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## **CHAPTER II**

# **CHINOOK SALMON MANAGEMENT**

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### **CENTRAL VALLEY CHINOOK STOCKS**

Central Valley chinook salmon stocks include fall, late-fall, winter, and spring stocks of the Sacramento and San Joaquin rivers and their tributaries. Two of these stocks are currently listed under the ESA: (1) Sacramento River winter chinook, listed as endangered in January 1994; and (2) Central Valley spring chinook, listed as threatened in September 1999.

#### **Management Objectives**

The following conservation objectives guided Council management of Central Valley chinook salmon stocks in the 2003 fisheries: (1) for fall chinook in the Sacramento River system, a spawner escapement goal of 122,000 to 180,000 hatchery and natural adults combined; and (2) for listed Sacramento River winter and Central Valley spring chinook, the NMFS ESA consultation standard requirement that the duration and timing of the commercial and recreational fisheries south of Point Arena not change substantially relative to the 2000 and 2001 seasons.

#### **Regulations to Achieve Objectives**

Harvest impacts on Central Valley chinook are a primary management concern in fisheries south of Point Arena, California. For 2003, no specific restrictions were required for ocean salmon fisheries to meet the conservation objective for Sacramento River fall chinook. Under the 2003 regulations, the projected escapement to the Sacramento River was 517,000 fall chinook adults, exceeding the upper end of the conservation objective range.

To meet the Sacramento River winter and Central Valley spring chinook NMFS ESA consultation standard, the commercial fishery season south of Point Arena was constrained by time and area, similar to the 2000 and 2001 seasons. Recreational fishery restrictions included delaying the opening of the season between Point Arena and Pigeon Point until April 12, and between Pigeon Point and the U.S.-Mexico border until March 29; a 24-inch minimum size limit south of Point Arena through April 30, and 20 inches thereafter; and a requirement that anglers use circle hooks if fishing by means other than trolling between Horse Mountain and Point Conception. Circle hooks have a lower non-retention mortality rate than do "J" hooks when used in mooching.

#### **Inside Harvest**

Although no catch estimate was made for the 2003 season, recreational harvest regulations continued to allow extensive harvest of fall chinook. A comprehensive angler survey of the Sacramento River system, conducted from 1990 through 1994, showed the recreational catch averaged 25% of the river run, as did an additional survey conducted from 1998 through 2000. The Sacramento River was closed to the retention of salmon from January 1 to July 15, 2003, for the protection of winter chinook. In response to the low escapements of recent years, the San Joaquin River and its tributaries (Stanislaus, Toulumne, and Merced) were closed to recreational salmon fishing in 2003.

## **Escapement and Management Performance**

### **Sacramento River Fall Chinook**

In 2003, a total of 519,600 natural and hatchery fall chinook adults were estimated to have returned to the Sacramento River basin for spawning, which nearly matched the preseason expectation of 517,000 adults and exceeded the Council's conservation objective of 122,000 to 180,000 adult spawners. Fall chinook returns to Sacramento River hatcheries totaled 108,500 adults. Available data indicate hatchery-produced fish constitute a majority of the Sacramento River naturally spawning fall chinook population. Table II-1 and Figure II-1 display historical natural and hatchery fall spawner escapements. For a more detailed breakdown of the historical escapements, see Appendix B, Tables B-1 and B-2. All numbers provided in Tables B-1 and B-2 were reviewed and updated by CDFG in 2003 to reflect CDFG final project reports.

### **Sacramento River Winter and Spring Chinook**

Historical spawner escapements for Sacramento River winter and spring chinook salmon are presented in Appendix B, Table B-3. All numbers provided in Table B-3 were reviewed and updated by CDFG in 2003 to reflect CDFG final project reports on the subject.

Spawner escapement of endangered winter chinook salmon in 2003 was estimated to be approximately 6,200 adults, 10.3 times the 600 adult escapement observed three years earlier based on expanded Red Bluff Diversion Dam (RBDD) counts. It should be noted that a time series of spawner escapement estimates based on carcass surveys also exists for the run from 1996 to the present. Expansion of the carcass survey data has in most cases yielded higher estimates of spawning escapement than the expansion of RBDD counts. While the carcass survey estimates have the potential to reduce the large uncertainty associated with the dam expansion estimates, a review of the most appropriate methodology for estimating the spawning escapement from the carcass survey data has not been completed. Ocean fishery impacts on the returning cohort of winter chinook spawners in 2003 were incurred primarily during the 2002 season and in the early 2003 recreational season south of Point Arena California.

Returns of spring chinook to the Sacramento River totaled approximately 30,500 fish (jacks and adults), of which approximately 21,800 fish returned to the upper river (above the mouth of the Feather River). The 2003 return could not be partitioned into adults and jacks due to a lack of age composition data.

### **San Joaquin River Fall Chinook**

San Joaquin River spawning areas are used primarily by fall chinook. The estimated San Joaquin River fall chinook spawning escapement in 2003 totaled 16,700 jacks and adults in natural areas and 8,700 jacks and adults to hatcheries (Appendix B, Tables B-1 and B-2 provide historical spawner escapements). Salmon production in the San Joaquin River is determined largely by spring outflows three years earlier. Since 1986, spawner returns to the San Joaquin River have constituted less than 10% of the total Central Valley escapement for fall run chinook.

TABLE II-1. **Sacramento River natural and hatchery adult fall Chinook** escapements in thousands of fish. (Page 1 of 1)

Year	Upper River <sup>a/</sup>			Lower River			Total		Grand Total
	Hatchery	Natural <sup>b/</sup>	Subtotal	Hatchery	Natural <sup>b/</sup>	Subtotal	Hatchery	Natural <sup>b/</sup>	
1970	3.0	59.0	62.0	10.3	82.7	93.0	13.3	141.7	155.0
1971	1.7	62.7	64.4	11.0	74.6	85.6	12.7	137.3	150.0
1972	1.3	35.4	36.7	6.8	47.6	54.4	8.0	83.1	91.1
1973	1.7	46.7	48.3	18.0	151.4	169.4	19.7	198.1	217.8
1974	2.0	63.4	65.3	11.8	121.9	133.7	13.8	185.3	199.1
1975	3.3	70.8	74.1	10.8	68.6	79.3	14.1	139.4	153.5
1976	3.0	76.8	79.8	8.6	76.0	84.6	11.6	152.8	164.4
1977	6.1	58.1	64.2	14.9	82.1	97.0	21.0	140.2	161.2
1978	2.7	65.3	68.1	9.9	47.3	57.2	12.7	112.6	125.3
1979	6.4	81.3	87.7	9.4	72.3	81.7	15.8	153.6	169.4
1980	10.3	45.4	55.6	14.6	71.6	86.3	24.9	117.0	141.9
1981	5.9	50.0	55.9	25.0	92.1	117.2	30.9	142.2	173.1
1982	17.1	39.5	56.6	14.5	92.6	107.1	31.7	132.1	163.8
1983	6.1	42.0	48.1	12.5	48.8	61.3	18.6	90.8	109.4
1984	19.6	51.7	71.3	19.1	67.7 <sup>c/</sup>	86.9	38.7	119.5	158.2
1985	15.9	103.7	119.6	13.4	105.8	119.1	29.3	209.5	238.7
1986	11.3	113.9	125.2	10.6	102.4	113.0	21.8	216.3	238.2
1987	10.0	76.9	86.8	9.9	97.9	107.8	19.8	174.8	194.6
1988	12.6	128.7	141.3	14.2	69.2	83.4	26.8	197.9	224.7
1989	10.2	67.3	77.5	14.7	59.4	74.1	24.9	126.7	151.6
1990	13.5	50.2	63.7	8.3	33.0	41.3	21.7	83.2	104.9
1991	10.0	35.3	45.3	16.0	56.1	72.1	26.0	91.4	117.4
1992	6.3	31.7	38.0	15.4	27.7	43.2	21.7	59.5	81.1
1993	7.1	55.3	62.4	17.6	55.4	73.0	24.6	110.7	135.4
1994	11.6	66.4	78.0	19.0	66.6	85.7	30.6	133.0	163.6
1995	24.8	112.2	137.0	16.7	141.3	158.0	41.5	253.5	295.0
1996	18.8	131.3 <sup>d/</sup>	150.1	13.7	135.8	149.5	32.5	267.1	299.6
1997	44.6	167.4	211.9	18.7	112.2	130.9	63.3	279.6	342.9
1998	42.4	60.7	103.1	27.5	107.4	134.9	69.9	168.1	238.1
1999	23.2	263.6 <sup>d/</sup>	286.7	17.3	82.7	100.0	40.5	346.3	386.8
2000	20.8	153.6	174.4	31.3	208.0	239.3	52.1	361.6	413.8
2001	23.7	130.4	154.1	33.5	357.3	390.8	57.2	487.7	544.9
2002	62.2	481.9 <sup>e/</sup>	544.1	23.7	207.9	231.6	85.9	689.8	775.7
2003 <sup>f/</sup>	83.0	162.9	245.9	25.5	248.2	273.7	108.5	411.1	519.6

a/ Above the Feather River; 1971-1980 estimates include Tehama-Colusa Spawning Channel.

b/ Fish spawning in natural areas are the result of hatchery and natural production; estimates generally based on carcass surveys.

c/ Does not include estimated Bear River escapement, approximately 300 adult fish.

d/ Includes Butte Creek, for which a fall spawner survey was conducted in 1996 and 1998.

e/ Estimation methodology was changed due to an extremely high Battle Creek escapement in 2002.

f/ Preliminary.

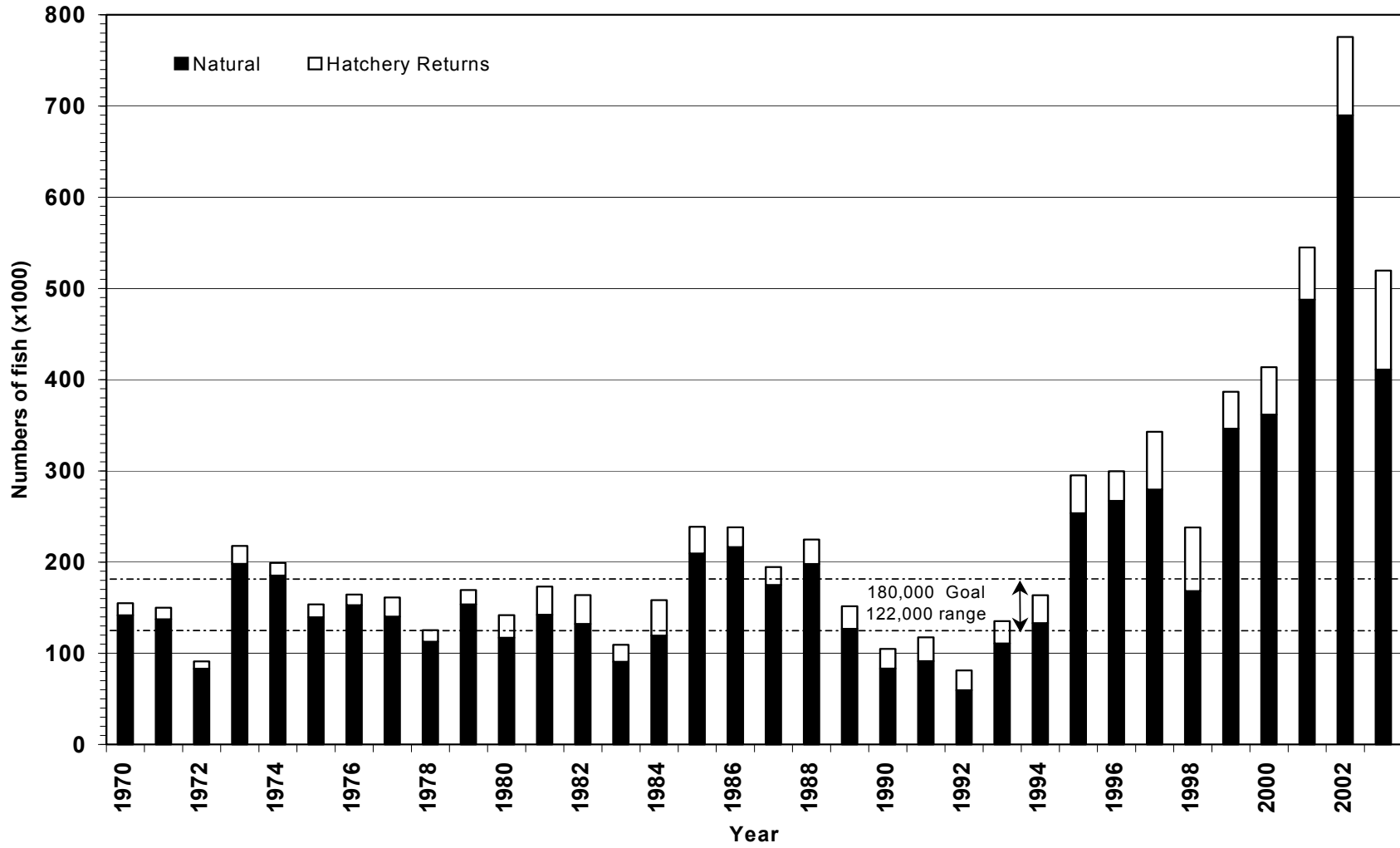


Figure II-1. Sacramento River adult fall chinook spawning escapements, 1970-2003.

## NORTHERN CALIFORNIA COAST CHINOOK STOCKS

Northern California stocks include fall and spring stocks north of the entrance to San Francisco Bay. Primary river systems in this area are (from north to south) the Smith, Klamath, Mad, Eel, and Mattole rivers. In September 1999, the coastal chinook stocks south of the Klamath River were listed as threatened under the ESA.

### Management Objectives

The Klamath River fall chinook conservation objective and the NMFS ESA consultation standard for California Coastal chinook provided primary guidance for Council management of northern California chinook salmon stocks in the 2003 fisheries. Klamath River fall chinook are managed in accordance with a harvest rate plan (Amendment 9) calling for a minimum adult natural spawner escapement rate of 33%, with a minimum spawner escapement of 35,000 adults in natural areas. The available harvest is to be shared equally between non-tribal and tribal fisheries (tribes with federally recognized fishing rights), and an equitable sharing arrangement is to be negotiated among the non-tribal fisheries. Klamath River fall chinook also provide the basis for the NMFS ESA consultation standard for California Coastal chinook, which limits the ocean harvest rate on age-4 Klamath fall chinook to no more than 16%.

### Regulations to Achieve Objectives

Harvest impacts on northern California coastal chinook are a primary management concern for commercial ocean fisheries from Pigeon Point, California, to Florence, Oregon, and for recreational fisheries in the KMZ. To meet the NMFS ESA consultation standard on California Coastal chinook and achieve the management objectives for Klamath River fall chinook, the adopted regulations were designed to result in: (1) a maximum ocean fishery exploitation rate on age-4 Klamath River fall chinook of 16.0% (for fisheries from September 1, 2002, through August 31, 2003); (2) a Klamath River run target of 113,200 fall chinook adults resulting in a spawner escapement of 35,000 fish in natural areas, taking into account a projected inriver harvest impact of 52,200 adults and returns to basin hatcheries; (3) 50% (41,400) of the allowable adult harvest for tribal subsistence and commercial fisheries; (4) 26.1% (10,800) of the non-tribal harvest to the Klamath River recreational fishery; and (5) 14.8% (4,500) of the ocean harvest to the KMZ recreational fishery. These harvest allocations were expected to result in a 50.9%/49.1% California/Oregon sharing of Klamath River fall chinook ocean troll harvest.

A moderate abundance of Klamath River fall chinook and an increase in the acceptable exploitation rate on OCN coho over that permitted in 2002 allowed for an expansion of commercial fishing opportunity in the Fort Bragg (Horse Mt. to Pt. Arena) area, including a full month of opportunity in May, August, and September, and twenty-six days in July. In addition, recreational fishing opportunity was expanded in the KMZ and Fort Bragg (Horse Mt. to Pt. Arena) areas, including a full month of opportunity in July.

### Inside Harvest

River harvest estimates for streams outside the Klamath River Basin are not available. The Yurok and Hoopa tribes shared a federally reserved right of 50% (41,400) of the available harvest surplus of adult Klamath fall chinook. The State of California managed the river recreational fishery under a 10,800 adult fall chinook quota. Adult fall chinook landings totaled 29,900 fish (72% of the quota) in the tribal fishery and 9,700 fish (90% of the quota) in the recreational fishery (Table II-2).

TABLE II-2. **Klamath River adult inriver fall Chinook** run size, spawning escapement, recreational catch, Indian net harvest, and non-landed fishing mortalities in numbers of fish and percent of the total inriver run size. (Page 1 of 1)

Year	Spawning Escapement		Inriver Recreational Catch		Indian Net Catch		Non-landed Fishing Mortality		Inriver Run Size
	Numbers	Percent	Numbers	Percent	Numbers	Percent	Numbers	Percent	Numbers
1978	71,500	77	1,700	2	18,200	20	1,600	2	92,900
1979	34,300	67	2,100	4	13,700	27	1,200	2	51,300
1980	28,000	61	4,500	10	12,000	26	1,100	2	45,600
1981	38,300	48	6,000	7	33,000	41	3,000	4	80,300
1982	42,400	64	8,300	12	14,500	22	1,400	2	66,600
1983	44,600	78	4,200	7	7,900	14	800	1	57,500
1984	23,600	50	3,300	7	18,700	40	1,700	4	47,300
1985	48,200	75	3,600	6	11,600	18	1,100	2	64,400
1986	146,300	75	21,000	11	25,100	13	2,600	1	195,000
1987	130,800	63	20,200	10	53,100	25	5,000	2	209,100
1988	112,800	59	22,200	12	51,700	27	4,900	3	191,600
1989	65,900	53	8,800	7	45,600	37	4,100	3	124,300
1990	23,600	66	3,600	10	7,900	22	800	2	35,900
1991	18,100	55	3,400	10	10,200	31	1000	3	32,700
1992	19,400	73	1,000	4	5,800	22	500	2	26,700
1993	43,500	76	3,200	6	9,600	17	900	2	57,200
1994	47,100	76	1,800	3	11,700	19	1,100	2	61,700
1995	190,700	89	6,100	3	15,600	7	1,400	1	213,800
1996	101,400	58	12,800	7	56,500	32	5,200	3	175,800
1997	64,800	77	5,700	7	12,100	14	1,200	1	83,700
1998	71,700	79	7,700	8	10,200	11	1,000	1	90,600
1999	32,800	64	2,300	5	14,700	29	1,300	3	51,000
2000	180,300	83	5,700	3	29,400	13	2,700	1	218,100
2001	132,900	71	12,100	6	38,600	21	3,700	2	187,400
2002	92,800	58	10,500	7	24,600	15	2,400	1	160,800 <sup>a/</sup>
2003 <sup>b/</sup>	149,200	78	9,700	5	29,900	16	2,800	1	191,600

a/ Inriver run size includes an estimated 30,550 fish (19% of the run) that died prior to spawning in September 2002.

b/ Preliminary.

## **Escapement and Management Performance**

### **Threatened California North Coast Chinook**

Historical indices of spawner abundance, or actual spawning escapement estimates, for chinook salmon in California coastal streams outside of the Klamath River Basin are limited to cursory, nonsystematic surveys of one tributary of the Mad River and two tributaries of the Eel River (Appendix B, Table B-7).

The 2003 preliminary postseason estimate of the Klamath River fall chinook age-4 ocean harvest rate is 20.6%, which exceeds the preseason forecast of 16.0% , and the 16% NMFS ESA consultation standard for California Coastal chinook.

### **Klamath River Fall Chinook**

The 2003 postseason river run size estimate (preliminary) for Klamath River fall chinook salmon is 191,600 adults compared to the preseason predicted ocean escapement (river run size) of 113,200 adults. The escapement to natural spawning areas of 87,400 adults substantially exceeded the preseason prediction of 35,000 adults. The estimated number of hatchery returns is 61,800 adults. Table II-2, Figure II-2, and Appendix B Table B-4 present historical harvest and escapement data for Klamath River fall chinook.

Spawning escapement to the upper Klamath River tributaries (Salmon, Scott, and Shasta Rivers), where spawning is only minimally affected by hatchery strays, totaled 19,400 adults, exceeding the 2003 escapement of 13,400 adults. The Shasta River has historically been the most important chinook salmon spawning stream in the upper Klamath River, supporting a spawning escapement of 30,700 adults as recently as 1964, and 63,700 in 1935 (Appendix B, Table B-6). The escapement in 2003 was 4,100 adults.

### **Allocation**

The coded-wire tag (CWT) data necessary to evaluate whether the Council's harvest allocations were met are not available at this time.

## **OREGON COAST CHINOOK STOCKS**

Oregon coast chinook stocks include all fall and spring stocks from Oregon streams south of the Columbia River. These stocks are categorized into two major subgroups based on ocean migration patterns. Although their ocean harvest distributions overlap somewhat, they have been labeled as either north or south/local migrating. North migrating chinook stocks include stocks north of and including the Elk River, with the exception of Umpqua River spring chinook. South/local migrating chinook stocks include Rogue River spring and fall chinook, Umpqua River spring chinook, and fall chinook from smaller rivers south of the Elk River.

Based on CWT analysis, the populations from ten major north Oregon coast (NOC) river systems from the Nehalem through the Siuslaw Rivers are harvested primarily in PSC ocean fisheries off British Columbia and SEAK, and to a much lesser degree, in Council area fisheries off Washington and Oregon, and terminal area fisheries. Analysis of CWTs indicates the population from five major mid-Oregon coast (MOC) systems from the Coos through the Elk Rivers are harvested primarily in ocean fisheries off British Columbia, Washington, and Oregon, with minor catches in California fisheries. South/local stocks are important contributors to ocean fisheries off Oregon and northern California. Another central Oregon stock, Umpqua River spring chinook, contributes primarily to ocean fisheries off Oregon and California, and to a lesser degree, off Washington, British Columbia, and southeastern Alaska.

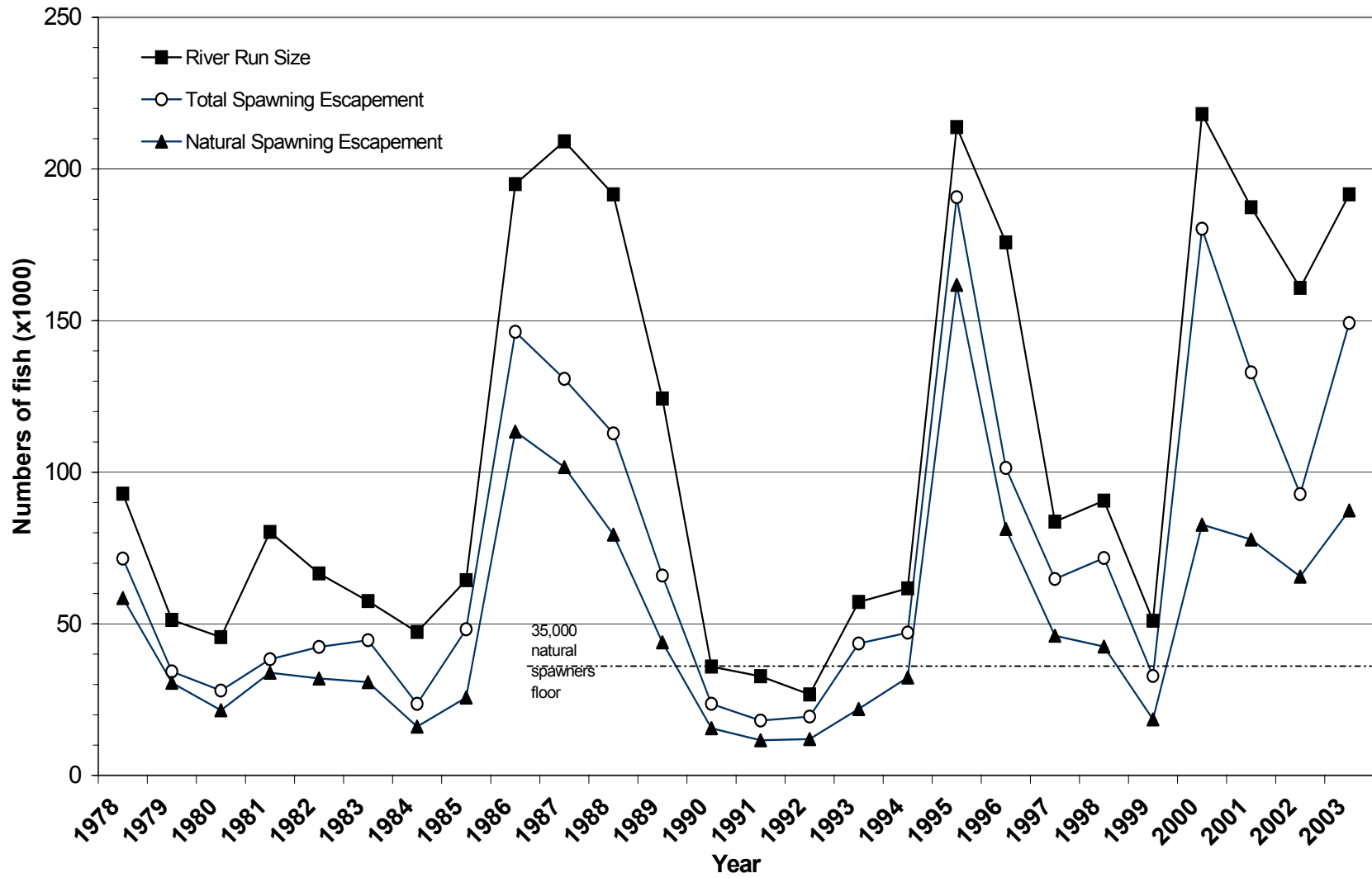


Figure II-2. Klamath River adult fall chinook salmon river return and spawning escapements, 1978-2003.



## **Management Objectives**

The conservation objective for Oregon coast salmon is an aggregate of 150,000 to 200,000 natural adult spawners as indicated by peak spawner counts of 60 to 90 fish per mile in standard index surveys. Preseason abundance estimates are not developed for this stock, and it has not been of critical management concern. Constraints for OCN coho, north California coast chinook, and Klamath River fall chinook management objectives generally result in reduced ocean fishery impacts on Oregon south/local migrating chinook stocks. Humbug Mountain to Cape Falcon chinook fisheries have a minor impact on most of the stocks originating from the north Oregon coast, which have a northerly marine distribution pattern.

## **Regulations to Achieve Objectives**

The areas of primary management concern for ocean fisheries impacting Oregon coast chinook vary between the north and south/local migrating stocks, although there is some overlap. There are no preseason abundance estimates available for Oregon coast chinook, however, based on postseason abundance indicators, impacts from Council-area fisheries on this stock have not been critical at the harvest levels of recent years. Under the 2003 regulations, the STT expected the aggregate conservation objective for this stock to be met with the restraints required for north California coast chinook and OCN coho.

## **Inside Harvest**

Inside recreational harvest of fall and spring chinook occurs in most Oregon coastal estuaries and rivers. Complete estimates of the 2003 recreational chinook harvest are not available at this time. Historical estimates of the recreational harvest of fall and spring chinook, derived from Oregon Department of Fish and Wildlife (ODFW) salmon and steelhead angler catch record cards are reported in Table II-3.

## **Escapement and Management Performance**

Actual escapement is not estimated for this stock aggregate. Achievement of an aggregate 150,000 to 200,000 naturally spawning adults is assessed through indices (e.g., stream surveys, dam counts, etc.). The escapement goal is equivalent to peak spawner index counts of 60 to 90 adults per mile in nine index streams and includes both spring and fall chinook. Peak spawner index counts are based on traditional non-random surveys. ODFW is developing alternate methodologies for establishing escapement goals for several fall chinook PSC indicator stocks. Escapement goals and assessment for these stocks will likely change upon completion of this process.

### **North Migrating Chinook**

An index of adult spawners (peak count per index mile) in nine standard streams is used to measure natural spawner escapement trends for north migrating fall chinook. Data have been collected since about 1950 for most systems. Overall peak chinook adult index spawner counts in 2003 are preliminarily estimated at 297 adults per mile, exceeding the goal range of 60 to 90 adults per mile (Table II-4, Figure II-3).

### **South/Local Migrating Chinook**

Standard fall chinook spawning index escapement data for the smaller southern Oregon coastal rivers (south of the Elk River) are available for the Winchuck, Chetco, and Pistol Rivers (Appendix B, Table B-8). Rogue River carcass counts are used as a trend indicator of escapement for naturally produced fall chinook (Table II-4). In addition, two trend indicators of escapement for naturally produced spring chinook are utilized, (1) Rogue River counts at Gold Ray Dam, and (2) Umpqua River counts at Winchester Dam (Table II-4).

Escapement based on these indicators has been stable or increasing since the early 1990s. (Figures II-3 and II-4).

The aggregate Oregon coast goal of 150,000 to 200,000 naturally spawning chinook adults was probably exceeded in 2003.

### Coastal Hatchery Chinook

Preliminary estimates of total fall and spring chinook returns to Oregon coastal hatcheries in 2003 are 3,800 and 17,100 adults, respectively (Table II-3). Hatchery egg-take goals are expected to be met at all stations.

TABLE II-3. **Oregon coastal spring and fall chinook** hatchery return and harvest in estuary and freshwater fisheries. (Page 1 of 1)

Year	Return to Facilities			Estuary and Freshwater Harvest <sup>b/</sup>	
	Public Hatchery <sup>a/</sup>		Private	Spring	Fall
	Spring	Fall	All		
<b>THOUSANDS OF CHINOOK</b>					
1976	2.9	0.5	-	13.5	24.3
1977	2.4	4.2	-	13.8	35.6
1978	4.4	1.6	-	13.1	43.4
1979	7.0	2.0	0.4	16.4	31.2
1980	7.9	1.8	3.4	11.9	22.7
1981	2.5	1.8	5.1	11.2	30.0
1982	4.1	2.3	12.1	11.6	25.1
1983	3.9	4.0	6.1	4.9	21.5
1984	5.6	3.3	6.3	4.1	29.0
1985	8.7	3.5	34.6	9.0	29.5
1986	30.6	5.8	70.8	17.3	36.5
1987	22.8	7.1	38.7	20.2	54.8
1988	22.0	6.4	25.0	28.9	61.4
1989	32.7	4.3	14.7	23.7	53.9
1990	6.3	3.4	7.8	15.5	39.9
1991	5.4	3.1	4.1	11.1	47.7
1992	2.7	4.4	-	8.0	44.7
1993	10.6	2.8	-	16.4	54.7
1994	4.8	3.0	-	9.2	46.7
1995	55.0	3.3	-	31.1	62.0
1996	26.7	3.6	-	25.6	66.0
1997	29.1	2.0	-	14.7	43.1
1998	11.0	2.6	-	8.2	37.3
1999	18.1	3.3	-	8.2	35.2
2000	24.5	3.1	-	NA	NA
2001	26.8	5.7	-	NA	NA
2002	24.7	2.9	-	NA	NA
2003 <sup>c/</sup>	17.1	3.8	-	NA	NA

a/ Adults only.

b/ Freshwater harvests are derived from ODFW salmon/steelhead angler catch record card information and represent fish larger than 24 inches (i.e., adults). Includes both hatchery and natural fish.

c/ Preliminary.

TABLE II-4. **Spawner indices** for naturally produced **Oregon coastal fall chinook** and south migrating/localized spring chinook.<sup>d/</sup>  
 (Page 1 of 2)

Year	Fall Chinook Spawner Indices		South/local Migrating Spring Chinook Spawner Indices	
	North Migrating Peak Count Adults Per Mile	Rogue River	Rogue River Gold Ray	
		(South/local migrating) Adult Carcass Counts (thousands)	Dam Counts (thousands)	Umpqua River Winchester Dam Counts (thousands)
1942	-	-	41.8	-
1943	-	-	36.1	-
1944	-	-	30.6	-
1945	-	-	32.0	-
1946	-	-	28.4	2.5
1947	-	-	22.6	3.8
1948	-	-	27.0	2.5
1949	-	-	18.8	2.6
1950	-	-	15.5	2.3
1951	-	-	19.4	3.6
1952	-	-	15.9	5.2
1953	-	-	31.5	3.9
1954	-	-	24.7	1.5
1955	-	-	15.7	6.6
1956	-	-	28.1	8.0
1957	-	-	17.7	4.0
1958	-	-	15.0	3.6
1959	-	-	14.0	3.1
1960	-	-	24.4	3.4
1961	51	-	31.8	4.4
1962	42	-	31.4	3.3
1963	56	-	40.6	8.7
1964	63	-	37.3	6.6
1965	59	-	47.6	9.0
1966	62	-	31.4	6.7
1967	50	-	14.7	6.5
1968	33	-	19.5	6.2
1969	37	-	59.0	10.7
1970	80	-	45.1	6.1
1971	43	-	28.3	6.0
1972	41	-	30.0	7.9
1973	52	-	34.7	11.4
1974	59	-	16.5	5.8
1975	55	-	20.4	5.4
1976	49	-	20.4	5.5
1977	71	1.1	14.9	6.8
1978	73	9.2	40.2	5.4
1979	81	8.0	29.3	5.5
1980	89	2.2	24.2	5.7
1981	82	4.4	12.8	4.6
1982	90	2.8	23.2	6.5
1983	42	1.6	9.8	3.0
1984	98	2.0	8.4	4.5
1985	132	5.5	27.8	7.5
1986	109	16.9	40.4	8.3
1987	121	29.1	37.4	8.3
1988	214	20.7	38.8	7.8
1989	137	7.4	7.9	7.6
1990	121	1.9	18.0	5.5

TABLE II-4. **Spawner indices** for naturally produced **Oregon coastal fall chinook** and south migrating/localized spring chinook.<sup>d/</sup>  
(Page 2 of 2)

Year	Fall Chinook Spawner Indices		South/local Migrating Spring Chinook Spawner Indices	
	North Migrating Peak Count Adults Per Mile	Rogue River	Rogue River Gold Ray	
		(South/local migrating) Adult Carcass Counts (thousands)	Dam Counts (thousands)	Umpqua River Winchester Dam Counts (thousands)
1991	150	2.8	9.3	2.4
1992	138	2.3	2.2	2.5
1993	63	5.4	12.6	3.8
1994	125	7.4	3.6	2.8
1995	101	4.0	20.7	6.2
1996	147	1.7	10.3	4.3
1997	105	1.6	9.6	3.3
1998	98	2.6	3.7	4.0
1999	124	2.5	6.0	2.8
2000	85	3.4	3.4	3.4
2001	203	6.4	3.0	6.1
2002	268	12.1	6.9	6.8
2003 <sup>e/</sup>	297	16.5	18.9	7.9

d/ North migrating peak counts are taken on nine miles of standard index surveys over nine river systems (see Appendix B, Table B-11 for individual system counts). Complete carcass counts are listed in Appendix B, Table B-10. Complete counts for Gold Ray and Winchester dams are listed in Appendix B, Table B-9.

e/ Preliminary.

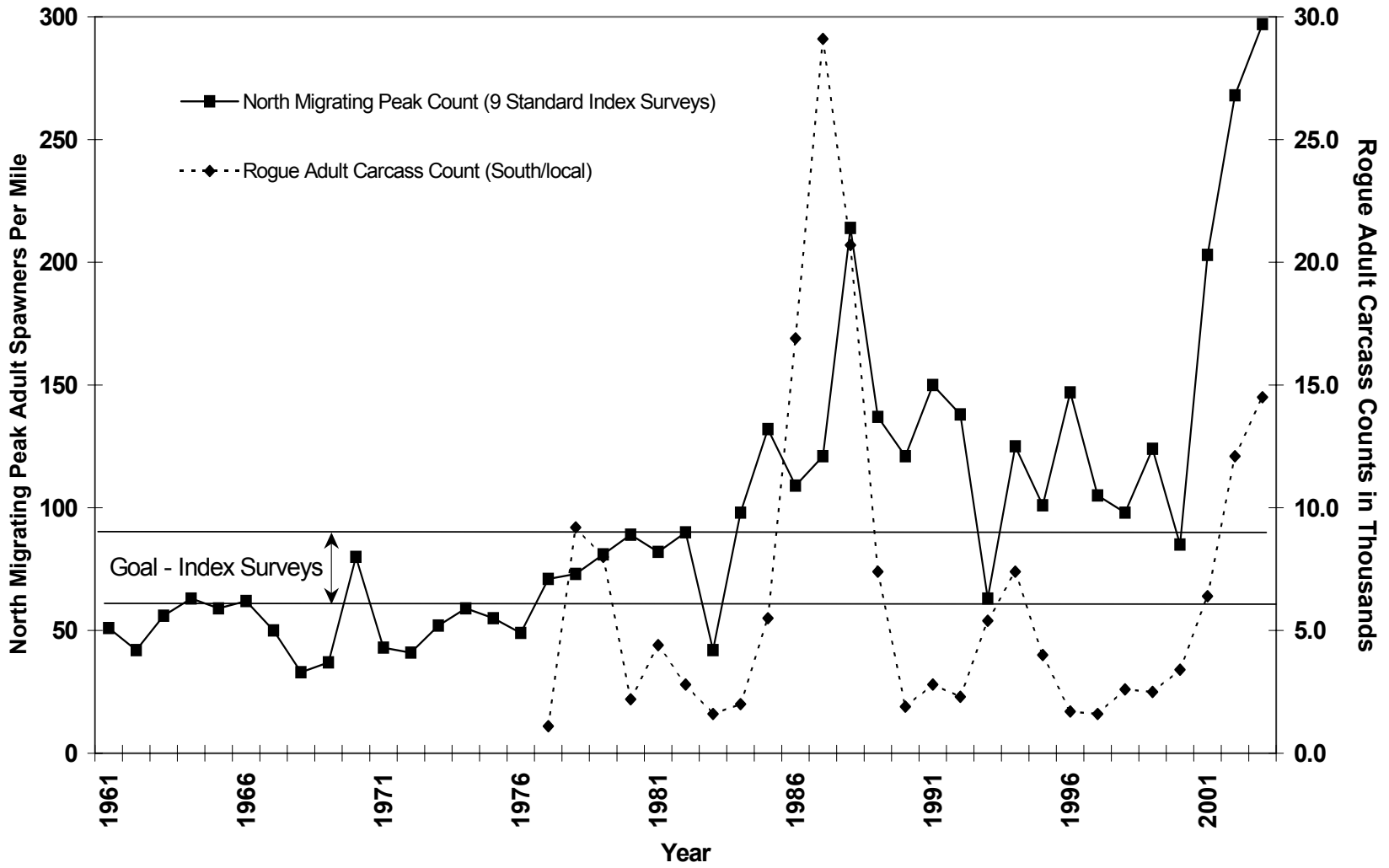


Figure II-3. Spawner indices for naturally produced Oregon coastal fall chinook.

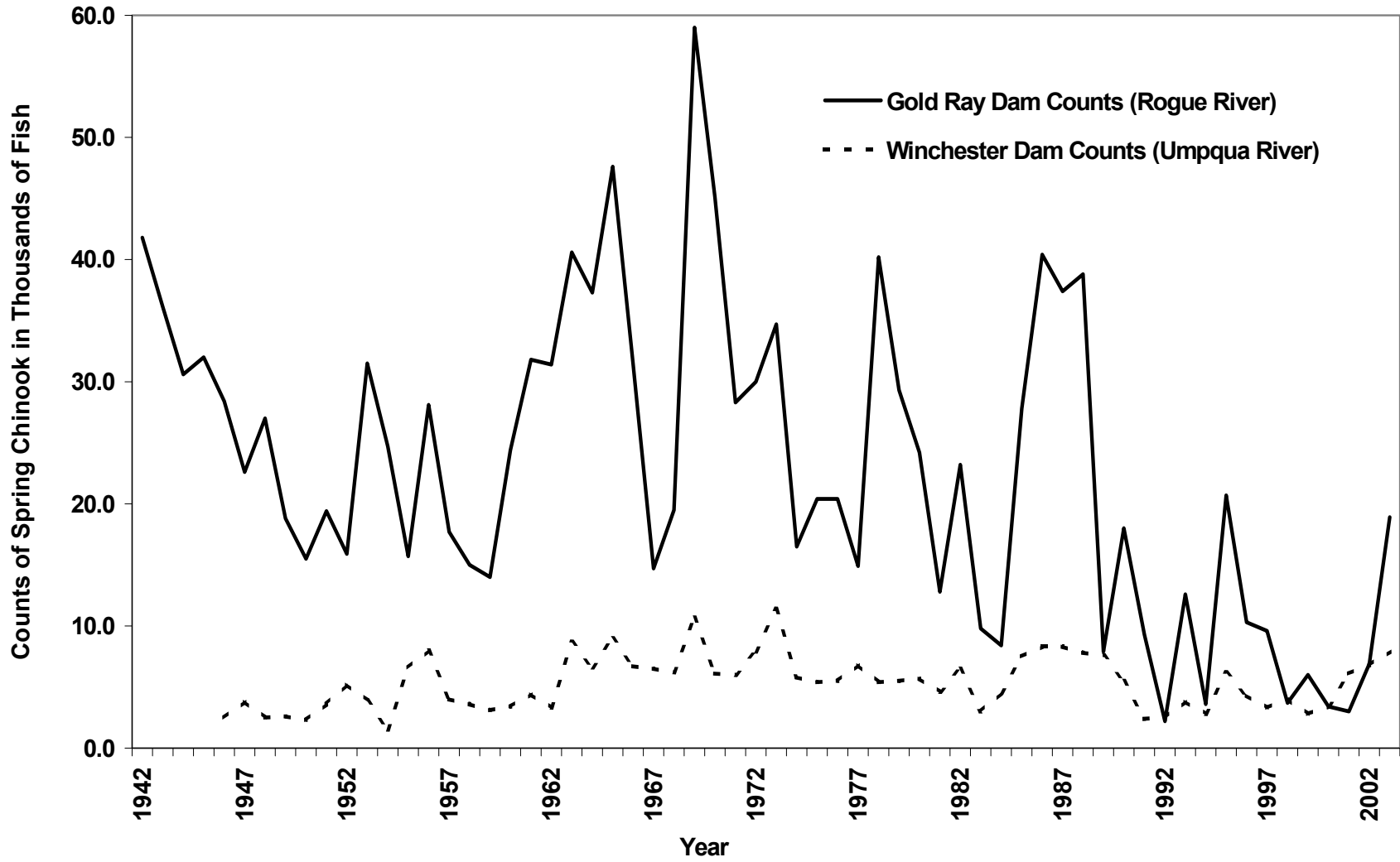


Figure II-4. Escapement indices for naturally produced Oregon coastal south/local migrating spring chinook, 1942-2003.

## COLUMBIA RIVER BASIN CHINOOK STOCKS

Columbia River Basin chinook salmon stocks include all fall, summer, and spring stocks of the Columbia River and its tributaries. NMFS has listed five ESUs within the Columbia Basin under the ESA, (1) Snake River fall listed as threatened April 1992; (2) Snake River spring/summer listed as threatened April 1992; (3) upper Columbia River spring listed as endangered March 1999; (4) lower Columbia River listed as threatened March 1999; and (5) upper Willamette River spring listed as threatened March 1999.

The assessment below covers five major stock groups of Columbia River Basin fall chinook: lower river hatchery tule stock (LRH) and lower river wild bright stock (LRW), both of which are part of the ESA-listed lower Columbia River chinook ESU; Spring Creek Hatchery tule stock (SCH); upriver bright stock (URB), which includes the ESA-listed Snake River fall chinook ESU; and mid-Columbia bright hatchery stock (MCB). Management details for Columbia River spring and summer chinook stocks are not discussed, since Council-managed ocean salmon fisheries have very limited impacts on these stocks (less than a 2% exploitation rate in base-period fisheries). Appendix B, Tables B-12 through B-19 contain historical harvest and escapement data for fall, summer, and spring stocks. Appendix B, Table B-20 summarizes catch information for all three races of chinook in the Columbia Basin. Additional information on these stocks can be found in *Status Report - Columbia River Fish Runs and Fisheries* published annually by the joint staffs of ODFW and the Washington Department of Fish and Wildlife (WDFW).

### Management Objectives

Council-area fisheries north of Cape Falcon in 2003 were managed to access abundant Columbia River hatchery tule stocks while maintaining a total (ocean plus inriver) AEQ exploitation rate on ESA-listed natural tules of no more than 49%. For pre-season modeling, the estimated total exploitation rate on Coweeman natural tules was used as a surrogate for the rate on all naturally spawning tules. The NMFS ESA consultation standard for Snake River fall chinook (no less than a 30% reduction in the Snake River Fall Index [SRFI] from the 1988 through 1993 base period exploitation rate for all ocean fisheries combined) did not constrain Council-area fisheries, primarily due to restrictions in other fisheries (especially ocean troll fisheries in Canada). Constraints on OCN and other depressed natural coho stocks, including Columbia River and Canadian stocks, also limited chinook harvest opportunity north of Cape Falcon.

### Inside Harvest

In recent years, fall chinook in Columbia River fisheries have been managed under the guidance of annual management agreements among the *U.S. versus Oregon* parties. The Columbia River Fishery Management Plan expired on December 31, 1998. In 2003, the fall fisheries were managed for a 30% reduction in the inriver harvest rate of Snake River wild fall chinook relative to the 1988 through 1993 base period, as represented by a 31.29% harvest rate of the aggregate URB return. Fisheries were also constrained to keep the total estimated AEQ exploitation rate on naturally spawning Coweeman River tules at or below 49%.

Harvestable surplus was projected for all major fall stocks in 2003. Total catch of fall chinook in all non-Indian commercial fisheries was 123,700 fish including 9,700 fish in Select Area (terminal) fisheries. The total catch of fall chinook in 2003 treaty Indian fisheries was 127,000 fish. Total recreational catch of fall chinook in mainstem Columbia River fisheries was 58,600 fish, including 16,300 fish in the Buoy 10 fishery and 13,100 above Bonneville Dam (primarily in the Hanford Reach above McNary dam.)

## Escapement and Management Performance

All Columbia River fall chinook met their FMP objectives (Table II-5). Appendix B, Tables B-12 through B-20 contain more detailed historical escapement data for most Columbia River fall, summer, and spring stocks.

Preliminary estimates of adult ocean escapement for the five fall stock groups, based upon preliminary CWT readings, catch estimates, dam counts, hatchery returns, and estimates of natural spawners are 190,000 LRH; 23,000 LRW; 194,000 SCH; 380,000 URB; and 118,000 MCB, which were all greater than forecast. The total ocean escapement of the five stocks was 905,000 fish, which was the largest escapement since 1942. Figure II-5 shows the river mouth return of these stock groups from 1976-2003.

Columbia River mainstem fisheries for fall chinook in 2003 were managed for at least a 30% harvest rate reduction from the 1988 to 1993 average harvest rate on URB fall chinook to protect ESA-threatened Snake River wild fall chinook. This goal was achieved, with a preliminary URB harvest rate estimate of 21.8%, or a 49% reduction from the 1988 through 1993 base-period average URB harvest rate (44.7%).

No specific escapement goal has been established for the ESA threatened Snake River wild fall chinook stock. Because nearly all spawning of this stock occurs upstream from Lower Granite Dam, establishing a spawning escapement goal at Lower Granite Dam would be appropriate. In the *Proposed Recovery Plan for Snake River Salmon*, NMFS has proposed a delisting goal for Snake River fall chinook that provides for an eight-year (approximately two generation) geometric mean of at least 2,500 natural spawners in the mainstem Snake River annually; the eight year mean through 2002 is 942. The total adult fall chinook count at Lower Granite Dam in 2003 was 11,100 compared to 12,300 fish in 2002, although a significant portion are returns from recent supplementation programs. An estimate of wild Snake River fall chinook escapement in 2003 is not yet available. Historical estimates of the number of adult wild Snake River fall chinook counted at Lower Granite Dam are provided in Appendix B, Table B-18.

## WASHINGTON COASTAL CHINOOK STOCKS

Washington coastal chinook stocks include all fall, summer, and spring stocks from coastal streams north of the Columbia River through the western Strait of Juan de Fuca (west of the Elwha River). This complex consists of several natural stocks, generally of small to medium-sized populations, and some hatchery production (primarily Willapa Bay and Quinault River). Coastal stocks are not impacted significantly by Council fisheries.

### Management Objectives

Spawning escapement goals for natural stocks managed within this complex, established in U.S. District Court by WDFW and the treaty Indian tribes, are recognized in the Council's FMP conservation objectives. Objectives for Grays Harbor and the North Coast river systems have been established pursuant to the U.S. District Court order in *Hoh versus Baldrige*. However, annual natural spawning escapement targets may vary from the conservation objectives if agreed to by WDFW and the treaty Indian tribes under the provisions of *Hoh versus Baldrige* and subsequent U.S. District Court orders. After agreement is reached on the annual targets, ocean fishery escapement objectives are established for each river, or region of origin, which include provisions for treaty Indian allocation and inside non-Indian fishery needs.



TABLE II-5. Performance of chinook salmon stocks in relation to 2003 conservation objectives (preliminary data). (Page 1 of 2)

System and Stock	2003 FMP Conservation Objective	Achievement
<b>Sacramento River Chinook</b>		
Fall	122,000-180,000 natural and hatchery adults.	519,600 adult fall chinook, 289% of the upper end of the escapement goal range.
Winter (Endangered)	Duration and timing of commercial and recreational fisheries south of Point Arena not to change substantially relative to 2000 and 2001.	Objective met, included delaying opening of recreational fishery between Point Arena and Pigeon Point until April 12, and between Pigeon Point and the U.S./Mexico border until March 29.
Spring (Threatened)	Same objective as for winter chinook.	Objective met-see winter chinook achievement.
<b>California North Coast Chinook</b>		
Klamath River Fall	Inriver run size target of 113,200 adults to provide an expected escapement of 35,000 natural adult spawners, the floor level.	Run size 191,600 adults, 169% of target; 87,400 natural area spawners, 250% of target.
California Coastal (Threatened)	No greater than 16% ocean harvest rate on age-4 Klamath River fall chinook.	20.6% ocean harvest rate on age-4 Klamath River fall chinook; objective not met.
<b>Oregon Coast Chinook</b>		
North and South/Local Migrating Stocks	150,000-200,000 natural adult spawners (equivalent to peak spawner index counts of 60-90 adults per mile).	297 natural adult spawners per mile, more than three times the upper end of the aggregate stock index range.
<b>Columbia River Basin Fall Chinook</b>		
LRW (Component of threatened lower Columbia River chinook ESU)	MSY objective of 5,700 natural North Lewis River adult spawners (jeopardy standard not defined).	19.0 adult escapement, 333% of the objective.
Lower Columbia natural tules (Component of threatened lower Columbia River chinook ESU)	Total (ocean plus inriver) AEQ exploitation rate on ESA-listed Coweeman River natural tules of no more than 49%	Preseason projection of 47%. No postseason estimate can be made at this time.
LRH	14,000 adult hatchery spawners.	57.0 adult hatchery spawners. 411% of goal.
SCH	7,000 adult hatchery spawners.	58,000 adult hatchery spawners, 829% of target.
MCB	No FMP objective; CRFMP target of 7,750 hatchery adults.	24,200 adult hatchery spawners, 312% of CRFMP target.
URB	40,000 natural and hatchery adults above McNary Dam, plus meet treaty Indian obligations. <u>U.S. v. Oregon</u> parties agreed to a target of 45,000 adults between 1991 and 1993, and 46,000 after 1993.	173,700 natural and hatchery adults over McNary Dam, 378% of MSY target in FMP.
Snake River Fall Chinook (Threatened; component of URB)	SRFI #0.70 for all ocean fisheries combined (i.e., no less than a 30% reduction from the 1988-1993 base period exploitation rate).	Preseason SRFI projection of less than 0.70. No postseason estimate can be made at this time.
<b>Washington Coastal Chinook</b>		
Fall	Natural spawner escapement objectives as provided in state-tribal agreements; meet hatchery egg-take goals and meet treaty Indian obligations.	Escapement objectives met for Willapa Bay hatchery; Queets natural, Hoh natural, and Quillayute natural; spawning escapements estimates for Willapa natural and Grays Harbor natural not available.
Spring/Summer	Natural spawner escapement objectives as provided in state-tribal agreements; meet hatchery egg-take goals and meet treaty Indian obligations.	Escapement objectives met for Queets spring hatchery, Queets summer natural, Hoh spring/summer natural; not met for Quillayute spring/summer natural; spawning escapements estimates for Grays Harbor spring natural not available.

TABLE II-5. Performance of chinook salmon stocks in relation to 2003 conservation objectives (preliminary data). (Page 2 of 2)

System and Stock	2003 FMP Conservation Objective		Achievement	
<b>Puget Sound Chinook</b>				
(Threatened)	Minor part of Washington ocean harvest; Council ocean management not directed at these stocks. Adult equivalent exploitation rate standard developed for some stocks:		Postseason estimates not available. Preseason predictions of adult equivalent exploitation rates and spawner objectives were:	
	Exploitation Rate	Spawner Escapement	Exploitation Rate	Spawner Escapement
CNooksack spring	C7% So U.S.		7%	399
CSkagit summer/fall	C49% Total		50%	11,639
CSkagit spring	C30% Total		24%	1,135
CStillaguamish summer/fall	C24% Total		18%	2,322
CSnohomish summer/fall	C24% Total		21%	5,072
CLake Wash. summer/fall	C31% Total		31%	311
CWhite River spring	C20% Total		19%	1,501
CGreen River summer/fall	C53% Total	5,500	56%	6,884
CPuyallup summer/fall	C55% Total		50%	2,433
CNisqually summer/fall	CNA	1,100		1,107
CSkokomish summer/fall	CNA	1,200		1,349
CMid-Hood Canal fall	C29% So U.S.		29%	531
CDungeness spring	C23% Total		23%	351
CElwha summer/fall	C23% Total		23%	

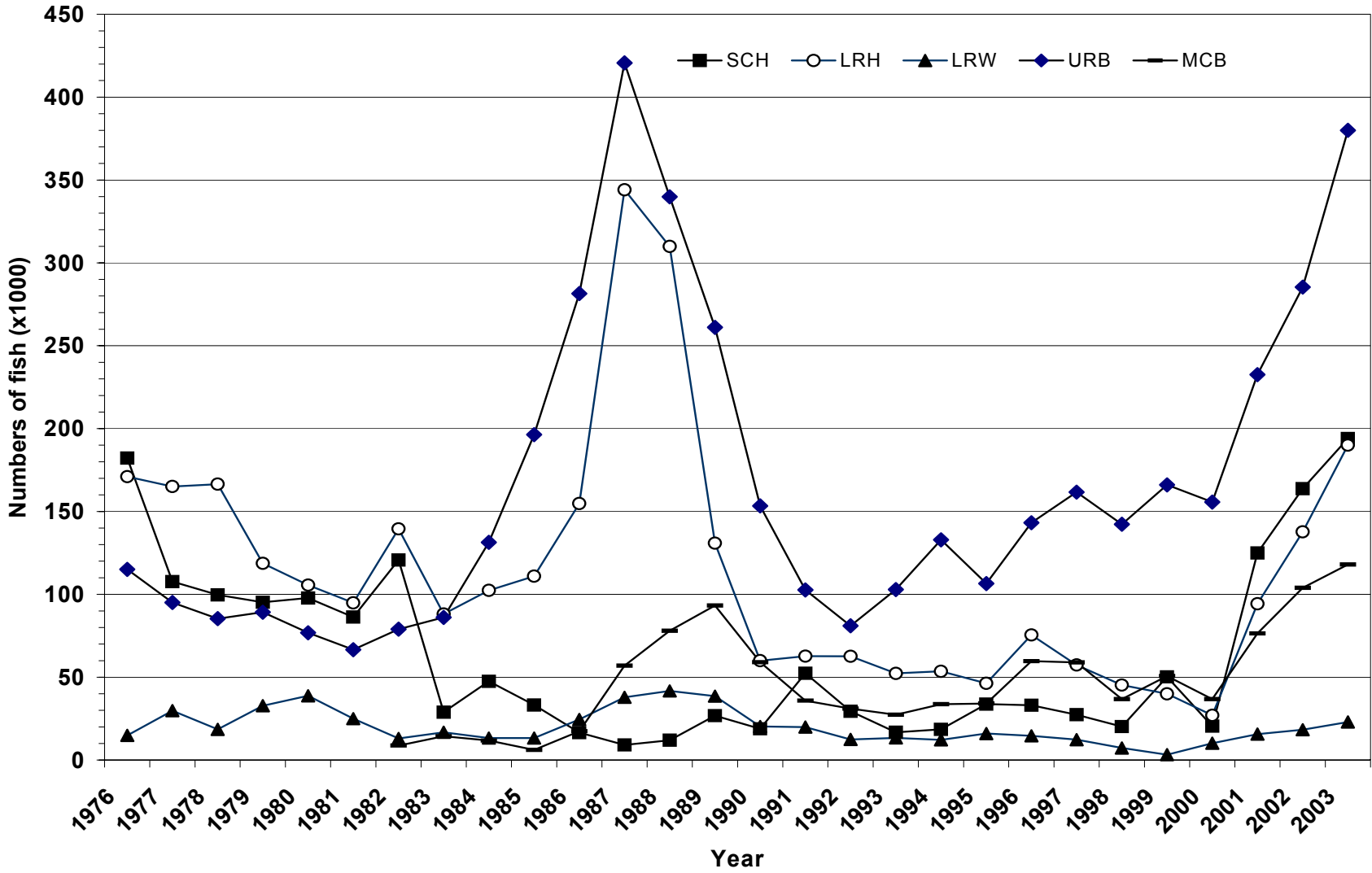


Figure II-5. Columbia River mouth adult returns of the five major fall chinook stock groups, 1976-2003.

## **Regulations to Achieve Objectives**

Stocks in this complex tend to range farther north than most Columbia River stocks and, while present in fisheries from Cape Falcon to southeast Alaska, tend to have limited impacts in Council-area ocean fisheries. Preseason abundance estimates are generally not available for Council management, and these stocks qualify as exceptions to the Council's over fishing criteria due to generally low fishery impacts. However, in 2003, the Council established a Conservation Area around the mouth of Grays Harbor that was in effect beginning August 16 to provide additional protection for Grays Harbor natural fall chinook, which have not met their escapement goal since 1997.

### **Willapa Bay Chinook**

#### **Inside Harvest**

Run size, harvest, and escapement data for Willapa Bay fall chinook are presented in Appendix B, Table B-23.

A chinook non-Indian gillnet fishery during July and the first half of August was conducted in 2003 for only the second time since 1993, 215 chinook were harvested. This fishery is commonly referred to as the "summer dip-in" fishery; it occurs with such irregularity because it is dependent on Columbia River tule abundance. This fishery generally harvests Columbia river tule stocks in a mix similar to adjacent ocean area catches.

Preseason forecast of chinook returning to Willapa Bay was 16,664 fish. Concerned by the low forecast abundance of local Willapa chinook, the one day update fishery that typically occurs in late August was eliminated in order to maximize harvest of hatchery coho. Chinook harvest in non-targeted gillnet fisheries during 2003 totaled 7,445 fish based on Quick Reporting data. Recreational harvest estimates are not yet available for 2003. Recreational fisheries in the marine waters of Willapa Bay were open July 22, 2003 through January 31, 2004. Recreational salmon fishery in freshwater tributaries to Willapa Bay varied in duration but were generally open August 1 through January 31. Two adult chinook were allowed to be harvested daily and single point barbless hooks were required in all areas.

#### **Escapement and Management Performance**

During 2003, chinook returning to hatcheries in the Willapa Bay watershed totaled 7,403 fish. Based on current hatchery production, this return was not sufficient to achieve the goal of 9,825 total chinook escapement to Willapa Bay hatchery facilities.

The escapement goal for naturally spawning chinook in Willapa Bay is 4,350 adults. An estimate of the 2003 natural spawning escapement is not yet available.

### **Grays Harbor Chinook**

#### **Inside Harvest**

Run size, harvest, and escapement data for Grays Harbor chinook are presented in Appendix B, Table B-25.

Net fisheries were conducted by the Quinault Indian Nation and the Chehalis Tribe targeting spring chinook. The Quinault Indian Nation harvested 66 spring chinook in 2003. No catch estimate is available for the Chehalis Tribe. A recreational season was conducted on the Chehalis River, but catch estimates are not yet available.

No summer non-Indian gillnet fishery directed at non-local chinook stocks occurred in 2003. No retention of fall chinook was allowed during the coho directed non-Indian net fisheries in 2003 and only 93 were harvested during the chum directed fishery. Terminal marine and freshwater recreational fisheries were scheduled on all area waters except the Humptulips River. Recreational harvest estimates are not yet available. The treaty Indian fishery harvested a total of 851 fall chinook.

### **Escapement and Management Performance**

Chehalis River spring chinook are of natural origin and managed for an escapement goal of 1,400 adults. The 2003 terminal run forecast for spring chinook was 2,398 adult fish, exceeding the escapement goal. An escapement estimate for 2003 is not currently available.

Grays Harbor fall chinook are managed for a natural spawning escapement goal of 14,600 adults. The 2003 Grays Harbor fall chinook forecast was 11,486 wild and 2,221 hatchery adults. An escapement estimate for 2003 is not currently available. There is no management goal for Grays Harbor fall chinook hatchery production.

## **Quinault River Chinook**

### **Inside Harvest**

Historical terminal gillnet harvest data for Quinault River chinook stocks are presented in Appendix B, Table B-27.

A run of natural spawning spring/summer chinook enters the river from April through July. The spring/summer chinook run is typically small and any harvest is taken incidentally during fisheries directed at sockeye and steelhead. A total of 92 spring/summer chinook were harvested in 2003.

The 2003 harvest of Quinault River fall chinook was mostly hatchery origin fish taken in September and October. The treaty Indian net catch totaled 7,433 fall chinook.

### **Escapement and Management Performance**

The estimated 2003 fall chinook spawning escapement estimate is not yet available. Hatchery egg-take goals for fall chinook were obtained at the tribal facilities. In addition, fall chinook eggs to supplement hatchery rack returns at the U.S. Fish and Wildlife Service (USFWS) Quinault National Fish Hatchery were also taken at the tribal facility.

## **Queets River Chinook**

### **Inside Harvest**

Historical terminal run size, catch, and escapement data for Queets River spring/summer and fall chinook are presented in Appendix B-29 and B-30, respectively.

The treaty Indian gillnet harvest of spring/summer fish was limited to a one (1) day ceremonial and subsistence fishery that harvested six fish. This fishery used small mesh gear to target summer steelhead. The non-treaty inriver recreational fishery was closed.

Fall chinook were harvested during a fishery managed to target hatchery and wild coho during September and early October, and hatchery and wild chinook during late October and early November. The fishery

started September 1 and followed a schedule set in a preseason management agreement between the Quinault Indian Nation and WDFW. The treaty Indian gillnet fishery harvested 1,342 fall chinook, including 20 fish taken for ceremonial and subsistence use. The 2003 catch estimate of 473 for the inriver recreational fishery is preliminary.

### **Escapement and Management Performance**

The preliminary 2003 spawning escapement estimate for Queets River spring/summer chinook is 189 adults, substantially below the floor escapement goal of 700.

The preliminary spawning escapement estimate for Queets River natural fall chinook is 4,993 adults, well above the minimum goal of 2,500 adult spawners established for this stock. The preliminary hatchery escapement estimate is 203.

## **Hoh River Chinook**

### **Inside Harvest**

Historical terminal run size, catch, and escapement data for Hoh River spring/summer and fall chinook are presented in Appendix B, Tables B-32 and B-33, respectively.

The Spring/summer chinook pre-season forecast was for a wild run size of 1,870. The Hoh Tribe and WDFW agreed upon terminal fisheries expected to harvest 31% of the terminal wild run size as well as dip-in hatchery chinook from the Quillayute River System. The escapement was expected to be approximately 1,290 wild chinook. The tribal fishery operated at one day per week from week 19 (week of May 5) to week 35 (week of August 25). The fishery took 316 chinook with 11 estimated taken during separately scheduled ceremonial fishing. Results of scale analyses indicate that 107 of these were of hatchery origin. The recreational fishery, targeting 15.5% of the run, was open May 16 through August 31, Wednesdays through Sundays, one adult per day from the mouth to Willoughby Creek. A catch estimate is not yet available for the recreational fishery.

Hoh River fisheries on fall chinook were based on an expectation of a terminal run size of 3,264, which allowed for a harvest rate of 40%. The tribal fishery targeted 25.5% of the terminal run while requiring 6" maximum stretch mesh restrictions from weeks 43 to 46 to focus catch on coho. The tribal gill net fishery was scheduled for 2 days per week from weeks 36 (week of September 1) through 48 (week of November 24). In mid-October, a record high flow occurred, causing flooding and significant bank erosion. Fluctuating flows caused the re-scheduling of one day of fishing in weeks 43 and 47. The days were made up in weeks 44 and 48. The tribal fishery caught approximately 547 chinook. (501 estimated to be wild). The non-Indian recreational fishery extended from September 1 through November 30, with the area below Willoughby Creek open and a daily bag limit of 6 salmon, two of which could be adults. The portion of the river between Willoughby Creek and Morgan's Crossing opened October 16 to reduce impacts on spawning spring/summer chinook in that reach. The river above Morgan's Crossing did not open for recreational fishing for salmon. A catch estimate is not yet available for the recreational fishery.

### **Escapement and Management Performance**

The spring/summer chinook run returned in numbers approximating the preseason forecast. The preliminary spawning estimate for Hoh spring/summer chinook is 1,200 adults, above the 900 fish escapement floor for this stock.

Based on the treaty gill net catch and expected harvest rate, the fall chinook terminal run size appears to be below the level anticipated preseason. Large freshets during the season created difficult fishing conditions, and may have reduced the tribal harvest rate. The preliminary spawning escapement estimate for Hoh fall chinook is 1,400, above the 1,200 fish escapement floor established for this stock.

### **Quillayute River Chinook**

#### **Inside Harvest**

Historical terminal run size, catch, and escapement data for Quillayute River spring, summer, and fall chinook are presented in Appendix B, Tables B-35 and B-36 respectively. Spring and summer chinook are currently managed separately, but data for both are combined in Table B-35. All hatchery origin fish are considered to be spring chinook, and all natural spawners and tribal broodstock collections are considered to be summer chinook.

The recreational and tribal fisheries for spring and summer chinook were established by preseason agreement between WDFW and the Quileute Tribe. The total tribal catch for 2003 was 188 spring and 46 summer chinook. Estimates of recreational spring and summer chinook harvest are not yet available.

The total 2003 Quileute Tribal harvest of fall chinook was 1,445. An estimate of recreational catch is not yet available.

WDFW required release of unmarked chinook during July and August to reduce impacts of the recreational fishery on the natural summer chinook stock. The fall recreational fishery from September through November proceeded with normal bag limits and schedule. The Quileute Tribe did not have a closure in their fishery this year, but as in past years, reduced their fishery to 29 hours per week during July and August to reduce impacts to summer chinook.

#### **Escapement and Goal Assessment**

The management agreement called for an escapement goal of 200 hatchery spring chinook. The actual rack return was 1,250, which exceeded hatchery requirements.

The summer chinook run is managed to achieve an escapement of 1,200 (adults, jacks, and broodstock collection combined). The estimated natural spawning summer chinook escapement of 1,065 is slightly under the escapement goal.

Terminal area fisheries on fall chinook are managed for a target 40% harvest rate, with a minimum escapement goal of 3,000 adults. The preliminary escapement estimate of 4,578 fall chinook exceeds the escapement goal.

### **PUGET SOUND CHINOOK STOCKS**

Puget Sound chinook stocks include all fall, summer, and spring stocks originating from U.S. tributaries in Puget Sound and the eastern Strait of Juan de Fuca (east of Salt Creek). This stock complex consists of numerous natural chinook stocks of small to medium sized populations and significant hatchery production. The Puget Sound ESU was listed as threatened in March 1999.

## Management Objectives

The stocks within this complex and their respective conservation objectives were established in U.S. District Court by WDFW and the treaty Indian tribes. The conservation objectives for stocks managed primarily for natural production were developed by a State/Tribal Management Plan Development Team following the Boldt Decision, and were based on “the adult spawning population that will, on the average, maximize biomass of juvenile outmigrants subsequent to incubation and freshwater rearing under average environmental conditions.” The objectives were estimated for the average spawning escapement during periods thought to represent spawner abundances that provided maximum production. The objectives for stocks managed for artificial production are based on hatchery escapement needs. Annual management targets (expected hatchery returns plus natural escapement) for specific rivers or regions of origin may vary from the conservation objectives by following fixed procedures established in U.S. District Court as outlined in “Memorandum Adopting Salmon Management Plan” (*U.S. versus Washington*, 626 F. Supp. 1405 [1985]).

NMFS has developed rebuilding exploitation rate (RER) standards for some ESA-listed Puget Sound stocks (Table II-5). Predicted total exploitation rates were compared to these standards and used by NMFS in setting ESA consultation standards for the combined Council/Puget Sound salmon fisheries. Puget Sound stocks are managed pursuant to the provisions of a WDFW/Tribal management plan approved under a 4(d) rule promulgated by NMFS.

## Regulations to Achieve Objectives

Puget Sound stocks contribute to fisheries off British Columbia, are present to a lesser degree off southeast Alaska, and are impacted to a minor degree by Council-area ocean fisheries. Base period Council-area ocean fishery AEQ exploitation rates of 2% or less are below a management threshold which allows effective Council management of these stocks, and they qualify as exceptions to the Council’s overfishing criteria.

## Inside Harvest

Commercial inside fishery harvest of Puget Sound chinook is managed on the basis of six regional stock management units or, in some cases, component stocks within management units: Strait of Juan de Fuca, Nooksack-Samish, Skagit, Stillaguamish-Snohomish, South Puget Sound, and Hood Canal. Harvest is regulated according to the natural spawning escapement goal or hatchery program escapement goal for that unit. Commercial net and troll harvest (treaty Indian and non-Indian) is presented in Appendix B, Table B-38. These catches include some fish of non-Puget Sound origin. The total commercial chinook harvest in Puget Sound in 2003 was 73,600 fish, compared to 86,000 chinook caught in 2002. The non-Indian net catch was 8,600 chinook, compared to 17,600 chinook caught in 2002. The treaty Indian net and troll harvest was 65,000 chinook, compared to 68,400 chinook caught in 2002.

Recreational chinook catches in the Puget Sound recreational fishery for years from 1971 through 2002 are presented in Appendix B, Table B-39. Catch estimates for the 2003 Puget Sound recreational fishery are not yet available.



## **Escapement and Management Performance**

Puget Sound chinook management goals for fishery planning processes in 2003 were expressed in terms of constraints on total fishery exploitation rates. Information to evaluate performance against these constraints is not yet available.

Historical hatchery and natural run component escapements and net catches for summer/fall chinook for each Puget Sound region of origin are presented in Appendix B, Table B-40. Historical spring chinook escapement data are presented in Appendix B, Table B-43.

Puget Sound spring chinook hatchery escapement goals were met. Preliminary data suggest most Puget Sound hatcheries met their summer/fall chinook goals.

Naturally spawning Puget Sound spring and summer/fall chinook remained depressed in 2003. Preliminary data suggest the Puget Sound spring chinook natural stocks did not meet their escapement goals. Preliminary estimates of 2003 natural spawning escapements for summer/fall chinook stocks indicate escapement goals were met in some areas, but not in Stillaguamish, Cedar, and Dungeness.

## **COASTWIDE GOAL ASSESSMENT SUMMARY**

Information to assess conservation objectives was unavailable for Willapa Bay natural fall chinook, Grays Harbor natural spring and fall chinook, and all Puget Sound natural chinook stocks. Conservation objectives for all other Council managed chinook stocks were met.

A summary of 2003 performance for chinook salmon stocks in relation to Council conservation objectives is presented in Table II-5.

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