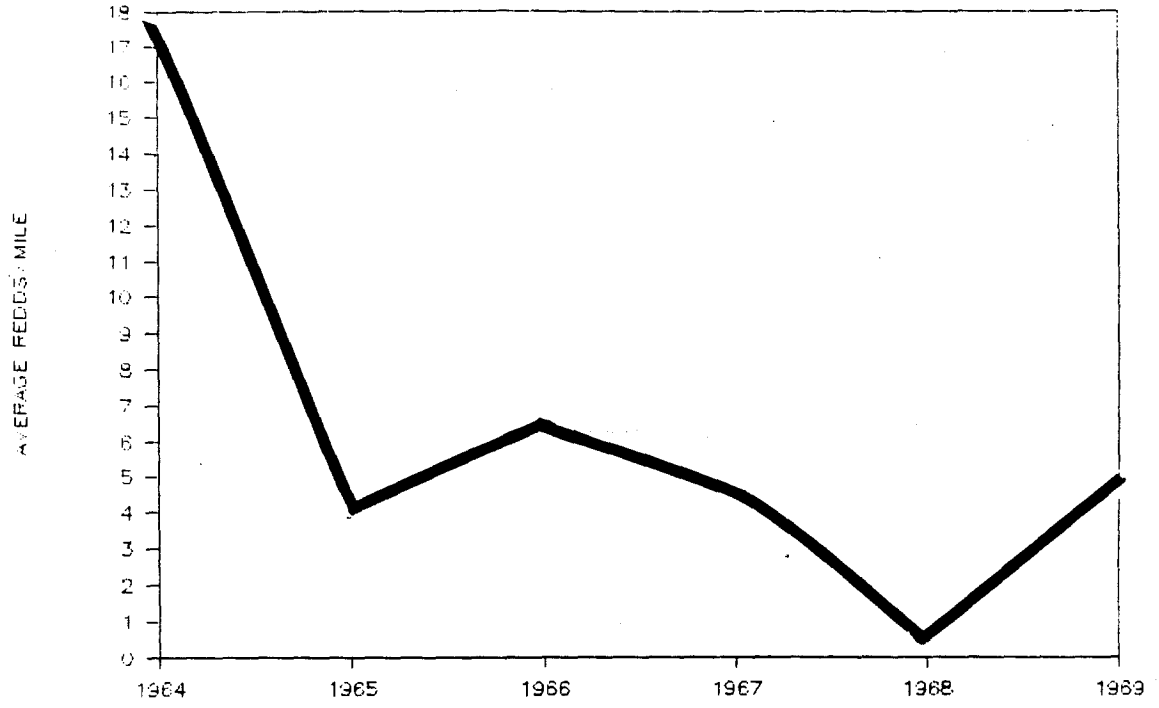

Figure A-79 . Fifteenmile Creek Winter Steelhead Counts (Average Redds Per Mile) (ODFW 1985c).

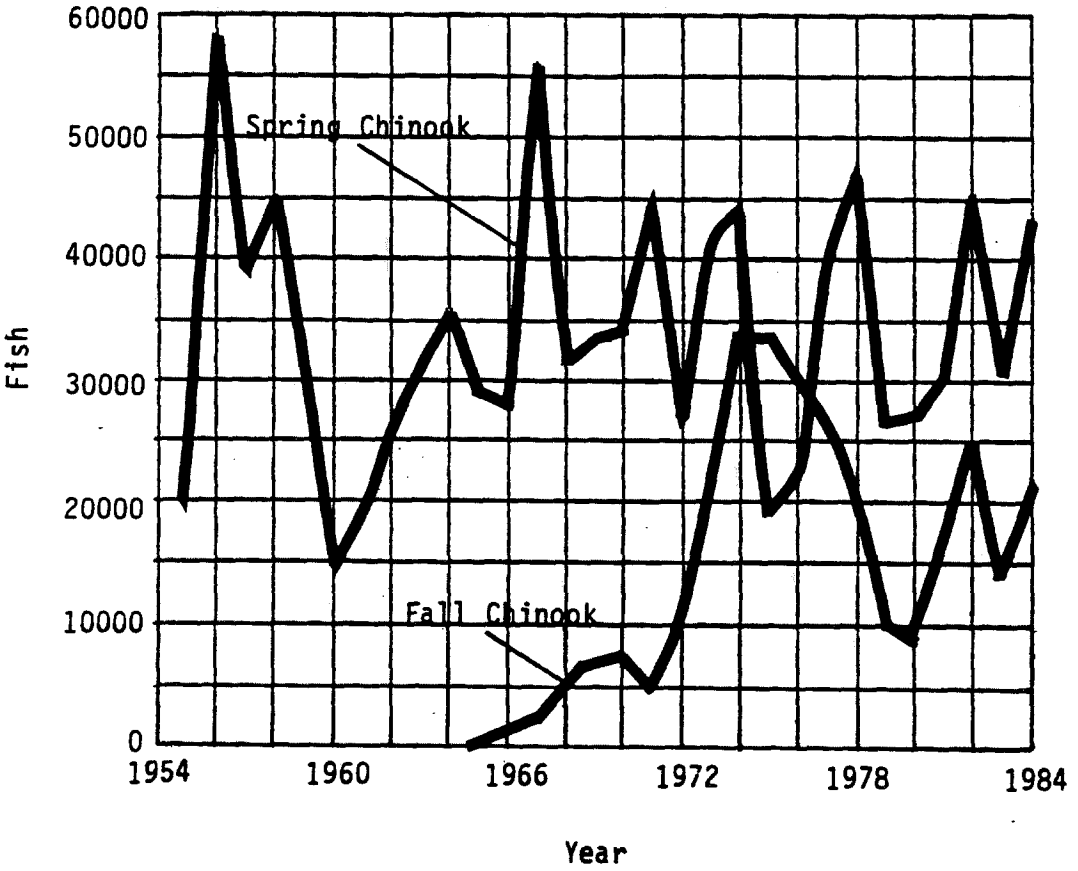

Figure A-80 . Willamette Falls Spring and Fall Chinook Counts (Bennett 1985).

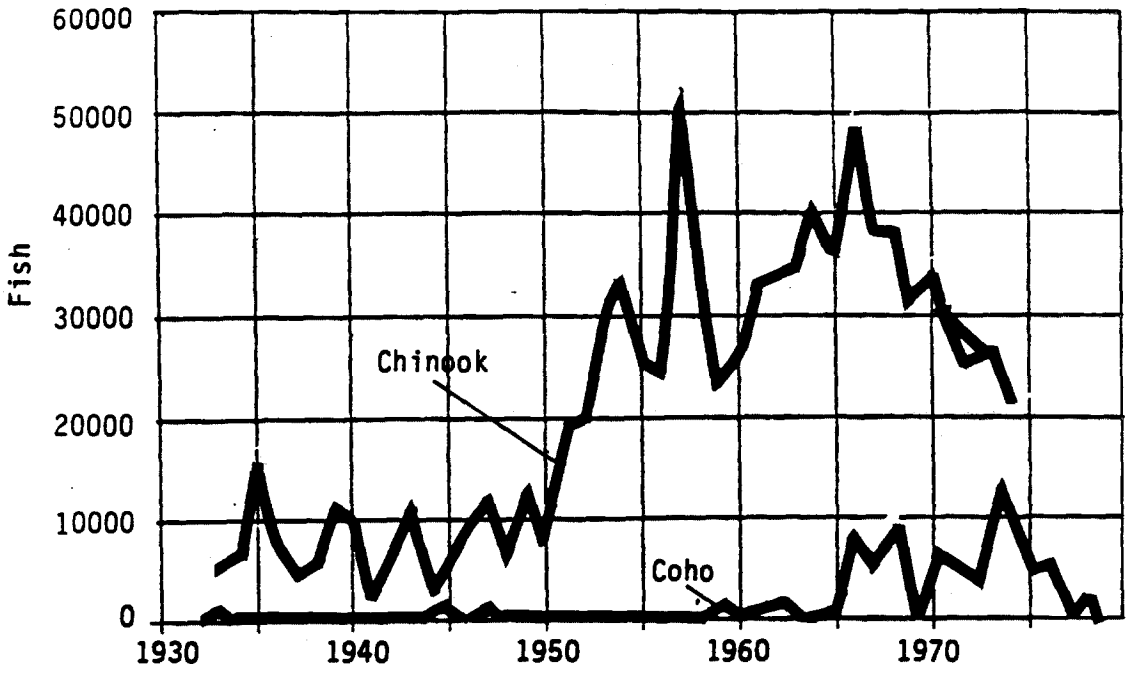

Figure A-81 . Rock Island Dam Chinook and Coho Counts (Beiningen 1976a; Mullan 1983).

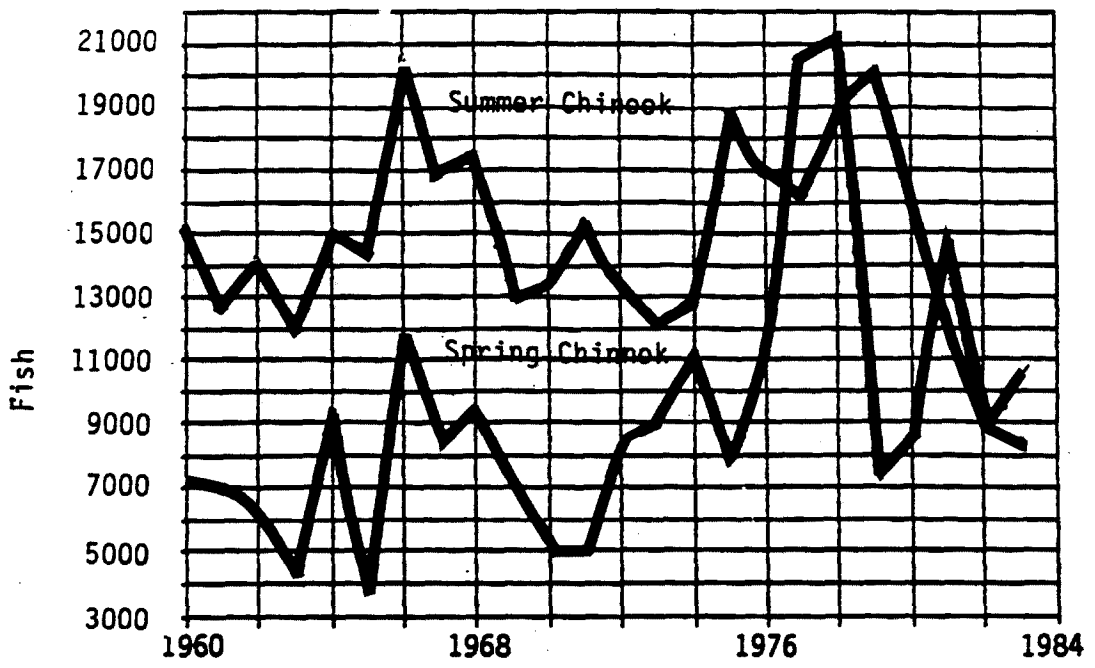

Figure A-82 . Priest Rapids Dam Spring and Summer Chinook Counts (ODFW 1984a).

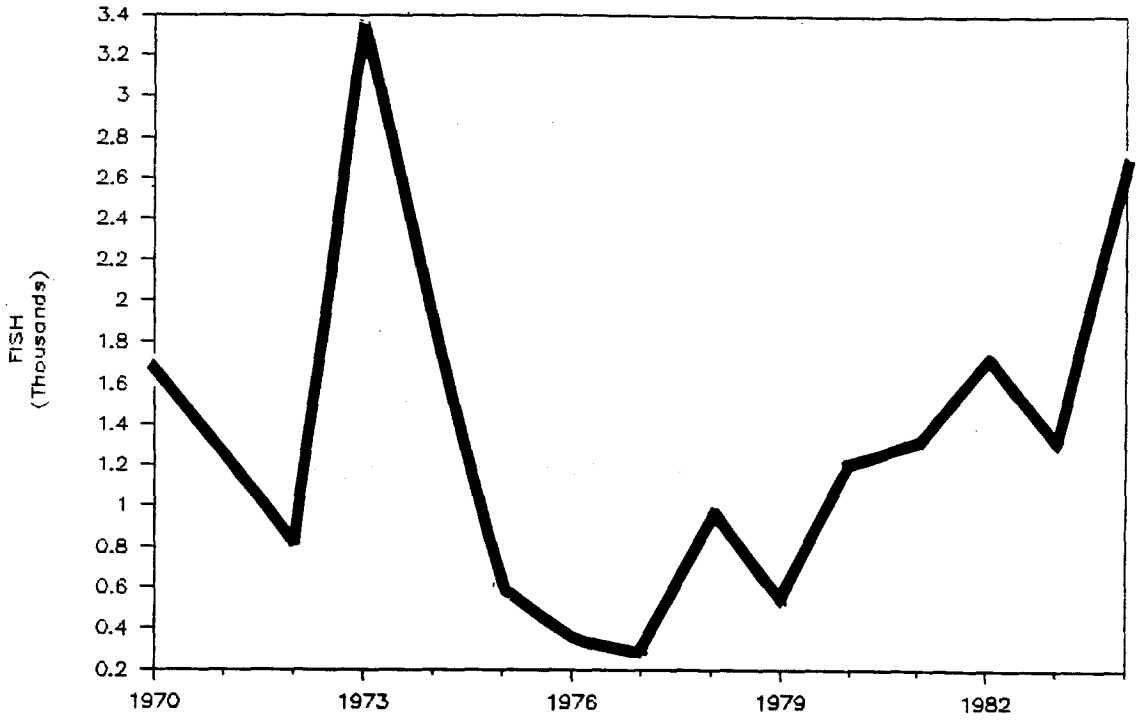

Figure A-83 . Yakima Basin Spring Chinook Size Run (ODFW 1985b).

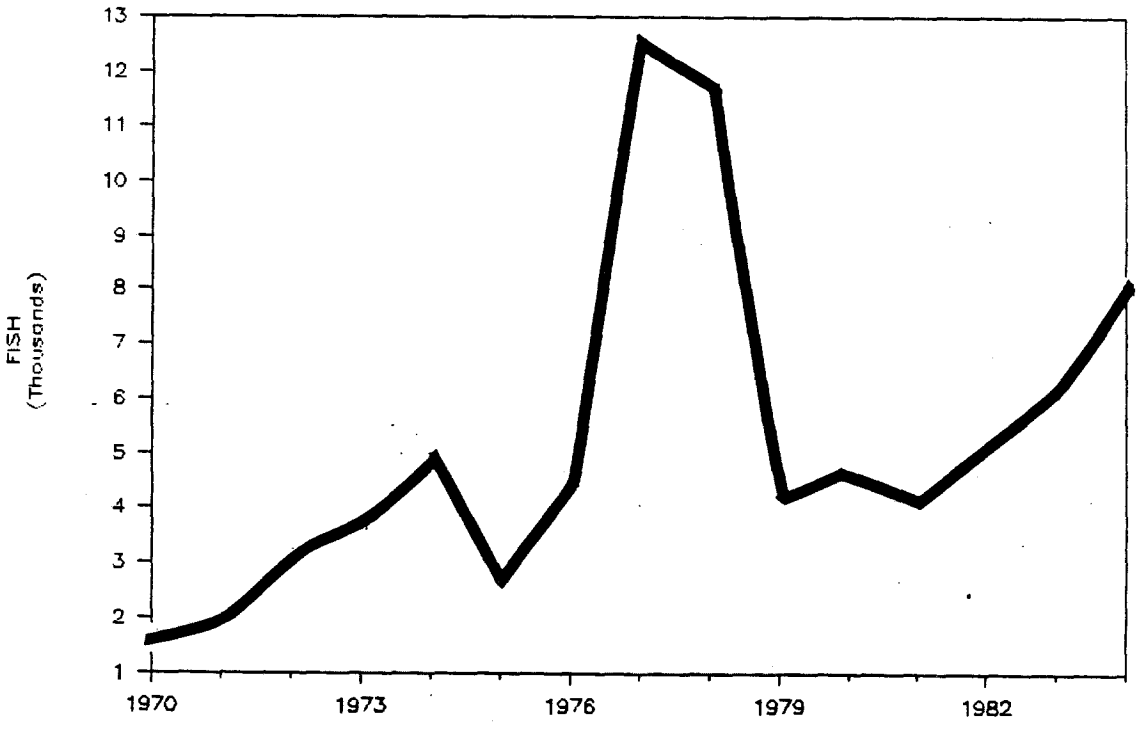

Figure A-84 . Wenatchee River Spring Chinook Run Size (ODFW 1985b).

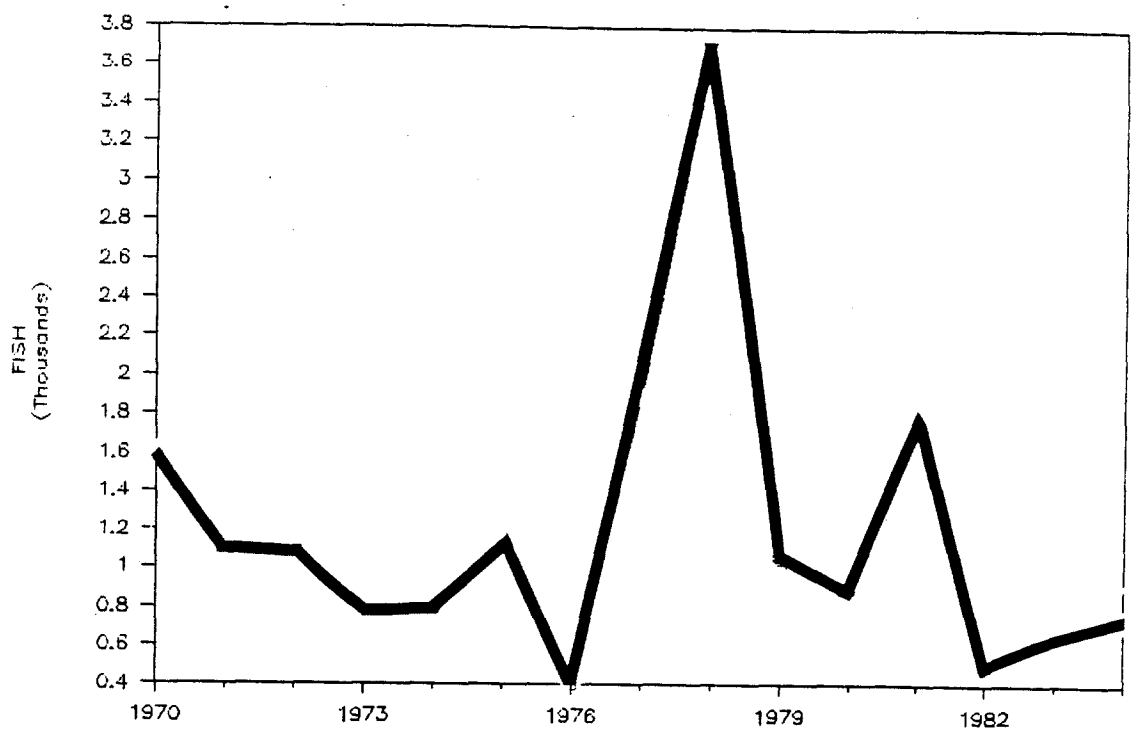

Figure A-85 . Entiat River Spring Chinook Run Size (ODFW 1985b).

Figure A-86 . Methow River Spring Chinook Run Size (ODFW 1985b).

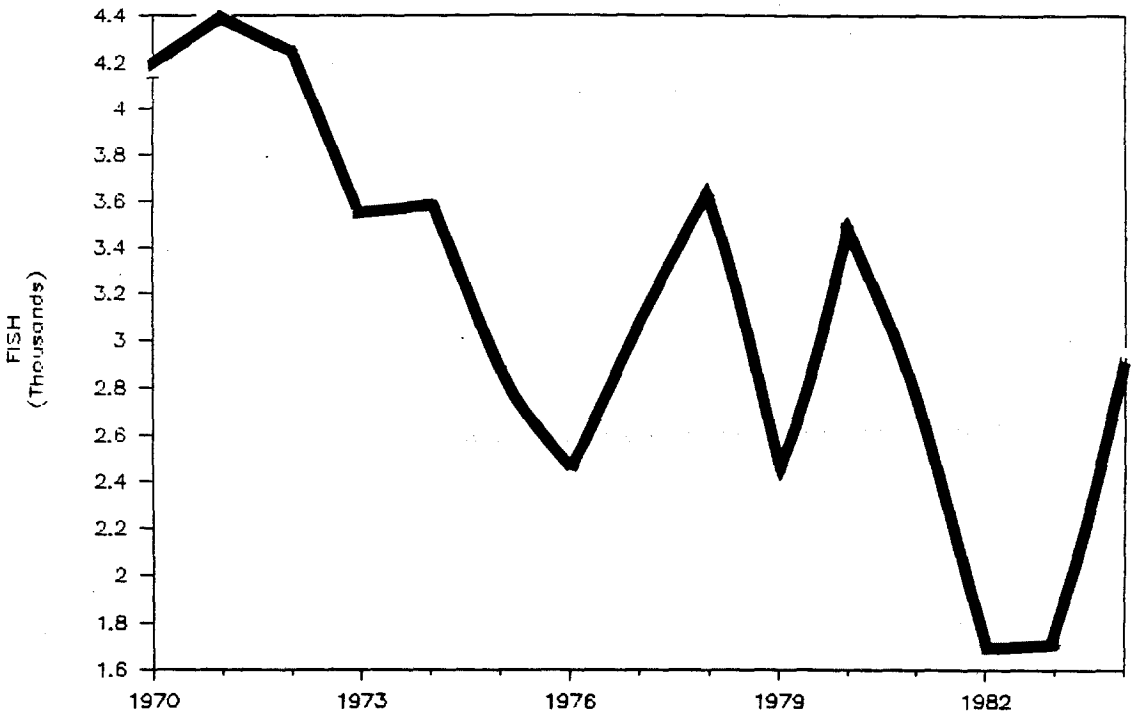

Figure A-87. Wenatchee River summer chinook escapement (ODFW 1985b).

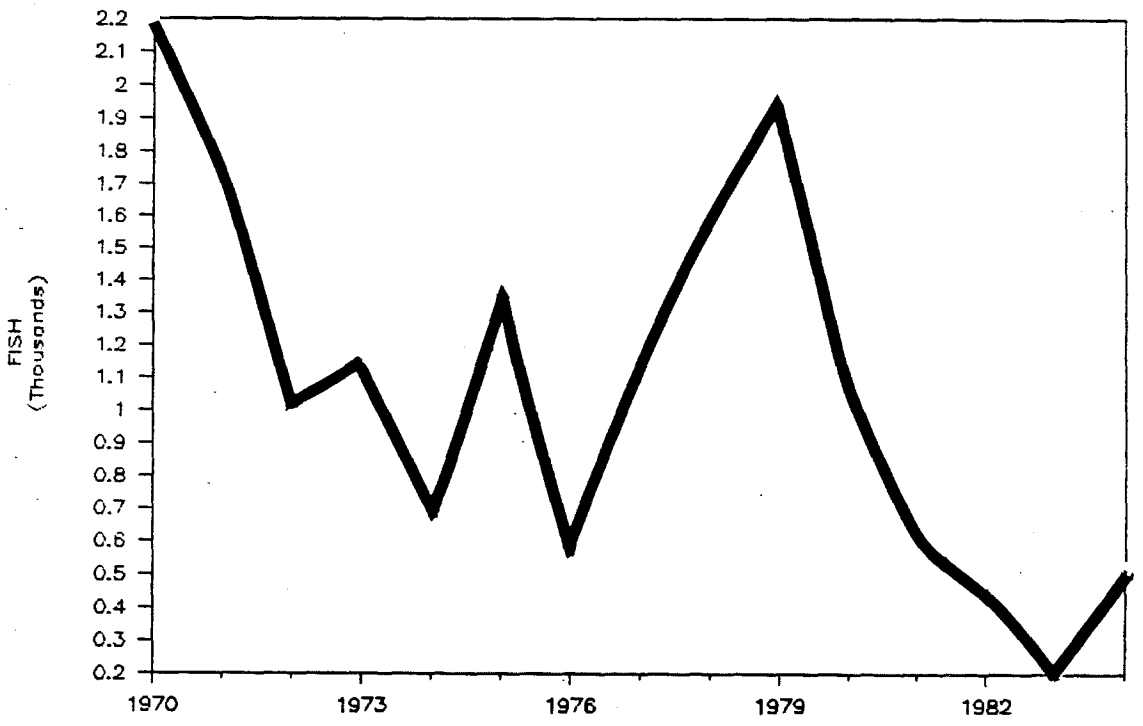

Figure A-88. Methow River summer chinook escapement (ODFW 1985b).

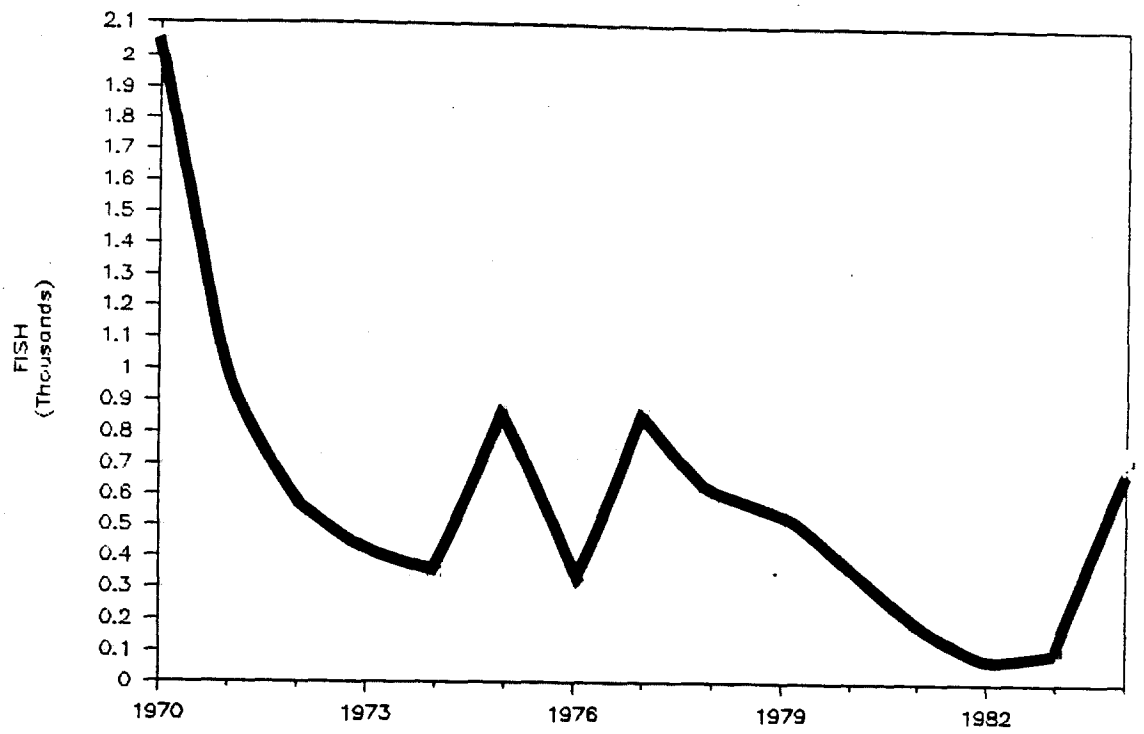

Figure A-89 . Okanogan River Summer Chinook Escapement (ODFW 1985b).

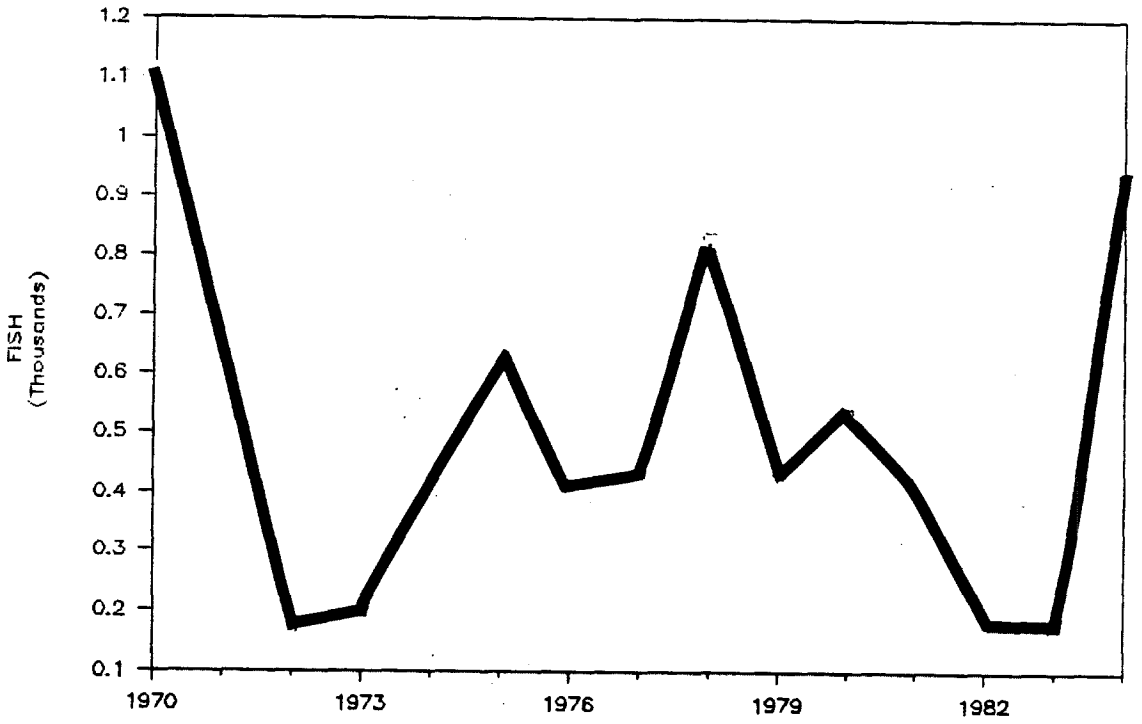

Figure A-90 . Similkameen River Summer Chinook Escapement (ODFW 1985b).

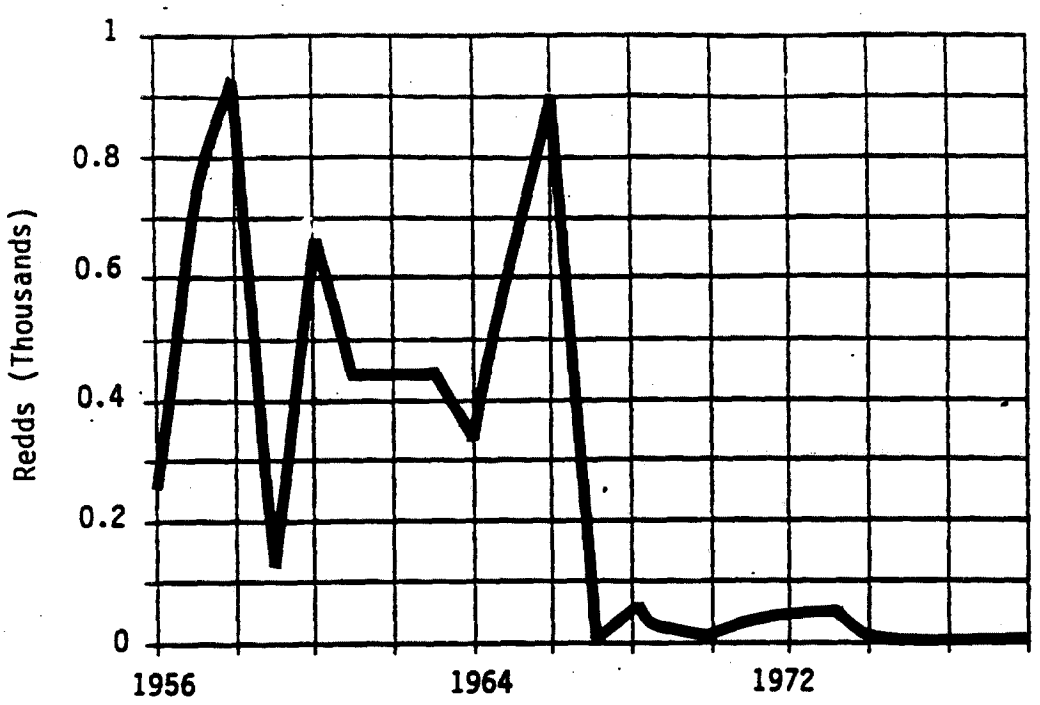

Figure A-91. Mainstem Middle Columbia River summer chinook redd counts (USFWS 1981).

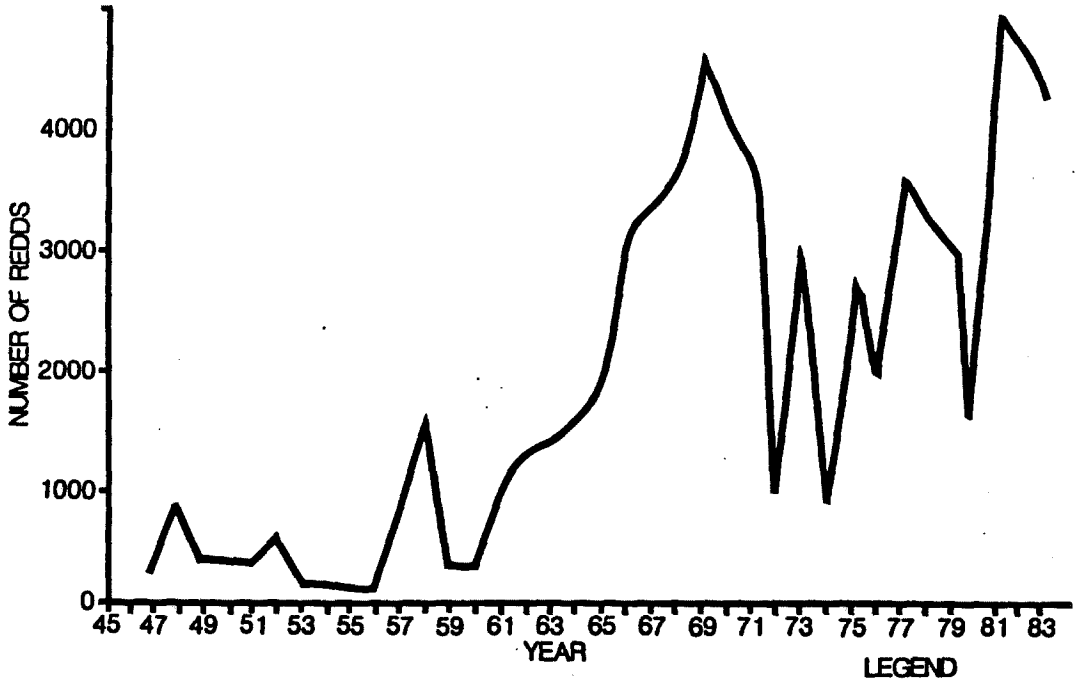

Figure A-92. Hanford Reach fall chinook redd counts ( ).

Figure A-93 . Wenatchee River Sockeye Spawning Escapement (ODFW 1985b).

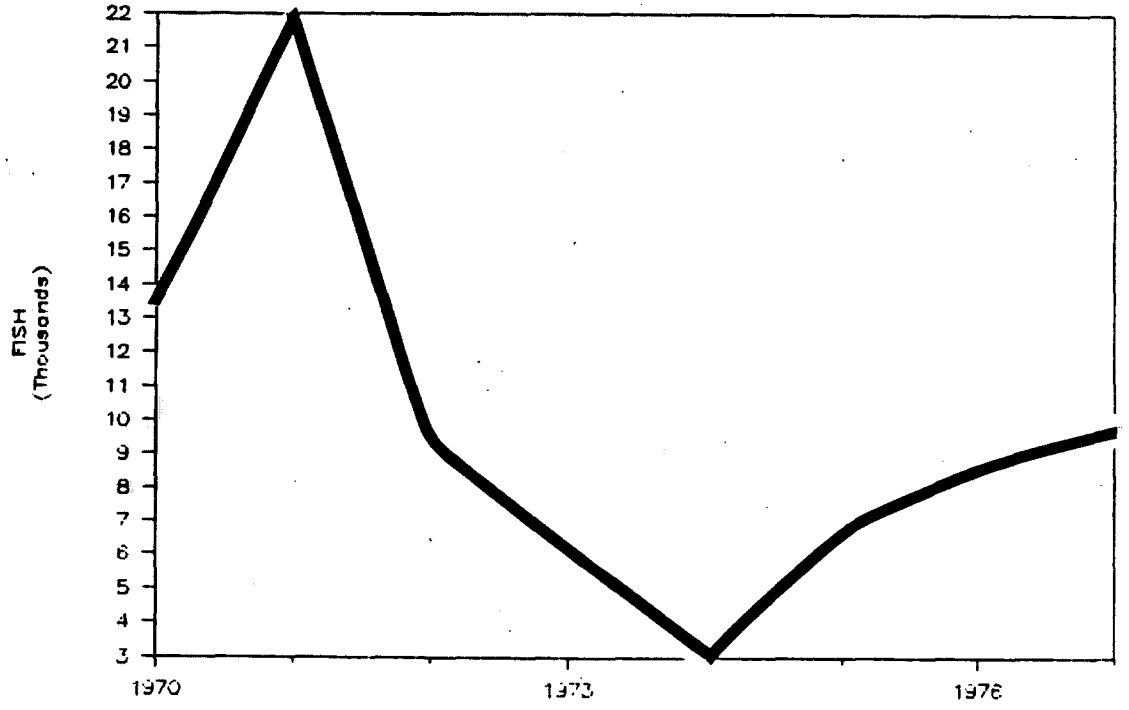

Figure A-94 . Okanogan River Sockeye Spawning Escapement (ODFW 1985B).

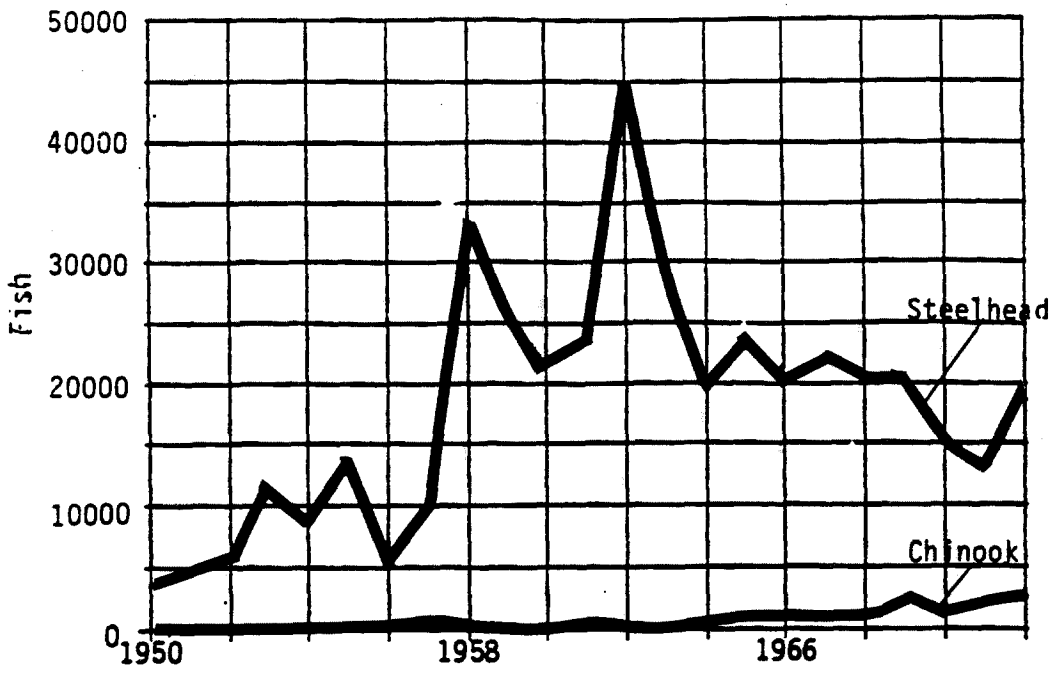

Figure A-95 . Lewiston Dam Spring Chinook Salmon and Steelhead Counts (Beiningen 1976a; USFWS 1981).

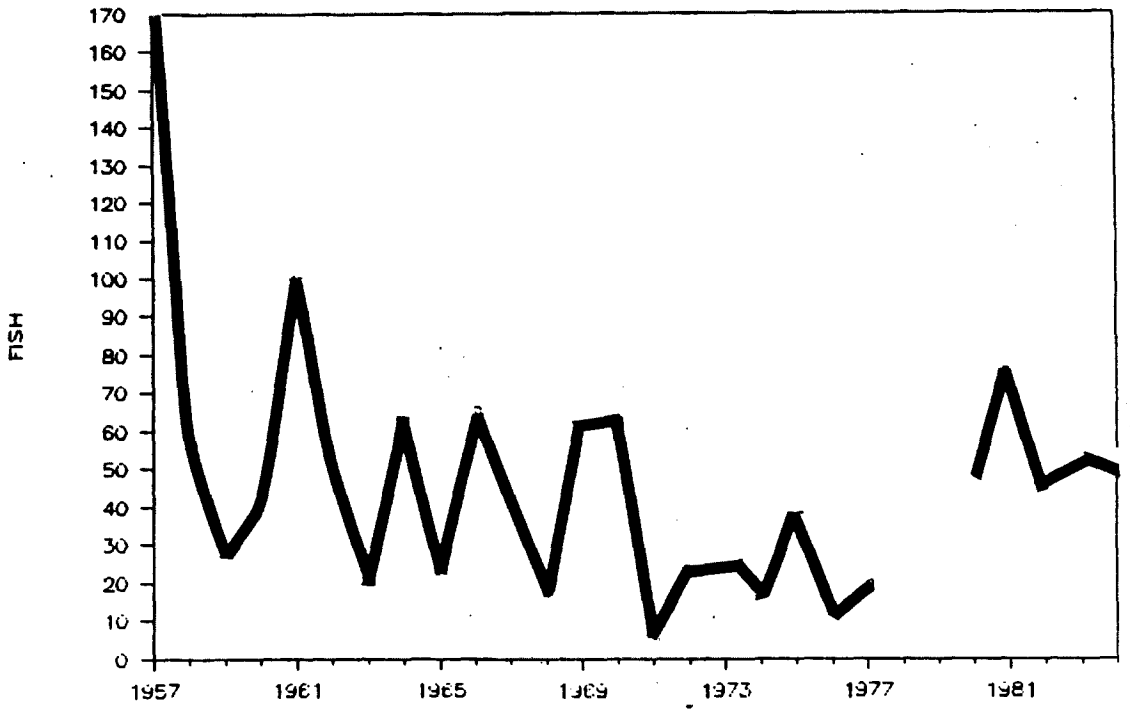

Figure A-96 . Tucannon River Spring Chinook Redd Counts (ODFW 1985b).

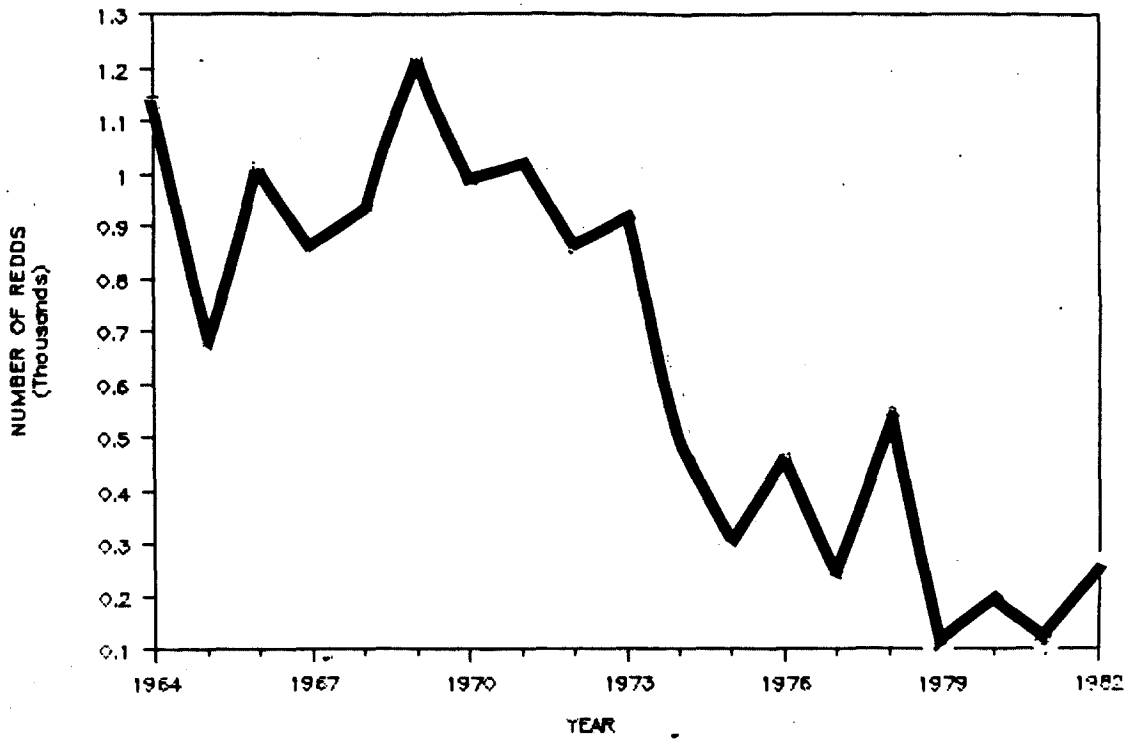

Figure A-97 . Grande Ronde River Spring Chinook Redd Counts (ODFW 1985b).

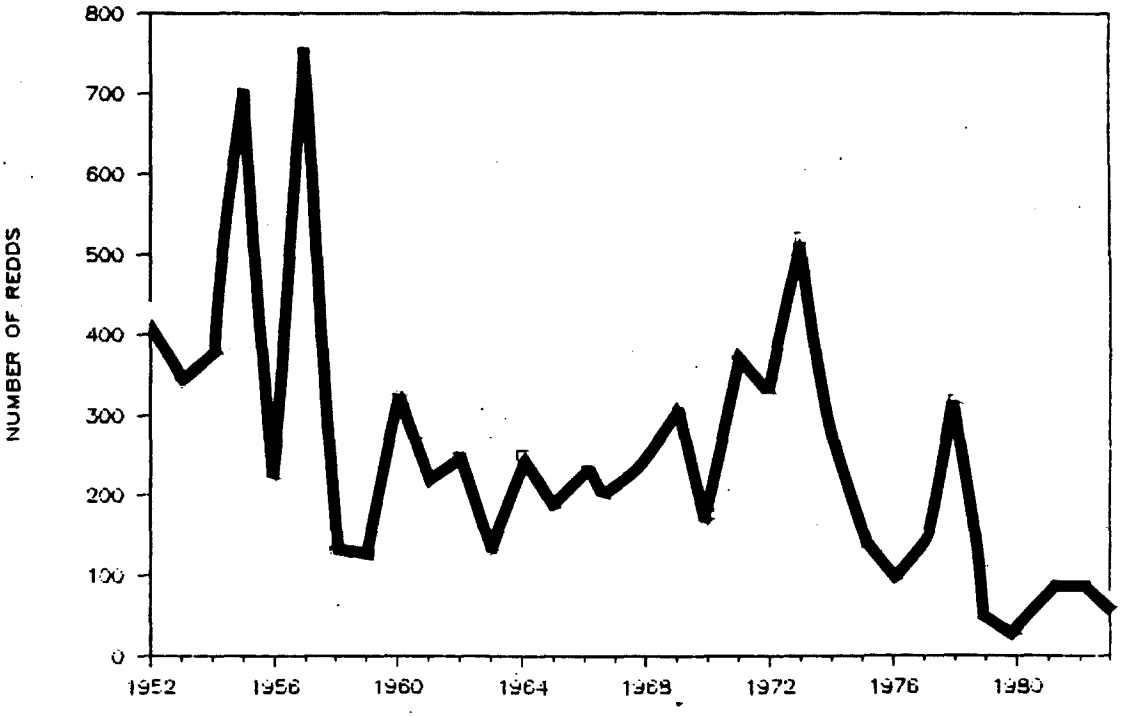

Figure A-98 . Imnaha River Spring Chinook Redd Counts (ODFW 1985b).

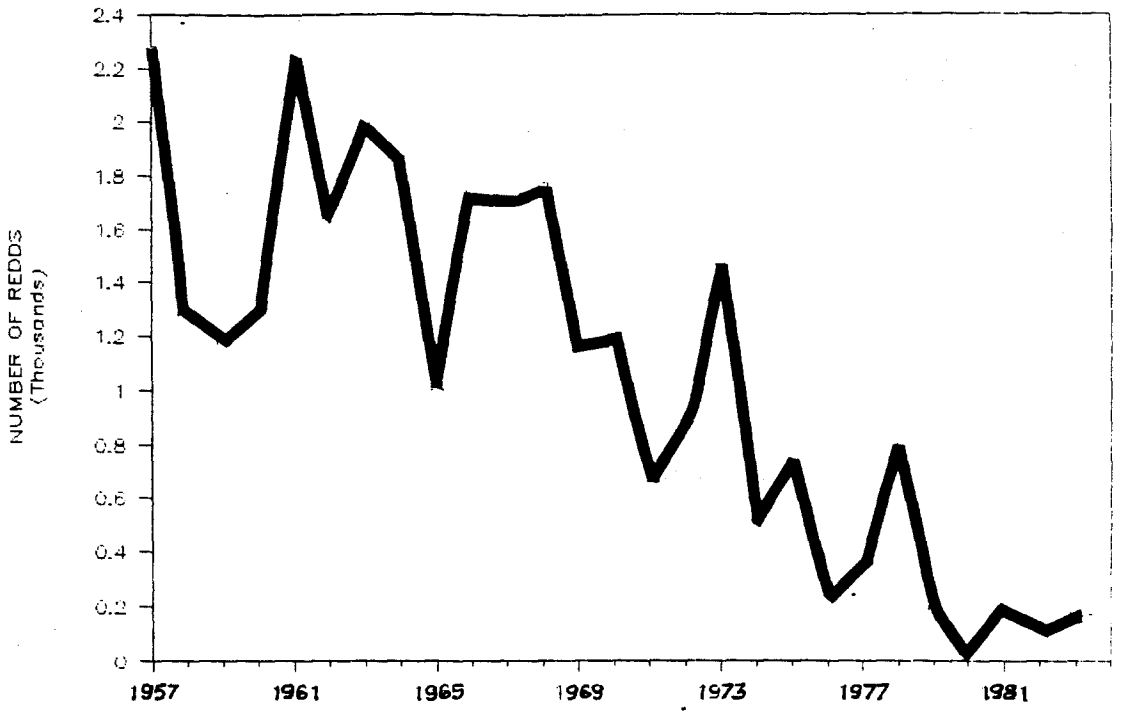

Figure A-99 . Middle Fork Salmon River Spring Chinook Redd Counts (Pollard 1985).

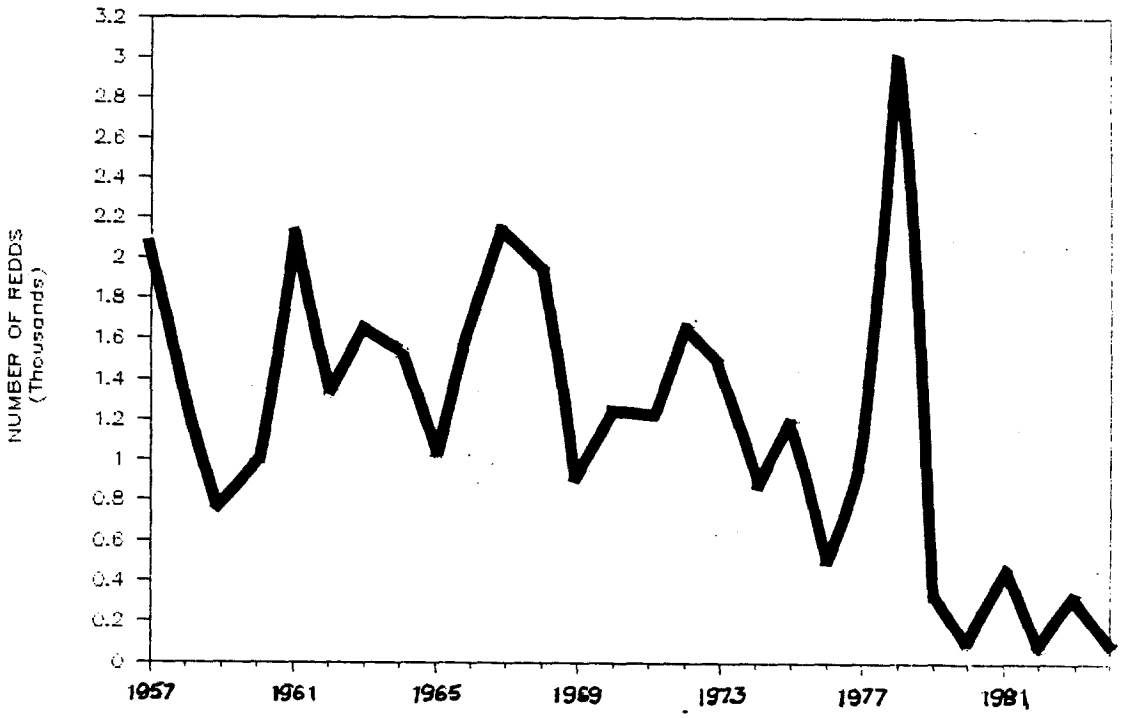

Figure A-100. Upper Salmon River Spring Chinook Redd Counts (Pollard 1985).

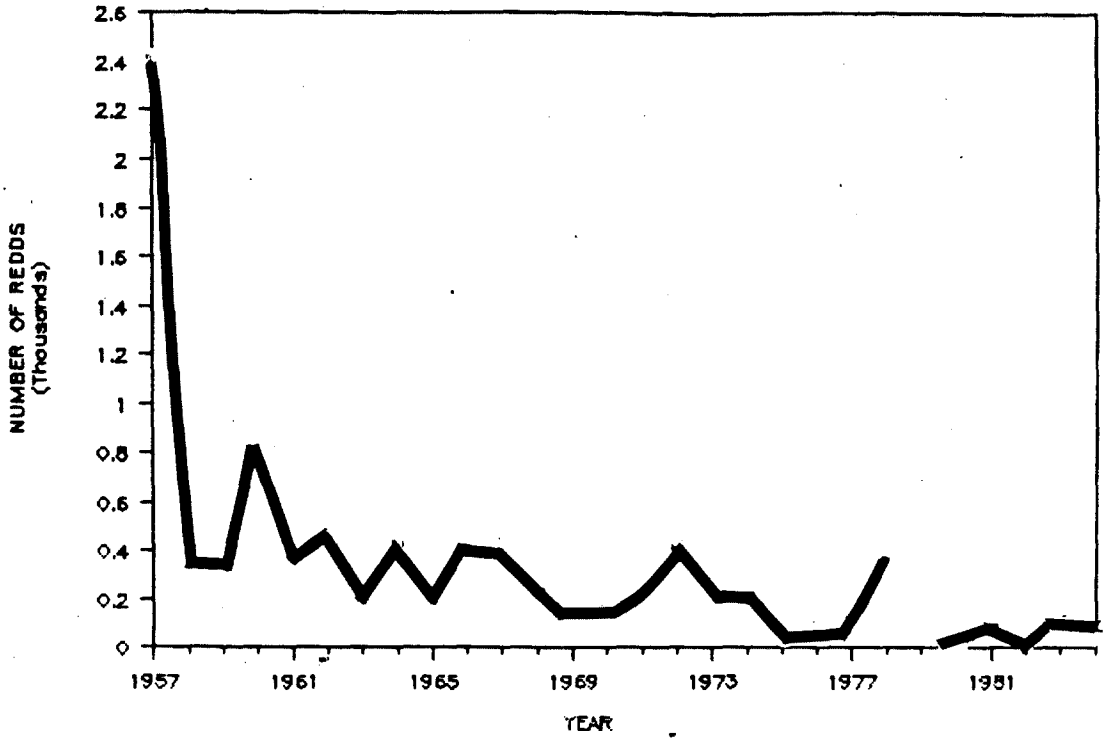

Figure A-101. Upper Mainstem Salmon River summer chinook redd counts (Pollard 1985).

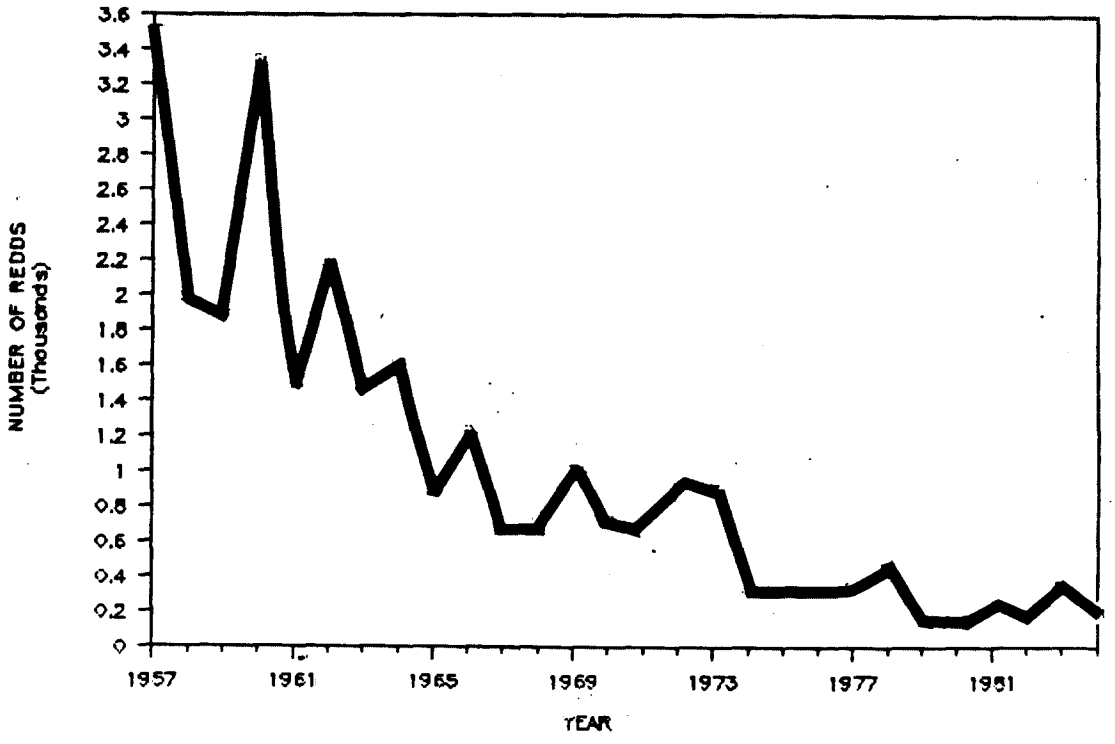

Figure A-102. Summer Chinook redd counts for South Fork Salmon River and tributaries (ODFW 1985b).

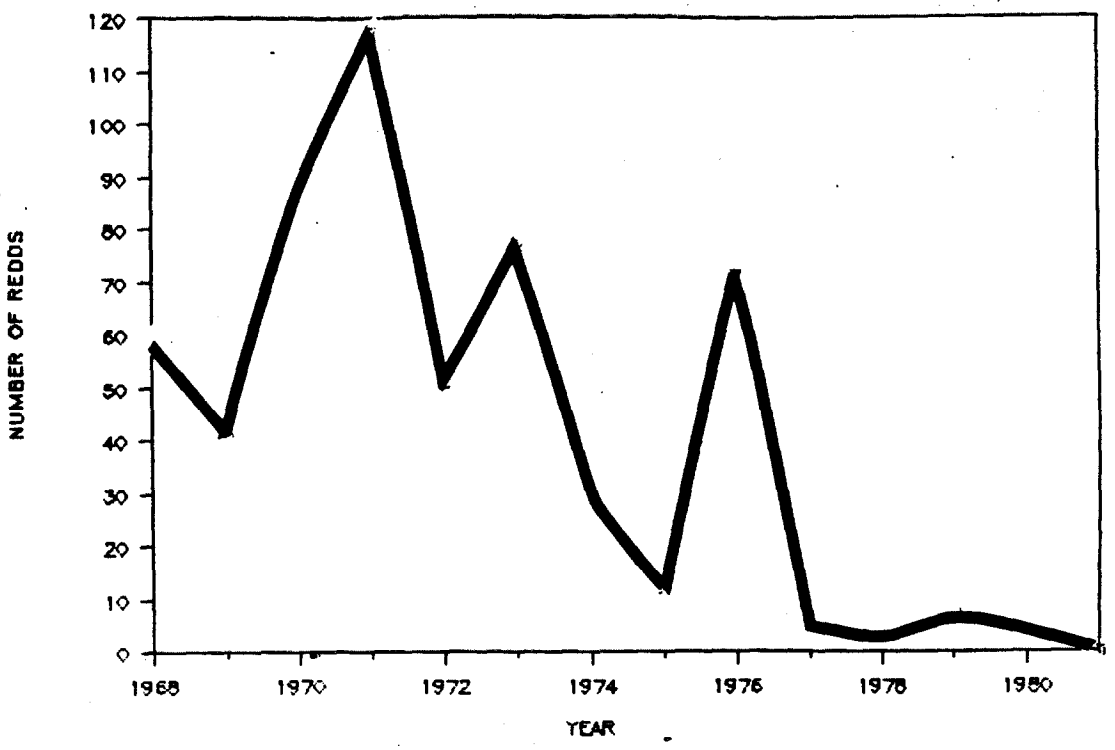

Figure A-103. Wallowa River Coho Redd Counts (Schwartzberg 1985).

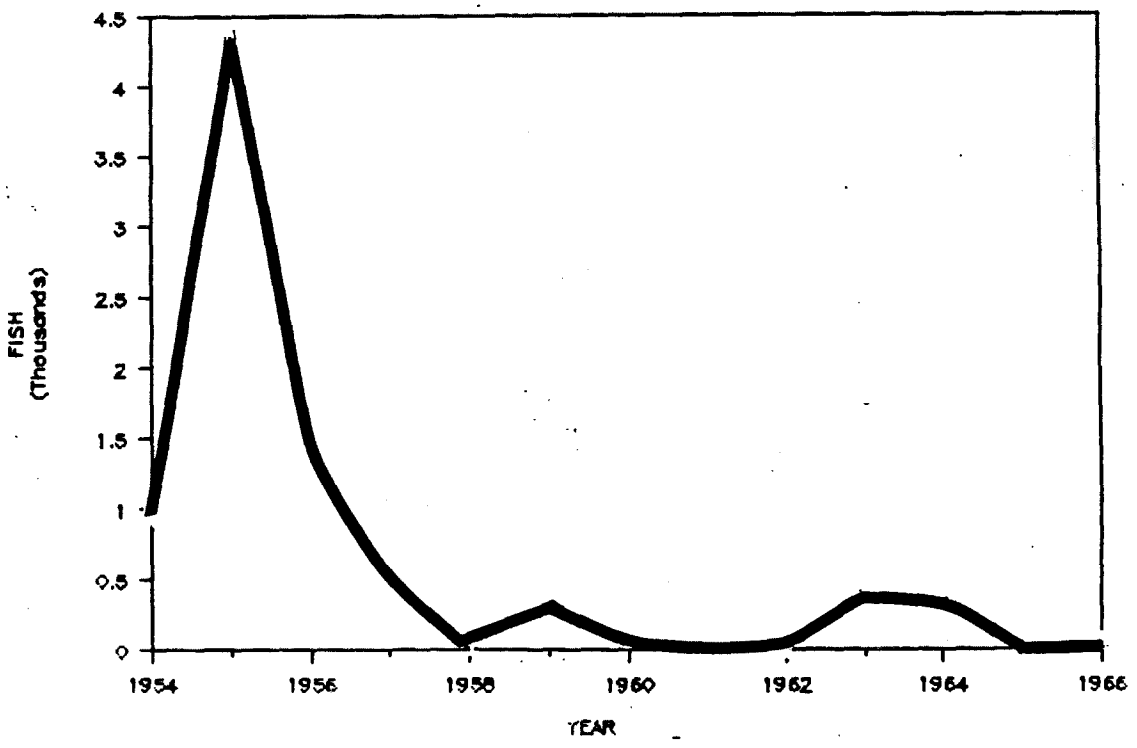

Figure A-104. Redfish Lake Creek Adults Sockeye Fish Counts (Bjornn et al. 1968).

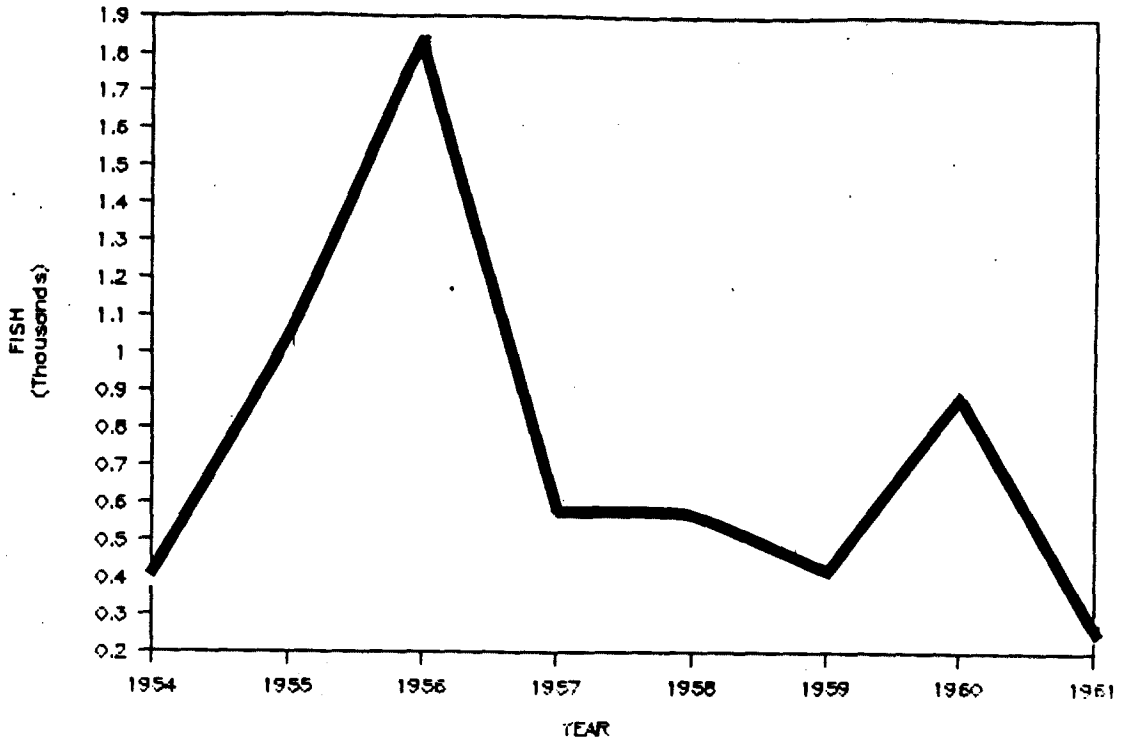

Figure A-105. Asotin Creek summer steelhead fish counts (Eldred and Douglas 1960; Eldred 1961).

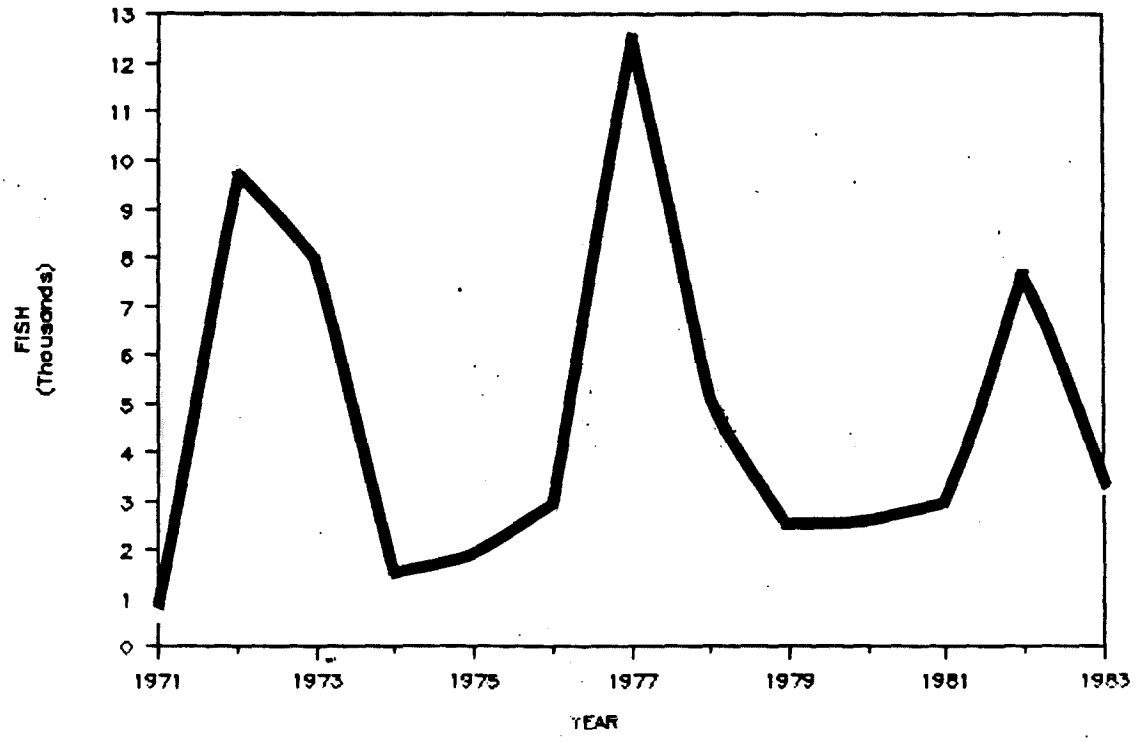

Figure A-106 Summer steelhead return to Dworshak National Fish Hatchery (ODFW 1985b).

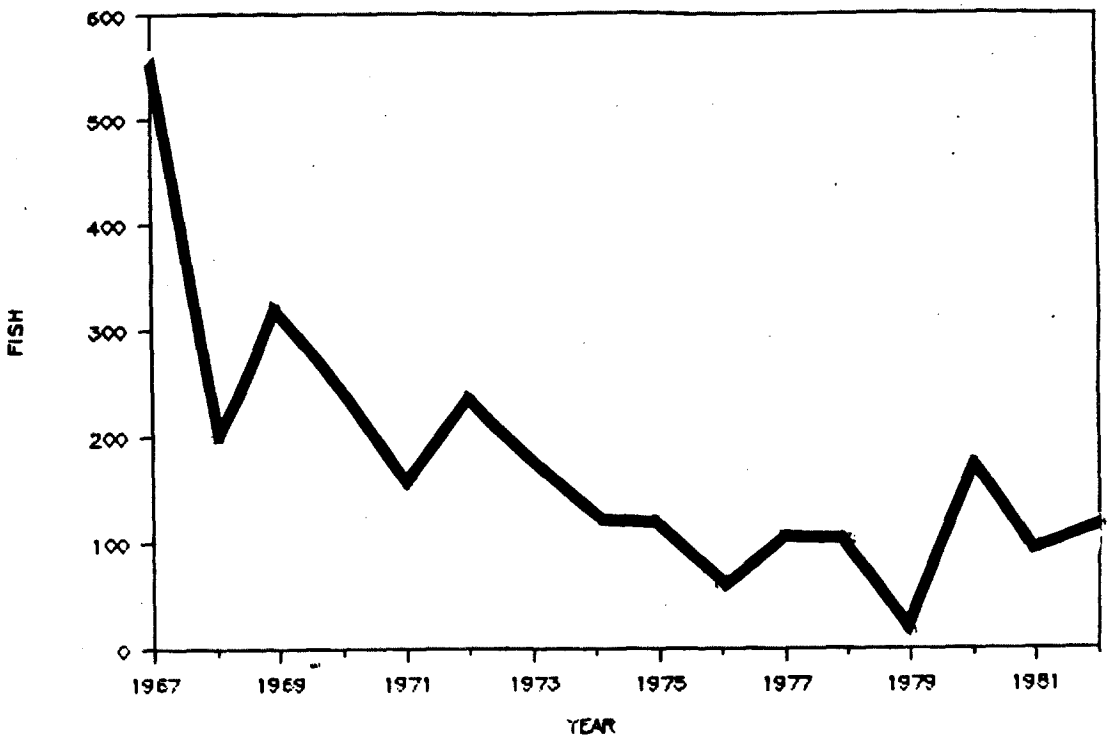

Figure A-107. Grande Ronde River Summer Steelhead Fish Counts (James 1984).

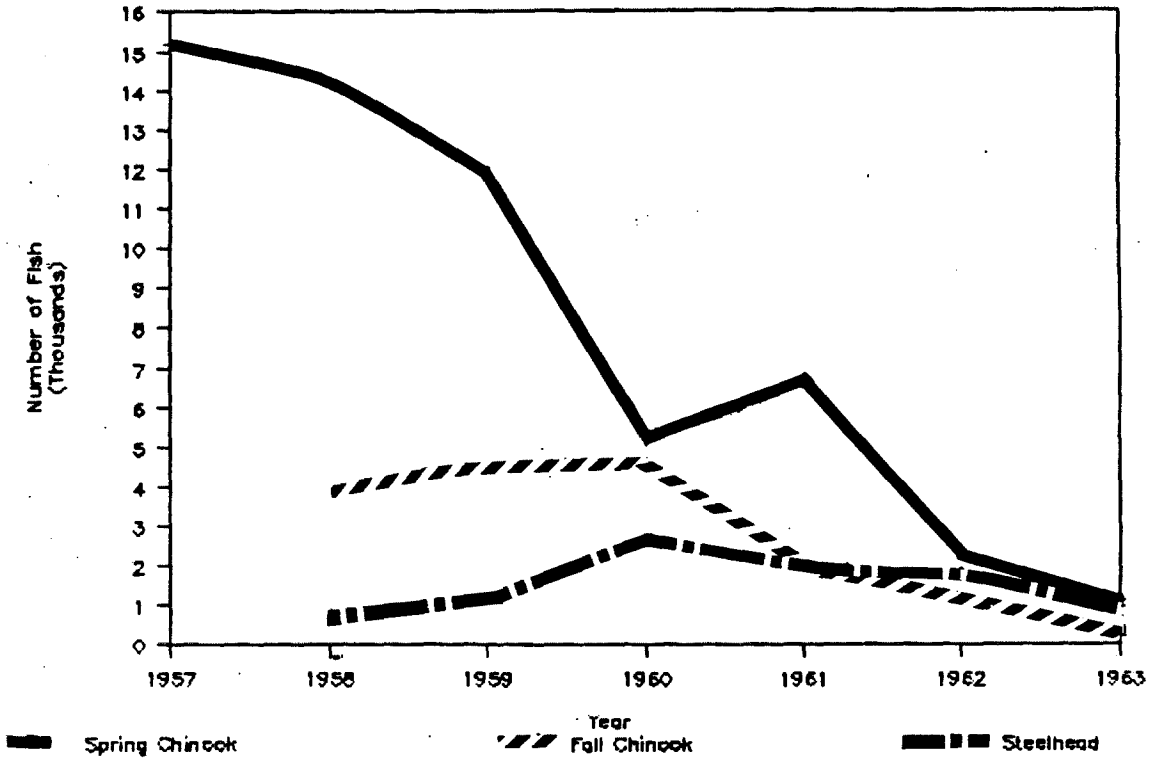

Figure A-108. Counts of Adult Salmon and Steelhead at Brownlee-Oxbow Dams (ODFW 1985b).

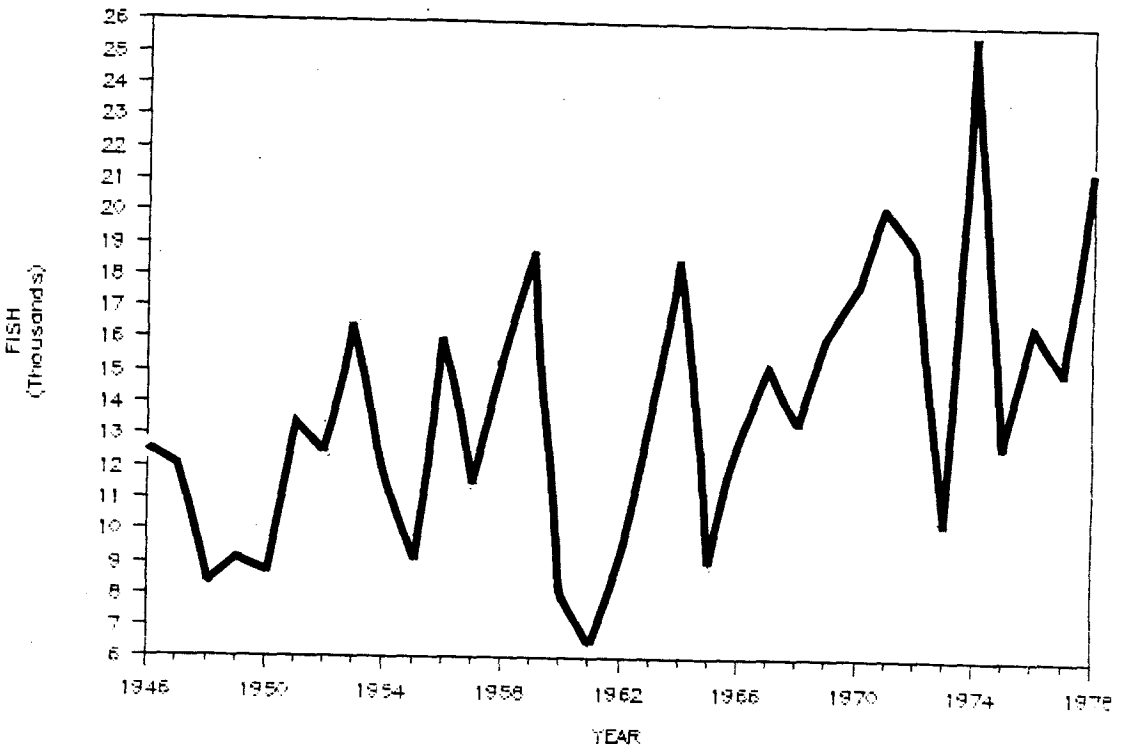

Figure A-109. Willamette River spring chinook sport catch (Collins 1981, Bennett 1983 and 1985).

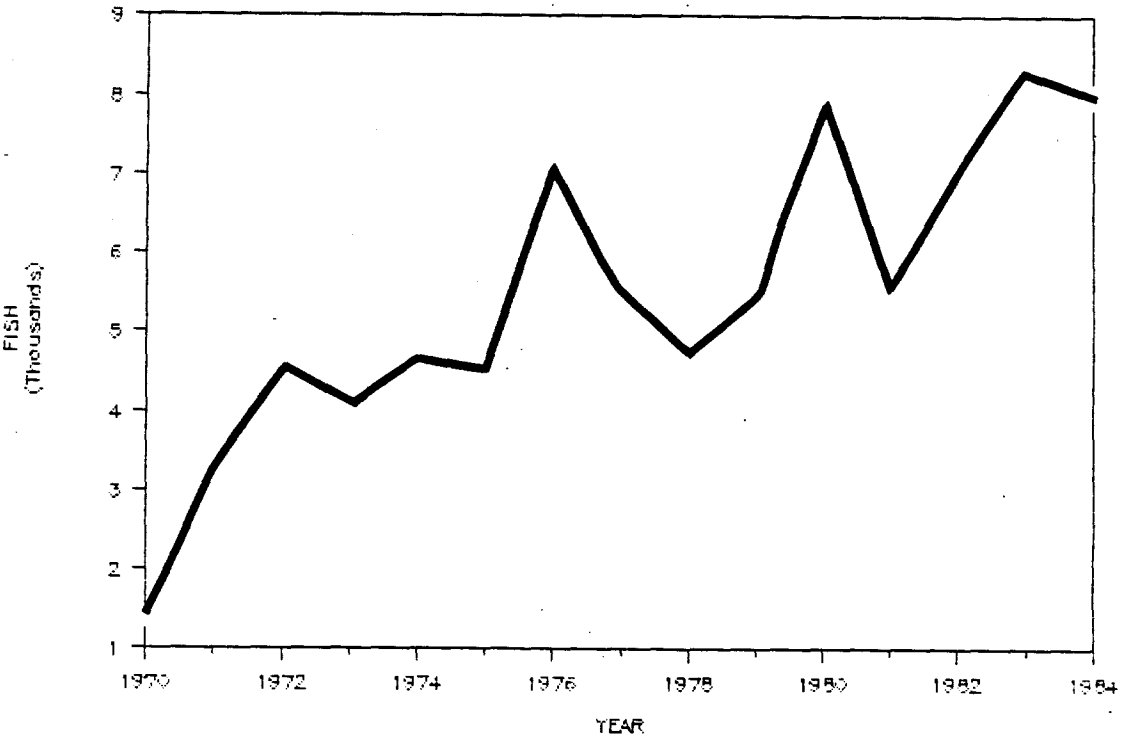

Figure A-110. Cowlitz River spring chinook sport catch (ODFW 1985b).

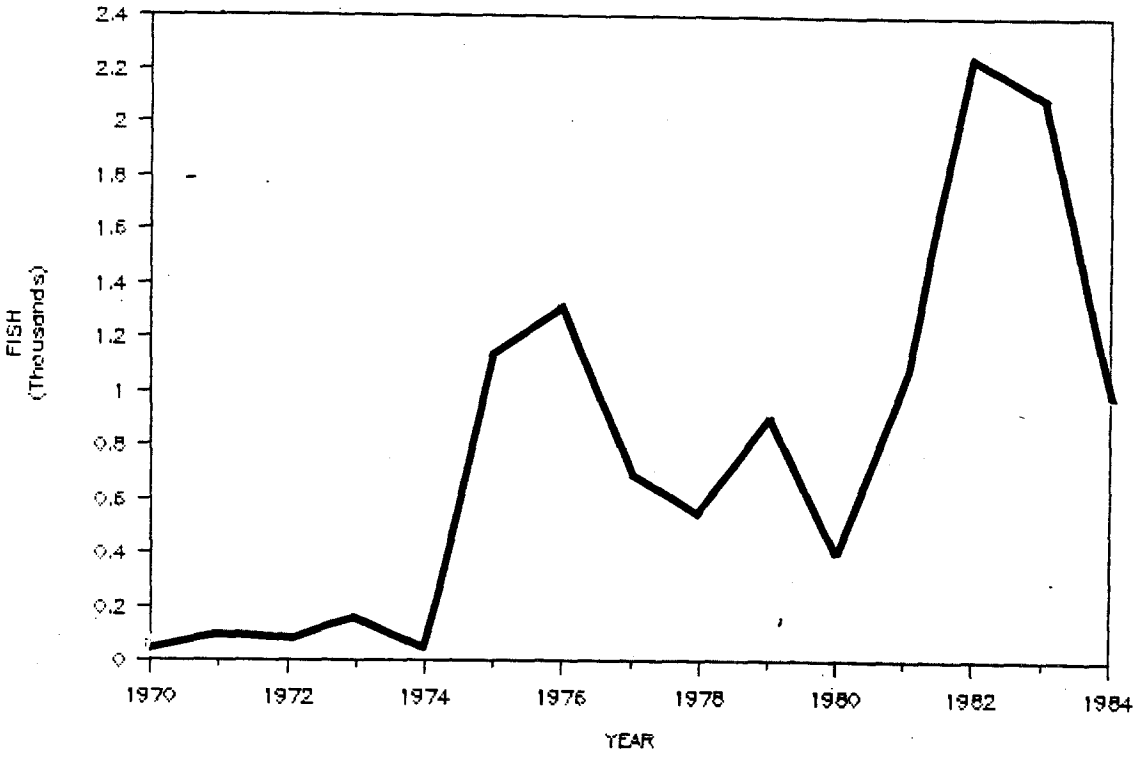

Figure A-111. Kalama River spring chinook sport catch (ODFW 1985b).

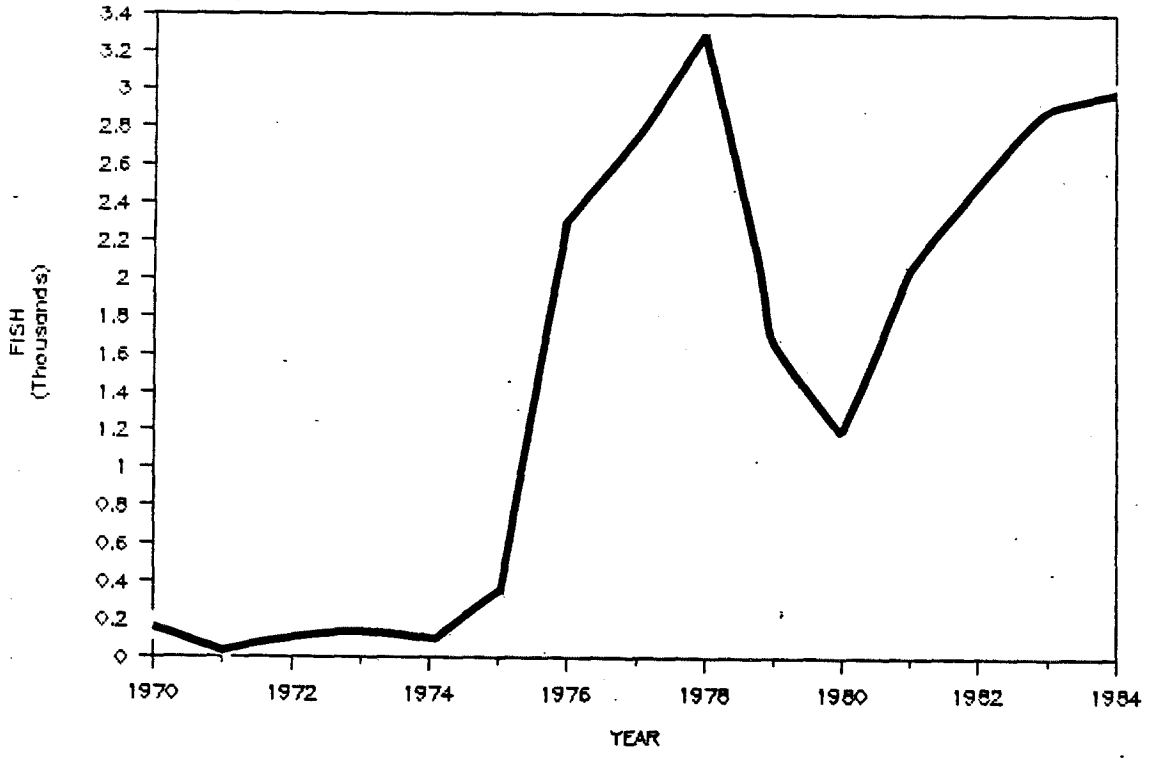

Figure A-112. Lewis River spring chinook sport catch (ODFW 1985b).

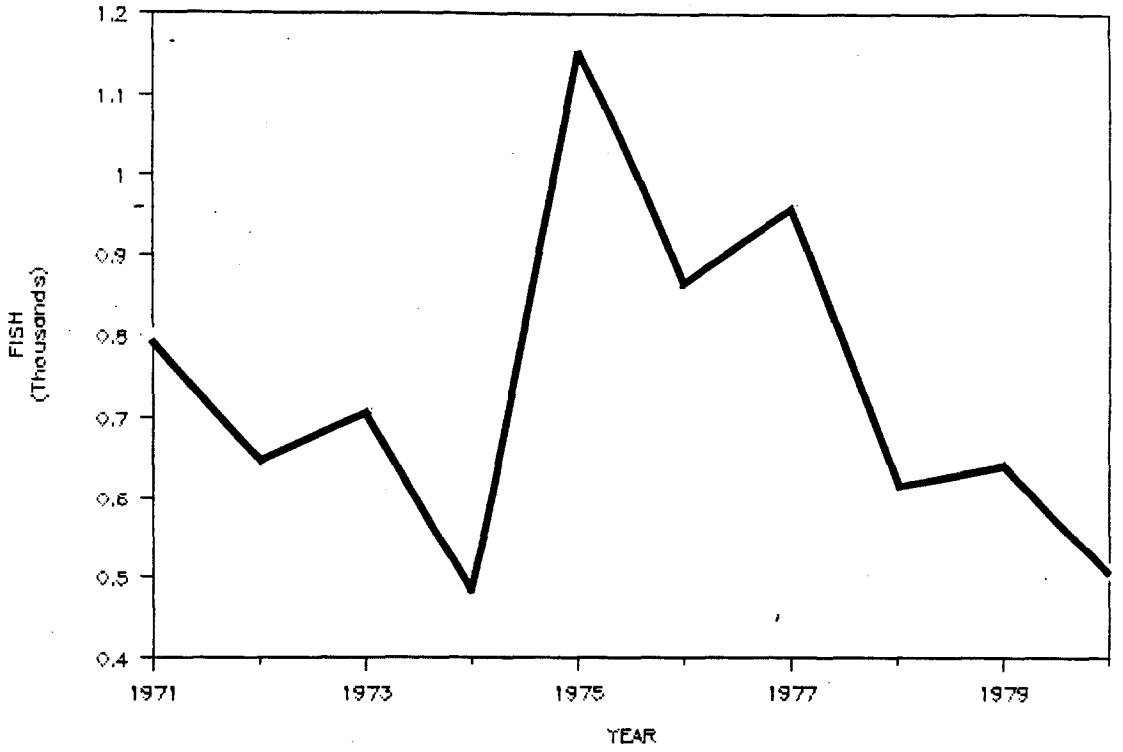

Figure A-113. Willamette River fall chinook sport catch (Berry 1981).

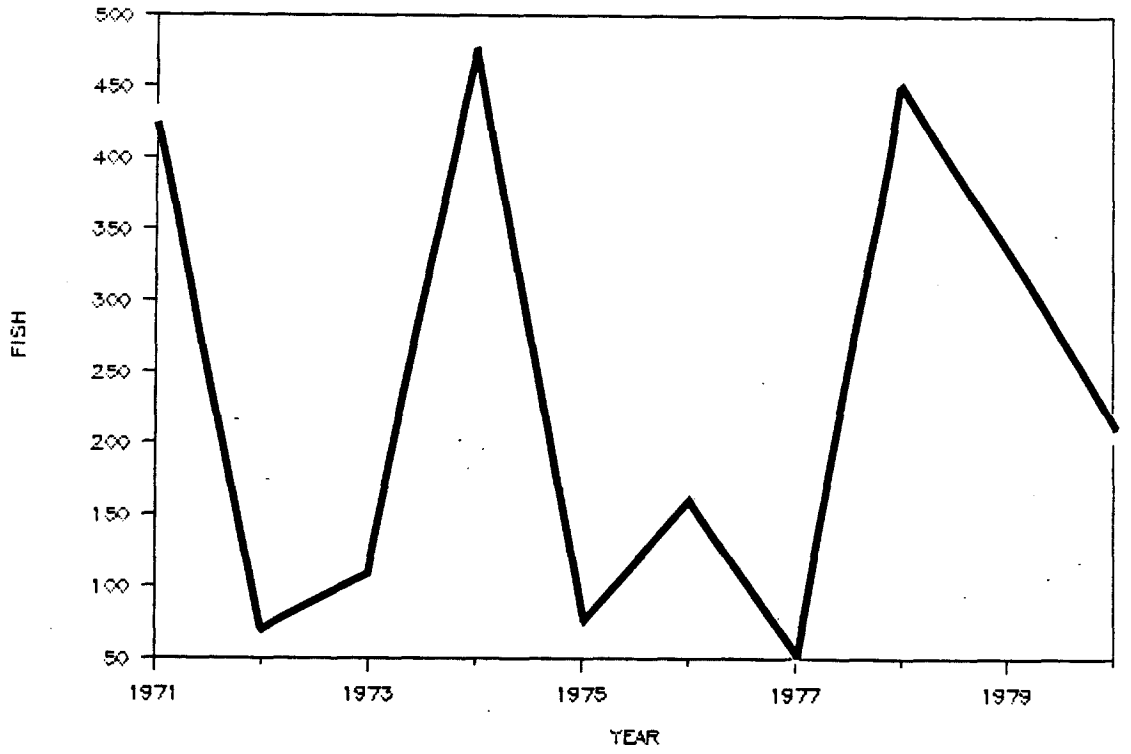

Figure A-114. Sandy River fall chinook sport catch (Berry 1981).

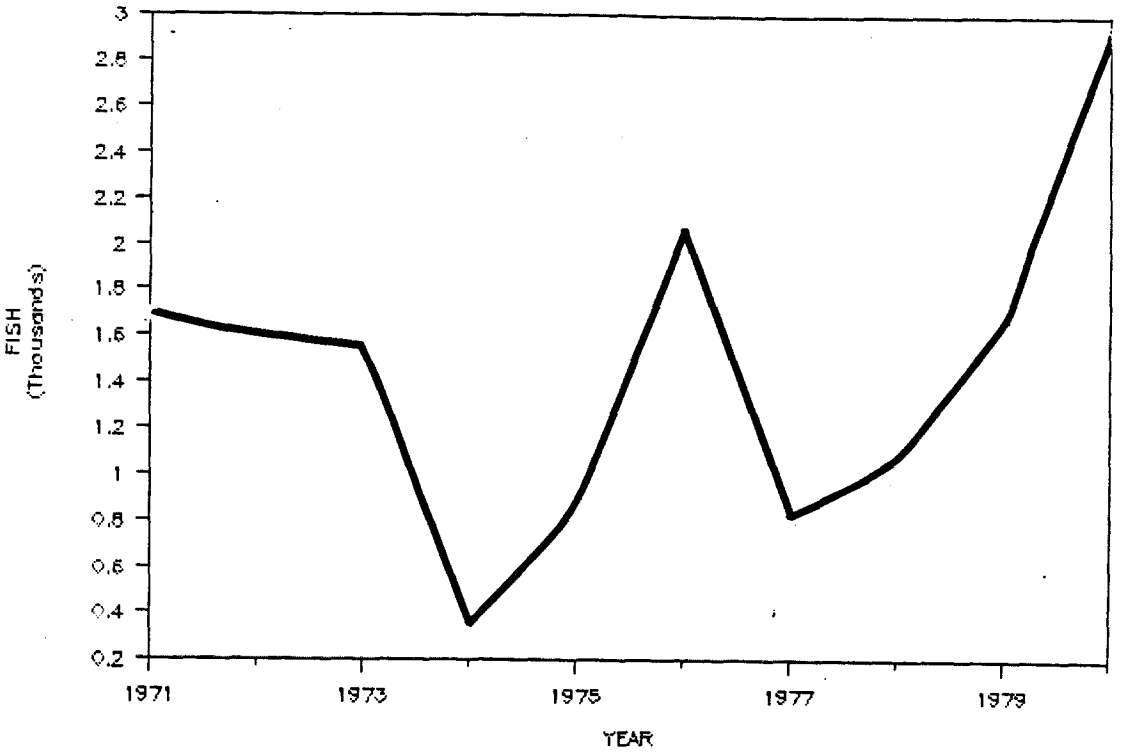

Figure A-115. Clackamas River coho sport catch (Berry 1981).

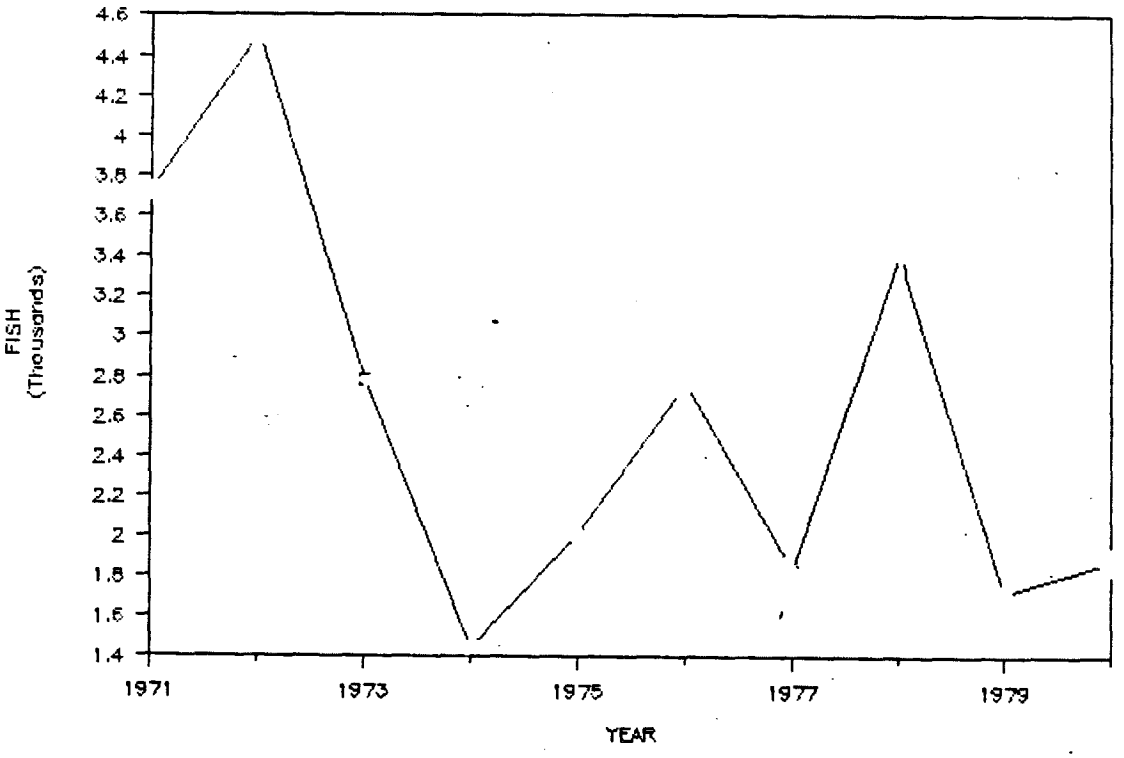

Figure A-116. Oregon Columbia River tributaries below Bonneville Dam coho catch excluding the Willamette Basin (Berry 1981).

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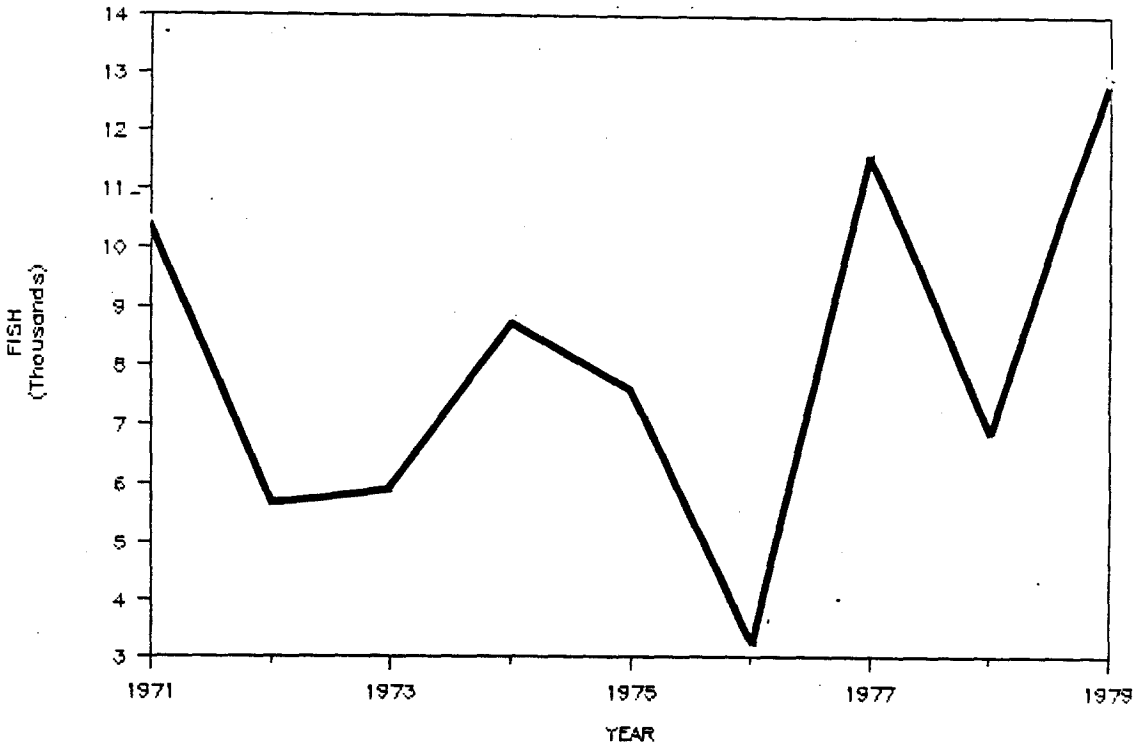

Figure A-117. Sandy River winter steelhead sport catch (Berry 1981).

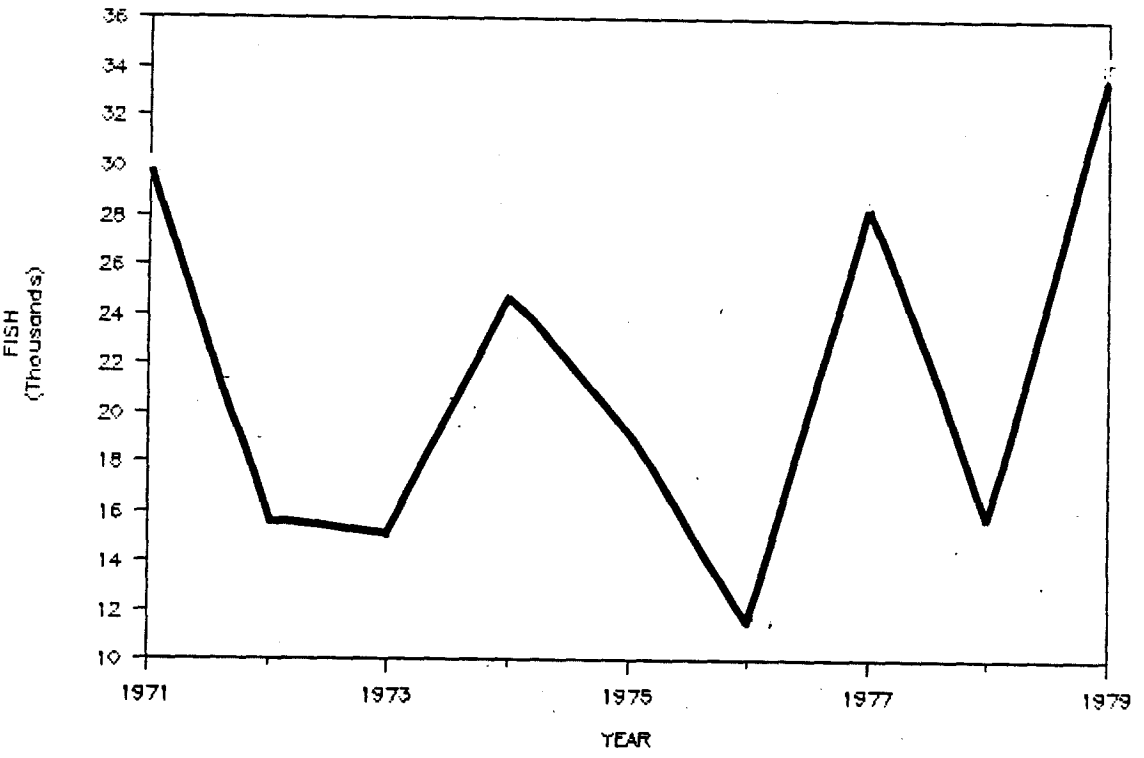

Figure A-118. Oregon Columbia River tributaries below Bonneville Dam winter steelhead sport catch excluding the Willamette Basin (Berry 1981).

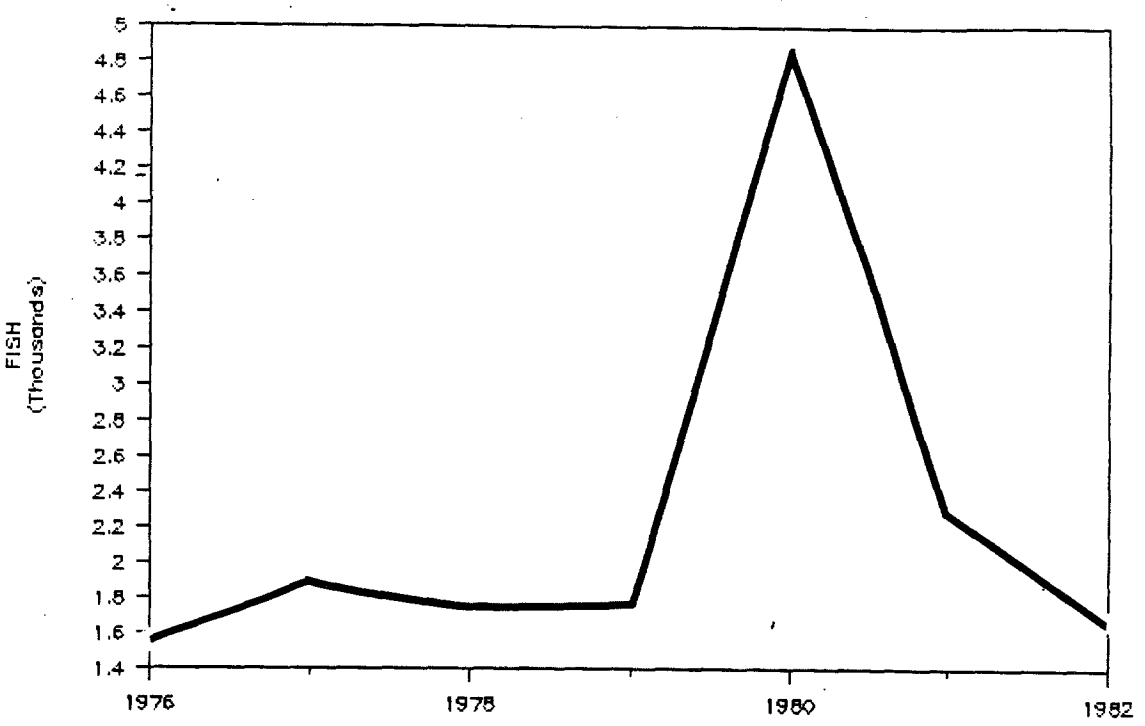

Figure A-119. Kalama River winter steelhead sport catch (Chilcote et al. 1984).

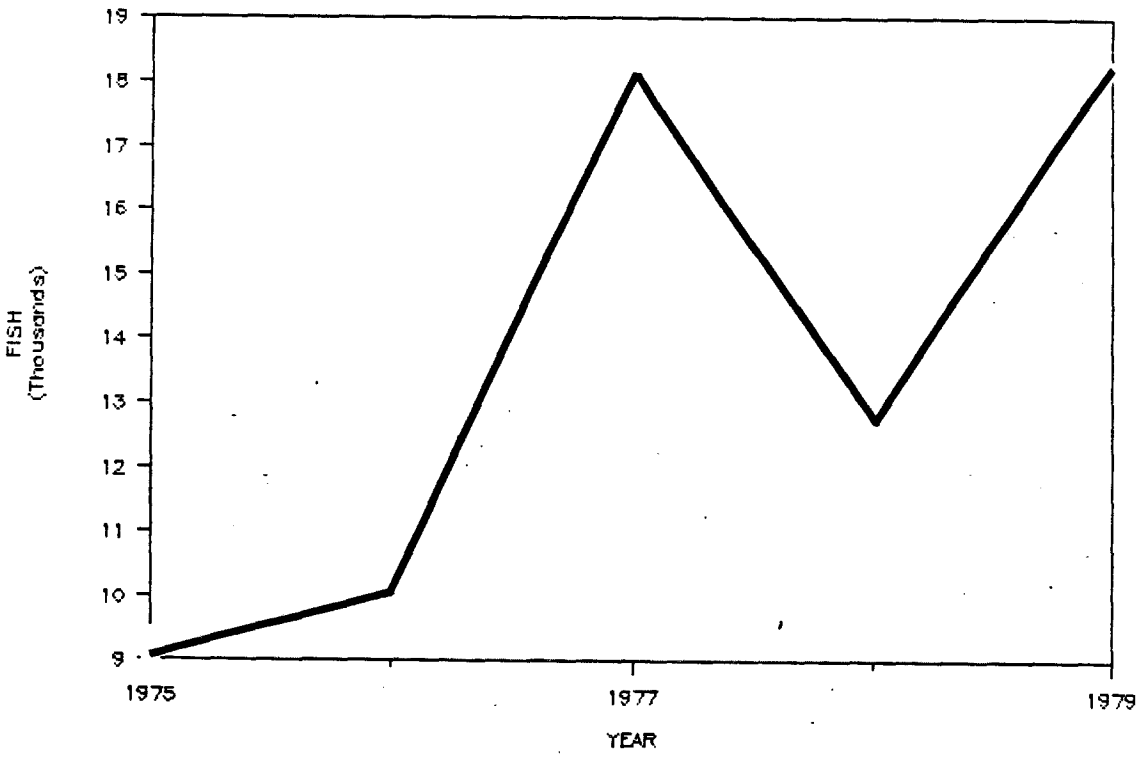

Figure A-120. Cowlitz River winter steelhead sport catch (ODFW 1985c).

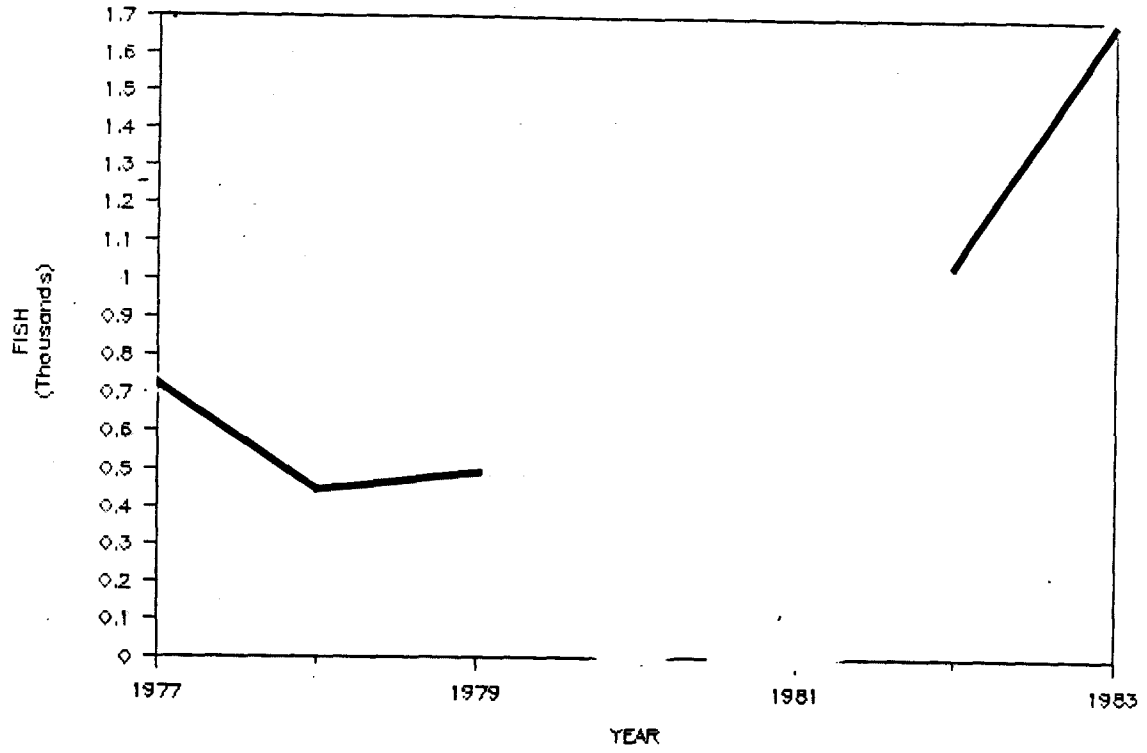

Figure A-121. North Fork Lewis River winter steelhead sport catch (ODFW 1985c).

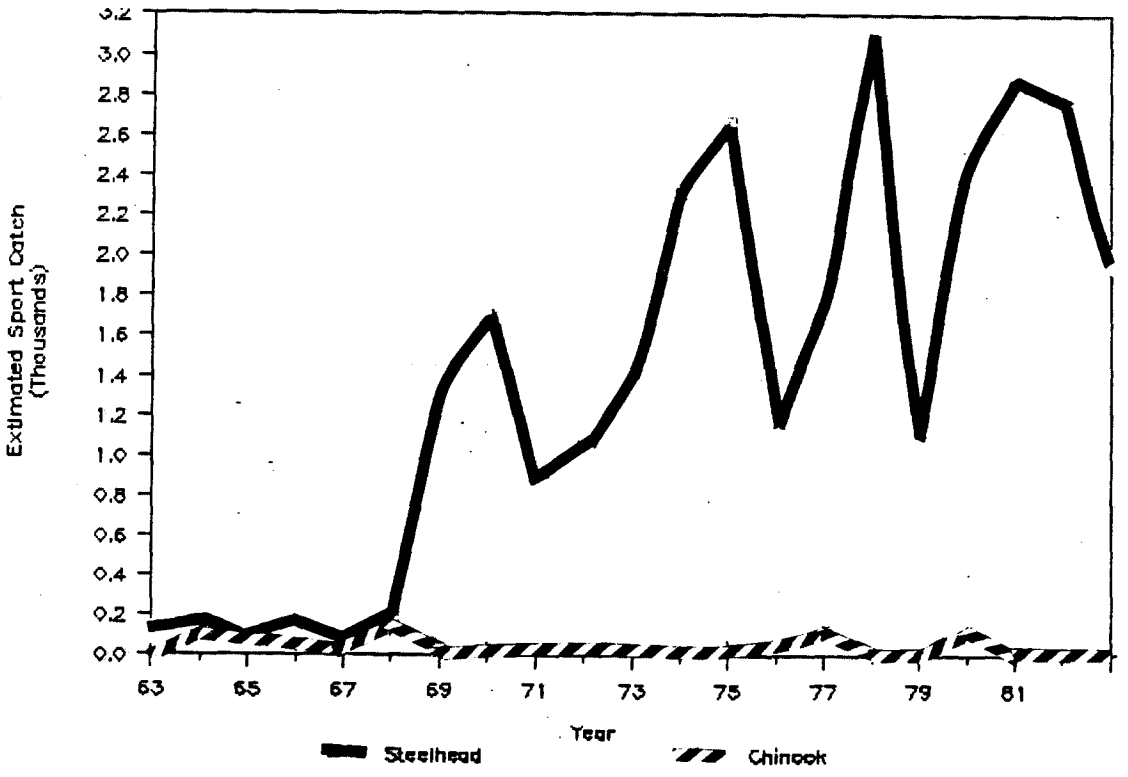

Figure A-122. Hood River steelhead and chinook sport catch (ODFW 1985b, c).

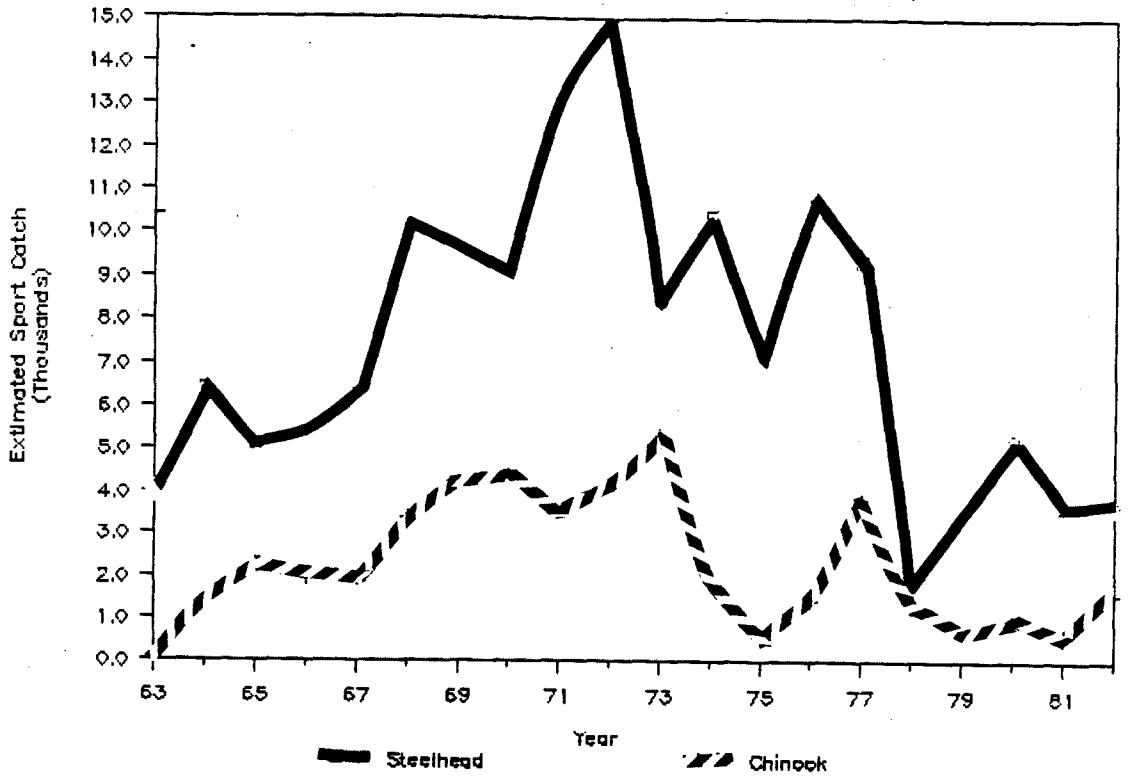

Figure A-123. Deschutes River steelhead and chinook sport catch (ODFW 1985b, c)

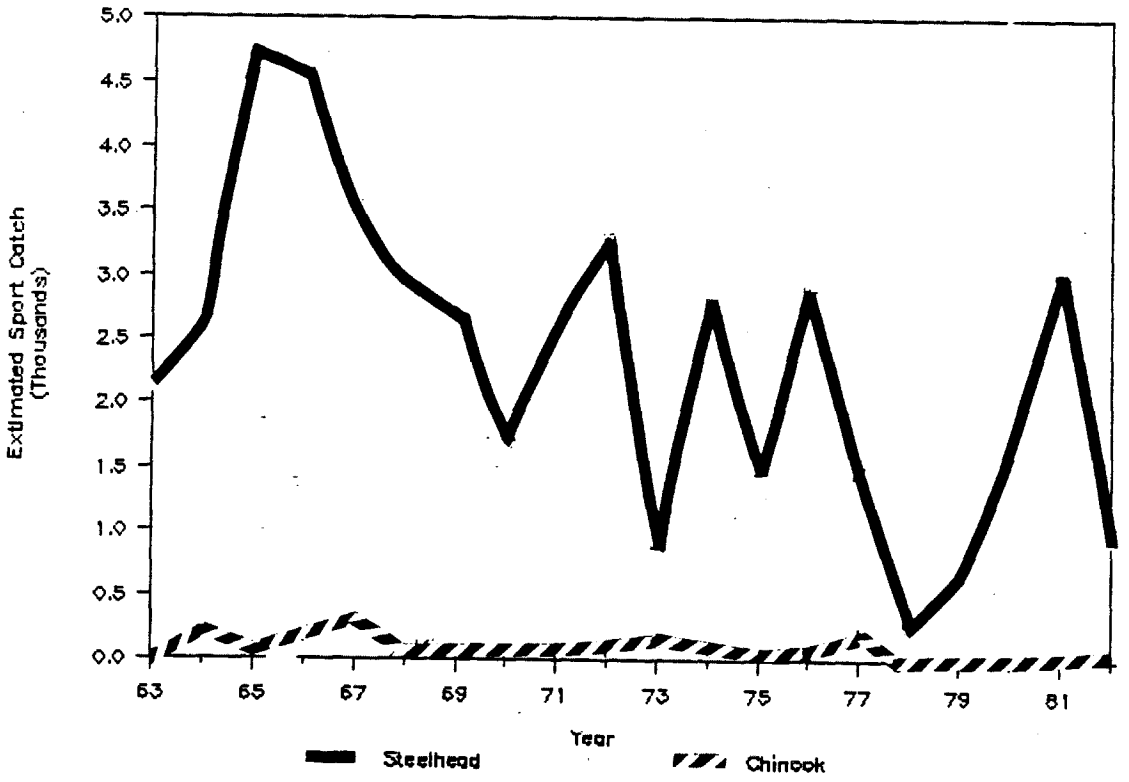

Figure A-124. John Day River steelhead and chinook sport catch (ODFW 1985b, c).

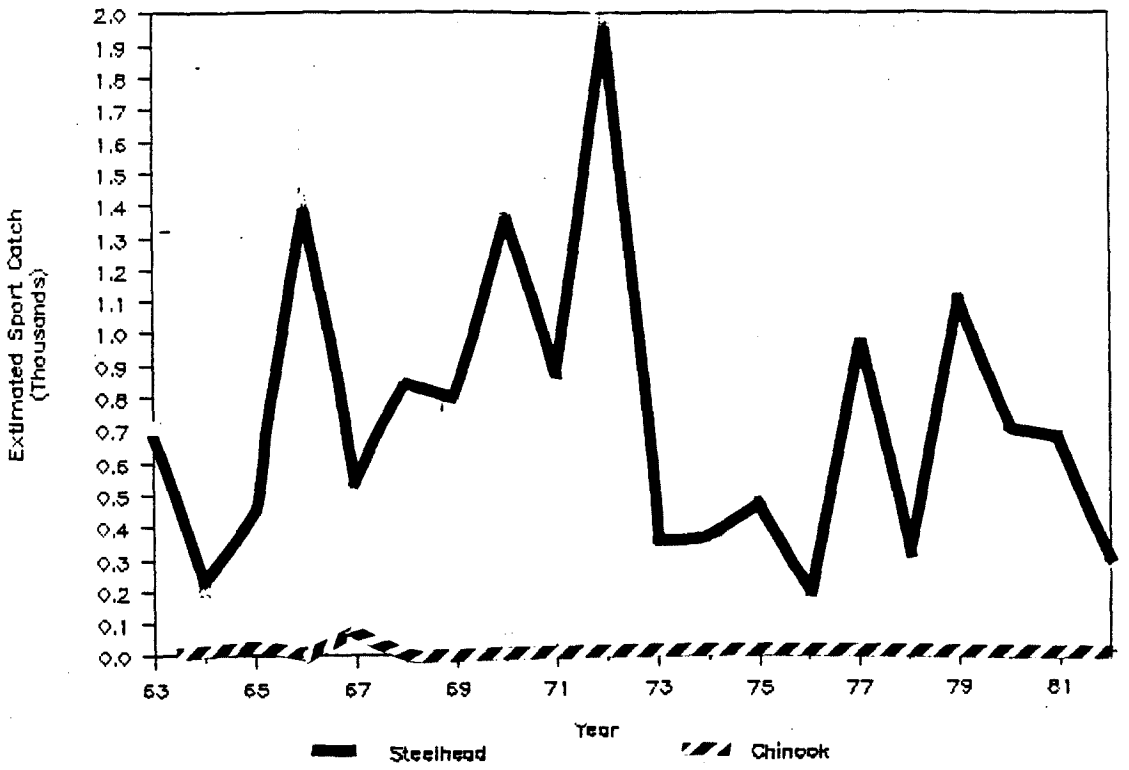

Figure A-125. Umatilla and Walla Walla Rivers chinook and steelhead sport catch (ODFW 1985b, c).

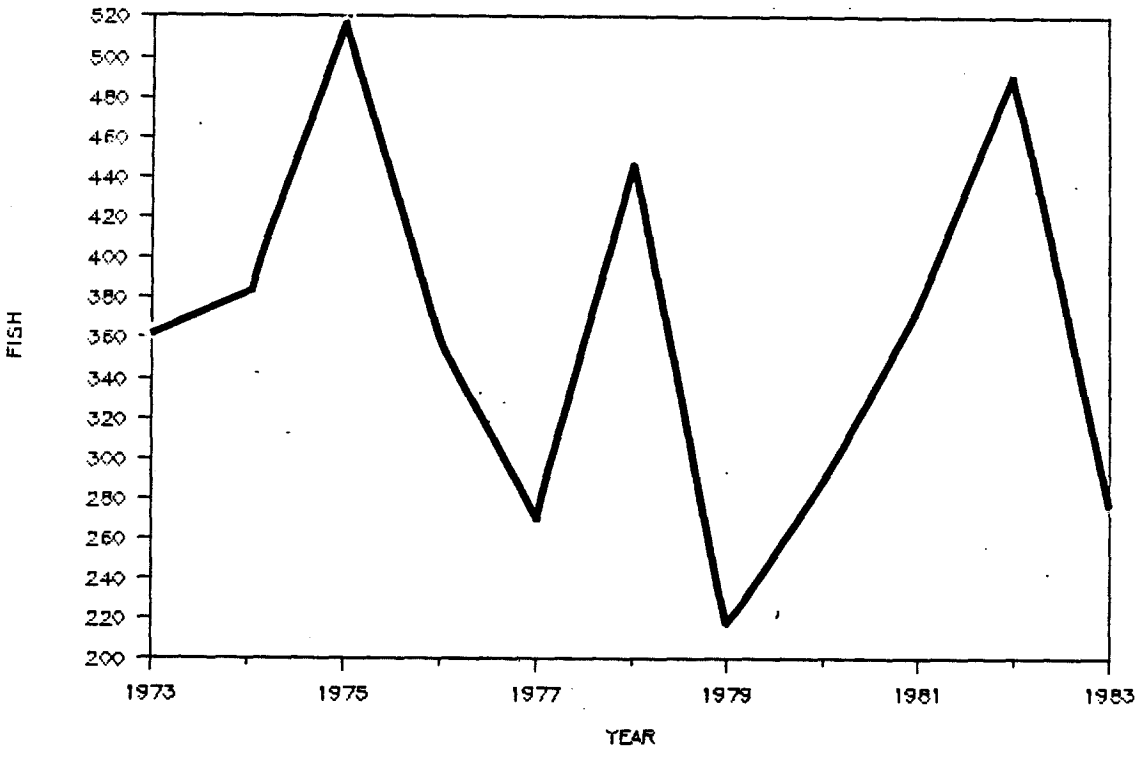

Figure A-126. Deschutes River (Sherars Falls) falls chinook sport catch (Jonasson and Lindsay 1983).

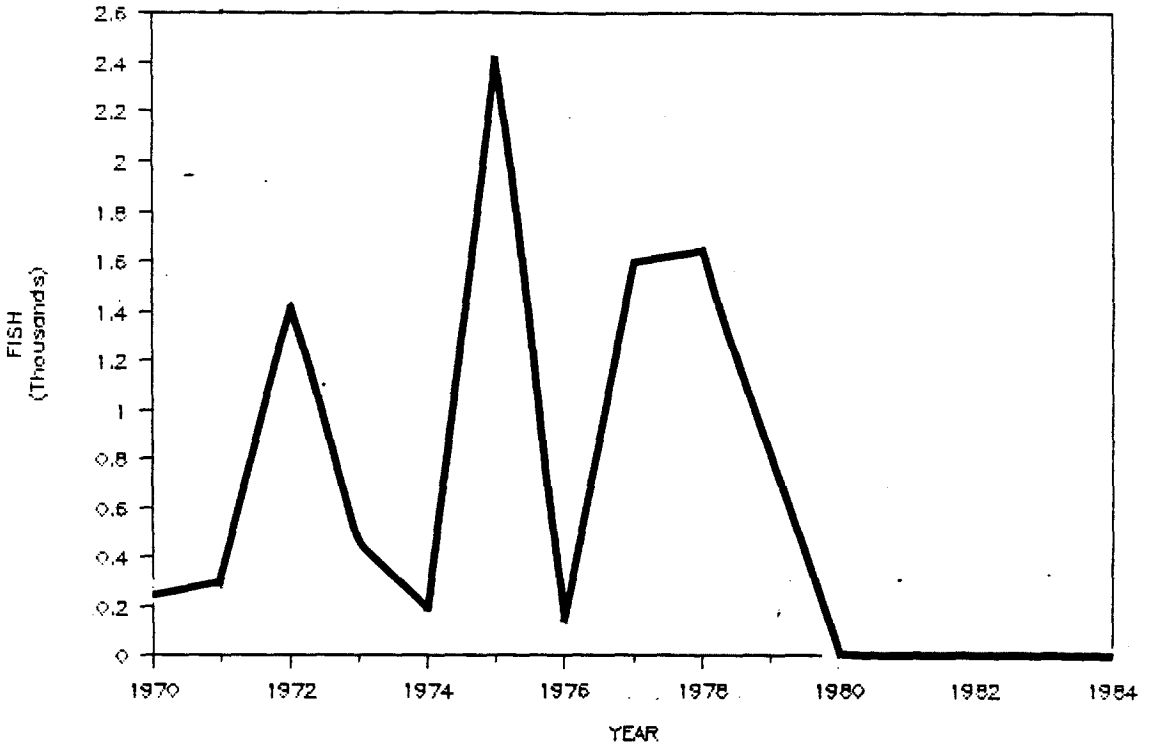

Figure A-127. Wind River spring chinook sport catch (ODFW 1985b).

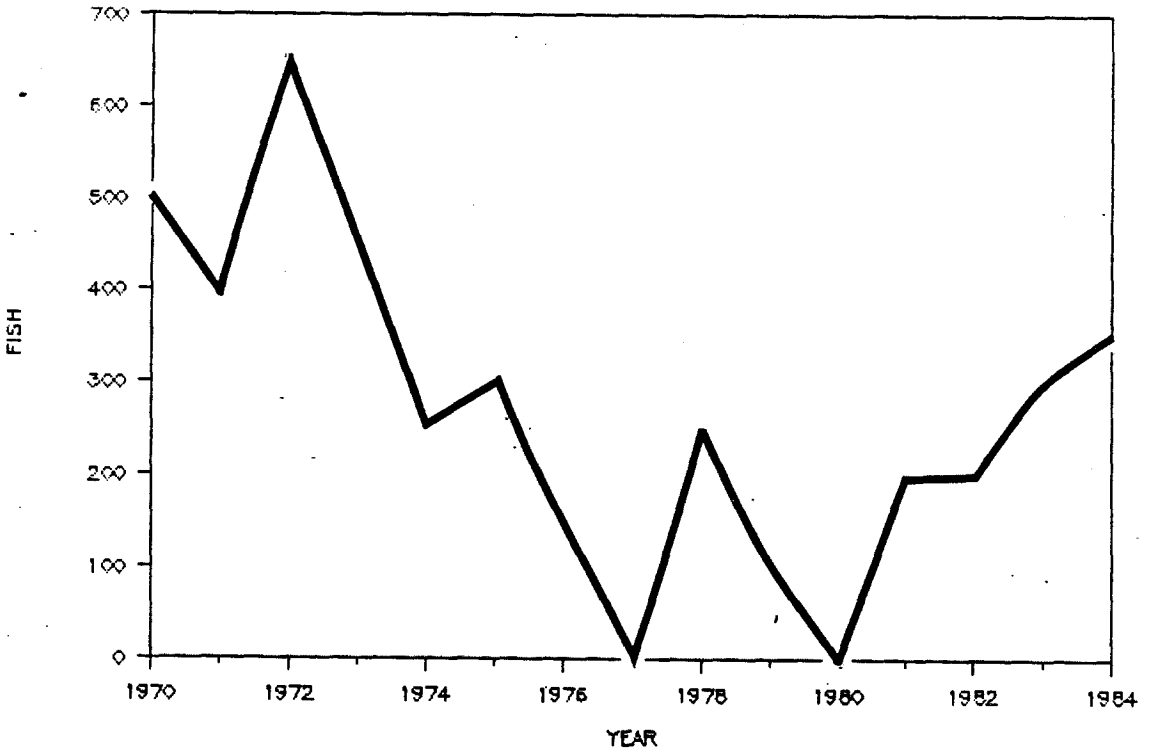

Figure A-128. Klickitat River spring chinook sport catch (ODFW 1985b).

Figure A-129. Hood River coho sport catch (Berry 1981).

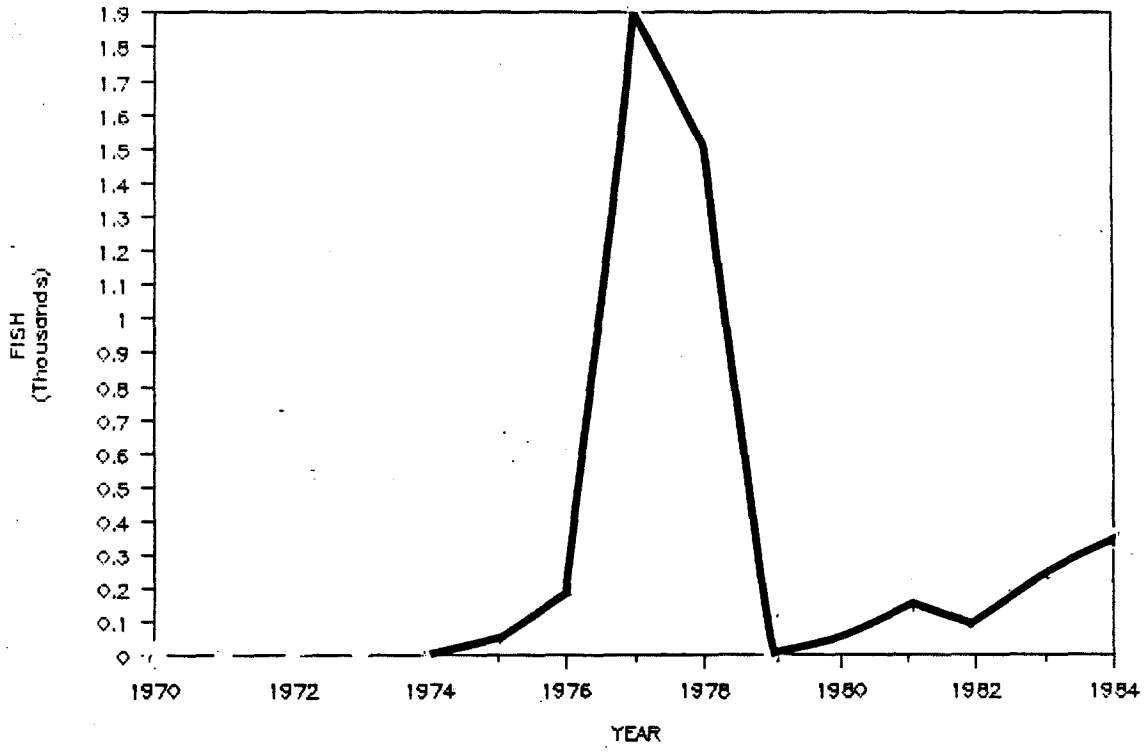

Figure A-130. Wenatchee River spring chinook sport catch (ODFW 1985b).

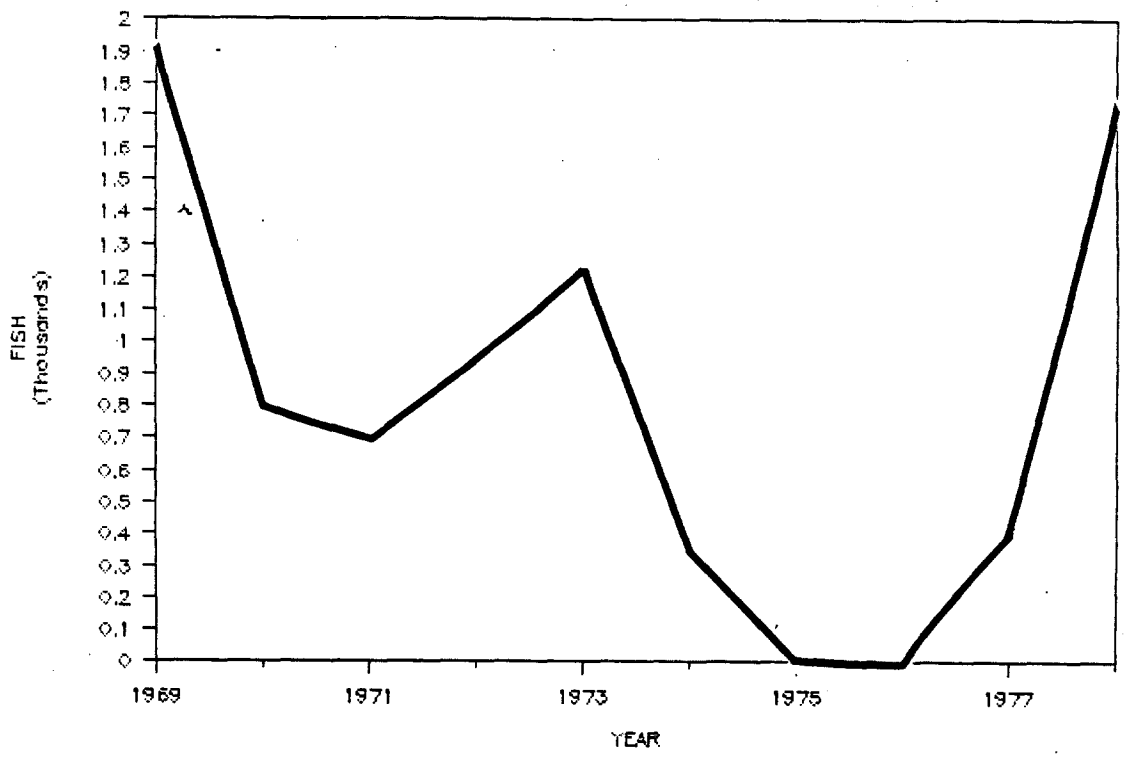

Figure A-131. Main Fork Salmon River spring chinook sport catch (ODFW 1985b).

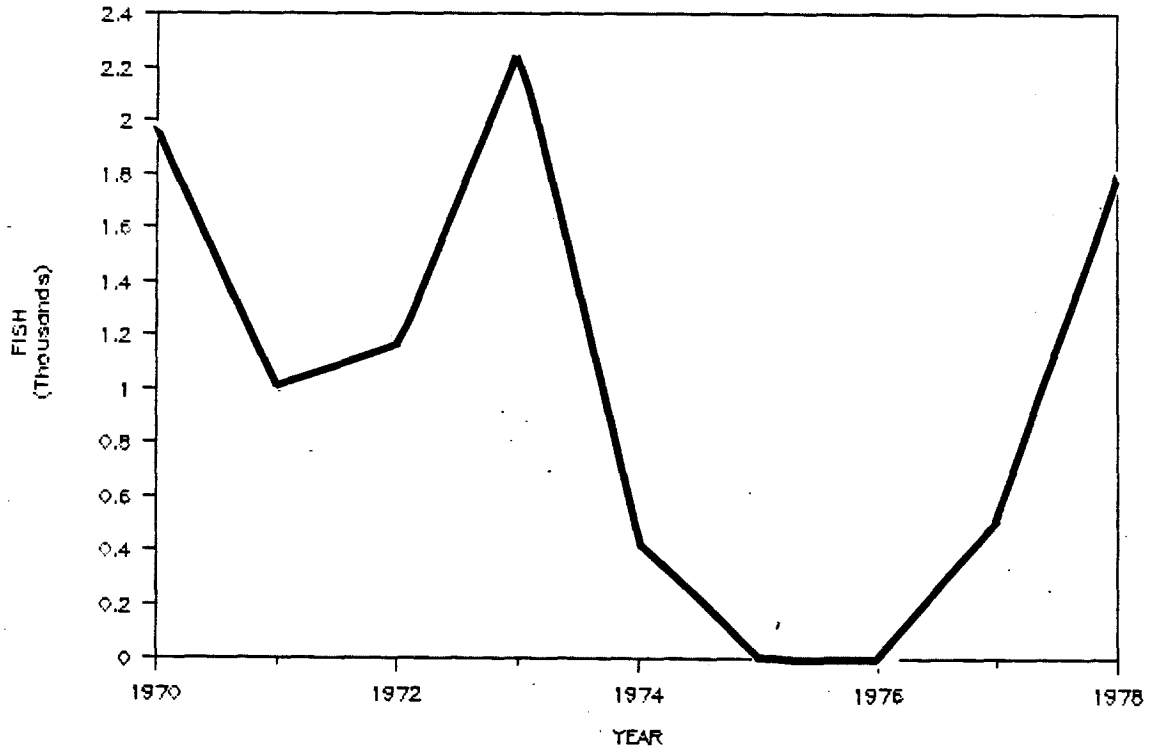

Figure A-132. Mainstem Salmon River spring chinook sport catch (ODFW 1985b).

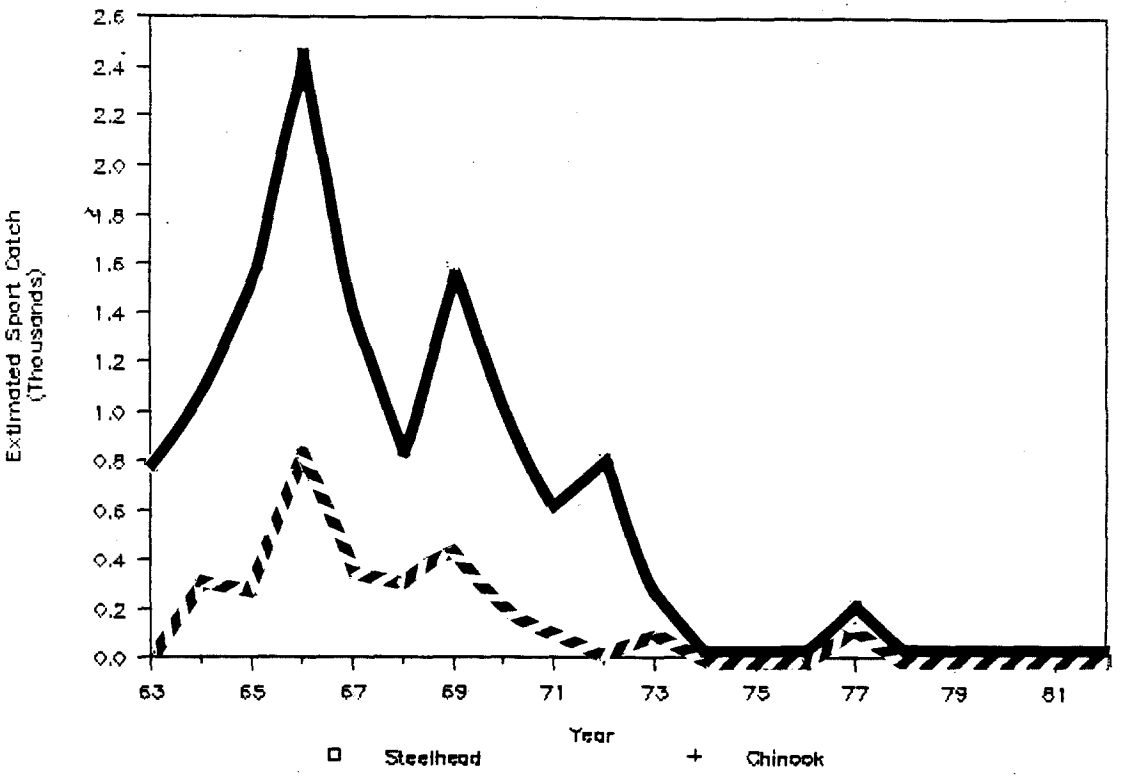

Figure A-133. Sport catch of spring chinook and summer steelhead in the Imnaha River (James 1984; USFWS 1981).

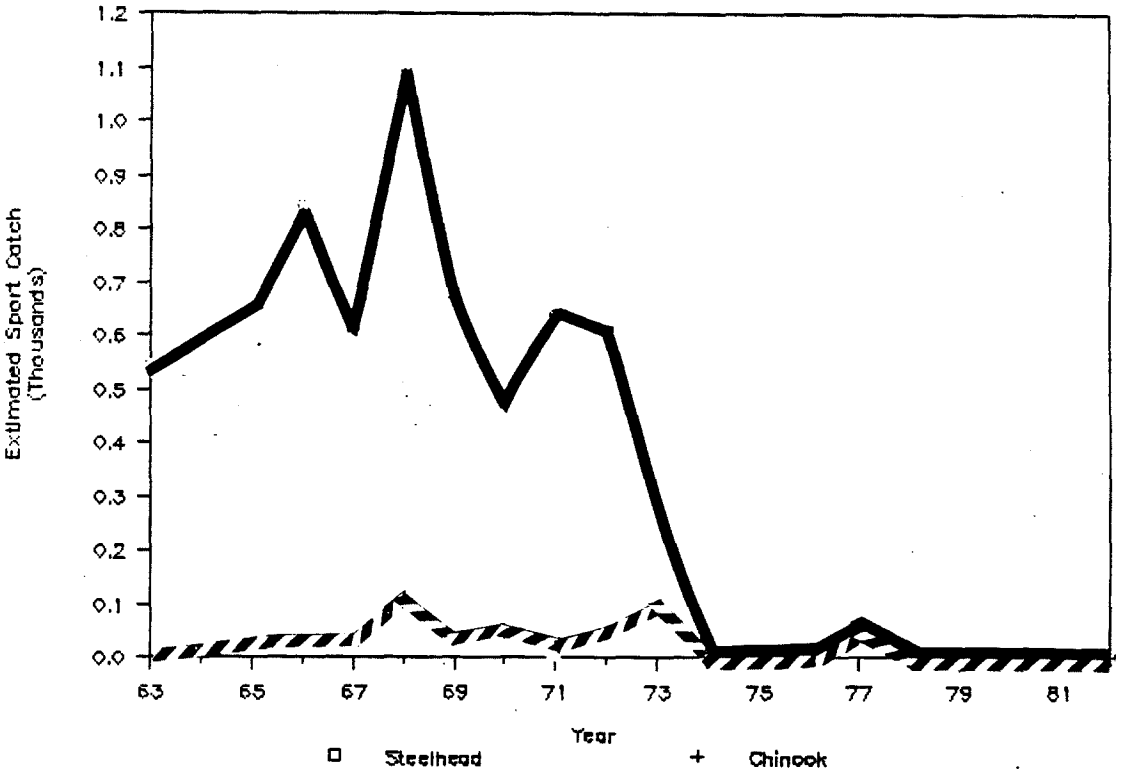

Figure A-134. Sport catch of spring chinook and summer steelhead in the Imnaha River (James 1984; USFWS 1981).

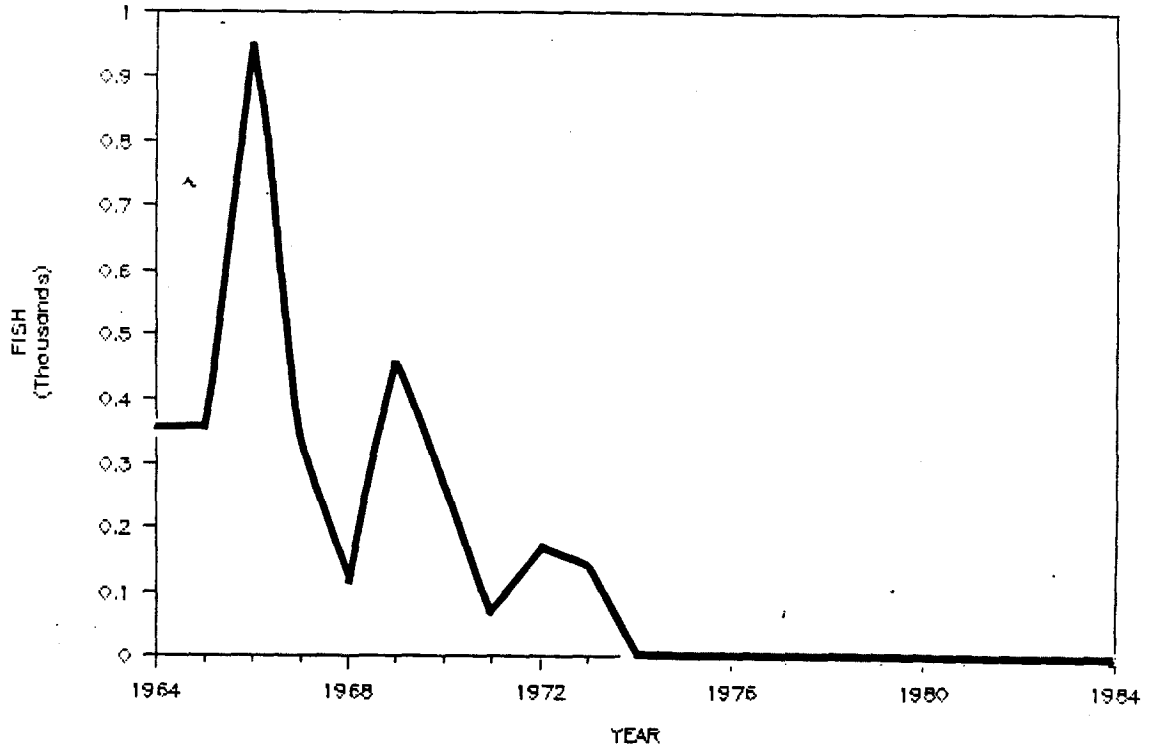

Figure A-135. Tucannon River spring chinook sport catch (ODFW 1985b).

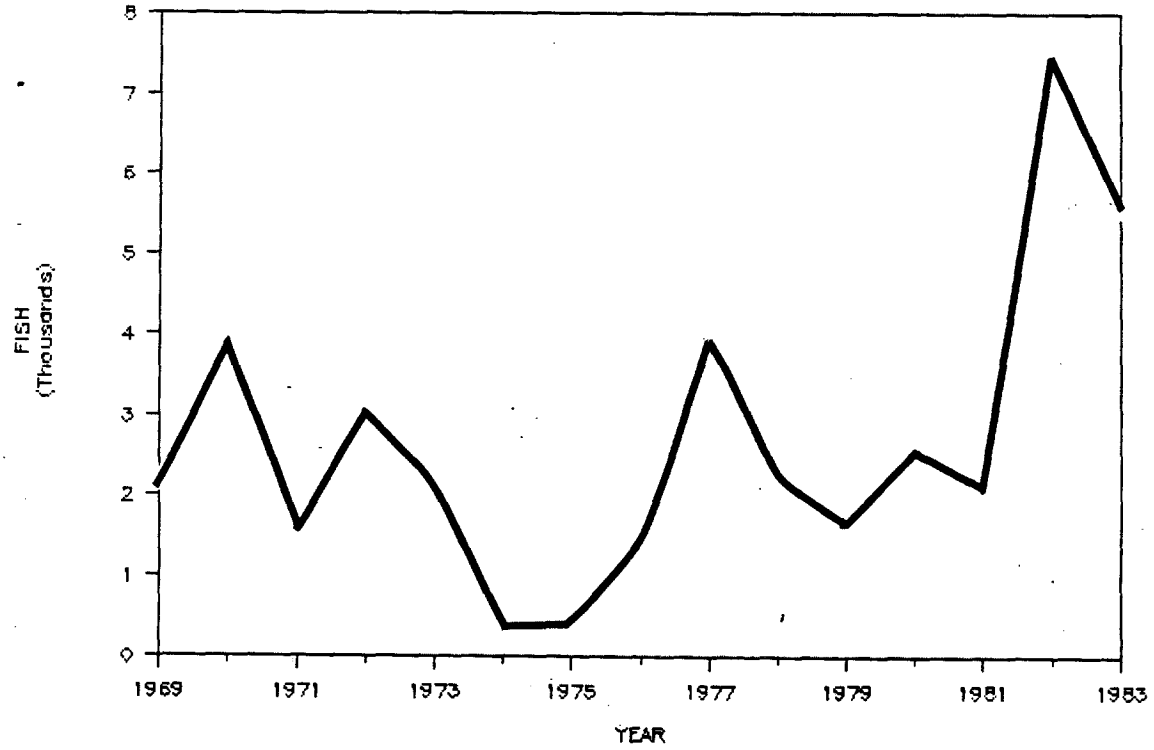

Figure A-136. Clearwater River summer steelhead sport catch (ODFW 1985c).

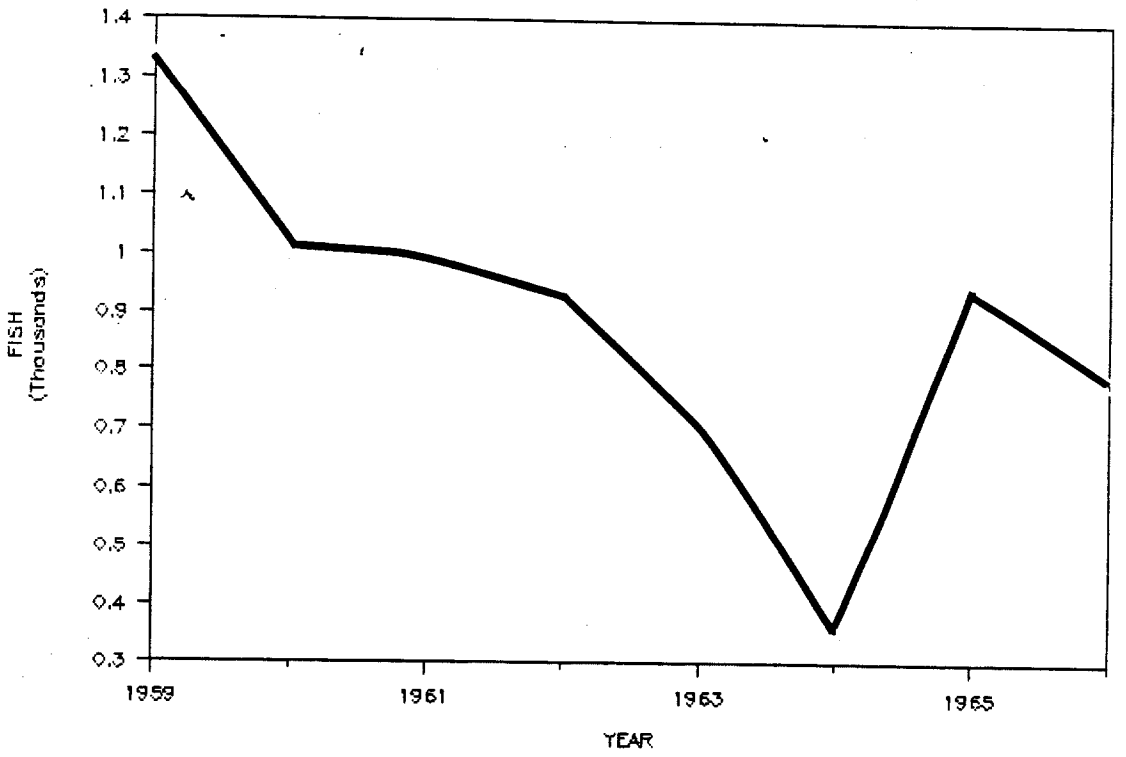

Figure A-137. Imnaha River summer steelhead sport catch (Berry 1981).

Table A-1 - Columbia River commercial landings of chinook, coho, sockeye, chum and steelhead since 1866 (thousands of fish).

Date	Chinook	Coho	Sockeye	Chum	Steelhead	Total
1866	15					15
1867	66					66
1868	102					102
1869	367					367
1870	550					550
1871	733					733
1872	916					916
1873	916					916
1874	1,283					1,283
1875	1,375					1,375
1876	1,650					1,650
1877	1,393					1,393
1878	1,686					1,686
1879	1,760					1,760
1880	1,943					1,943
1881	2,016					2,016
1882	1,984					1,984
1883	2,307					2,307
1884	2,273					2,273
1885	2,030					2,030
1886	1,644					1,644
1887	1,305					1,305
1888	1,365					1,365
1889	978		348		236	1,562
1890	1,230		1,120		399	2,749
1891	1,297		303		275	1,875
1892	1,262	32	1,300		674	2,098
1893	1,059	221	595	13	608	2,496
1894	1,287	325	856		488	2,956
1895	1,631	758	352	126	463	3,330

Table A-1 (Continued)

Date	Chinook	Coho	Sockeye	Chum	Steelhead	Total
1896	1.360	335	332		463	2.490
1897	1.610	463	253		430	2.756
1898	1.250	498	1.303		245	3.296
1899	1.012	225	468	63	112	1.880
1900	1.037	341	257	99	192	1.926
1901						
1902	1.242	80	333	58	80	1.793
1903	1.505	93	164	56	66	1.884
1904	1.713	238	252	115	92	2.410
1905	1.781	204	152	144	92	2.373
1906	1.616	315	153	155	61	2.300
1907	1.307	242	107	126	55	1.837
1908	1.064	239	168	94	100	1.665
1909	923	321	490	137	161	2.032
1910	1.365	524	122	371	51	2.433
1911	1.973	604	117	298	80	3.072
1912	1.153	242	160	104	294	1.953
1913	1.045	312	218	74	297	1.946
1914	1.370	531	690	275	261	3.127
1915	1.732	254	107	483	368	2.944
1916	1.725	396	74	434	217	2.846
1917	1.591	489	156	299	306	2.841
1918	1.577	747	739	166	414	3.643
1919	1.635	690	142	421	260	3.148
1920	1.676	206	51	105	160	2.198
1921	1.162	261	118	27	140	1.708
1922	966	688	601	49	296	2.600
1923	1.163	779	749	142	368	3.201
1924	1.206	872	144	322	437	2.981
1925	1.437	888	110	311	398	3.144
1926	1.145	739	425	183	526	3.018
1927	1.294	583	134	382	431	2.824
1928	978	416	94	697	296	2.481
1929	978	750	197	305	393	2.623
1930	1.082	865	192	63	329	2.531

Table A-1 (Continued)

Date	Chinook	Coho	Sockeye	Chum	Steelhead	Total
1931	1,152	304	81	20	291	1,848
1932	863	458	55	96	196	1,668
1933	1,053	302	135	136	268	1,894
1934	1,013	534	134	136	263	2,080
1935	820	300	13	66	242	1,441
1936	860	185	87	94	316	1,542
1937	1,006	206	96	157	265	1,730
1938	669	257	122	157	242	1,449
1939	728	171	78	96	197	1,270
1940	729	155	104	103	387	1,478
1941	1,253	117	145	340	293	2,148
1942	1,007	72	55	426	200	1,760
1943	616	79	42	79	167	983
1944	758	171	15	23	180	1,147
1945	699	204	3	48	203	1,157
1946	770	118	37	73	183	1,181
1947	933	167	206	41	179	1,526
1948	935	131	28	86	157	1,337
1949	581	100	7	45	88	821
1950	562	117	49	58	101	887
1951	541	108	49	44	154	896
1952	392	120	175	25	188	900
1953	376	52	42	20	225	715
1954	286	34	70	26	154	570
1955	463	69	57	10	162	761
1956	441	52	82	4	108	687
1957	319	46	69	3	98	535
1958	347	19	208	7	92	673
1959	248	15	183	4	108	558
1960	266	18	120	1	94	499
1961	254	38	40	1	100	433
1962	311	65	14	4	99	493
1963	251	65	14	1	117	448
1964	269	206	21	2	56	554
1965	336	235	6	1	64	642

Table A-1 (Continued)

Date	Chinook	Coho	Sockeye	Chum	Steelhead	Total
1966	201	424	4	1	47	677
1967	263	382	56	1	50	752
1968	220	133	25	1	45	424
1969	318	198	26	1	48	591
1970	357	536	17	1	33	944
1971	332	277	76	1	51	737
1972	319	140	78	1	62	600
1973	454	195	4	1	53	707
1974	191	273	0	1	19	484
1975	323	162	0	1	7	493
1976	288	172	0	1	10	471
1977	256	40	0	0	35	331
1978	189	136	0	2	20	347
1979	171	132	0	0	9	312
1980	150	150	0	0	7	307
1981	95	62	0	1	10	168
1982	155	206	0	2	9	372
1983	58	7	2	0	19	86
1984	128	204	32	2	75	441
1985	(150)[1]	(195)	(81)	(1)	(89)	(516)

Source: Beiningen 1976a; Oregon Department of Fish and Wildlife 1984a; Correspondence from James Galbraeath (ODFW) June 11, 1986.

[1] Parentheses indicate preliminary results.

Table A-2 - Columbia River Indian commercial landings of salmon and steelhead above Bonneville Dam.[1]

Year	Chinook	Coho	Sockeye	Steelhead	Total
1960	2,400	200	600	1,300	4,500
1961	7,500	500	100	1,500	9,600
1962	9,900	2,500	3,800	500	16,700
1963	36,800	100	8,900	8,500	54,300
1964	42,700	2,500	15,800	6,700	67,700
1965	55,600	3,200	5,800	13,200	77,800
1966	12,400	8,300	4,200	3,100	28,000
1967	63,300	13,600	34,500	15,800	127,200
1968	47,200	7,600	5,000	9,400	69,200
1969	90,700	7,800	11,300	14,100	123,900
1970	57,100	15,500	4,100	13,200	89,900
1971	75,100	13,100	21,300	25,700	135,200
1972	90,100	8,700	26,100	28,800	153,700
1973	104,100	11,100	1,400	27,900	144,500
1974	72,500	6,800	100	13,100	92,400
1975	140,600	5,700	0	7,300	153,600
1976	135,400	4,000	100	9,600	149,000
1977	72,400	1,000	0	35,200	108,600
1978	65,600	3,700	0	20,400	89,700
1979	62,900	4,000	0	9,200	76,100
1980	33,900	300	0	7,300	41,500
1981	56,400	1,800	0	10,000	68,200
1982	57,700	4,300	100	9,400	71,500
1983	24,500	200	1,800	18,500	45,000
1984	53,500	1,600	22,500	75,100	152,700
1985	75,800	5,200	49,400	87,800	218,200

[1] Note that dam counts are only an indication of and do not represent total run size.

Table A-3 - Yearly totals of salmonid fish counted over Bonneville Dam.[1]

Year	Total Chinook	Steelhead	Sockeye	Coho
1938	271.799	107.003	75.040	15.185
1939	286.189	122.032	73.382	14.383
1940	391.587	185.174	148.807	11.917
1941	461.443	118.089	65.741	17.911
1942	401.942	151.800	55.464	12.402
1943	313.123	92.133	39.845	2.547
1944	240.764	100.518	15.072	4.207
1945	297.478	120.133	9.501	790
1946	446.052	142.807	74.376	3.898
1947	480.377	135.444	171.139	11.174
1948	419.555	139.062	131.541	4.081
1949	277.697	119.285	51.444	1,004
1950	357.375	114.087	77.993	10.151
1951	331.788	140.689	169.428	5.201
1952	420.879	260,990	184.645	7.768
1953	332.479	223,914	235.215	13.018
1954	320.947	176,260	130.107	4.062
1955	359.853	198,411	237.748	3.725
1956	300.917	131.116	156.418	6.127
1957	403.286	139.183	82.915	4.675
1958	426,419	131.437	122.389	3.673
1959	345.028	129.026	85.560	2.695

Year	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
1960	69.595	85.170	101.282	113.676	59.713	3.268
1961	98.695	66.461	119.916	139.719	17.111	3.456
1962	89.635	77.310	118.039	164.025	28.179	14.788
1963	75.473	64.013	139.079	129.418	60.319	12.658
1964	91.425	80.531	172.463	117.252	99.856	53.602
1965	84.261	75.974	157.685	166.453	55.125	76.032

[1] Note that dam counts are only an indication of and do not represent total run size.

Table A-3 (Continued)

Year	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
1966	112.669	71.997	155.445	143.661	156.661	71.891
1967	84.935	95.659	185.643	121.872	144.158	96.488
1968	99.187	82.919	159.247	106.974	108.207	63.488
1969	173.566	102.153	231.838	140.782	59.636	49.378
1970	110.976	65.510	208.902	113.510	70.762	80.116
1971	125.517	77.911	202.274	193.966	87.447	75.989
1972	186.140	70.830	137.486	185.886	56.323	65.932
1973	142.148	45.360	211.127	157.823	58.979	54.609
1974	134.535 [2]	45.896 [3]	186.328	137.054	43.837	60.955
1975	104.104	44.351	277.111	85.540	58.212	58.307
1976	113.446 [2]	69.013 [3]	325.312	124.177	43.611	53,150
1977	119.508	41.023	206.126	193.437	99.829	19.408
1978	149.863 [2]	44.323 [3]	200.404	104.431	18.436	52.590
1979	51.462	34.217	190.613	113.979	52.628	45,328
1980	60.987	31.065	153.466	129.254	58.882	22.052
1981	65.009	26.929	193.712	159.270	56.037	30.510
1982	76.044	26.614	220.151	157.640	50.219	73.832
1983	56.838	23.458	164.180	213.779	100.527	15.176
1984	51.042	28.359	244.892	315.795	152.541	29.332
1985	91.008	29.912	343.015	343.985	166.859	56.856

[2]Counts corrected for fallback: 1974 -- 86,100: 1976 -- 78.300: 1978 -- 128.900.

[3]Counts corrected for fallback: 1974 -- 34.000: 1976 -- 42.100: 1978 -- 43.000.

Table A-4 - Yearly totals of salmonid fish counted over The Dalles Dam.[1]

Year	Total Chinook			Steelhead	Sockeye	Coho
1957	312,678			129,361	90,201	6,793
1958	301,960			121,420	111,039	2,395
1959	207,461			156,090	86,259	2,709
Year	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
1960	58,406	75,315	63,441	111,189	59,441	3,000
1961	79,183	50,824	71,328	134,572	16,689	2,139
1962	69,139	57,009	60,986	163,301	27,127	3,696
1963	52,937	47,319	80,699	118,957	56,931	3,716
1964	60,691	56,359	66,791	110,033	79,042	5,978
1965	43,616	50,529	100,905	141,852	44,279	17,468
1966	96,627	61,062	82,981	146,172	147,886	32,279
1967	71,976	72,582	135,554	121,614	120,589	32,015
1968	99,542	67,401	96,830	147,481	116,897	42,687
1969	100,482	61,978	151,798	112,529	37,226	17,054
1970	83,549	48,115	129,793	99,187	77,678	23,219
1971	73,661	51,847	125,026	151,348	76,103	29,061
1972	103,107	48,660	116,861	135,303	44,671	16,562
1973	111,088	38,774	131,083	100,082	52,303	11,152
1974	56,397	30,273	130,511	70,875	28,827	14,655
1975	52,483	39,062	125,738	57,675	43,198	13,976
1976	56,570	38,733	120,860	82,568	27,747	19,392
1977	90,373	44,378	90,197	133,882	86,252	10,021
1978	84,924	34,396	79,908	60,485	11,845	18,877
1979	27,297	32,298	91,016	83,364	32,791	8,726
1980	28,237	21,133	64,581	93,963	42,088	6,326
1981	41,160	19,676	74,340	113,268	35,447	6,941
1982	44,750	19,342	108,590	117,434	33,331	7,383
1983	36,862	17,051	102,230	170,643	84,202	3,457
1984	33,953	22,544	147,340	218,552	101,379	3,172
1985	75,253	25,385	269,083	276,022	117,253	4,572

[1] Note that dam counts are only an indication of and do not represent total run size.

Table A-5 - Yearly totals of salmonid fish counted over John Day Dam.[1]

Year	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
1968	77.472	75.494	80.668	121.256	87.847	38.233
1969	81.724	64.732	129.595	86.348	39.847	13.589
1970	72.545	43.093	106.858	82.440	78.133	19.543
1971	56.625	50.030	87.226	115.977	72.232	40.830
1972	71.569	44.542	109.520	141.628	51.793	17.533
1973	96.710	34.206	118.576	101.440	64.744	13.359
1974	46.191	25.865	95.832	43.756	33.121	14.651
1975	37.716	32.179	89.184	32.651	50.774	6.305
1976	45.418	36.037	94.455	59.808	30.446	5.806
1977	75.782	29.194	89.955	102.558	85.701	1.123
1978	72.723	30.371	71.758	44.188	13.778	8.355
1979	21.981	23.572	72.601	55.877	43.630	5.061
1980	27.202	19.664	53.798	78.199	50.675	1.924
1981	37.677	15.813	60.869	95.172	46.146	2.562
1982	36.530	16.360	91.192	108.603	37.970	4.063
1983	33.480	14.695	91.548	154.697	89.810	1.640
1984	31.592	22.858	134.656	201.870	109.815	2.065
1985	72.124	25.489	241.746	247.093	126.941	1.657

[1] Note that dam counts are only an indication of and do not represent total run size.

Table A-6 - Yearly totals of salmonid fish counted over McNary Dam.[1]

Year	Total Chinook	Steelhead	Sockeye	Coho
1954	126.555	75.059	108.181	950
1955	108.915	85.575	173.758	643
1956	114.342	42.554	102.145	683
1957	292.696	105.728	85.460	2,855
1958	226.092	87.890	102.397	1,350
1959	171.490	110.475	83.977	1,970

Year	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
1960	52.490	76.940	47.337	96.895	55.372	1,580
1961	68.539	45.257	41.200	103.743	16.388	2.045
1962	55.884	52.756	44.116	163.181	29.372	3,195
1963	52.336	44,760	52.361	113.646	59,744	3,113
1964	54,274	55.062	58.593	100.742	83.931	3,317
1965	29,206	45.375	76.326	118.960	42.052	2,700
1966	87.195	60,827	75.119	145.130	173.028	8,525
1967	62.591	59,975	73.087	77.700	105.635	27,226
1968	67.092	60.639	72.757	112.522	101.007	39,518
1969	70.079	63.953	79.375	76.681	29.787	53.716
1970	63.982	43.356	61.554	69.759	59.636	36,399
1971	42.601	59.129	69.718	109.630	52.867	39.358
1972	69.023	50.491	49.307	93.820	26.422	45,635
1973	79.047	31.812	73.253	64.620	42.731	17,682
1974	40.037	25.812	62.009	26.932	26.505	13.746
1975	32.718	31.713	68.719	23.663	43,143	3.975
1976	38.505	36.818	87.991	54.000	24.632	7.539
1977	69.934	32.277	84.370	87.712	80.781	4,622
1978	68.414	31.589	42.769	34.740	18.511	18.043
1979	21,153	24.161	49.883	50.304	37.792	12.257
1980	23.001	18.862	38.910	66.524	44.301	571

[1] Note that dam counts are only an indication of and do not represent total run size. The dates for beginning and termination of counting have varied slightly.

Table A-6 (Continued)

Year	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
1981	32.330	15.141	33.148	61.985	36.644	3.736
1982	28.352	16.574	57.299	75.099	15.077	3.119
1983	31.636	16.199	74.006	124.996	40.903	2.439
1984	27.474	21.201	110.378	135.306	56.894	2,823
1985	63.260	22.122	203.189	188.048	98.167	6.903

Table A-7 - Yearly totals of salmonid fish counted over Ice Harbor Dam.[1]

Year	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
1962	33.613	30.639	30.049	115.796	389	3.207
1963	26.778	20.875	13.537	74.539	1.118	1.933
1964	24.303	24.696	11.097	58.860	1.276	2.071
1965	12.178	14.701	12.354	62.873	317	320
1966	43.881	16.983	15.018	65.798	278	878
1967	35.593	30.315	19.022	44.205	717	3.770
1968	44.763	29.531	24.377	82.383	1.165	6.227
1969	52.091	30.917	17.507	63.889	745	5.316
1970	47.931	19.360	10.385	53.870	797	3.636
1971	32.640	26.606	11.004	67.029	532	2.969
1972	50.350	22.846	9.436	63.593	363	2.522
1973	60.639	12.829	8.353	38.311	233	2.443
1974	19.361	10.269	2.814	12.528	204	1.334
1975	21.401	7.727	2.558	16.218	243	1.559
1976	25.056	10.026	1.474	23.885	771	1.991
1977	44.421	10.337	1.756	54.820	582	1.561
1978	49.303	10.440	1.609	27.142	86	652
1979	9.247	2.608	2.074	23.117	30	398
1980	9.668	3.305	1.744	50.221	36	58
1981	16.167	3.814	2.111	41.290	142	82
1982	14.600	4.527	3.519	73.405	174	348
1983	12.602	4.922	2.735	88.485	216	465
1984	9.070	6.453	2.445	93.891	105	22
1985	33.473	5.290	9.164	128.254	24	6

[1] Note that dam counts are only an indication of and do not represent total run size.

Table A-8 - Yearly totals of salmonid fish counted over Lower Monumental Dam.[1]

Year	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
1969	48.639	30.455	7.609	71.434	1.127	6.466
1970	45.612	22.413	7.284	62.167	240	2.972
1971	30.887	27.795	10.203	70.114	808	2.171
1972	44.322	22.706	5.192	66.857	415	733
1973	62.717	12.403	5.437	39.530	206	1.333
1974	18.442	10.266	3.020	15.139	114	812
1975	21.398	8.562	3.053	17.363	146	572
1976	24.372	7.938	2.085	21.822	364	361
1977	39.171	8.183	1.947	47.749	293	122
1978	47.342	8.480	1.013	20.540	96	218
1979	7.921	2.083	1.284	17.794	31	194
1980	7.259	2.712	913	34.322	48	73
1981	14.275	4.092	1.624	35.923	136	63
1982	15.303	4.284	2.378	62.772	154	89
1983	13.102	4.447	1.524	80.562	118	110
1984	9.642	7.167	1.226	89.086	63	26
1985	31,791	4.845	5.827	109.706	68	24

[1] Note that dam counts are only an indication of and do not represent total run size.

Table A-9 - Yearly totals of salmonid fish counted over Little Goose Dam.[1]

Year	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
1970	43.562	23.174	6.225	59.640	163	2.480
1971	28.432	26.830	6.140	70.013	891	2.701
1972	41.400	20.468	2.343	63.638	408	799
1973	55.429	11.987	3.188	38.820	192	1.157
1974	17.243	8.752	1.292	14.784	124	532
1975	18.426	6.929	1.605	15.225	173	697
1976	22.385	8.906	1.068	20.894	644	733
1977	39.555	8.365	1.256	47.388	574	438
1978	44.327	10.471	1.271	24.927	168	307
1979	7.880	3.445	1.190	21.049	72	390
1980	6.850	3.057	698	38.627	88	124
1981	13.668	4.033	1.385	38.680	200	120

[1] Note that dam counts are only an indication of and do not represent total run size. Also, note that 1981 concludes visual fish counting at Little Goose Dam. Counting is now done by an automatic system.

Table A-10 - Yearly totals of salmonid fish counted over Lower Granite Dam.[1]

Year	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
1975	17,639	8,576	2,245	17,778	209	921
1976	20,475	9,884	1,298	23,017	531	900
1977	38,770	8,429	1,924	52,522	458	268
1978	41,002	11,755	1,485	30,068	123	152
1979	7,539	3,572	1,438	25,046	25	158
1980	6,758	3,447	781	40,454	96	43
1981	13,642	3,805	1,751	40,234	218	17
1982	12,746	4,528	2,202	72,840	211	59
1983	10,026	4,662	1,513	86,234	122	51
1984	7,921	7,244	1,368	98,930	47	0
1985	27,737	6,646	2,191	114,477	34	1

[1] Note that dam counts are only an indication of and do not represent total run size.

Table A-11 - Yearly totals of salmonid fish counted over Priests Rapids Dam.[1]

Year	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
1960	8,534	20,852	10,687	7,837	58,201	58
1961	8,385	18,245	11,108	8,559	19,793	88
1962	7,993	20,824	10,082	9,324	28,575	601
1963	7,597	18,511	17,563	9,344	64,883	29
1964	9,814	26,489	14,760	6,009	79,072	60
1965	5,353	21,856	24,594	9,041	48,340	448
1966	13,358	27,465	20,716	13,006	170,071	11,903
1967	10,307	21,324	17,330	7,354	123,786	8,879
1968	10,739	22,068	15,309	10,524	108,308	13,212
1969	7,796	16,928	16,062	6,650	39,240	1,351
1970	5,789	17,955	19,884	5,558	77,419	4,971
1971	6,122	17,696	12,345	11,102	73,837	7,738
1972	8,775	14,760	9,104	6,429	44,927	5,225
1973	10,062	14,351	10,083	6,999	54,480	1,576
1974	11,127	13,703	7,618	3,089	35,434	1,781
1975	8,170	22,205	13,365	2,462	55,210	2,193
1976	13,306	19,344	10,774	9,248	32,810	2,275
1977	21,217	19,605	6,856	9,803	95,413	370
1978	21,427	21,229	6,523	4,545	14,913	597
1979	7,750	22,689	7,727	8,409	45,662	311
1980	11,136	18,708	8,441	8,524	52,039	318
1981	14,787	12,381	5,438	9,117	51,461	428
1982	9,088	9,883	13,110	11,119	40,461	1,810
1983	10,780	9,573	10,668	31,882	90,008	502
1984	12,662	17,490	11,624	26,210	114,835	179
1985	24,695	17,284	20,131	34,489	118,541	219

[1] Note that dam counts are only an indication of and do not represent total run size.

Table A-12 - Yearly totals of salmonid fish counted over Rock Island Dam.[1]

Year	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
1933	--	4.732	936	182	40.737	1.055
1934	--	6.482	816	69	2.227	583
1935	2.380	10.643	3.287	10	14.013	5.412
1936	2.000	4.535	861	--	16.501	2.369
1937	180	4.088	865	58	15.087	2.214
1938	1.339	2.747	1.717	78	17.123	2.400
1939	4.256	6.294	1.074	13	19.591	5.427
1940	3.303	4.926	1.263	2	26.894	5.550
1941	1.392	1.014	165	29	949	3.561
1942	1.106	5.082	626	1	16.282	3.586
1943	7.374	3.369	402	22	17.665	2.249
1944	1.265	1.909	543	186	4.932	1.329
1945	1.938	3.328	430	166	7.142	1.121
1946	3.040	6.695	257	32	46.563	1.761
1947	7.877	3.424	465	229	79.834	2.115
1948[2]	1.839	5.256	--	29	84.627	2.319
1949[2]	4.234	8.609	--	40	18.682	2.460
1950	2.194	7.271	900	72	50.059	1.846
1951	7.781	9.606	1.375	8	102.724	2.932
1952	5.006	13.754	1.354	22	113.703	3.015
1953	12.078	17.699	1.303	40	152.013	4.071
1954	12.981	17.747	2.555	43	91.184	5.400
1955	3.944	20.768	1.013	51	155.782	3.902

[1] Note that dam counts are only an indication of and do not represent total run size. Counts at Rock Island Dam frequently terminate prior to the conclusion of the coho run.

[2] Summer chinook count includes fall chinook.

Table A-12 (Continued)

Year	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
1956	1,433	22,311	1,471	29	92,209	1,780
1957	16,646	29,899	3,943	33	71,267	4,013
1958	7,334	20,769	4,585	76	97,947	6,121
1959	7,349	14,158	2,734	118	72,251	4,145
1960	7,774	13,087	5,689	94	60,341	6,216
1961	7,409	16,833	8,825	50	19,233	7,042
1962	6,670	18,548	6,833	737	29,253	7,605
1963	6,874	15,841	11,973	13	64,750	7,078
1964	9,326	21,597	9,028	61	69,411	5,016
1965	4,885	21,766	9,756	258	42,380	6,062
1966	9,292	29,657	9,605	8,342	164,547	9,734
1967[3]	6,882	20,413	3,752	6,222	119,765	5,506
1968[4]	37,871	--	--	9,259	104,790	7,880
1969[4]	31,970	--	--	947	37,965	4,979
1970[4]	34,342	--	--	3,483	74,904	3,144
1971[4]	28,342	--	--	5,423	71,438	8,312
1972[4]	25,585	--	--	3,661	43,467	4,813
1973	7,891	15,548	2,925	4,605	68,732	5,157
1974	9,425	11,518	1,032	10,788	33,859	1,885
1975	6,297	23,175	8,032	4,610	52,718	2,725
1976	9,065	18,580	7,472	4,996	35,537	7,875
1977	19,382	22,693	5,384	518	90,262	9,926
1978	20,406	22,673	3,049	1,229	14,748	3,348
1979	7,520	24,141	3,534	465	50,485	7,424
1980	7,664	16,936	2,396	783	52,657	7,017
1981	8,130	11,011	1,684	826	47,139	7,512
1982	8,336	10,560	5,043	1,915	41,111	9,879
1983	10,273	9,921	3,201	260	86,424	29,666
1984	12,554	17,467	7,297	24,602	109,083	1,090
1985	25,848	16,407	12,982	31,998	103,202	1,094

[3]Estimates computed from Priest Rapids counts.

[4]Estimates computed from Priest Rapids counts. Spring chinook counts include summer and fall chinook.

Table A-13 - Yearly totals of salmonid fish counted over Rocky Reach Dam.[1]

Year	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
1961	3,747	14,421	3,110	--	--	--
1962	4,708	12,247	1,649	3,699	9,870	500
1963	5,624	7,492	4,039	2,955	37,046	2
1964	7,056	15,069	3,378	1,482	32,159	100
1965	3,315	16,034	5,995	3,221	31,735	3,304
1966	6,782	19,625	4,108	5,416	129,557	879
1967	4,987	16,131	2,328	2,402	109,434	688
1968	5,919	15,224	2,268	3,553	91,376	735
1969	4,244	13,152	3,638	1,955	20,374	179
1970	4,288	11,909	5,756	2,543	57,251	207
1971	4,132	10,031	3,294	5,360	49,838	0
1972	4,693	7,189	3,451	2,319	26,978	3,312
1973	4,121	9,646	4,760	3,536	48,856	745
1974	4,261	8,298	1,677	1,063	20,976	10,788
1975	3,388	14,676	4,373	1,134	26,925	6,979
1976	3,429	11,892	4,275	5,893	27,205	5,684
1977	6,344	15,374	4,187	7,416	25,648	927
1978	7,460	10,232	1,853	2,453	8,157	1,438
1979	2,388	10,933	1,570	4,896	28,747	244
1980	2,119	6,646	1,395	4,345	29,906	713
1981	3,668	5,472	1,119	5,524	30,649	522
1982	2,908	4,102	2,186	6,297	17,379	882
1983	3,499	3,712	1,795	19,698	26,079	237
1984	4,064	6,301	3,906	16,775	73,288	852
1985	8,700	5,912	6,209	22,718	54,077	612

[1] Note that dam counts are only an indication of and do not represent total run size.

Table A-14 - Yearly totals of salmonid fish counted over Wells Dam.[1]

	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye
1967	960	12.266	2.735	1.581	102.674
1968	4.932	8.918	2.623	2.538	81.528
1969	3.713	6.854	2.972	1.994	17.281
1970	2.627	8.041	4.354	1.987	50.218
1971	3.172	6.007	2.027	4.135	48.255
1972	3.617	4.058	2.414	2.230	32.404
1973	3.006	5.089	2.649	2.459	37.146
1974	3.413	4.572	1.116	739	17.000
1975	2.221	8.532	3.774	742	22.392
1976	2.778	7.889	3.834	4.980	27.585
1977	4.212	7.526	3.250	5.685	21.906
1978	3.616	6.422	1.338	1.580	7.237
1979	1.088	9.506	1.659	4.008	26.624
1980	1.177	5.520	724	3.800	26.525
1981	1.834	4.241	690	4.747	27.981
1982	2.391	3.258	1.809	8.519	18.722
1983	2.876	2.763	1.089	20.083	27.740
1984	3.272	5.885	1.896	17.286	80.957
1985	5.171	4.535	2.076	19.762	53.109

[1] Note that dam counts are only an indication of and do not represent total run size.

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APPENDIX B

SPAWNING AREAS OF SALMON AND STEELHEAD IN THE COLUMBIA RIVER BASIN

(Prepared by Environmental Research and Technology, Inc. from information found in Fulton 1968 and Fulton 1970.)

CONTENTS

LIST OF TABLES

Table B-1

SPAWNING AREAS OF CHINOOK, CHUM AND COHO SALMON AND STEELHEAD TROUT IN THE LOWER COLUMBIA RIVER[1]

	Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
Chinook (spring & summer)	Cowlitz R.	209	Upper section of main river and Ohanapecosh River	About same
	Lewis R.	145	Lower portion below Merwin Dam	Middle and upper Lewis R. and tributaries removed from production by Merwin, Yale, and Swift Dams.
	Willamette R.	303	None in main river.	None.
	Clackamas R.	129	Middle & upper portions of Clackamas R.; North Fork, Eagle Creek, Collawash R., and Hot Springs Fork.	18 km of main river.
	Santiam R.	18	None in mainstem	None
	N. Santiam R.	148	Lower 66 km of main stream, & lower 24 km of Little N. Santiam R.	Spawning areas in Breitenbush R. & upper tributaries of N. Santiam R. were cut off by Detroit & Big Cliff dams.
	S. Santiam R.	139	69 km stretch of main river and lower Wiley Creek	Same
	Middle Santiam R.	48	Well distributed throughout most of its course. Also 26 km of Quartzville Creek.	Same

Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
McKenzie R.	138	Throughout length of main river & portions of Gate Creek, Blue R. Horse Creek, Separation Creek, and Lost Creek.	Mohawk Creek removed from production by past logging practice
South Fork	50	Main river and French Pete Creek	11 km of main stream inundated by Cougar D
Middle Fork Willamette R.	124	Fall, Little Fall, Big Fall, Winberry, & Lost creeks	About 1,508 km. of streams cut off by Dexter & Lookout Point dams. No record of spawning in river below Dexter Dam.
Coast Fork Willamette R.	80	None	Former runs were present in the upper Coast Fork
Sandy R.	72	Upper Sandy R.	Portions of lower Sandy & tributaries
Wind R.	52	Main river & limited amount in tributaries	None
Klickitat R.	143	Upper main river	About same
Deschutes R.	394	Main river near Squaw Creek; Warm Springs R. and its tributary, Beaver Creek; Metolius R.; and Squaw Creek	Crooked R. and Trout Creek
John Day R.	365	Upper main river, upper N. and Middle Forks, Granite Creek & its tributary, Clear Creek	Many areas of middle & upper main river & tributaries
Umatilla R.	192	Small section in upper part of main river	Upper half of Umatilla R. & tributaries

	Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
	Walla Walla R.	90	None	Upper & middle parts in main river and tributaries.
Chinook (fall)	Cowlitz R.	209	Throughout most of mainstem and many tributaries. Most productive area in section from mouth of Toutle R. to Mayfield Dam	13 km of intermittent spawning in main river inundated by Mayfield Reservoir.
	Youngs R.	29	2 km section of Youngs R., and lower section of Klaskanine R.	Same
	Lewis R.	145	Lower portion below Merwin Dam.	About 48 km inundated by reservoirs
	Willamette R.	304	None in mainstem	Small amount below mouth of Clackamas R.
	Clackamas R.	129	Lower 8 km	18 km inundated by hydroelectric impoundments
	Washougal R.	58	Lower portion of Washougal.	Some areas probably lost due to small dams. New areas gained.
	Sandy R.	72	Lower part of main Sandy	About same
	Wind R.	52	Lower & middle portions of main stream and limited about in tributaries	Limited to lower 2 km., which was flooded out by Bonneville pool.
	Little White Salmon R.	29	About 1 km. of spawning below hatchery rack	Lower 1 km inundated by Bonneville pool
	Big White Salmon R.	64	Lower 4 km	Probably lower 4 km & and midsection

	Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
	Hood R.	18	First 10 km. of main river	More extensive
	East Fork Hood R.	42	None	Lower mainstem
	Middle Fork Hood R.	14	None	No information
	West Fork Hood R.	22	Limited use at present	Probably lower half of main stream
	Klickitat R.	153	Lower 44 km of mainstem	Confined to area below Castile Falls.
	Main Columbia R. (Bonneville Dam to McNary Dam)	237	None.	Bonneville and The Dalles reservoirs inundated some spawning areas
Chum	Lewis & Clark River	40	Lower portions	About same
	Youngs R.	29	About 1.6 km section above tidewater to Youngs R. Falls.	Same
	Cowlitz R.	208	None in main Cowlitz R.	Main Cowlitz R. in vicinity of Mayfield Reservoir.
	Lewis R.	144	Below Merwin Dam.	Same
	East Fork Lewis R.	67	Lower portion	Same
	Washougal R.	58	Lower Washougal R. & tributary	Same
	Little White	29	About 0.8 km of spawning below hatchery rack	Lower 0.8 km inundated by Bonneville pool

	Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
	Columbia R.		None	In mainstem in stretch up to about 232-248 km above mouth
Coho	Lewis & Clark	40	Tidewater to Youngs R. Falls (0.8 km stretch)	Same
	Cowlitz R.	208	Upper main Cowlitz R. tributaries listed below	About same
	Lewis R.	144		Area above Merwin Dam and tributaries
	Willamette R.	303	None	None
	Clackamas R.	128	Upper portion and lower North Fork	Probably some of stream areas inundated by dams
	Santiam R.	18	None	None
	N. Santiam R.	147	None	None
	S. Santiam R.	101	Midsection of Thomas & Wiley Creeks & tributaries, lower 2/3 of Crabtree Creek	Species introduced
	McKenzie R.	138	Mowhawk R. & Camp Cr.	Species introduced
	Middle Fork Willamette R.	123	None in main stream	None
	Coast Fork Willamette R.	80	Bear Creek	Species introduced
	Washougal R.	58	Lower river, Little Washougal R., Winkler Creek and West Fork	Not as large
	Sandy R.	72	Middle Sandy R. and Cedar Creek	Salmon & Bull Run rivers

	Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
	Wind R.	51	Middle portion and tributaries	Lower 2.4 km flooded by Bonneville pool
	Little White Salmon R.	29	About 0.8 km of spawning below hatchery rack	Lower 0.8 km inundated by Bonneville pool
	Hood R.	18	Section of main Hood R. East and West forks, and Neal Creek	Unknown
	Klickitat R.	152	Section of main Klikcitat & W. Fork	Species introduced
	John Day R.	364	Small section of Middle Fork	Unknown
	Walla Walla R.	90	None	Location unknown
Steelhead	Lewis & Clark R.	40	Most of stream above tidewater	Dam, about 22 km up, has fishway but may be partial barrier at times
	Youngs R.	29	Lower 0.8 km Youngs R. (above tidewater) Klaskanine R., & its North Fork	Barth Falls on Klaskanine R. laddered in 1964, opening new area
	Cowlitz R.	208	Most of main Cowlitz R. & tributaries listed below	Areas inundated by Mayfield & Mossyrock Reservoirs
	Lewis R.	144	River km 11 to 32	Area above Merwin Dam lost
	E. Fork Lewis R	67	Lower 50 km	Same
	Clackamas R.	128	Upper Clackamas R., Clear, Deep, & Eagle creeks. N. Fork, Roaring, Oakgrove Fork, Collawash & Hot Springs Fork rivers	Area inundated by dams. May have had spawning gravel.

Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
Santiam R.	18	None	None
N. Sanitam R.	147	Most of main stream & lower 2/3 of Little N. Santiam R.	Upper main stream & 540 km of tributaries cut off by Detroit & Big Cliff dams
S. Santiam R.	101	Upper South Santiam, Thomas, Crabtree, Wiley, & Canyon Creeks	Wiley Creek Falls laddered, increasing area. No former area cut off
Middle Santiam R.	48	Middle Santiam R. and Quartzville Creek	Lower portion of Middle Santiam R. inundated by dams
McKenzie R.	138	Upper half Mohawk R.	
Middle Fork	123	Fall & Winberry Creeks & main Middle Fork	Probably little use by species before they were introduced below Dexter R. Dam
Washougal R.	58	Main Washougal, lower Little Washougal, and lower half, West Fork	Not as large owing to fishway construction over Salmon Falls & removal of old dams.
Sandy R.	72	Sandy R. & tributaries	Some losses in 43 km stretch below Marmot Dam
Wind R.	51	Upper Wind R., Trout and Panther creeks	Not as large
Little White Salmon R.	27	Lower 0.8 km above Bonneville pool	Bonneville pool inundated lower 2.6 km
Big White Salmon R.	64	Lower 1.6 km above Bonneville pool	Lower part of mainstem and area above Condit Dam (3 km above mouth)

Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
Hood R.	18	Midsection, east, west & middle forks & Neal creeks	About same
Klickitat R.	152	Upper Klickitat and Little Klickitat rivers	Falls were laddered, opening new areas
Fifteenmile Cr.	64	Scattered in most of main stream. Best area in upper reaches	Some loss in middle & lower portion
Deschutes R.	392	Stretches in lower 160 km of main stream	Crooked, Metolius & upper Deschutes rivers & Squaw Creek
John Day R.	364	Tributaries of upper John Day R., parts of Rock, Butte, and Thirtymile creeks, & tributaries of the South Fork R.	Some reduction though not located
Umatilla R.	191	Birch & Mecham creeks, South and North forks	Butter Creek & some sections of tributaries taken out of production of water for irrigation
Walla Walla R.	90	Upper Walla Walla R. and its tributaries	Some tributaries removed from production

[1]Source: Fulton (1968; 1970); Mullan (1984)

[2]Former spawning areas refer to those taken out of use before 1969.

Table B-2
SOCKEYE SALMON NURSERY LAKES OF THE COLUMBIA RIVER BASIN[1]

River	Surface Lake	Not Available in Late 1960s: Passage Acres	Not Available in Late 1960s: Date Surface Blocked	Available in late 1960s: Acres
Upper Columbia[2]	Upper Arrow	51,904	1939	
	Lower Arrow	37,504	1939	
	Whatshan	4,004	1939	
	Slocan	16,738	1939	
Middle Columbia				
Okanogan[3]	Osoyoos			5,729
	Skaha	4,967	1921	
	Okanogan	85,990	1915	
Yakima	Bumping	631	1910	
	Cle Elum	1,982	1909-10	
	Kachess	2,744	1904	
	Keechelus	1,240	1904	
Wenatchee	Wenatchee			2,445
Snake Area				
Payette	Big Payette	1,000	1914	
	Little Payette	300	1914	
	Upper Payette	200	1914	
Wallowa	Wallowa	1,777	1929	
Salmon[4]	Redfish		1913-34[5]	1,500
	Alturas		1913-34	1,200
	Petit		1913-34	395
	Stanley		1913-34	180
	Yellowbelly		1913-34	170

River	Surface Lake	Not Available in Late 1960s: Passage Acres	Not Available in Late 1960s: Date Surface Blocked	Available in late 1960s: Acres
Lower Columbia				
Metolius	Suttle	250	1930	
TOTAL		211,231		11,619

[1]Source: Mullan (1984).

[2]Presence of kokanee suggests that sockeye once used Kinabasket, Windermere, and Columbia lakes

[3]Fulton (1970) indicates that Palmer Lake once was used by sockeye. Unpublished data indicate that salmon never ascended above Enloe Falls on the Similkameen River.

[4]Same as footnote 1 for Hell Roaring, Little Redfish, and Warm lakes.

[5]Only a remnant sockeye run has persisted since passage was restored.

Table B-3

SPAWNING AREAS OF CHINOOK, CHUM AND COHO SALMON AND STEELHEAD TROUT IN THE MIDDLE COLUMBIA RIVER[1]

	Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
Chinook (spring and summer)	Yakima R.	319	Upper Yakima R. & Naches R.	Satus, Toppenish, Ahtanum, Wenas, and Teanaway rivers
	Wenatchee R.	88	Most of main river; portions of Chiwawa, Little Wenatchess, & White rivers; & Nason, Icicle, & Peshastin creeks	Areas in Peshastin Creek & areas above Leavenworth National Fish Hatchery on Icicle Creek
	Entiat R.	84	Most of main stream	About same
	Methow R.	114	Main stream & large tributaries	About same as present. Some areas may be reduced in size owing to irrigation diversion
	Okanogan R.	129	Intermittent riffles throughout its length and lower 2 km of Similkameen R.	Salmon & Omak creeks were lost to production due to irrigation & dams. Most of Similkameen R.
Chinook (fall)	Yakima R.	319	Lower portion	Extent of former use unknown
	Section of main Columbia	539	Above McNary pool to Priest Rapids Dam, & a small area near mouth of Wenatchee R.	McNary, Priest Rapids Wanapum, Rock Island, Rocky Reach, Wells, Chief Joseph, & Grand Coulee pools inundated spawning area.

	Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
				In addition, areas above Grand Coulee were taken out of production when runs were cut off by high dam
Chum	Never reportedly frequented upper Columbia River but may have historically			
Coho	Yakima R.	317	Upper main Yakima R.	Part of upper main Yakima R., Cle Elum & Kachess rivers, & Umptanum & Taneum creeks, also Naches R. Other areas unknown
	Wenatchee R.	88	Icicle Creek below hatchery and main Wenatchee R. below Leavenworth	Portions of Icicle and Nason Creek
	Entiat R.	83	Entiat R.	Reduced somewhat but specific areas unknown
	Methow R.	114	Main stream downstream from town of Twisp	Upper Methow & Twisp rivers

	Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
Steelhead	Yakima R.	317	Upper Yakima R.. parts of Naches R.. & Satus & Toppenish creeks	Fomerly much more extensive in tributaries
	Wenatchee R.	88	Throughout main Wenatchee R., lower Mission, Peshastin, Icicle, Chiwaukim and Nason creeks, Chiwawa, Little Wenatchee and White rivers	About same
	Entiat R.	83	Entiat & Mad rivers	About same
	Methow R.	114	Most of Methow R., Twips, & Chewack rivers and Lower Beaver Creek	About same
	Okanogan R.	128	Scattered throughout mainstem below L. Osoyoos to Omak Creek and Lower Similkameen R.	Salmon & Omak creeks & upper Similkameen R.

[1]Source: Fulton (1968; 1970)

[2]Former spawning areas refer to those taken out of use before 1969.

Table B-4

SPAWNING AREAS OF CHINOOK, CHUM AND COHO SALMON AND STEELHEAD TROUT IN THE UPPER COLUMBIA RIVER[1]

Stream	Length (miles)	In the Late 1960s	Former[2]
Chinook			
Spokane River	90	none	Lower 50 miles and tributaries
Sanpoil River	75	none	Entire river
Colville River	40	none	Lower 4 miles below Meyer Falls
Kettle River	160	none	To a falls above stream running out of Christina Lake in Canada
Pend Oreille River			
Clarks River	100	none	Lower 20 miles and tributaries
Kootenai River	250	none	50 miles above its confluence with Columbia River
Chum			
Never reportedly frequented upper Columbia River but may have historically.			
Coho			
Spokane	90	none	Lower 50 miles
Sanpoil River	75	none	Entire river
Hall Creek	20	none	Lower 4 to 5 miles
Steelhead			
Spokane	90	none	Lower 50 miles and tributaries
Sanpoil	75	none	Entire river
Colville River	40	none	Lower 4 miles below Meyer Falls
Kettle River	160	none	To a falls above stream running out of Christina Lake in Canada

Stream	Length (miles)	In the Late 1960s	Former[2]
Pend Oreille River (Clark River)	100	none	Lower 20 miles and tributaries
Kootenai	25	none	50 miles above its confluence with Columbia River

[1]Source: Fulton (1968; 1970)

[2]Former spawning areas refer to those taken out of use before 1969.

Table B-5

SPAWNING AREAS OF CHINOOK, CHUM AND COHO SALMON AND STEELHEAD TROUT IN THE SNAKE RIVER AND TRIBUTARIES[1]

	Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
Chinook (spring & summer)	Snake R.	1,609	None	None
	Palouse R.	241	None	None
	Tucannon R.	97	Middle & upper parts of main stream and Cummings Creek	Some reduction in habitat
	Clearwater R.	121	None in mainstem	Spawning gravel is present, but no record exists of past use
	North Fork	217	Lower half of Little North Fork	Most of main stream & nearly all lower portions of tributaries. (This area is now available but not now used.)
	Middle Fork Clearwater R.	39	None	Believed to have been used throughout entire length
	South Fork Clearwater R.	121	None	Scattered areas along main river & parts of many tributaries
	Grande Ronde	322	Upper half of main river & tributaries	Middle & upper Joseph Creek & tributaries. Some reduction of spawning area in upper main stream

Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
Salmon R.	644	Small amount of spawning area scattered throughout lower 322 km Many good riffles in next 258 km., but the most productive area is in upper 56 km.	About same
Little Salmon	69	Main stem & Rapid R.	Same
South Fork Salmon R.	132	Main stream and tributaries, Secesh R., East Fork, & Johnson Creek	About same but reduced use of East Fork & Johnson Creek
Middle Fork Salmon R.	171	Upper half Middle Fork & portions of Big, Camas, Loon, Sulphur, Marsh, & Bear Valley creeks	About same
North Fork Salmon R.	37	Lower 2/3 main river	Lower 18 km out of production for a period of years owing to dredging in upstream areas.
Lemhi R.	97	Most of main stream	About same
East Fork	48	Most of East Fork, & lower parts of some tributaries	About same
Imnaha R.	121	Upper river, Big Sheep Creek, & Lick Creek	Little Sheep Creek

	Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
Chinook (fall)	Snake R.	1,609	From Palouse R. junction, scattered areas for 32 km; areas near Lewiston, Idaho; & scattered riffle areas up to Hells Canyon damsite	Main river spawning above Hells Canyon damsite to Shoshone Falls. Ice Harbor, Oxbow, & Brownlee dams have flooded spawning areas, and Hells Canyon Dam flooded 32 km more.
Chum	Never reportedly frequented Snake River area but may have historically			
Coho	Snake R.	1,602	None	None
	Tucannon R.	96	None	Location unknown
	Clearwater R.	120	None	Location unknown
	Grande Ronde	320	Unknown	Lower section
Steelhead	Salmon R.	641	Middle & upper main Salmon R., lower Wind R., Whitebird, Slate, Crooked, Big Mallard, Bargamin, & Chamberlain creeks. Other tributaries listed below	Same
	Little Salmon R.	69	Lower & middle portions main stream & Rapid R.	Same
	South Fork Salmon R.	128	Throughout South Fork, Secesh R., East Fork & Johnson Creek	Same
	Middle Fork Salmon R.	170	A few sections of Middle Fork and most of Big Clover, Camas, Loon, Sulphur, Bear Balley, & Marsh creeks & tributaries	Same

Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
North Fork Salmon R.	37	North Fork and lower parts of tributaries	Some reduction caused by mining
Lemhi R.	96	Most of Lemhi R. and lower portions of tributaries	About same
East Fork Salmon R.	51	Most of its length and lower parts of tributaries	Same
Imnaha R.	120	Throughout main Imnaha R., & Cow, Lightning, Horse, Little Sheep creeks, & several other tributaries	About same
North Fork Clearwater R.	216	None	Most of main North Fork lower 1/2 of Little North Fork, & Kelly Cr. and lower portions of many small tributaries
Middle Fork Clearwater R.	38	Throughout Middle Fork and tributaries.	About same
South Fork Clearwater R.	120	Lower section	Stream blocked by dam about 32 km above mouth for 14 years
Grande Ronde R.	320	Most of upper & middle main stream tributaries, Lookingglass, Clark, Phillips, Indian, Willow, Catherine, Five-Point, Beaver, Meadow, & Sheep Creek	Some reduction in upper Grande Ronde and tributaries due to gold dredging & channel relocation

Stream	Length (km)	Spawning Area[2] In Late 1960s	Former
Snake R.	1,600	Scattered spawning areas above Ice Harbor Harbor pool to Hells Canyon Dam	Main river spawning was lost by inundation. Because this species spawns during high water, it is difficult to see spawning activity & locate areas.
Palouse R.	240	None	None
Tucannon	96	Middle & upper Tucannon R., Cummings & Panjab creeks	Much area of lower stream damaged by floods, dredging & diking in 1965
Clearwater R.	120	Perhaps small stretches used	About same

[1]Source: Fulton (1968; 1970)

[2]Former spawning areas refer to those taken out of use before 1960.

Table B-6

SALMON AND STEELHEAD HABITAT LOST IN THE SNAKE RIVER AND TRIBUTARIES AND REMAINING HABITAT PRESENTLY AVAILABLE BY MAJOR DRAINAGE[1]

Major Drainage	Miles of Lost Habitat	Miles of Habitat Presently Available
Mainstem Snake and minor tributaries	440	175
Tucannon	0	55
Clearwater	627	1,248
Grande Ronde	0	647
Salmon	88	1,834
Imnaha	0	223
Powder	200	0
Burnt	140	0
Weiser	256	0
Payette	470	0
Boise	520	0
Owyhee	485	o
Malheur	205	0
Total	3,557	4,182

[1] Pacific Fishery Management Council, 1979. This report applies to salmon, but it is probably generally applicable to steelhead also.

APPENDIX C

INFORMATION DESCRIBING DAMS IN THE COLUMBIA RIVER BASIN

CONTENTS

INDEX OF TERMS

Legend for Table C-1

Date: Year in which main structure completed

Height: Dam height, in feet

Maximum Capacity: Maximum storage capacity in acre-feet (AF)

* = Usable storage in acre-feet (AF)

Purpose:

H =	Hydropower	S =	Water supply
I =	Irrigation	D =	Debris control
C =	Flood control	R =	Recreation
N =	Navigation	O =	Other

Power: Power generating capacity = megawatts (MW)

\+ = FERC licensed hydroelectric project under construction or undergoing major modifications

Affil: Affiliation

P =	Private and PUD
F =	Federal
S =	State
M =	Municipal

Comments: Present anadromous salmonid usage or past occurrence within the drainage or stream

Y = Yes, good documentation
UK = Unknown, but possible due to location
UL = Unknown, but unlikely due to location or type of structure
UP = Unknown, but probable due to location

Source for Table C-1: Corps of Engineers (1975); Hertz et al, 1980; Bonneville Power Administration (1981); Washington Department of Ecology (1981); Corps of Engineers (1984); Carpenter (1981); Federal Energy Regulatory Commission (1984); Oregon Water Resources Department (1985); Corps of Engineers (1985).

TABLE C-1
INFORMATION DESCRIBING DAMS IN THE COLUMBIA RIVER BASIN

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
COLUMBIA RIVER BELOW BONNEVILLE DAM													
Clackamas	Faraday Forebay	Clackamas River	1907	OR	Clackamas	Earth	38	675	H	0	Portland Gnrl Elec	P	Y; fish passag facilities
	River Mill	Clackamas River	1911	OR	Clackamas	Other	78	12,200	H	19	Portland Gnrl Elec	P	Y; fish passag facilities
	Lake Harriet	Clackamas River	1923	OR	Clackamas	Arch	50	400	H	0	Portland Gnrl Elec	P	Y
	Frog Lake	Clackamas River	1955	OR	Clackamas	Earth	65	460	H	0	Portland Gnrl Elec	P	Y; fish passag facilities
	Timothy Lake	Oak Grove Fork	1956	OR	Clackamas	Earth	100	81,000	H, R	0	Portland Gnrl Elec	P	UK
	North Fork	Clackamas River	1958	OR	Clackamas	Multi-arch	145	21,000	H	52	Portland Gnrl Elec	P	Y; fish passag facilities
	Faraday	Clackamas River	1965	OR	Clackamas	Gravity	66	560	H	34	Portland Gnrl Elec	P	Y; fish passag facilities
	Milwaukee Plywood Corp	Eagle Creek	1965	OR	Clackamas	Earth	6	72	O	0	Milwaukee Plywood Co.	P	UL
Columbia	Lake Oswego	Oswego Creek	1921	OR	Clackamas	Gravity	26	7,000	H	0	Lake Oswego Corp	P	Y

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Lower Lackamas and Round Lakes	Lackamas Creek	1936	WA	Clark	Buttress	23	8,530	S, R	Ø	Crown Zellerbach	P	Uk
	Middle Lake	Trib Bear Creek	1940	OR	Clatsop	Earth	34	160	S	Ø	City of Astoria	M	UL
	Unnamed	Trib Coweman R.	1940	WA	Cowlitz	Earth	9	65	R	Ø	D. Sweet	P	Y
	Wickiup Lake	Bear Creek	1940	OR	Clatsop	Earth	33	338	S	Ø	City of Astoria	M	UP
	Bear Creek	Bear Creek	1953	OR	Clatsop	Gravity	89	675	S	Ø	City of Astoria	M	UP
	Unnamed	Trib Coweman River	1962	WA	Cowlitz	Earth	10	200	R	Ø	B. Blanke-smith	P	Y
	Seely	Trib Rock Creek	1977	WA	Clark	Earth	15	100	I	Ø	M. Seeley	P	UP
Cowlitz	Unnamed	Olequa Creek	1932	WA	Lewis	Buttress	20	120	Ø	Ø	Wagner Bros Lumber	P	UP
	Long-Bell Pond	Winston Creek	1943	WA	Lewis	Earth	11	65	Ø	Ø	Long-Bell Lumber Co.	P	UP
	Ladd Pond	Nineteen Creek	1954	WA	Lewis	Earth	26	167	Ø	Ø	St. Paul & Tacoma Log	P	UP
	Mt. Adams Veneer Co. Mill Pond	Siler Creek	1961	WA	Lewis	Earth	8	153	Ø	Ø	Mt. Adams Veener Co.	P	UP
	Mayfield	Cowlitz River	1963	WA	Lewis	Arch/ gravity	229	166,600	H,R	162	City of Tacoma	M	Y; blockage of fish runs
	Packwood	Late Creek	1964	WA	Lewis	Rockfill	52	3,500	H,R	26	WA Public Power Supply System	P	UP

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Unnamed	Trib Mill Creek	1965	WA	Lewis	Earth	14	67	R	Ø	T. Plant	P	UP
	Swofford Valley Rearing Pond	Sulphur Creek	1968	WA	Lewis	Earth	22	2,173	D	Ø	City of Tacoma	M	UP
	Mossyrock	Cowlitz River	1968	WA	Lewis	Arch	363	1,714,600	H,C,R	300	City of Tacoma	M	Y; fish runs blocked by downstream dam
Lewis	Yacolt Reservoir	Big Creek	1911	WA	Clark	Gravity	9	7	S	Ø	Yacolt	P	UP
	Merwin (Ariel)	Lewis River	1932	WA	Clark	Arch	218	42,000	H, R	135	Pacific Power Light	P	Y; trap and haul facility provided
	Yale	Lewis River	1952	WA	Clark	Earth	324	356,000	H, R	108	Pacific Power Light	P	Y; runs blocke by Merwin Dam
	Unnamed	Trib E Fork Lewis River	1953	WA	Clark	Earth	27	102	I,R	Ø	Tsugawa Brothers	P	UK
	Swift No. 1	Lewis River	1958	WA	Skamania	Other	410	773,000	H,R	204	Pacific Power Light	P	Y; runs blocke by Merwin Dam
	Swift No. 2	North Fork Lewis River	1958	WA	Cowlitz	Earth	83	850	H	70	Cowlitz PUD	P	Y; runs blocke by Merwin Dam
	Unnamed	McCormack Creek	1959	WA	Clark	Earth	33	74	I	Ø	K. Menger	P	UK
	Unnamed	Duncan Creek	1963	WA	Skamania	Earth	24	300	R	Ø	C. H. Woodard	P	UL
	Camp Kwoneesum	Wildboy Creek	1965	WA	Skamania	Rockfill	53	120	R	Ø	Portland Campfire Girls	P	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
Luckiamute	Emery Moore	Trib Maxfield Creek	1962	OR	Benton	Earth	29	166	I	Ø	Emery E. Moore	P	UP
	Wendell Kreder	Trib Luckiamute R	1970	OR	Polk	Earth	19	120	I	Ø	Wendell Kreder	P	UL
	Wispering Winds	Burgett Creek	1973	OR	Benton	Earth	18	60	R	Ø	Santiam Girl Scouts	P	UP
McKenzie	Leaburg	McKenzie River	1930	OR	Lane	Gravity	22	345	H	14	Eugene Wtr & Elec Brd	M	Y; fish passag facilities
	Walterville Power Intake	McKenzie River	1949	OR	Lane	Earth	--	100	H	8	Eugene Wtr & Elec Brd	M passage	Y; adult fish facilities
	Smith	Smith River	1962	OR	Linn	Earth	225	15,000	H	80	Eugene Wtr & Elec. Brd	M	UP
	Trailbridge	McKenzie River	1962	OR	Linn	Earth	87	2,263	H	10	Eugene Wtr & Elec. Brd	M channel	Y; spawning provided
	Carmen	McKenzie River	1963	OR	Linn	Rockfill	25	300	H	Ø	Eugene Wtr & Elec. Brd	P barrier	N; natural downstream
	Cougar	S Fork McKenzie River	1964	OR	Lane	Rockfill	467	219,000	H,C,I,R, N	25	Corps of Engineers	F	Y; hatchery mitigation
	Blue River	Blue River	1968	OR	Lane	Earth	278	89,000	C,R	Ø	Corps of Engineers	F	UP
Sandy	Big Sandy (Marmot)	Sandy River	1912	OR	Clackamas	Other	40	970*	H,S	Ø	Portland Gnrl Elec	P	Y; fish passag facilities

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Bull Run No. 1	Bull Run River	1929/ 1982	OR	Multnomah	Gravity	194	30,000	H,S,O	24	City of Portland	M	Y; no passage facilities
	Acme Timber Co Mill	Bull Creek	1953	OR	Clackamas	Earth	16	180	O	0	Acme Timber Co	P	UL
	North Fork	N Fork Bull Run Creek	1958	OR	Multnomah	Earth	34	1,020	S	0	City of Portland	M	UP
	Lake Roslyn	Sandy River	1959	OR	Clackamas	Earth	40	2,011	H	22	Portland Gnrl Elec	P	UP
	Bull Run No. 2	Bull Run River	1960/ 1982	OR	Clackamas	Rockfill	110	21,000	H,S,O	12	City of Portland	M	Y; fish passag facilities
	Bull Run Lake	Bull Run River	1965	OR	Multnomah	Earth	45	16,000	S	0	City of Portland	M	Y; no passage facilities
	PDX G.W. pump sta./ hydro	Bull Run River	1985	OR	Multnomah	---	---	---	H,S	5	City of Portland	M	N; offstream generating facility
Santiam	Stayton Diversion	N Santiam River	1924	OR	Marion	Other		0	H,I	1	Pacific Power Light	P	Y
	Willamette Natl Lumber Company	S Santiam River	1946	OR	Linn	Earth	14	375	O	0	Willamette Natl Lumber Company	P	UL
	Lyons Pond Dike	N Santiam River	1952	OR	Linn	Earth	9	120	O	0	N Santiam Plywood	P	UL
	Big Cliff	N Santiam River	1953	OR	Linn	Gravity	101	5,930	H	18	Corps of Engineers	F	Y; no passage facilities
	Detroit	N Santiam River	1953	OR	Linn	Gravity	364	455,000	H,C,R,I, M,N	100	Corps of Engineers	F	Y; no passage facilities

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Western Veneer and Plywood	S Santiam River	1955	OR	Linn	Earth	9	265	O	Ø	Western Veneer and Plywood	P	UL
	Foster	S Santiam River	1967	OR	Linn	Rockfill	123	61,000	H,C,R,I	20	Corps of Engineers	F	Y; fish passag facilities
	Green Peter	M Santiam River	1967	OR	Linn	Gravity	319	430,000	C,H,R,I, N	80	Corps of Engineers	P	Y; fish passag facilities
	Helms	Trib S Santiam River	1968	OR	Linn	Earth	19	91	I	0	M. C. & Pearl Holmes	P	UP
Toutle	N Fork Toutle Debris	N Fork Toutle R.	1980	WA	Cowlitz	Rockfill	38	3,900	D	Ø	Corps of Engineers	P	UP
	S Fork Toutle Debris	S Fork Toutle River	1980	WA	Cowlitz	Rockfill	21	352	D	Ø	Corps of Engineers	P	UP
Tualatin	No. 2	Trib Tualatin River	1952	OR	Washington	Earth	10	67	I	Ø	Burkhalter Bros	P	UL
	Unnamed	W Fork Dairy Cr	1954	OR	Washington	Other	8	69	I	Ø	Vandehey & Spiering	P	UL
	Unnamed	S Fork Campbell Creek	1955	OR	Washington	Earth	30	28	I	Ø	Ed Hatfield	P	UL
	Unnamed	Trib E Dairy Cr	1956	OR	Washington	Earth	33	89	I	Ø	D.D. & K.L. Bump	P	UL
	Kay	Trib McKay River	1963	OR	Washington	Earth	38	37	I	Ø	Henry R. Carlson	P	UL
	Pierson	Trib Tualatin R.	1965	OR	Washington	Earth	26	16	I	Ø	Carl Pierson	P	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Unnamed	Trib McKay Creek	1967	OR	Washington	Earth	7	84	I	Ø	Bert Vanderzanden	P	UL
	Unger	Trib Tualatin R.	1968	OR	Washington	Earth	34	8Ø	I	Ø	William F. Unger	P	UP
	Bailey	Trib Tualatin R.	1968	OR	Washington	Earth	1Ø	5Ø	I	Ø	US Natl Bank Trustee	P	UP
	Howard River	Trib E Fork McKay River	1969	OR	Washington	Earth	35	29	R	Ø	Howard Schimdt	P	UL
	Lind	Trib McKay River	197Ø	OR	Washington	Earth	16	112	I	Ø	Hill A. Lind	P	UL
	Pearson	Trib Christenson Creek	1971	OR	Washington	Earth	6Ø	45	I	Ø	Don Pearson	P	UL
	Glenn Walters	Trib Tualatin R	1969	OR	Washington	Earth	21	132	I	Ø	Glenn Walters	P	UP
	Scoggins	Scoggins Creek	1975	OR	Washington	Earth	151	53,6ØØ	I	Ø	Bureau of Reclamation	F	Y; no passage facilities fis trap below dam
Washougal	Julian	Trib Washougal	1968	WA	Skamania	Earth	25	4	O	Ø	C. Julian	P	UL
Willamette	T.W. Sullivan	Willamette River	1888	OR	Clackamas	Other	3Ø	---	H	15	Portland Gnrl Elec	P	Y; fish passag facilities at Willamette Fls
	Number 1	N Fork of N Fork Willamette River	1928	OR	Lane	Other	24	19Ø	D	Ø	Edward Hines Lmbr Co	P	UP
	Cottage Grove	Coast Fork Willamette River	1942	OR	Lane	Earth	76	33,ØØØ	C,I,N,R	Ø	Corps of Engineers	F	UP

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Willamette Falls	Willamette River	1943	OR	Clackamas	Gravity	30	100	H	3	Publishers Paper Co.	P	Y; fish passag facilities at Willamette Fls
	Dorena	Row River	1949	OR	Lane	Earth	129	77,500	C,I,R,N	0	Corps of Engineers	F	UP
	Robin	Marys River	1950	OR	Benton	Earth	6	89	D	0	Robin Lumber Co	P	UL
	Kuehne	Trib Chehalem Cr	1952	OR	Yamhill	Earth	33	90	I	0	H.R. Kuehne	P	UP
	Hickory Hill Fram	Trib Chehalem Cr	1952	OR	Yamhill	Earth	27	47	I	0	Marinus Vanden Hoek	P	UP
	Peak Plywood Corp	Trib Squaw Creek	1953	OR	Benton	Earth	21	191	D	0	Starker & Roth	P	UL
	Booth-Kelly Lumber Co Log Pond	Mosby Creek	1953	OR	Lane	Earth	8	144	D	0	Booth-Kelly Lumber Co	P	UL
	Lookout Point	Middle Fork Willamette River	1954	OR	Lane	Earth	242	477,000	C,I,N,M, H,R	120	Corps of Engineers	F	Y; blocked by Dexter Dam
	Dexter	M Fork Willamette River	1955	OR	Lane	Earth	60	29,900	H,R	15	Corps of Engineers	F	Y; total barrier some use below dam
	Sharps Creek	Sharps Creek	1955	OR	Lane	Earth	17	151	O	0	Bohemia Lumber Co	P	UL
	W.A. Woodward Lumber Co	Coast Fork Willamette River	1955	OR	Lane	Earth	10	100	R,D	0	Walter A. Woodward	P	UL
	Clemens Log Pond	East Creek and West Creek	1956	OR	Benton	Earth	20	1,028	O	0	Willamette Indus.	P	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Unnamed	Squaw Creek	1957	OR	Benton	Earth	15	139	D	Ø	Larson Lumber Co.	P	UL
	Ford Farms	Trib Coyote Creek	1959	OR	Lane	Earth	19	60	I	Ø	Stephen H. Ford	P	UL
	Unnamed	Trib Willamette R.	1959	OR	Marion	Earth	28	50	I	Ø	Not known	P	UL
	North Fork	N Fork Rock Creek	1960	OR	Benton	Earth	74	257	S	Ø	City of Corvallis	M	UL
	Waldo Lake Reservoir	Little Pudding R.	1960	OR	Marion	Earth	11	56	I	Ø	Lloyd M. Hill, Inc.	P	UL
	Mercer	Rickreall Creek	1961	OR	Polk	Earth	71	1,500	S	Ø	City of Dallas	M	UL
	Hills Creek	M Fork Willamette R	1962	OR	Lane	Earth	317	356,000	C,H,I,R, N	30	Corps of Engineers	F	Y
	Oak Crest	Trib Willamette R	1962	OR	Polk	Earth	29	22	I	Ø	Oak Crest Farm	P	UL
	Fall Creek	Fall Creek	1965	OR	Lane	Rockfill	181	125,000	C,I,N	Ø	Corps of Engineers	F	UP
	S-M-S No. 1	Trib Pudding River	1966	OR	Marion	Earth	27	52	R,O	Ø	Savage-Martin-Savage	P	UL
	River Bend	Trib Willamette R	1967	OR	Marion	Earth	27	62	I	Ø	James L. Payne	P	UL
	Art McKay	Champoeg Creek	1968	OR	Marion	Earth	11	461	I	Ø	Art McKay	P	UL
	Neil Beyer	Beaver Creek	1968	OR	Clackamas	Earth	31	220	I,O	Ø	Neil Beyer	P	UP

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Spada	Champoeg Creek	1968	OR	Marion	Earth	16	329	I	Ø	A&R Spada	P	UL
	E.R. Baker	Trib Chehalem Cr	1970	OR	Yamhill	Earth	50	225	I	Ø	E.R. Baker	P	UL
	Mission Cr	Mission Creek	1972	OR	Marion	Earth	20	1,150	I	Ø	D. & C. Buyserie	P	UL
	Hershiser	Trib Willamette	1972	OR	Clackamas	Earth	38	33	I	Ø	Don Hershiser	P	UP
	Mompano	Abermethy Creek	1971	OR	Clackamas	Earth	35	780	R,O	Ø	Terra Corp.	P	UP
	P. M. Delaubenfels	Trib Starr Creek	1970	Or	Benton	Earth	29	84	R	Ø	P. M. Delaubenfels	P	UL
	Spring Lake	Trib Willamette R	1972	OR	Marion	Earth	30	104	R	Ø	Spring Estates	P	UL
	Teasel Creek	Teasel Creek	1972	OR	Clackamas	Earth	16	55	I,O	Ø	Willard Deardorff	P	UL
Yamhill	Haskins Creek	Haskins Creek	1930	OR	Yamhill	Rockfill	52	410	S	Ø	City of McMinnville	M	UP
	Unnamed	Rock Creek	1944	OR	Polk	Earth	13	59	O	Ø	Polk Operating Co	P	UL
	Cole and Forrester	Trib Yamhill River	1951	OR	Yamhill	Earth	33	122	I	Ø	Elsie V. Cole	P	UP
	Walker	Salt Creek	1952	OR	Yamhill	Earth	12	52	I	Ø	R.L. Walker	P	UP
	Keene	Palmer Creek	1957	OR	Yamhill	Earth	15	125	I	Ø	Alice Stephens	P	UP

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Reimer	Trib Salt Creek	1958	OR	Polk	Earth	18	125	I	Ø	William Reimer	P	UL
	Dejong	Trib Salt Creek	1961	OR	Polk	Earth	33	72	I	Ø	Jack & James Dejong	P	UL
	Kauer	Trib Yamhill River	1968	OR	Yamhill	Earth	31	116	I	Ø	Raymond C. Kauer	P	UP
	Stringer	Holdridge Creek	1969	OR	Yamhill	Earth	22	78	I	Ø	Philip Eichler	P	UL
	Oberg Bros.	Trib Yamhill River	1970	OR	Yamhill	Earth	30	60	R	Ø	Oberg Bros.	P	UP
	Panther Cr	Panther Creek	1971	OR	Yamhill	Earth	43	66	S	Ø	City of Carlton	M	UP
	Joe Crow	Trib Yamhill River	1971	OR	Polk	Earth	20	82	I	Ø	Joe Crow	P	UL
Unknown	Unnamed	Onehorse Slough	1939	OR	Linn	Earth	9	300	D	Ø	Willamette Valley Lumber Co.	P	UL
COLUMBIA RIVER BETWEEN BONNEVILLE DAM AND SNAKE RIVER													
Columbia	Condit	White Salmon River	1913	WA	Klickitat	Gravity	125	1,081	H, R	10	Pacific Power Light	P	Y; fish passag provided, but removed in agreement with state
	Popular Springs	Pine Creek	1915	OR	Umatilla	Earth	44	37	S	Ø	City of Weston	M	UP
	Unnamed	Unnamed Trib	1938	WA	Benton	Earth	31	202	D	Ø	Coffin Sheep Co.	P	UK

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Unnamed	Unnamed Trib	1938	WA	Benton	Earth	26	50	O	Ø	Coffin Sheep Co.	P	UK
	Bonneville	Columbia River	1938/ 1983	OR	Multnomah	Gravity	50	600,000 150,000*	H, N, R	1,Ø76	Corps of Engineers	F	Y; fish passag facilities
	Unnamed	Unnamed Trib	1939	WA	Benton	Earth	28	25	C	Ø	E. Burlin-game	P	UK
	McNary	Columbia River	1953	OR	Umatilla	Gravity	180	1,350,000 185,000*	H,R,N	980	Corps of Engineers	F	Y; fish passa facilities
	Evans	Trib Threemile Creek	1953	OR	Wasco	Earth	8	90	I	Ø	Worth Evans	P	UP
	The Dalles	Columbia River	1957	OR	Wasco	Gravity	114	330,000 53,000*	H,N,R,I	1,808	Corps of Engineers	F	Y; fish passa facilities
	John Day	Columbia River	1968	OR	Sherman	Gravity	113	2,530,000 534,000*	H,C,N, R,I	2,160	Corps of Engineers	F	Y; fish passa facilities
	Crow Creek	S Fork Mill Creek	1968	OR	Wasco	Earth/ rockfill	105	955	S	Ø	City of The Dalles	M	UP
Crooked	Twelvemile	Twelvemile Creek	1929	OR	Crook	Earth	7	100	I	Ø	PCJS Land Bank of Portland	P	UL
	Camp Creek	W Fork Camp Creek	1945	OR	Crook	Earth	10	189	I	Ø	Ray Rickman	P	UL
	Merwin	Crooked River	1945	OR	Crook	Earth	6	166	I	Ø	Gale Merwin	P	UP
	Lillard	S Fork Twelvemile Creek	1948	OR	Crook	Earth	23	494	I	Ø	Boston Ranch Co	P	UL
	Twelvemile	Twelvemile Creek	1949	OR	Crook	Earth	19	150	I	Ø	Ranch Co	P	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Dry Creek No. 2	Dry Creek	1951	OR	Crook	Earth	16	370	I	Ø	Harry Stearns	P	UL
	Dick	Lost Creek	1950	OR	Crook	Earth	27	70	I	Ø	Hudspeth Land & Livestock	P	UP
	Fisher	Lytle Creek	1953	OR	Crook	Earth	43	508	I	Ø	Joe Fisher	P	UP
	Bonny View	Horse Heaven Creek	1953	OR	Crook	Earth	34	235	I	Ø	Hudspeth Land & Live-stock	P	UP
	Logan Butte	N Fork Camp Creek	1953	OR	Crook	Earth	32	330	I	Ø	R. T. Grisedale	P	UL
	Maury Mountain	Camp Creek	1954	OR	Crook	Earth	40	532	I	Ø	Ned Severance	P	UL
	King	Camp Creek	1955	OR	Crook	Earth	20	219	R	Ø	Izaac Wal-ton League	P	UL
	Barnes Butte	Trib Ochoco Creek	1956	OR	Crook	Earth	24	300	I	Ø	John Hudspeth	P	UP
	Rickman's Camp Creek No. 2	N Fork Camp Creek	1959	OR	Crook	Earth	17	606	I	Ø	Ray W. Rickman	P	UL
	Palmer	S Fork Beaver Creek	1959	OR	Crook	Earth	22	316	I	Ø	Vernon W. Palmer	P	UL
	Prineville	Crooked River	1961	OR	Crook	Earth	182	235,000	I,C,R	Ø	Bureau of Reclamation	F	Y
	Grindstone	Grindstone Creek	1964	OR	Crook	Earth	29	427	I	Ø	Boston Co	P	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Antelope Flat	Bear Creek	1965	OR	Crook	Earth	27	1,793	I	Ø	William R. McCormack	P	UP
	Marks Lake	Marks Creek	1968	OR	Crook	Earth	14	52	R	Ø	Lee Rhoden	P	UP
	Newsome Creek No. 1	Newsome Creek	1970	OR	Crook	Earth	36	95	I	Ø	Aspen Valley Ranches	P	UL
	Opal Springs	Crooked River	1985	OR	Jefferson	Other	10	31	H	5	Deschutes Valley W.D	P	UL; offstream generating facility
Deschutes	North Unit Diversion	Deschutes River	1906	OR	Deschutes	Gravity	33	Ø	H	Ø	Joanna MacLean	P	Y; runs blocke by downstream dams.
	Wickiup	Deschutes River	1913	OR	Deschutes	Earth	89	200,000	I,S	Ø	North Unit Irrigation District	P	Y; runs blocke by downstream dams.
	Bend Power	Deschutes River	1913	OR	Deschutes	Other	14	100	H	1	Pacific Power Light	P	UL; natural barrier downstream
	Cline Falls	Deschutes River	1913	OR	Deschutes	Other	---	Ø	H	1	Pacific Power Light	P	UL; natural barrier downstream
	Ochoco	Ochoco Creek	1922	OR	Crook	Earth	123	52,900	I	Ø	Bureau of Reclamation	F	Y; runs blocke by downstream dams.
	Crane Prairie	Deschutes River	1940	OR	Deschutes	Earth	22	83,330	I	Ø	C.O.I Dist, Trustee	P	Y; runs blocke by downstream dams.

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Brewer	Hay Creek	1952	OR	Jefferson	Earth	30	1,580	I	0	Hay Creek Ranching & Cattle Co.	P	UL
	Little Willow Creek	Little Willow Creek	1954	OR	Jefferson	Earth	35	962	I	0	Hay Creek Ranching & Cattle Co.	P	UL
	Crescent Lake	Crescent Creek	1956	OR	Crook	Earth	40	86,900	I	0	Bureau of Reclamation	F	UL; no passage facilities
	Haystack	Deschutes River	1957	OR	Jefferson	Earth/ rockfill	80	6,000	I	0	North Unit Irrigation District	P	UL
	Pelton	Deschutes River	1957	OR	Jefferson	Arch	175	37,300	H	108	Portland Gnrl Elec	P	Y; prevented upstream passage
	Pelton Reregulating	Deschutes River	1958	OR	Jefferson	Rockfill/ gravity	68	3,270	H,R	10	Portland Gnrl Elec	P	Y; prevented upstream passage
	Jefferson Plywood Co	Deschutes River	1959	OR	Deschutes	Earth	8	63	0	0	Jefferson Plywood Co	P	UL
	McKenzie Canyon	Squaw Creek	1959	OR	Deschutes	Earth	15	89	I	0	Squaw Creek Irr Dist	P	UP
	Wasco	Clear Creek	1960	OR	Wasco	Earth	39	16,300	I	0	Juniper Flat Dist Co	P	UL
	Upper Tumalo	Tumalo Creek	1961	OR	Deschutes	Other	10	1,100	I	0	Tumalo Irr District	P	UP
	Lytle Creek Diversion	Lytle Creek	1962	OR	Crook	Rockfill	4	0	I	0	Bureau of Reclamation	F	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Round Butte	Deschutes River	1964	OR	Jefferson	Earth/ rockfill	430	535,000	H,R	247	Portland Gnrl Elec	P	Y; runs blocke by Pelton Dam
	Squaw Creek Irr Dist	Squaw Creek	1965	OR	Deschutes	Earth	15	500	I	0	Squaw Creek Irr Dist	P	UP
	Cyrus	Squaw Creek	1968	OR	Deschutes	Earth	14	68	I	0	Keith Cyrus	P	UP
	Morrow Bros.	Willow Creek	1970	OR	Jefferson	Earth	17	83	I	0	Morrow Bros., Inc.	P	UP
Hood	Powerdale	Hood River	1923	OR	Hood River	Other	20	0	H	6	Pacific Power Light	P	Y
	Farmer's I.D. No. 2	Hood River	1985	OR	Hood River	Other	---	---	H,I	3	Farmer's I.D. No. 2	P	UL; offstream generating facility
John Day	Canyon Creek Meadows	Canyon Creek	1963	OR	Grant	Rockfill	45	400	R	0	Oregon St. Game Comm	S	UP
	Bates	Trib John Day R. River	1949	OR	Grant	Earth	23	100	R	0	Not known	P	UP
Klickitat	Unnamed	Outlet Creek	1951	Wa	Klickitat	Earth	14	130	O,S,R	0	J. Neils Lumber Co.	P	UP
	Van Aelst	Trib L Klickitat R	1966	WA	Klickitat	Earth	16	15	I	0	E Van Aelst	P	UL
Umatilla	Feed Canal Diversion	Umatilla River	1907	OR	Umatilla	Rockfill/ timber	8	0	I	0	Bureau of Reclamation	F	UP; no passage facilities
	Maxwell	Umatilla River	1907	OR	Umatilla	Rockfill/ timber	14	0	O	0	Bureau of Reclamation	F	UP; no passage facilities
	Cold Springs	Cold Springs Wash	1908	OR	Umatilla	Earth	90	52,200	I,D	0	Bureau of Reclamation	F	UP

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Three Mile Falls Diversion	Umatilla River	1914	OR	Umatilla	Multi-Arch	24	300	I	Ø	Bureau of Reclamaton	F	Y
	McKay	McKay Creek	1927	OR	Umatilla	Earth	154	79,000	I,C	Ø	Bureau of Reclamation	F	Y; fish passag
Walla Walla	Mill Creek	Mill Creek	1942	WA	Walla Walla	Earth	115	8,300	C	Ø	Corps of Engineers	F	UP
	Mill Creek	Mill Creek	1942	WA	Walla Walla	Gravity	12	12	O	Ø	Corps of Engineers	F	Y; fish passag facilities
	Robison Pond	Mud Creek	1954	WA	Walla Walla	Earth	16	200	I	Ø	Jim Robison	P	UL
	Dayton Lumber	Touchet River	1956	WA	Columbia	Earth	7	28	O	Ø	J. Lidstrom	P	UL
	Unnamed	Mill Creek	1962	WA	Walla Walla	Earth	14	90	I	Ø	Edward Stiller	P	UL
White	Miller	Trib White River	1952	OR	Wasco	Earth	24	106	I	Ø	M.E. Miller	P	UL
COLUMBIA RIVER BETWEEN SNAKE RIVER AND CHIEF JOSEPH DAM													
Columbia	Three Lakes	Unnamed Tributary	1908	WA	Chelan	Earth	8	600	I,R	Ø	Three Lakes Water Dist.	P	UK
	Rat Lake	Whitestone Creek	1917	WA	Okanogan	Earth	24	3,043	R,C	Ø	Okan Pwr & Irr Co.	P	UP
	Meadow Lake	Unnamed Tributary	1920	WA	Chelan	Earth	18	360	I,R	Ø	Galler Ditch Co.	P	UK
	Wapato Lake	Tributary Lake Chelan	1920	WA	Chelan	Earth/ Rockfill	16	9,464	I,R	Ø	Chelan Irrg Dist.	P	UK

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Unnamed	Trib Crab Creek	1924	WA	Grant	Earth	10	200	C	0	J. W. McDonald	P	UL
	Chelan	Chelan River	1928	WA	Chelan	Gravity	36	1,191,744	H,R	48	Chelan Co PUD	P	UK
	Moses Lake North	Crab Creek	1930	WA	Grant	Gravity	15	50,000	I,R	0	Moses Lake Irr. Dist.	P	UL
	Rock Island	Columbia River	1933	WA	Chelan	Gravity	84	135,000 11,000*	H,R	623	Chelan Co PUD	P	Y; fish ladder present, first mainstem dam.
	Blair Reservoir	Unnamed Trib	1937	WA	Benton	Earth/ Rockfill	30	124	I,R	0	B. Blair	P	UK
	Black Lake-Upper	Crab Creek	1938	WA	Adams	Gravity	6	250	R	0	Clayton Michel	P	UK
	Lower Goose Lake	Crab Creek	1938	WA	Grant	Other	11	1,550	R	0	Bureau of Reclamation	F	UL
	Jenkins-Webley	Trib Columbia R.	1945	WA	Douglas	Earth	12	1,200	I	0	Jenkins & Webley	P	UL
	Unnamed	Trib Columbia R.	1946	WA	Douglas	Earth	9	120	I	0	R. C. Jorgensen	P	UL
	O'Sullivan	Lower Crab Creek	1949	WA	Grant	Earth	140	552,000	I,C,R	0	Bureau of Reclamation	F	UL
	Unnamed	Trib Douglas Cr	1950	WA	Douglas	Earth	6	150	I	0	Gerald Meyer	P	UL
	North	Trib Columbia R	1951	WA	Grant	Earth	77	1,275,000	I,R	0	Bureau of Reclamation	F	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Soda Lake Dike	Trib Columbia R	1952	WA	Grant	Earth	38	10,200	I	0	Bureau of Reclamation	F	UL
	N Scooteney Dike	Trib Columbia R	1953	WA	Franklin	Earth	10	15,250	I	0	Bureau of Reclamation	F	UL
	Bonaparte Lk	Bonaparte Creek	1957	WA	Okanogan	Earth	9	995	I,R	0	Ted Eberle	P	UP
	Priest Rapids	Columbia River	1959	WA	Grant	Earth/ Gravity	97	250,000 44,600*	H,R	789	Grant Co. PUD No. 1	P	Y; fish ladder present.
	Rocky Reach	Columbia River	1961	WA	Chelan	Gravity	120	430,000 35,000*	H,R	1,213	Chelan Co. PUD	P	Y; fish ladder provided
	Unnamed	Trib Columbia	1961	WA	Douglas	Earth	12	120	C	0	J. McKay	P	UL
	Moses Lake	Crab Creek	1962	WA	Grant	Earth	12	15,000	I,R	0	Bureau of Reclamation	F	UL
	Wanapum	Columbia River	1963	WA	Grant	Earth/ Gravity	130	748,000 160,800*	H,R,N	831	Grant Co. PUD No. 1	P	Y; fish ladder provided
	Wells	Columbia River	1967	WA	Douglas	Earth/ Gravity	110	361,200 70,000*	H,R	774	Douglas Co. PUD	P	Y; fish ladder provided
	Lower Rimrock	McCarteney Creek	1972	WA	Douglas	Earth/ Rockfill	67	550	R	0	Glen Corning	P	UL
	Columbia Park	Trib Columbia R	1976	WA	Benton	Earth	10	30	R	0	City of Kennewick	M	UP
	McLaughlin	Trib Columbia R	1976	WA	Chelan	Earth	12	200	I	0	T. McLaughlin	P	UL
Methow	Libby Lake	N Fork Libby Creek	1911	WA	Okanogan	Rockfill/ Earth	6	760	R,I	0	US Forest Service	F	UP

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Beaver Lake	Beaver Creek	1910	WA	Okanogan	Earth	6	80	R	0	US Forest Service	F	UP
	Patterson L	Trib Methow River	1922	WA	Okanogan	Earth	29	5,715	I,R	0	Wolf Creek Recl Dist	P	UP
	Wenner Lakes	Trib Benson Creek	1940	WA	Okanogan	Earth	12	100	R	0	J Chalfa, D. Wentworth	P	UP
	Wenner Lakes No. 1	Trib Benson Creek	1940	WA	Okanogan	Earth	29	100	R,I	0	L. Hawkins	P	UP
	Wenner Lakes No. 2	Trib Benson Creek	1940	WA	Okanogan	Earth	22	150	R	0	John Pabel	P	UP
Naches	Wapatox	Naches River	1906/ 1979		Yakima	Other	3	0	H,I	0	Pacific Power Light	P	Y
	Naches	Naches River	1906	WA	Yakima	Other	---	0	H	6	Pacific Power Light	P	Y
	Tieton Diversion	Tieton River	1908	WA	Yakima	Other	3	1	I	0	Bureau of Reclamation	F	Y
	Bumping Lake	Bumping River	1910	WA	Yakima	Earth	38	37,700	I,C,R	0	Bureau of Reclamation	F	Y; Passage problems
	Naches Drop	Natches River	1914	WA	Yakima	Other	---	0	H	1	Pacific Power Light	P	Y
	Clear Creek	N Fork Tieton R	1914	WA	Yakima	Arch	57	6,680	I,R	0	Bureau of Reclamation	F	Y
	Tieton (Rim Rock)	Tieton River	1925	WA	Yakima	Earth	192	203,500	I,C,R	0	Bureau of Reclamation	F	Y; passage problems

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
Okanogan	Similkameen (Enloe)	Similkameen River	1905	WA	Okanogan	Arch	60	2,400	H	0	Okan Co PUD No. 1	P	Y; dam was total barrier, new fishway under design
	Leader Lake	Loup Loup Creek	1910	WA	Okanogan	Earth	50	5,312	R	0	Pleasant Valley Irr. & PW	P	UP
	Conconully	Salmon Creek	1910	WA	Okanogan	Earth	63	16,600	I,C,R	0	Bureau of Reclamation	F	Y; blockage of fish runs
	Sasse Reservoir	Trib Okanogan R	1910	WA	Okanogan	Earth	8	60	R	0	WA St Dept of Game	S	UP
	Salmon Lake	Salmon Creek	1920	WA	Okanogan	Earth	35	12,380	I,R	0	Bureau of Reclamation	F	Y
	Fish Lake	Trib Okanogan R.	1920	WA	Okanogan	Earth	7	2,815	R	0	WA St Dept of Game	S	UP
	Blue Lake	Trib Sinlahekin Cr	1923	WA	Okanogan	Earth/ Rockfill	10	4,416	R	0	WA St Dept of Game	S	UL
	Zosels Mill Pond	Okanogan River	1927	WA	Okanogan	Other	15	426	D	0	W. Zosel	P	UP
	Whitestone L	Trib Okanogan R	1930	WA	Okanogan	Earth/ Rockfill	8	2,144	R,I	0	Victor Lesamiz	P	UP
	Forde Lake	Sinlahekin Creek	1949	WA	Okanogan	Earth	10	333	R	0	WA St Dept of Game	S	UP
	Sinlahekin Impoundment No. 2	Sinlahekin Creek	1949	WA	Okanogan	Earth	10	82	R	0	WA St Dept of Game	S	UP

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Lower Sinlahekin Impoundment	Sinlahekin Creek	1950	WA	Okanogan	Earth	7	593	R	Ø	WA St Dept of Game	S	UP
	Schallow Lake	Coulee Creek	1954	WA	Okanogan	Earth	11	76	R	Ø	WA St Dept of Game	S	UP
	Little Green Lake	Trib Salmon Creek	1959	WA	Okanogan	Earth	11	68	O	Ø	WA St Dept of Game	S	UP
	Fanchers	Antoine Creek	1961	WA	Okanogan	Earth	60	600	I,R	Ø	R. M. Fancher	P	UP
	Spectacle Lake Dike	Okanogan River	1969	WA	Okanogan	Earth	13	14,100	I,R	Ø	Bureau of Reclamation	F	UP
	Moccasin Lake	Trib Thompson Cr	1969	WA	Okanogan	Earth	15	490	I,R	Ø	J. R. Titcomb	P	UP
	Beth Lake	N Fork Beaver Cr	1973	WA	Okanogan	Earth	16	300	R	Ø	US Forest Service	F	UP
	Davis Lake	Trib Methow River	1974	WA	Okanogan	Earth/ rockfill	7	552	R	Ø	Mack Lloyd	P	UL
Wenatchee	Dryden Diversion	Wenatchee River	1907	WA	Chelan	Gravity	10	8	H,S	Ø	Chelan Co. PUD	P	Y; no fish passage facilities
	Tumwater	Wenatchee River	1909	WA	Chelan	Gravity	15	17	H	Ø	Chelan Co. PUD	P	Y; dam is not operational, no passage facilities
	H & H Reservoir	Trib Mission Creek	1926	WA	Chelan	Earth	14	250	I	Ø	P. Halvor-sen/Hampton	P	UK

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Colchuck Lake Saddle	Colchuck Creek	1930	WA	Chelan	Rockfill/ Earth	8	1,570	I,R	Ø	Icicle Irr Dist.	P	UK
	Colchuck Lake	Colchuck Creek	1930	WA	Chelan	Rockfill/ Earth	15	1,570	I,R	Ø	Icicle Irr Dist	P	UK
	Eightmile L	Eightmile Creek	1933	WA	Chelan	Rockfill/ Earth	19	1,610	I,R	Ø	Icicle Irr Dist	P	UK
	Klonaqua Lake	Trib French Creek	1933	WA	Chelan	Rockfill/ Earth	13	1920	I,R	Ø	Icicle Irr Dist	P	UK
Yakima	Horn Rapids	Yakima River	1893	WA	Benton	Gravity	5	70	O	Ø	Columbia Irr Dist	P	Y; passage problems new fishway under construction
	Wapato Drop No. 3	Yakima River		WA	Yakima		Ø	Ø	I	Ø	Bureau of Reclamation	F	Y; new fishway under design/ construction
	Wapato Drop No. 2	Yakima River		WA	Yakima		Ø	Ø	I	Ø	Bureau of Reclamation	F	Y; new fishway under design/ construction
	Cascade Mill Pond	Yakima River Offstream	1907	WA	Yakima	Earth	12	195	O	Ø	Boise Cascade Corp	P	UL
	Sunnyside	Yakima River	1907	WA	Yakima	Earth	8	20	I	Ø	Bureau of Reclamation	F	Y; inefficient ladders, fish passage problems, new fish ways under construction
	Kachess	Kachess River	1912	WA	Kittitas	Earth	59	245,000	I,C,R	Ø	Bureau of Reclamation	F	Y; no passage

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Prosser Diversion (Chandler)	Yakima River	1917/ 1956	WA	Benton	Gravity	9	350	O,H	12	Bureau of Reclamation	F	Y; passage problems, new fishways under design/construction
	Keechelus	Yakima River	1917	WA	Kittitas	Earth	68	171,000	I,C,R	Ø	Bureau of Reclamation	F	Y; no passage
	Wenas	Wenas Creek	1925	WA	Yakima	Earth	43	1,450	I,R	Ø	Wenas Irr Dist	P	Y; total passage barrier
	Easton Diversion	Yakima River	1929	WA	Kittitas	Gravity	56	4,000	I,R	Ø	Bureau of Reclamation	F	Y; inefficient fish ladders
	Cle Elum	Cle Elum River	1933	WA	Kittitas	Earth	124	710,000	I,C,R	Ø	Bureau of Reclamation	F	Y; no passage
	Placer Lake	Morse Creek	1935	WA	Yakima	Earth	12	420	O	Ø	J. A. Wickstrom	P	UP
	Roza Diversion	Yakima River	1939/ 1958	WA	Kittitas	Gravity	31	200	I,H	11	Bureau of Reclamation	F	Y; inefficient fish ladders
	Byron Ponds	Trib Yakima River	1950	WA	Yakima	Gravity	9	200	R	Ø	WA St Dept of Game	S	UL
	Parker Reservoir	Trib Wide Hollow Cr	1955	WA	Yakima	Earth	24	54	I,R	Ø	H. Parker	P	UP
	Knudson	Trib Yakima River	1966	WA	Kittitas	Earth	8	11	R	Ø	E. Knudson	P	UP
COLUMBIA RIVER ABOVE CHIEF JOSEPH DAM													
Columbia	Owhi Lake	Little Nespelem Creek	1916	WA	Okanogan	Earth	10	6,400	I,R,S	Ø	Bureau of Indian Affairs	F	UP

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Hunter Reservoir	Hunters Creek	1921	WA	Stevens	Earth	57	602	I,R	Ø	Hunter Land Co.	P	UP
	Twin Lakes	Stranger Creek	1931	WA	Ferry	Earth	8	18,950	I,R,S	Ø	Bureau of Indian Affairs	F	UL
	Grand Coulee	Columbia River	1942	WA	Grant	Gravity	380	9,562,000 5,185,500*	I,H,C, N,R	6,464	Bureau Reclamation	F	Y; blocked mainstem fish runs
	Higginbotham Reservoir	Trib Banks Lake	1947	WA	Grant	Earth	10	145	I,R	Ø	T. R. Higginbotham	P	UL
	Pinto	Columbia River	1948	WA	Lincoln	Earth	107	76,500	I,C,R	0	Bureau of Reclamation	F	UL
	Dry Falls	Columbia River Offstream	1949	WA	Douglas	Earth	40	1,275,000	I,R	Ø	Bureau of Reclamation	F	UP; Impound-Banks Lake
	Snook Lake	Trib Columbia R	1953	WA	Stevens	Earth	10	92	I	Ø	E.R. Lantzy	P	UL
	Chief Joseph	Columbia River	1955	WA	Douglas	Gravity	205	480,000 46,000*	H,R,I	2,069	Corps of Engineers	F	Y; fish ladder
	Walter Hardman	Cranberry Creek	1959	BC	----	Earth	40	580	H	8	BC Hydro	F	Y; runs blocke by Grand Coule and Chief Jose
	Sims Corner Reservoir	Trib Columbia R	1960	WA	Douglas	Earth	7	433	C	Ø	R. Hunt	P	UL
	Hugh Keenleyside (Arrow Lakes)	Columbia River	1968	BC	----	Earth/ Gravity	170	8,337,000 7,100,000*	C,O	Ø	BC Hydro	F	Y; runs blocke by Grand Coule and Chief Jose
	Mica	Columbia River	1973	BC	----	Earth	800	20,000,000 12,000,000*	H,C,O	1,736	BC Hydro	F	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Revelstoke	Columbia River	1983	BC	----	Earth/ Gravity	575	4,300,000 1,104,800*	H,C,O	1,800	BC Hydro	F	UL
Colville	Meyers Falls	Colville River	1915	WA	Stevens	Earth/ Buttress	23	60	H	1	WA Water Power	P	N
	Beitey Lake	Trib Colville River	1934	WA	Stevens	Earth	10	124	R	0	J C Beitey	P	UL
	Unnamed	Little Pend Oreille River	1952	WA	Stevens	Other/ Earth	10	50	R,O	0	WA St Dept of Game	S	UL
	Somers Reservoir	Trib Sheep Creek	1958	WA	Stevens	Earth	15	51	I,R	0	E.R. Somers	P	UL
	Miller Reservoir	Kline Creek	1959	WA	Stevens	Earth	13	98	I,R	0	J. Keeley	P	UL
	Jumpoff Jim Lake	Trib Colville River	1972	WA	Stevens	Earth	11	270	R	0	James Keeley	P	UL
Kootenai	Libby	Kootenai River	1973	MT	Lincoln	Gravity	370	5,809,000 4,934,000*	H,R,N,C	420+	Corps of Engineers	F	N; natural barrier down-stream
Kootenay	Lower Bonnington	Kootenay River	1898/ 1925	BC	---	Gravity	113	---	H	42	W. Kootenay Pwr & Light	P	Y; may have blocked runs
	Upper Bonnington	Kootenay River	1907	BC	---	Gravity	110		H	60	W. Kootenay Pwr & Light	P	Y; runs blocke by downstream dams.
	South Slocan	Kootenay River	1928	BC	---	Gravity	132	---	H	55	W. Kootenay Pwr & Light	P	Y; may have blocked runs
	Corra Linn	Kootenay River	1932	BC	---	Gravity	109	396,000	H,C,R	51	W. Kootenay	P	Y; runs blocke by downstream dams.

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Brilliant	Kootenay River	1944	BC	---	Gravity	156	2,500	H	129	W. Kootenay	P	Y; runs blocke by downstream dams
	Aberfeldie	Bull River	1953	BC	---	Gravity	100	1,000	H	5	BC Hydro	F	N; natural barrier down-stream
	Duncan	Duncan River	1967	BC	---	Earth	130	1,432,500 1,400,000*	C,R,O	0	BC Hydro	F	UK
	Kootenay Canal	Offstream, diverts from Kootenay Lake	1975	BC	---	Gravity	90	---	H	528	BC Hydro	F	N; offstream generating facility
Pend Oreille	Calispell L	Calispell Creek	1890	WA	Pend Oreille	Earth/ Rockfill	7	3,000	R	0	Calispell Duck Club	P	N; natural barrier down-stream
	Ione Mill Pond	Big Muddy Creek	1914	WA	Pend Oreille	Earth	21	557	R	0	Louisiana Pacific Co	P	UL
	Thompson Falls	Clark Fork	1915	MT	Saunders	Gravity	54	15,000*	H	40	Montana Power Co.	P	N; natural barrier down-stream
	Sullivan L	Harvey Creek	1931	WA	Pend Oreille	Gravity	29	31,210	H,R	0	Pend Oreille Co PUD	P	UL
	Kerr	Flathead River	1938	MT	Lake	Arch	200	1,219,000*	H,C,R	180	Montana Power Co.	P	N; natural barrier down-stream
	Priest Lake	Priest River	1950	ID	Bonner	Other (Gated)	8	71,400*	R,O	0	State of Idaho	S	N; natural barrier down-stream

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Hungry Horse	Flathead River	1952	MT	Flathead	Arch/ Gravity	564	3,468,000	H,I,N, C,R	285	Bureau of Reclamation	F	N; natural barrier downstream
	Cabinet Gorge	Clark Fork	1953	ID	Bonner	Arch	160	44,000	H	200	WA Water Power Co	P	N; natural barrier downstream
	Waneta	Pend Oreille	1954	BC	-----	Gravity	275	2,600	H	375	W Kootenay Pwr & Light	P	Y; may have blocked runs
	Albeni Falls	Pend Oreille	1955	ID	Bonner	Gravity		1,153,000*	H,N,R,C	43	Corps of Engineers	F	N; natural barrier downstream
	Noxon Rapids	Clark Fork	1959	MT	Sanders	Gravity/ Earth	260	497,700	H,R,C	397	WA Water Power Co.	P	N; natural barrier downstream
	Box Canyon	Pend Oreille River	1955	WA	Pend Oreille	Gravity	100	50,000	H,R	60	Pend Oreille County PUD	P	Y; partial natural barrier downstream
	Kent Meadows Lake	Trib Pend Oreille River	1959	WA	Pend Oreille	Earth	10	1,000	R	0	F. J. Capretto	P	UL
	Unnamed	Trib Pend Oreille R	1966	WA	Pend Oreille	Earth	12	150	I,R	0	J S Duncan	P	UL
	Boundary	Pend Oreille River	1967	WA	Pend Oreille	Arch	380	94,500	H,R	635+	City of Seattle	M	Y; may have blocked runs
	Unnamed	Trib Pend Oreille R	1970	WA	Pend Oreille	Earth	15	51	R	0	Yergens & Anselmo	P	UL
	Locke	Trib Pend Oreille R	1971	WA	Pend Oreille	Earth	25	2,130	C	0	Pend Oreille Co Diking Dist	P	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Pend Oreille PUD	Trib Pend Oreille R	1973	WA	Pend Oreille	Earth	15	18	R	0	Pend Oreille PUD	P	UL
	McDowell Lake	Trib Little Pend Oreille River	1973	WA	Stevens	Earth	13	596	R	0	WA St Dept of Game	S	UL
	Seven Mile	Pend Oreille	1979	BC	-----	Gravity	220	68,000	H	607	BC Hydro	F	N; natural barrier downstream
Spokane	Monroe Street	Spokane River	1896	WA	Spokane	Gravity	26	68	H	7	WA Water Power	P	UL; runs blocked by Spokane Falls
	Lincoln Heights Reservoir	Trib Spokane River	1903	WA	Lincoln	Gravity	20	74	S	0	City of Spokane	M	UL
	Post Falls	Spokane River	1906	ID	Kootenai	Gravity	59	225,000	I,H	15	WA Water Power	P	UL; runs blocked by Spokane Falls
	Nine Mile	Spokane River	1908	WA	Spokane	Gravity	95	5,800	H	12	WA Water Power	P	UK; blockage of fish runs adult fish passage facilities
	Little Falls	Spokane River	1910	WA	Lincoln	Gravity	60	4,250	H	32	WA Water Power	P	UK; blockage of fish runs, adult fish passage facilities
	Marshall Lake	Marshall Creek	1912	WA	Pend Oreille	Earth	10	1,919	R,I	0	L. Margart	P	UL
	Long Lake	Spokane River	1915	WA	Lincoln	Gravity/ Arch	208	229,000	H	70	WA Water Power	P	Y; blockage of fish runs

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Upper Falls	Spokane River	1922	WA	Spokane	Buttress/ Gravity	22	800	H	10	WA Water Power	P	UL; runs blocked by Spokane Falls
	Wanermere L.	Trib Little Spokane River	1930	WA	Spokane	Earth	9	70	R	0	W.L. Ross	P	UL
	Horsehose L.	W Br Little Spokane River	1930	WA	Pend Oreille	Rockfill	12	2,240	H,S,O	0	H. Klopp	P	UP; dam has be breached
	Upper Station Control Works	Spokane River	1935	WA	Spokane	Gravity	27	200	H	4	City of Spokane	M	UP
	Reflection L.	Trib Dry Creek	1955	WA	Spokane	Earth	23	550	R	0	C.H. Sheets	P	UL
	Lynda Lake	Trib Little Spokane Spokane River	1960	WA	Pend Oreille	Earth	22	17	R	0	L. Well	P	UP
	Little Spokane	W Br Little Spokane Spokane River	1960	WA	Pend Oreille	Earth	8	35	R	0	WA St Dept of Game	S	UP
SNAKE RIVER BELOW HELLS CANYON DAM													
Clearwater	Lapwat Lake	Lapwat Creek	1910	ID	Lewis	Earth	35	800	R,O,S	0	ID Fish and Game Dept.	S	UL
	Soldiers Meadow	Webb & Sweetwater Creeks	1924	ID	Nez Perce	Earth	57	2,000	I,S	0	Lewiston Orchds Irr Dist	P	UP
	Lewiston	Clearwater	1927	ID	Nez Perce	Gravity	35	0	O	0	WA Water Power	P	Y; fishways provided, dam removed 1972
	Dworshak	N Fork of Clear-water	1971	ID	Nez Perce	Gravity	717	3,468,000 2,015,800*	H,C,R	400	Corps of Engineers	F	Y; total barrier, mitig tion hatchery downstream

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
Grande Ronde	Ruckham	Grande Ronde River	1963	OR	Union	Earth	12	76	I	Ø	Ruckham Farms	P	UP
	Langdon Lake	Lookingglass Ck.	1930	OR	Umatilla	Earth	9	253	R	Ø	Langdon Lake, Inc.	P	UL
	La Grande	Beaver Creek	1920	OR	Union	Earth	32	650	S	Ø	Not Known	P	UP
	Gray's Slough	Grande Ronde River	1970	OR	Union	Earth	8	82	I	Ø	Aldon H. Gray	P	UL
Imnaha	Canal Creek	Trib Sheep Creek	1984	OR	Wallowa	Gravity	4	Ø	H,I	1	Joseph Hydro Assoc	P	UL; offstream generating facility
	Ferguson Ridge	Trib Sheep Creek	1984	OR	Wallowa	Other	4	Ø	H,I	2	Joseph Hydro Assoc	P	UL; offstream generating facility
	Upper Little Sheep Creek	Trib Sheep Creek	1984	OR	Wallowa	Gravity	4	Ø	H,I	5	Joseph Hydro Assoc	P	UL; offstream generating facility
Lemhi	Mill Creek L.	Mill Creek	1928	ID	Lemhi	Earth	16	210	I,S	Ø	R. Snyder & S. Amonson	P	UL
Salmon	Goose Lake	Goose Creek	1924	ID	Adams	Earth	21	6,218	I	Ø	Goose Lake Res. Co.	P	UL
	Buster Lake	Garden Creek	1935	ID	Custer	Earth	29	139	I	Ø	US Forest Service	F	UL
	Brundage Meadows	Brundage Creek	1935	ID	Adams	Gravity	31	3,537	I,S	Ø	Brundage Meadows Res. Co.	P	UL
	Mosquito Flat	Challis Creek	1949	ID	Custer	Earth	46	800	I,S	Ø	Bain Stark	P	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Blackbird Cr.	W Fork Blackbird Cr	1950	ID	Lemhi	Earth	100	650	O	Ø	Noranda Mining Co.	P	UP; upstream impacted by acid mine drainage.
	Bohannon	Bohannon Creek	1950	ID	Lemhi	Rockfill	10	50	I	Ø	Bill Swahlen	P	UP
	Warm Springs Creek	Warm Springs Creek	1950	ID	Lemhi	Earth	24	119	I	Ø	Lee Rice	P	UL
	Challis Creek	Challis Creek	1951	ID	Custer	Earth	11	200	I,S	Ø	Clyde Green	P	UL
	Twin Granite	Goose Creek	1958	ID	Adams	Earth	22	750	I	Ø	Goose Lake Res. Co.	P	UL
	Williams Lake	Lake Creek	1965	ID	Lemhi	Earth	Ø	400	O	Ø	Joseph Burden	P	UL
	Hoodoo Mine No. 2	Slate Creek	1971	ID	Custer	Earth/ Rockfill	25	15	O	Ø	Hoodoo Mines, Inc.	P	UL
	Hoodoo Mine No. 1	Slate Creek	1971	ID	Custer	Earth/ Rockfill	40	50	O	Ø	Hoodoo Mines, Inc.	P	UL
Snake Mainstem	Pomeroy Gulch	Unnamed Tributary	1907	WA	Asotin	Arch	41	58	S	Ø	Wash. Water Power	P	UK; dam has be removed
	Sprague Lake	Cow Creek	1920	WA	Adams	Gravity	8	22,000	I,R	Ø	M. Harder	P	UK
	Ice Harbor	Snake River	1962	WA	Walla Walla	Gravity	100	407,000 24,900*	H,R,I,N	603	Corps of Engineers	F	Y; fish ladder provided
	Lower Monumental	Snake River	1969	WA	Franklin	Gravity	100	377,000 20,100*	H,R,I,N	810	Corps of Engineers	F	Y; fish ladder provided
	Little Goose	Snake River	1970	WA	Columbia	Gravity	98	565,000 49,000*	H,R,N	810	Corps of Engineers	F	Y; fish ladder provided

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Lower Granite	Snake River	1975	WA	Columbia	Gravity	105	483,800 44,000*	H,R,N,I	810	Corps of Engineers	F	Y; Fish ladder provided
Wallowa	Minam Lake	Lostine River	1921	OR	Wallowa	Earth	7	1,000	I,S	0	Minam Lake Resrv Co.	P	UP
	Wallowa Lake	Wallowa River	1931	OR	Wallowa	Gravity	35	49,257	I,H,S,R	1	Assoc Ditch Co.	P	UP
	Lostine	Lostine River	1970	OR	Wallowa	Earth/ Rockfill	11	540	R	0	Bruch M. Strathearn	P	UL
SNAKE RIVER ABOVE HELLS CANYON DAM													
Big Wood	Cow Creek	Cow Creek	1915	ID	Elmore	Earth	20	1,283	I	0	E. A. Harrison & Sons	P	UL
	Magic	Big Wood River	1917	ID	Blaine	Earth	123	192,000	I	0	Big Wood Canal Co.	P	UL
	Thorn Creek	Thorn Creek	1961	ID	Gooding	Earth	25	950	O	0	Thorn Creek Cattle Assn	P	UL
	Little Wood	Little Wood River	1962	ID	Blaine	Earth	111	32,000	I	0	Little Wood River Irr. Dist.	P	UL
Boise	Barber	Boise River	1906	ID	Ada	Other	26	180	C,D	0	Cele Danzer	P	Y; may have blocked runs
	Deer Flat-Lower	Boise River	1908	ID	Canyon	Earth	41	190,000	I,R	0	Bureau of Reclamation	F	UL
	Deer Flat-Middle	Boise River	1908	ID	Canyon	Earth	11	190,000	I,R	0	Bureau of Reclamation	F	UL
	Deer Flat-Upper	Boise River	1908	ID	Canyon	Earth	65	190,000	I,R	0	Bureau of Reclemation	F	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Boise Diversion	Boise River	1908	ID	Ada	Gravity	35	800	I,H	2	Bureau of Reclamation	F	Y; no passage facilities
	Arrowrock	Boise River	1915	ID	Elmore	Arch	262	301,000	I,C	0	Bureau of Reclamation	F	Y; passage blocked by downstream dam.
	Anderson Ranch	S Fork Boise River	1950	ID	Elmore	Earth	332	509,000	I,H,C,R	27	Bureau of Reclamation	F	Y; passage blocked by downstream dams.
	Lucky Peak	Boise River	1955	ID	Ada	Earth	340	307,000	C,R,H,I	0+	Corps of Engineers	F	Y; runs blocke downstream dan
Bruneau	Strickland	Louse Creek	1957	ID	Owyhee	Earth	34	950	I,G	0	W. P. Strickland	P	UL
Burnt	Elms	Trib Job Creek	1908	OR	Baker	Earth	10	190	I	0	Not known	P	UP; runs now blocked by Unity Dam
	Morfitt	Job & Bull Run Crs.	1914	OR	Baker	Earth	15	280	I	0	William L. Morfitt	P	UP
	Long Creek	Long Creek	1918	OR	Baker	Earth	15	70	I	0	John Hardmand	P	UP
	Whited	S Fork Burnt R.	1921	OR	Baker	Earth	41	700	I,S	0	George M. Whited	P	UP
	Murray	E Fork Camp Creek	1928	OR	Baker	Earth	16	467	I	0	John Hardman	P	UP
	Camp Creek	Camp Creek	1930	OR	Baker	Earth	70	1,700	I	0	Camp Creek Water Co.	P	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Unity	Burnt River	1938	OR	Baker	Earth	62	29,300	I,R	Ø	Bureau of Reclamation	F	Y; total barrier
	Munn	N Fork Burnt R.	1947	OR	Baker	Earth	18	120	I	Ø	Wallace Morgan	P	UP
Malheur	Morrison	Trib Williow Creek	1916	OR	Malheur	Earth	29	80	O	Ø	Bureau of Land Mgmt	F	UP
	Warm Springs	M. Fork Malheur R.	1919	OR	Malheur	Arch	97	2,000,000	I,C,R,O	Ø	Bureau of Reclamation	F	UP
	Becker	N Fork Indian Creek Creek	1923	OR	Malheur	Other	8	150	I	Ø	Charles Becker	P	UL
	Harper Diversion	Malheur River	1929	OR	Malheur	Gravity	21	Ø	I	Ø	Bureau of Reclamation	F	UP
	Pole Creek	Pole & Field Creeks	1932	OR	Malheur	Earth	11	351	I	Ø	James J. Cathcort	P	UL
	Agency Valley	N Fork Malheur R.	1935	OR	Malheur	Earth	83	66,000	I,C,R,O	Ø	Bureau of Reclamation	F	Y
	Malheur	Willow Creek	1944	OR	Malheur	Earth	69	41,000	I	Ø	Orchards Water Co.	P	UL
	Pole Creek	Pole Creek	1944	OR	Malheur	Earth	55	2,200	I	Ø	Orchards Water Co.	P	UL
	South Fork	S Fork Malheur R.	1951	OR	Harney	Earth	21	161	I	Ø	Florence O. Hawley	P	UL
	Bully Creek	Bully Creek	1963	OR	Malheur	Earth	99	38,801	I,C,R,O	Ø	Bureau of Reclamation	F	UP
	South Fork	S Fork Malheur R.	1968	OR	Harney	Earth	25	536	I	Ø	Hawley Land & Cattle Co.	P	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Squaw Creek	S Fork Squaw Creek	1969	OR	Malheur	Earth	27	32	R	Ø	Bureau of Land Mgmt	F	UL
Owyhee	Antelope	Jack Antelope & Jordan Creek	1925	OR	Malheur	Earth	51	55,ØØØ	I	Ø	Jordan Val. Irr. Dist	P	UL
	Owyhee	Owyhee River	1932/ 1985	OR	Malheur	Arch	412	1,12Ø,ØØØ	I,C,R,H	4	Bureau of Reclamation	F	Y; no passage facilities
	Rock Creek	Rock & Louisa Crs.	1965	ID	Owyhee	Earth	28	1,29Ø	I	Ø	A Giusti, EP Lawrence	P	UL
Payette	Boulder Lake	Boulder Creek	1922	ID	Valley	Other	13	1957	I,S	Ø	Roseberry Irr. Dist.	P	UL
	Molony	S Fork Lake Fork R.	1924	ID	Valley	Other	1Ø	81	I	Ø	Lucille F. Miller	P	UL
	Black Canyon Diversion	Payette River	1924	ID	Gem	Gravity	112	44,8ØØ	I,H,R,C	8	Bureau of Reclamation	F	Y; no passage facilities
	Little Payette Lake	Lake Fork Payette R	1926	ID	Valley	Earth	21	16,95Ø	I,S	Ø	Lake Fork Irr. Dist.	P	UL
	Deadwood	Deadwood River	1931	ID	Valley	Arch	147	164,ØØØ	I,H,C,R	Ø	Bureau of Reclamation	F	UP
	Sage Hen	Sage Hen & Squaw Creeks	1938	ID	Gem	Earth	43	5,3ØØ	I,S	Ø	Squaw Creek Irr. Company	P	UL
	Payette Lake	N Fork Payette R.	1944	ID	Valley	Gravity	1Ø	94,525	I,S	Ø	Lake Reservoir Co	P	UL
	Cascade	N Fork Payette R.	1948; 1984	ID	Valley	Earth	1Ø7	7Ø3,2ØØ	I,C,R,H	12	Bureau of Reclamation	F	UP
	Upper Payette Lake	N Fork Payette R.	1953	ID	Valley	Gravity	12	3,ØØØ	I,S	Ø	Lake Reservoir Co	P	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Browns Pond - Cruzen	Lake Fork Payette R	1962	ID	Valley	Earth	40	1,233	I	0	Edward A Cruzen	P	UL
	Paddock Valley	Little Willow Creek	1967	ID	Washington	Earth	47	33,000	I	0	Little Willow Irr. Dist	P	UP
	Boulder Meadow	Boulder Creek	1968	ID	Valley	Earth	25	490	I	0	L. Hollen-beak, R. Potter	P	UL
Powder	Rock Creek	Rock Creek	1905	OR	Baker	Gravity	7	6	H	1	C.P. Nat'l.	P	UP; diversion dam to off-stream storage site
	Bennett	Trib. Ebell Cr.	1908	OR	Baker	Earth	20	250	I	0	Not known	P	UL
	Vaughn	Timber Gulch	1908	OR	Baker	Earth	35	230	I	0	Not known	P	UL
	Killamacue	Killamacue Creek	1908	OR	Baker	Gravity	15	150	I	0	Not known	P	UP
	Saw Mill Gulch	Spring Creek	1916	OR	Baker	Earth	25	150	I	0	David S. Grover	P	UL
	Licklider	Trib. Powder River	1917	OR	Baker	Earth	30	45	I	0	Elle Licklider	P	UP
	Bacher Creek	Bacher Creek	1925	OR	Baker	Earth	25	120	I	0	Pearl Wright	P	UP
	Love	Love, Lawrence & Bitter Creeks	1928	OR	Baker	Earth	27	570	I	0	C & R Love H. Colton	P	UL
	Rock Lake	Rock Creek	1928	OR	Baker	Earth	23	500	I	0	Nancy A. Maxwell	P	UP

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Little Summit Lake	Trib N Fork Powder River	1929	OR	Baker	Earth	20	290	I	0	J. Dalton & C. Johnson	P	UL
	Summit Lake	Trib. N Fork Powder River	1929	OR	Baker	Earth	20	430	I	0	J. Dalton & C. Johnson	P	UP
	Van Patton L.	Trib Dutch Flat Cr.	1929	OR	Baker	Earth	20	290	I	0	J. Dalton & C. Johnson	P	UL
	Thief Valley	Powder River	1932	OR	Baker	Buttress	73	17,600	I	0	Bureau of Reclamation	F	Y; total barrier
	Smith Lake	Powder River	1948	OR	Baker	Earth	21	1,155	I	0	Allen & Jones	P	UL
	Widman	W Fork Love Creek	1952	OR	Baker	Earth	25	65	I	0	John Widman	P	UP
	Shaw	Trib. Powder River	1955	OR	Union	Earth	43	504	I	0	John A Shaw	P	UL
	Goodrich	Goodrich Creek	1963	OR	Baker	Earth	57	603	S	0	City of Baker	M	UL
	Balm Creek	Balm Creek	1963	OR	Baker	Earth	60	1,962	I	0	H.H. Jacobs & Sons	P	UP
	Crater Lake	Kettle Creek	1964	OR	Baker	Earth	26	190	I	0	Eagle Val. Irr. Co.	P	UL
	Wirth	Trib. Big Creek	1966	OR	Baker	Earth	33	59	I	0	George Wirth	P	UL
	Mason	Powder River	1968	OR	Baker	Earth	173	95,500	I,C,R,O	0	Bureau of Reclamation	F	Y; runs blocke by downstream dams.
Snake Mainstem	Idaho Falls-Lower	Snake River	1904	ID	Bonneville	Gravity	15	800	H	11	City of Idaho Falls	M	N; natural barrier down-stream

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Milner	Snake River	1905	ID	Jerome	Rockfill	67	14,200	I	0	Twin Falls Canal Co.	P	UP
	Minidoka	Snake River	1906	ID	Minidoka	Earth	74	220,000	I,H,C,R	13	Bureau of Reclamation	F	N; above historical run limits
	Shoshone Falls	Snake River	1907	ID	Jerome	Gravity	30	12,500	H	12	Idaho Power Company	P	UP; at upper limits of historical run
	Jackson Lake	Snake River	1907	WY	Teton	Gravity	78	847,000	I,C	0	Bureau of Reclamation	F	N; natural barrier downstream
	Lower Pine L.	N Fork Pine Creek	1908	OR	Baker	Gravity	19	75	I	0	Not known	P	UL
	Upper Pine L.	N Fork Pine Creek	1908	OR	Baker	Gravity	15	150	I	0	Not known	P	UL
	Blackfoot	Blackfoot River	1909	ID	Caribou	Earth/ Rockfill	35	410,000	I	0	Bureau of Indian Affairs	F	N; natural barrier downstream
	Swan Falls	Snake River	1910	ID	Ada	Gravity	24	6,900	H	10	Idaho Power Company	P	Y; no passage facilities
	Deep Cr No. 1	Deep Creek	1911	ID	Twin Falls	Earth	15	300	I,O	0	David Chadwick	P	UP
	Deep Cr No. 2	Deep Creek	1911	ID	Twin Falls	Earth	37	1,500	I,O	0	David Chadwick	P	UP
	Lower Malad	Malad River	1911	ID	Gooding	Gravity	12	0	H	14	Idaho Power Co.	P	UP
	Salmon Falls	Salmon Falls Cr.	1912	ID	Twin Falls	Arch	203	228,000	I,S	0	Salmon R Canal Co.	P	UP

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Thousand Springs	Thousand Springs	1912	ID	Twin Falls	Other	---	8,800	H	9	Idaho Power Company	P	N; offstream generating facility
	Idaho Falls	Snake River	1913	ID	Bonneville	Gravity	7	400	H	8	City of Idaho Falls	M	N; natural barrier downstream
	Dewey	Marsh Creek	1913	ID	Cassia	Earth	26	478	I	0	L.S. Skaggs	P	UL
	Oakley	Goose Creek	1913	ID	Cassia	Rockfill	136	74,357	I	0	Oakley Canal Co.	P	UL
	Jenkins Creek	Jenkins Creek	1915	ID	Washington	Earth	35	200	I	0	Jenkins Cr. Ranch	P	UP
	Monroe	Jenkins Creek	1916	ID	Washington	Other	45	320	I	0	Jenkins Cr. Ranch	P	UL
	Ashton	Henry's Fork	1917	ID	Fremont	Earth	56	7,460	H	6	Utah Power & Light	P	N; natural barrier downstream
	Cedar Creek	Cedar Creek	1920	ID	Twin Falls	Earth	78	29,930	I	0	Cedar Mesa Resvr. Co.	P	UL
	Benson	Benson Creek	1922	OR	Baker	Earth	6	100	I	0	H.R. Benson	P	UL
	North Fork (Henrys Lake)	Henrys Fork	1923	ID	Fremont	Earth	26	90,300	I,S	0	North Fork Res Co.		N; natural barrier downstream
	Clear Creek	W Fork Clear Creek	1924	OR	Baker	Earth	15	257	I	0	Clear Creek Resvr. Co.	P	UP
	American Falls	Snake River	1927	ID	Power	Gravity	78	1,671,300	I,C,H,M	92	Bureau of Reclamation	F	N; natural barrier downstream

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Lost Valley	Lost Valley Creek	1929	ID	Adams	Earth	27	10,300	I,S	0	Lost Valley Resvr. Co.	P	UP
	Pine Creek	Pine Creek	1933	OR	Baker	Earth	12	85	I	0	Otha D. Perkins	P	UP
	Twin Falls	Snake River	1935	ID	Jerome	Gravity	26	10,000	H	8	Idaho Power Company	P	N; natural barrier downstream
	Clear Lake	Snake River	1937	ID	Gooding	Other	---	0	H	2	Idaho Power Company	P	N; offstream generating facility
	Idaho Falls-Upper	Snake River	1937	ID	Bonneville	Gravity	24	800	H	8	City of Idaho Falls	M	N; natural barrier downstream
	Upper Salmon Falls A	Snake River	1937	ID	Gooding	Other	---	0	H,I,S	18	Idaho Power Company	P	UL; offstream generating facility
	Island Park	Henrys Fork	1938	ID	Fremont	Earth	77	150,000	I	0	Bureau of Reclamation		UL
	Melhorn-Bassett	Trib. Clear Creek	1939	OR	Baker	Earth	18	216	I	0	C Derrral & R Thomas	P	UL
	Upper Salmon Falls B	Snake River	1947	ID	Gooding	Gravity	10	1,200	H	17	Idaho Power Company	P	Y; runs blocke by downstream dams
	McMullen Cr.	McMullen & Cotton-wood Creeks	1948	ID	Twin Falls	Earth	35	350	I	0	William T. Williams	P	UP; tributary to Rock Creek upper limit of fish runs

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Upper Malad	Malad River	1948	ID	Gooding	Gravity	8	Ø	H	7	Idaho Power Company	P	UP
	F. M. Crow	Deer Gulch	1949	OR	Baker	Earth	16	191	I	Ø	Lelia B. Culbertson	P	UL
	Lower Salmon Falls	Snake River	1949	ID	Gooding	Gravity	53	18,500	H	60	Idaho Power Company	P	Y; fish runs blocked by downstream dam
	Kivett No. 3	Birch Creek	1950	OR	Baker	Earth	30	39	I	Ø	K.W. Kivett	P	UL
	Laird	Sag Creek	1950	OR	Baker	Earth	20	69	I	Ø	Lewis Laird	P	UP
	R.K. Moseley	Trib E. Pine Cr.	1950	OR	Baker	Earth	16	180	I	Ø	J. Roscoe & M.Lee	P	UL
	Sugarloaf	Trib. Fish Lake Fork Creek	1950	OR	Baker	Earth	24	260	I	Ø	Rowen-Larue-Tarter	P	UL
	Bliss	Snake River	1950	ID	Gooding	Gravity	101	11,000	H	75	Idaho Power Company	P	Y; fish runs blocked by downstream dam
	C. J. Strike	Snake River	1952	ID	Owyhee	Earth	105	250,000	H,S	83	Idaho Power Company	P	Y; runs blocke by downstream dams
	Williams	Cottonwood Creek	1952	ID	Twin Falls	Earth	51	1,475	I	Ø	William T. Williams	P	UL; tributary to Rock Creek, upper limit to fish runs
	Fish Lake	Trib. Lake Fork Cr.	1953	OR	Baker	Earth	17	747	I	Ø	Fish Lake Imp. Dist.	P	UP
	Walker	King Hill Creek	1955	ID	Elmore	Earth	16	505	I	Ø	Shelby Land & Cattle Co.	P	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Palisades	South Fork Snake River	1957	ID	Bonneville	Earth	249	1,401,600	H,I,C,R	114	Bureau of Reclamation	F	UL; natural barrier down-stream
	Bray Lake	Dry Creek	1958	ID	Gooding	Earth	32	4,600	I	Ø	Alex Mason	P	UP
	Brownlee	Snake River	1958	ID	Washington	Rockfill	295	1,420,060 975,320*	H,C	585	Idaho Power Company	P	Y; no passage facilities; fish hatcheries provided
	Salmon Falls Creek	Salmon Falls Creek	1960	ID	Twin Falls	Gravity	8	160	I	Ø	Magic Water Company	P	UP
	Oxbow	Snake River	1961	ID	Adams	Rockfill	140	58,200 5,420*	O,H	190	Idaho Power Company	P	Y; no passage facilities; fish hatcheries provided
	Somsen	Raft River	1961	ID	Cassia	Earth	7	96	I	Ø	Frank Somsen	P	UL
	East Lakes	Trib E Fork Pine Cr	1963	OR	Baker	Earth	12	132	I	Ø	Pine Lakes Ditch Rsv Co	P	UL
	Pioneer	Clover Creek	1964	ID	Gooding	Earth	13	844	I	Ø	Earl Hordey, Mike Kas	P	UP
	Hell's Canyon	Snake River	1967	ID	Adams	Gravity	318	167,720 98,820	H	391	Idaho Power Company	P	Y; no passage facilities; fish trans & hatcheries provided
	Courtright	Trib Hob Creek	1973	ID	Washington	Earth	21	100	I	Ø	Leo Courtright	P	UL

TABLE C-1 (Con't)

Major Drainage	Dam Name	Stream	Date	State	County	Type	Height	Max. Cap. (acre-ft)	Purpose	Power	Owner	Affil	Comments
	Ririe	Willow Creek	1976	ID	Bonneville	Earth	253	100,500	I,C,R,O	Ø	Bureau of Reclamation	F	N; natural barrier downstream
Weiser	Crane Creek	Crane Creek	1920	ID	Washington	Earth	55	69,600	I,S	Ø	Crane Creek Resvr Co.	P	UP
	Little	Crane Creek & Tributary	1921	ID	Washington	Earth	26	254	I	Ø	Walter C. Little	P	UL
	Barton	Monroe Creek	1936	ID	Washington	Earth	45	1,045	I,S	Ø	Monroe Cr. Irr. Dist.	P	UP
	C. Ben Ross	Little Weiser River	1936	ID	Adams	Earth	55	7,787	I,S	Ø	Little Irr. Co.	P	UP; runs blocked by downstream dam
	Fairchild	Sage Creek	1960	ID	Washington	Earth	74	3,700	I	Ø	Art Fairchild	P	UP
	Mann Creek	Mann Creek	1967	ID	Washington	Earth	132	15,400	I,C,R,O	Ø	Bureau of Reclamation	F	UP
	Cooper Cliff Tailings Pnd	Mann Creek	1974	ID	Adams	Earth	115	300	O	Ø	Silver King Mines, Inc.	P	UP

Go To Next Part

APPENDIX D

SUMMARY OF FISH HABITAT AND THE EFFECTS OF DEVELOPMENT ON FISH HABITAT FOR SIX MAJOR AREAS OF THE COLUMBIA RIVER BASIN

(Prepared by
Environmental Research and Technology, Inc.
from Bryant and Parkhurst 1950,
Parkhurst 1950a, Parkhurst 1950b, Parkhurst 1950c)

CONTENTS

List of Areas

AREA 1: COLUMBIA RIVER BELOW BONNEVILLE DAM -- WASHINGTON SIDE

Walicut River (No Survey)

- Lowermost stream entering the Columbia River; merely a slough.

Chinook Creek (1946 Survey)

- Enters Columbia River at RM 6 and is 8 miles long.
- Two tide gates prevented entrance of fish on incoming tide.
- Many beaver dams and trash jams made salmon passage difficult at low water at the time of the survey.
- Fall chinook and coho present when surveyed.

Deep River (1942 and 1946 Surveys)

- Enters Columbia River at RM 20 and is 8 miles long.
- Tide gates barred fish passage during flood tide.

Grays River (1936 and 1946 Surveys)

- Enters Columbia River at RM 21 and is 16 miles long.
- 8 to 10-foot cascade and falls formed a complete barrier to salmon at RM 13; steelhead could pass only during high water.
- Chum, coho, fall chinook and steelhead present when surveyed.

Left Fork (1936 Survey)

- Enters Grays River at RM 12.
- Impassable to fish at RM 3 because of logging debris.
- Chum and coho present when surveyed.

North Fork (1937 Survey)

- Joins South Fork to form Grays River, and is 10.5 miles long.
- 18-foot splash dam at RM 5 of North Fork was a total barrier to fish passage. Early spring steelhead present when surveyed.

- Mitchell Creek (tributary of North Fork) had 6 and 7-foot falls 1,800 and 1,900 yards above the mouth that were difficult for fish to pass; spring steelhead present when surveyed; unnamed tributary to Mitchell Creek had impassable 40-foot log jam at RM 1. Left Fork of Mitchell Creek had a brush jam 600 yards above mouth that was probably passable.

South Fork (1937 Survey)

- Joins North Fork to form Grays River and is 8 miles long.
- Abandoned 40-foot splash dam 260 yards above mouth; no spill over dam at low water.
- Impassable 15-foot falls at RM 4.
- No runs of salmon or steelhead when surveyed.

Crooked Creek (1937 and 1946 Surveys)

- Enters Columbia River at RM 22 and is 8 miles long.
- 4-foot irrigation dam had no fish protective devices and formed a low water barrier.
- Unused 6 to 8-foot power dam was 600 yards above irrigation dam on the North Fork.
- Salmon (unknown species) present when surveyed.

Jim Crow Creek (1937 and 1946 Surveys)

- Enters Columbia River at RM 30 and is 6 miles long.
- 5 to 7-foot brush jams were only obstructions.
- Coho, chum and steelhead present when surveyed.

Skamokawa Creek (1946 Survey)

- Enters Columbia River at RM 34 and is about 7 miles long.
- 6 to 8-foot log/brush jam in Wilson Creek tributary nearly impassable at RM 4.3.
- 40-foot culvert where Elkhorn Creek entered Wilson Creek interfered with salmon migration.

- o Coho, chum and steelhead present when surveyed.

Alochomin (Elochoman) River (1935, 1936, 1937 Surveys)

- o Enters Columbia River at RM 38 and is 15 miles long.
- o West Fork joins East Fork to form Alochomin River at RM 15; watershed of West Fork completely logged off and burned, resulting in considerable damage to stream.
- o Chum, coho, and spring runs of steelhead present when surveyed.

East Fork

- o Log jam at RM 2.5 made fish passage difficult.
- o West bank eroded due to logging underway at time of survey.
- o Log jam in right branch was a complete barrier except at extreme high water.
- o Coho and steelhead present when surveyed.

Birnie Creek and Abe Creek

- o Small streams, approximately 2 miles long, enter Columbia River near Cathlamet, Washington; both blocked by falls near mouth and of no value to salmon or steelhead.

Mill Creek (1936 and 1946 Surveys)

- o Enters Columbia River at RM 53 and is 6 miles long.
- o 7-foot falls at RM 1.25 was barrier during low water.
- o Chum and steelhead present when surveyed.

Abernathy Creek (1936 and 1946 Surveys)

- o Enters Columbia River at RM 54 and is 13 miles long.
- o 10-foot falls at RM 3.5 complete barrier to salmon except at high water.
- o Small falls at RM 5.5 and 12.
- o Numerous log and brush jams made fish passage difficult.

- Chum, coho and steelhead present when surveyed.

Cameron Creek (1936 and 1946 Surveys)

- Enters Abernathy Creek at RM 0.25 and is 6 miles long.
- 4 falls and several impassable log jams in lower mile; 4-foot falls at RM 1.5; impassable log jam and fall at RM 2.5.
- Chum salmon present when surveyed.

Germany Creek (1936 and 1946 Survey)

- Enters Columbia River at RM 56 and is 12 miles long.
- Passable barriers included 3 low falls between RM 0-2 and 1 log jam at RM 1.5; major log jam at RM 6 was impassable.
- Chum, coho and steelhead present when surveyed.

Falls Creek (1942 Survey)

- Enters Columbia River at RM 57 and is 2 miles long.
- Impassable 40-foot falls 200 feet above mouth.
- No migratory fish present when surveyed.

Coal Creek (1936 Survey)

- Enters Columbia River at RM 62 and is 14 miles long.
- Impassable double falls (12 feet and 6 feet) at RM 3.2.
- 3 falls 3 to 4 feet high formed low water barriers 1,300 to 2,400 yards upstream.
- Chum and steelhead present when surveyed.

Cowlitz River (1937 Survey)

- Enters Columbia River at RM 65 and is 130 miles long.
- 8-foot falls just above the mouth was passable with difficulty.
- Coho, fall chinook, steelhead, and spring chinook present when surveyed.

Coweman River (1936 and 1945)

- Enters Cowlitz River at RM 1 and is 33 miles long.
- Low falls at RM 5 and 12 hindered fish movement.
- 9-foot falls at RM 20 was a low water barrier.
- Abandoned 38-foot splash dam was total barrier at RM 23.5; similar dam at RM 25.5.
- Fall chinook and coho present when surveyed.
- Globe Creek had dam at RM 3.5.
- Mulholland Creek had impassable 30-foot splash dam at RM 1.75; 11-foot falls above splash dam was a low water barrier; numerous debris jams; fall chinook present when surveyed.
- Baird Creek had dam at RM 1.

Ostrander Creek (1936 Survey)

- Enters Cowlitz River at RM 7 and is 10 miles long.
- Irrigation dam at RM 1.6 had been low water barrier, but has been removed.
- 3 cascades between RM 2.3 and 3 were low water barriers; 22 beaver dams (7 were low water barriers), and 10 log jams.
- Coho and steelhead present when surveyed.
- South Fork had 2-foot diversion dam with unscreened diversion flume 300 yards from mouth (diverted most of water from sawmill pond and domestic water supply); log and debris jam and 8-foot falls at RM 0.6; numerous beaver dams were low water barriers in upper portion.

Arkansas Creek (1937 Survey)

- Enters Cowlitz River at RM 15 and is 2 miles long.
- Coho, fall chinook, and steelhead present when surveyed.
- North Fork had several brush jams and impassable log jam at RM 6.5; silt-laden from denuded hills from logging; coho and steelhead present when surveyed.

- South Fork had 6 log/brush jams in lower 3 miles; coho and steelhead present when surveyed.

- Monahan Creek had series of 3 cascade falls at RM 0.5 with combined height of 18 feet that was impassable to fish; coho present when surveyed.

Toutle River (1936 Survey)

- Enters Cowlitz at RM 17 and is 52 miles long.

- 2 small dams and log jam were low water barriers just below Spirit Lake (RM 52).

- Log jam 300 yards above the mouth of Outlet Creek difficult to pass except during high water.

- Chinook, steelhead and coho present when surveyed.

- South Fork of the Toutle River had fall and spring chinook and steelhead present when surveyed.

- Eighteen Creek and Twenty Creek were blocked by impassable falls 50 yards from mouths.

- Whitten Creek was blocked by impassable 30-foot falls 250 yards from mouth.

- Bear Creek was blocked by impassable 10-foot falls 460 yards from mouth.

- Green River had lower 18 miles logged off; at RM 7 two falls were passable at low water with difficulty; at RM 20.5 a 12-15 foot falls was a total barrier; at RM 26 were 2 impassable 650-foot cascades. Fall chinook, coho, and steelhead present when surveyed.

- On Devils Creek a 6-foot bedrock chute 360 yards above mouth was a low water barrier; coho and steelhead present when surveyed.

- On Elk Creek 4 log jams and a 7-foot falls were passable with difficulty; impassable falls at RM 1.

- On Miners Creek several log jams and cascades were passable with difficulty; salmon (unidentified species) and steelhead present when surveyed.

- On Hoffstadt Creek an 8-foot falls at RM 6.8 was a low water barrier; at RM 13 series of falls in log-filled gorge was a total barrier.

- On Bear Creek over 30 log and trash jams were possible barriers.

- On Deer Creek at RM 2 a 25-foot falls was a total barrier.

- On Castle Creek a log/debris jam 150 yards above mouth was a partial barrier to migratory fish; tangles of fallen trees in lower 3 miles; 30-foot falls at RM 3 was a total barrier; small falls 400 yards farther upstream were low water barrier.

- On Coldwater Creek numerous log and brush jams were difficult for fish to pass; 6-foot falls 2 miles above mouth of South Fork; steelhead present when surveyed.

- On Studebaker Creek series of log jams and falls formed a low water 25-foot barrier 100 yards above mouth; 3-foot log and boulder dam 560 yards upstream were low water barrier; a few coho present when surveyed.

Olequa Creek (1937 Survey)

- Enters Cowlitz River at RM 22 and is 20 miles long.

- Low falls at RM 5.2 and log/brush jam at RM 12.5 were difficult for fish to pass.

- Formerly impassable 25-foot England Lumber Company dam (built in 1932?) at RM 15; in 1947 new fishway constructed.

- Sawmill pollution and washings from a gravel crusher, raw sewage from towns Winlock and Vader (and indirectly from Ryderwood), refuse and drainage from farms and garbage dumps damaged quality of stream.

- Chinook, coho, chum and steelhead present when surveyed.

- On Campbell Creek a 6-foot dam diverted flow for Ryderwood water supply; sewage from Ryderwood and silt from a gravel crusher made lower 1.3 miles unfit for fish as well as lower 6 miles of Stillwater Creek.

- Ferrier Creek blocked by swimming pool dam south of Winlock.

La Camas Creek (1937 Survey)

- Enters Cowlitz River at RM 27 and is 22 miles long.

- At RM 14.8 a 6-foot dam diverted water for the operation of a farm lighting plant; similar dam located 500 yards farther upstream; both were barriers to fish at low water.
- Brush jam below the first dam.
- Coho present when surveyed.
- 6-foot dam at Ayell Creek was removed in 1947.

Salmon Creek (1937 Survey)

- 35 miles long.
- 25-foot impassable falls at RM 2 on Cedar Creek.
- Logging operations nearly exterminated salmon runs prior to 1932.
- Coho, steelhead and chinook present when surveyed.

Mill Creek (1941 Survey)

- Enters the Cowlitz River at RM 56 and is 13 miles long.
- 20-foot fall blocked all salmon runs about RM 1.
- Coho present below falls

Winston Creek (1941 Survey)

- Enters Cowlitz River at RM 59 and is 15 miles long.
- Impassable 40-foot falls 250 yards above mouth.

Klickitat Creek (1941 Survey)

- Enters Cowlitz River at RM 62 and is 3.5 miles long.
- Series of impassable bedrock chutes and falls 6 to 14 feet in height blocked stream at RM 3.5
- No salmon runs present when surveyed.

Tilton River (1936 Survey)

- Enters Cowlitz River at RM 63.5 and is 26 miles long.

- 3 difficult log jams between RM 12 and 16.
- 10-foot power dam at RM 15.5 was blasted out in 1944.
- Impassable 18-foot falls at RM 22.6.
- Coho, fall chinook, winter steelhead and sea-run cutthroat present when surveyed.
- Cinnabar Creek inaccessible to fish because of 75-foot falls at mouth.
- Bear Canyon Creek and Alder Creek inaccessible because of cascades/steep gradient and windfall at mouths.
- On North Fork several cascades and low falls were passable with some difficulty; 6-foot and 9-foot waterfalls in lower 2.5 miles; several log jams were partial barriers; coho and steelhead present when surveyed.
- On Wallanding Creek a 12-foot falls was impassable at RM 0.75.
- Rockies Creek was blocked by 10-foot falls/log jam 100 yards above mouth.
- Jesse Creek was blocked by 20-foot falls 300 yards above the mouth.
- Winnie Creek had impassable 18-foot falls 1,200 yards from mouth; log jam 700 yards farther upstream also possible total barrier.
- Impassable falls and dam at RM 0.5 of Mines Creek.
- Lumbering operations on the upper watershed of East Fork were beginning to fill stream with log jams and debris at the time of survey; impassable falls at RM 8; coho present when surveyed.
- Several log jams and beaver dams on South Fork of the East Fork were passable with some difficulty; coho present when surveyed.
- Nineteen Creek blocked at RM 0.75 by impassable 12-foot fall and log jam.
- West Fork of Tilton River had impassable log jam at RM 5 of left branch and 8-foot impassable falls on right branch; logging operations in upper watershed, silting in lower 2 miles; coho and steelhead present when surveyed.
- Snow Creek was blocked by 15-foot falls 250 yards above mouth; coho present when surveyed.

- Eagle Creek was blocked by impassable series of falls at RM 1; coho present when surveyed.

Sulphur Creek (1941 Survey)

- Enters Cowlitz River at RM 71 and is 6.5 miles long.
- Impassable 12-foot bedrock chute at RM 1.7; 6-foot dam diverted water to planer mill.

Shelton Creek (1937 Survey)

- Enters Cowlitz River at RM 78 and is 3.5 miles long.
- Impassable 13-foot falls at RM 0.5.
- Coho present when surveyed.

Landers Creek (1937 Survey)

- Enters Cowlitz River at RM 18 and is 9 miles long.
- Impassable 100-foot series of falls and log jams at RM 2.9.
- Coho present when surveyed.

Rainey Creek (1936 Survey)

- Enters Cowlitz River near RM 85 and is 10 miles long.
- Log jam at RM 2.4 was considered a barrier; others at RM 5 and 8.
- Coho present when surveyed.
- North Fork had impassable falls at RM 0.8.
- Lunch Creek had impassable 15-foot falls in lower mile; fall run of coho present when surveyed.

Goat Creek (1937 Survey)

- Enters Cowlitz River at RM 89 and is 5 miles long.
- 35-foot impassable falls 500 yards above mouth.
- Coho present when surveyed.

Cispus River (1941 Survey)

- Enters Cowlitz river at RM 92.5 and is 50 miles long.
- Impassable 30-foot falls at RM 33.5.
- Spring chinook, fall chinook, coho, steelhead present when surveyed.
- On Quartz Creek bad log jam 1,000 yards above the mouth and RM 3; 6-foot falls was partial barrier; 10-foot falls at RM 2.75 was a total barrier.
- Iron Creek had 30-foot impassable falls at RM 2.7.
- Greenhorn Creek had impassable 60-foot falls at RM 2.
- On Niggerhead Creek 5-foot falls at RM 3 was obstacle; 25-foot log jam at RM 3.3 was total barrier; impassable 25-foot falls at RM 5.25. Spring chinook, coho, fall chinook and steelhead present when surveyed.
- McCoy Creek was blocked by 50-foot falls at RM 0.4.
- On North Fork of Cispus River 25-foot series of falls at RM 6 were impassable; coho, fall chinook and steelhead present when surveyed.
- East Canyon Creek blocked by impassable 40-foot falls 300 yards from mouth.
- On Adams Creek 15-foot falls topped with drift logs were total barrier to fish.

Silver Creek (1936 Survey)

- Enters Cowlitz River at RM 100 and is 7 miles long.
- 2 impassable falls 12 feet and 22 feet in height at RM 2.6.

Mill (Miller) Creek (1936 Survey)

- Enters Cowlitz River at RM 108 and is 2.5 miles long.
- Impassable 30-foot falls at RM 0.5.

Silver Creek (1937 Survey)

- Enters Cowlitz River at RM 105 and is 12 miles long.

- A low dam at RM 1.8 diverted water to small power plant; normally no spill over the dam; slats spaced 2.5 inches apart did not effectively screen down-stream migrants at the time of survey.
- Impassable 20-foot falls at RM 2.7; coho and steelhead present when surveyed.
- East Fork blocked by impassable 50-foot log jam 0.25 miles upstream.

Davis Creek (1936 Survey)

- Enters Cowlitz River at RM 11 and is 6 miles long.
- Impassable 20-foot falls at RM 2.
- Coho and steelhead present when surveyed.

Kilborn Creek (1936 Survey)

- Enters Cowlitz River at RM 112.2 and is 5 miles long.
- Impassable 35-foot falls at RM 0.75.
- Coho and steelhead present when surveyed.

Garret Creek (1936 Survey)

- Enters Cowlitz River at RM 114 and is 2.5 miles long.
- Impassable 12-foot falls at RM 0.5.

Burton Creek (1936 Survey)

- Enters Cowlitz River at RM 115 and is 3.5 miles long.
- Impassable cascades at RM 1.3.
- East Fork had coho present when surveyed.

Willame Creek (1937 Survey)

- Enters Cowlitz River at RM 118 and is 8.5 miles long.
- Impassable 30-foot falls at 825 yards upstream.

Smith Creek (1936 Survey)

- Enters Cowlitz River at RM 119.3 and is 10 miles long.
- 20-foot impassable falls at RM 1.

Johnson Creek (1936 Survey)

- Enters Cowlitz River at RM 120 and is 12 miles long.
- Impassable log jam at RM 1.5; 30-foot log jam at RM 2 was probably impassable to fish; 15-foot falls and log jam at RM 4.3 was impassable; coho and steelhead present when surveyed.

Skate Creek (1937)

- Enters Cowlitz River at RM 123 and is 14 miles long.
- Several 6 to 7-foot rubble dams at RM 2.3 were impassable at low water.
- Steelhead and coho present when surveyed.

Butter Creek (1937 Survey)

- Enters Cowlitz River at RM 125.5 and is 10 miles long.
- Impassable 30-foot falls at RM 1.5.
- Coho fingerlings present when surveyed.

Lake Creek (1937 Survey)

- Enters Cowlitz River at RM 126 and is 5 miles long.
- 25-foot falls at RM 1.9 were impassable.
- Coho and steelhead present when surveyed.

Coal Creek (1936 Survey)

- Enters Cowlitz River at RM 127.6 and is 6 miles long.
- Impassable 75-foot falls at RM 0.75.

Purcell Creek (1936 Survey)

- Enters Cowlitz River at RM 129.5 and is 2.5 miles long.

- o Impassable 60-foot falls at RM 0.3.
- o Coho present when surveyed.

Clear Fork of the Cowlitz River (1937 Survey)

- o Joins Ohanapecosh to form Cowlitz River and is 16 miles long.
- o Lower 1.5 miles had falls, above which salmon had never been reported.
- o Two tributaries blocked at mouths by impassable falls.
- o State of Washington installed racks near the mouth to secure chinook salmon for artificial propagation.
- o Steelhead, coho and chinook present when surveyed.

Ohanapecosh River (1937 Survey)

- o 15.5 miles long.
- o Log hatchery dam 12 feet high 700 yards above the mouth; State Department of Fisheries installed hatchery racks 180 yards upstream to take spring and fall chinook and steelhead eggs.
- o Spring and fall chinook, coho and steelhead present when surveyed.

Owl Creek and Fish Pond Creek (Not Surveyed)

- o Short streams enter Columbia River near RM 68; 30-foot falls at RM 1.25 of Owl Creek.
- o Chum and coho present when surveyed.

Kalama River (1936 Survey)

- o Enters Columbia River at RM 75 and is 42 miles long.
- o In 1936, 13,000 fish taken at RM 1 from run of 20,000 for hatchery purposes; in 1940, racks moved farther upstream.
- o Power dam (Puget Sound Power and Light Co.) at RM 11; 12-foot natural falls between intake and return; improved fish ladder in 1944, but ineffective.
- o High fall (Kalama Falls) at RM 35.
- o Fall chinook, winter steelhead and chum present when surveyed.

Two Unnamed Tributaries

- Enter Columbia River at RM 77.5 and 79; a few coho and chum salmon present when surveyed.

Rock Creek, Speelyai Creek, and Burris Creek (No Survey)

- Small creeks enter Columbia River between RM 81 and 83.

Lewis River (1936 Survey)

- Enters Columbia River at RM 85 and is 90 miles long.
- 240-foot Ariel Dam, built in 1931, at RM 20; downstream migrants pass over spillway.
- Washington State Department of Fisheries operated a fish trap at the dam; fry reared at Cougar Creek and elsewhere; rest of fish trapped were lifted over dam to Lake Merwin (Ariel Reservoir) to proceed to natural spawning areas above the dam.
- Coho, fall chinook, steelhead, spring chinook, and chum present when surveyed.

East Fork of Lewis River (1936 and 1937 Survey)

- Enters Lewis River at RM 5 and is 42 miles long.
- 14-foot Lucia Falls was total barrier to salmon at RM 21; steelhead could ascend at high water.
- 700 yards above Lucia Falls were 24-foot falls; 8-foot and 9-foot falls at RM 24 and 24.5 were low water barriers.
- 4 falls 3-9 feet high were at RM 26-27.
- Horseshoe Falls was 18 feet high at RM 28.5; 2 log jams at RM 31.
- 16-foot Sunset Falls at RM 31.5 was a total barrier to fish.
- Coho, fall chinook, summer run of steelhead present when surveyed.
- 5-foot falls at RM 1 on Rock Creek may be barrier at low water; spring and fall runs of steelhead present when surveyed.
- On Copper Creek an 18-foot falls 60 feet above mouth was impassable.

Cedar Creek (1937 Survey)

- Enters Lewis River at RM 16.5 and is 20 miles long.
- Good run of coho salmon reported at the time of the survey.
- State operated fish rack 500 yards above mouth in the past.
- 22-foot mill dam built in 1876 at RM 2.25 was removed in 1946; ineffective fish ladder built in 1905.
- Beaver dams and brush jams at RM 9, and a highway culvert above RM 12 made fish passage difficult.

Salmon Creek (1936 Survey)

- Enters Columbia River at RM 94 and is 22 miles long.
- 3 beaver dams and 3 log jams near RM 8 were low water barriers; silted-in areas in lower stream due to farming and gravel crushers.
- Impassable brush jam 340 yards above mouth of Mill Creek, which enters Salmon Creek at RM 6.
- Coho, fall chinook, chum and steelhead present when surveyed.

Washougal River (1935 Survey)

- Enters Columbia River at RM 121 and is 36 miles long.
- Fires in 1902, 1927, 1929 resulted in reduced stream value; afterwards, upper portion closed to public.
- Formerly 3 Cotterell Power Co. dams blocked fish runs on lower river; 1 washed out, other 2 were low water barriers in spite of fish ladders; remaining 2 were removed in 1944 and 1947.
- Salmon Falls at RM 17.5 was 8 feet high and difficult for salmon to pass at lower water.
- 25-foot falls at RM 30 was a total barrier to salmon and possibly steelhead.
- In the 6 miles above falls (RM 30-36) were 8 falls and cascades, 7 to 15 feet high.
- Chief detriment to stream at the time of the survey was sulphite effluent from Camas paper mills at stream mouth.

- Steelhead, fall chinook, coho present when surveyed.

Lacamas Creek (1937 Survey)

- Enters Washougal River at RM 1 and is 16 miles long.
- Impassable 70-foot falls at RM 0.75 and 30-foot Camas Papermill Dam at RM 1.25.

Little Washougal River (1935 Survey)

- Enters Washougal River at RM 4.5 and is 13 miles long.
- Abandoned 18-foot mill dam at RM 11 was a low water barrier to all fish and high water barrier except for steelhead.
- 4-foot Camas Water Supply Co. dam at RM 11.25 upstream; most of flow diverted here through unscreened flume.
- Coho and steelhead present when surveyed.

Canyon Creek (1937 Survey)

- Enters Washougal River at RM 12 and is 4 miles long; 2 impassable 15-foot falls at mouth.

West Fork (1935 Survey)

- Enters Washougal river at RM 13 and is 23 miles long.
- Impassable 18-foot falls at RM 5.5.
- Steelhead present when surveyed.
- Impassable 9-foot falls 1,000 yards above mouth of Texas Creek.

McCloskey Creek (1937 Survey)

- Enters Washougal River at RM 16.5
- Steelhead present below 8 to 10-foot falls near mouth at time of survey.

Dougan Creek (1937 Survey)

- Enters Washougal River at RM 21 and is 3.5 miles long.

- Series of impassable falls just above mouth.

Stebbins Creek (1936 Survey)

- Enters Washougal River at RM 24 and is 6 miles long.
- Impassable falls at RM 1.7.
- Steelhead present when surveyed.

Gibbons Creek, Walton Creek, and St. Cloud Creek (Not Surveyed)

- Small tributaries enter Columbia River between 2 and 7 miles above Washougal, Washington.

Duncan Creek (1937 Survey)

- Enters Columbia River 1 mile above Skamania, Washington.
- Steelhead and chum present when surveyed.

Woodward Creek (1937 Survey)

- Enters Columbia River 1 mile above Skamania, Washington.
- Steelhead and chum present when surveyed.

Hardy Creek (1937 Survey)

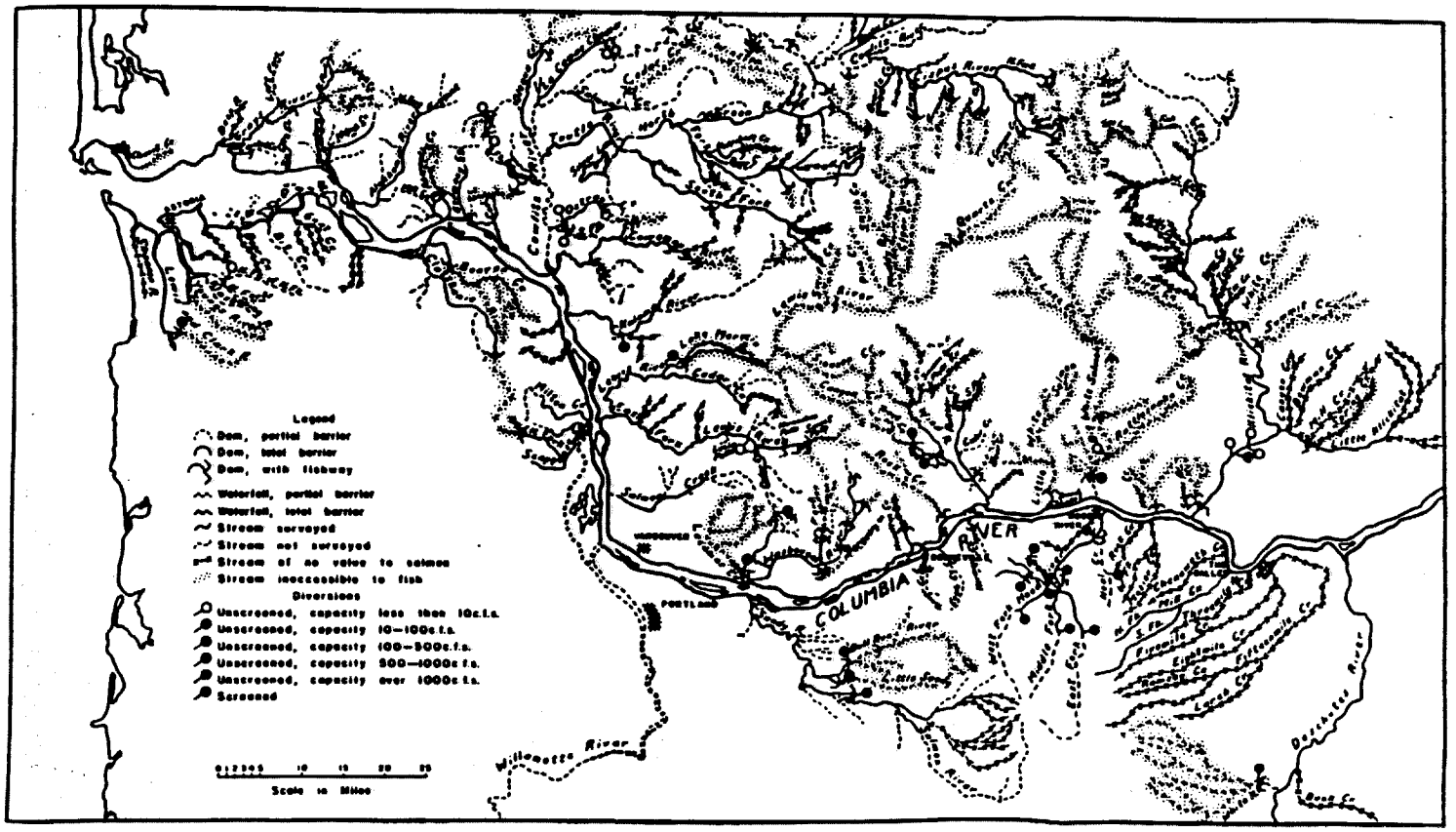
- Enters Columbia River 3 miles above Skamania, Washington.
- Rodney Falls at RM 0.75 was possible total barrier.

Hamilton Creek (1937 Survey)

- Enters Columbia River 4 miles above Skamania, Washington.
- 8-foot impassable falls at RM 3.7.
- Steelhead present when surveyed.

Blue Lake Creek (No Survey)

- Enters Columbia River 4 miles above Bonneville Dam.



Lower Columbia River Basin

AREA 2: COLUMBIA RIVER BETWEEN BONNEVILLE DAM AND ITS CONFLUENCE WITH THE SNAKE RIVER -- WASHINGTON SIDE

Rock Creek (1936 Survey)

- Enters Columbia River at RM 151 and is 14 miles long.
- Series of 7 falls with 65-foot drop at RM 1 and one 25-foot fall above.
- 2 log jams and 2 beaver dams were difficult for fish to pass in lower 7 miles.
- Chinook and steelhead present when surveyed.

Nelson Creek and Carson Creek (1937 Survey)

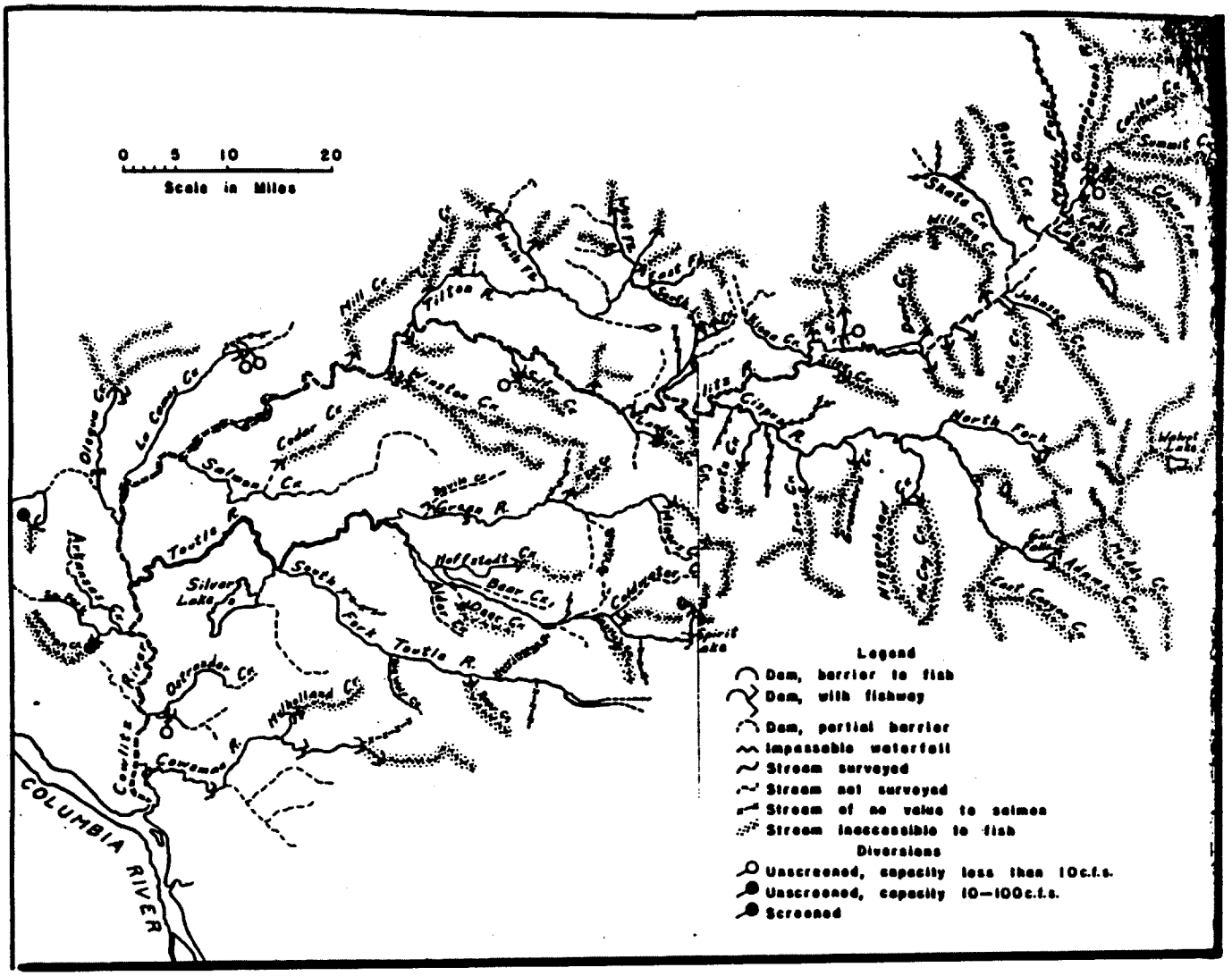
- Enter Columbia River at RM 152 and 154.
- Falls near mouth.
- No salmon present when surveyed.

Wind River (1935, 1936, 1940 Survey)

- Enters Columbia River at RM 155 and is 32 miles long.
- Backwater from forebay of Bonneville Dams flooded lower 1.5 miles at the time of the survey; ponding covers former spawning area and state holding and racking site.
- At the time of the survey, hatchery crew racked stream just above Bonneville backwater to secure spawning stock of fall chinook.
- 3 falls (3 to 5 feet, 12 to 15 feet, 12 feet) at RM 3.7 impassable to salmon ; ineffective channel blasted in 1936.
- 8-foot Carson Lumber Co. mill dam at RM 14 was removed in 1947.
- Steelhead in spring and fall chinook present when surveyed.

Little Wind River (1937 Survey)

- Enters Wind River at RM 1.9 and is 65 miles long.
- Several log jams filled in with gravel in lower 1.8 miles.



Cowlitz River Basin

- 8-foot falls at RM 1.5 was a salmon barrier and difficult for steelhead.
- Steelhead present when surveyed, but no salmon.

Bear Creek (1935 Survey)

- Enters Wind River at RM 4.3 and is 7 miles long; 18-foot falls near mouth.

Panther Creek (1935, 1936, 1937 Surveys)

- Enters Wind River at RM 4.3 and is 13 miles long.
- 4 falls (5 to 10 feet high) near RM 9 were low water barriers.
- Several log jams.
- Steelhead present when surveyed.
- South Fork had 15-foot falls near mouth and was inaccessible.
- 3 impassable log jams 600 yards above mouth of Cedar Creek; reported to be excellent steelhead stream prior to 1933 when timber was cut along stream.

Trout Creek (1936 Survey)

- Enters Wind River at RM 10 and is 10 miles long.
- 20-foot concrete dam with a fish ladder at RM 2 was abandoned in 1944.
- 4-foot dam with screened intake just above concrete dam with adequate fish ladder installed in 1941.
- Steelhead present when surveyed.

Tyee Springs Creek

- Enters Wind River at RM 15; Carson hatchery (USFWS) greatly enhanced value of stream (as of 1946) as a fish producer.

Trapper Creek (1935, 1937 Survey)

- Enters Wind River at RM 18 and is 6 miles long.
- Debris jams made passage difficult at RM 1 at the time of the survey.

- Steelhead present when surveyed.

Fall Creek

- Enters Wind River at RM 21 and is 9 miles long.
- Impassable falls at RM 1; watershed had been burned over and stream scoured at time of survey.

Collins Creek and Dog Creek (1937 Survey)

- Enter Columbia River at RM 155 and RM 157.
- Both blocked by impassable falls within RM 1.
- No salmon present when surveyed.

Little White Salmon River (1936 Survey)

- Enters Columbia River at RM 162 and is 18 miles long.
- Salmon hatchery at mouth.
- Impassable 37-foot falls at RM 1.75.
- Backwaters from Bonneville Dam extended to within 0.5 miles of falls, covering spawning areas.
- Chinook, steelhead, sockeye, and coho present when surveyed.

Spring Creek

- Enters Columbia River at RM 167 and is about 100 yards long.
- Hatchery established in 1902.
- Fall chinook present when surveyed.

White Salmon River (No Survey)

- Enters Columbia River at RM 176 and 177.
- Impassable falls for salmon, but probably not steelhead near mouth.
- No salmon present when surveyed.

Klickitat River (1938 and 1942 Surveys)

- Enters Columbia River at RM 180 and is 95 miles long.
- 5 falls (4 to 14 feet) and narrow gorge near RM 2.
- Several cascades and 2 log jams above West Fork.
- 4 small irrigation dams at RM 10 to 13; diversions were not screened at the time of the survey.
- Large runs of spring chinook reported 30 years prior to survey.
- Spring steelhead present when surveyed.
- Silver Creek tributary had impassable falls near mouth.

Little Klickitat River (1938 Survey)

- Enters Klickitat River at RM 30 and is 35 miles long
- Numerous cascades and low falls; 10-foot falls at RM 5 was complete barrier at low water.
- Spring Creek was inaccessible to fish because of 35-foot falls near mouth.

Outlet Creek (1942 Survey)

- Enters Klickitat River at RM 38 and is 9 miles long.
- 50-foot falls at RM 1; abandoned sawmill dam at RM 3.5.
- Much of stream water diverted for irrigation.
- No salmon present when surveyed.

Hellroaring (Big Muddy) Creek (1942 Survey)

- Enters Klickitat River at RM 51 and is 10 miles long.
- Usually turbid with glacial silt.
- Wooden dam diverted part of flow to irrigation ditch
- No salmon present when surveyed.

Deschutes River (1942 Survey)

- Enters Columbia River 15 miles above The Dalles, Oregon, and is 245 miles long.

Section 1 -- Mouth to Squaw Creek (RM 0 to 136)

- The only obstruction, Sherar Falls, 15 feet high, at RM 45, had been provided with a good fishway by the Oregon Fish Commission; falls was the site of an important Indian fishery.

- Indian and sport fishing accounted for 500 to 1,000 chinook salmon and steelhead trout annually at the time of the survey.

- Oregon Fish Commission operated a rearing station at Oak Spring, 4 miles downstream from Maupin, where several hundred thousand chinook salmon were reared and released annually. Oregon Game commission operated a trout hatchery at the same site.

- Spring chinook and spring and fall steelhead present when surveyed.

Section 2 -- Squaw Creek to the North Canal Dam at Bend, oregon (RM 136 to 173.5)

- Steelhead Falls, about 15 feet high, 4 miles above the confluence of Squaw Creek and the main Deschutes River; fishway was blasted in the bedrock, but at the time of observation it was impassable.

- Big Falls, 30 feet high, 3.5 miles above Steelhead Falls; a fair 9-step fishway, but was impassable at times because of a lack of water. These falls marked the upstream limit of migration of chinook salmon and steelhead trout under natural conditions.

- Cline Falls, 11 miles above Big Falls, had a drop of 30 feet plus an additional 3 feet created by a wooden splash dam across the crest; the fishway was in a state of disrepair.

- North Canal Cam was a concrete structure 30 feet high; a broken-down fishway at the center of the dam made it a barrier to fish; diversions removed so much flow that only 15 to 20 cfs spilled over the dam during the period of March to November.

- No salmon or steelhead present when surveyed.

Section 3 -- North Canal Dam to Benham Falls (RM 173.5 to 187.5)

- 2 canals (80 and 300 cfs) diverted water at the North Canal Dam (RM 173.5).

- A third large canal, built by the U.S. Bureau of Reclamation, diverted about 1,000 cfs at this point for agricultural development at the time of the survey.

- Deschutes County Municipal Improvement District dam, 7 feet high, was located in the City of Bend. It was concrete and had a 6-step fishway. From 60 to 80 cfs was diverted at the dam to supplement the Tumalo project feed canal.

- Pacific Power and Light Company dam was 1/4 mile above the county dam. It was about 15 feet high and had a poor fishway.

- Shevlin-Hexon lumber mill dam was located about 1 mile above the Pacific Power and Light Company dam. it was of wooden construction, about 6 feet high, and had a good fishway.

- Scanlon-Brooks lumber mill dam, located a short distance farther upstream, was similar to the Shevlin-Hexon dam.

- Central Oregon Irrigation Canal diverted from 350 to 400 cfs midway between Bend and Lava Island Falls; the Arnold Canal diverted from 60 to 70 cfs.

- 3 falls were not serious barriers.

Section 4 - Benham Falls to Pringle Falls (RM 187.5 to 216)

- No obstructions or diversions.

- No salmon present when surveyed.

Section 5 - Pringle Falls Source (RM 216 to 245)

- Inaccessible to salmon because of the obstructions above Squaw Creek as well as the impassable Wickiup Dam (1913), 90 feet high, about 8 miles above Pringle Falls.

- Crane Prairie Dam (1940), 35 feet high, 12 miles above Wickiup Dam,

Buck Hollow Creek (1942 Survey)

- Enters Deschutes River at RM 44.

- Dry in late summer.

- No salmon present when surveyed.

White River (1942 Survey)

- Enters Deschutes River at RM 47.5 and is 50 miles long.
- Blocked by a series of 2 falls totaling 180 feet in height about RM 2.5
- Falls surmounted by a power dam 6 feet high used to divert water to the Pacific Power and Light Company plant in the gorge below falls.
- Chinook salmon present when surveyed.

Bakeoven Creek, Wapinitia Creek and Nena Creek (1942 Survey)

- Became completely dry in summer; no salmon present when surveyed.

Warm Springs River (1942 Survey)

- Enters Deschutes River about 30 miles above Maupin, Oregon, and is 48 miles long.
- 2 small dams interfered with the upstream migration of fish; flashboard-type structure, 5.5 feet high, at RM 8 with a poor, loose rock spillway that made the structure impassable during low water; log-crib dam 3 feet high located a short distance above the road bridge at HeHe.
- Greater part of the chinook salmon run entering Warm Springs River proceeded to Beaver Creek to spawn; creek had no natural or artificial obstructions and none of its water was diverted.
- Indians caught from 50 to 100 chinook salmon from the river each year at the time of the survey.
- Only dam on Mill Creek was a single log, 3 feet in diameter, and was easily passable. This dam diverted from 10 to 15 cfs into a large unscreened irrigation ditch.
- Falls on Mills Creek blocking the ascent of fish to Trout Lake was blasted out in 1939.

Trout Creek (1942 Survey)

- Enters Deschutes River 3 miles above Warm Springs River and is 40 miles long.
- In late summer the lower stream section is sometimes dry.

- 12 diversions from the stream in the Willowdale Valley and an equal number in the Ashwood Valley; small, temporary dams were placed across the stream at each of the points of diversion. None of these dams were barriers to fish, but none of the diversions were screened.

- Only permanent dam on the stream was the Hiline Canal Dam 10 miles above Willowdale; this flashboard type structure, 6 feet high, was a barrier when the flashboards were in place.

- Large runs of steelhead trout entered this stream 35 years before survey, but none were present when surveyed.

- Trout Creek had no salmon present when surveyed.

Shitike Creek (1942 Survey)

- Enters Deschutes River 8 miles above Trout Creek and is 33 miles long.

- 60-foot falls blocked the stream at RM 10.

- A few low passable dams and small unscreened irrigation diversions occurred in the vicinity of the Indian Agency.

Metolius River (1942 Survey)

- Enters Deschutes River 13 miles above Shitike Creek and is 40 miles long.

- No natural obstructions in the stream.

- Dams of ranches in the lower section, as well as the few small dams in the upper area, were all passable to fish.

- Small amounts of water were diverted by wing dams, paddle wheels, and pumps into unscreened ditches and pipelines for small-scale irrigation, stock watering, and domestic use.

- Sockeye salmon formerly ascended to Suttle Lake. Chinook salmon spawned in the upper section, while steelhead trout used suitable areas all along the stream. Runs in 1940 were the largest in the previous 20 years.

- Chinook and steelhead present when surveyed.

- Jack Creek was blocked by 2 dams, the upper appeared to be impassable at all times; a log and flash board structure dam about 3 feet high at RM 0.5 was impassable at the time of examination; second dam at RM 2.5 was log-crib construction with a center flash board section about 3 feet high and a wooden downstream apron about 15 feet long. Diversions for both dams were unscreened.

- 2 small dams on Lake Creek were impassable except when the flash board was out.

- Concrete power dam, 4 feet high, on Lake Creek may have been responsible for the disappearance of the sockeye salmon run. The spillway had a 15-inch flashboard that was impassable except under very favorable circumstances. The 3-step fishway was too small for large fish and was blocked at the upper end by a stationary screen. Two rotary screens prevented the escapement of fish from the lake to the creek. The diversion to the small power plan was screened.

Crooked River (1942 Survey)

- Enters Deschutes River 3.5 miles northwest of Culver, Oregon, and is 115 miles long.

- 5 large diversions near Prineville, Oregon, and numerous small ones in the 80-mile section between Prineville and the headwater streams.

- None of the dams were passable during low water stages in connection with these diversions.

- Pacific Power and Light Company power plant at RM 2.5.

- Runs of chinook salmon and steelhead trout formerly entered the stream, but steelhead present when surveyed.

- On McKay Creek there were 5 small diversions in the upper part of the stream and most of the water near the mouth was diverted into the Ochoco Irrigation Canal during the summer.

- Ochoco Creek was blocked by a dam 110 feet high 6 miles above Prineville; at times this lower section was completely dry.

- North Fork was blocked at RM 12 by a falls 20 to 25 feet high.

- In Beaver Creek, chinook and steelhead present when surveyed.

Squaw Creek (1942 Survey)

- Enters Deschutes River 4 miles below Steelhead Falls.

- 10 dams and diversions on this creek above Sisters, Oregon. In the summer, diversions took the entire stream flow, leaving a 3-mile section near Sisters dry. None of the dams had spillways, and all were barriers during low water; none of the diversions were screened.

- No salmon or steelhead present when surveyed.

John Day River (1942, 1944 Surveys)

- Enters Columbia River 33 miles above The Dalles, Oregon, and is 227 miles long.

- A large gold dredge was operating on the river about 21 miles below Prairie City near Mt. Vernon and was moving slowly downstream in 1942. It had torn up 10 miles of river bottom above this point, where the stream bed was transformed into numerous conical mounds of gravel tailings 8 to 12 feet high. Vast areas were rendered unsuitable for salmon spawning.

- All gold mining activities in the John Day River system were suspended during the war; by 1944 normal stream action had cleaned silted areas, making them again suitable for spawning.

- Dredging proceeded intermittently for about 25 years and contributed to the depletion of the salmon runs in the river.

- Only permanent barrier was the West Coast Power and Light Company dam 3 miles above Prairie City; 6 feet high, had no fishway, and was a barrier to upstream migration except perhaps for a few steelhead. Approximately 60 cfs was diverted at this point for the generation of electric power. The diversion was not screened.

- Between Prairie City and Dayville were 11 major diversions and numerous small ones. None of the diversions were provided with screens at the time of the survey. All of the dams in connection with these diversions were of temporary construction; while these structures were in place they were barriers to both upstream and downstream migrants.

- Large runs of salmon and steelhead 25 or 30 years ago (1920 to 1925); 1944 steelhead run was heaviest in a decade.

North Fork (1942, 1944 Surveys)

- Enters John Day River at Kimerley, Oregon, and is 84 miles long.

Go To Next Part

- Hydraulic mining operations in the headwaters caused the stream to be very turbid in 1942.
- Mining activities were suspended in 1942, and in 1944 the stream was crystal clear.
- Few small irrigation diversions of temporary construction and usually passable to fish; 4 dams of the Eastern Oregon Light and Power Company located on minor tributaries; 2 dams operated by mining and timber interests located on a tributary.
- At one time an excellent spawning and rearing stream for salmon and steelhead. No large run of salmon has entered this stream for the 25 years prior to 1942; steelhead present when surveyed. A large steelhead run was reported in 1944.
- Middle Fork at one time was an excellent producer of chinook and steelhead.
- In 1942 stream bed of Middle Fork covered with silt from gold mining operations 2.5 miles above the Town of Galena, Oregon; in 1944, following 2 years of no mining activity, the water was very clear.

South Fork (1942, 1944 Surveys)

- Enters John Day River at Dayville, Oregon, and is 36 miles long.
- Water for domestic and irrigation purposes was diverted from the stream at RM 3, withdrawing practically the entire summer flow.
- The diversion dam was easily passable during high water, but the diversion was unscreened.

Willow Creek (1944 Survey)

- Enters Columbia River 11 miles above Arlington, Oregon.
- Entire summer flow diverted for irrigation.
- No salmon or steelhead present when surveyed.

Umatilla River (1944, 1945 Surveys)

- Enters Columbia River at RM 300 and is 119 miles long.
- Limiting factor concerning chinook salmon and steelhead trout was a total lack of water near the mouth at the time of year these fish migrate.

- In the lower portion, the entire flow diverted by 15 diversions in the 50-mile section below Pendleton. The channel was dry below the lowermost diversion dam at RM 3.

- 17 water diversions on the main Umatilla River; 15 diversions below Pendleton and 2 above.

  - canal at RM 29.7 screened by the Oregon Game Commission in 1948;
  - canal at RM 30.9 first screened in 1938; and
  - canal at RM 35.7 also screened in 1948.

- 11 diversion dams on the main river; first permanent dams were built sometime during 1903 to 1907. These were the West Extension Canal and the Hermiston Light and Power Company dams located at RM 4 and 10, respectively. Both were of concrete construction and both have been provided with fishways since the initial construction.

- Next 6 dams upstream were constructed of concrete for the use of flashboards and were from 4 to 8 feet high. With the flashboards in place none of these dams was passable to the upstream migration of fish.

- Another dam was located in the city of Pendleton; concrete structure 4 feet high with a single flashboard crest and with a broken down, 5-step fishway at the south end. It was passable at all times.

- 2 dams above Pendleton were temporary earth and rock structures that were passable at all times.

- Large run of chinook salmon in 1914. No salmon present when surveyed.

Butter Creek (1944 Survey)

- Enters Umatilla River at RM 13 and is 16.5 miles long.

- Entire flow diverted for irrigation by 20 diversions and 22 dams.

- No salmon or steelhead present when surveyed.

- North Fork and South Fork had 5 dams and diversion each; no salmon or steelhead present when surveyed.

Birch Creek (1944 Survey)

- Enters Umatilla River 7.5 miles below Pendleton, Oregon, and is 18 miles long.

- o Water extensively diverted for irrigation.
- o In 1948 Oregon Game Commission installed 44 fish screens on Birch and McKay creeks.
- o At RM 12 a feed canal diverts water to McKay Creek for storage in McKay Reservoir.
- o At one time an excellent steelhead stream; no salmon present when surveyed.

McKay Creek (1944 Survey)

- o Enters Umatilla River 5 miles below Pendleton, Oregon.
- o McKay Reservoir dam (1927), 157 feet high, at RM 5 formed a barrier to fish.
- o Numerous irrigation diversions were screened by the Oregon Game Commission in 1948.
- o At one time an excellent steelhead trout stream; no salmon present when surveyed.

Mecham Creek (1944 Survey)

- o Enters Umatilla River 25 miles above Pendleton, Oregon, and is 20 miles long.
- o Largest and most important tributary of the Umatilla.
- o Present values for salmon nullified by the critical water use problem in the main Umatilla River.

Walla Walla River (1935, 1936 Surveys)

- o Enters Columbia River 3 miles above Oregon-Washington stateline and is 56 miles long.
- o Flow during the summer irrigating season extremely low because of extensive diversions.
- o The river was dry 2.5 miles below Freewater bridge during the summer for 2 to 4 months, due to irrigation diversions and to absence of heavy subsoil in the area. At no time since the late 1880s has there been a flow of water through this section (known as the "Tumalum Branch") during the summer.

- 14 dams and 16 diversions on the main river; 6 of the dams and 7 diversions were located below the "Tumalum Branch" and the others above.

- All of the dams were passable to salmon and steelhead trout during high water stages, and only 3 were barriers during low water: the Burlingame Dam and 2 dams at the Freewater bridge. (They were not barriers because of size, but because they caused the entire flow to be diverted during the irrigation season).

- These 3 dams plus the Milton power dam, only 1 foot high, were the only permanent structures.

- All diversions below the "Tumalum Branch" were screened, but none above was provided with protective devices of any kind.

- Nine Mile Dam, built in 1905 near Reese, Washington, was an effective barrier to the upstream migration and was largely responsible for the decline in runs of chinook salmon. This structure was no longer a barrier at the time of the survey, since the river had cut a channel around it.

- At one time the river was a good producer of chinook salmon and steelhead trout, but little fisheries value at time of the survey; last chinook salmon run of any importance was reported in 1925.

- Steelhead present when surveyed.

Touchet River (1935 Survey)

- Enters Walla Walla River at RM 20 and is 61.5 miles long.

- Before Nine Mile Dam was constructed on the main Walla Walla River (1905), the Touchet (as well as its tributaries the North Fork, South Fork, Wolf Creek, and Robinson Creek) had excellent runs of chinook salmon and steelhead.

- Chinook and steelhead present when surveyed.

- Touchet River once had the best potential fishery value of any stream in Walla Walla River system; no serious barriers to fish migration, and its diversions were mostly small.

- 20 unscreened diversions; 15 had dams, only 6 were permanent structures.

- None of the dams was over 3.5 feet high, except Preston-Shaeffer 6-foot mill dam located 1.5 miles above the city of Waitsburg, Washington; had an adequate fishway. Diversion at times may take the entire flow, leaving the channel dry for a distance of about 1 mile.

- Touchet Irrigation Company diversion at RM 5 withdrew the entire stream flow during period of low water, leaving the channel below the dam virtually dry.

- On the North Fork 8 low dams and 13 small diversions withdrew 18 cfs; one of the dams was a total barrier.

- City of Dayton water supply dam, 2 feet in height, was the only permanent dam on the North Fork; the diversion was screened.

- Wolf Creek had 5 small, unscreened irrigation diversions and several low, temporary diversion dams.

- None were total barriers to fish; chinook and steelhead present when surveyed.

- On the South Fork an impassable falls blocked the upstream passage of migratory fish at RM 21.

- At times flow in the South Fork very low; under extreme conditions the stream may become completely dry in the lower mile.

- South Fork had 6 small unscreened irrigation diversions and 2 small, temporary, low rock diversions dams that allowed fish passage.

- No salmon present in the South Fork when surveyed, but it supported the largest run of steelhead trout of any stream in the Touchet River at time of survey.

Mill Creek (1935 Survey)

- Enters Walla Walla River 6 miles below City of Walla Walla and is 33 miles long.

- Water was taken from the stream by 12 unscreened diversions; dams were used in connection with 8 of the diversions, only 4 were permanent.

- All dams were passable to migratory fishes with the exception of the uppermost; this dam was 12 feet high and had an ineffective fishway, blocking the upstream passage of fish.

- 1.5 miles above Three Mile Bridge a diversion carried two-thirds of the water of Mill Creek into Yellowhawk Creek; the entire Mill Creek stream bed from this point to Walla Walla was dry in summer.

- No salmon or steelhead present when surveyed.

Little Walla Walla River and Stone Creek (1937 Survey)

- Enters Walla Walla River near Mission Bridge.

- Largely a waste ditch for irrigation water.

- All of Stone Creek tributary diverted for irrigation.

Yellowhawk Creek (1935 Survey)

- Enters Walla Walla River 3 miles above Mission Bridge.

- Greater part of flow obtained by diversion from Mill Creek.

- 29 unscreened diversions; 7 dams, 3 of which are small, low structures passable without difficulty.

- Whitney dam, 4.5 feet high, had no fishway but was easily passable at the spillway.

- Walla Walla mill dam, 6 feet high, had an adequate fishway. Ankeny Dam, 6 feet high, with a broken down fishway, was a low water barrier.

- Brehm Dam, 4.5 feet high, had 2 fishways, only 1 of sufficient size to be usable by large fish.

- Entire flows of Cottonwood Creek, Reser Creek, and Russell Creek diverted for irrigation.

- Steelhead present when surveyed.

Birch Creek (1937)

- Enters Walla Walla River at Oregon-Washington state line.

- Almost dry during the summer.

- No salmon or steelhead present when surveyed.

North Fork Walla Walla River (1935, 1936 Surveys)

- Enters Walla Walla River at RM 56 and is 17 miles long.

- From RM 0 to 4 were 9 small unscreened irrigation diversions with small, temporary dams; easily passable to fish during high water stages, but 4 may be barriers during low water.

- Steelhead present when surveyed.

South Fork Walla Walla Rivers (1935, 1936 Surveys)

- Enters Walla Walla River at RM 56 and is 24 miles long.

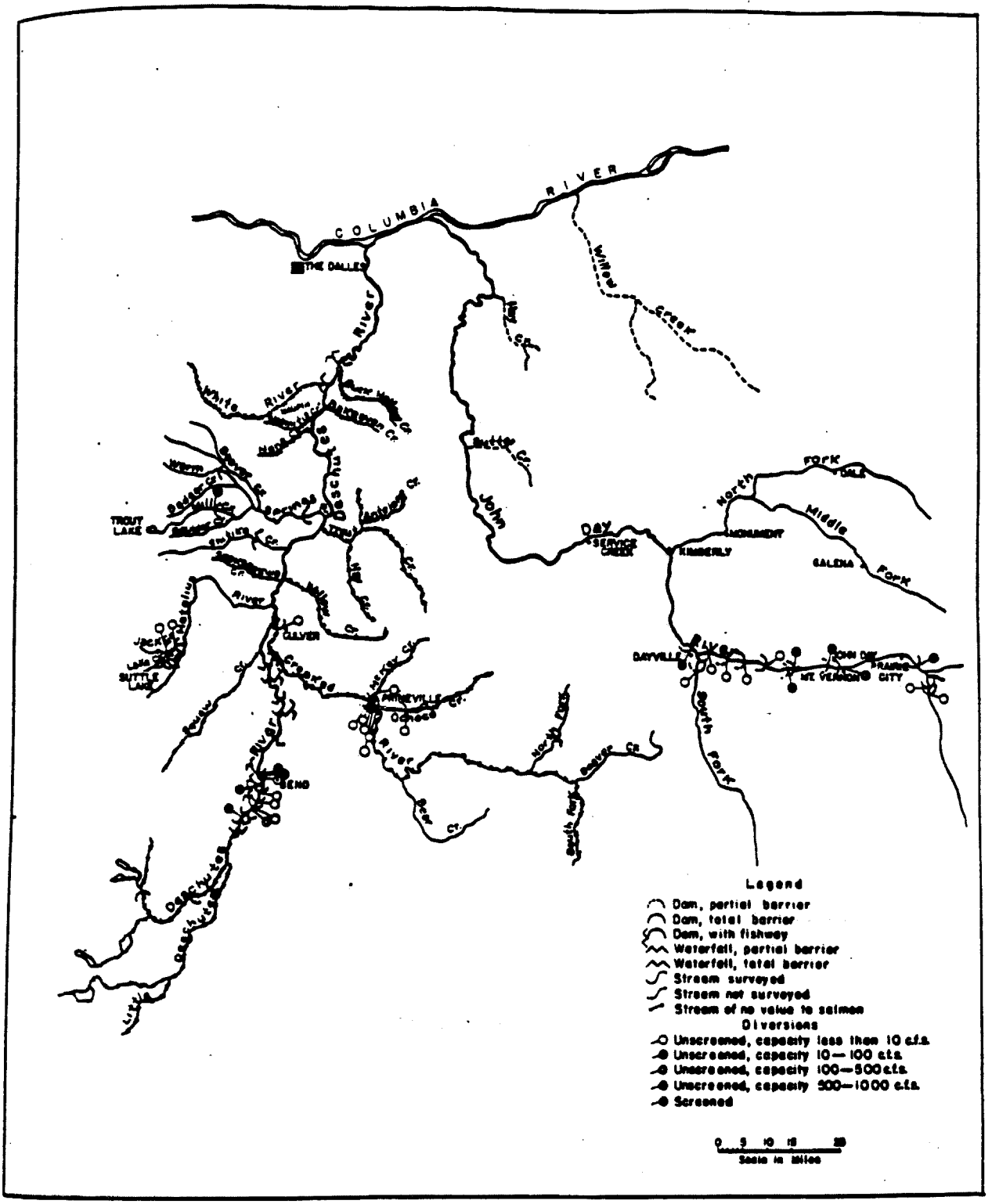
- 16 irrigation and 2 power diversions in lower 8-mile section; none were screened.

- 8 temporary and 2 permanent dams, each 4 feet high, connected with the power diversions.

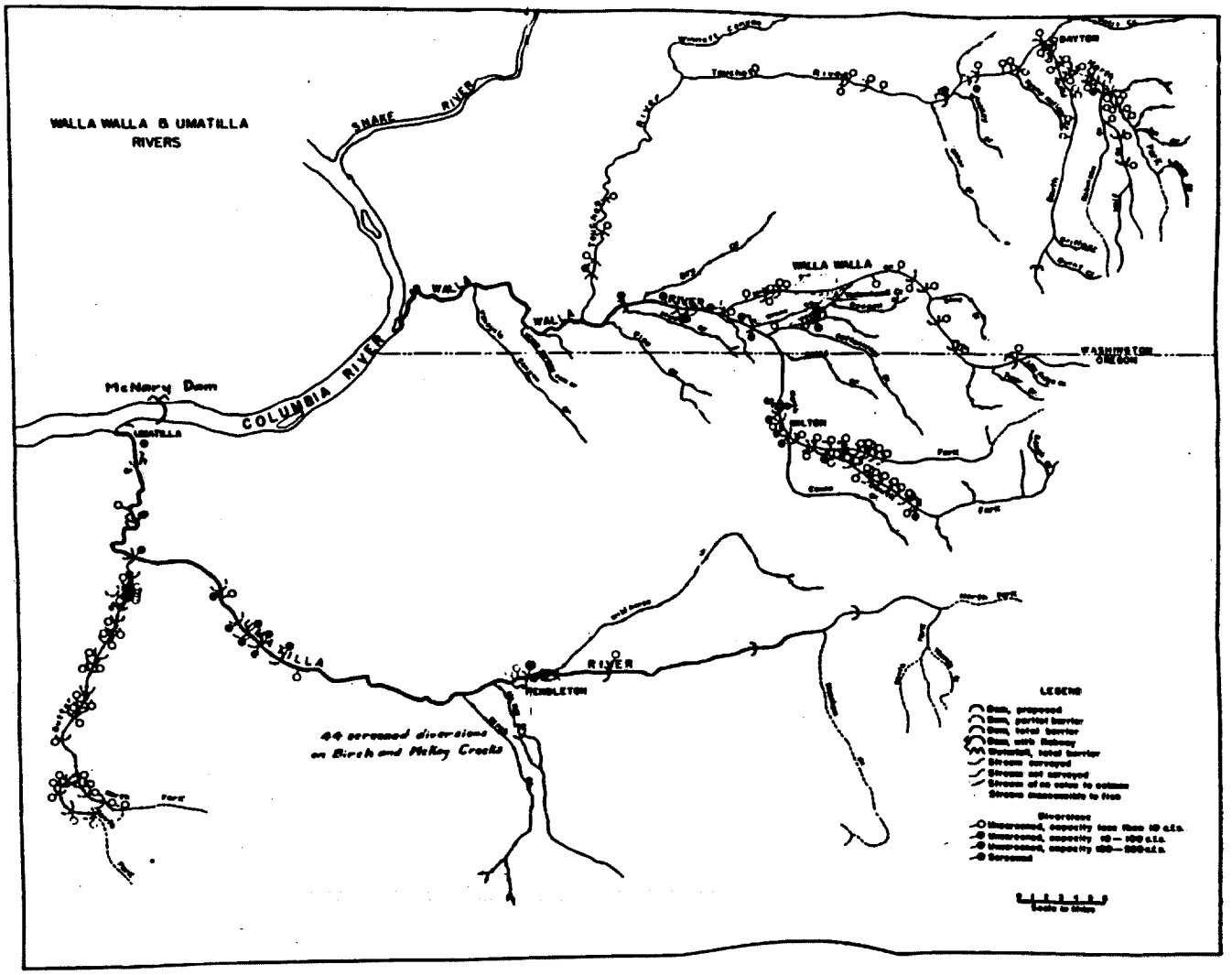
- Lowermost power dam operated by Milton Power Company at RM 0.5; no fishway, but was a barrier to fish only during low water stages; unscreened diversion carried about 70 cfs.

- Second power dam, owned by the Pacific Power and Light Company, was the uppermost structure on the stream; adequate fishway was passable at all times; unscreened diversion carried 80 to 100 cfs.

- Spring run of steelhead present when surveyed. No salmon seen since 1925. Existing conditions on the main Walla Walla River were largely responsible.



Deschutes and John Day river basins



Walla Walla and Umatilla river basins

AREA 3: COLUMBIA RIVER BETWEEN ITS CONFLUENCE WITH THE SNAKE RIVER AND CHIEF JOSEPH DAM

Columbia River (1946 Survey)

- 210 miles long in area surveyed from Snake River to confluence of Okanogan River.
- Most tributaries were subject to intermittent flows due to diversion of water for irrigation purposes.
- 87-foot McNary or Umatilla Dam was under construction at time of survey at RM 292; fish ladders were planned.
- At Priest Rapids at RM 396, the Pacific Power and Light Company operated a power plant; no barrier dam, with water diverted by a small wing dam; two fixed-bladed power wheels were operated.
- Two dams on the main Columbia at time of survey and a third under construction; Rock Island Dam was built by the Puget Sound Power and Light Company in 1934 at RM 452; it was a 22 to 33-foot barrier to migratory fish, but had 3 satisfactory fishways.
- Fish counting stations were operated at Rock Island Dam by the Fish and Wildlife Service to provide information on fish entering the section of the river above the Yakima River and below Grand Coulee Dam.
- Relatively small runs of fish remained in the Columbia River above Rock Island in years prior to the building of Grand Coulee Dam.
- No great losses to the runs could be attributed to the salvage operations and transferring of the stocks to hatcheries and streams below Grand Coulee after 1939 under the Grand Coulee Fish Salvage Program of the Fish and Wildlife Service.
- From 1939 to 1943 all adult salmon were trapped at Rock Island Dam and placed in the Wenatchee, Entiat, Methow and Okanogan rivers, which enter the main Columbia River below Grand Coulee.
- In addition to being a migration route of anadromous fish, a relatively important spawning area.
- Spring, summer, fall chinook salmon present when surveyed.

Rock Creek, Pine Creek, and Alder Creek (1937 Survey)

- 20 to 30 miles long.
- Steelhead present when surveyed.

Yakima River (1936 to 1947, Various Surveys)

- Enters Columbia River at RM 335 and is 198 miles long.
- Prior to settlement and development, this river system was unquestionably a tremendous fish producer, owing to the extensive spawning and rearing areas for chinook, coho, and sockeye salmon, as well as steelhead trout.
- Construction of irrigation dams made large sections of spawning area inaccessible and resulted in the extermination of the sockeye salmon populations.
- All of the major and many of the minor diversions had been screened by late 1940s.
- As late as 1936, survey parties found only 8 diversions screened out of 40 examined on the main Yakima River. Since then the Washington State Fisheries Department, aided by the Works Progress Administration, has undertaken an effective screening program. The Fish and Wildlife Service has screened government-constructed diversions.
- Another problem in conserving salmon of this area involved the fishing activities of the Indians, who speared, netted and snagged many of the fish concentrated in the shallow waters below dams and fish ladder entrances, as at the Richland, Prosser, Sunnyside, and Wapato dams on the Yakima River.
- At the time of the survey, the 47-mile reach from Ellensburg to Easton Dam contained most frequently used spawning areas of the entire river; Easton Dam was upstream limit of anadromous fish migration in the Yakima River.
- Main hazard to fish life in upper section was reduction in river flow, owing to storage of water in reservoirs.
- Area above Easton Dam was virtually unused by salmon or steelhead although dam was provided with fish ladder.
- Construction of Roza Dam at RM 115 in 1940 allowed counts on escapement to the upper Yakima:

- -- Spring chinook counts in years 1940 to 1947 were 1,001, 239, 521, 689, 242, 447, 989, and 2,645, respectively.

- -- Fall runs in 1944 and 1947 were 51 chinook and 774 coho salmon, and 29 chinook and 1,943 coho salmon, respectively.

o 45 individual dams and diversions on the main Yakima River were identified; of these, 25 of 35 diversions were screened (many in 1938), and 7 of the 10 dams had fish ladders or similar devices.

- -- Richland Diversion Dam at RM 18 was a low water barrier at time of survey, 2 fish ladders installed later.

- -- 2 diversion ditches at dam with total capacity of 625 cfs were screened in 1938.

- -- Diversion ditches at RM 38 and 40; one screened in 1938.

- -- 8-foot Prosser Power dam at RM 45; 3-step fish ladder built in 1930 effective at high water levels.

- -- Canal at dam had battery of huge rotary screens; an underground bypass returned fish to river.

- -- Ditch at RM 79; 3 ditches at RM 83 were screened, 1 in 1938.

- -- 8-foot Sunnyside Dam at RM 88 was built in 1906-1907 by the Bureau of Reclamation and equipped with 3 fishways.

- -- Canal at Sunnyside Dam with 1,250 cfs capacity was unprotected for 20 years; probably more fish entered the canal and perished than in any other diversion from the Yakima River. In 1929/1930 electric fish screens were installed, in 1935 a battery of 8 rotary screens installed, in 1939 these were rebuilt and improved.

- -- Canal 0.5 miles above Sunnyside Dam was unprotected before 1930 when electric fish screen was installed, later replaced by bar screen.

- -- 9-foot Wapato Diversion Dam at RM 91 was built in 1917; fish ladder built in 1930, second ladder installed later.

- -- Canal at dam unscreened prior to 1929 when electric fish screen installed; in 1939, 19 rotary screens installed.

- -- 3 ditches about RM 99 had rotary screens.

-- Ditch 2 miles above Selah, Washington, was screened in 1938.

-- Pomona Dam (only remnants were left at that time of survey) at RM 106 was built to store water to float logs to saw mills.

-- Canal at RM 108 was screened in 1938.

-- 20-foot Roza Dam at RM 115 had fish ladder and was built in 1940.

-- Canal at dam had capacity of 2,200 cfs and was equipped with a rotary drum screen.

-- 2 ditches about RM 134 were screened.

-- Ditch at RM 135 was unscreened.

-- 2 ditches about RM 139 were screened, 1 in 1938.

-- Ditch at RM 144 with 612 cfs capacity was unscreened at time of survey.

-- Ellensburg Dam at RM 144 was low water barrier to fish.

-- Canal at dam was screened in 1939.

-- Mills Power Dam at RM 146 was possible low water barrier.

-- 2 canals at RM 148 were screened, 1 in 1938.

-- 2 ditches about RM 150 were screened in 1938 and 1941.

-- Ditch at RM 158 was supplied by 25-foot high paddle-wheel dipper, did not require screening.

-- 3 ditches about RM 163 were screened.

-- 60-foot Easton Dam at RM 186 was built in 1929; 20-pool fish ladder not very effective; dam was sometimes a barrier to fish.

-- Canal at dam was screened and diverted 1,300 cfs after 1937.

-- 70-foot Lake Keechelus High Control Dam at RM 198 was impassable to fish; reservoir storage first began in a crib dam 1906 and was completely filled in 1920.

Satus Creek (1935 Survey)

- Enters Yakima River at RM 60 and is 50 miles long.
- 7 unscreened irrigation diversions and 5 dams.
  - -- Indian Service Dam at RM 9.5 was usually passable to fish; irrigation canal was unscreened.
  - -- Irrigation canal at RM 11 was unscreened.
  - -- Unscreened irrigation canal at RM 12.5.
  - -- Unscreened irrigation canal at RM 13 above a 2-foot dam that might have been a low water barrier.
  - -- 2 unscreened irrigation ditches about RM 26.5.
  - -- Unscreened irrigation ditch at RM 30; 2.5-foot diversion dam was a low water barrier.
- Steelhead and salmon reported prior to 1910; few, if any present when surveyed.
- Impassable 15-foot falls at RM 14 on Logy Creek.

Toppenish Creek (1937 Survey)

- Enters Yakima River at RM 68 and is 60 miles long.
- 4-foot irrigation dam at RM 35; during summer entire flow was diverted.
- Small run of steelhead reported; little value to salmon at time of survey.

Ahtanum Creek (1935 Survey)

- Enters Yakima River at RM 94 and is 21.5 miles long.
- Formerly had good runs of salmon and steelhead; few chinook present when surveyed.
- Mainstem channel had 23 irrigation diversions; many had low earth, rock, or board dams, but no fishways were barriers at low water stages. The only screened diversion was Indian Service Diversion Canal, screened in 1929.
- 3.5-foot concrete dam at RM 17.

- Hatton Channel (10 miles long) had 33 unscreened diversions and several low dams; dam 200 yards above return was a definite barrier to fish.

- Bachelor Creek Cannel (17 miles long) had 38 unscreened diversions and several low diversion dams, 1 of which was 2 miles upstream and a low water barrier.

- North Fork of Ahtanum Creek (20 miles long) had 5 unscreened diversion, and a 4-foot diversion dam that was a low water barrier at RM 1.5.

- South Fork of Ahtanum Creek (13 miles long) had 6 unscreened diversions, 2 above small brush dams.

Naches River (1935, 1936 Surveys)

- Enters Yakima River at RM 101 and is 51 miles long.

- Spring and summer chinook and steelhead entered the Naches and upper tributaries to spawn at the time of the survey.

- Only natural obstruction to fish was an 8-foot cascade at RM 45; main obstacles to fish were shallow or dry sections at height of irrigation season, flashboards and downstream aprons at several of the diversion dams, and superior attractions at 1 or 2 diversion returns.

- 37 diversions (25 screened) and two dams (both with fishways) were identified on the river; most screening occurred in 1938.

  -- Ditch at RM 2 was screened in 1938.

  -- Ditch at RM 3 was screened in 1938; gravel and rock dam shunted most of the water of lower Cowiche Creek into this canal.

  -- Dam with a fishway at RM 3.5 was a barrier to fish during irrigation season; ditch was screened in 1938.

  -- Canal at dam was screened with fine mesh panel screens.

  -- 2 ditches about RM 6 were screened.

  -- 3 ditches about RM 7; 2 were unscreened.

  -- 2 ditches about RM 8 were screened, 1 in 1938.

  -- Rip-rap wing dam at RM 9.5 with 5 diversions screened in 1938.

-- Ditch at RM 10.5 was screened.

-- Ditch at RM 11 was screened in 1938.

-- Canal at RM 16; 565 cfs capacity for power and irrigation; first protected by electric screen in 1930, battery of rotary screens installed in 1938.

-- Canal at RM 17 was screened in 1938.

-- Yakima Water Works Dam at RM 18 had a series of concrete abutments 3 to 5 feet high that had a provision for the use of flashboards; a fishway was provided.

-- Canal 20 feet above the dam; a small concrete wing shunted debris away from the canal; downstream migrating fish also shunted out into the stream and few fish make the reverse turn back into the canal mouth, but continue on either over the low dam or through the fishway.

-- 3 ditches about RM 22 were not screened.

-- 2 ditches about RM 24 were screened.

-- 2 ditches about RM 26 were screened.

-- Ditch at RM 29 above an 80-foot long log wing dam was screened in 1938.

-- 2 ditches about RM 30; 1 was screened.

-- 2 ditches about RM 31; 1 was screened in 1938.

-- 3 ditches at RM 34 to 37; 2 were screened.

o Cowiche Creek had 9 unscreened diversions, each above a 1 to 3-foot high dam that diverted all or nearly all of the stream flow at that point; South Fork had 5 unscreened irrigation diversions that used almost all of its water.

o Tieton River had 8 diversions (5 screened) and 3 dams:

-- Tieton Irrigation Dam at RM 14 had no fishway and was a barrier at low water.

-- Rimrock Dam, completed in 1925 at RM 22, was a total barrier to fish.

-- 53-foot Clear Creek Reservoir dam on the North Fork was completed in 1918.

-- Irrigation diversion at RM 0.25, 0.33, 1.8, 2.5, 3.3, 4, 5.5, and 14; only the diversion at RM 14 was screened at the time of the survey.

- Rattlesnake Creek had 4 diversions at RM 0.25, .9, 1.2, and 4.3 miles upstream (1 screened) and an 8-foot fall at RM 16 was a low water barrier; small numbers of chinook reported to sometimes enter stream.

- Bumping River had log jam at RM 13.7 that was a low water barrier; impassable 4 to 5-foot storage dam at RM 16.3; most fish could pass out of the lake into the stream through a conduit without injury.

- American River had no dams or diversions; series of cascades at RM 14 were low water barrier; excellent chinook salmon producer in the past, fair at time of survey.

Wenas Creek (1937 Survey)

- Enters Yakima River at RM 106 and is 30 miles long.

- 60-foot reservoir control dam at RM 12 was total barrier to fish; stream often dry in summer.

- Formerly had good salmon and coho runs; no runs present when surveyed.

Umptanum Creek (1936 Survey)

- Enters Yakima River at RM 121 and is 16 miles long.

- Impassable 35-foot fall at RM 7.6; unscreened irrigation ditch at RM 8.

- Coho salmon formerly reported before Pomona Dam built on the Yakima.

Wilson Creek (1936 Survey)

- Enters Yakima River at RM 131.

- Thoroughly used for irrigation.

- No salmon or steelhead present when surveyed.

Manastash Creek (1936 Survey)

- Enters Yakima River at Ellensburg, Washington, and is 29 miles long.
- 44 unscreened irrigation diversions in lower 11 miles; nearly half had diversion dams.
- Inaccessible due to irrigation facilities on lower courses.

Taneum Creek (1936 Survey)

- Enters Yakima River at RM 148 and is 12 miles long.
- Inaccessible due to irrigation demands and numerous low dams.
- Before completion of Taneum Canal in 1910, stream supported a good run of coho salmon; no runs reported for many years prior to survey.
- 5 unscreened diversion ditches at RM 1.5, 2, 2.5, 5.2, and 6.5; 3-foot concrete dam at RM 2.
- 25-foot falls on South Fork was total barrier at RM 3.5.

Swauk Creek (1936 Survey)

- Enters Yakima River at RM 153 and is 20 miles long.
- 12 small unscreened irrigation ditches; 11 had dams that would be barriers at very low water.
- No salmon present when surveyed.

Teanaway River (1936 Survey)

- Enters Yakima River at RM 159 and is 11.5 miles long.
- Good runs of salmon prior to 1904, logging companies operated on stream 1905 to 1916.
- 9 screened irrigation ditches and 3 low dams that were low water barriers.
- On North Fork low dam at RM 0.25 diverted entire flow during periods of low water; 3 other low dams; several log jams and beaver dams; 6 screened diversions.
- Impassable 20-foot falls and log jam on Bear Creek tributary of Stafford Creek.

- 4 unscreened irrigation diversions with dams on Middle Fork; low water barriers; no salmon runs reported since 1916.

- Impassable 15-foot fall at RM 7.3 and 3 small unscreened irrigation ditches with dams on lower 3 miles of West Fork.

Cle Elum River (1941 Survey)

- Enters Yakima River at RM 169 and is 33 miles long.

- 135-foot Cle Elum Lake dam at RM 8 was completed by the U.S. Bureau of Reclamation in 1933 for irrigation purposes; no fishway.

- Low rubble dam below reservoir had panel screen.

Big Creek (1935 Survey)

- Enters Yakima River at RM 178 and is 10 miles long.

- Used extensively for irrigation.

- Steelhead present when surveyed.

Kachess River (1935 Survey)

- Enters Yakima River at RM 187 (above Easton Dam).

- Impassable storage dam at outlet of Kachess Lake (RM 1.5); crib dam installed at lake outlet in 1905, replaced in 1911 by 63-foot, earth-fill dam built by the Bureau of Reclamation.

- Good run of sockeye salmon entered the lake until blocked by dam construction.

Cabin Creek (1937 Survey)

- Enters Yakima River at RM 189 (above Easton Dam); water supply for town of Easton diverted from this stream.

- No salmon present when surveyed.

Crab Creek (1937 Survey)

- Enters Columbia River at RM 422.

- No value to salmon or steelhead at time of survey due to irrigation use.

Quilomene Creek, Tekison Creek, Tarpiscan Creek, Colockum Creek, Stemilt Creek, and Squillchuck Creek (1937 Survey)

- No value to salmon or steelhead because of intermittent flows due to irrigation diversions.

Wenatchee River (1935 to 1947, Various Surveys)

- Enters Columbia River at Wenatchee, Washington, and is 55 miles long.
- Wenatchee and Okanogan River watersheds were the major producing areas of sockeye salmon in the Columbia system at the time of the survey; plentiful steelhead and spring chinook present when surveyed. Summer chinook had difficulty passing Dryden and Tumwater Dams; former large runs of coho salmon greatly depleted at time of survey.
- Most diversions were screened beginning about 1930.
- Gunn Irrigation Dam and diversion at RM 6 with capacity of 40 cfs was screened in 1938.
- Ditch at RM 12 had a capacity of 25 cfs and was screened.
- Ditch at RM 16.5 diverted 4 cfs and was screened.
- Dryden Dam at RM 17 has always been a serious obstruction to upstream passage of anadromous fish. Dam was once equipped with small wood fishways that were replaced with a concrete pool-type fishway in 1947. Diversion of water was for power and irrigation purposes; intervening reach of river was nearly dry at low water flows.
- Canal at Dryden Dam had capacity of 1,375 cfs. In 1935 the only protective device was an ineffective electric fish screen; thereafter, a battery of 7 rotary screens was installed.
- Old lumber mill dam in the Wenatchee River at Leavenworth (RM 24) was at least a partial barrier to fish for many years, although it was equipped with some semblance of a fish ladder. This dam was removed in 1933 or 1934. Fishways were later constructed at the two remaining dams on the Wenatchee.
- Canal constructed in 1940 at RM 25, intake was screened.

- Tumwater Power Plant at RM 28; the power diversion, which was screened, operated a low speed turbine and was returned through the tailrace to the river at this point. The flow in the intervening river channel becomes very low at certain water stages, and at such times this section was a definite hazard and a partial barrier to the upstream migration of fish.

- Tumwater Power Dam had a drop of about 15 feet onto a wide downstream apron; fish passage was provided by a multiple entrance ladder.

Mission Creek (1935, 1936 Survey)

- Enters Wenatchee River at RM 12.5 and is 19 miles long.

- In 1936 the lower 5 miles were polluted with household and barnyard sewage and garbage.

- 13 unscreened irrigation diversions and 3 low dams; stream usually almost dry and of no value to salmon; few steelhead reported in spring.

- On Sand Creek a log jam at RM .25 and a fall at RM 2.25 were both barriers to fish at low water.

- On East Fork numerous beaver dams formed low water barriers and mud and sand in stream bed limited available spawning area; no value to salmon, small run of spring steelhead at time of survey.

Peshastin Creek (1935 Survey)

- Enters Wenatchee River at RM 21 and is 18 miles long.

- 3 low dams located at RM 2, 2.5, and 6 were barriers during irrigation.

- 7 wing dams and 9 irrigation diversions, of which 5 had been screened. Chinook fingerlings observed in 1944, and in 1945 a few spring chinooks were seen spawning. Fair runs of steelhead trout observed in 1944 and 1945; in 1946 and 1947 no salmon or steelhead were found.

- On Ingalls Creek an impassable 40-foot falls at RM 6.5 and a low dam at RM .75 diverted 28 cfs to a small electric power plant.

Chumstick Creek (1935 Survey)

- Enters Wenatchee River at RM 24 and is 13 miles long.

- 13 unscreened irrigation diversions, 3 with dams that were considered barriers during low water periods; first dam was located about RM 2.

- At times during summer entire flow was diverted and stream bed was nearly dry; steelhead in spring and fall chinook present when surveyed.

- On Engle Creek 11 irrigation diversions, all unscreened, left the stream dry during most summers; small dam at RM .75 was a barrier at low water stages; impassable 15-foot Parkins Dam at RM 6; little possible value to salmon or steelhead at time of survey.

Icicle Creek (1935 Survey)

- Enters Wenatchee River near RM 24 and is 26 miles long.

- Leavenworth Hatchery built in 1940 at RM 2.5. Few coho salmon and fair runs of steelhead trout, chinook and sockeye salmon up to the hatchery at the time of the survey.

- Irrigation diversion at RM 4 screened in 1938.

- Irrigation and water supply dam at RM 5 was barrier during irrigation season; irrigation ditch intake screened in 1938.

- Town of Leavenworth water supply intake near dam was screened.

- Impassable 5 to 15-foot falls at RM 24.

Chiwaukum Creek (1935 Survey)

- Enters Wenatchee River at RM 38 and is over 11 miles long.

- 5 diversions: 3 being unscreened irrigation diversions, a screened diversion to a state trout hatchery, and the other a screened diversion to a CCC camp no longer in use.

- Series of impassable falls at RM 4.5.

- No salmon and few steelhead present when surveyed.

Beaver Creek (1937 Survey)

- Enters Wenatchee River at RM 48 and is 5 miles long.

- Largely used for local irrigation, became almost dry late in summer.

- Of no value to salmon.

Chiwawa River (1935 Survey)

- Enters Wenatchee River at RM 50 and is 27 miles long.
- Only diversion was RM 3.5, with capacity of 40 cfs for irrigation.
- No salmon reported for 20 years prior to survey.
- 3 log jams in lower 3 miles of Chickamin Creek may be barrier at low water.
- No migratory fish present when surveyed.

Fish Lake Stream

- Enters Wenatchee River at RM 53 and is 1 mile long.
- Numerous beaver dams prevented the migration of fish up or down the outlet stream; stream may become dry in late summer.
- No anadromous fish present when surveyed.

Nason Creek (1935 to 1947, various surveys)

- Enters Wenatchee River at RM 55 and is 25 miles long.
- Once had large runs of chinook, coho and steelhead. Between 1939 and 1944 Grand Coulee fish maintenance project maintained a weir just above the mouth and transplanted adult chinook and steelhead from Rock Island Dam into the stream.
- Gaynor Falls at RM 15 was 12 feet high and a barrier to salmon; doubtful that steelhead could pass at high water.
- On Whitepine Creek 18 to 20 feet high falls at RM 1.5 were an impassable barrier.

Lake Wenatchee

- Headwater of Wenatchee River at RM 55.
- One of few remaining accessible rearing areas for sockeye salmon in the Columbia River system.

- Grand Coulee fish maintenance project transferred adult sockeye salmon from Rock Island traps into Lake Wenatchee from 1939 to 1943, the largest yearly transfer being 13,000 fish in 1943; in September 1947, 46 spawning sockeye and 10 redds were found on a small gravel area in the lake.

- A few chinook salmon were place in the lake in 1939; in 1943, 900 were planted.

- Little Wenatchee River enters upper end of Lake Wenatchee and is 20 miles long. The stream dropped approximately 100 feet at RM 6 and the cascades and falls were believed to be a total barrier to the upstream passage of fish; impassable 30-foot falls at RM 15.

- Little Wenatchee River was valuable as a spawning area for sockeye salmon; largest run in the 20 years before the Grand Coulee transplantation project was begun amounted to 412 observed spawners in 1935. In 1948 a total of 4,255 sockeye were taken from the Little Wenatchee River for hatchery purposes.

- White River enters Lake Wenatchee and is 27 miles long; large runs of sockeye and chinook salmon entered the White River in the early days, but were depleted to a few hundred fish by 1935. In 1948 it was estimated that nearly 10,000 sockeye spawned in White River.

- At RM 13 of White River was impassable 25-foot falls.

- 8-foot falls located at RM 4 of the North Fork of White River believed to be a barrier to salmon.

Entiat River (1935 to 1947 Surveys)

- Enters Columbia River at RM 483 and is 52 miles long.

- Large runs of chinook salmon and steelhead trout that entered the Entiat in the early days had been practically exterminated by 1925 due principally to the construction of small dams and the diversion of water; last good run prior to survey was in 1904.

- In 1898 a dam with an ineffective fish ladder forming a partial barrier to salmon was built at saw mill site at RM 1. A new dam was built which entirely obstructed the passage of fish upstream; this dam was later removed, but others were installed which continued to obstruct the passage of fish.

- A power dam 4 feet in height was constructed by the Puget Sound Power and Light Company on the Entiat about RM 3; it was provided with a fishway in 1939. Dam formed a barrier because of diversion of flow to power plant (and later for irrigation) 1 mile downstream; river channel was impassable to low water stages.

- The 8-foot high Kellogg Mill Dam was built in 1913 at RM 3 and was a barrier to fish except at flood stages. The dam continued to bar the passage of fish until an opening was blasted through the structure by sportsmen in 1932.

- In 1941 the Entiat hatchery was constructed at Packwood Springs, approximately at RM 7.

- Harris Mill Dam at RM 11 was constructed in 1930. This dam, 13.5 feet high, was provided with an ineffective fishway in 1931; better fishway was constructed in 1939. Entire structure was washed out in the flood of 1948.

- Dams that formerly obstructed the passage of migratory fish had been removed or provided with fishways by late 1940s.

- Of at least 19 irrigation diversions, 18 had been provided with fish screens at the time of the survey.

- Fish Tail Falls at RM 28 appeared to be a barrier during low water stages.

- Entiat Falls at RM 33 was 10 feet high and a barrier to fish; several additional 8 to 10-foot falls farther upstream.

Mad River (1935 to 1947, Various Surveys)

- Enters Entiat River at RM 11 and is 25 miles long; formerly principal steelhead trout producer in Entiat River system.

- Passage of migratory fish was greatly restricted for many years by the Harris Mill Dam on the main Entiat.

- Log dam about RM 0.6 supplied unscreened irrigation diversion ditch.

- Plank dam 3 feet high at RM 1 supplied a screened pipeline leading to the Harris lumber mill dam. Both dams were obstructions to fish at low water stages.

North Fork of Entiat River (1935 to 1947, Various Surveys)

- Enters Entiat River at RM 34 and is 10 miles long.
- Blocked 600 yards above mouth by 3 falls 10, 18 and 30 feet high.
- No salmon and some steelhead present when surveyed.

Chelan River (1935 Survey)

- Enters Columbia River at RM 503 and is 4 miles long.
- No salmon or steelhead present when surveyed, due to steep gradients and intermittent flow resulting from diversion of water to power plant.

Antoine Creek (1936, 1937 Survey)

- Enters Columbia River 2.5 miles below Azwell, Washington.
- Entire flow diverted near mouth of irrigation; 1-mile reach dry at time of survey.

Methow River (1934, 1935, and 1938 Surveys)

- Enters Columbia River at Pateros, Washington, and is 71.5 miles long.
- Fomerly supported large runs of chinook and coho salmon and steelhead trout.
- Fair spring run of steelhead trout and small spring and summer runs of chinook salmon present when surveyed.
- From 1899 through 1914 a hatchery was operated at Twisp (RM 38) by the State of Washington and the Okanogan County Game Commission. This hatchery collected up to 2 million coho salmon eggs and about 70,000 chinook eggs annually.
- In 1915 the Washington Water Power Company constructed a dam at Pateros, near the mouth of the river, which was not provided with fishways. Since the dam was impassable, no fish could reach the hatchery. Therefore, it was moved downstream to the dam site. Silver salmon eggs were taken at this new location, although in smaller numbers than previously, and in addition 2 to 4 million steelhead eggs were taken annually. Practically no chinook salmon eggs were handled by the hatchery during this time, as the run had been virtually exterminated.

- Egg taking was discontinued in 1921; attempts were made from 1926 to 1931 to introduce fall chinook salmon from other hatcheries.

- By 1930, when the power dam at Pateros had been removed, the run of coho salmon had all but disappeared, and the run of steelhead was very small.

- In 1935, a few spring chinook salmon were seen in the main Methow and some of its tributaries.

- Many open irrigation diversions resulted in the death of thousands of young migrants annually, which was pointed out by the Washington State Commissioner of fisheries as early as 1902.

- Diversion dams, which were often impassable during low water stages, seriously hindered fish migration.

- Prior to the Grand Coulee fish maintenance project, some diversions in the Methow watershed had been screened and the power dam had been removed. Methow was not included in the fisheries transplantation program until 1941, as the screening program was still under way; in 1941 a program of annual liberations of artificially propagated chinook salmon and steelhead trout was begun in Methow River.

- Although the water of the Methow River was used extensively for irrigation at the time of the survey, it was still an important, usable stream, both as a spawning and rearing area and as a migration route between the Columbia River and the numerous tributaries of the Methow River system.

- 2 Diversion dams on the main Methow River were sometimes impassable to migrating fish during low flow; Bolinger Dam, at RM 12, and the Methow Valley Canal Company irrigation diversion dam at RM 43.

- 3 other dams were passable at time of survey.

  -- Parkinson irrigation dam at RM 24.

  -- Foghorn irrigation and power dam at RM 49 had fishway installed in 1942.

  -- Little Wetzel irrigation diversion dam at RM 54.

- In August 1935 there were 26 irrigation diversions on the main Methow withdrawing a total flow of more than 500 cfs; none were screened at the time of the survey; by 1938 the Washington State Fisheries Department had succeeded in screening the important diversions.

- In 1946 the Winthrop hatchery trapped 1,074 chinook.

Gold Creek (1937 Survey)

- Enters Methow River at RM 20 and is 8 miles long.
- 3 beaver dams might be impassable at low water stages.
- 4 irrigation diversions between 1,015 and 4,120 yards above the mouth, no fish protective devices.
- Entire stream flow diverted for irrigation during late summer and early fall; considered to be of no present or potential value to migratory fish.

Twisp River (1935 Survey).

- Enters Methow River at RM 38 and is 27 miles long.
- Migratory fish able to ascend practically to headwaters during most of the year; however, during late summer and early fall when the water was being used for irrigation, Airy Ditch, about RM 0.5, took the entire flow and limited the use of the stream to the early runs of steelhead trout and chinook salmon.
- 18 irrigation diversions with aggregate withdrawal in August 1935 of 115 cfs; most major water diversions were screened.
- In earlier years great numbers of salmon used the spawning area in this stream and its tributaries; however, the many dams and formerly unscreened diversions in both the Twisp and the main Methow Rivers caused such unfavorable conditions that the only populations of migratory fish still using the stream when the runs were intercepted at Rock Island Dam in 1939 were a few early run spring chinook salmon and lesser numbers of steelhead trout.
- Impassable falls about 1 mile above the mouth of War Creek made it of little value to migratory fish.

Chewack River (1935 Survey)

- Enters Methow River at RM 48 and is 40 miles long.
- Excellent producing area for chinook salmon in the early days.
- Steelhead trout runs persisted until runs were intercepted at Rock Island on the main Columbia River in 1939.

- Former dams and unscreened diversions on the main Methow River played a major part in the depletion of these runs.

- Passable to salmon in the lower 32.5 miles up to Chewack Falls.

- Fulton irrigation diversion dam at RM .7 was a barrier to migratory fish at low water stages.

- Chewack irrigation diversion dam at RM 7 was a low water barrier to fish.

- Of the 5 irrigation diversions, none were screened at the time of the survey, but all of the large permanent diversions later were screened by the Washington State Department of Fisheries; total amount of water diverted at the time of the survey was about 150 cfs.

- Big Boulder Creek had 20-foot impassable falls at RM 1; little possible value to salmon or steelhead.

- 2 impassable beaver dams were within 500 yards of the mouth of Eightmile Creek; 3-foot dam at RM 2.5 with 2 diversions (1 screened); several impassable beaver dams between RM.5 and 2.

- Impassable beaver dams above and below the mouth render Twentymile Creek entirely inaccessible to migratory fish; impassable 25-foot falls at RM 1.

- Rock slide and log jam 4 feet and 40 feet long formed a total barrier to migratory fish at RM 6 on Lake Creek; storage dam 2 feet high at the outlet of Black Lake was a barrier to migratory fish at low water stages; no salmon or steelhead present when surveyed.

Wolf Creek (1937 Survey)

- Enters Methow River at RM 50.5 and is 13 miles long.

- Most flow diverted through a flume into Patterson Lake; stream entirely dry at its confluence with Methow River except at spring runoff; no value to salmon or steelhead.

Goat Creek (1937 Survey)

- Enters Methow River at RM 60 and is 13 miles long.

- Several diversions for farm irrigation took the entire flow during the summer and early fall.

- No salmon or steelhead present when surveyed.

Early Winters Creek (1935 Survey)

- Enters Methow River at RM 64 and is 18 miles long.
- Falls 20 feet high at RM 7 impassable except possibly to steelhead at high water stages.
- 2 unscreened irrigation diversions in the lower part of the stream.
- On Cedar Creek 3 impassable falls, 20, 45, and 30 feet, located at RM 2.
- No salmon or steelhead present when surveyed.

Lost River (1935 Survey)

- Enters Methow River at RM 70 and is 22 miles long.
- At RM 7 impassable rock slide 20 feet high; high impassable falls at RM 12.
- At one time heavily populated with chinook salmon. Indians from surrounding regions formerly went to Lost River to obtain their winter supply of fish.
- Impassable power dam built at Pateros on Methow River in 1915 resulted in the virtual extermination of the runs into Lost River.
- On Eureka Creek at RM .75 an impassable 35-foot falls.

West Fork, Methow River (1935 Survey)

- Enters Methow River at RM 71.5 and is 17 miles long.
- 1 irrigation diversion at RM .5 was not screened at time of survey.
- 2 falls 11 feet and 8 feet high at RM 9 were impassable to migratory fish, with the possible exception of steelheads at high water.
- At RM 10 a log jam 20 feet high formed a total barrier to fish.

Swamp Creek (1937 Survey)

- Enters Columbia River between Methow and Okanogan Rivers and is 12 miles long; intermittent.
- No salmon or steelhead present when surveyed.

Okanogan River (1934 and 1936 Survey)

- Enters Columbia River near Brewster, Washington, and is 120 miles long.

- Sockeye and chinook inhabited this river system at the time of the survey; steelhead trout used lower portion of the river to a limited extent.

- Okanogan River was an important Indian fishing ground; as late as 1931 the natives built brush fishing weirs across the lower part of the river near Monse, Washington, trapping practically all adult salmon going upstream.

- In Canada, large numbers of sockeye were taken by the natives on the spawning grounds.

- Depletion of the large early-day runs of both chinook and sockeye salmon must be attributed to a combination of over-exploitation by the commercial fishery in the lower Columbia and the destructive Indian fishery.

- A counting weir operated at the Oroville mill dam from 1935 to 1937; resultant counts were 264 sockeye in 1935, 895 in 1936, and 2,162 in 1937; no significant number of chinook passed.

- From 1939 to 1943, anadromous fish which entered the Okanogan were trapped at Rock Island Dam; sockeye were hauled by tank truck to Lake Osoyoos, and chinook placed in other stream systems.

- In late 1940s the Okanogan River had the greatest available, and potentially available, habitat for sockeye salmon in the entire Columbia River System; sockeye used Lake Osoyoos and some 8 miles of the river immediately above the lake for rearing and spawning area.

- Lake Osoyoos (RM 80) was originally one of the chief producers of sockeye salmon in the Columbia River system.

- Summer water temperatures were extremely high, reaching the high 70s below Lake Osoyoos.

- Considerable amount of water withdrawn by means of pumps between the mouth and Lake Osoyoos; intakes of pumps were all screened.

- Zosel Mill Dam built in 1927 at Oroville was about 4 feet high and provided with an improved fishway.

- Diversion dam 8 miles above Oliver, British Columbia, and below Lake Vaseaux was the upper terminus of fish migrations at the time of the survey; dam was about 6 feet high and a total barrier to fish. Dam once was provided with an ineffective fishway; dam diverts about 170 cfs of water into an unscreened canal for irrigation purposes.

- Below Lake Skaha was a cascade-type falls about 30 feet high which appeared to be a barrier to fish.

- Low impassable dam at the outlet of Lake Okanogan (RM 120) had no fishway.

- Towns of Okanogan, Omak, Tonasket, and Oroville all discharged raw sewage into the river.

Chiliwist Creek and Loup Loup Creek (1936 Survey)

- Enters Okanogan River at RM 14.5 and 16; entirely diverted for irrigation.

Salmon Creek (1936 Surveys)

- Enter Okanogan River at RM 25 and is 25 miles long.

- Conconully Reservoir Dam at RM 16 was a total barrier to fish; dam was completed by the Bureau of Reclamation in 1916 to store water for the irrigation season.

- Similar smaller dam located on a tributary a short distance above the Conconully Dam and practically the entire flow was impounded.

- Before the completion of the irrigation project, Salmon Creek supported a large run of chinook; no salmon or steelhead present when surveyed.

Omak Creek (1937 Survey)

- Enters Okanogan River at RM 31.5 and is 25 miles long.

- An impassable 16-foot lumber mill dam at RM 0.75.

- 2 unscreened irrigation ditches; in late summer the lowermost ditch, 400 yards above the mouth, withdrew the entire flow remaining in the stream bed at that point.

- St. Mary's Mission diversion dam at RM 5.75 was 5 feet high.

- Chinook salmon and steelhead trout formerly spawned in small numbers up to the mill dam; little value to salmon or steelhead at time of survey.

Bonaparte Creek (1936 Survey)

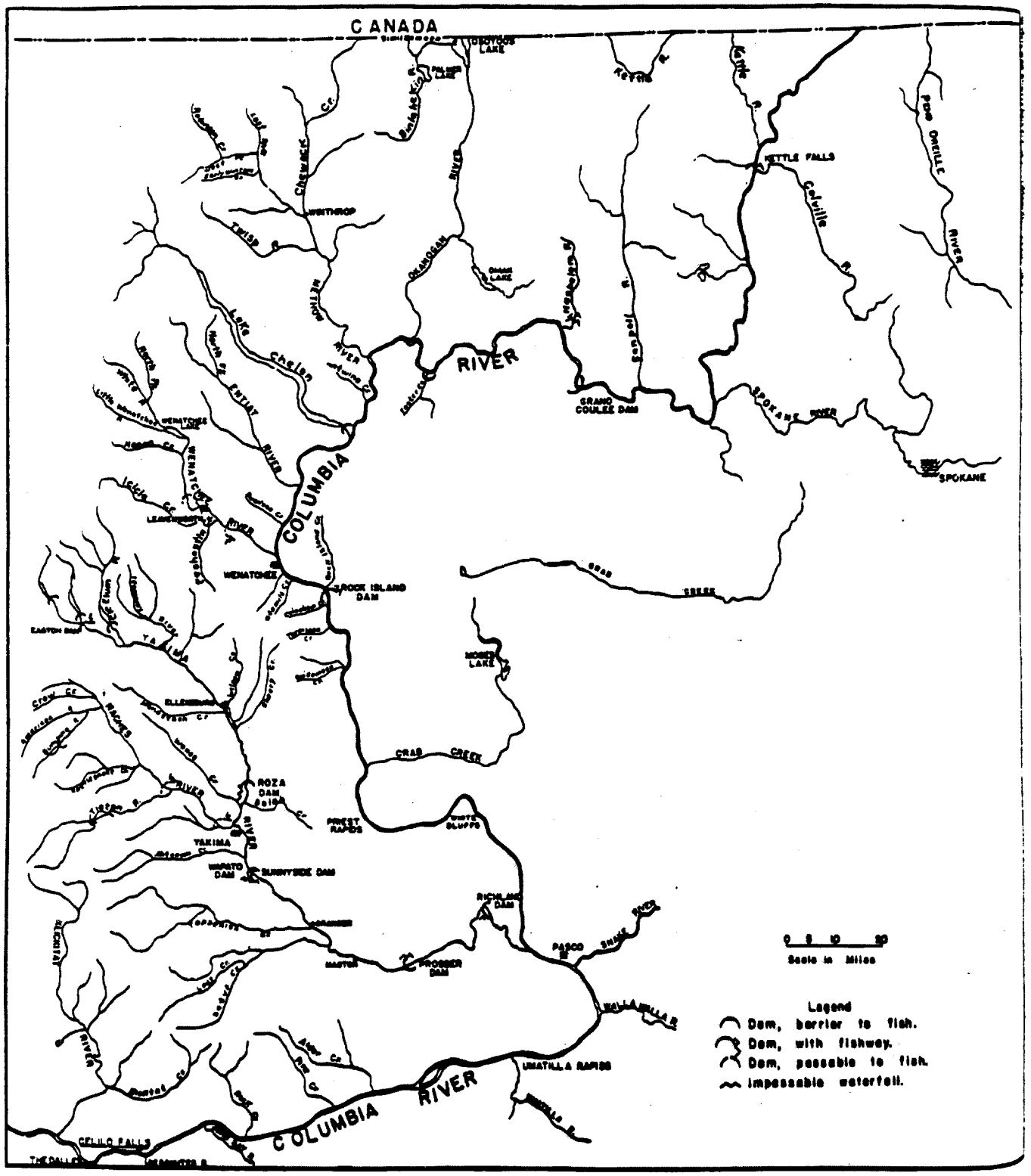
- Enters Okanogan River at RM 55.5 and is 25 miles long.
- Entire flow used for irrigation at time of survey.

Similkameen River (1936 Survey)

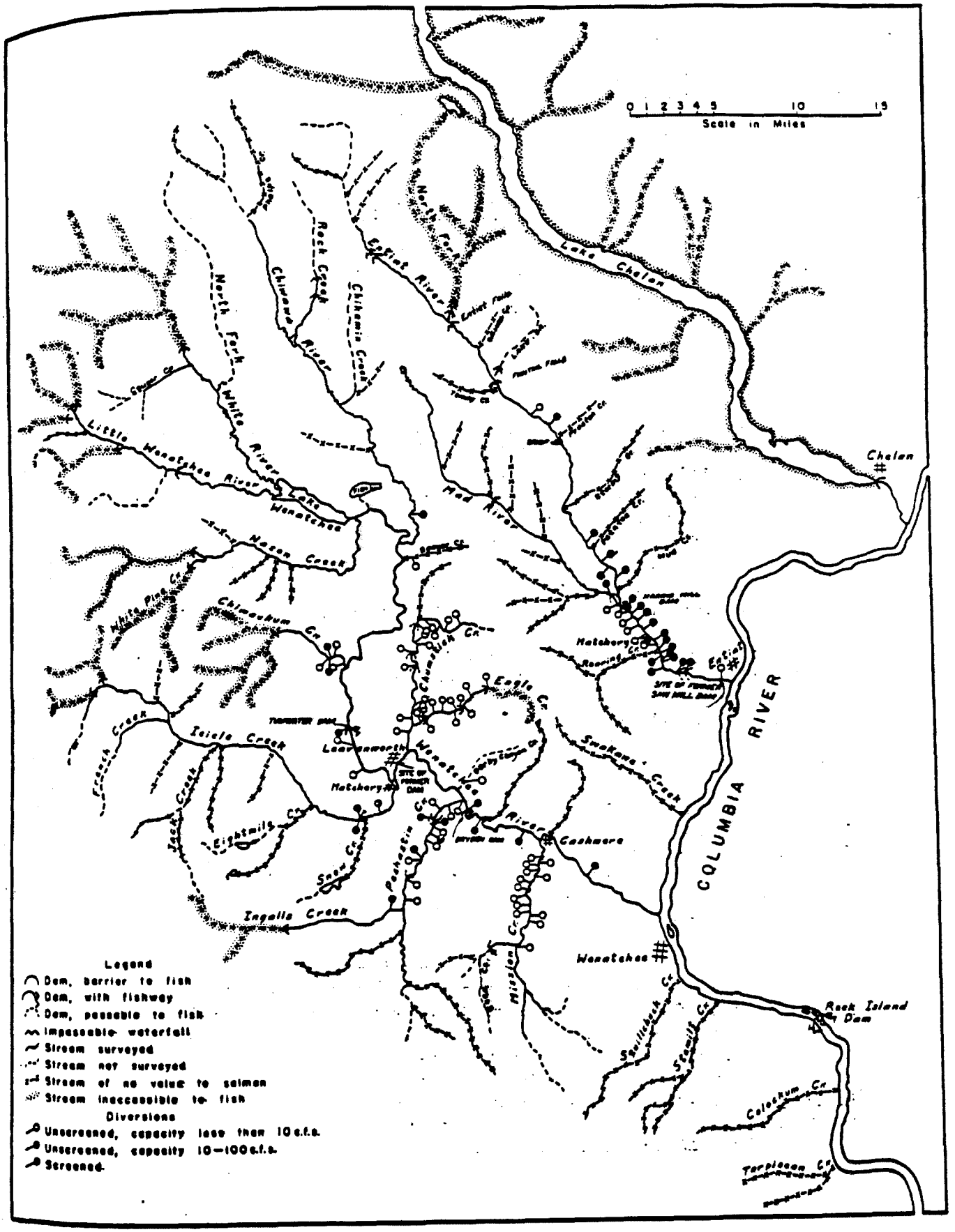
- Enters Okanogan River at RM 75.
- Impassable power dam 65 feet high 100 yards above the falls.
- 1 large water diversion in the canyon above the power dam withdrew more than 100 cfs for irrigation and was unscreened.
- Summer water temperatures high in the lower section (71°F).
- 15-foot falls at RM 6 was at least a barrier at low water.
- 6-mile stream section from the mouth to the falls and power plant supported a small run of chinook prior to 1939.
- In 1936 about 500 sockeye found in the stream, all of them having died without spawning.
- Since the cessation of fish trapping at Rock Island Dam in 1943, a few chinook and sockeye again have entered the stream.
- Large gold mine at RM 10; catch-basin designed to hold cyanide waste production had been long since filled, with a subsequent overflow directly into the river; samples of river water taken as far as 9 miles downstream from the mine were found to contain a cyanide compound.
- Sinlahekin River lost greater part of flow to unscreened irrigation diversions during summer months.

Foster Creek (1937 Survey)

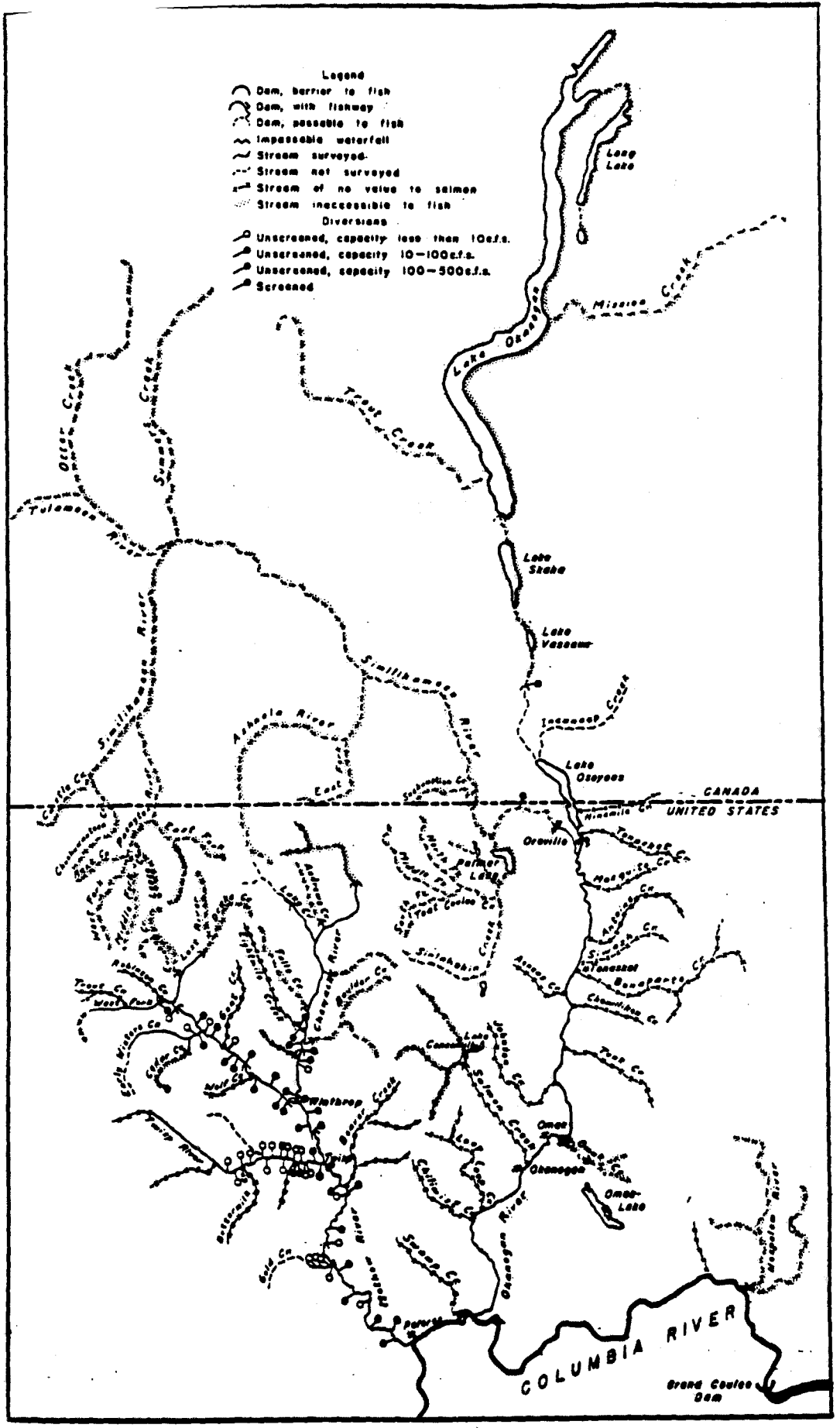
- Enters Columbia River at RM 555 and is over 10 miles long.
- All flow diverted in summer.
- No salmon or steelhead present when surveyed.



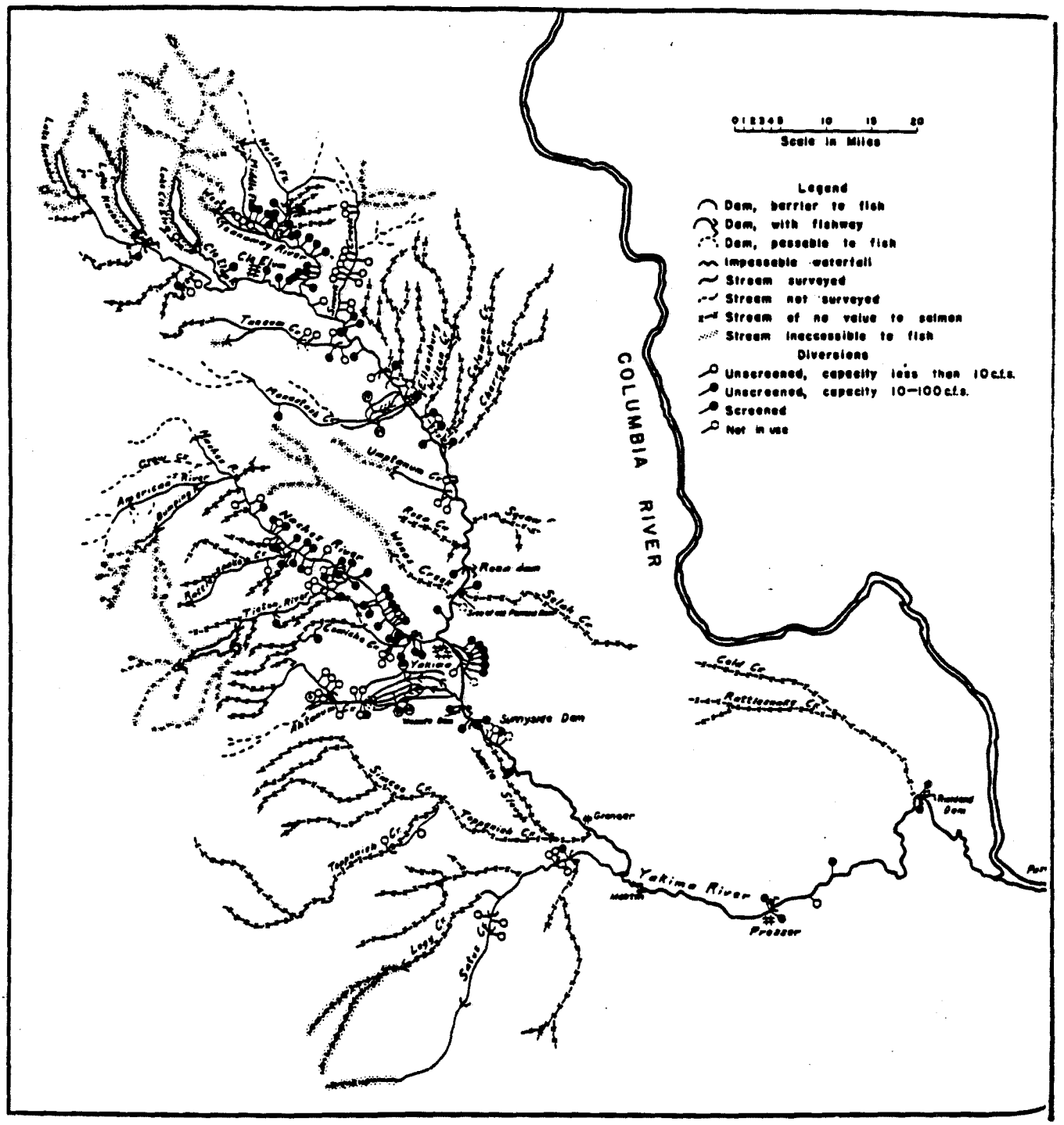
Yakima, Wenatchee, Entiat, Chelan, Methow, Okanogan, Sanpoil, Spokane and Colville river basins



Wenatchee and Entiat river basins



Methow and Okanogan river basins



Yakima River Basin

AREA 4: COLUMBIA RIVER ABOVE CHIEF JOSEPH DAM

San Poil River

- Formerly supported good runs of chinook salmon; decline was evident around 1890; good run in 1918.

Spokane River

- Salmon formerly ascended to impassable falls near Spokane. In 1883, estimated Indian catch of 2,000 fish.
- In Spokane River below the falls large numbers of fish were present prior to 1882 but had declined since, until by 1894 the numbers were very few, although steelhead still occurred in considerable numbers.
- In 1889 the Monroe Street Dam was constructed by Washington Water Power at Spokane Falls.
- The Nine Mile Falls Dam was completed in 1908. This dam was constructed by a railway and power company. Washington Water Power acquired the facility in 1925.
- In 1910 the Little Falls Dam was built at RM 27; dam was 60 to 70 feet high, had a fishway. The dam was owned by Washington Water Power Company, which in the same year built the 60-foot Nine Mile Falls Dam some 19 miles farther upstream.
- Impassable 175-foot Long Lake Dam was built in 1915 4 miles above the Little Falls Dam. Mitigation was provided for fish losses.
- By 1918 the chinook, coho, and steelhead runs had practically disappeared from the river.

Colville River

- Salmon runs fomerly ascended to Meyers Falls, about 4 miles above the river mouth, but the 80-foot lower fall and the 26-foot upper fall presented an impassable barrier to fish.
- Salmon formerly spawned in the river below the falls prior to 1878, but were apparently scarce by 1890.

Kettle River

- Smelters are reported to have run slag into this river and killed off many fish at times, but a few persisted until the building of Grand Coulee Dam.

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Pend Oreille River

- Runs of salmon were reported to have been heavy, but declined after 1878, although some fish were present until Grand Coulee Dam was built.
- Steelhead abundant at the mouth of this river in 1894.
- Hydroelectric plant at falls at RM 20 supplied power to towns of Trail and Nelson.

AREA 5: SNAKE RIVER BELOW HELLS CANYON DAM

Palouse River (No Survey Date)

- Enters Snake River at RM 60 and is 150 miles long.
- High falls at RM 6 rendered the stream inaccessible to migratory fish.

Tucannon River (1935 Survey)

- Enters Snake River at RM 63 and is 60 miles long.
- Difficult for fish to enter river at low water stages at time of survey because of delta formed at the mouth by flood action.
- Of little salmon-producing value at time of survey; last large run of chinook occurred in 1915 when 500 salmon per day entered the river during the spawning migration.
- Chinook spawning peaked in mid-August at time of survey. Until 1922 or 1923 a run of fall chinook also entered the stream; last run of coho occurred in October 1929.
- Counting weir installed at RM 2 in 1938 showed the chinook run had been depleted to a negligible size; only 24 were counted.
- Power and irrigation diversion dam near Starbuck, Washington, at RM 5.5, was a barrier at lower water; almost entire flow taken by the screened power diversion at low water stages.
- 1-mile section of river channel between intake and power house tailrace virtually dry during summer months at time of the survey.
- 5-foot DeRuwe dam at RM 16 was a barrier to fish at low water; built to supply water for a power diversion, but at time of survey used to supply irrigation diversion; old fish ladder was entirely useless, blocks at least part of the chinook run.
- During summer, most of the flow at DeRuwe dam was diverted into unscreened irrigation ditch.
- 31 diversions withdrew 128 cfs at the time of the survey; irrigation ditches took 72 cfs, remainder used for power; 3 ditches had been screened.
- Steelhead used river January-April, small fall run also observed at time of survey. Although steelhead still entered the river in 1935, these runs were not nearly as abundant as in earlier years.

- o 2 small irrigation diversions found on Cummings Creek at RM 0.5 and 1 had no fish protective devices; wing dams in connection with these diversions were not barriers to fish. Cummings Creek was 12 miles long and entered Tucannon River at RM 34.

- o Cummings Creek formerly supported a good chinook population; good spring run of steelhead still present when surveyed.

Several small intermittent streams enter the Snake River in the 77-mile section between the mouths of the Tucannon and Clearwater Rivers; none is of value to salmon. Five of these streams are: Alkali Flat Creek -- enters at RM 67; Deadman Creek -- RM 85; Penawawa Creek -- RM 93; Almota Creek -- RM 105; and Steptoe Creek -- RM 129.

Alpowa Creek (1937 Survey)

- o Enters Snake River at RM 131 and is 22 miles long.

- o Often no flow in lower section during summer months due to diversion of water into several small, unscreened irrigation ditches, and semi-arid nature of watershed.

- o Upper section supported small spring run of steelhead at time of survey; no salmon present when surveyed.

Asotin Creek (1935 Survey)

- o Enters Snake River at RM 146 and is 14.5 miles long.

- o Formerly supported excellent runs of salmon and steelhead; had a good spring run of steelhead and a very small summer run of chinook at the time of the survey.

- o 2 permanent dams and 13 irrigation diversions on the main stream at the time of the survey; the only screened diversion was at the Washington Water Power Company Dam (see below).

- o A 2-foot permanent dam at RM 4 was installed to prevent the migration of suckers from the Snake River into Asotin Creek; dam did not prevent the migration of steelhead during high water, but during periods of extreme low water it is doubtful if salmon and trout were able to pass this obstruction.

- o 6-foot Washington Water Power Company Dam at RM 7.5 was used for irrigation and as a source of domestic water supply for the towns of Clarkston and Asotin; intakes to the diversion pipeline were adequately screened and a fish ladder installed.

- In periods of extremely low water the dam diverted the entire stream flow, leaving the stream bed dry except for deep pools.

- During August 1934 the State of Washington did considerable fish salvage work in the area below the dam; 3 miles of ditches were dug; fish seining methods were also used, and it was estimated that 250,000 steelhead fingerlings and 25 adult chinook spawners were saved from destruction.

- At the time of the survey North Fork provided the principal spawning area for the run of steelhead that ascended Asotin Creek. The North Fork is about 13 miles long, and joins the South Fork to form Asotin Creek at RM 14.5 of Asotin Creek.

- Runs of chinook had been depleted almost to the point of extinction on the North and South Fork at the time of the survey.

- 4 small irrigation diversions on the 12-mile long South Fork were all screened.

- Log jam 4 feet high at RM 1 of South Fork was a barrier except at high water stages.

- South Fork formerly supported a good run of steelhead and a reasonably good run of chinook; both had become very scarce by the time of the survey.

Tenmile Creek (1937 Survey)

- Enters the Snake River at RM 151 and is 20 miles long.

- No value to salmon at time of survey, and questionable value to steelhead trout.

Couse Creek (1937 Survey)

- Enters Snake River at RM 158 and is 10 miles long.

- No salmon or steelhead present when surveyed.

Clearwater River

- Joins the Snake River 140 miles above confluence with the Columbia River and is approximately 75 miles long.

- Clearwater River system formerly supported large runs of chinook, coho and steelhead; runs had been greatly depleted in recent years prior to the survey, and the coho run had been completely exterminated.

- Diversion dam of the Washington Water Power Company at RM 4 was 40 feet high; fish ladder was ineffective for chinook because of poor location and because at low water stages the river channel was almost dry from the diversion dam to the power plan tailrace (1.5 miles).

- Operation of the dam for 13 years without adequate provision for the passage of fish was responsible more than any other single factor for the depletion of the salmon runs in the Clearwater River system.

- An additional ladder was constructed at the diversion dam in 1940, and a ladder was built from the tailrace to the forebay; before these improvements were made, only the lower 2.5 miles of the river were available at low water stages.

North Fork, Clearwater River (1938 Survey)

- Enters Clearwater River at RM 43 and is 135 miles long.

- Formerly supported large run of chinook; run had been greatly depleted for many years, and by 1938 was practically exterminated; a small spring run of steelhead was reported at the time of the survey.

- Log jam 1,200 yards long at RM 20 was a barrier at low water; 2 smaller log jams above were also impassable at low water. Log jams removed at highwater; no permanent barrier to fish.

- Cranberry Creek and Reed Creek enter North Fork at RM 21.5 and 20, and were probably used by steelhead at the time of the survey (1938).

- A 12-foot falls near the mouth of Falls Creek rendered it inaccessible to migratory fish.

- Gold Creek was used by a few steelhead at the time of the survey (1938).

- Little North Fork formerly supported good runs of chinook and steelhead.

- Other tributaries to North Fork that probably supported small runs of steelhead at the time of the survey (1938) were Isabella Creek (RM 62.5); Beaver Creek (RM 63.5); Skull Creek (RM 71); Quartz Creek (RM 73); Deadhorse Creek (RM 83); Washington Creek (RM 84.5); Orogrande Creek (RM 92.5); Sprague Creek (RM 94); Squaw Creek (RM 95); and Jackknife Creek (RM 97).

Orofino Creek (1938 Survey)

- Enters Clearwater River at RM 47 and is 30 miles long.
- Series of impassable falls 6 feet to 12 feet high were at RM 5; of little possible value to migratory fish.

South Fork (1938 Survey)

- Joins Middle Fork to form Clearwater River at RM 75 and is 75 miles long.
- Power dam at RM 21 was provided with a poor fish ladder and was considered a barrier to the upstream passage of fish.
- Extremely turbid at the time of survey due to gold dredging operations.

Middle Fork (1938 Survey)

- Joins South Fork to form Clearwater River at RM 75 and is 24 miles long.
- Accessible to migratory fish throughout the course, but of little value to chinook or steelhead at time of survey. Spring run of steelhead present when surveyed.
- Selway Falls at RM 20 of Selway River was passable to spring steelhead, but difficult or impassable for summer chinook. Selway River enters Middle Fork at RM 24 and is about 100 miles long.
- At the time of the survey Idaho State Department of Fish and Game placed racks across the mouth of Gedney Creek to capture trout for artificial propagation. Gedney Creek enters the Selway River at RM 19.5.

Grande Ronde River (1940-1941 Survey)

- Enters Snake River at RM 170 and is about 200 miles long.
- Formerly an important producer of chinook, sockeye, and coho salmon, as well as steelhead. In 1901 the Grande Ronde was referred to as "one of the greatest chinook breeding feeders that the Council ever had."
- Largest hatchery egg-take was about 4 million chinook from 709 spawners and 7.5 million coho from 2,655 spawners, taken in 1902 near RM 45.5.

- Several obstructions and diversions located around Island City (RM 148) and La Grande (RM 150):
  - -- Debris jam at RM 148, probably impassable to fish at low water stages.
  - -- 3-foot power diversion dam considered impassable at low water furnished power to a flour mill at RM 148.
  - -- Several small irrigation pumps operated intermittently at RM 149.5.
  - -- Stone diversion dam 2.5 feet high was a barrier at low water at RM 150.
  - -- 3 irrigation ditches between RM 151-152.
  - -- Rock dam 2.5 feet high was a barrier to fish at low water at RM 152.5.
  - -- None of the diversions was provided with any fish protective devices; this undoubtedly contributed to the depleted condition of migratory fish runs at the time of the survey.
- Low stone dam in connection with Orodell irrigation diversion was not a barrier to fish at about RM 150.
- At RM 191, 3 log and debris jams were all impassable to fish at low water.
- At RM 192 stream bed was torn up by a gold dredge; gravel tailings were deposited for a distance of 2 miles upstream at the time of the survey.
- In 1941 the flow was entirely beneath the surface of the stream bed in this 2-mile section, due to former dredging operations.
- Debris jam at lower end of the mining tailings was impassable at low water; principal bad effect of the gold dredging operation was excessive silting of areas downstream.
- Since salmon runs in the upper river had been depleted to extinction already, mining operations could not be blamed for the condition at the time of the survey.

Wenana River (1940 Survey)

- Enters Grande Ronde River at RM 45.5 and is 17 miles long.
- Formerly supported a small run of chinook and a fair run of coho. Small run of steelhead and coho present when surveyed.
- Oregon State Department of Fisheries maintained an egg-taking station in 1901 and 1902 at the mouth where both the Grande Ronde and Wenaha Rivers were racked.
- In 1903 the station was moved several miles up the Wenaha River, where eggs were taken from 25 chinook and 483 coho.

Wallowa River (1940 Survey)

- Enters Grande Ronde River at RM 81.5 and is 55 miles long.
- Good run of chinook, coho and steelhead that formerly used the Wallowa River and many of its tributaries were greatly depleted at the time of the survey.
- Oregon State Fish Commission established a salmon and steelhead eyeing station in 1903 at RM 8.5; a hatchery built at this location in 1905; best yearly egg-takes at this station were 2 million chinook eggs, 4 million coho eggs, and 1 million steelhead eggs.
- Station closed in 1913 due to continued decline in number of salmon.
- In 1921-1922 a hatchery with an excellent spring water supply was established farther upstream, near Enterprise.
- Numerous irrigation diversions, but no dams or other obstructions below the outlet of Lake Wallowa (RM 50).
- None of the water diversions screened at the time of the survey; this condition was one of the chief causes for the depletion of the runs of chinook in the Wallowa, and was recognized as early as 1901.
- 2 principal water diversions (irrigation and industrial) were located near town of Wallowa at RM 23.
- Granger and Big Ben Irrigation canals at RM 48.5 diverted from 0 to 300 cfs and 0 to 120 cfs.
- Farmers Canal was below the dam at the outlet of Lake Wallowa (RM 50); irrigation diversion flow ranged from 0 to 150 cfs.

- Silver Lake Irrigation Ditch was located at the Lake Wallowa dam (RM 50); diversion flow ranged from 0 to about 130 cfs.

- 40-foot dam at the outlet of Lake Wallowa (RM 50) was built in 1929 and was a total barrier to the upstream migration of fish.

- Flow in the stream bed directly below the dam ranged from 0 when there was no irrigation demand to a maximum of more than 500 cfs.

- Stationary screen 200 feet above the dam (RM 50) prevented land-locked sockeye chinook from passing downstream.

- Lake Wallowa formerly provided an excellent rearing area for sockeye salmon; its chief values at time of survey being as recreational area and as a reservoir for irrigation and power uses.

- Minam River enters Wallowa River at RM 10 and is 45 miles long; formerly supported good runs of chinook, coho and steelhead; these runs have been greatly depleted.

- Bear Creek enters Wallowa River at RM 22 and is 25 miles long; several small irrigation diversions occurred in the upper section; because of the low volume of flow at the time of the chinook migration in July and August, Bear Creek was of little potential value to this species, but it was attractive to steelhead at higher water stages.

- Lostine River enters the Wallowa River at RM 26.5 and is 30 miles long; formerly supported good runs of salmon; some steelhead present when surveyed.

- A number of small irrigation diversions occurred in the lower section of Lostine River; none was provided with fish protective devices.

- Domestic water supply dam 3.5 feet high at RM 7 of the Lostine River; this dam was not provided with a fishway, and was passable to fish only at high water stages.

- Hurricane Creek enters Wallowa River at RM 42 and is 18 miles in long; concrete 10-foot irrigation diversion dam at RM 8 was a barrier to fish; 100 feet farther upstream was another low irrigation diversion dam.

- During late summer, there was often no flow in Huricane Creek below the lower dam; all the water was used for irrigation.

- West Fork, Wallowa River joins East Fork to form main river at RM 55 and is 10 miles long; 30-foot waterfall at RM 5.

- East Fork is 5 miles long; impassable 8-foot power dam at RM 1.

Cabin Creek (1940 Survey)

- Enters Grande Ronde River at RM 87 and is 12 miles long.
- Of little possible value to salmon at time of survey; may be used by steelhead at higher water stages.

Clark Creek (1940 Survey)

- Enters Grande Ronde River at RM 96 and is 30 miles long.
- Low wing dam, passable to fish, and a small irrigation diversion at RM 3.5.
- Too small to be of value to salmon, may be of value to steelhead at higher water stages.

Indian Creek (1940 Survey)

- Enters Grande Ronde River at RM 98 and is 22 miles long; no salmon reported to enter in fall, few steelhead ascend during spring high water.
- Town of Elgin maintained a domestic water supply dam and diversion at RM 5.5; this dam was 9 feet high, and was provided with a poor fish ladder which was impassable at low water stages.

Catherine Creek (1941 Survey)

- Enters Grande Ronde River at RM 135 and is 320 miles long; former good runs of chinook were greatly depleted at the time of the survey; fair run of steelhead in spring.
- 19 dams, 11 were at least barriers at low water stages, and several of these partially obstructed the passage of salmon even at high water.
- 29 water diversions, of which only 1, the intake to the hatchery of the Oregon State Game Commission, was screened at the time of the survey.
- Extensive withdrawal of water for irrigation, industrial, and domestic use did not leave a sufficient volume of flow at the time of the upstream salmon migration; water temperature abnormally high in late summer, often above 80°F, and flash floods had become increasingly frequent occurrence due to the removal of timber in the upper section of the watershed.

- Mill Creek enters the Grande Ronde River and Catherine Creek (at RM 1) and is 10 miles long; small power dam at Cove was total barrier to migratory fish.

- Little Creek enters Catherine at RM 10.5 and is 14 miles long; several diversion dams were barriers to the migration of fish; extensive water diversions for irrigation.

- Little Catherine Creek enters Catherine Creek at RM 25 and is 7 miles long; numerous log and debris jams; possible use of lower section by few salmon and steelhead at time of survey.

- North Fork, Catherine Creek, enters Catherine Creek at RM 29 and is 11 miles long; log jams at RM 32 and 3.5 and several other log and debris jams farther upstream caused by road building operations were at least barriers to fish at low water stages; fair sized run of chinook formerly ascended as far as the confluence of the Middle Fork, at RM 3.5, and steelhead ascended much farther upstream; these runs, especially the salmon, were greatly depleted at the time of the survey.

- Middle Fork, Catherine Creek, enters Catherine Creek at RM 3.5 and is 5 miles long; formerly supported small run of chinook, but no salmon present when surveyed (1941); a few steelhead ascended at high water stages.

- Middle Fork was filled with log and debris jams from road building and logging operations that impeded the passage of fish.

- South Fork, Catherine Creek, enters Catherine Creek at RM 29 and is 9 miles long; numerous log and debris jams were impassable to fish at low water stages.

- South Fork formerly supported the largest runs of chinook and steelhead of the 3 branches of Catherine Creek. These runs had been greatly depleted at the time of the survey.

Five Point Creek (1941 Survey)

- Enters Grande Ronde River at RM 156.5.

- Formerly supported small run of salmon and steelhead. No salmon present when surveyed.

Beaver Creek (1941 Survey)

- Enters Grande Ronde River at RM 167 and is 18 miles long.

- Domestic water reservoir supplying the town of La Grande was located in the headwaters of Beaver Creek; this structure did not hinder fish life.

- Inaccessible to migratory fish at low water stages at the time of the survey because of obstructions in the main Grande Ronde River.

Meadow Creek (1941 Survey)

- Enters Grande Ronde River at RM 168.5 and is 24 miles long.

- Numerous beaver dams were low water barriers; a low, temporary, loose rock dam at RM 6 was also a barrier at low water.

- Formerly supported a good run of chinook; this run had been depleted to extermination at the time of the survey; entire stream was inaccessible at lower water stages because of dams in the main Grande Ronde River.

Fly Creek (1941 Survey)

- Enters Grande Ronde River at RM 173.

- No chinook present when surveyed; potential value to steelhead at high water stages.

Sheep Creek (1941 Survey)

- Enters Grande Ronde River at RM 182 and is 10 miles long.

- No salmon present when surveyed; some steelhead at high water; a low, wooden diversion dam at RM 3 was a barrier to fish at low water stages.

Limber Jim Creek (1941 Survey)

- Enters Grande Ronde River at RM 185.

- No salmon present when surveyed; possible value to steelhead at higher water stages.

Clear Creek (1941 Survey)

- Enters Grande Ronde River at RM 187 (where stream of main river was torn up by gold dredges at the time of the survey) and is 8 miles long.

- Possible value to steelhead at higher water stages.

Salmon River (1941 Survey)

- Joins the Snake River 187 miles above the Columbia River confluence and is 400 miles long.
- Salmon River system has always been one of the mainstays in the production of spring chinook.
- At the time of the survey, chinook and sockeye runs in the easily accessible headwaters area were only a small fraction of their former size; a fair spring run of steelhead was reported.
- Stream bed heavily silted for 161 miles from Shoup to Stanley at time of survey due to mining operations, the principal source of silting being a large gold dredge operating on Yankee Fork.
- Spearing salmon on the spawning beds at the headwaters formerly resulted in great economic waste and was one of the principal causes of salmon depletion in this region; a regulation abolishing spearing and snagging of salmon and steelhead was enacted by Idaho Fish and Game Commission in 1945.
- Sunbeam Dam at RM 360 contributed to the depletion of salmon in the headwaters; the 30-foot dam was built in 1913 and constituted a partial barrier to salmon. Attempts to construct a fishway never were satisfactory. Steelhead were able to ascend the fishway during spring high water.
- Sunbeam Dam was especially damaging to the sockeye run, which was entirely dependent upon access to the lakes above; the dam was partially removed in 1934.
- Other dams noted were several small, temporary, irrigation wing dams above Stanley, none of which was a barrier to the upstream migration of salmon.
- No important water diversions on the main Salmon River; 3 small, unscreened irrigation ditches above Stanley.

Little Salmon River (1942 Survey)

- Enters Salmon River at RM 82 and is 43 miles long.
- Formerly supported a fair run of chinook; little or no value as a salmon producer at time of survey.

- No total barriers to fish were found, but several small falls and cascades rendered the upper section difficult for salmon to access during low-water stages.

- Rapids River enters Little Salmon River at RM 4 and is 21 miles long; supported small run of chinook at time of survey.

South Fork, Salmon River (Not Surveyed)

- Enters Salmon River at RM 129 and is 80 miles long.

- East Fork tributary reported to be silted from mining activities 26 miles above confluence with South Fork.

- Formerly supported large runs of chinook and steelhead.

Middle Fork, Salmon River (1941 Survey)

- Enters Salmon River at RM 191 and is 106 miles long.

- Only obstacle to migratory fish was Sulphur Creek Falls at RM 96; passable with difficulty at high water. Salmon and steelhead have always spawned above Sulphur Creek Falls, and the falls cannot be considered a barrier.

- Fairly good run of spring chinook into the larger tributaries through Camas Creek at RM 35; run was very small in upper section in 1941.

- Good run of steelhead appeared in the river in April and May and ascended most of the tributaries at the time of the survey; these fish have apparently suffered much less depletion than chinook.

- Big Creek enters Middle Fork at RM 18 and is 50 miles long; supported chinook and spring steelhead at the time of the survey.

- Monumental Creek enters Big Creek at RM 25 and is 25 miles long; chinook and steelhead present when surveyed.

- Crooked Creek enters Big Creek at RM 25 and is 15 miles long; turbid from mining silt, numerous beaver dams; no salmon present when surveyed.

- Camas Creek enters Middle Fork at RM 35 and is 38 miles long; chinook present when surveyed.

- West Fork of Camas Creek enters at RM 15 and is 13 miles long; and irrigation diversion dam at RM 2 was not a barrier to fish, the ditch was unscreened; several beaver dams found about RM 4 were considered to be barriers at low water.

- West Fork of Camas Creek had chinook present when surveyed.

- Loon Creek enters Middle Fork at RM 45.5 and is 34 miles long; small, unscreened irrigation ditch was at RM 10.

- Warm Spring Creek enters Loon Creek at RM 14 and is 17 miles long; chinook and a spring run of steelhead present when surveyed.

- Trapper Creek enters Warm Spring Creek at RM 10 and is 7 miles long; chinook present when surveyed; several beaver dams, log jams, and small falls were considered barriers at low water or passable only with great difficulty.

- Mayfield Creek enters Loon Creek at RM 23.5 and the main stream is 2.5 miles long; chinook and steelhead present when surveyed, but it was not of importance as a salmon producer; several log jams and beaver dams were considered to be passable only with great difficulty. There were 3 small unscreened irrigation ditches.

- Numerous beaver dams on the West Fork of Mayfield Creek were passable with great difficulty. Chinook and steelhead present in East and West forks at time of survey.

- Trail Creek enters Loon Creek at RM 24 and is 6.5 miles long; impassable beaver dam 950 yards above the mouth; 2 small, unscreened irrigation ditches and numerous other beaver dams were observed.

- Little Loon Creek enters Middle Fork at RM 55.5 and is 11 miles long; a falls 6 feet high located at the mouth was probably a barrier at low water; numerous beaver dams formed impassable barrier at RM 3; formerly supported small run of chinook.

- Marble Creek enters Middle Fork at RM 63 and is 24 miles long; considerable mining pollution at the time of the survey.

- Indian Creek enters Middle Fork at RM 69 and is 22 miles long; 2 log jams were possible barriers to fish at low water; a 7-foot falls at RM 11.5 was considered a barrier at low water; little or no value as salmon producer at the time of the survey.

- Pistol Creek enters Middle Fork at RM 74 and extends 3.5 miles to forks; chinook and steelhead present when surveyed. On Big Pistol Creek and Little Pistol Creek log and debris jams and numerous beaver dams were probably barriers at low water; small run of chinook formerly entered the stream, and a fair run of spring steelhead was present when surveyed.

- Rapid River enters Middle Fork at RM 78 and is 20 miles long; chinook and steelhead present when surveyed.

- Soldier Creek enters Middle Fork at RM 85.5 and is 8 miles long; several log and debris jams were considered to be passable to fish only with difficulty; no salmon or steelhead present when surveyed.

- Sulphur Creek enters Middle Fork at RM 94.5 and is 19 miles long; supported a fair run of chinook at the time of the survey; lower 3 miles covered with fallen trees, and log jams had begun to form at the time of the survey.

- Marsh Creek and Bear Valley Creek enter Middle Fork at RM 106.5 and are 14.5 miles and 37 miles long, respectively. Marsh Creek (and tributaries Beaver Creek, Cape Horn Creek, Banner Creek, and Knapp Creek) and Bear Valley Creek (and tributary Elk Creek) formerly supported large runs of chinook, but by the 1930s the runs had been almost exterminated by the former unrestricted practice of spearing salmon on the spawning beds; spring steelhead present when surveyed. A log jam at RM 1 of Banner Creek was considered a barrier to fish.

- Cape Horn Creek was of no value and inaccessible to salmon above 6 miles upstream due to the small volume of flow and numerous beaver dams.

- 2 beaver dams in the lower 200 yards of Sand Creek (tributary to Bear Valley Creek) were considered to be passable with difficulty; of no value to salmon because of small stream size.

Panther Creek (1941 Survey)

- Enters Salmon River at RM 203 and is 43 miles long.

- 3 low irrigation diversion dams, 1 abandoned mining diversion dam, and several beaver dams and log jams were found; none were total barriers to fish, but 2 of the irrigation dams and a log jam appeared to be passable only with difficulty at low water stages.

- Formerly supported a good run of chinook; the run had declined steadily at the time of the survey.

- Napias Creek enters Panther Creek at RM 20 and is 13 miles long; inaccessible to salmon a short distance above mouth because of many falls and cascades; silt from gold mines at headwaters; no salmon present when surveyed.

North Fork, Salmon River (1941 Survey)

- Enters Salmon River at RM 229 and is 23 miles long.

- Fomerly supported run of chinook; extreme turbidity due to a large gold mine at RM 11 and smaller mining operations at various points along the stream; as a result it was of no value to salmon at the time of the survey.

Lemhi River (1941 Survey)

- Enters Salmon River at RM 251 and is 60 miles long.

- Idaho Power Company had a 6-foot diversion dam at RM 1 not equipped with fishways, and was a barrier to salmon except during the June high water stage.

- During low water periods entire flow diverted except for seepage; the diversion was not equipped with any fish protective devices.

- Irrigation diversion about RM 3; dam in connection with diversion was not a barrier to fish.

- 3-foot irrigation dam at RM 7.5; no fishway was provided and the dam was a barrier at low water.

- Numerous other low irrigation dams were all passable to fish; no fish screens were on any of the water diversions.

- Formerly supported excellent run of chinook; run had been depleted at the time of the survey.

Pahsimeroi River (1941 Survey)

- Enters Salmon River at RM 295 and is 30 miles long.

- Numerous small irrigation ditches found throughout, none equipped with fish screens; the total amount of water being diverted was considerable.

- Silting of the stream bed due mainly to returns from irrigation ditches and partly to placer mining on several small tributaries.

- Formerly supported a good run of chinook and steelhead; no salmon or steelhead present when surveyed due to extensive irrigation withdrawals.

East Fork (Salmon River) (No Survey)

- Enters Salmon River at RM 336 and is 32 miles long.
- Small run of chinook present when surveyed.

Yankee Fork (Salmon River) and Valley Creek (1941 Survey)

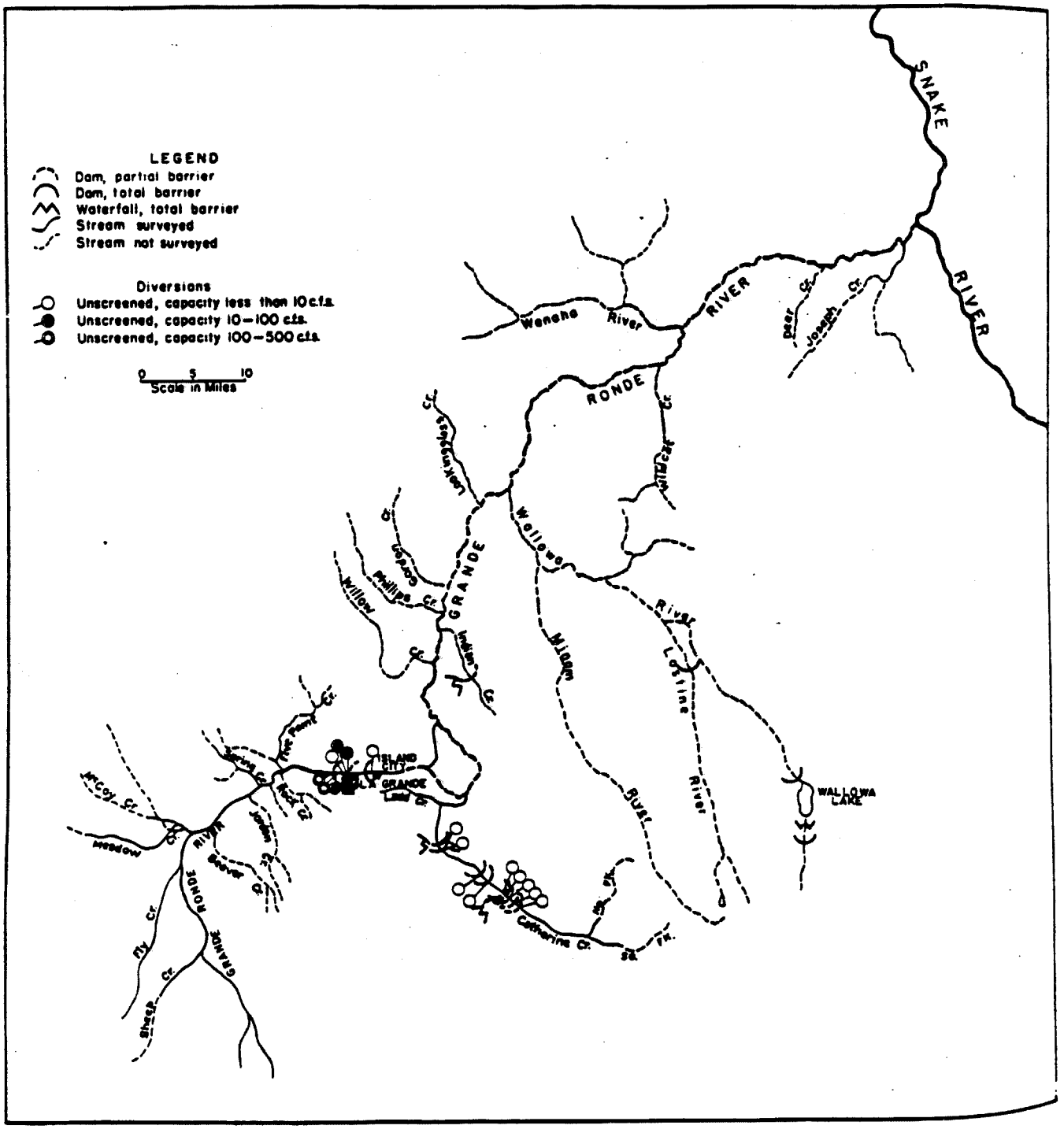
- Enter Salmon River at RM 360 and RM 372, and are 25 and 21 miles long, respectively.
- Extremely muddy at the time of observation due to the extensive operations of large gold-mining dredges.
- Small runs of chinook present when surveyed.

Redfish Lake Creek (1941-1942 Surveys)

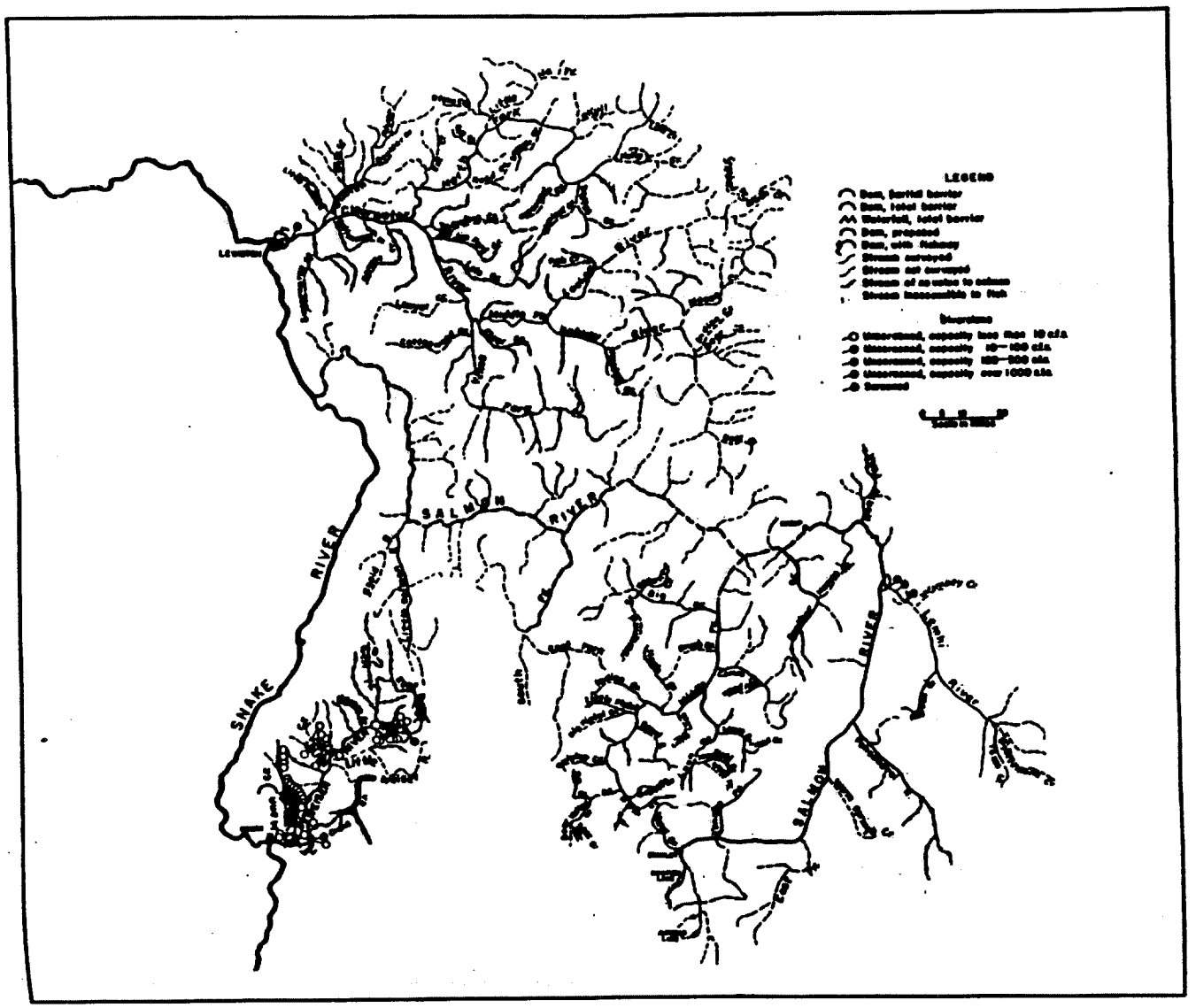
- Enters Salmon River at RM 337 and extends 0.75 miles to Little Redfish Lake
- Impassable to salmon above the head of Big Redfish Lake because of falls and cascades; log jam 500 yards below lake outlet was passable with difficulty.
- No chinook present when surveyed. 200 sockeye were reported spawning in Big Redfish Lake in October 1942.
- Chief value to salmon at time of survey was use as a passageway by the small, greatly depleted run of sockeye that entered Big Redfish Lake.

Imnaha River (Not Surveyed)

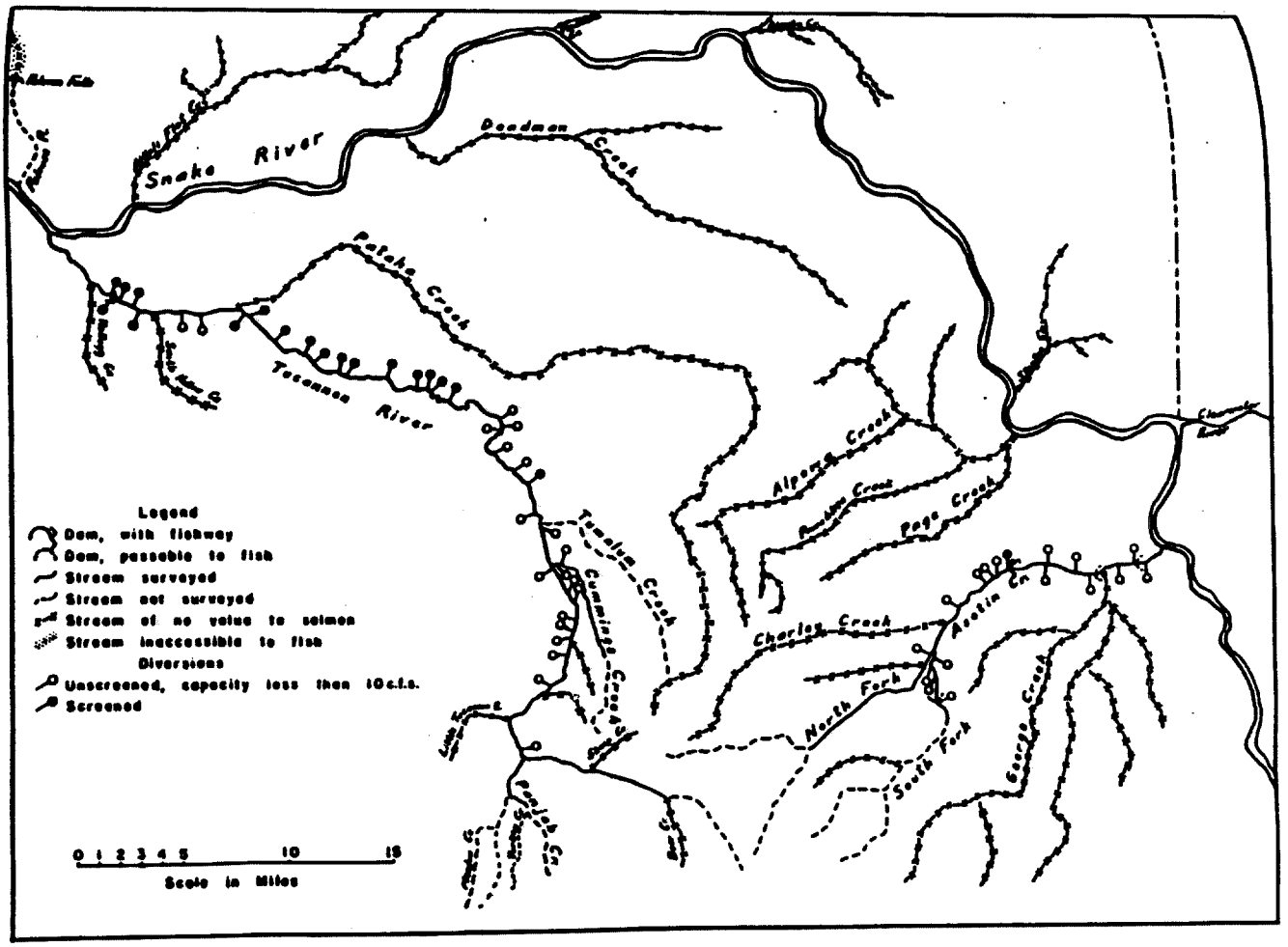
- Enters Snake River at RM 190 and is 75 miles long.
- At the time of the survey, with the exception of the Imnaha River, there were no streams of present or potential major importance to salmon on the Oregon side of the Snake River in this area, mainly due to extensive irrigation use.
- Formerly supported good runs of chinook and steelhead, but runs were very small in 1942.
- Imnaha Falls at RM 65 was a barrier to salmon.



Grande Ronde River Basin



Clearwater, Salmon and Weiser river basins



Tucannon and Asotin river basins

AREA 6: SNAKE RIVER ABOVE HELLS CANYON DAM

Weiser River (1941 Survey)

- Joins Snake River 342 miles above confluence of Columbia and Snake rivers, and is 82 miles long.
- Extensive use of irrigation facilities; on several streams practically all water diverted at certain points during the summer, leaving sections of dry stream bed.
- 167 irrigation diversions in the river system; none were screened.
- Stream bed in lower part of the river covered with a layer of silt resulting from the turbid discharge of several reservoirs on tributary streams; upper part was more often clear.
- 13 irrigation diversions on the main Weiser; 6 had water rights ranging from 9 to 240 cfs.
- Mill Ditch irrigation diversion dam at RM 11 passable at high water, and not equipped with a fishway.
- Short distance above Mill Ditch was the 4-foot Galloway diversion dam of the Weiser Irrigation Project with poorly designed fishway; passable to steelhead during spring runoff.
- Usually little or no spill over the dam during August and September, and the stream bed below was practically dry; a large part of the chinook run had sometimes been blocked at this dam, and the fish caught in large numbers (e.g., 1939).
- Galloway ditch had a carrying capacity of 240 cfs, and rights to all the water in the river except for 9 cfs which was supplied to the Mill ditch.
- Other major irrigation diversions were the Middle Valley ditch, 60 cfs; the Robertson-Levey ditch, 30 cfs; and the Allison-Jewell ditch, about 9 cfs.
- In the early days, the Weiser River system was a valuable area for the reproduction of salmon; large runs of chinook formerly used the extensive spawning area in both the main stream and its principal tributaries.
- Runs gradually have become depleted, the last fair-sized run of chinooks being reported in 1931.

- A fairly good run of steelhead trout entered the river during the spring high water period and ascended the tributaries to spawn at the time of the survey.

Mann Creek (1941 Survey)

- Enters Weiser River at RM 5.5 and is 33 miles long.
- 20 irrigation diversions were found; 13 of the dams associated with these diversions, as well as several falls and log jams, were considered to be barriers at the low water. Each of the dams diverts practically the entire stream at that point during low water stages, leaving a dry channel.
- Many years ago Mann Creek supported good runs of chinook and steelhead; at time of survey salmon run was practically exterminated and small spring run of steelhead was reported.

Crane Creek (1941 Survey)

- Enters Weiser River at RM 14 and is 33 miles long.
- Crane Creek Dam at RM 12 was built for irrigation in 1920; not equipped with fishways and a total barrier to migratory fish. The stream bed below the dam often practically dry when water was being impounded.

Keithley Creek (Not Surveyed)

- Enters Weiser River at RM 29.5 and is 15 miles long.
- 13 irrigation diversions diverted almost the entire flow during the late summer at the time of the survey.
- Small late summer run of chinook formerly used stream, and a spring run of steelhead was reported; of little value to salmon at time of survey.

Little Weiser River (Not Surveyed)

- Enters Weiser River at RM 36 and is 38 miles long.
- In earlier years chinook and steelhead spawned all along the stream from the vicinity of Indian Valley to the headwaters some 24 miles above; chinook had been greatly depleted at the time of the survey, although some used upper portion.

- Before the C. Ben Ross Reservoir was built near Indian Valley in 1937, the portion of the stream below the lowest diversion was often dry during the summer. Reservoir maintained some flow in the lower part of the stream at the time of the survey.

- 18 irrigation diversions on the stream.

- Grays Creek enters Little Weiser River at RM 11 and is 25 long; single diversion took the entire flow during irrigation season, leaving the lower portion of the stream bed practically dry.

- Water carried into Grays Creek from diversions on Fall Creek and the Little Weiser River; without these 2 supplemental supplies for irrigation, Grays Creek would be dry for almost its entire length in late summer.

Pine Creek (1941 Survey)

- Enters Weiser River at RM 36.5 and is 15 miles long.

- Stream formerly supported good runs of chinook and steelhead; few chinook and small spring run of steelhead reported at time of survey.

- 21 small irrigation diversions; diversion dams were all small, low structures; several were barriers to fish at low water.

Spring Creek (Not Surveyed)

- Enters Weiser River at RM 37.

- 1 small irrigation diversion.

- No salmon present when surveyed.

Rush Creek (Not Surveyed)

- Enters Weiser River at RM 37.5 and is 17 miles long.

- Good runs of chinook and steelhead formerly used spawning areas, but these runs had been greatly depleted at the time of the survey.

- Power plant and an impassable falls at RM 9; 21 small irrigation diversions.

Grizzly Creek (Not Surveyed)

- Enters Weiser River at RM 42.5 and is 8 miles long.

- 1 small irrigation diversion.
- Too small to be of value to salmon; slight value to steelhead.

Cow Creek (Not Surveyed)

- Enters Weiser River at RM 43.5 and is 8 miles long.
- 3 irrigation diversions.
- Too small to be of value to salmon; slight value to steelhead.

Bacon Creek (Not Surveyed)

- Enters Weiser River at RM 44.5 and is 7 miles long.
- Excess water from the Mesa diversion of the Middle Fork of the Weiser River flowed into a pool at the head of Bacon Creek; if it were not for this supplemental flow, Bacon Creek would be dry during the summer.
- No salmon present when surveyed.

Goodrich Creek (Not Surveyed)

- Enters Weiser River at RM 45.5 and is 13 miles long.
- 3 small irrigation diversions.
- Formerly supported runs of chinook and steelhead; of little value to salmon at time of survey.

Johnson Creek (Not Surveyed)

- Enters Weiser River at RM 48 and is 13 miles long.
- 1 small irrigation diversion.
- Good runs of chinook and steelhead formerly used the spawning area; of slight value to salmon at time of survey.

Middle Fork, Weiser River (1941 Survey)

- Enters Weiser River at RM 49.5 and is 25 miles long.
- Good runs of chinook and steelhead formerly entered the Middle Fork; no value to migratory fish at time of survey due to water withdrawals.

- 8 irrigation diversions, most important being the Mesa ditch, located about RM 8; this diversion had a legal right to all the water in the stream during the irrigation season and was the source of domestic water supply for the town of Mesa.

- Stream bed often dry below the diversion point during part of July, August, and September; diversion was a barrier to fish at low water.

- Falls 25 feet in height at RM 13 was a total barrier to fish.

- Fall Creek enters Middle Fork at RM 7 and is 6 miles long; all water from the upper part of Fall Creek diverted into the North Fork of Grays Creek and used to irrigate land in the vicinity of Indian Valley; 2 miles above the mouth another diversion carried the remainder of the stream into the Mesa Ditch; no value to salmon at time of survey because of agricultural use.

Cottonwood Creek

- Enters Weiser River at RM 52 and is 11 miles long.

- 6 irrigation diversions on main stream and 1 on North Cottonwood Creek.

- Extensive water withdrawals and unscreened diversions made creek of no value to salmon and slight value to steelhead when surveyed.

Hornet Creek (1941 Survey)

- Enters Weiser River at RM 54.5 and is 18 miles long.

- 13 irrigation diversions; 3 were of fair size.

- Formerly supported good runs of chinook and steelhead; headwaters were of some value to steelhead at the time of the survey, although the irrigation diversions present hazards to downstream migrants; no salmon present when surveyed.

Mill Creek (Not Surveyed)

- Enters Weiser River at RM 58 and is 7 miles long.

- 9 irrigation diversions.

- No salmon present when surveyed.

Fort Hall Creek (Not Surveyed)

- Enters Weiser River at RM 60 and is 3 miles long.
- 3 irrigation diversions.
- No salmon present when surveyed.

West Fork, Weiser River (1941 Survey)

- Enters Weiser River at RM 61 and is 14 miles long.
- Formerly supported good runs of chinook and steelhead; chinook run had been greatly depleted at the time of the survey because of extensive withdrawal of water for irrigation, but still of some value to steelhead.
- 3 irrigation diversions on the stream.
- Lost Creek enters West Fork at RM 8 and is 21 miles long. Lost Valley reservoir dam at RM 10 was 40 feet high; no fishways were provided and the dam was a total barrier to fish. Dam used to provide sufficient water for irrigation diversions on the West Fork and the main Weiser River.
- Practically the entire discharge from the reservoir diverted during the irrigation season.

Warm Spring Creek (Not Surveyed)

- Enters Weiser River at RM 64 and is 7 miles long.
- Impassable dam about RM 1.
- No salmon present when surveyed.

East Fork, Weiser River (Not Surveyed)

- Enters Weiser River at RM 68.5 and is 14 miles long.
- 2 irrigation diversions on the stream; probably no flow at times during the winter.
- Formerly supported runs of chinook and steelhead; no value to salmon at time of survey because of the withdrawal of water for irrigation.

Payette River (1938 Survey)

- Joins Snake River 357 miles above Columbia River confluence and is 72 miles long.
- Most valuable asset was large amount of spawning and rearing area provided by the lakes in its headwaters for the large runs of sockeye salmon that the system formerly supported (pointed out as early as 1896, 1897). Sockeye runs in this system were exterminated many years ago and the chinook runs more recently met the same fate.
- At least 35 years ago (about 1915) a former diversion dam located a few miles below Horseshoe Bend prevented salmon from passing upstream above that point, thus blocking the entire run of bluebacks from the headwater lakes and confining the chinook run to the main stream below the dam.
- For the next 15 years the chief chinook spawning areas were located near Montour and the mouth of Squaw Creek; when the Black Canyon Dam was built (1923) these spawning areas were rendered inaccessible; the dam at Horseshoe Bend was later removed.
- Main Payette formerly supported a good run of chinook and provided a passageway for a good run of blueback salmon.
- 96-foot Black Canyon Dam was constructed at RM 41 in 1923 by the U.S. Bureau of Reclamation as a power and irrigation project and was a total barrier to migratory fish. No salmon reported at Black Canyon Power Plant since 1937.
- No fish-protective devices at the time of the survey, diversions were unscreened.
- 11 irrigation diversions and 1 power diversion in operation on the main Payette at the time of the survey; 8 diversions were of large size.
- Sewage was discharged into the stream at the town of Payette near the mouth, and at Emmett at RM 32; sawmill waste also entered at Emmett.

Little Will Creek (Not Surveyed)

- Enters Payette River at RM 9 and is 23 miles long.
- Paddock Valley reservoir at RM 18.
- No salmon present when surveyed.

Willow Creek and Squaw Creek (Not Surveyed)

- Entire Payette River at RM 13 and RM 45, and are 23 miles and 45 miles long.
- Almost entire flows diverted for irrigation.
- No salmon present when surveyed.

North Fork, Payette River (1938 Survey)

- Enters Payette River at RM 72 and is 120 miles long.
- North Fork together with the lakes in its headwaters formerly supported large runs of chinook and sockeye salmon; region was inaccessible to salmon at the time of the survey.
- Mill dam at the town of Cascade built in 1926, about RM 40; 4 feet high, no fish ladder, and passable only at high water.
- Power dam 1 mile above the town of Cascade (RM 41); 7 feet high, no fish ladder, and impassable to fish; power diversion unscreened.
- Water control dam constructed at the outlet of Payette Lake in 1943; no fishways were provided, and the dam was barrier to migratory fish.
- Water control dam at the outlet of Upper Payette Lake, 9 feet high, no fish ladder, and impassable to fish.
- Small diversion 500 yards below outlet of Payette Lake provided water for a fish hatchery.
- Untreated sewage from the town of McCall discharged 0.5 miles downstream from the outlet of Payette Lake.
- Clear Creek enters North Fork at RM 32 and is 16 miles long; several beaver dams in the lower section were barriers to fish; 2 small unscreened diversions for irrigation and stock watering; completely inaccessible to migratory fish at time of survey.
- Big Creek enters North Fork at RM 32 and is 19 miles long; series of beaver dams and log jams considered impassable to fish at low water; irrigation diversion dam at RM 4, 25 feet high, no fishway, and a total barrier to fish; inaccessible to migratory fish at time of survey.

- Gold Fork Creek enters North Fork at RM 58 and is 28 miles long; 15-foot irrigation diversion dam at RM 12; no fishway, unscreened ditch, and impassable to fish; inaccessible to fish at the time of the survey.

- Lake Fork Creek enters North Fork at RM 64 and is 24 miles long.

  -- 2-foot dam at RM 16.5 was a barrier at low water.

  -- 2-foot irrigation diversion dam at RM 17.5 was a barrier at low water.

  -- Irrigation wing dam at RM 18.5.

  -- 2-foot irrigation diversion dam at RM 22.5 was a barrier at low water.

  -- 15-foot water control dam built in 1926 at the outlet of Little Payette Lake was impassable to fish.

  -- No dams or diversions were equipped with any fish-protective devices.

  -- Run of sockeye salmon formerly entered Little Payette Lake; inaccessible to migratory fish at time of survey.

  -- 90 percent of the flow diverted for agriculture.

- Impassable 20-foot power dam 2 miles above Little Payette Lake on North Fork, Lake Fork Creek; no fish-protective devices.

South Fork, Payette River (1938 Survey)

- Enters Payette River at RM 72 and is 77 miles long.

- Lower portion of the South Fork formerly supported a good run of chinook; inaccessible to migratory fish at time of survey.

- Grimes Pass power dam at RM 16 was 60 feet high and was not provided with any means for passage of fish; middle third of this structure washed out in 1943.

- Series of natural falls about RM 25.

- Middle Fork of the South Fork enters South Fork at RM 7 and is 40 miles long. Floods deposited large amounts of sand and silt throughout much of the stream bed on the Middle Fork, damaging many former good spawning areas.

- Middle Fork formerly supported a large run of chinook; entire stream was inaccessible to migratory fish when surveyed.

- Silver Creek enters Middle Fork at RM 18 and is 15 miles long; several beaver dams and log jams were found to be impassable at low water.

- A few chinook formerly entered Silver Creek; entire stream was inaccessible to migratory fish when surveyed.

- Deadwood River enters South Fork at RM 30 and is 40 miles long. Deadwood Dam was built in 1931 at RM 23; 120 feet high, not equipped with fishways; no salmon present when surveyed.

- Tenmile Creek enters South Fork at RM 50 and is 13 miles long; 2-foot dam at RM 2 with an unscreened irrigation ditch; inaccessible to migratory fish when surveyed.

Pine Creek (1942 Survey)

- Enters Snake River at RM 269 and is 32 miles long.

- No salmon had been seen for 15 years preceding the survey (1927-1942); small winter and early spring run of steelhead still ascended at the time of the survey; 5 to 11 tributaries reported possible use by steelhead in spring.

  Section 1 -- Lower Pine Canyon (RM 0-12)

  -- Diversion dam 2 feet high at RM 3 was not a barrier to fish; unscreened ditch for irrigation and stock watering.

  Section 2 -- Pine Valley (RM 12-24)

  -- Large number of small, unscreened irrigation diversions in late summer took practically all of the water in both the main stream and the side channel.

  Section 3 -- Carson to Cornucopia, Oregon (RM 24-29)

  -- No obstructions or diversions.

  Section 4 -- Cornucopia, Oregon, to Headwaters (RM 29-31.5)

  -- Of little value as spawning area for salmon.

North Pine Creek (1942 Survey)

- Enters Pine Creek at RM 7 and is 15 miles long; no salmon present when surveyed; some steelhead reported during spring high water period.

Fish Creek (1942 Survey)

- Enters Pine Creek at RM 7.5 and is 14 miles long.
- Several small, unscreened irrigation diversions near the source at Fish Lake (RM 14)
- A few steelhead and no salmon present when surveyed.

Powder River (1942 Survey)

- Enters Snake River at RM 294 and is 114 miles long; originally an excellent salmon stream.
- Irrigation diversion dam 2 feet high at RM 37.5 not a serious obstacle to fish.
- Several irrigation dams and diversions in the lower part of Thief Valley Canyon:
  - -- 6-foot irrigation diversion dam at RM 41; dam was a barrier to fish during low water; 2 irrigation diversions, each withdrew 30 cfs.
  - -- 3-foot Basche Irrigation Diversion Dam at RM 42.5; barrier to fish during low water.
  - -- 3-foot Miles Irrigation Diversion Dam at RM 44; barrier to fish during low water.
  - -- 70-foot Thief Valley Reservoir Dam at RM 52 was a total barrier; Bureau of Reclamation began construction of this storage dam for irrigation in 1931 and completed it in 1932. No salmon or steelhead reported at base of dam for several years prior to survey.
- Number of small open irrigation ditches in the Baker Valley section in addition to several larger installations.
  - -- 4-foot Estes Irrigation Diversion Dam at RM 81 was a barrier to fish.

-- Another similar low irrigation diversion dam 300 yards above the Estes Dam may be a barrier to fish at certain seasons.

-- 2-foot Old Pioneer Irrigation Diversion Dam within the city limits of Baker may be a barrier to fish during the irrigation season.

o Above Baker Valley near headwaters, stream was heavily silted due to mining activities.

-- 4-foot irrigation diversion dam at RM 87 was probably a barrier to fish during low water.

-- 2-foot Stewart-Shaw Irrigation Diversion Dam at RM 92; impassable to fish during low water.

-- 3-foot Smith Brothers Irrigation Diversion Dam 100 yards above the Stewart-Shaw Dam; probably impassable to fish during low water.

o From McEwen upstream to Sumpter, a distance of somewhat more than 6 miles, the stream bed was either torn up or in the process of being torn up by gold dredges at the time of the survey, which caused heavy silting downstream.

Eagle Creek (1942 Survey)

o Enters Powder River at RM 9 and is 36 miles long.

o Eagle Creek was one of the few streams in eastern Oregon reported to maintain a fairly good run of chinook at the time of the survey; also had a good run of steelhead.

o Log wing dam at RM 7 was not a barrier to fish.

o Irrigation diversions at RM 9 and RM 11.

o Little Eagle Creek enters Eagle Creek at RM 12.5 and is 9 miles long; of value to a small number of salmon at the time of the survey.

o East Fork enters Eagle Creek at RM 21.5 and is 14 miles long; lower portion of some value to salmon at the time of the survey.

o West Fork enters Eagle Creek at RM 26.5 and is 9 miles long; irrigation ditch at RM 1.5 withdrew good portion of stream; lower portion of some value to salmon at time of survey, although ditch was a hazard to downstream migrants.

Kirby Creek (1942 Survey)

- Enters Powder River at RM 10.
- Adult salmon and fingerlings present when surveyed.

North Powder River (1942 Survey)

- Enters Powder River at RM 61 and is 26 miles long; originally an excellent salmon stream.
- Extensive diversion of water for irrigation purposes during late summer and fall, discharge at the mouth often less than 5 cfs; no salmon present when surveyed.
- Construction of the impassable Thief Valley Dam on the main Powder River rendered the North Powder inaccessible at all times to salmon and steelhead.
- 1-foot irrigation diversion dam at RM 1.5 was not a barrier to fish except during low water.
- 2-foot irrigation diversion dam was not a barrier to fish.
- 2-foot irrigation diversion dam at RM 7 was not a barrier to fish except during low water.
- 3-foot Big Bulger Irrigation Diversion Dam at RM 16 was a barrier to fish during low water.
- Hartung-Nicholson Irrigation Ditch at RM 16.5.
- Big Mansfield Irrigation Ditch and Warfield-Burnside Irrigation Ditch about RM 17.
- Little Mansfield Irrigation Ditch at RM 17.5

Muddy Creek, Rock Creek, and Pine Creek (1942 Survey)

- Enter Powder River at RM 71, 72, and 75; and were 8 miles, 15 miles and 10 miles long.
- Small open ditches took most of flow for irrigation and stock watering at time of survey; of no value to salmon.

Deer Creek (1942 Survey)

- Enters Powder River at RM 105 and is 12 miles long.
- Irrigation diversion dam at RM 1 was not a barrier to fish.
- Little potential value to salmon at time of survey.

Burnt River (1941-1942 Surveys)

- Enters Snake River at RM 326 and is 78 miles long.
- Once supported good run of chinook; greatly depleted for many years prior to the survey; of little value as salmon producer at time of survey.
- Impassable Unity Dam 78 miles upstream (see below).
- 39 direct irrigation diversions between the mouth and Unity Dam, and 46 irrigation diversions on tributaries that flow into the reservoir above the dam; none equipped with fish-protective devices.
- Almost all the diversion dams were of a temporary nature; few more than 3.5 feet high; none of those below Unity Point were barriers to salmon.

Section 1 -- Huntington Valley (RM 0-23)

-- 9 irrigation ditches, with total diversion of slightly more than 15 cfs.

Section 2 -- Durkee Valley (RM 23-29)

-- 7 irrigation ditches, with a total water diversion of almost 32 cfs.

Section 3 - Burnt River Canyon (RM 29-43)

-- At the time of the survey several large-scale gold dredging projects were located in Burnt River Canyon and operated directly in the stream channel, forming conical mounds of gravel tailings 5 to 8 feet high as they slowly progressed upstream.

-- High summer water temperature (70°F) at lower canyon.

-- 3 small irrigation ditches

Section 4 -- Bridgeport Valley (RM 43-58)

-- 7 irrigation ditches, with a total diversion of about 62 cfs.

Section 5 -- Hereford Valley (RM 58-78)

-- 11 irrigation ditches, with a total diversion of slightly more than 56 cfs.

Section 6 -- Unity Valley and Headwaters (RM 78)

-- Construction of 76-foot Unity Dam was begun in 1936 and was completed in 1939; no fishways provided and dam was a total barrier to upstream migration.

Job Creek (1941 Survey)

- Enters Unity Reservoir 1 mile above dam and is 7 miles long; no possible value to salmon at time of survey.
- 6 small irrigation ditches.

South Fork, Burnt River (1941 Survey)

- Enters Unity Reservoir 2 miles above dam and is 16 miles long.
- 8 irrigation ditches with a total diversion of 48 cfs.
- 40-foot Whited Reservoir Dam built in 1921 was a total barrier, no fishways were provided.
- 6 irrigation ditches with a total diversion of about 65 cfs.
- 5 small irrigation ditches on Pole Creek tributary.
- 3 irrigation ditches on Bullrun Creek tributary diverted practically the entire flow.
- 2 small irrigation ditches on Amelia Creek tributary.
- 1 small irrigation ditch on Barney Creek tributary.

Middle Fork and West Fork, Burnt River (1941 Survey)

- Enter Unity Reservoir 3 miles above dam and are 10 and 6 miles long.
- 2 and 8 irrigation ditches, respective; inaccessible to salmon at time of survey.

North Fork, Burnt River (1941 Survey)

- Enters Unity Reservoir 4 miles above dam and is 25 miles long; inaccessible at the time of the survey.
- 4 irrigation ditches diverted more than 35 cfs.
- Two 3-foot irrigation diversion dams at RM 3 and 5 were barriers to fish at low water.
- 1 small irrigation ditch on China Creek tributary.

Snake River Mainstem (1942 Survey from Payette River to Upper Salmon Falls)

- In early 1900s river was racked in vicinity of Ontario and large numbers of fall chinook taken for artificial propagation by Oregon Fish Commission; in one year of record, more than 20 million eggs were taken.
- Last good run of fall chinook prior to survey occurred in 1929 and 1930; a few spawners were observed in September/October in 1941 and 1942.
- Swan Falls 30-foot dam (1910) and power plant (Idaho Power) at RM 444; dam at this point first obstructed salmon and steelhead fish passage about 1907. A poor fishway was provided, but runs above the dam were exterminated. Fishway was improved in 1940, and was possible for fish to ascend at the time of the survey.
- Bliss Dam (Idaho Power) was constructed in 1950 5 miles downstream of Bliss. The 104-foot dam had no fish passage facilities.
- Lower Salmon Falls and a 53-foot power dam (completed in 1949 by Idaho Power) at RM 565 formerly constituted the upstream limit of anadromous fish migration. Migration limit had been moved downstream by other power projects at the time of the survey.
- Upper Salmon Falls and a 10-foot power dam (Idaho Power, 1937) were located 9 miles above Lower Salmon Falls. A fishway near the center of the dam was passable at all times at the time of survey.

Malheur River (1942 Survey)

- Enters Snake River at RM 359 and is 167 miles long.
- Large runs of chinook and steelhead formerly used extensive spawning areas; however, fish were a rare occurrence at the time of the survey.

- Numerous dams and diversions obstructed passage of fish and used river flow for irrigation; none of the water diversions had fish protective devices at the time of the survey.

Sections of Malheur drainage basin:

1) Vale or Lower Malheur Valley

   -- No value for salmon spawning; little stream cover and high summer water temperature, 71°F.

   -- Nevada Dam (6 feet high) and irrigation canal 1.5 miles below Vale. Dam was passable to fish except at low water stages during irrigation.

   -- 3 other irrigation canals above Nevada Dam (between RM 381 and 389).

2) Canyon below Harper

   -- Heavily silted and summer water temperatures of 71°F made it unsuitable for salmon.

   -- 2 principal irrigation diversions with 2 temporary 3-foot dams of loose rock, passable to fish except at low water.

3) Harper Valley

   -- Heavily silted and 71°F summer water temperature resulted in little possible value to salmon.

   -- 2 ditches had 2-foot and 3-foot diversion dams; no fish protection devices associated with either ditch; passable to fish except at low water.

4) Canyon Below Juntura

   -- Heavy silt layers.

   -- Small, unscreened diversion ditch had temporary 1-foot rock wing dam.

   -- Harper Dam and Reservoir and the Vale-Oregon Irrigation Canal constituted diversion works for the Vale Project. Dam was 17 feet high, and was a barrier to fish. No fish protection devices in connection with the diversions.

5) Juntura Valley and headwaters

-- Riverside Dam and Warm Springs reservoir completed in 1919. The concrete dam was 91 feet high and was a total barrier to fish.

-- Turbid water due to discharge from dam at the time of survey.

- Willow Creek enters Malheur River at RM 15; turbid water from many small irrigation diversions with no fish screens; no salmon present when surveyed.

- Bully Creek enters Malheur River at RM 16; heavily silted from small irrigation diversion returns; no salmon present when surveyed.

- North Fork enters Malheur River at RM 79 and is 50 miles long; lower areas had heavy layer of silt; no present or potential value to anadromous fish; 2 irrigation diversions near RM 6.5, neither with a dam or fish protection devices; Beulah Dam and reservoir completed in 1935 at RM 15.7; earth-fill, rock-faced dam was 89 feet high. Concrete spillway was fitted with 18-foot steel cantilevered gates. No fishways; dam was impassable to fish at the time of the survey.

- South Fork had insufficient flow at low water stages; 86°F summer water temperatures measured at mouth of stream; no salmon or steelhead present when surveyed.

Boise River (No Survey)

- Enters Snake River at RM 379 and is 76 miles long.

- Formerly supported good runs of chinook and steelhead; runs have been exterminated since 1900 due to extensive irrigation diversion and intense pollution by cities and towns.

- Barber Dam and power plant at RM 54; 21-foot dam was barrier to fish.

- New York canal diversion dam was 28 feet high (at RM 57); poor fishway was impassable.

- 253-foot Arrowrock Dam constructed at RM 72 was a barrier to fish.

- On the South Fork, Anderson Ranch Dam raised water level to 322 feet and was impassable to fish; no value to salmon due to irrigation projects and pollution.

Owyhee River (1942 Survey)

- Enters Snake River at RM 380 and is 150 miles long.
- Several small unscreened irrigation diversions in lower 12 miles.
- "Old Owyhee" irrigation dam and diversion at RM 12 were unscreened; 2-foot rock dam only a barrier at low flow.
- Below Owyhee Dam heavily silted due to turbine discharge.
- Temporary, loose rock irrigation dam and unscreened diversion ditch at RM 16; only a barrier at low flow.
- Owyhee Dam completed in 1933 at RM 26 for irrigation storage. The dam was 330 feet high and was total barrier to fish. Reservoir extended 23 miles upstream.
- North and South Canal diversions from the reservoir; sufficient discharge from outlet gates to supply "Old Owyhee" diversion downstream; however, inadequate flow for fish in lower 12 miles from Old Owyhee canal to the north.
- From October to March, stream bed below Owyhee Dam mostly uncovered.
- No salmon or steelhead present when surveyed.
- Formerly supported good run of salmon.

Sucker Creek, Jump Creek, Squaw Creek, Reynolds Creek, Rabbit Creek, Sinker Creek, Castle Creek, Birch Creek, and Shoo Fly Creek

- Enter Snake River upstream of Owyhee River; no salmon or steelhead present when surveyed.

Bruneau River (No Survey)

- Enters Snake River 8 miles upstream of Grand View.
- Used extensively for irrigation. Several reservoirs and numerous unscreened irrigation diversions.
- No salmon or steelhead present when surveyed

Canyon Creek

- Enters Snake River 2.5 miles above Bruneau river.

- Largely diverted for irrigation and at times no flow in lower portion at the time of the survey.

- No salmon or steelhead present when surveyed.

Rattlesnake Creek

- Enters Snake River 12 miles above Canyon Creek; impounded by Mountain Home Reservoir for irrigation.

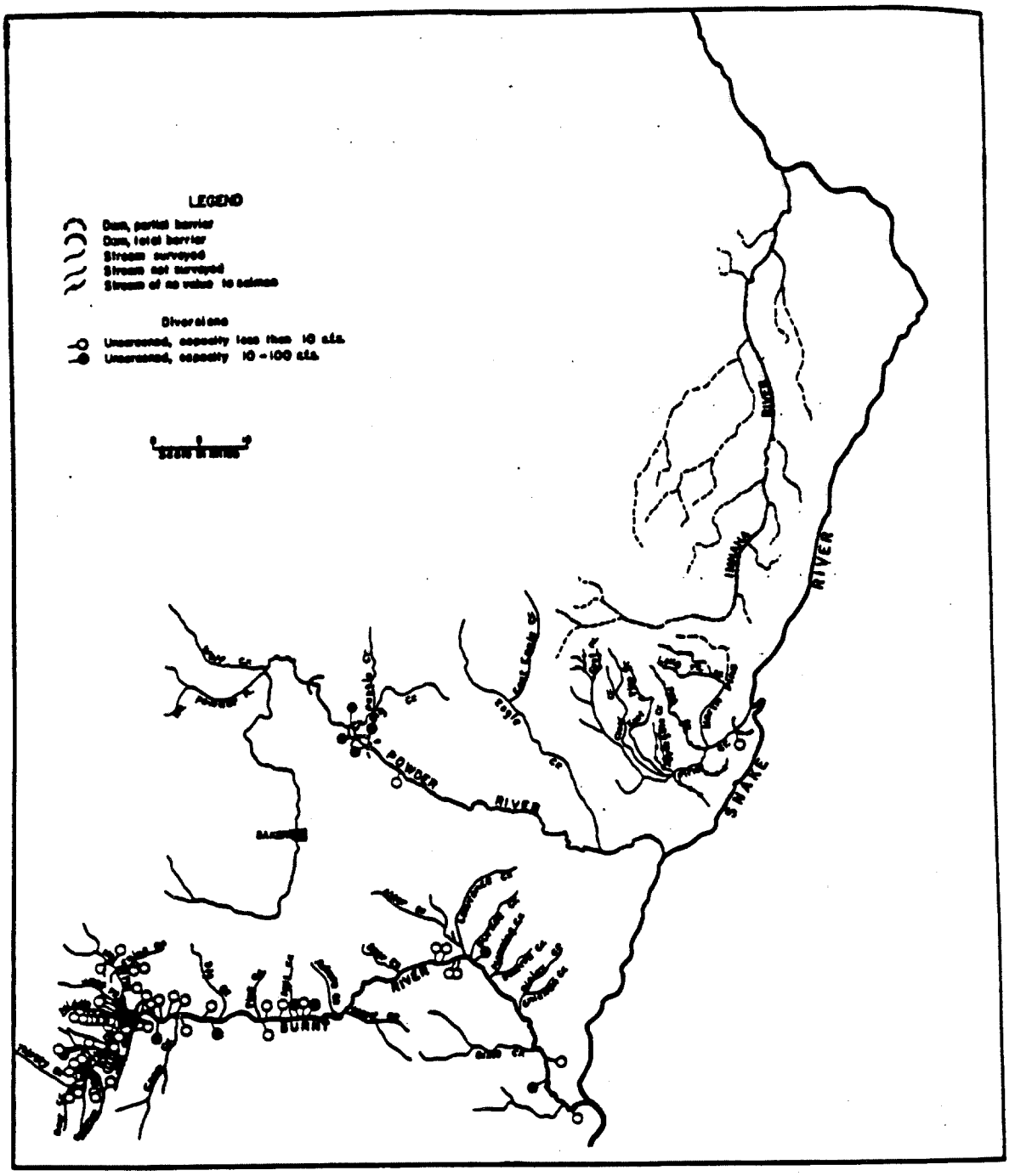
Big Wood River (No Survey)

- Enters Snake River 2 miles downstream of Lower Salmon Falls.

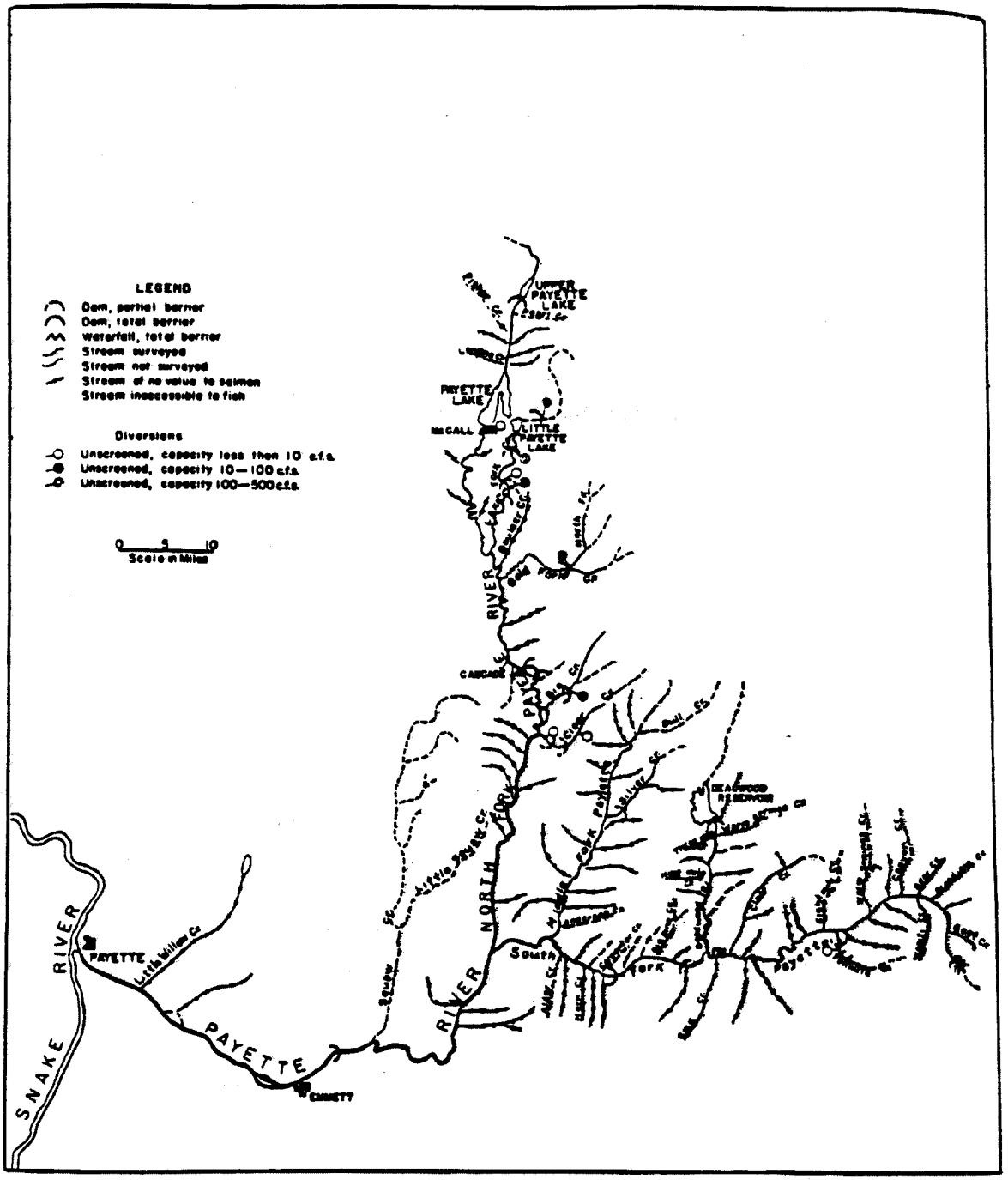
- Upper portion impounded in Magic Reservoir; lower portion received water from canals diverting from Snake River at Milner Dam.

- Numerous impassable dams and unscreened diversions.

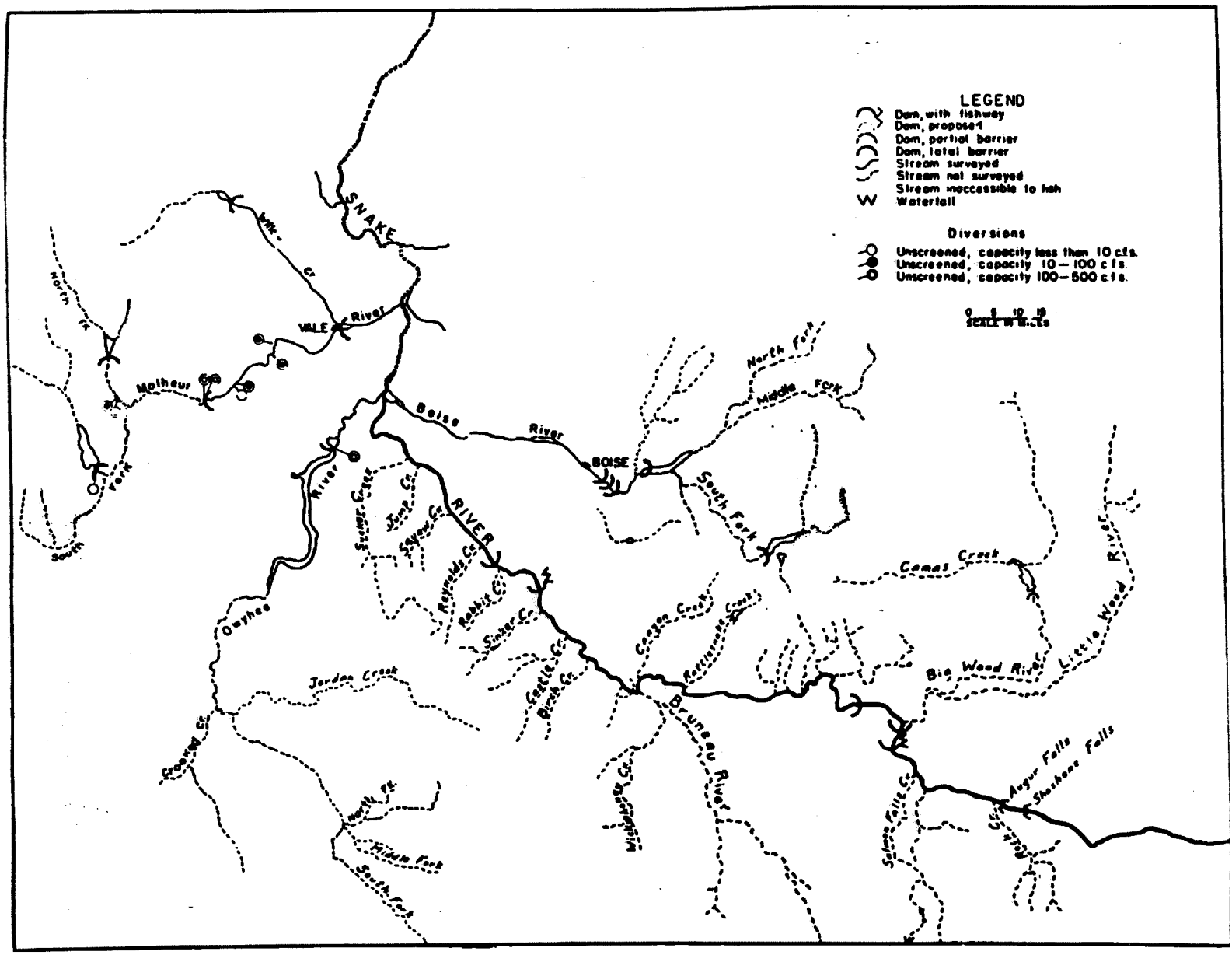
- Entire stream of no value to salmon or steelhead.



Imnaha, Powder, and Burnt river basins



Payette River Basin



Malheur, Boise, Owyhee, Bruneau, and Wood river basins

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APPENDIX E

COST AND INVESTMENT ALLOCATION FOR COLUMBIA BASIN HYDROPOWER PROJECTS

CONTENTS

LIST OF TABLES

Table E-1 - Schedule of amount of allocation of plant investment in the Federal Columbia River Power System, September 30, 1984 (in thousands of dollars).[1]

PROJECT	TOTAL	COMMERCIAL POWER			IRRIGATION			NONREIMBURSABLE					PERCENT OF TOTAL RETURNABLE FROM COMMERCIAL POWER REVENUES
		COMPLETED PLANT	CONSTRUCTION WORK IN PROGRESS	TOTAL COMMERCIAL POWER	RETURNABLE FROM COMMERCIAL POWER REVENUES	RETURNABLE FROM OTHER SOURCES	TOTAL IRRIGATION	NAVIGATION	FLOOD CONTROL	FISH AND WILDLIFE	RECREATION	OTHER	
Bureau projects													
Boise	70,340	7,251	2,413	9,664	16,364	35,453	51,817	--	16,859	--	--	--	33.2
Columbia Basin	1,613,893	845,259	94,944	940,203	537,078	83,206	620,284	1,000	48,432	3,294	154	526	91.5
Hungry Horse	101,808	76,966	129	77,115	--	--	--	--	24,693	--	--	--	75.7
Minidoka-Palisades	204,417	14,123	26	14,149	10,291	112,319	122,610	--	60,865	1,202	5,591	--	12.0
Yakima	114,077	4,717	447	5,164	10,815	95,789	106,604	--	905	1,166	238	--	14.0
TOTAL BUREAU PROJECTS	2,112,535	948,336	97,959	1,046,295	574,548	326,767	901,315	1,000	151,754	5,662	5,983	526	76.7
Corps projects													
Albeni Falls	33,858	32,226	--	32,226	--	--	--	135	174	--	1,323	--	95.2
Bonneville	781,654	693,631	39,934	733,565	--	--	--	44,738	--	--	1,289	2,062	93.8
Chief Joseph	504,327	479,376	17,366	496,742	746	--	746	--	--	--	2,116	4,724	98.6
Cougar	60,743	18,443	186	18,629	--	3,073	3,073	547	36,286	--	--	203	30.7
Detroit-Big Cliff	67,452	40,691	262	40,953	--	5,122	5,122	222	21,155	--	--	--	60.7
Dworshak	355,506	299,157	211	299,368	--	--	--	9,446	34,015	--	12,677	--	84.2
Green Peter-Foster	90,627	50,042	16	50,053	--	5,848	5,848	367	30,441	--	1,855	2,068	55.2
Hills Creek	49,867	17,526	11	17,537	--	4,321	4,321	627	26,310	--	--	272	35.7
Ice Harbor	207,604	140,376	18,193	158,569	--	--	--	46,194	--	--	2,841	--	76.4
John Day	551,427	396,604	10,599	407,303	--	--	--	86,123	20,108	--	11,479	25,409	73.9
Libby[2]	587,898	411,646	52,647	463,693	--	--	--	--	87,102	--	5,594	31,509	78.9
Little Goose	281,752	205,634	18,375	244,009	--	--	--	51,088	--	--	4,051	2,604	79.5
Lookout Point-Dexter	98,483	46,811	139	46,950	--	1,385	1,385	739	48,793	--	522	94	47.7
Lost Creek[3]	149,695	26,957	11	26,968	--	2,005	2,005	--	53,173	24,404	29,308	13,837	18.0
Lower Granite	423,734	329,440	18,757	348,197	--	--	--	55,061	--	--	12,634	7,842	82.2
Lower Monumental	292,594	222,370	18,387	240,757	--	--	--	48,598	--	--	2,822	417	82.3
McNary	350,581	273,143	6,343	279,486	--	--	--	68,099	--	--	2,996	--	79.7
The Dalles	327,022	280,076	1,081	281,157	--	--	--	43,761	--	--	2,082	22	86.0
TOTAL CORPS PROJECTS	5,214,024	3,963,549	202,518	4,166,167	746	21,754	22,500	455,750	359,557	24,404	93,588	92,068	79.9

[1] Source: Bonneville Power Administration (1984).

[2] Project in service that has tentative cost allocations at September 30, 1984.

[3] Included in this amount are nonreimbursable road costs amounting to $77.1 million.

Table E-2 - Cost allocation summary of Corps of Engineers Columbia Basin power projects.[1]

Project Name	Date	Date	Joint Construction Cost Allocation					Joint O&M Cost Allocation					Total Benefits Allocation[2]				
			Power	Flood Cntrl	Irri-gation	Naviga-ation	Recre-ation	Power	Flood Cntrl	Irri-gation	Naviga-ation	Recre-ation	Power	Flood Cntrl	Irri-gation	Navig-ation	Recre-ation
Albeni Falls	1955	1959	97.5	1.5		1.0		98.0	1.0		1.0		99.1	0.5		0.4	
Bonneville	1938	1945	50.0			50.0		50.0			50.0		N/A			N/A	
Chief Joseph	1955	1970	100.0					100.0					100.0				
Cougar	1953	1968	23.0	70.0	6.0	1.0		19.5	73.5	6.0	1.0		12.6	81.3	2.3	0.4	3.5
Detroit-Big Cliff	1953	1969	40.5	47.5	11.5	0.5		50.5	41.0	8.0	0.5		34.4	53.9	4.6	0.2	6.9
Dworshak	1974	1977	87.4	10.6		2.0		83.4	14.0		2.6		93.0	3.5		1.1	2.4
Green Peter-Foster	1967	1971	49.5	41.5	8.5	0.5		44.5	48.5	6.5	0.5		15.8	77.6	2.6	0.2	4.1
Hills Creek	1962	1968	24.5	63.0	11.0	1.5		21.5	65.5	11.5	1.5		15.8	78.4	5.1	0.7	
Ice Harbor	1961	1965	78.6			21.4		78.6			21.4		83.3			16.7	
John Day	1968	1981	77.5	6.0		16.5		79.0	5.0		16.0		79.3	3.2		15.0	2.4
Libby	1975	1983	78.0	22.0				78.4	21.6				90.4	8.0			1.6
Little Goose	1970	1984	93.3			6.7		93.3			6.7		89.4			10.6	
Lookout Point-Dexter	1954	1968	31.0	66.0	2.0	1.0		36.0	61.0	2.0	1.0		29.9	62.6	1.2	0.6	5.7
Lost Creek[3]	1977	----	5.5	48.5	23.0		16.0	10.5	41.0	1.5		22.0	15.0	46.9	4.7		13.1
Lower Granite	1975	1984	98.4			1.6		99.3			0.7		92.3			7.7	
Lower Monumental	1969	1984	94.1			5.9		93.2			6.8		94.1			5.9	
McNary	1953	1965	81.3			18.7		81.3			18.7		92.5			7.5	
The Dalles	1957	1968	74.0			26.0		72.0			28.0		93.3			5.4	1.3

[1] Source: U.S. Army Corps of Engineers (1986).

Computed as the percentage of total A. A. benefits from allocation table.

[3] Based on preliminary allocation -- 1967 also includes fish and wildlife water quality as purposes.

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