PACIFIC SALMON COMMISSION
JOINT CHINOOK
TECHNICAL COMMITTEE REPORT

CATCH AND ESCAPEMENT OF CHINOOK SALMON UNDER PACIFIC SALMON COMMISSION JURISDICTION, 2004

REPORT TCCHINOOK (05)-2

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LIST OF ACRONYMS WITH DEFINITIONS

AABM	Aggregate Abundance Based Management
AI	Abundance Index
ADF&G	Alaska Department of Fish & Game
AEQ	Adult Equivalent
AWG	Analytical Working Group of the CTC
BCAFC	British Columbia Aboriginal Fisheries Commission
C&S	Ceremonial & Subsistence
CBC	Central British Columbia Fishing area – Kitimat to Cape Caution
CCMP	Comprehensive Chinook Management Plan
CDFO	Canadian Department of Fisheries & Oceans
CI	Confidence Interval
CNR	Chinook Nonretention
CR	Columbia River
CRITFC	Columbia River Intertribal Fish Commission
CRFMP	Columbia River Fishery Management Plan
CTC	Chinook Technical Committee
CUS	Columbia Upriver Spring Chinook stock
CWT	Coded Wire Tag
ESA	U.S. Endangered Species Act
est+fw	Estuary Plus Fresh Water Area
FL	Fork Length
FMP	PFMC Framework Management Plan
FOG	Fisheries Operational Guidelines
FR	Fraser River
GCG	Gene Conservation Group
GS	Strait of Georgia
IDFG	Idaho Department of Fish & Game
IDL	InterDam Loss
IM	Incidental Mortality
ISBM	Individual stock based management
LFR	Lower Fraser River
LGS	Lower Strait of Georgia
mar	Marine Area
mar+fw	Marine Plus Fresh Water Area
MOC	Mid Oregon Coast
MRP	Mark-Recovery Program
MSH	Maximum sustainable harvest
MSY	Maximum Sustainable Yield for a stock, in adult equivalents
MSY ER	Exploitation Rate sustainable at the escapement goal for a stock, in AEQs
NBC	Northern British Columbia Dixon Entrance to Kitimat including Queen Charlotte Islands
NA	Not Available
NBC	Northern British Columbia Dixon Entrance to Kitimat including Queen Charlotte Islands
NM	Nautical Mile
NMFS	National Marine Fisheries Service
NOC	Oregon Coastal North Migrating Stocks
NPS	North Puget Sound
NPS-S/F	North Puget Sound Summer/Fall Chinook stock
NR	Not Representative
NWIFC	Northwest Indian Fisheries Commission
ODFW	Oregon Department of Fish & Wildlife
OTAC	Outside Troll Advisory Committee
PFMC	Pacific Fisheries Management Council
PS	Puget Sound
PSC	Pacific Salmon Commission
PSARC	Pacific Scientific Advice Review Committee
PSMFC	Pacific States Marine Fisheries Commission
PST	Pacific Salmon Treaty
QDNR	Quinault Department of Natural Resources, Division of fisheries
QIN	Quinault Nation
QCI	Queen Charlotte Islands
S_{MSY}	Escapement producing maximum sustained yield
SEAK	Southeast Alaska Cape Suckling to Dixon Entrance
SPS	South Puget Sound
SSRAA	Southern Southeast Regional Aquaculture Association
TAC	Technical Advisory Committee
TBR	Transboundary Rivers
TTC	Transboundary Technical Committee
UFR	Upper Fraser River
UGS	Upper Strait of Georgia
USCTC	U.S. members of the CTC
USFWS	U.S. Fish & Wildlife Service
UW	University of Washington
WA/OR	Ocean areas off Washington and Oregon North of Cape Falcon
WAC	North Washington Coastal Area (Grays Harbor northward)
WACO	Washington, Oregon, Columbia River Chinook stock
WCVI	West Coast Vancouver Island excluding Area 20
WDFW	Washington Department of Fisheries and Wildlife
WDFW	Washington Department of Fisheries and Wildlife

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EXECUTIVE SUMMARY

The June 30, 1999, Pacific Salmon Treaty (PST) Annexes and Related Agreements (Agreement) substantially changed the objectives and structure of the Pacific Salmon Commission's (PSC) Chinook salmon fisheries and assessment of Chinook salmon stocks. The Agreement eliminated the previous ceiling and pass-through fisheries and replaced them with Aggregate Abundance Based Management (AABM) and Individual Stock Based Management (ISBM) fisheries. It also tasked the Chinook Technical Committee (CTC) with a number of assignments (Appendix to Annex IV, Chapter 3).

In this report, we provide a summary of 2004 fishery catches by region and an assessment of escapement for those stocks that have CTC accepted goals. In addition, escapement data and agency comments have been provided for all escapement indicator stocks. We will also provide a second annual report that summarizes the exploitation rate analysis and the results of the CTC model calibration as was done last year (see CTC 2004a). Model calibration results will include postseason statistics for the 2004 fisheries and preseason predictions for the 2005 fisheries.

CHINOOK CATCH 2004

Only catches, incidental mortalities, and some fishery effort estimates are presented in this report. Assessment of the AABM and ISBM fishery performance requires more detailed analyses using coded-wire tag (CWT) data and calibration of the CTC model. As was done in 2003, these analyses will be reported in the annual Exploitation Rate and Model Calibration Report (e.g., CTC 2004a).

In keeping with the move towards a total mortality regime, both landed catch and estimates of incidental mortality are provided in this report for each component of each AABM fishery for 2003 and 2004, similar to what was done for the 2003 report (CTC 2004b). Commentary on these fisheries is also provided, as in previous reports. One difference from the 2003 report is that catch and estimates of incidental mortality for each ISBM fishery are also included in this report. Similar to the 2003 report, landed catch is reported in appendices for each geographic area covered under the PST.

ESCAPEMENTS THROUGH 2004

The escapement review includes 50 naturally spawning escapement indicator stocks/stock aggregates. Biologically-based escapement goals have been accepted by the CTC for 23 of the 50 escapement indicator stocks/stock aggregates. For 12 of these stocks, the agency escapement goal is defined as a range; for the remaining 11 stocks, the escapement goal is the point estimate of S_{MSY} (escapement producing maximum sustained yield). In 2004, escapements were within the goal range for seven stocks, above the range or S_{MSY} point estimate for 15 stocks, and below the goal range for one stock. It was not possible to provide this assessment for the other stocks without accepted escapement goals. However, data for other stocks are presented to illustrate trends in escapement. Some stocks are managed to an agency goal, but these goals have not been accepted by the CTC. The CTC will continue to review escapement goals brought forth for the remaining stocks, as they are provided.

1 CHINOOK CATCH

The June 30, 1999, Pacific Salmon Treaty (PST) Annexes and Related Agreements (Agreement) substantially changed the objectives and structure of the Pacific Salmon Commission's (PSC) Chinook salmon fisheries. The Agreement eliminated the previous ceiling and pass-through fisheries and replaced them with Aggregate Abundance Based Management (AABM) and Individual Stock Based Management (ISBM) fisheries. Chinook catches for the AABM fisheries are summarized in Tables 1-1 through 1-4, as well as Appendix A, and the ISBM catch in Appendices A1-A14 .

Starting last year, the CTC included estimates of incidental mortalities associated with landed catch for each component of each AABM fishery (CTC 2004b). This year's report also includes available estimates of landed catch and incidental mortality for ISBM fisheries. However, much work remains to provide a complete breakdown of total mortality impacts into reportable numbers of catch and incidental mortality for each fishery. A more comprehensive overview of incidental mortality estimates associated with landed catch for ISBM fisheries will be included in next year's report. Commentary on both AABM and ISBM fisheries is also provided. This is similar to previous reports, with the exception of catch year 2003 (CTC 2004b) for which commentary was linked to AABM fisheries.

1.1 REVIEW OF AABM FISHERIES

AABM fisheries for Chinook are managed for the catch level corresponding to each year's abundance index (AI) in Table 1 of the agreement. AABM fisheries are mixed stock salmon fisheries that intercept and harvest migratory Chinook from many stocks. The AABM fisheries, as defined in Annex IV, Chapter 3, paragraph 2, are:

1) Southeast Alaska (SEAK) All Gear,
2) Northern BC (NBC) Troll and Queen Charlotte Islands (QCI) sport, and
3) West Coast Vancouver Island (WCVI) Troll and Outside Sport.

Catches for these three fisheries are reported below in Table 1-1.

Table 1-1. Annual catches and add-ons for Pacific Salmon Treaty AABM fisheries, in thousands of Chinook salmon. The Treaty catches do not include the add-on or exclusions (see Appendix A.1). Notation is T for Troll, N for Net and S for sport.

	SEAK (T, N, S)			NBC (T), QCI (S)		WCVI (T, S)	
	Treaty Catch		Add-on	Treaty Catch		Treaty Catch	
Year	Limit[1]	Observed		Limit[1]	Observed	Limit[1]	Observed
1999	184.2	198.8	47.7	126.1	92.9	107.0	36.4[2]
2000	178.5	186.5	74.3	123.5	31.9	86.2	101.4[2]
2001	250.3	186.9	77.3	158.9	43.5	145.5	117.7[2]
2002	371.9	357.1	68.2	237.8	150.6	196.8	165.0[2]
2003	439.6	380.2	57.2	197.1	191.7	268.9	175.8
2004	418.3	428.8/433.4[3]	72.0	267.0	241.5	209.6	213.6

[1] Allowable treaty catches correspond to the postseason AIs for 1999-2004.

[3] The value on the left does not account for a terminal exclusion for the Stikine River, whereas the value on the right includes such terminal exclusion catch; see section 1.1.1.2 for discussion.

1.1.1 Southeast Alaska Fisheries

The Southeast Alaska Chinook fishery has been managed to achieve the annual all gear PSC allowable catch through a plan established by the Alaska Board of Fisheries. Once the all gear allowable catch is determined from the preseason abundance index (AI) each spring, this plan establishes gear quotas for the troll, net, and recreational fisheries. The allocation plan reserves 4.3% of the total PSC catch for purse seine, and 8,600 fish for combined set and drift gillnet fisheries. After the net quotas are subtracted, 80% of the remainder is reserved for troll gear and 20% for the recreational fishery. To meet the recreational target catch, the recreational fishery is managed in-season with bag-limits and other constraints. Regulatory history and maps for each SEAK fishery are detailed in CTC (2004c).

In addition, the SEAK fisheries were managed for:

1) An Alaskan hatchery add-on calculated on the basis of coded-wire-tag (CWT) sampling based on a 1 in 10 chance of error.
2) A wild stock terminal exclusion on the Situk, Taku, and Stikine Rivers.
3) Compliance with provisions established by the National Marine Fisheries Service in accordance with the United States (U.S.) Endangered Species Act (ESA).
4) Consistency with the provisions of the PST as required by the Salmon Fishery Management Plan of the North Pacific Fishery Management Council (PFMC) established by the U.S. Magnuson-Stevens Act.

The all gear harvests in SEAK in 2004 were similar in magnitude to those in 2002 and 2003. The pre-season AI of 1.88 allowed an initial all-gear catch of 383,538 fish per the Agreement. The all gear harvest was 506,207 and the treaty catch was 428,833 (Table 1-1), after subtracting an Alaskan hatchery add-on of 72,225 Chinook and a wild-stock terminal exclusion of 5,119 Chinook salmon. A breakdown by gear for total catch, Alaskan hatchery contributions and terminal exclusions is detailed in Table 1-2. Historical harvests for 1975-2004 are shown in Appendix A-1.

Table 1-2. Harvest of Chinook salmon in SEAK by gear type in 2004.

Gear	Total Harvest	Alaskan Hatchery Harvest	Alaskan Hatchery Add-on[2]	Wild[1,3] Terminal Exclusion	Treaty Catch
Troll					
Winter	52,886	6,176	5,356	0	47,530
Spring	56,796	21,402	18,754	0	38,042
Summer	244,929	9,934	8,614	0	236,368
Troll subtotal	354,664	37,512	32,724	0	321,940
Sport	87,505	23,402	20,824	290	66,391
Net					
Setnet	2,734	0	0	446	2,288
Driftnet	21,671	8,482	7,607	4,673/0	9,391/14,064
Seine	39,633	11,742	10,870	0	28,763
Net subtotal	64,038	20,224	18,477	5,119/446	40,442/45,115
Total	506,207	81,138	72,025[2]	5,409/736	428,773/433,446

[1] Exclusion catch claimed in 2004 is for the Situk and Stikine Rivers. Sport exclusions represent Situk catch only.

[2] Add-on is 81,138 AK hatchery harvest, minus 5,000 base AK hatchery harvest, minus 4,113 risk adjustment, which is 1.645 x SE of the estimated AK hatchery harvest.

[3] The value on the left does not account for a terminal exclusion for the Stikine River, whereas the value on the right does. See section 1.1.1.2 for discussion.

1.1.1.1 Troll Fishery Harvest

Troll fishery regulations in 2004 were similar to those in 2003, including a minimum size limit of 28 inches. The 2004 accounting year began October 2003 and ended September 2004. The winter fishery begins in October and continues until 45,000 total Chinook salmon are caught or through April 30, whichever is earlier. The spring fisheries were managed so that each fishery would not exceed a predetermined number of non-Alaskan Chinook salmon based on the Alaskan hatchery percentage in each of the fisheries. Also, in 2004, the first summer fishery opening began on July 1 and was managed to harvest 70% of the remaining troll gear Chinook quota based on the pre-season AI. After the first 70% of the summer quota was harvested, the areas of high Chinook abundance were closed while the fishery was directed primarily onto coho. A second summer Chinook retention period began after necessary management actions for coho salmon were determined.

In 2004, the troll fishery harvested a total of 354,664 Chinook salmon, including 37,512 Alaskan hatchery fish, of which 321,940 were treaty fish (Table 1-2). The winter fishery opened October and closed April 14 with a total harvest of 52,886 of which 6,176 (11.7%) were from Alaskan hatcheries, with a total of 47,530 treaty fish. The spring fishery harvested a total of 56,796 of which 21,402 (37.7%) were Alaskan hatchery fish and 38,042 were treaty fish.

In the first summer retention period (July 1-15), 193,992 (186,470 treaty) fish were taken. The areas of high Chinook abundance were closed for the remainder of the summer season after the initial retention period. The second summer retention period was open from August 12-15, with a catch of 50,937 Chinook, including 49,846 treaty Chinook. There were a total of 5,885 boat-days of Chinook effort and 17,428 boat-days of Chinook non-retention effort in 2004. The 2003 troll effort has been updated; the new statistics are 10,743 boat days of Chinook effort and 9,228 boat-days of Chinook non-retention effort.

1.1.1.2 Net Fisheries Harvest

Net harvest of Chinook salmon in the purse seine fishery is regulated with a 28" (71 cm) minimum size limit and the use of Chinook non-retention (CNR) regulations. Chinook between 21" and 28" may never be sold, while Chinook below 21" may be retained and sold at all times. Gillnet harvest of Chinook is limited by a delayed sockeye season opening until mid June.

ADF&G has claimed terminal exclusions since 1996 for the Stikine and Taku drift gillnet fisheries and for the Situk set-gillnet fishery. The CTC has requested documentation on these proposed terminal exclusions since 2002. Complete documentation has been provided for the Situk, and initial documentation for the Taku and Stikine. Documentation for the latter two was not provided after Canada refused to review transboundary river terminal exclusions. While recently negotiated harvest sharing agreements are in place for the Stikine and Taku starting in 2005, they do not cover catch years prior to 2005. The catches during the base period (1979-1982) were 402 and 1,708 fish for the Stikine and Taku respectively. The base catch was reached for the Stikine but not for the Taku in 2004. The Situk commercial set-gillnet catch during the base period was 776.

The 2004 total net harvest was 64,038 Chinook (Table 1-2). There was a total of 5,119 fish excluded in the Situk (446) and Stikine (4,673) Rivers and 20,224 Chinook from Alaskan hatcheries were excluded. The total net harvest minus the claimed terminal exclusion and the allowed Alaskan hatchery add-on was 40,442 Chinook. The treaty harvest by gear type was 2,288 for set gillnet, 9,391 for drift gillnet and 28,763 for purse seine.

1.1.1.3 Recreational Fishery Harvest

Recreational harvests are monitored in-season by creel surveys throughout the region, and sampling programs are in place to recover coded-wire tagged (CWT'd) Chinook and coho salmon. Creel surveys provide preliminary estimates of catch in 2004; these numbers will be updated after statewide harvest mail survey results are obtained in the fall of 2005. In 2004, regulations for the recreational fishery included a two fish daily bag limit for Alaska residents and a daily bag limit of one fish with a three fish annual limit for non-resident anglers. The minimum size limit of 28 inches in total length was in effect for both resident and non-resident anglers. In "terminal" areas near hatchery release sites, however, bag and size limit regulations were liberalized to provide for increased harvests of returning Alaskan hatchery Chinook salmon.

The preliminary total harvest in 2004 was 87,505 Chinook of which 290 were wild fish that were excluded (Situk River), and 23,402 were Alaskan hatchery fish (Table 1-2). The preliminary total sport harvest of 87,505 minus 21,114 combined allowed hatchery add-on and wild terminal exclusion fish, resulted in a treaty harvest of 66,391 Chinook.

Recreational harvests for SEAK in 2003 have been updated from statewide harvest survey results. In 2003, the total recreational harvest was 69,370 Chinook of which 490 were the Situk

terminal exclusion, 19,057 were Alaskan hatchery fish taken in non-terminal areas and 4,490 were fish taken in terminal Alaskan hatchery areas. The total sport harvest of 69,370 resulted in a treaty harvest of 49,239 Chinook, after subtracting the 20,131 hatchery add-on and 4,490 terminal hatchery harvests.

1.1.1.4 Estimated Incidental Mortality

The incidental mortality for the troll and recreational fisheries in 2003 and 2004 were estimated from direct fishery observation programs. Estimates for the net fishery included incidental mortality for both seine and gillnet fisheries. For the seine fishery, estimates were based on regressions between landed catch in traditional fisheries and incidental mortality, from the 1985-1987 purse seine studies (CTC 2004). For the gillnet fishery, drop-off mortality was estimated as a percentage of the landed catch using the regional-specific drop-off rate for SEAK (CTC 2004).

The estimated total mortality of Chinook salmon in SEAK fisheries in 2003, including Alaskan hatchery fish, was 530,068 nominal fish. The landed catch component of this mortality was 439,436, of which 380,152 were treaty fish. The estimated incidental mortality was 90,632 fish, including 65,523 sublegal fish and 25,110 legal fish (Table 1-3). Estimated incidental mortality was 26,312 in the troll fishery, 15,619 in the recreational fishery, and 48,702 in the net fisheries. Table 1-3 summarizes encounter and incidental mortality estimates for these fisheries in 2003 by size class during retention and CNR fishing periods.

The estimated total mortality of Chinook salmon in SEAK fisheries in 2004 is incomplete at this time because estimates of the legal and sublegal encounters in the recreational fishery are not yet available. The estimated total mortality in 2004, including Alaskan hatchery fish, but not including a complete estimate of the incidental mortality in the recreational fishery, was 626,474 nominal fish. The landed catch component of this mortality was 506,207, of which 428,833 (not including terminal exclusion catch for Stikine and Taku) were treaty fish. The estimated incidental mortality was 120,267 fish, including 84,072 sublegal fish and 36,195 legal fish (Table 1-3). The incidental mortality total includes 31,635 in the troll fishery, 85,481 in the net fishery, and 3,150 legal drop-off mortality in the recreational fishery. Table 1-3 summarizes available encounter and incidental mortality estimates for these fisheries in 2004 by size class during retention and CNR fishing periods. The estimates of sublegal and legal fish encountered and released in the recreational fishery in 2004 were not available in time for this report.

Table 1-3. Estimated encounters and incidental mortality in SEAK troll, net and sport fisheries for 2003-2004. Mortality estimates of fish released in troll and sport fisheries include drop-off mortality. In the net fishery, 21"-28" fish from both retention and non-retention periods are included in the CNR numbers.

Panel A – Troll and Sport Fisheries

		Troll				Sport		
		Retention Fishery		CNR Fishery		Retention	Releases	
		Legal				Legal		
Year		Drop-off	Sublegal	Legal	Sublegal	Drop-off	Legal	Sublegal
2003	Encounters	Na[1]	39,821	33,804	22,015	Na[1]	25,518	57,006
2003	IM	2,646	10,473	7,403	5,790	2,497	4,057	9,064
2004	Encounters	Na[1]	18,133	68,868	34,019	Na[1]		
2004	IM	2,837	4,769	15,082	8,947	3,150		

Panel B – Net Fisheries and Total

Year		Net Fisheries				Total Incidental Mortality	
		Seine			Gillnet		
		Retention	CNR Fishery		Legal		
		< 21"	> 28"	21"-28"	Drop-off	Legal	Sublegal
2003	Encounters	1,103	16,081	53,188	Na[1]		
2003	IM	1,103	8,202	39,093	305	25,110	65,523
2004	Encounters	589	28,700	94,922	Na[1]		
2004	IM	589	14,637	69,767	488	36,194[2]	84,072[2]

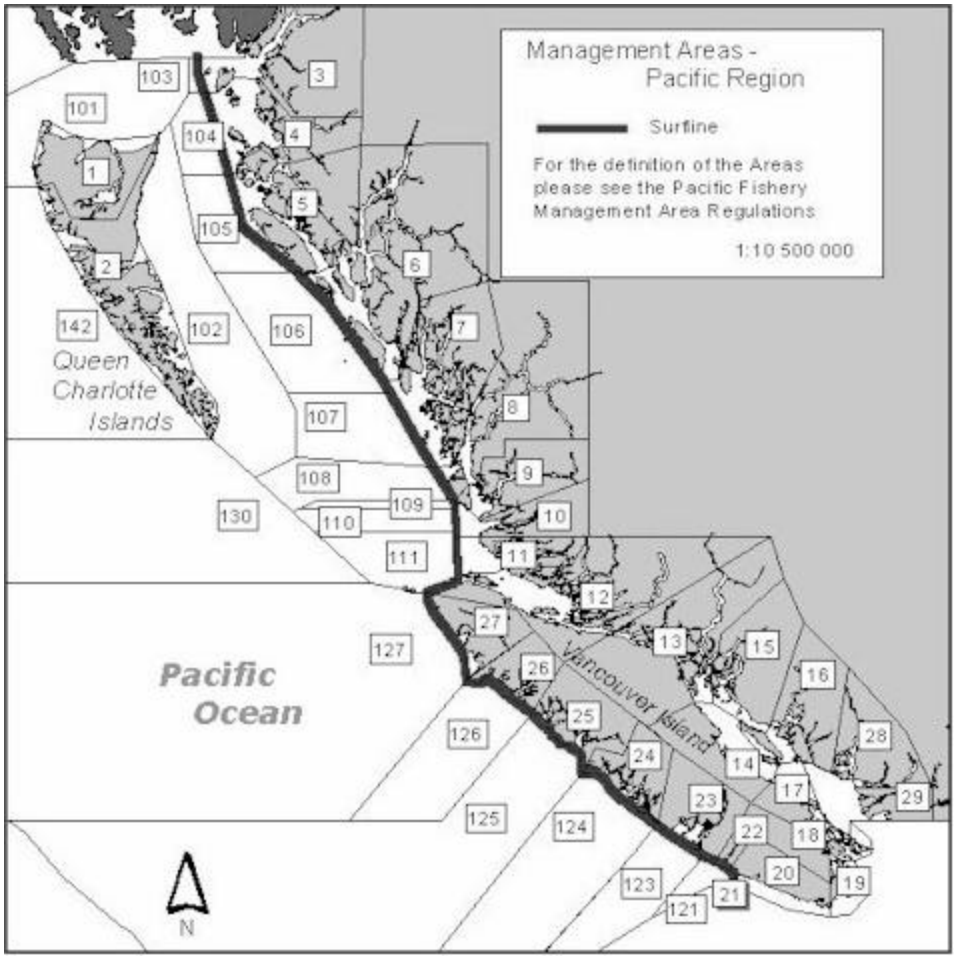
[1] Drop-off mortality is computed from landed catch times a percentage that incorporates a gear-specific encounter ratio and a release mortality rate.

[2] Preliminary total for 2004 does not include release mortality estimates from the sport fishery.

1.1.2 Northern British Columbia Fisheries

Under the 1999 PST Agreement, the NBC AABM fishery is defined to include troll catch in Statistical Areas 1-5, and sport catch in Areas 1 and 2 (QCI) (Figure 1-1). The total AABM catch (troll plus QCI sport) in 2004 was 241,508 (Table 1-4).

Figure 1-1. British Columbia fishery management areas.



1.1.2.1 Troll Fishery Harvest

The NBC troll fishery was opened for Chinook fishing from October 1, 2003 to April 15, 2004, from June 15 to July 1 and from July 18 to 22, 2004. Barbless hooks were mandatory and the

minimum size limit was 67 cm. Areas open to Chinook fishing included Hecate Strait, Dixon Entrance and the west coast of the Queen Charlotte Islands. DFO statistical areas 1, 2, 6, 7, 101, 102, 106, 107, 130 and 142 were open from October 1, 2003 to March 31, 2004. Areas 6, 7, 106 and 107 were closed after April 1, 2004. Very few (72) Chinook were landed in October 2003 and no troll fishing occurred until mid-February. The catch in February and March was 3,127 Chinook and another 6,062 Chinook were caught from April 1 to 15. A ribbon boundary around Langara Island and from Skonun Point to Cape Knox on Graham Island excluded the commercial troll fishery from areas within one nautical mile of the shore during the June and July Chinook fisheries. Catch in the June 15 to July 1 fishery was 108,604 Chinook. Catch in the July 18 to 22 fishery was 48,843 Chinook. A test fishery was conducted in areas off the west coast of the QCI, in which 800 legal-sized Chinook were caught and included in the total for the troll fishery. All of the test catch was attributed to the areas north and west of the QCI (Areas 1, 101, 2W and 142). Troll fisheries were conducted in Hecate Strait and Dixon Entrance with non-retention of Chinook salmon from July 23 to September 30, 2004. The total NBC troll catch from October 1, 2003 to September 30, 2004 was 167,508 Chinook.

Table 1-4. Summary of landed catch by gear for Canadian AABM fisheries in 2004.

AABM Fishery	Troll	Sport	Total
NBC	167,508	74,000	241,508
WCVI	174,128	42,038	216,166

1.1.2.2 Recreational Fishery Harvest

Tidal recreational fisheries in NBC and CBC (marine statistical Areas 1-11) are managed under one set of regulations (45 cm minimum size limit; two Chinook per day and four in possession; annual bag limit of 30). During the past decade, recreational fisheries in the marine areas of NBC and CBC have expanded substantially, especially in the area of the QCI (Areas 1, 2W, 2E). Management of these marine recreational fisheries now recognizes two basic regions: QCI, and the coastal mainland and inlets. Only the QCI recreational catch is included in the AABM totals. Since 1995, catch in the QCI recreational fisheries has been estimated by creel surveys (supported by the Haida Nation), lodge logbook programs and independent observations by CDFO staff. The normal possession limits of two per day and four in possession applied in 2004. Catch for this fishery in 2004 was 74,000 Chinook salmon. Thus, the total NBC AABM catch (troll plus sport) between October 1, 2003 and September 30, 2004 was 241,508 Chinook salmon (Table 1-4).

1.1.2.3 Estimated Incidental Mortality

Table 1-5 summarizes encounter and IM estimates for the NBC AABM fisheries from 2002 to 2004 by size class during retention and CNR fishing periods. Encounters for the NBC troll fishery are based on phone-in hails. Encounters for the QCI sport fishery are based on creel survey and logbook programs. The table presents IM estimates using size specific rates from the CTC (1997) of 1.7% troll drop-off, 18.5% troll legal mortality, 22% troll sublegal mortality, 6.9% sport drop-off and 12.3% sport legal mortality. IM for sublegal sport encounters were included in the legal IM since encounters of sublegal Chinook (<45 cm) in the QCI sport fishery are rare and the CTC (1997) recommended mortality rate is the same for all Chinook greater than 33 cm. Encounters of Chinook less than 33 cm are very rare in the QCI sport fishery.

The estimated total mortality of Chinook salmon in the NBC AABM fisheries in 2002 was 164,927 nominal fish, including 150,137 fish in the landed catch and 14,790 fish from IM (Table 1-5). The estimated IM included 14,098 legal and 692 sublegal fish in nominal numbers of fish, comprised of 3,432 fish in the troll fishery and 11,357 in the recreational fishery.

The estimated total mortality of Chinook salmon in the NBC AABM fisheries in 2003 was 209,694 nominal fish, including 191,657 fish in the landed catch and 18,037 fish from IM (Table 1-5). The estimated IM included 17,566 legal and 472 sublegal fish in nominal numbers, comprised of 5,161 fish in the troll fishery and 12,876 in the recreational fishery.

The estimated total mortality of Chinook salmon in the NBC AABM fisheries in 2004 was 278,964 nominal fish, including 241,508 fish in the landed catch and 37,456 fish from IM (Table 1-5). The estimated IM included 36,679 legal and 777 sublegal fish in nominal numbers, comprised of 9,936 fish in the troll fishery and 27,520 in the recreational fishery.

Table 1-5. Estimated encounters and incidental mortalities (nominal fish) in NBC AABM troll and sport fisheries for 2002-2004. Mortality estimates of fish released in troll and sport fisheries include drop-off mortality.

		Troll				Sport		Total Incidental Mortalities	
		Retention Fishery		CNR Fishery		Retention	Releases [2]		
Year		Legal & Sublegal Drop-off	Sublegal releases	Legal	Sublegal	Legal & Sublegal Drop-off	Legal	Legal	Sublegal
2002	Encounters	NA [1]	2,608	5,109	129	NA [1]	42,226		
	IM	1,752	618	1,032	31	3,250	8,107	14,098	692
2003	Encounters	NA [1]	1,721	11,798	148	NA [1]	47,549		
	IM	2,335	408	2,383	35	3,747	9,129	17,566	472
2004	Encounters	NA [1]	2,605	31,460	489	NA [1]	116,741		
	IM	2,848	617	6,355	116	5,106	22,414	36,679	777

[1] Drop-off mortality is computed from landed catch times a percentage that incorporates a gear-specific encounter ratio and a release mortality rate.

[2] Releases are reported as 'mixed' sizes. However, since >90% of such releases are legal-sized, all reported releases were considered to be legal-sized for the purpose of estimating incidental mortality.

1.1.3 West Coast Vancouver Island AABM

Under the 1999 PST Agreement, the WCVI AABM fishery includes the WCVI troll and the outside WCVI Chinook recreational fishery (defined below). The total AABM landed catch (troll plus outside tidal sport) in 2004 was 216,166 Chinook (Table 1-4).

1.1.3.1 Troll Fishery Harvest

The AABM troll catch includes the commercial Area G troll catch and Nuu-chah-nulth First Nations troll caught Chinook in Statistical Areas 21, 23-27, and 121-127. In the 2004 season (October 1,2003-September 30,2004), the WCVI troll fishing opportunities were consistent with a CDFO commitment to evaluate winter fisheries as a means to improve the economic base for the fleet and local communities while increasing flexibility in harvest opportunities and reducing the harvest rates on stocks encountered in summer fisheries (Table 1-6). Troll fishery openings were shaped by conservation concerns for upper Fraser River and WCVI Chinook and upper Fraser River and Thompson River coho. To protect early spring run upper Fraser Chinook, areas where they were known to be present were closed from mid-March to mid-April. This measure also gives some protection to spring run US Chinook stocks at the same time the mature cohort are abundant on the WCVI. In the outside fishery the southern bank area (Area 121) remained closed in 2004. The minimum size limit for troll-caught Chinook in all periods was 55 cm FL. Catches during these fisheries were monitored to determine encounter rates of other species and of Chinook under 55 cm FL, as well as for sampling size distributions, and stock compositions (via CWT, DNA and otolith samples).

The majority of catch from November through March came from Areas 23 and 123. After March 10, Area 123 was closed until mid-April. All areas were closed from mid-May through August to avoid upper Fraser River and Thompson River coho. Two very small troll fisheries in August, targeting hatchery Chinook in Alberni Inlet (Area 23) and Tlupana Inlet (Area 25), were included in AABM catch. The majority of the catch in September came from Areas 26 and 127.

Table 1-6. Fishing periods and Chinook harvested and released during the 2004 accounting year in the WCVI troll fishery.

Fishing period	**Landed Catch**	**Sublegal Releases**
Outside		
October 1–3, 2003	17,905	1,941
November 1-2, 2003	2,955	474
December 1-21, 2003	825	202
January 4 – Feb. 2, 2004	1,561	495
February 3- 29, 2004	2,837	520
March 1-10, 16-21, 2004	8,043	588
April 1-9, 15-27, 2004	51,181	2,179
May 1-3, 15-16, 2004	51,486	2,877
May 17 – September 16, 2004	Closed	Closed
September 17-20, 2004	32,044	1,120
Sub-total	168,837	10,396
Inside		
August Alberni (Area 23)	155	31
August Tlupana (Area 25)	136	1
Sub-total	291	34
First Nations	5,000	NA
Total	174,128	10, 430

[1] Troll fisheries were closed mid-May to mid-September to avoid encounters of Upper Fraser and Thompson River coho and WCVI Chinook.

The catch for 2004 Area G troll fisheries between October 1, 2003 and September 30, 2004 was 168,837 Chinook. A further 10,396 sublegal Chinook were released during this fishery. In the two minor AABM 'inside' troll fisheries effort was very limited. Catches were 155 kept and 311 sublegals released in Alberni Inlet (Area 23) and 136 kept and 1 sublegal released in the Tlupana Inlet fishery (Area 25). The total AABM Chinook catch by the commercial Area G troll fleet was 169,128 and 10,430 sublegal fish were released. An estimated 5,000 Chinook were caught in WCVI First Nations troll fisheries in 2004. The total WCVI AABM troll catch for 2004 was 174,128, with 10,430 sublegal Chinook releases.

1.1.3.2 Recreational Fishery Harvest

The AABM recreational fishery includes all catch in northwest WCVI (Areas 25–27) between October 16 through June 30, and the catch outside one nautical mile offshore from July 1 through October 15, plus all the catch in southwest WCVI (Areas 21–24) between October 16 through July 31, and outside one NM offshore from August 1 to October 15. Catch inside the surf line and outside the AABM periods specified above is included in ISBM fishery catch.

The 2004 WCVI recreational Chinook fisheries were structured to meet conservation concerns for non-enhanced WCVI Chinook stocks and Interior Fraser and Thompson coho. The outer

WCVI sport fishery occurs primarily in the Barkley Sound, outer Clayoquot Sound, and Nootka Sound areas. The majority of fishing effort occurs from mid-July to September in north WCVI and August through mid-September in the south WCVI. Creel surveys are generally conducted from late May or early June to September 30 but vary with run timing. Selective fishing regulations such as barbless hooks and size regulations were enforced in order to lower post-release mortality and impacts on stocks of concern. For the outside sport fishery the Chinook daily bag limit was two Chinook greater than 45 cm of which only one could be >77 cm, to limit the catch of female Chinook.

Recreational effort in the AABM portion of the WCVI fishery was estimated at 37,740 boat trips in 2004. The 2004 WCVI AABM sport catch estimate was 39,464 Chinook (Table 1-7). In 2004, the harvest in the AABM fishery equaled the highest recorded since 2001. This was due in part was to higher angler effort. Catch rates were estimated from 10,416 interviews (13% of the estimated number of angling parties) at 19 landing sites. No creel surveys occurred between the months of October and May, as effort is relatively low during this period.

Table 1-7. Outer WCVI AABM recreational fishery catches of Chinook by statistical area in 2004.

Statistical areas						
21/121	**23/123**	**24/124**	**25/125**	**26/126**	**27**	**Total**
11,638	19,103	9,550	78	1,669	0	42,038

The total WCVI AABM Treaty troll and recreational catch for 2004 was 216,166 Chinook (Table 1-4).

1.1.3.3 Estimated Incidental Mortality

The estimated total mortality of Chinook salmon in the WCVI AABM fisheries in 2004 was 227,208 nominal fish, including 216,166 fish in the landed catch and 11,042 fish from IM (Table 1-8). The estimated IM included 7,532 legal and 3,510 sublegal fish in nominal numbers of fish. The estimates for the commercial troll fisheries in 2004 are from direct fishery observations programs. Table 1-8 summarizes encounter and IM estimates for these fisheries in both years by size class during retention. No estimate of IM from First Nations' troll fishery are included in these figures. In 2004 there were no CNR fishing periods in the AABM fishery. Although the landed catch was higher in 2004 the resulting incidental mortalities were proportionally lower than were reported in 2003.

Table 1-8. Estimated encounters and incidental mortalities (nominal fish) in WCVI troll and sport AABM fisheries for 2003-2004. Mortality estimates of fish released in troll and sport fisheries include drop-off mortality.

		Troll				**Sport**			**Total Incidental Mortalities**	
		Retention Fishery		**CNR Fishery**		**Retention**	**Releases**			
Year		**Legal Drop-off**	**Sublegal**	**Legal**	**Sublegal**	**Legal Drop-off**	**Legal**	**Sublegal**	**Legal**	**Sublegal**
2003	Encounters	NA [1]	15,479	63	7	NA [1]	11,016	8,073		
	IM	2,581	3,793	13	0	1,656	2,115	1,550	6,352	5,343
2004	Encounters	NA [1]	10,430	0	0	NA [1]	16,449	5,680		
	IM	2,786	2,461	0	0	2,723	2,023	1,091	7,532	3,510[2]

[1] Legal drop-off mortality is computed from landed catch, incorporating both an encounter ratio and a mortality rate.
[2] Sublegal dropoffs are included with sublegal incidental release mortalities

1.2 REVIEW OF ISBM FISHERIES

1.2.1 Canadian ISBM Fisheries

ISBM fisheries include all fisheries that harvest or release Chinook salmon in British Columbia under PST jurisdiction but outside areas governed by AABM fisheries.

In 2004, 299,668 Chinook were harvested in Canadian ISBM fisheries in British Columbia. Total estimated IM in the Canadian ISBM Fisheries in 2004 was 34,430 legal and 12,234 sublegal sized Chinook. The distribution of the landed catches and estimated incidental mortalities in Canadian ISBM fisheries are presented in Table 1-9.

Table 1-9. Canadian Chinook catch and incidental mortalities (nominal fish) in all ISBM fisheries in 2004.

Region	Landed Catch	Total Incidental[1] Mortalities	
		Legals[2]	Sublegals[3]
Transboundary Rivers	8,079	NA[4]	NA
Northern BC	36,735	13,752	725
Central Coast	21,528	3,322	31
WCVI terminal	93,691	8,620	1,915
Johnstone Strait	13,728	1,422	3,283
Georgia Strait	15,476	1,149	963
Juan de Fuca Strait	40,877	4,061	3,304
Fraser River	68,079	2,104	2,013
Total	299,668	34,430	12,234

[1] Includes drop-off and release mortalities in both retention and Chinook non-retention fisheries.
[2] In Chinook non-retention fisheries, all releases were assumed to be legal size as the sizes were unknown.
[3] Minimum size limits were 45 cm in Georgia Strait and 62 cm elsewhere.
[4] No release estimates or drop off rates are known for these gillnet, and sport, fisheries.

1.2.1.1 Transboundary Rivers Harvest and Estimated Incidental Mortality

Drift gillnet fisheries occur upstream of the international boundary on the Alsek, Taku, and Stikine Rivers in the Canadian Transboundary region. These fisheries are for sockeye and Chinook. A small recreational fishery also occurs on the Canadian portion of Alsek River.

Chinook catches in the Canadian gillnet (commercial and test fishery catches) and aboriginal fisheries were 2,618 jacks and 3,986 age-.3 and older in the Stikine, 616 jacks and 3,877 age 3 and older fish in the Taku in 2004 (Table 1-10). Alsek River net and recreational Chinook catches in Canadian waters were 216 in 2004 (Table 1-11). The combined Canadian catch in this region was 3,234 jacks and 8,079 adults. Details of these fisheries are available from the annual reports of the PSC's Transboundary Technical Committee (TTC).

Table 1-10. Canadian gillnet catches of Chinook on the Stikine and Taku Rivers, 1999 – 2004.

Year	Stikine				Taku			
	Commercial + Test Fishery		First Nations		Commercial + Test Fishery		First Nations	
	Jacks	Large	Jacks	Large	Jacks	Large	Jacks	Large
1999	898	3,004	463	765	259	1,485	-	50
2000	260	2,684	386	1,109	174	2,888	-	50
2001	162	2,608	44	664	347	2,633	-	125
2002	535	2,092	366	927	646	2,872	-	37
2003	1,454	2,044	372	570	944	3,297	-	514
2004	2,121	2,561	497	1,425	616	3,484	-	393

Table 1-11. Catches of large Chinook on the Alsek River system, 1999 - 2004.

Year	First Nations	Recreational
1999	238	173
2000	65	77
2001	120	157
2002	120	197
2003	90	138
2004	139	77

1.2.1.2 Estimated Incidental Mortalities

Currently there are no CTC agreed upon rates or direct observation data available for estimating incidental drop-off rates and mortality rates in these net fisheries. Drop-off rates, drop-off mortality and that of released legal and sublegal fish encountered by the recreational fishery in the Transboundary rivers are unknown.

1.2.1.3 North Coast Harvest and Incidental Mortality

Mandatory release of Chinook from seine nets has been maintained throughout the seine fishing season in the North Coast since 1999. There were no gillnet catches of Chinook salmon in the Queen Charlotte Islands in 2004. The gillnet catches for 2004 Areas 3, 4, and 5, including the Tyee test fishery are provided in Table 1-12.

Marine recreational fisheries in Areas 3, 4 and 5 occurred in the North Coast under the restrictions of a 45 cm size limit, a daily bag limit of 2, a possession limit of 4 and a total annual allowable harvest of 30. Creel surveys were not conducted in areas 3, 4 and 5 in 2004.

First Nations fisheries on the north coast harvested an estimated 20,548 Chinook (5,044 tidal, 15,504 freshwater) in 2004. This represents an underestimate of total catch since estimates are not available for several First Nations. The total North Coast harvest was 36,735 large Chinook.

Table 1-12. Summary of ISBM landed catches by fishery for North Coast Areas 1 to 5 in 2004.

Year	Area 1-5 Gillnet	Tyee Test Fishery	Area 3-5 Tidal Sport	Freshwater Sport	Tidal FN	Freshwater FN	Total
2004	15,192	995	NA	NA	5,044	15,504[1]	36,735

[1] Skeena Chinook catches below Terrace only.

There are no size limits for catch in NBC Net fisheries. The portions of the landed catch classed as small or jack Chinook are not accounted for in Table 1-12. Landed catch of small Chinook are presented in Table 1-13.

Table 1-13. NBC Net fishery landed catches of small Chinook in 2004.

Year	Area 1-5 Gillnet Landings of small Chinook	Tyee Test Fishery Landings of small Chinook	Total
2004	47	92	139

1.2.1.4 North Coast Incidental Mortalities

Release estimates for NBC net and sport fisheries appear in Table 1-14. Release estimates for gillnets are from hails. Release estimates for seines are from hails corrected using a factor that relates hails to observed estimates (factor of 2.17). Tyee test fishery releases are from the biological database for that fishery. Sport fishery release estimates come from creel surveys.

Table 1-14. NBC release estimates for Net and Sport fisheries.

Year	Area 1-5 Seine releases	Area 1-5 Gillnet releases	Tyee Test Fishery large releases	Tyee Test Fishery jack releases	Area 3-5 Tidal Sport releases	Freshwater Sport releases
2004	16,329	1,439	31	42	NA	NA

Table 1-15 summarizes incidental mortality estimates for the NBC net and sport fisheries for 2004. IM cannot be calculated from the FN catches as encounter data are not available for most areas. Incidental mortality estimates were calculated using rates recommended by the CTC (1997). Gillnet IM was calculated using a 4.6% gillnet drop-out rate (average of recommended CTC rates, 1997) and 90% gillnet release mortality. Seine IM was calculated with zero drop-out and 72% seine release mortality where size was not specified. For seine catches where size specific data was available rates of 85.8%, 73.5% and 51% were used for small, medium and large Chinook respectively. Marine sport IM was calculated using rates of 6.9% drop-off and 12.3% release mortality. Sport fishery releases were not size specific but encounters of sublegal Chinook (<45 cm) in NBC Sport fisheries are rare and the CTC (1997) recommended mortality rate of 12.3% is the same for all Chinook greater than 33 cm. Freshwater sport IM was calculated using 6.9% drop-off and 5% release mortality (Cox-Rogers, pers. comm.) as there were no recommended CTC rates for freshwater releases.

Table 1-15. Summary of IM by fishery for NBC Net and Sport fisheries for 2004.

Year	Area 1-5 Seine IM	Area 1-5 Gillnet IM	Tyee Test Fishery IM	Area 3-5 Tidal Sport IM	Freshwater Sport IM	FN IM	Total
2004	11,757	1,926	69	NA	NA	NA	13,752

1.2.1.5 Central Coast Harvest & Incidental Mortality

While trolling was permitted during net fishing periods in Areas 7 and 8 in 2004, the level of participation was unknown and no retained Chinook catch was reported. In 2004, gillnet catch from the central coast (Areas 6-10) was 6,324 Chinook, including 5,147 fish caught in the Area 8 (Bella Coola) large mesh gillnet fishery.

For the 2004 Rivers Inlet (Area 9) tidal recreational fishery, the terminal area near the Wannock River remained closed to fishing. A logbook program was conducted, which indicated a lodge catch of 1,454 Chinook. A creel survey was used to estimate independent angler Chinook catch of 280. The total estimated catch was 1,734 Chinook in Rivers Inlet. The total tidal sport catch for Areas 7 to 10 (including Rivers Inlet) was 10,677 Chinook. This estimate does not include a significant sport fishery in Area 6, the approaches to Kitimat. No catch estimate is available for this fishery in 2004, though it targets Kitimat fish.

Freshwater recreational fisheries occur annually in several central coast rivers. However in 2004, catch estimates were available from the Bella Coola and Atnarko Rivers only. Estimated freshwater sport catch in these systems was 524 Chinook.

Native food fisheries along the central coast occur primarily in the Bella Coola River, the Kitimat River and approach areas (Area 6). In 2004, an estimated 4,003 Chinook were harvested (197 tidal, 3,806 non-tidal) in Areas 7 to 10. No estimate is available for First Nations' harvests of Chinook in Area 6 in 2004.

Total reported Central Coast landed catch was as follows: troll 0, tidal sport 10,677, freshwater sport 524, commercial net 6,324, and First Nations 4,003. Central Coast reported IM in 2004 totaled 3,319 legal sized Chinook, and 31 sublegals (Table 1-16).

Table 1-16. Central Coast Chinook incidental mortality in 2002- 2004.

Panel A- Hook and line fisheries

		Troll				Tidal Sport			Total Incidental Mortalities	
		Retention Fishery		CNR Fishery		Retention	Releases			
Year		Legal Drop-off	Sublegal	Legal[2]	Sublegal	Legal Drop-off	Legal[3]	Sublegal[3]	Legal	Sublegal
2002	Encounters	NA[1]	28	459	-	NA[4]	-	-		
2002	IM	8	1	102	-	506	-	-	616	1
2003	Encounters	NA[1]	40	1285	-	NA[4]	-	-		
2003	IM	1	1	261	-	579	-	-	841	1
2004	Encounters	0	0	2657	0	NA[4]	-	-		
2004	IM	0	0	492	0	737	-	-	1229	0

[1] Legal drop-off mortality is computed from landed catch, incorporating both an encounter ratio and a mortality rate.
[2] Legal and sublegals are not separable; it is assumed that all releases were legal-sized.
[3] No estimates of releases are currently available.
[4] Legal drop-off mortality is computed from landed catch, incorporating both an encounter ratio and a mortality rate.

Panel B – Net Fisheries.

		Gillnet[1]			Seine[2]			Total Incidental Mortalities	
		Retention Fishery	CNR Fishery		Retention Fishery	CNR Fishery			
Year		Sublegal	Legal	Sublegal	Sublegal	Legal	Sublegal	Legal	Sublegal
2002	Encounters	42	-	-	-	899	-		
2002	IM	38	-	-	-	647	-	647	38
2003	Encounters	22	-	-	-	2752	-		
2003	IM	20	-	-	-	1981	-	1981	20
2004	Encounters	34	0	0	-	2907	-		
2004	IM	31	0	0	-	2093	-	2093	31

[1] IM was calculated using a 90% release mortality which includes drop-off.
[2] All releases were assumed to be adults; a release mortality of 72% was used to calculate IM, which includes drop-off.

1.2.1.6 South Coast Fisheries

The South Coast area includes British Columbia waters south of Cape Caution. The South Coast area includes Area 11-29, 111 and 121-127.

1.2.1.7 Johnstone Strait Harvest and Incidental Mortality

A total of 13,728 legal Chinook were landed in all Johnstone Strait fisheries in 2004. A further 7,079 legal and 7,648 sublegal Chinook were released.

In 2004, Chinook could be retained during Area H troll fisheries for sockeye salmon that occurred in Johnstone Strait (Area 12). By-catch of Chinook in these troll fisheries was estimated to be 630 fish and 397 sublegals were released. During the Bute Inlet chum troll fishery, no Chinook were retained but one sublegal fish was released. During the Fraser Chum troll fishery retention of Chinook was permitted and 13 legal Chinook were landed and 73 sublegals were released. Total landed catch in area troll fishery was 643 legal and 471 sublegals.

To estimate recreational catch in 2004 a creel survey occurred in the high activity areas within Area 12 and northern Area 13 including Port Hardy and Port McNeil from July 1- Sept 1, 2004. The resulting sport catch estimates were 12,837 Chinook and a further 8,699 were released (4,225 legal and 4,474 sublegal) from 16,367 boat trips.

No directed Chinook net fisheries occurred in Johnstone Strait in 2004 (Areas 11-13). Fishing time, location, and gear are regulated in southern BC net fisheries to conserve immature and adult Chinook salmon. For seine gear, there was non-retention and non-possession of Chinook in all fisheries except for those targeting Fraser River sockeye, chum and Chinook. In these fisheries retention of legal size Chinook bycatch was permitted. The normal seine Ribbon Boundary restrictions remained in effect in Johnstone Strait. Fish revival tanks were required as a condition of license; these tanks were used to revive fish prior to release. Johnstone Strait seine fisheries targeting Fraser sockeye resulted in landed catch of 23 Chinook and the release of 2,590 sublegal Chinook in 2004. A Chum seine fishery in this area retained no Chinook, but released 101 sublegals. In total, 23 legal and 2,691 sublegal releases in Johnstone Strait seine fisheries.

The combined 2004 Area D gillnet Chinook catch in the Johnstone Strait. was 197 retained and 93 released. Size distributions from net releases are not available at this time. Only 28 Chinook were reported landed in First Nations fisheries along Johnstone Strait, though this is likely an underestimate of the First Nations catch.

Combined total mortalities for all fisheries in Johnstone Strait in nominal fish were 13,728 Chinook in landed catch plus 1,422 legal and 3,283 sublegal releases in 2004 fisheries. The incidental mortalities in the Johnstone Strait troll and sport fisheries were comprised of 1,416 legal and 1,268 sublegal sized Chinook (Table 1-17). Incidental mortalities in the net fisheries were 2,021 comprised of 6 legal and 2,015 sublegal Chinook. The legal size release mortalities reported include the mortality of 7 Chinook of unspecified size in troll and gillnet CNR fisheries.

Table 1-17. Incidental Chinook mortalities (nominal fish) in the Johnstone Strait troll, sport (Panel A) and net fisheries (Panel B).

Panel A- Hook and line fisheries

		Troll				Sport			Total Incidental Mortalities	
		Retention Fishery		CNR Fishery		Retention	Releases			
Year		Legal Drop-off	Sublegal	Legal[2]	Sublegal	Legal Drop-off	Legal	Sublegal	Legal	Sublegal
2004	Encounters	NA[1]	397	1		NA[1]	4,225	4,474		
2004	IM	10	94	1		886	520	859	1,416	1,268[3]

[1] Legal drop-off mortality is computed from landed catch, incorporating both an encounter ratio and a mortality rate.
[2] Legal and sublegals are not separable.
[3] Includes sublegal dropoffs and release mortality

Panel B – Net Fisheries.

		Gillnet			Seine			Total Incidental Mortalities	
		Retention Fishery	CNR Fishery		Retention Fishery	CNR Fishery			
Year		Sublegal	Legal[1]	Sublegal	Sublegal	Sublegal	Legal	Legal	Sublegal
2004	Encounters	86	7		NA	2,691	0	-	-
2004	IM	77	6		NA	1,938	0	6	2,015

[1] Combined sublegal and legal releases.
[2] No release estimates are available for First Nations component.

1.2.1.8 Georgia Strait Harvest and Estimated Incidental Mortality

The combined GS fisheries landed catch was 15,476 Chinook. A further 1,755 legal and 10,946 sublegal sized Chinook were released.

Troll fisheries in Georgia Strait had mandatory single barbless hook license conditions in 2004. There were no directed commercial Chinook troll fisheries outside of Area 29; however, Chinook were retained during directed sockeye, pink, and chum fisheries. The management strategy included a provision for Chinook non-retention if unacceptable bycatch levels of Chinook were observed. The minimum size limit for troll caught Chinook was 62 cm FL for Areas 13 to 18 and 29. In 2004, 17 Chinook were retained and two were released in a Fraser Chinook troll fishery in Area 29. Area H trollers released a further seven Chinook in the Qualicum chum fishery (Area 14). No Chinook encounters were reported in the Nanaimo chum troll fishery (Area 17). Total Area H troll 2004 Chinook catch in Georgia Strait/Fraser was 17 Chinook retained and nine sublegals released.

There were no directed Chinook commercial net fisheries in the GS in 2004. Three Chinook were released in the Qualicum chum gillnet fishery.

The GS recreational fishery includes Statistical Areas 13 (from Quadra and Sonora Islands south) through Area 18, 19A (Saanich Inlet), 28, and marine portions of 29 outside the Fraser River. Restrictions on this fishery are outlined in Table 1-18.

Table 1-18. Chinook recreational daily bag limits, annual catch limits, and size limits in Southern BC marine recreational fisheries.

Fishing Area	Daily Bag Limit	Annual Bag Limit	Size Limit (cm)
	1989 to Present	1989 to Present	1989 to Present
Strait of Georgia (S. A. 13-18, 19A, 28, 29)	2	15	62
Juan de Fuca (S. A. 19B, 20)	2	20	45
Johnstone Strait (S. A. 12)	2	15	62

Effort and Chinook catch was affected by area closures to protect Interior Fraser River coho. Recreational catch and effort were not separable at the time of reporting between creel Areas 19A and 19B. Consequently, all Area 19 catch is included in the Juan de Fuca recreational Chinook catch in 2004. No freshwater recreational landed catch or releases were reported in 2004 in GS.

The estimated recreational landed catch in the GS in 2004 was 13,475 Chinook harvested during 74,714 boat trips. This level of effort is less than half of the 160,000 boat trips reported in 2002. There were also 1,605 legal sized and 7,190 sublegal sized Chinook released in the 2004 GS sport fishery. About 30% of effort but less than 25% of the catch occurs in Areas 13, 14 and 15.

Table 1-19. Distribution of estimated marine recreational fishing effort, landed catch and releases of legal (>62 cm) and sublegal (<62 cm) of Chinook in the Strait of Georgia (GS) in 2004.[1]

GS Area	Fishing effort	Chinook kept	Chinook released	
	(boat trips)		Legal	Sublegal
Areas 13, 14, 15, 16	49,297	9,964	564	5,336
Areas 17, 18, 28	20,784	3,119	1,014	1,256
Area 29 (Fraser)	4,633	392	27	598
Total	74,714	13,475	1,605	7,190

[1] Recreational catch and effort were not separable at the time of reporting between areas 19A and 19B. The Area 19B catch is included in the Juan de Fuca recreational Chinook catch in 2004.

Freshwater recreational fisheries also occur on various streams on the east coast of Vancouver Island, though no catch estimates are yet available for 2004.

First Nations fisheries occur in GS marine areas and in rivers. Reported First Nations tidal catch was 1,066 Chinook, with no release information reported. This is likely an underestimate. First Nation catch in the Cowichan River was estimated to be 345 adult Chinook in the Cowichan Tribes spear fishery. First Nations harvested an estimated 320 fall Chinook from the Nanaimo River. No harvests of jacks were reported these two fisheries.

Incidental mortalities for troll and sport fisheries in GS included 1,146 legal and 886 sublegal Chinook in 2004 (Table 1-20). Incidental mortalities in GS net fisheries were three legal and 77 sublegal Chinook. No releases are reported for First Nations fisheries. The combined estimated IM was 1,149 legal and 963 sublegal sized Chinook.

Table 1-20. Incidental Chinook mortalities (nominal fish) in the Strait of Georgia troll, sport (Panel A) and net fisheries (Panel B).

Panel A- Hook and line fisheries

		Troll				Sport			Total Incidental Mortalities	
		Retention Fishery		CNR Fishery		Retention	Releases			
Year		Legal Drop-off	Sublegal	Legal[2]	Sublegal	Legal Drop-off	Legal	Sublegal	Legal	Sublegal
2004	Encounters	NA[1]	9	7	0	NA[1]	1,605	7,190	-	-
2004	IM	1	2	1	0	946	198	884	1,146	886

[1] Legal drop-off mortality is computed from landed catch, incorporating both an encounter ratio and a mortality rate.
[2] Legal and sublegal releases were not separable in CNR fisheries at the time of reporting.

Panel B – Net Fisheries.

		Gillnet			Seine			Mortalities	
		Retention Fishery	CNR Fishery		Retention Fishery	CNR Fishery			
Year		Sublegal	Legal[1]	Sublegal	Sublegal	Sublegal	Legal	Legal	Sublegal
2004	Encounters	86	3		0	0	0	-	-
2004	IM	77	3		0	0	0	3	77

[1] Combined sublegal and legal releases.
[2] No release estimates are available for First Nations component.

1.2.1.9 Fraser River Harvests and Incidental Mortalities

The combined Fraser River commercial, First Nations and recreational catches totaled 68,079 legal Chinook. Although no current release information is available for First Nations fisheries, commercial gillnets released 191 fish of unspecified size in Area 29. A further 159 Chinook were released in the Albion Chinook and chum and PSC Whannock and Cottonwood test fisheries. The in-river recreational sport fishery released 17,107 of unspecified size Chinook in 2004.

The largest fishery for Chinook by First Nations in southern BC occurs in the Fraser River mainstem and tributaries. This fishery is also the largest for Chinook on the Fraser River. First Nations catches were estimated with catch monitoring programs in the lower river below Sawmill Creek and surveys in the upper river above Sawmill Creek. The 2004 final estimate for the First Nations Chinook catch in the lower Fraser River was 33,711. The lower river catches were distributed 84% above Port Mann, and a full 65% of the catch occurred above the Harrison River. Middle and upper Fraser River First Nations catches (to October 5th) in the mainstem (3340) and tributaries (2359) totaled 5,699 in 2004. The combined Fraser River Chinook catch by First Nations in 2004 was 39,410. Most of the catch is by gillnet.

Commercial Chinook catch by net gears occurs mainly in the Fraser River sockeye gillnet fishery, chum gillnet fishery, and gillnet test fishery. In 2004 for there was a directed gillnet fishery for Fraser Late Chinook in Area 29. Chinook retained in the sockeye and chum gillnet directed fisheries in 2004 totaled 5,987 with 191 sublegal releases. The directed Chinook gillnet fishery harvested 1,228 Chinook. No releases were reported from this fishery. The combined catch in the Area 29 commercial gillnet fishery was a landed catch of 7,215 legal and 191 sublegals were released. Catch in the assessment fisheries included the Albion Chinook test fishery (2,705), Albion chum test fishery (232) PSC Whannock and Cottonwood sockeye test fisheries (1,504 kept, 159 releases) and Area E sockeye test fishery (128) totaled 4,569.

The total lower Fraser commercial gillnet Chinook landed catch in 2004, including test fisheries, was 12,318 fish with 350 sublegal Chinook released.

Most recreational fishery catches are monitored annually by creel surveys covering three general areas on the Fraser River. Regulations are enforced by Fishery Officers. Creel surveys are conducted on systems that are ranked a high priority for stock assessment (indicator stocks) and/or resource management. Surveys have occurred in the lower mainstem above Chilliwack and below Hope during the summer and between the Port Mann Bridge (Vancouver) and the Harrison River in fall. The Chilliwack River fishery is assessed in the fall, and in the Interior regions, dispersed Chinook and sockeye fisheries are largely monitored in summer. The lower Fraser mainstem (Port Mann Bridge-Harrison River) fall survey was not conducted in 2004. However, recent Chinook impacts from this fishery are low. In 2003, catch was estimated at 66 adults retained with a further 104 adults and 68 jacks released. No jacks were retained. The 2003 catches were the highest estimated in the 2001-2003 period. Estimates for the October/November 2004 Nicomen Slough/Norrish Creek Chinook catch was 0 retained and 7 adults released. In 2004, the Lower Fraser mainstem was not assessed in the fall, and the Stave, Chehalis and Harrison River recreational fisheries were also not assessed.

The 2004 lower Fraser River summer recreational fishery was monitored from May 1 to September 10. Total angler effort was estimated at 524,866 angler hours. The estimated adult catch was 10,275 Chinook retained and 587 released (Table 1-21). There were an additional 335 Chinook jacks retained and 24 released. Approximately 77% of effort and 67% of the catch occurred between July 1 to mid-August. Sixty percent of angler effort and 40 % of the total adult Chinook catch occurred during the sockeye retention period (July 23 – August 18, 2004).

Recreational fishing has increased in the Chilliwack River (lower Fraser River) since 1988 and targets the Fraser River fall-run Chinook stock (Harrison fall-run Chinook transplanted to Chilliwack River). Catch in this recreational fishery was monitored by creel surveys from September 15 to mid-November. Effort was 279, 959 angler hours in 2004. The final estimate of recreational adult Chinook catch in the Chilliwack River were 5,463 retained and 16,520 released. The estimates for jack Chinook were 1,032 retained and 2,752 released. The largest proportion of Chinook fishing effort (75%) and catch (84%) occurred in October.

Recreational fishing occurs in several interior tributaries to the Fraser River. In 2004 funding reductions resulted in monitoring four fewer Interior sport fisheries than in 2003. The sampling periods and the number of interior streams surveyed have varied in recent years. Surveys of the Clearwater/North Thompson, Middle Shuswap and South Thompson Rivers and Spence's Bridge were discontinued. The combined catch estimated in the three largest interior and tributary sport fisheries was 1,147 Chinook in 2004. Release estimates are not available for the interior Fraser River mainstem and tributaries. The observed and estimated catch in 2004 combined with the most recent data for the discontinued surveys was less (84%), but comparable to the 2002 total estimate of 3,739 for these fisheries.

Table 1-21. Summary of Fraser River estimates of recreational Chinook adult catches and releases in 2004.

Creel Survey Area	Chinook Retained	Chinook Released
Lower Fraser -summer	10,275	587
Lower Fraser- fall	Not Assessed	Not Assessed
Chilliwack- fall	5,463	16,520
Interior & tributaries	1,147	NA
Nicomen/Norrish	0	7
Harrison River-fall	Not Assessed	Not Assessed
Total	16,885	17,107

The total Fraser River Sport catch estimated from surveys in 2004 was 16,885 adults Chinook retained and 17,107 fish of unspecified size released.

Incidental mortalities for freshwater net and sport fisheries in the Fraser River included 2,104 legal and 2,013 sublegal Chinook in 2004. Release rates for freshwater sport are generally not reported by legal and sublegal categories except for jacks retained and those released in the Chilliwack River sport fishery.

Table 1-22. Incidental Chinook mortalities in the Fraser River gillnet and freshwater sport fisheries.

		Gillnet			Sport			Total Incidental Mortalities	
		Retention	CNR		Retention	Releases			
Year		Sublegal	Legal[1]	Sublegal	Sublegal	Legal	Sublegal	Legal	Sublegal
2004	Encounters	350	0		NA [1]	17,107[2]	2,776	-	
2004	IM	315	0		1165	2,104	533	2,104	2,013

[1] Legal drop-off mortality is computed from landed catch, incorporating both an encounter ratio and a mortality rate.
[2] Legal and sublegal releases were not separable in CNR fisheries, nor for freshwater sport fisheries with the exception of jacks on the Chilliwack River.

1.2.1.10 Juan de Fuca Strait Harvests and Incidental Mortalities

In the Strait of Juan de Fuca the total estimated landed catch of Chinook was 40,877 and 10,088 legal and 11,590 sublegal fish were released. The legal sized releases included 608 Chinook of unknown size released in the Seine CNR fishery.

Two salmon fisheries occur in the Strait of Juan de Fuca. The largest recreational Chinook fishery in southern BC occurs year-round the area west of Victoria (Areas 19-20). An Area B seine fishery that also impacts Chinook occurs in western Juan de Fuca Strait (Area 20). This is a fishery directed at Fraser River sockeye. Areas of high Chinook vulnerability were closed to the seine fishery; fishing inside of a minimum water depth stratum was also precluded to reduce the catch of immature Chinook and coho. A maximum number of immature Chinook caught per set was used to limit total Chinook mortality. If encounters exceeded this value, then the fishery was moved or closed. During the sockeye seine fishery in Juan de Fuca Strait (Area 20) 608 Chinook were released. No Chinook were retained in this fishery in 2004.

Recreational fishing regulations for 2004 are provided in Table 1-7. An annual creel survey of the Juan de Fuca recreational fishery included Areas 19B-E (Sidney to Race Rocks), 19-F/20-5 (Race Rocks to Sheringham) and 20-1 at Port Renfrew. As the catch was not separable in mid-Area 19, all of Area 19 and 20 catches are reported in Juan de Fuca Strait. The estimated catch was 40,877 Chinook landed from 62,914 boat trips during which 10,088 legal and 10,982

sublegal sized fish were released in 2004. There was considerably less effort in this recreational fishery in recent years. In 2004 recreational effort was about one half of the effort level reported in 2002 survey. Most of the catch occurred between June and September.

No First Nations catches are presently reported from this area. However, most First Nations fisheries in these areas use sport gear, so it is likely that the bulk of the catch is included in the creel survey effort and catch estimates.

The combined incidental mortalities in the Juan de Fuca fisheries were 4,061 legal and 3,304 sublegal Chinook in 2004 (Table 1-23). Total mortalities were 40,877 Chinook in the landed catch, 4,061 legal and 3,304 sublegal Chinook from releases in seine CNR and the sport fishery.

Table 1-23 Incidental Chinook mortalities in the Strait of Juan de Fuca seine and sport fisheries.

		Seine			Sport			Total Incidental Mortalities	
		Retention	CNR		Retention	Releases			
Year		Sublegal	Legal[1]	Sublegal	Sublegal	Legal	Sublegal	Legal	Sublegal
2004	Encounters	-	608	-	NA [1]	10,088	10,982	-	-
2004	IM	-	438	-	2821	1,241	1,351	4,061	3,304

[1] Legal drop-off mortality is computed from landed catch, incorporating both an encounter ratio and a mortality rate.

[2] Legal and sublegal releases were not separable in CNR fisheries, or for freshwater sport fisheries

1.2.1.11 WCVI Terminal Harvest and Incidental Mortalities

The combined landed ISBM fishery landed catch on the WCVI was 95,166 Chinook, and 23,601 legal and 7,341 sublegal sized Chinook were released.

Terminal fisheries in the WCVI ISBM fishery that catch Chinook include recreational, First Nations fisheries and commercial net fisheries. Commercial gillnet and seine fisheries for sockeye and Chinook occur primarily in Area 23. A First Nations Economic Opportunity fishery for sockeye and Chinook occurs in the Somass River in Area 23.. Seine and gillnet fisheries for chum salmon occur at Nitinat (Area 21) and Nootka Sound (Area 25) where there is also occasionally a Chinook net fishery. Recreational fisheries and First Nations also harvest Chinook in all WCVI terminal areas (21-27).

Terminal WCVI sport catch occurs in inshore areas of Areas 23A (Alberni Inlet), 23B (Barkley Sound), 24 (Clayoquot Sound), 25 (Nootka Sound), 26 (Kyuquot Sound) and 27 (Quatsino Sound). It includes catch inside Areas 21/ 23/24 in August and September and in Areas 25, 26, and 27 in July-September. The 2004 ISBM sport landed catch from marine terminal areas of WCVI was 62,607 Chinook salmon (Table 1-24). Sixty-one percent of the catch occurred in Barkley Sound/Alberni Inlet (Area 23) and a further 31% occurred in Nootka Sound (Area 25) where there are major hatchery facilities. Chinook released in this fishery included 22,361 legal fish and 7,341 sublegals. Eighty-five percent of the sub-legal releases occurred in the Area 23 fisheries. The freshwater recreational catch in the Somass River (Area 23) was 26 Chinook retained and a further 886 were released.

Table 1-24. Terminal-area WCVI marine recreational fishery landed catches of Chinook by statistical area in 2004.

Year	Area							Total
	21	23A	23B	24	25	26	27	
2004	0[2]	8,532	29,490	2,269	19,472	2,844	NA[1]	62,607

[1] There was no creel survey program in Area 27 in 2004.

[2] Area 21 sport catch takes place outside the "surf line" and is included in the AABM catch.

In 2004 there were directed Area D gillnet fisheries for Chinook in Tlupana Inlet and Alberni Inlet. The gillnet catch in these fisheries was 5450 Chinook in Tlupana Inlet and 6,899 in Alberni Inlet. Combined with a catch of 181 during the Barkley Sound sockeye fishery, and 1 retention in the Nitinat gillnet chum fishery, the Area D gillnet total WCVI landed catch was 12,531 Chinook. Including releases during chum, sockeye and Chinook gillnet fisheries the total Area D gillnet releases were 157 Chinook.

Two net fisheries occur for chum salmon targeting enhanced production in the near-shore Nitinat Lake area outside the entrance to Juan de Fuca Strait (Area 21). The Area B seine chum fishery (Area 21) reported 1 Chinook retained and 141 released from 588 vessel days of effort in 2004. This was the only salmon seine fishery on the WCVI in 2004. The Area E gillnet fleet Chinook catch in this fishery included 1 Chinook retained and 28 released in 2004. The 2004 combined net catch was 2 Chinook retained and 169 released in Area 21 fisheries. An Area B seine chum test fishery contract payment fishery in Area 25 reported no Chinook catch.

The total WCVI commercial gillnet and seine catches of Chinook in all WCVI terminal areas (21-27) in 2004 was 12,532 landed and 326 released.

First Nations on the WCVI harvested an estimated 20,000 Chinook in the ISBM fishery in 2004 in Area 23. Approximately 18,000 Chinook were allocated to the Somass River (Area 23) Economic Opportunity and food, social and ceremonial fisheries by the Tseshaht and Hupacasath First Nations. The preliminary catch in the Economic Opportunity portion of the Somass River fishery was 15,789 Chinook. The present best estimate of total catch in the terminal area (Area 23) after August 1st of 20,000 is provided to include an estimate of Chinook catches by five other Barkley Sound First Nations plus Tseshaht and Hupacasath First Nations food, social and ceremonial Chinook catches. No estimates of the ISBM Chinook catches by other WCVI First Nations fisheries in Areas 23-27 are available.

A freshwater sport fishery on the Somass River reported 26 Chinook kept and 886 released of unspecified size in 2004. A freshwater sport fishery occurred in the Conuma River (Area 25) but no estimates of effort and catch statistics were collected for this very small fishery.

The number of incidental mortalities in WCVI terminal ISBM hook and line fisheries were 8,620 legal and 1,915 sublegal Chinook (Table 1-25). The incidental mortalities that occurred in the WCVI terminal area net fisheries in 2004 were 127 legal and 192 sublegal sized Chinook (Table 1-25). Although troll fisheries occurred in Alberni Inlet and Tlupana Inlet, all troll catch is reported in the WCVI AABM fishery. An additional 506 drop-off mortalities occurred from the encounters with 7,391 sublegal sport caught releases.

Table 1-25. Incidental Chinook mortalities in the WCVI terminal areas sport and net ISBM fisheries.

Panel A- Hook and line fisheries

		Troll[1]				Sport			Total Incidental Mortalities	
		Retention Fishery		CNR Fishery		Retention	Releases			
Year		Legal Drop-off	Sublegal	Legal[2]	Sublegal	Legal Drop-off	Legal	Sublegal	Legal	Sublegal
2004	Encounters	-	-	-	-		23,247[3]	7,391	-	-
2004	IM	-	-	-	-	5,761	2,859	1,915[4]	8,620	1,915

[1] All troll fisheries on the WCVI are considered AABM fisheries by definition.
[2] Legal and sublegal releases were not separable in CNR fisheries, or freshwater sport at the time of reporting
[3] Includes freshwater sport releases of unspecified size.
[4] includes 1409 sub-legal direct release mortalities and 506 drop-off mortalities from the encounters with 7,391 sublegal releases.

Panel B – Net Fisheries.

		Gillnet			Seine			Total Incidental Mortalities	
		Retention Fishery	CNR Fishery		Retention Fishery	CNR Fishery			
Year		Sublegal	Legal[1]	Sublegal	Sublegal	Legal	Sublegal	Legal	Sublegal
2004	Encounters	213	-	-	0	141	0	-	-
2004	IM	192	-	-	0	127	0	127	192

[1] Combined sublegal- and legal-sized releases.
[2] No release estimates are available for First Nations component.

1.2.2 Southern U.S. Fisheries

Southern U.S. fisheries of interest to the PSC, generally those north of Cape Falcon, Oregon, are managed in accordance with legal obligations stemming from treaties between Indian tribes and the United States. In 1974, *U.S. v Washington* set forth sharing obligations to meet Treaty fishing rights in western Washington. Treaty rights of Columbia River tribes were defined by *U.S. v Oregon*, and the Columbia River Fisheries Management Plan was implemented in 1977. In reporting these fisheries, fishermen are termed "treaty" if they are fishing under the Native Treaty fishing rights and "non treaty" otherwise. Catches are tabulated in Table 1-26 and summaries are presented below. As specified in the 1999 agreement, all southern U.S, fisheries are ISBM fisheries.

Table 1-26. Catches in U.S. ISBM fisheries. Ocean troll and sport include catches north of Cape Falcon. Inside catches include catches from the Columbia River, Washington coastal rivers, and inside Puget Sound.

Year	Ocean Troll	Ocean Sport	Inside Net	Inside Sport
1999	45.0	10.8	196.3	77.4
2000	20.6	9.2	182.9	78.2
2001	54.6	25.6	345.8	169.8
2002	120.7	60.6	376.5	149.4
2003	104.4	36.5	307.9	146.5
2004	96.2	26.6	344.8	NA

1.2.2.1 Strait of Juan de Fuca and the San Juan Islands

Chinook salmon were harvested in the Strait of Juan de Fuca and the San Juan Islands by recreational anglers and in commercial fisheries. Management measures were taken to protect depressed spring Chinook stocks. Treaty commercial fisheries were closed during the spring

Chinook management period (April 16-June 15). The recreational fisheries were restricted by a 30-inch maximum size limit for Chinook during the spring Chinook management period and through the use of barbless hooks.

In the Strait of Juan de Fuca, recreational fishing was closed to Chinook salmon retention in catch reporting Areas 5 & 6 except from February 16 to April 10 and during the month of November. From July 1 to August 4, mark selective regulations for retention of marked-fish only were in effect except for the area east of Ediz Hook in area 6. From July 1 through September 30, the total harvest of Chinook salmon in Area 5 and 6 was estimated at 3,500 fish.
The southern and southeastern (Rosario Strait) portions of the San Juan Islands were again closed to recreational fishing in 2004 to protect migrating, mature Puget Sound Chinook salmon.

The remaining area was opened for retention of Chinook (one fish bag limit) from July 1 to September 30. Chinook retention was also allowed in the entire area from February 16 - March 31 and for the month of November with a one fish bag limit. No estimate of recreational catch is available at this time.

The preliminary estimate of the 2004 Chinook catch in Strait of Juan de Fuca tribal net fisheries directed at sockeye salmon is 620. An additional 183 Chinook were taken during the coho management period.

The preliminary estimate of the 2004 Chinook catch in the San Juan Islands tribal net fishery directed at sockeye salmon is 4,282. Non-treaty landings totaled about 874 Chinook.

The preliminary estimate of the 2004 Strait of Juan de Fuca treaty troll fishery is 19,530 Chinook through December. The catch estimate does not include catches from Area 4B during the May-September PFMC management period. These are included in the North of Cape Falcon troll summary.

Historic catch estimates are provided in Appendices A.8 and A.9 for the Strait of Juan de Fuca and San Juan areas respectively.

1.2.2.2 Puget Sound

In the Puget Sound area, exclusive of the Strait of Juan de Fuca and the San Juan Islands, Chinook salmon are harvested in recreational fisheries, and in both treaty and non-treaty commercial net fisheries. The fisheries are managed to protect depressed spring and fall Chinook and coho stocks. To protect depressed summer/fall stocks, there were no directed Chinook commercial net fisheries in the Skagit or Stillaguamish/Snohomish terminal areas with the exception of the tribal fishery in Tulalip Bay, which targeted hatchery-origin Chinook. Additionally, some tribal ceremonial and subsistence (C&S) harvest occurred in these areas as well as an evaluation fishery to maintain annual fishery data.

In 1997, the WDFW Commission adopted a rule to require the completion of logbooks by all non-Treaty purse seine vessel operators during the 7/7A sockeye/pink fishery, and the release of all Chinook. In 1999, the logbook program was expanded to include all commercial gear in the 7/7A sockeye/pink fishery, and the use of brailers or hand dip nets became mandatory for removal of salmon from seine nets. For the rest of Puget Sound, additional restrictions were also put in place to protect depressed stocks. However, harvest opportunities may occur in local terminal areas where hatchery surpluses exist.

Preliminary estimates of the 2004 tribal and non-tribal net fishery harvests in Puget Sound marine areas are 56,151 Chinook, mostly taken in terminal areas where harvestable abundance was identified. Additional tribal net harvest occurred in freshwater fisheries with a preliminary estimate of 22,075. Estimates of the sport catch in 2004 are not yet available. Historic catch tables for Puget Sound exclusive of the San Juans are provided in Appendix A.10.

1.2.2.3 Washington Coast

The annual harvests in Washington Coastal fisheries for 2004 are reported in Table 1-26. Chinook salmon are harvested in both treaty and non-treaty commercial net fisheries, Indian ceremonial and subsistence (C&S) fisheries, and in recreational fisheries. Washington coastal catch estimates include harvests in Grays Harbor, Willapa Bay, and the Quinault, Queets, Hoh and Quillayute Rivers. Harvests impact the spring/summer and fall stocks in Grays Harbor and the Quinault, Queets, Hoh and Quillayute Rivers and the fall stock in Willapa Bay. Tribal commercial and ceremonial and subsistence fisheries harvested a total of 15,235 Chinook in north coastal rivers (Quinault, Queets, Hoh, Quillayute) in 2004.

Harvest in Grays Harbor includes catch from both the Humptulips and Chehalis rivers. The 2004 tribal net fisheries harvested an estimated 3,552 Chinook. The 2004 non-Indian commercial net harvest in Grays Harbor was only about 105 Chinook. Approximately 4,345 Chinook were harvested by non-Indian commercial net fisheries in Willapa Bay in 2004.

From Grays Harbor north, recreational fisheries were implemented based upon pre-season tribal-state agreements and were subject to in-season adjustment. Estimates of sport fishery catches for Washington coastal terminal fishing areas in 2004 are not available. Historic catch estimates for Washington Coastal inside fisheries are shown in Appendix Table A.11.

In recent years (2002-2004) Chinook abundance in Willapa Bay and Grays Harbor has constrained other salmon fisheries, fisheries in general have operated with fixed schedules as agreed to during pre-season planning and run sizes have not been updated in-season. Management in Willapa Bay has targeted a 30% harvest rate (recreational and commercial net combined) on Chinook, focusing fisheries and gear to maximize harvest of abundant hatchery coho. In Grays Harbor, Chinook impacts in the non-treaty commercial net fishery have been limited through the use of small mesh nets (6" stretched mesh), short soak times, recovery boxes and required release of Chinook in certain times and areas. This has effectively limiting the harvest of Chinook to less 100 per year in the non-treaty commercial fishery. Non-treaty recreational fisheries have also been operated with catch and release requirements in most times and areas.

1.2.2.4 Ocean Fisheries North of Cape Falcon

The U.S. ocean fisheries north of Cape Falcon, Oregon, are managed through the domestic regulatory process of the Pacific Fishery Management Council (PFMC). Management objectives for Chinook fisheries include satisfying standards for ESA-listed stocks, meeting requirements of the Pacific Salmon Treaty, providing for viable ocean and terminal area fisheries, protecting depressed wild stocks and meeting hatchery Chinook brood stock needs. Lower Columbia River and Bonneville Pool Hatchery fall Chinook have historically been the major contributors to ocean catches North of Cape Falcon. In 2004, Chinook management objectives included (in order from most to least constraining):

1) At least a 30% reduction in the total ocean age-3 and age-4 AEQ exploitation rate from the 1988-1993 average on threatened Snake River Fall Chinook (NMFS ESA consultation standard).
2) A 49% total (ocean and inriver) exploitation rate on the naturally spawning tule portion of the threatened lower Columbia River Chinook ESU (NMFS ESA consultation standard)
3) For select stocks of concern, keep the ISBM index at or below 60% of the 1979-1982 average.

In addition, fisheries were constrained to limit impacts, including incidental impacts during Chinook fisheries, for several coho stocks, primarily the Oregon Coastal Natural stock and Interior Fraser Coho. Recreational and commercial catches for the region are shown in Table 1-26.

Preliminary estimates of Chinook catch north of Cape Falcon in 2004 are 89,561 in treaty and non-treaty troll fisheries, and a total recreational catch of 26,620. The troll catch includes catches in Area 4B during the PFMC management period (May 1 – September 30). Historic catch estimates are provided in Appendix A.13.

1.2.2.5 Ocean Fisheries, Cape Falcon to Humbug Mountain

Most harvest in ocean fisheries off Oregon's coast is comprised of a mixture of southern Chinook stocks not included in the PSC agreement. These stocks do not migrate north into the PSC jurisdiction to any great extent. Some stocks originating in Oregon coastal streams do migrate into PSC fisheries, including the Northern Oregon Coast (NOC) and Mid-Oregon Coast (MOC) stock aggregates. The NOC stocks are harvested only incidentally in Oregon ocean fisheries, while the catch distribution of MOC stocks in Oregon ocean fisheries is believed to be much greater. Catch statistics are readily available for only one population of the MOC group, for a terminal area troll fishery at the mouth of the mouth of the Elk River. Late season (November-December) troll catch in the Elk River terminal troll fishery in 2004 was 2,258 chinook.

Recreational catch of these two stock groups occurs primarily in estuary and freshwater areas as mature fish return to spawn and is reported through a "punch card" accounting system. These data are only available more than two years after the current season. Therefore, we can now report only the riverine and estuarine sport catch though 2002 for the NOC and MOC groups. The 2002 punch card estimate of estuary and freshwater catch for the NOC and MOC groups is 64,267 Chinook. Historic catch estimates for the Elk River troll fishery and the estuary and freshwater sport fisheries targeting on MOC and NOC stocks are shown in Appendix A-15.

1.2.2.6 Columbia River

Chinook from the Columbia River are divided into eight stock groups for management purposes. These groups are delineated by run timing and area of origin: (1) spring run originating below Bonneville Dam; (2) spring run originating above Bonneville Dam; (3) summer run originating above Bonneville Dam; (4) fall run returning to Spring Creek Hatchery; (5) fall run originating in hatchery complexes below Bonneville Dam; (6) wild fall run originating below Bonneville Dam; (7) upriver bright fall run; and (8) mid-Columbia bright fall hatchery fish.

Columbia River fisheries are constrained by escapement objectives for these stock groups and restrictions resulting from Evolutionarily Significant Units (ESUs) listed under the ESA. There are five Chinook ESUs in the Columbia River: (1) Snake River falls – threatened April 1992; (2) Snake River spring/summer – *threatened* April 1992; (3) Upper Columbia spring – endangered March 1999; (4) Lower Columbia River – *threatened* March 1999; (5) Upper Willamette spring

– *threatened* March 1999. The Columbia River also has several ESUs of other species that could affect the capacity to harvest Chinook: (1) chum – *threatened* March 1999; (2) Snake River sockeye – *endangered* November 1991; (3) upper Columbia River steelhead – *endangered* August 1997; (4) Snake River steelhead – *threatened* August 1997; (5) Lower Columbia River steelhead – threatened March 1998; (6) Upper Willamette steelhead – *threatened* March 1999; (7) mid Columbia steelhead – *threatened* March 1999.

Annual harvest management plans are based on the Columbia River Fishery Management Plan and agreements reached between the parties to *U.S. v Oregon*.

In 2004, the total annual harvest for all fisheries (spring, summer and fall) in the Columbia River basin was 330,788 Chinook, which included non-Indian and treaty-Indian commercial net harvest of 199,937 recreational harvest of 102,961 and the Indian ceremonial and subsistence harvest of 9,921 Chinook and 17,969 non-ticket sales. Historic catch estimates are shown in Appendix A. 12.

1.2.2.7 Estimates of incidental mortality for Southern U.S. Fisheries

Table 1-27 shows estimates of incidental mortalities for Washington Coastal and Puget Sound fisheries. Sources of estimates are shown in the table footnotes. No estimates of incidental mortalities were provided for 2004 for ocean fishery south of Cape Falcon or Columbia River fisheries.

Table 1-27. Estimated incidental mortality in Southern US troll, net, and sport fisheries for 2004.

Fishery	**Troll**	**Net**[1]	**Sport**
Strait of Juan de Fuca	1,760[2]	25	NA
San Juan Islands	0	155	NA
Puget Sound	0	2,273	NA
Washington Coast	0	695	NA
North of Cape Falcon	19,400[3]	0	5,300[3]

[1] Assume 3% net dropout rate.
[2] Estimates from FRAM.
[3] Estimates from dock observations.

2 ESCAPEMENTS THROUGH 2004

2.1 INTRODUCTION

The June 30, 1999, agreement of the Pacific Salmon Treaty (Pacific Salmon Treaty Fishing Annexes & Related Agreements, June 30, 1999) established a Chinook management program that:

> *"introduces harvest regimes that are based on estimates of chinook abundance, that are responsive to changes in chinook production, that take into account all fishery induced mortalities and that are designed to meet MSY or other agreed biologically-based escapement objectives"*

This chapter compares annual escapement estimates with maximum sustained yield (MSY) or other accepted biologically-based escapement goals established for Chinook stocks. The CTC has reviewed and accepted escapement goals for 23 stocks included in this report. For these stocks, the CTC can evaluate stock status in relation to the accepted goals. For stocks without accepted goals, the CTC must rely on the time series of escapement data and agency comments in the individual stock narratives to provide a perspective on stock status and escapement trends. The narratives provide information on escapement assessment methodology, on factors affecting annual observations such as poor visibility or floods, and on the basis for setting escapement goals. The information is included to assist the reader in understanding the relative quality of data and to present management agencies' own assessments of stock status.

2.2 FRAMEWORK

2.2.1 Escapement and Terminal Run Data

This year's escapement review includes 50 naturally spawning escapement indicator stocks or stock aggregates (Table 2-1). These stocks may be distinct populations, or they may be groups of several populations aggregated by region and life history type for management purposes.

2.2.1.1 Sources of Escapement Data

The escapement and terminal run data used in this report were provided by management agencies in each jurisdiction. Data for each stock are presented in Appendices B.1 – B.6.

2.2.1.2 Agency Procedures for Estimating Escapement

Methods of estimating escapement varied depending on river characteristics and agency resources. Some escapement estimates were measures of actual spawner abundance, others are estimates (or indices) of abundance measured at a point of migration beyond the effect of major fisheries. Estimates were made using weirs and counting fences; aerial, foot, or boat surveys; expansions from counts of redds; dam passage counts; electronic counting devices; or mark-recapture studies. Where appropriate, escapements of hatchery fish have been removed from the escapement estimates so that they represent only the natural stock. Estimation methods are discussed in the specific stock descriptions (Sections 2.3.1 to 2.3.4).

Many of the Canadian escapement indicator stocks are influenced, to some degree, by enhanced production. In most cases, this enhancement is an integral part of the management program. In streams with more limited enhancement, fish collected as broodstock are excluded from the count of natural spawners, although fish produced by enhancement projects that return as adults

and spawn naturally are included in these numbers (e.g., Yakoun, Lower Strait of Georgia, and Harrison).

For the Columbia upriver stocks, mainstem dam counts were reduced by the number of hatchery fish in the count in order to estimate the return of naturally spawning fish; estimated upriver harvests were also subtracted.

For Oregon coastal stocks there are no hatchery releases in the Nehalem, Siletz, Siuslaw or South Umpqua Rivers. For the MOC stock aggregate, several stocks have extensive enhancement programs. An attempt, however, is made to minimize inclusion of hatchery strays by conducting spawning surveys greater than 10 miles away from hatchery smolt release sites.

2.2.2 MSY or Biologically-Based Escapement Goals

2.2.2.1 Origin of Goals

Escapement goals accepted by the CTC were based on analyses that followed the guidelines developed in the CTC escapement goal report (CTC 1999). In the stock-specific narratives presented with the escapement graphs, the agencies may refer to agency goals, but only CTC-accepted escapement goals and ranges (in gray shading) are shown on the escapement graphs and used for evaluation. Table 2-1 presents the status of escapement goal reviews by the CTC.

Table 2-1. PSC Chinook escapement indicator stocks, where shading indicates that there is not a CTC accepted escapement goal for PSC assessment of stock status.

Presence in Treaty Attachments					Stock Group In Att. I-V	Escapement Indicator	Region	Run
SEAK	NBC/ QCI	WCVI	BC ISBM	SUS ISBM				
✓						Situk	Yakutat	Spring
✓						Alsek	Yakutat	Spring
✓						Taku	TBR	Spring
✓						Stikine	TBR	Spring
✓						Chilkat	N. Inside	Spring
✓						King Salmon	N. Inside	Spring
✓						Andrew Creek	C. Inside	Spring
✓						Unuk	S. Inside	Spring
✓						Chickamin	S. Inside	Spring
✓						Blossom	S. Inside	Spring
✓						Keta	S. Inside	Spring
✓	✓		✓		Northern/Central B.C.	Yakoun	NBC-Area 1	Summer
✓	✓		✓		Northern/Central B.C	Nass	NBC-Area 3	Spring/Summer
✓	✓		✓		Northern/Central B.C	Skeena	NBC-Area 4	Spring/Summer
			✓		Northern/Central B.C.	Dean	CBC-Area 8	Spring
						Rivers Inlet	CBC-Area 9	Spring/Summer
✓	✓		✓		WCVI Falls	Artlish, Burman, Kaouk, Tahsis, Tashish, Marble	WCVI	Fall
✓	✓		✓		Upper Strait of Georgia	Klinaklini , Kakwiekan, Wakeman, Kingcome, Nimpkish	UGS	Sum/Fall
			✓		Lower Strait of Georgia	Cowichan/Nanaimo	LGS	Fall
✓	✓		✓		Fraser Early[1] (Spr/Sum)	Fraser Spring 1.3	Fraser River	Spring
✓	✓		✓		Fraser Early[1] (Spr/Sum)	Fraser Spring 1.2	Fraser River	Spring
✓	✓		✓		Fraser Early[1] (Spr/Sum)	Fraser Summer 1.3	Fraser River	Summer
✓	✓		✓		Fraser Early[1] (Spr/Sum)	Fraser Summer 0.3	Fraser River	Summer
		✓	✓	✓	Fraser Late	Harrison	Fraser River	Fall
			✓	✓	N. P.S. Natural Springs	Nooksack	PS	Spring
			✓	✓	N. P.S. Natural Springs	Skagit Spring	PS	Spring
		✓	✓	✓	P.S. Natural Summer/Falls	Skagit Summer/Fall	PS	Summer/Fall
		✓	✓	✓	P.S. Natural Summer/Falls	Stillaguamish	PS	Summer/Fall
		✓	✓	✓	P.S. Natural Summer/Falls	Snohomish	PS	Summer/Fall
		✓	✓	✓	P.S. Natural Summer/Falls	Lake Washington	PS	Fall
		✓	✓	✓	P.S. Natural Summer/Falls	Green	PS	Fall

-continued-

Table 2-1. Continued.

Presence in Treaty Attachments					Stock Group In Att. I-V	Escapement Indicator	Region	Run
SEAK	NBC/ QCI	WCVI	BC ISBM	SUS ISBM				
✓	✓			✓	WA Coastal Fall Natural	Hoko	WAC	Fall
						Quillayute Summer	WAC	Summer
✓	✓			✓	WA Coastal Fall Natural	Quillayute Fall	WAC	Fall
						Hoh Spring/Summer	WAC	Summer
✓	✓			✓	WA Coastal Fall Natural	Hoh Fall	WAC	Fall
						Queets Spring/Summer	WAC	Summer
✓	✓			✓	WA Coastal Fall Natural	Queets Fall	WAC	Fall
						Grays Harbor Spring	WAC	Spring
✓	✓			✓	WA Coastal Fall Natural	Grays Harbor Fall	WAC	Fall
						Col. Upriver Spring	CR	Spring
✓	✓	✓		✓	Col. Upriver Summers	Upper-Columbia Summers	CR	Summer
✓	✓	✓		✓	Columbia River Falls	Col. Upriver Bright	CR	Fall
✓	✓	✓		✓	Columbia River Falls	Lewis	CR	Fall
✓	✓	✓		✓	Columbia River Falls	Deschutes	CR	Fall
✓	✓			✓	Far N. Migrating OR Coast.	Nehalem	NOC	Fall
✓	✓			✓	Far N. Migrating OR Coast.	Siletz	NOC	Fall
✓	✓			✓	Far N. Migrating OR Coast.	Siuslaw	NOC	Fall
						Umpqua	MOC	Fall
						Mid South OR	MOC	Fall

[1] The escapement indicator stocks listed in the Annex tables for this group are Upper Fraser, Middle Fraser, and Thompson. The Fraser spring/summer group is split into these 4 escapement indicators to represent the stock group by life history type rather than geographically.

2.3 ESCAPEMENT ASSESSMENTS

The Agreement directs the CTC to *"report annually on the escapement of naturally spawning chinook stocks in relation to the agreed escapement objectives referred to below, evaluate trends in the status of stocks, and report on progress in rebuilding of naturally spawning chinook stocks"* (Annex IV, Chapter 3, paragraph 1.b.iii). In this report, escapement assessments include stock specific graphs of escapements and agency comments, presented to provide a perspective on stock status and escapement trends through 2004, similar to reporting through 2003 in CTC (2004b).

The escapement goals and 2004 escapements for the 23 stocks with CTC accepted escapement goals are listed in Table 2-2. For 12 of these stocks, the agency escapement goal is defined as a range; for the remaining 11 stocks, the escapement goal is defined as a point estimate. In 2004, escapements were within the goal range for seven stocks, above the range or S_{MSY} point estimate for 15 stocks, and below the goal for one stock.

Table 2-2. Escapement goals and 2004 escapements for PSC Chinook escapement indicator stocks with biologically-based goals accepted by the CTC.

Stock	Region	Stock Group	Escapement Goal	2004 Escapement
Situk	SEAK	Yakutat	500-1,000	798
Alsek (Klukshu index)	SEAK/TBR	Yakutat	1,100-2,300	2,525
Chilkat	SEAK/TBR	Northern Inside	1,750-3,500	3,422
Taku	SEAK/TBR	TBR	30,000-55,000	68,199
Stikine	SEAK/TBR	TBR	14,000-28,000	48,900
King Salmon	SEAK	Northern Inside	120-240	134
Andrew Creek	SEAK	Central Inside	650-1,500	3,068
Unuk (survey index)	SEAK	Southern Inside	650-1,400	1,008
Chickamin (survey index)	SEAK	Southern Inside	450-900	798
Blossom (survey index)	SEAK	Southern Inside	250-500	333
Keta (survey index)	SEAK	Southern Inside	250-500	376
Harrison	BC	Fraser River	75,100-98,500	128,944
Mid Col. Upr. Summer	CR	Columbia River	17,857	53,133
Col. Upriver Brights	CR	Columbia River	40,000	150,440
Lewis	CR	Columbia River	5,700	15,342
Quillayute Fall	WAC	Wa Coast	3,000	3,583
Queets Spring/Summer	WAC	Wa Coast	700	604
Queets Fall	WAC	Wa Coast	2,500	3,523
Hoh Spring/Summer	WAC	Wa Coast	900	1,829
Hoh Fall	WAC	Wa Coast	1,200	1,845
Nehalem	ORC	NOC	6,989	9,975
Siletz	ORC	NOC	2,944	3,902
Siuslaw	ORC	NOC	12,925	34,427

The CTC has now assessed the status of stocks with CTC-accepted goals for return years 1999-2004. Over this time period, the number of stocks with CTC-accepted goals has increased from 16 to 23 (Figure 2.1). The percentage of stocks below escapement goals or goal ranges has varied over these years from 4% to 19%, and was 4% for 2004 escapements.

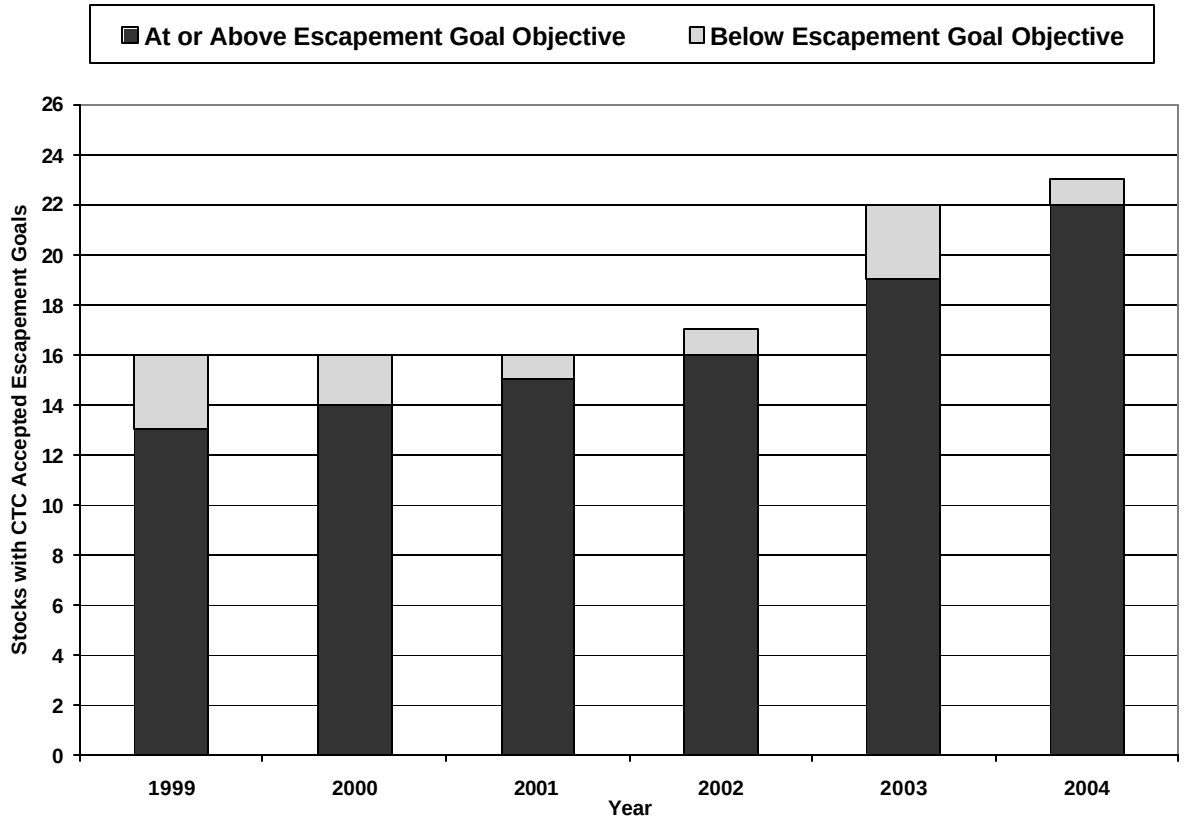


Figure 2-1. Number and status of stocks with CTC-accepted escapement goals for years 1999-2004.

Analyses of achieved escapements relative to accepted escapement objectives to determine if additional management actions are required under paragraph 9(b) in Chapter 3 of the Agreement is guided by footnote 3 to the paragraph: *"By the end of 2001, the CTC will recommend, for adoption by the Commission, criteria defining the lower bound of escapements for the purposes of taking additional management actions pursuant to this paragraph. Until the end of 2001, the escapement level at which the MSY production is reduced by more than 15% will be defined as the lower bound of the escapement."* A lack of clarity and consistency in the language contained in the 1999 Agreement regarding relationships between escapement objectives, the lower bounds referenced in footnote 3 to paragraph 9, and the "lower bound of the escapement range" referenced in the "criteria for stock status" column of Attachments I-V has resulted in some uncertainty as to the intent of the parties. The CTC has provided the PSC with an assessment of methods establishing lower bounds and a means of evaluating the risk of management error associated with implementing additional management actions based on lower bounds (CTC 2002a). In February 2002, the PSC instructed the CTC to postpone further work on establishing lower bounds for additional management actions under the Agreement until the CTC has accepted escapement goals for additional stocks of Chinook salmon.

2.4 STOCK SPECIFIC GRAPHS AND DESCRIPTIONS

Descriptions for Chinook stocks are included in sections for Alaska, Canada, and Washington/Columbia River/Oregon. Each stock is described separately with a graph and narrative text. Each graph contains the name of the stock and the type of data depicted (total escapement, index counts, terminal runs, etc.). For the graphs that include estimates of the terminal run size, the harvests in terminal runs include both jacks and adults in some cases, whereas the escapement is usually reported in adults. The x-axis represents calendar years. Escapement goals accepted by the CTC are shown. Escapements, escapement estimation methods and agency comments are included in the narrative. Historic escapement and terminal run data are provided for SEAK stocks in Appendix B.1, for Canadian stocks in Appendix B.2, for Puget Sound in Appendix B.3, Washington Coastal stocks in Appendix B.4, for Columbia River stocks in Appendix B.5 and Oregon Coastal stocks in Appendix B.6.

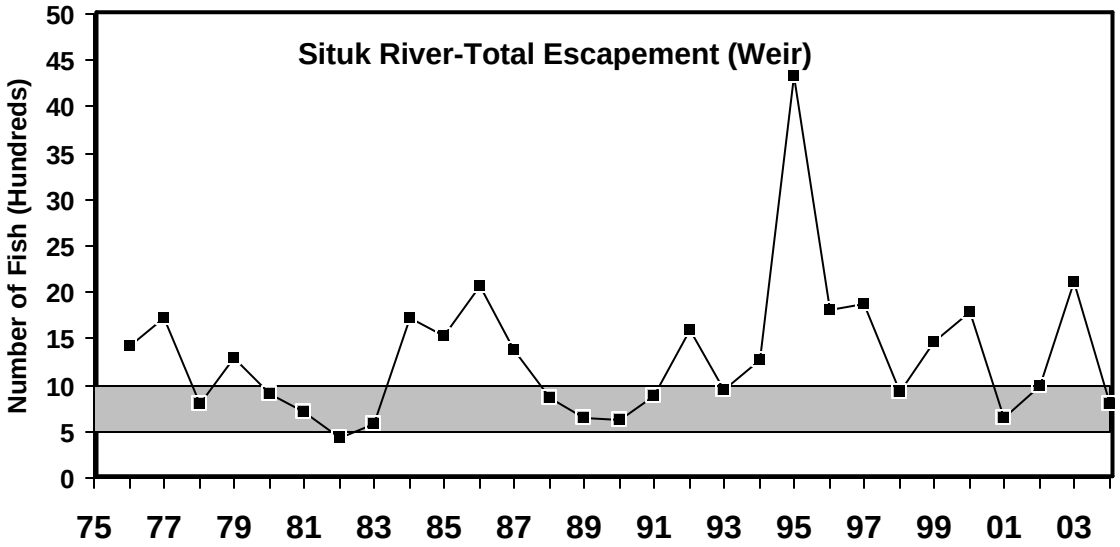
2.4.1 SEAK/TBR Stocks

Of the 11 SEAK/TBR stocks included in the escapement assessment, six (Situk, Chilkat, Taku, King Salmon, and Stikine rivers and Andrew Creek) include estimates of total escapement of large (adult) fish. Large fish refers to age-.3 (European notation age classes 0.3, 1.3, 2.3) and older Chinook salmon or fish 660 mm mid-eye to tail fork (MEF) length; age-.1 and -.2 fish (jack males) are not included in these estimates unless >659 mm MEF. Escapement estimates for the other five systems (Alsek, Unuk, Chickamin, Blossom, and Keta rivers) are index counts of large Chinook, and represent a fraction of the total escapement into a single river. Index counts include either fish counts taken at weirs (Alsek) on a single tributary of a larger river or foot/aerial helicopter survey peak counts. The peak counts are the highest count on a single day within a year. Except for the Chilkat River, survey methods have been standardized for all systems since 1975, and in some cases since 1971. The assessment of Chilkat River Chinook salmon was standardized in 1991 as an annual mark-recapture estimate of escapement.

The SEAK/TBR stocks can be classified into two broad categories, inside-rearing and outside-rearing, based on ocean migrations. Outside-rearing stocks have limited marine rearing in SEAK and are caught primarily during their spring spawning migrations; these stocks include Chinook salmon returning to the Situk, Alsek, Taku, and Stikine Rivers. Inside-rearing stocks are vulnerable to SEAK/NBC fisheries as immature fish as well as during their spawning migrations and include the other seven SEAK/TBR indicator stocks. Note that there is some overlap in these stocks within these two broad classifications. All SEAK/TBR indicator stocks produce primarily yearling smolt except the Situk River, which presently produces primarily sub-yearling smolt. Sub-yearling smolts comprise about 10% of the annual runs in the Keta and Blossom rivers.

ADF&G established a 15-year rebuilding program in 1981 (ADF&G 1981). ADF&G established interim point escapement goals in 1981 for all 11 systems, based on the highest observed escapement count prior to 1981. ADF&G (and CDFO for three TBR stocks) have revised escapement goals that have been reviewed and accepted by the CTC for all eleven stocks. ADF&G uses escapement goal ranges in conformance with the ADF&G Salmon Escapement Goal Policy. These ranges are shown on the stock-specific graphs in this section. ADF&G, CDFO, Tribal organizations on the transboundary rivers, and NMFS have worked in a cooperative manner to improve the SEAK/TBR Chinook stock assessment program. All of the SEAK/TBR stocks meet the assessment criteria detailed in the U.S. CTC Stock Assessment Review (USCTC 1997) and have CTC accepted escapement goals.

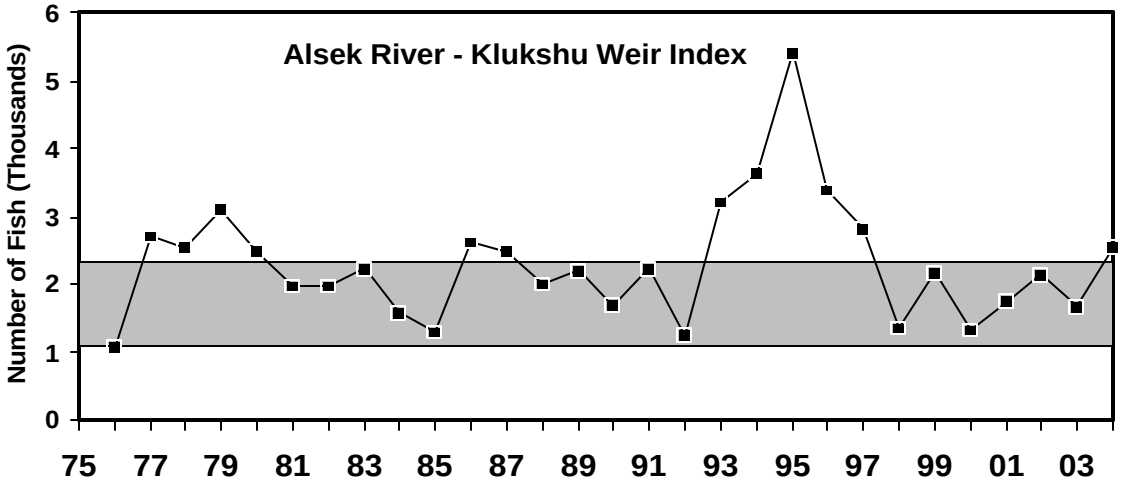
The State of Alaska adopted a Sustainable Salmon Fisheries Policy in March of 2000 (ADF&G/ABF 2000). The term "management concern" used later in this SEAK section of this report has the same meaning as given in the policy document described above, i.e., "Management concern: a concern arising from a chronic inability, despite use of specific management measures, to maintain escapements for a stock within the bounds of the Sustainable Escapement Goal, Biological Escapement Goal, Optimal Escapement Goal, or other specified management objectives for the fishery." "Chronic inability" means the continuing or anticipated inability to meet escapement thresholds over a four to five year period, which is roughly equivalent to a generation time of most salmon species. The term "healthy" used in this SEAK portion of this report refers to Chinook salmon stocks that by State of Alaska standards are not conservation or management concerns. Details of stock status assessment and escapement goals for SEAK/TBR Chinook stocks through 2002 are presented in McPherson et al. (2003).



Escapement Methodology: The Situk River is a non-glacial system located near Yakutat, Alaska, that supports a moderate-sized, outside-rearing stock of Chinook salmon. Escapements are based on weir counts minus upstream sport fishery harvests, which are estimated from an on-site creel survey and a postseason mail-out survey. The weir, located just upstream from the mouth, has been operated annually since 1976, and was also operated from 1928-1955. Counts of large Chinook salmon are reported as the spawning stock. Jacks (1- and 2-ocean-age fish) are also counted and, since 1989, jack counts (not included in the graph above) have ranged between 1,200 and 4,000 fish.

Escapement Goal Basis: In 1991, ADF&G revised the Situk River Chinook salmon escapement goal to 600 large spawners based upon a spawner-recruit analysis (McPherson 1991), which was reviewed and adopted by the CTC. In 1997, ADF&G revised the Situk River escapement goal range to 500-1,000 large spawners to conform to the department's escapement goal policy and to provide a more realistic maximum sustained yield range for management. The CTC reviewed and accepted this change in 1998. ADF&G changed the goal range to 450-1,050 large spawners in 2003; this range was reviewed by the CTC in 2004 and not accepted.

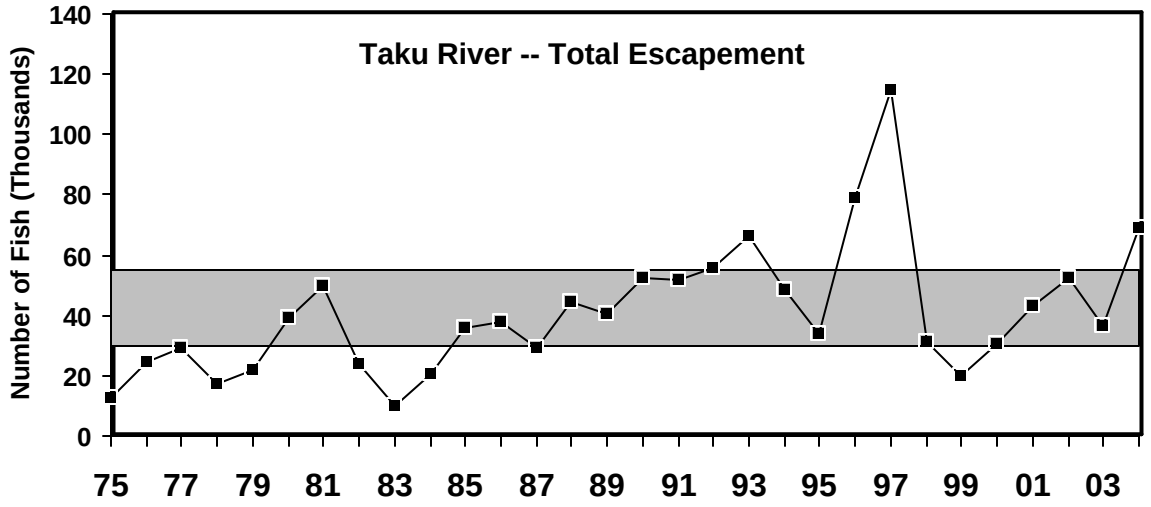
Agency Comments: During the 29-year period of 1976-2004, the Situk River Chinook salmon escapements have been below the goal range only once, in 1982. Directed U. S. sport, commercial and subsistence fisheries located both inside the river and inlet and in nearby surf waters target this stock under a management plan directed at achieving MSY escapement levels. Total annual terminal harvest rates from all gear groups have averaged about 60% during the 1990s. Escapements from 1999-2004 have averaged 1,303 large Chinook salmon. In 2004 the escapement was 798 large Chinook salmon, within the escapement goal range. ADF&G considers the Situk River stock of Chinook salmon to be healthy, but underutilized in some years.



Escapement Methodology: The Alsek River is a large, glacial, transboundary river, which originates in the SW Yukon and NW British Columbia and flows into the Gulf of Alaska, east of Yakutat, Alaska. It supports a moderate-sized, outside-rearing stock of Chinook salmon. Since 1976, Chinook salmon escapements in the Alsek drainage have been principally monitored by a weir operated at the Klukshu River (shown above), one of 51 tributaries of the Tatshenshini River, the principal salmon-producing branch of the Alsek River. The weir counts from the Klukshu River represent an index of the overall Chinook salmon escapement into the Alsek River drainage.

Escapement Goal Basis: Several escapement goals were set prior to 1998 by the U.S. and Canada, all without a detailed technical analysis of production data for this stock. In 1998, a joint analysis (McPherson et al. 1998) recommended a revised Klukshu River Chinook salmon escapement goal of 1,100 to 2,300 Chinook salmon and this revised goal was accepted by ADF&G and the CTC in 1998. Internal review by CDFO (PSARC) suggested it was premature to agree on the upper end of this range, since returns from a record weir count in 1995 were pending. The Transboundary Technical Committee (TTC) has agreed on a minimum escapement goal of 1,100 at the Klukshu River weir. The upper end of the range will be re-evaluated by CDFO and ADF&G in the near future.

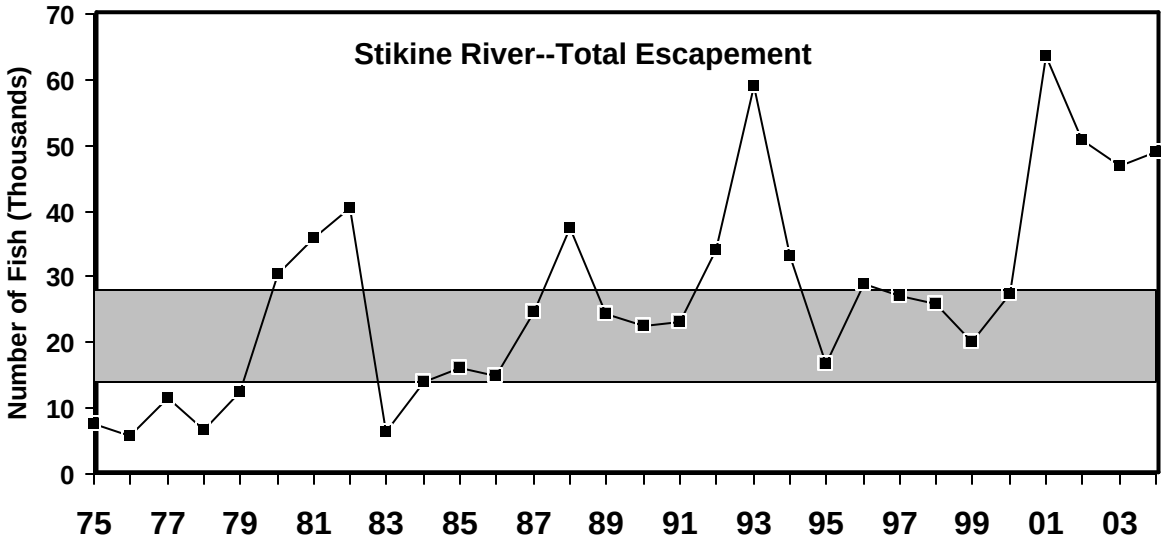
Joint Agency Comments: Directed Canadian sport and aboriginal fisheries take place in-river while - U. S. commercial and subsistence fisheries are located both inside the river and lagoon and in nearby surf waters. Total annual harvest rates have averaged 20% to 25% since 1981 (McPherson et al. 1998). Escapements in the Klukshu River have averaged 2,300 Chinook salmon over the 29-year period of 1976-2004. The 2004 escapement was 2,525 Chinook salmon. The joint ADF&G-CDFO assessment is that the Alsek River stock of Chinook salmon is healthy. An expansion factor (about 5.0 at present) is being developed from the joint adult mark-recapture program that was implemented from 1998 to 2004. Alsek river escapements have averaged 9,244 fish from 1999-2003. It is hoped that information from this program will form the basis for future evaluation of a system-wide escapement goal. Studies to collect these data have been implemented and must continue in order to develop a new abundance-based management regime for Alsek River Chinook salmon by 2005 as per the Agreement.



Escapement Methodology: The Taku River is a large, glacial, transboundary river originating in northern British Columbia and flowing into Taku Inlet east of Juneau, Alaska. It supports a large, outside-rearing stock of Chinook salmon. Escapements of large fish (shown above) were estimated with joint U.S.-Canada mark-recapture experiments in 1989, 1990, and 1995-2004. Aerial survey counts in other years were expanded by a factor of 5.2, which is the 5-year average of the ratio of the mark-recapture estimates to aerial survey counts in 1989, 1990 and 1995-1997 (McPherson et al. 2000). Since 1995, cooperative mark-recapture projects by ADF&G, CDFO, and the Taku River Tlingit First Nation have estimated the escapement in the watershed.

Escapement Goal Basis: Prior to 1999, several system-wide or index goals were developed by the U.S. and Canada, and were based on limited data. ADF&G and CDFO staff developed a new escapement goal range of 30,000 to 55,000 large spawners (total escapement) in an analysis of adult and smolt production reviewed and accepted by the CTC, ADF&G, CDFO (including PSARC) and the TTC in 1999 (McPherson et al. 2000).

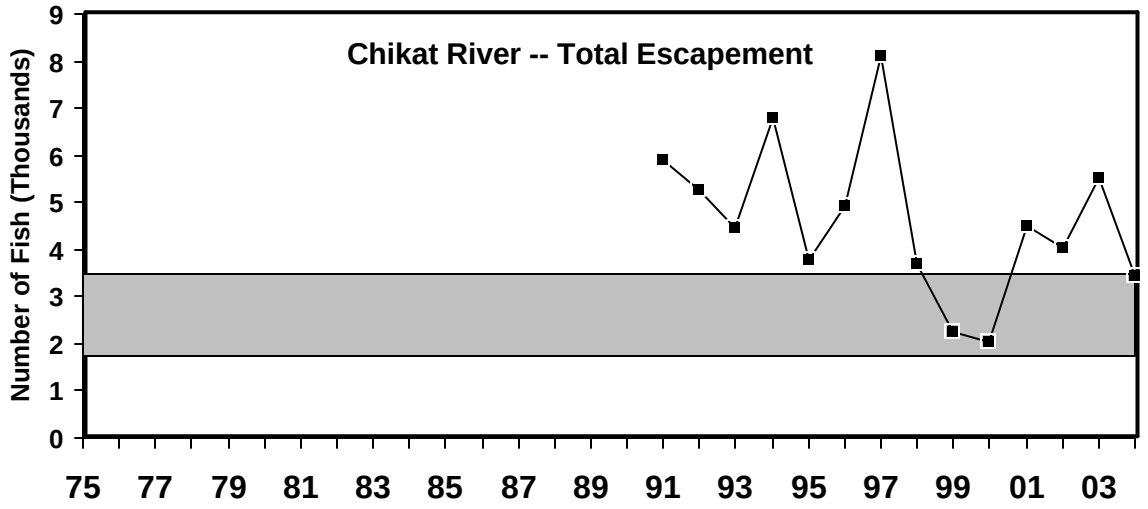
Joint Agency Comments: Estimated harvest rates on this stock range from 12% to 22% under the current management regime (McPherson et al. 2000). Smolt were marked with coded-wire tags from 1976 through 1981 and annually since 1993 (1991 brood). Data from recoveries of these CWTs from fisheries and inriver assessment projects provides the information needed for estimation of adult and smolt production. Historically, a significant terminal marine gillnet fishery occurred in the spring in Taku Inlet along with spring SEAK troll fishery. Incidental harvests occur in other U.S. and Canadian commercial fisheries. There are directed sport fisheries in the U.S. and Canada. The Parties developed an abundance-based management regime for Taku River Chinook salmon with harvest sharing in February 2005. Estimated escapements to the Taku River were within or above the escapement goal range from 1988 through 2004, except in 1999. In 2004, an estimated 68,199 large fish escaped into the Taku River, the third highest on record. The joint ADF&G-CDFO assessment is that the Taku River stock is healthy.



Escapement Methodology: The Stikine River is a transboundary river originating in British Columbia and flowing to the sea near Wrangell, Alaska. The Stikine River is a large, glacial river that supports a large, outside-rearing stock of Chinook salmon. Escapements in the Stikine River have been indexed using data gathered at the Little Tahltan River, a main spawning tributary located in the upper drainage. From 1975 through 1984, the index was made using survey counts and since 1985 counts were made using a weir. Since 1996, cooperative studies by ADF&G, CDFO, the Tahltan and Iskut Bands, and NMFS involving mark-recapture experiments, coupled with radio telemetry, were used to estimate in-river abundance in the entire Stikine River watershed. A comparison of index survey and weir counts with estimates from mark-recapture experiments indicates that Little Tahltan River counts represent 17% to 20% of the total in-river return to the Stikine River (Pahlke and Etherton 1999).

Escapement Goal Basis: Prior to 1999, several system-wide or index goals were developed by the U.S. and Canada, and were based on limited data. In a cooperative analysis by ADF&G and CDFO, recent results from mark-recapture experiments were used to expand index survey and weir counts into in-river returns to the watershed prior to 1996. In 1999, these data along with estimated harvests were used in a stock-recruit analysis to establish an escapement goal range for the Stikine River of 14,000 to 28,000 large Chinook salmon (Bernard et al. 2000). This biological escapement goal range has been reviewed and accepted by the CTC, ADF&G, and the joint TTC.

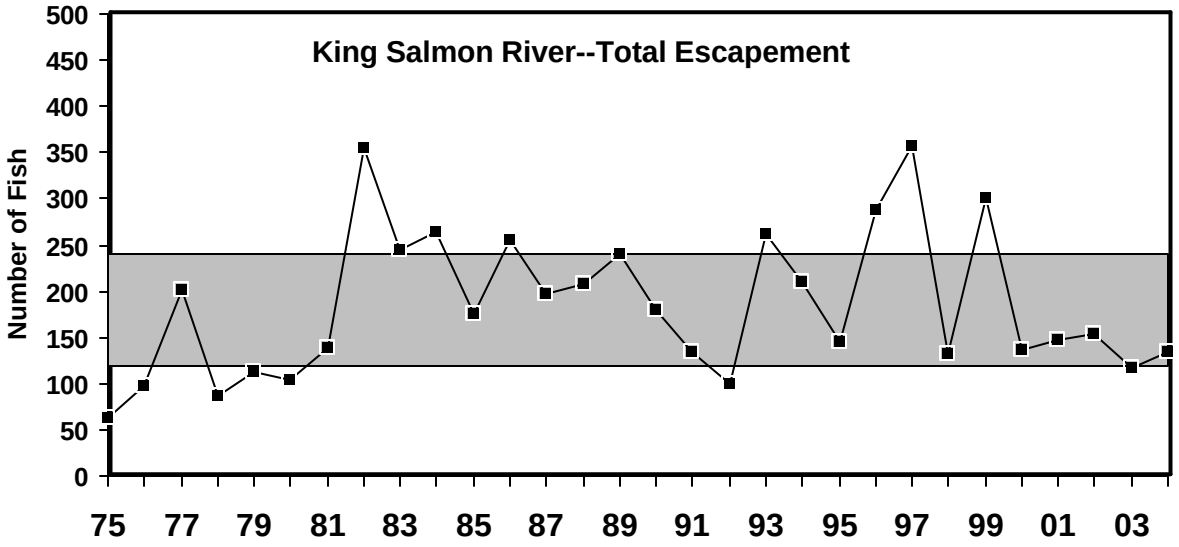
Joint Agency Comments: In recent years, total harvest rates on Stikine River Chinook salmon are believed to have ranged between 10% and 33% with an average of about 18% (Bernard et al. 2000). Prior to the early 1980s, harvests of this stock occurred in a significant terminal U.S. marine gillnet fishery operated near the mouth of the river and in the SEAK spring troll fishery. In 2004, there were no U.S. commercial marine fisheries targeting this stock, but incidental harvests occured in some U.S. commercial fisheries. A directed U.S. marine sport fishery occurs annually near Petersburg and Wrangell. In-river harvests occur in Canadian gillnet and aboriginal fisheries. CDFO and ADF&G currently operate joint programs to CWT smolt to estimate smolt and adult production, as well as exploitation. The preliminary escapement estimate for 2004 is 48,900 large spawners, the fourth highest on record. The joint ADF&G-CDFO assessment is that the Stikine River stock is healthy. The parties developed an abundance based management regime for Stikene River Chinook salmon with harvest sharing in February 2005.



Escapement Methodology: The Chilkat River is a glacial system located near Haines, Alaska, that supports a moderate-sized, inside-rearing stock of Chinook salmon. Escapements are based on estimates of large spawners from a mark-recapture program. Escapements have been estimated in this program annually since 1991 (Ericksen and McPherson 2004). From 1975-1992, aerial survey counts were conducted on two small tributaries with relatively clear water; results from these estimates appeared inconsistent. Radio telemetry studies conducted in 1991 and 1992 found that spawners in these two tributaries represented less than 5% of the total escapement and the aerial surveys were discontinued.

Escapement Goal Basis: The 1981 escapement goal was set at 2,000 large fish, based on an assumed fraction of the total escapement represented by the survey counts. Recent analysis (Ericksen and McPherson 2004) recommended a revised escapement goal range of 1,750 to 3,500 large Chinook spawners, which was reviewed and adopted by ADF&G and the Alaska Board of Fish in 2003. Subsequently, this revised goal was reviewed and accepted by the CTC.

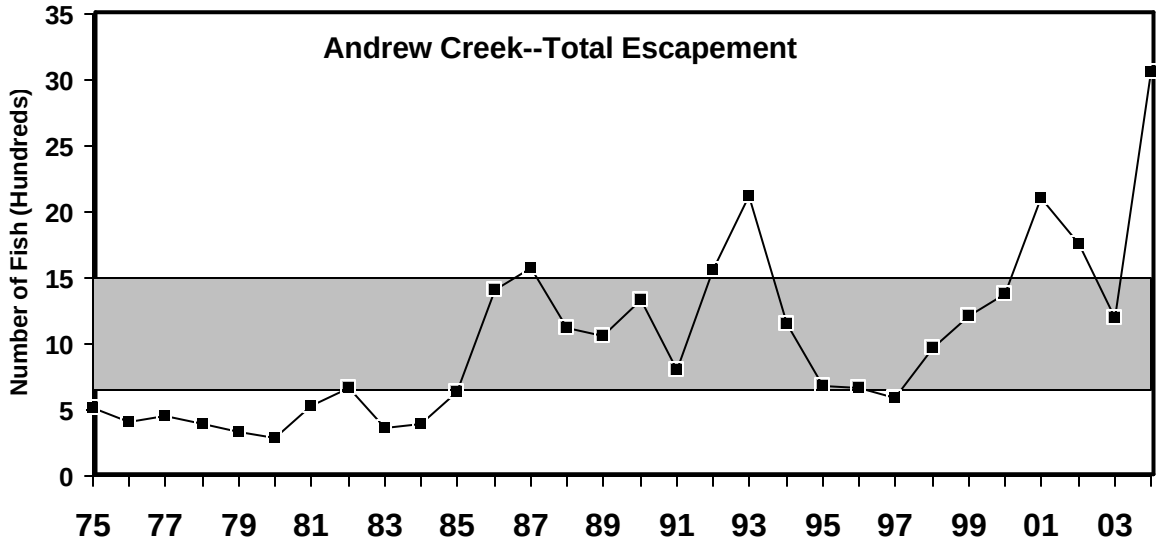
Agency Comments: Relatively small terminal U.S. marine sport and subsistence fisheries target this stock. This stock is also caught incidentally in SEAK commercial drift gillnet and troll fisheries. Limited coded-wire tag information on this stock suggests that exploitation is between 10% and 30%. During the 13-year period of 1991-2003, the Chilkat River Chinook salmon escapements averaged 4,716 large spawners and averaged 3,676 from 1999 to 2003. The preliminary escapement in 2004 was estimated at 3,422 large spawners, near the upper end of the escapement goal range. Escapements since 1991 have been above the lower end of the agency escapement goal range in all years and above the upper end in all but two years. The escapement database for this stock since 1991 is relatively precise with coefficients of variation for annual escapements averaging 15%. Estimates of the number of female spawners and spawners by age exceed the minimum U.S. CTC data standards. Smolt from this stock have been CWTd at relatively high rates (8-10%) beginning with the 1999 brood year, which will add substantial new information to the recruitment database by 2008 for this stock.



Escapement Methodology: The King Salmon River is a small clear-water system located on Admiralty Island southeast of Juneau that supports a small, inside-rearing stock. Escapements of large Chinook salmon are based upon weir counts (1983-1992) or expansions of index counts (1971-1982; 1993-2003). A weir was operated for 10 years (1983-1992) along with the surveys and, on average, the total escapement was 1.5 times the survey count (McPherson and Clark 2001). Jacks (2-ocean-age fish) represented an average of 22% of the weir counts from 1983-1992 and are not included in the graph above.

Escapement Goal Basis: In 1981, ADF&G set the index goal at 200 large fish based upon peak survey counts of 200 spawners in 1957 and 211 spawners in 1973. In 1997, ADF&G revised the goal to 120-240 total large fish based upon a spawner-recruit analysis for the 1971-1991 brood years (McPherson and Clark 2001). This range is ADF&G's most current estimate of maximum sustained yield escapement and has been accepted by the CTC as a biologically-based escapement goal.

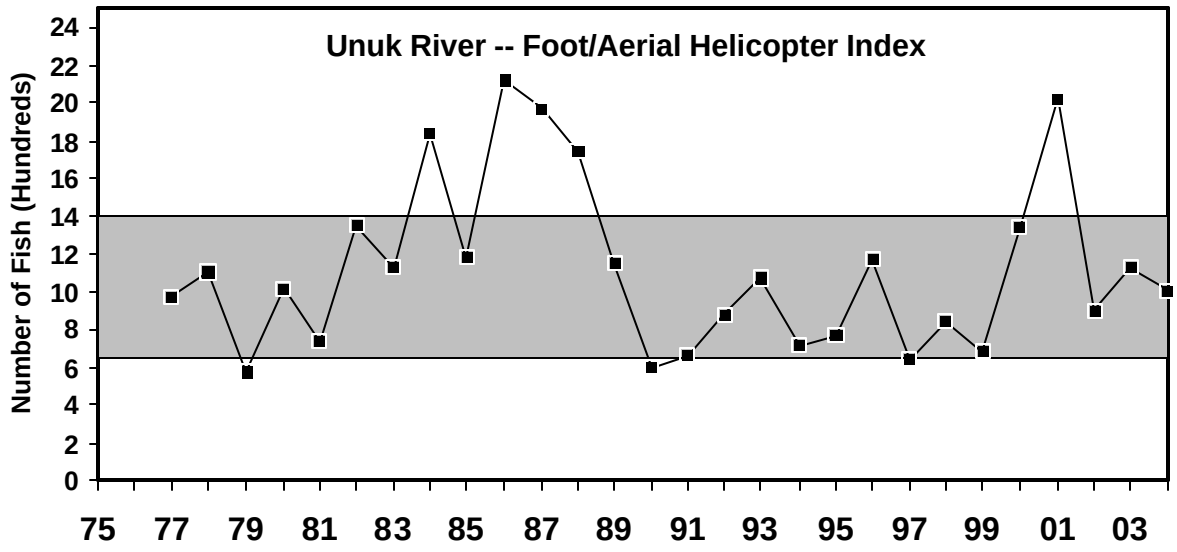
Agency Comments: There is no terminal fishery targeting this stock, though harvests of immature and mature fish occur in SEAK fisheries. During the 29 year-period 1975-2003, 15 of the annual escapements were within the 1997 range, seven were below the range and eight exceeded the range. The estimated escapement in 2004 was 137 large spawners. Survey conditions in 2004 were normal. The ADF&G considers the King Salmon River stock of Chinook salmon to be healthy.



Escapement Methodology: Andrew Creek, near Petersburg, Alaska, is a clear-water U. S. tributary of the lower Stikine River that supports a moderate-sized, inside-rearing stock of Chinook salmon. Data shown in the above graph are total estimated escapements of large Chinook salmon based upon weir counts (1976-1984) or expansions of index counts. During nine years of weir operations (1976-1984), standardized surveys were also conducted in four years and, on average, 53% of the total escapement was counted in surveys (Pahlke 2003). An expansion factor (2.0) was used to expand the survey counts for 1975 and 1985-2003 into estimates of total escapement. Jacks have represented an average of 19% of the weir counts and are not included in the above graph.

Escapement Goal Basis: In the early 1980s, ADF&G set the Andrew Creek Chinook salmon escapement goal at 750 large fish (total escapement). In 1997, an initial stock-recruit analysis was developed that underwent review by ADF&G and the CTC. This analysis was completed in 1998 and the technical report (Clark et al. 1998) recommended a revised biological escapement goal range of 650 to 1,500 large Chinook salmon that was accepted and adopted by the ADF&G and the CTC.

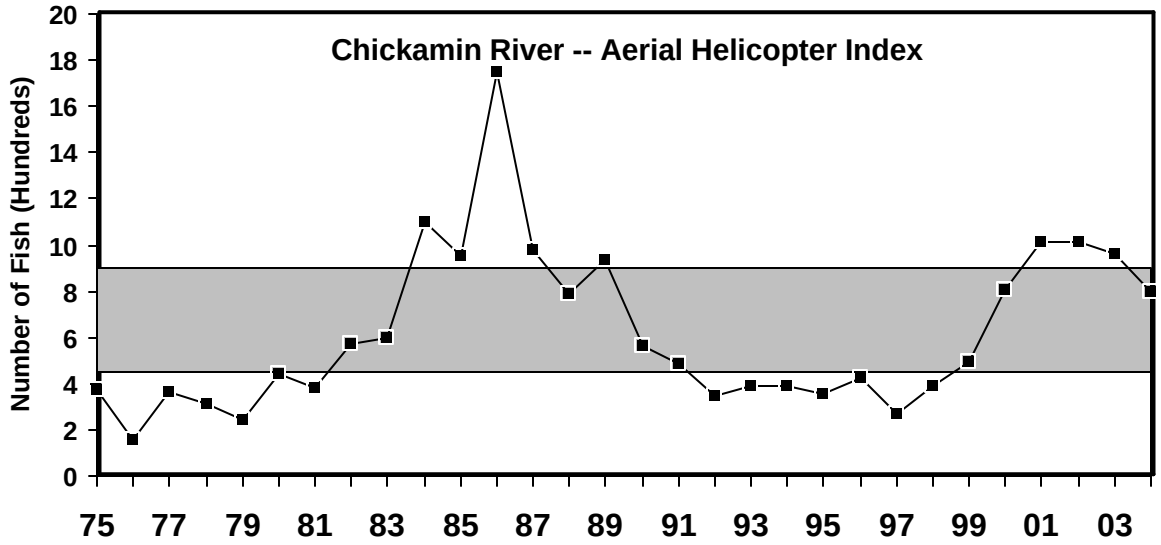
Agency Comments: Before 1976 a large terminal marine gillnet fishery occurred in the spring, targeting Stikine River and other nearby Chinook salmon stocks. Harvests of immature and mature fish occur primarily in SEAK and to a small extent in NBC fisheries, based on CWT recoveries of Chinook salmon from SEAK hatcheries using Andrew Creek brood stock. Escapements since 1986 have all been above the lower end of the biological escapement goal range of 650 to 1,500, except in 1997. The estimated escapement in 2004 was 3,068 large spawners, about 1,000 fish above the previous record and double the upper end of the range. The ADF&G considers the Andrew Creek stock of Chinook salmon to be healthy.



Escapement Methodology: The Unuk River empties into Behm Canal near Ketchikan, Alaska, and is a glacial system with non-glacial spawning tributaries which support a moderate-sized, inside-rearing stock of Chinook salmon. Escapements shown above are indices of escapement, i.e., peak counts (unexpanded highest single-day counts) of large fish from six tributaries using standardized methodology since 1977 (Pahlke 2003). Mark-recapture studies were implemented in 1994 and annually since 1997. Escapements over the most recent six years of estimates (i.e., 1999-2004) have averaged 6,140 large spawners and 1,178 large spawners in peak survey counts (Weller and McPherson 2003). A radio telemetry study in 1994 found that the surveys are conducted in stream reaches where 80% of the spawning occurs (Pahlke et al. 1996). These studies indicate that the expansion factor is about 5.0 and will allow conversion of index counts in years without mark recapture estimates to total escapement estimates.

Escapement Goal Basis: In 1994, ADF&G revised the Unuk escapement goal to 875 large index spawners based upon a spawner-recruit analysis (McPherson and Carlile 1997), which the CTC reviewed and accepted. In 1997, ADF&G revised the goal to a range of 650-1,400 large index spawners as recommended in the McPherson and Carlile (1997) report and in compliance with the ADF&G Escapement Goal Policy. The CTC reviewed and accepted this change in 1998. ADF&G will submit a report to the CTC in 2006 for review and potential revision of the Unuk River escapement goal range.

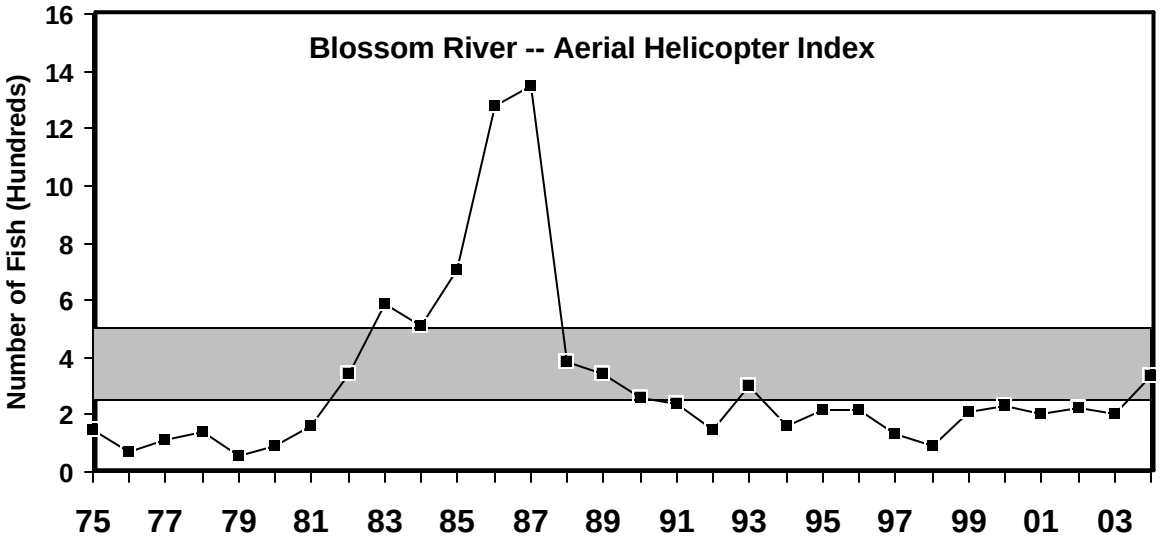
Agency Comments: There is no terminal fishery targeting this stock; harvests of immature and mature fish occur in SEAK and NBC fisheries. Estimated total exploitation rates average about 20% to 30% under current management (McPherson and Carlile 1997). Coded-wire tagging of this stock was conducted for the 1982–1986 (Pahlke 1995) and the 1992–present broods. Unuk wild and hatchery stock tagging both indicate that marine survival decreased through about 1998, relative to levels in the mid-1980s, but that survival has increased for the 1994–1997 broods. In the 28 years since 1977, the index counts have been within the escapement goal range, except for five years which were above and three years which were slightly below the range. The 2004 survey count was 1,008 large spawners, near the middle of the escapement goal range. Survey conditions were normal to excellent in 2004. Prelimanary total escapement in 2004, as estimated through a mark-recapture study, was about 3,963 large Chinook salmon. ADF&G judges the Unuk stock of Chinook salmon to be healthy.



Escapement Methodology: The Chickamin River drains into Behm Canal near Ketchikan, Alaska, and is a glacial system with non-glacial spawning tributaries which support a moderate-sized, inside-rearing stock of Chinook salmon. Reported escapements shown above are survey counts (unexpanded highest single-day counts) of large fish in eight tributaries using standardized methodology (Pahlke 2003). Mark-recapture studies in 1995 and 1996 found that between 15% and 25% of the total escapement is counted during peak surveys (Pahlke 1997). A radio telemetry study in 1996 indicated that the annual surveys are conducted in stream reaches where over 80% of all spawning occurs. Mark-recapture experiments to estimate total escapement have occurred annually since 2001. The expansion factor is estimated at 4.64 for survey counts using the results from the 1996 and 2001-2003 studies.

Escapement Goal Basis: In 1994, ADF&G revised the goal to 525 large index spawners based upon a spawner-recruit analysis (McPherson and Carlile 1997), which the CTC reviewed and accepted. In 1997, ADF&G revised the goal to 450-900 large index spawners as recommended in the McPherson and Carlile (1997) report and in compliance with the ADF&G Escapement Goal Policy (ADF&G 1997). The CTC reviewed and accepted this change in 1998.

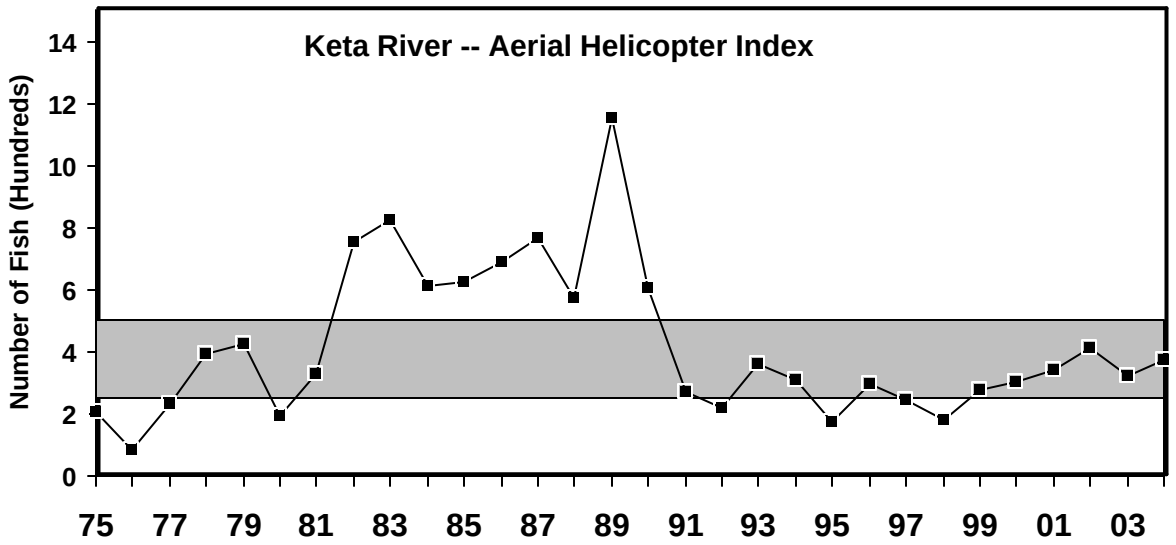
Agency Comments: There is no terminal fishery targeting this stock; harvests of immature and mature fish occur in marine SEAK and NBC fisheries. There are no subsistence or freshwater fisheries on any Behm Canal Chinook stocks. Coded-wire tagging was conducted for the 1982-1986 broods (Pahlke 1995) and resumed for the 2000 brood. Estimated total exploitation rates ranged from 35% to 40% under the current management regime (McPherson and Carlile 1997). Between 1975 and 1981, survey counts were all below 450 large fish by an average of 30%. From 1982 to 1991, index counts were all above 450 large fish and exceeded the upper limit of the escapement goal range of 900 large fish in five of those years. The 1992-1998 index counts were all below the lower end of the escapement goal range by an average of 15%. Survey counts since 1999 were within (1999 and 2003) or above (2001-2003) the escapement goal range. In 2004, the survey count was 798 which is about 24% of the preliminary mark-recapture estimate of 3,294 large spawners. The ADF&G considers the Chickamin River stock of Chinook salmon to be healthy.



Escapement Methodology: The Blossom River empties into Behm Canal near Ketchikan, Alaska, and is a clear-water river that supports a small, inside-rearing stock of Chinook salmon. Recent studies indicate that about 10% of the annual run is comprised of progeny from under-yearling smolt. Escapements shown above are peak counts(unexpanded highest single-day counts) of large fish made by helicopter surveys conducted using standardized methodology since 1975 (Pahlke 2003). In 1998, the total escapement was estimated with mark-recapture methodology, which indicated an estimated expansion factor of 4.0.

Escapement Goal Basis: In 1994, ADF&G revised the Blossom goal to 300 large index spawners based upon a spawner-recruit analysis (McPherson and Carlile 1997), which the CTC reviewed and accepted. In 1997, ADF&G revised the goal to a range of 250-500 large index spawners in conformance with the McPherson and Carlile (1997) report and in compliance with the ADF&G Escapement Goal Policy. This range is ADF&G's most current estimate of maximum sustained yield escapement. The CTC reviewed and accepted this change in 1998. ADF&G will submit a report to the CTC in 2006 for review and potential revision of the Blossom River escapement goal range.

Agency Comments: There is no terminal fishery targeting this stock; harvests of immature and mature fish occur in SEAK and NBC fisheries. All waters of east Behm Canal are closed to Chinook salmon fishing year round. Between 1975 and 1981, survey counts were below the current escapement goal range of 250-500, averaging 110 large fish. These smaller escapements subsequently seeded large runs with resultant large escapements during the six-year period of 1982-1987, with counts averaging 796 fish. This six-year period of larger escapements has been followed by a 15-year period (1988-2003) of reduced, but relatively stable, run abundance. Survey counts for 1999-2003 averaged 215 large spawners. The 2004 survey count was 333 large spawners, within the index escapement goal range for the first time since 1993. Survey counting conditions were excellent for this system in 2004, due to very low water levels from a dry summer. It is doubtful that abundance was greater than the 1999-2003 runs. ADF&G considers the Blossom River stock of Chinook salmon to be a management concern. A mark-recapture project in 2004 was implemented to verify the expansion factor and improve estimates of age and sex composition; the mark-recapture estimated abundance in 2004 was 734 large spawners. This study was also implemented in 2005.



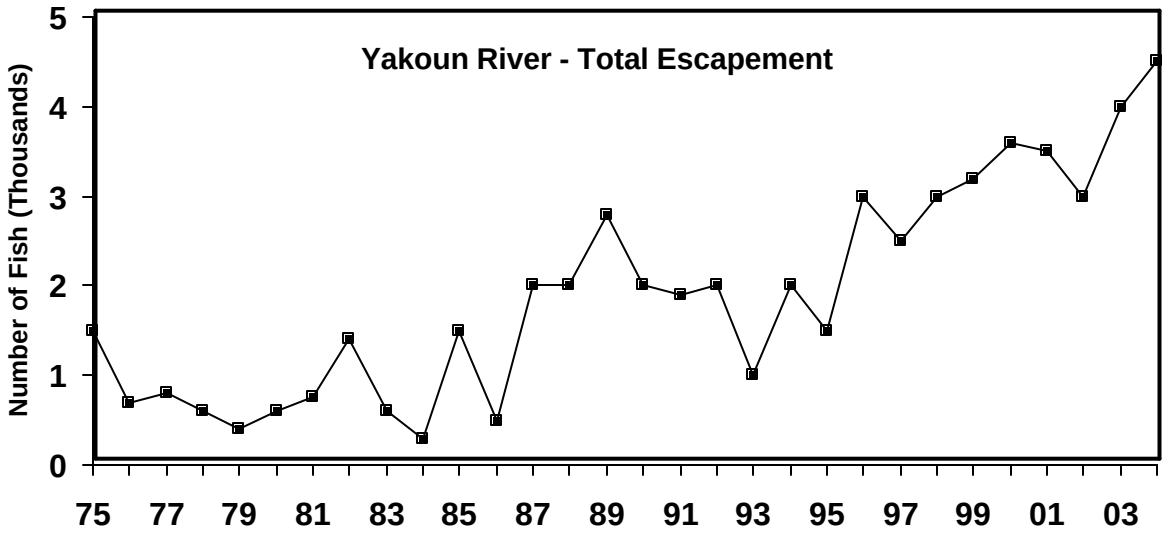
Escapement Methodology: The Keta River is located near Ketchikan, Alaska, and is a clear-water system that supports a small, inside-rearing stock. Recent studies indicate that about 10% of the annual run originates from under-yearling smolt. The escapements shown above are peak counts (unexpanded highest single-day counts) of large fish made by helicopter survey that have been conducted using standardized methodology since 1975 (Pahlke 2003). Total escapement was estimated with mark-recapture methodology in 1998, 1999, and 2000 (Freeman et al. 2001).

Escapement Goal Basis: In 1994, ADF&G revised the escapement goal to 300 large index spawners based upon a spawner-recruit analysis (McPherson and Carlile 1997), which the CTC reviewed and accepted in 1994. In 1997, ADF&G revised the escapement goal to a range of 250-500 large index spawners in conformance with the McPherson and Carlile (1997) report and in compliance with the ADF&G Escapement Goal Policy (ADF&G 1997). The CTC reviewed and accepted this change in 1998. ADF&G will submit a report to the CTC in 2006 for review and potential revision of the Keta River escapement goal range

Agency Comments: There is no terminal fishery targeting this stock; harvests of immature and mature fish occur in SEAK and NBC fisheries. Between 1975 and 1981, annual survey counts were within or below the goal of 250-500, averaging 265 large spawners. Production from the 1975-1981 escapements was high and survey counts from 1982 to 1990 averaged 734 large fish. This was followed by a 14-year period (1991-2004) of lower survey counts. Survey counts for 1999-2003 averaged 330 large spawners. The survey count in 2004 was 376 large spawners,under normal count conditions, which is near the middle of the escapement goal range. ADF&G estimated total escapements of 446, 968 and 943 large spawners in mark-recapture projects in 1998, 1999, and 2000, respectively. These projects were funded using LOA Chinook funds to estimate an expansion factor of 3.0 (SE = 0.52) for this stock (Freeman et al. 2001). This expansion factor was used to develop total estimates of large spawners for survey counts prior to 1998, which appear in Freeman et al. (2001), along with associated estimates of precision. The expanded estimate for 2004 is 1,128 large spawners. ADF&G judges this stock to be healthy.

2.4.2 Canadian Stocks

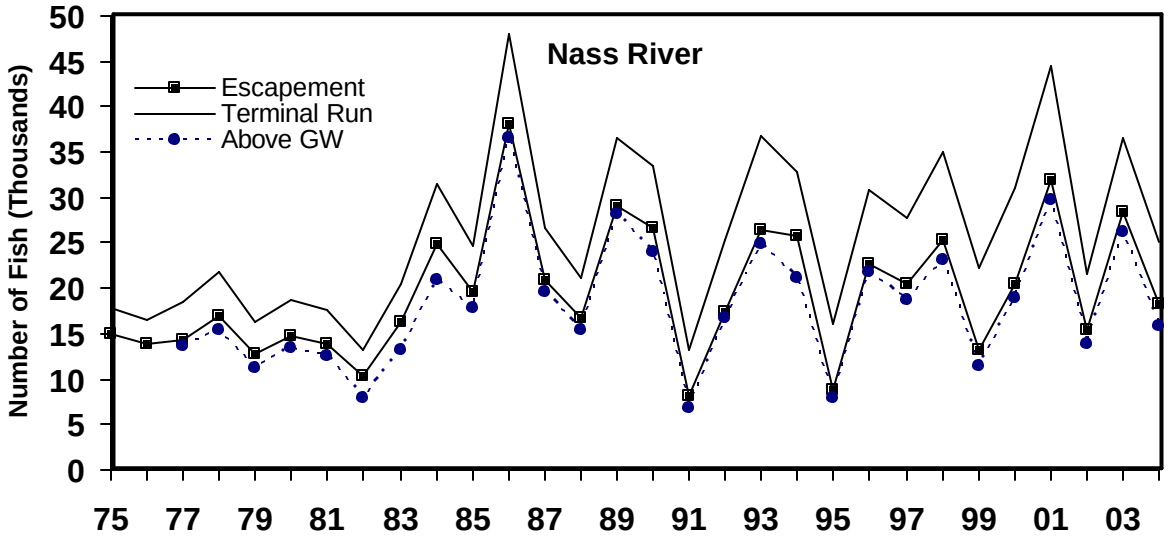
Since the beginning of the Chinook rebuilding program of the 1985 PST, escapement goals for Canadian Chinook stocks were generally based on doubling the average escapements recorded between 1979-1982. The doubling was based on the premise that Canadian Chinook stocks were over-fished and that doubling the escapement would still be less than the optimal escapement estimated for the aggregate of all Canadian Chinook populations (see stock-recruitment curve in "Technical Basis of PSC Catch Ceilings," Figure 1, Attachment 4, PSC file 72006; PSC Office, Vancouver, BC). The escapement goals of the Canadian stocks are currently being reviewed.



Escapement Methodology: The Yakoun River is the only significant Chinook-producing stream on the Queen Charlotte Islands. Chinook spawn primarily at the outlet of Yakoun Lake and are a summer-run stock. Visual estimates of escapement are made by foot surveys of the system. These estimates are then expanded into a total estimate of spawning escapement in the system. The effort spent on escapement surveys has declined in recent years and their accuracy (i.e. total escapement) is unknown.

Escapement Goal Basis: There is no CTC accepted escapement goal for this stock.

Agency Comments: A small enhancement program also exists on the Yakoun River.



Escapement Methodology: The "Nass Area" represents those Chinook streams draining into the portion of Portland Inlet north of the Kwinamass River. The Nass River, the largest river in this area, is the Area 3 indicator stock representing a group of approximately 25 streams. These streams extend over a diverse range of habitats and a large geographical area. Outside of the Nass River, Portland Inlet Chinook streams generally have very small returns, typically representing less than 10% of the total return to the "Nass Area". Prior to 1992, CDFO observations of escapement were based on visual counts, which varied considerably between streams and between years. The escapements used in past escapement analyses represent local fishery managers' estimates based on stream walks and aerial surveys, the frequency of which were dependent on resource and staff availability and weather.

Since 1992, the Nisga'a Tribal Council has conducted mark-recapture programs to estimate the total spawning escapement in the Nass River. The Nass mark-recapture program uses two fish wheels at Gitwinksihlkw (GW) in the lower Nass canyon to apply tags and two wheels at Grease Harbour in the upper canyon for recovery. Tags are also recovered in up-river fisheries and on the spawning grounds. A modified Petersen mark-recapture estimator, stratified by size category (500-730 cm nose-fork length (NF), >730 cm NF), is used to estimate the total population of Chinook passing the tagging location. Spawning escapements are calculated as the estimated Chinook population past Gitwinksihlkw from the mark-recapture studies, less upriver catches in sport and First Nation's fisheries. Reports of each year's program are available from LGL Ltd. (Sidney, BC) or CDFO (e.g., Link and Nass 1999).

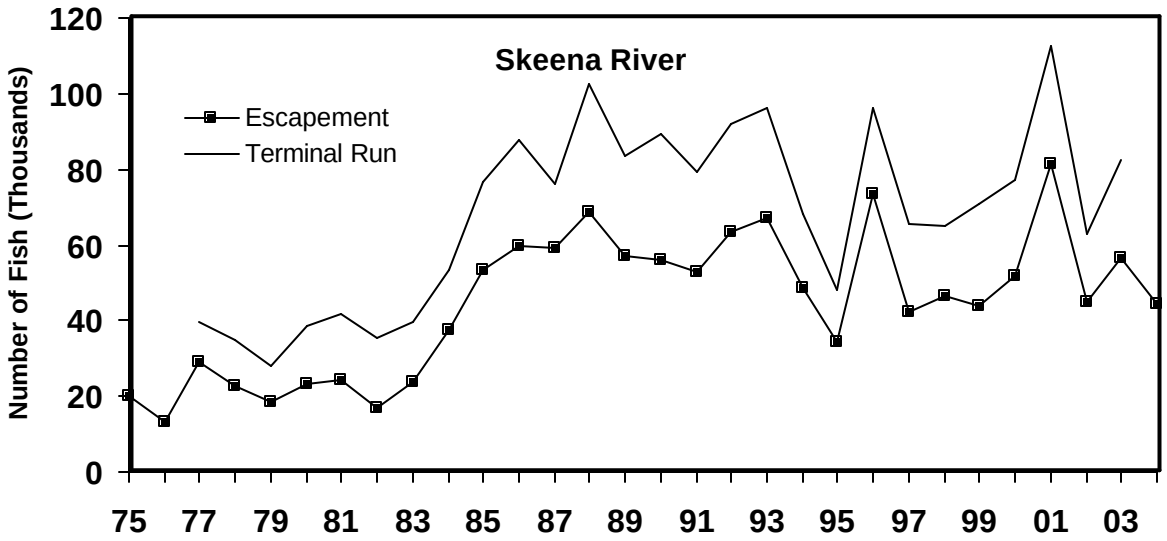
Three tributaries with Chinook populations enter the Nass River below Gitwinksihlkw. Visual estimates augmented by fence counts of the Kincolith River in 2001 and 2002 are used to enumerate Chinook below the fish wheels.

Because of these major changes in escapement methodology, the Nisga'a Tribal Council and CDFO have agreed to standardize the escapement time series. The consulting firm LGL Ltd., in conjunction with the Nisga'a Tribal Council, has developed a revised escapement data set using the two years (1992-1993) of the CDFO field estimates that overlapped with their radio-tracking and mark-recapture studies. The difference between the two estimates was used to develop a "multiplier" for previous CDFO visual estimates. Estimates of the terminal run of Chinook to the Nass River were similarly derived. The harvest rate in the lower river Native fishery in 1992 and

1993 averaged 35% while fishing seven days per week. Estimates of the historical terminal run assumed the harvest rate in past years was four-sevenths of 35% since typically fishing was allowed four days per week. The method and data used are documented in the Fisheries Operational Guidelines (FOG, March 9, 2000, Tribal Office, New Aiyansh, BC) that was prepared for the Nisga'a Tripartite Comprehensive Claims Negotiation. It is these revised estimates that are used in calculating "Nass Area" escapement and terminal run.

Escapement Goal Basis: There is no CTC accepted escapement goal for this stock. The FOG states two goals for managing fisheries: an operational target escapement of 20,000 Chinook on the spawning grounds, and a minimum escapement of 10,000 Chinook. If escapements are projected to be below 10,000 Chinook, then no fishing on Nass River Chinook would be recommended. No biological basis for an escapement goal has been developed for this system.

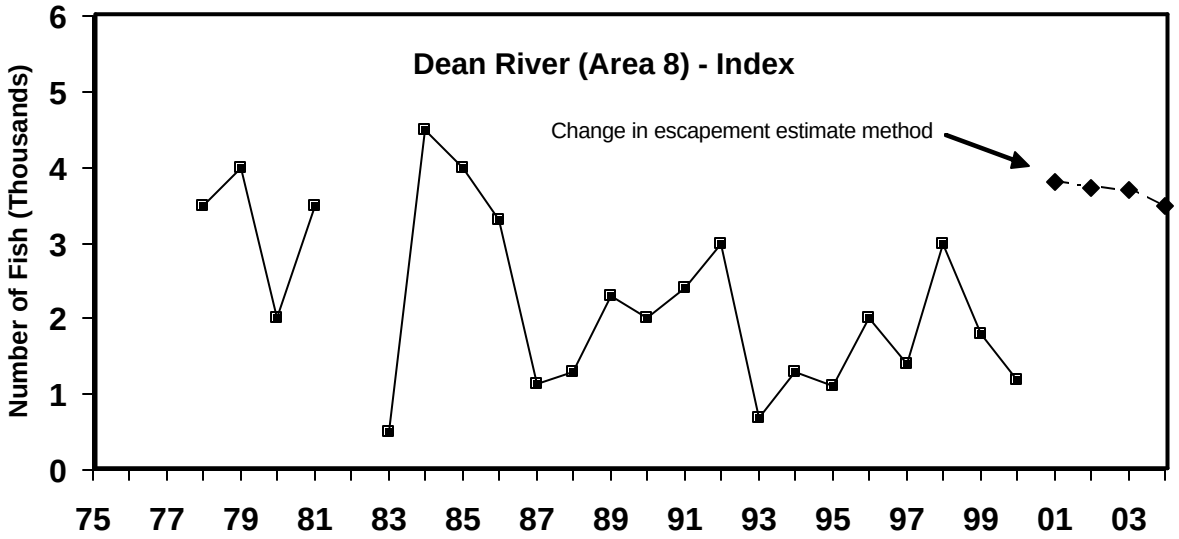
Agency Comments: The Nisga'a Fisheries Working group, including CDFO, have accepted the historical escapement and terminal run values provided for Nass River Chinook. These figures have been revised and are presented in Appendix B2.



Escapement Methodology: The Skeena Chinook stock index represents 40 streams which are consistently surveyed. As a system, the Skeena supports over 75 separate Chinook spawning populations, but three spawning populations (Kitsumkalum, Morice, and Bear Rivers) account for about 70% of the total spawner abundance. A second group of populations (Ecstall, Kispiox, and Babine Rivers) have annual returns ranging from 1,000 to 5,000 spawners, and comprise about 13% of Skeena returns. Escapement estimates are generally based on visual observations from helicopter, fixed wing aircraft and/or from stream walking surveys. The Kitsumkalum River is the exploitation rate indicator stock for the Skeena Chinook complex. Spawning escapements in the Kitsumkalum have been estimated using a mark-recapture program since 1984. Escapement values presented represent total escapement to the Skeena River system.

Escapement Goal Basis: There is no CTC accepted escapement goal for this stock. Biologically-based goals for this complex of Chinook spawning populations have not yet been developed. Future assessments will partition this large aggregate into stocks by run timing, life history and geographic areas.

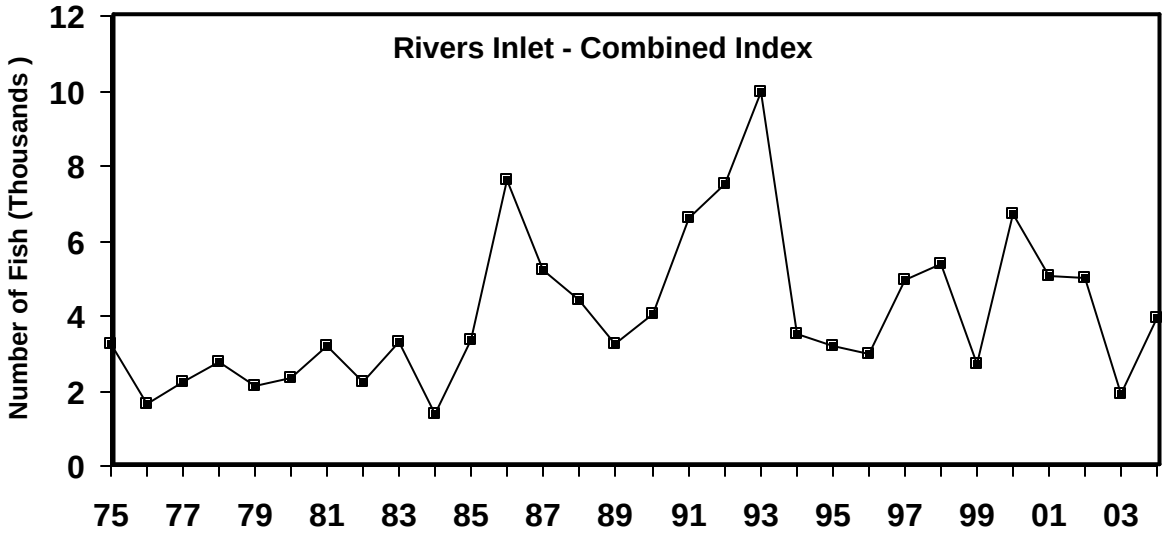
Agency Comments: Terminal catch in the Skeena River would normally include commercial gillnet catch in the terminal exclusion area (River Gap Slough, Area 4), in-river sport catch, and Native catch. Estimates of in-river sport catch were not available from 1997 to 2002. A creel survey was conducted on the Lower Skeena in 2003. Consequently, the 2003 total terminal run estimate includes lower river sport catch but no estimate of upper river sport catch.



Escapement Methodology: The Area 8 Chinook stock index consists of seven non-enhanced systems, but the Dean River is the main spawning population. Of all Chinook- producing streams in the Central Coast, the Dean is the best indicator in terms of consistent survey coverage and methodology. Chinook returning to the Dean River have an early summer timing;and most are in the lower river by July. Escapement enumeration in the Dean River has been fairly consistent over the past several years and surveys have documented fish distributed throughout the system. Fishing guides operating throughout the lower river monitor spawning activity of Chinook. Helicopter surveys are usually conducted in and around peak spawning activity. Prior to 2001, counts of spawning Chinook were made during 1-3 surveys and the peak count used as the escapement index. Survey counts were sometimes expanded to account for sections of the river that could not be surveyed in any year, but the counts were not extrapolated to total escapement of Chinook to the river. Since 2001, the annual number of aerial surveys have increased, allowing the calculation of area-under-the-curve (AUC) escapement estimates. Poor counting conditions were encountered during (Aug.) 2004 and as a result an AUC estimate was not possible. Instead a maximum likelihood estimate was used and yielded a total Chinook return of 3,500 to the Dean River.

Escapement Goal Basis: There is currently no CTC accepted escapement goal for this stock.

Agency Comments: Based on the large contribution of the Dean River to Area 8 escapements and due to gaps in escapement data for other streams in Area 8, the Dean River alone will be used to represent stock strength in Area 8. Funds allocated for implementation of the 1999 PST Agreement have been allocated to improve Chinook surveys in the Dean River. In 2004, high water conditions made visibility poor and a maximum likelihood estimate of 3,500 Chinook was derived. This escapement is slightly lower than 2003, however it resulted in good distribution and seeding within the spawning areas.



Escapement Methodology: The Wannock, Chuckwalla, and Kilbella Rivers are the primary Chinook streams in Area 9 (Rivers Inlet area). Small tributaries of Owikeno Lake also contain Chinook but these populations are much smaller. The Wannock River contains the largest Chinook population, averaging 5,200 Chinook in the 1990s, while the Chuckwalla and Kilbella together, averaged around 300. The Wannock River drains Owikeno Lake, is about six kilometers long, and is wide and turbid. The Chuckwalla and Kilbella rivers are much longer, drain from coastal mountains, and their visibility is much more variable depending on local weather (glacial flour to clear). The timing of these stocks also differs: the Wannock has late summer/fall run timing, the other two are early summer Chinook stocks.

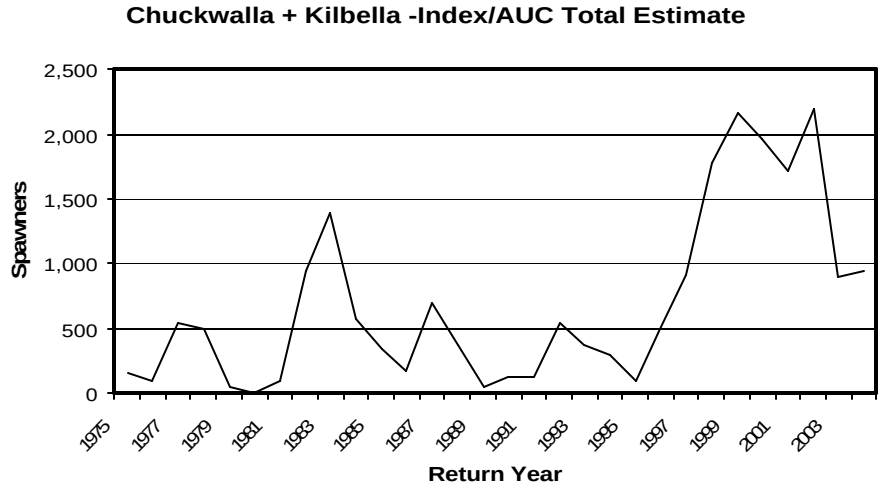
Escapement estimates in the Chuckwalla and Kilbella rivers are derived from aerial surveys, whereas Wannock escapement is derived from expansions of carcass count to estimate total spawning escapement. Since 1986 documentation has been provided for each expansion, but previous documentation is very limited. Mark recapture programs were conducted in the Wannock River from 1991-1993, but tag recovery proved very difficult. Given the uncertainty in the mark-recapture estimates and to maintain consistency with past years, CDFO has maintained the expanded carcass estimates for comparison between years.

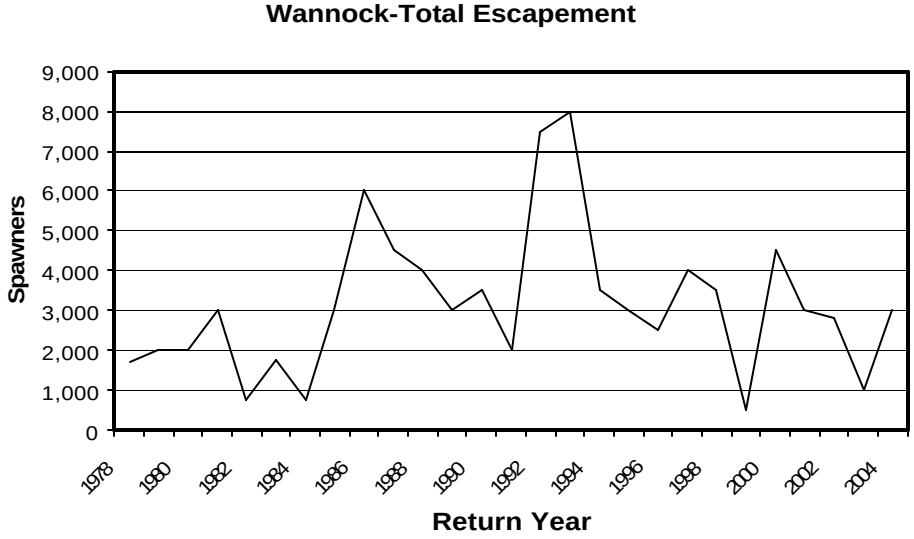
Escapement Goal Basis: There are currently no CTC accepted escapement goals for any of these stocks.

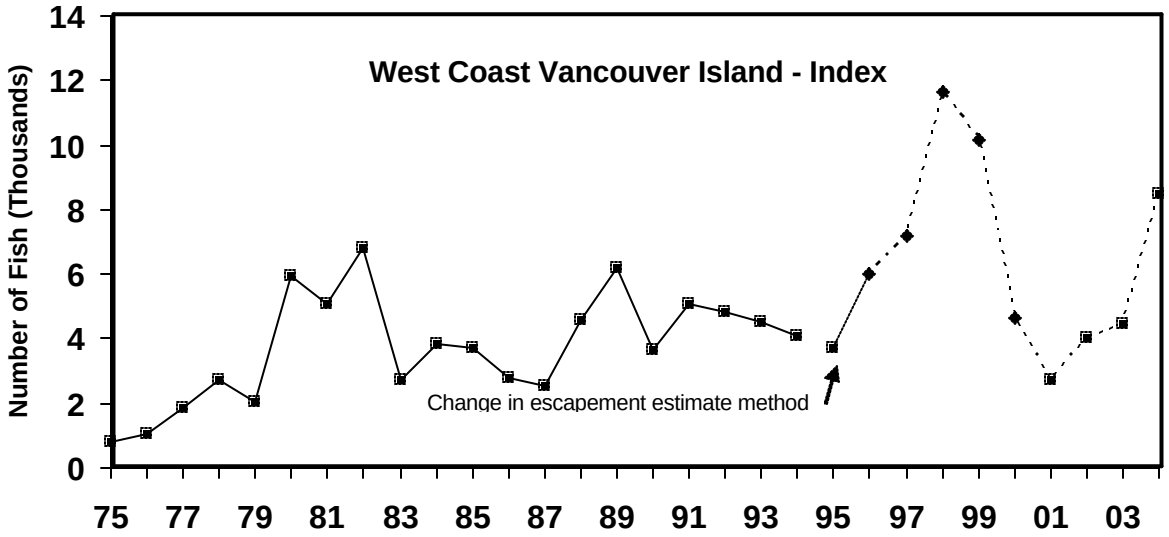
Agency Comments: Since summer (Chuckwalla and Kilbella) and fall (Wannock) Chinook are likely to have different ocean exploitation and productivity, separate assessments may be more accurate than a combined assessment. For example, the increase in recent escapement of Kilbella and Chuckwalla Chinook is dramatic when compared to that of the Wannock (see graphs below). These increases are likely due to improved returns of hatchery fish and reductions to ocean fisheries. In 2004, it was difficult to count Chinook in the Chuckwalla and Kilbella due to the high numbers of pink and chum in these systems, thus the escapement estimates of 400 and 550 Chinook for the Chuckwalla and Kilbella are likely to be underestimates.

Escapement to the Wannock did not change significantly through 1997 and 1998, but declined sharply in 1999 to an estimated 500 fish. During 2000, the Wannock River Chinook stock became a stock of concern and sport fishing restrictions were implemented in the terminal area.

In addition, new assessment programs were implemented including radio-tagging and mark-recapture studies. The escapement estimate for 2000 was 4,500 Chinook based on carcass sampling and this compares to a final mark-recapture estimate of 7,443 Chinook. Escapement to the Wannock declined to 3,000 fish in 2001 and 2,800 in 2002. The estimated escapement in 2003 was 1,000 Chinook, which included 4-year olds returning from the poor 1999 escapement. Age data suggests that the 1999 escapement contributed ~ 33% of the 2003 return. Additional protective measures were taken in 2004 to further reduce exploitation in the terminal central coast sport fishery and protect returns from 1999. This included a voluntary reduction in recreational gear to one rod per angler. A recreational catch monitoring program was conducted in the inlet again this year. Escapement to the Wannock in 2004 was estimated at 3000.







Escapement Methodology: The WCVI index (shown above) represents the sum of escapements for six rivers (Marble, Tahsis, Burman, Artlish, Kaouk, and Tahsish), which were chosen to provide an 'index' of escapement for wild WCVI stocks in general. These stocks were chosen based on historical consistency of data quality. In 2003 the Gold River was removed from the index due to hatchery straying. Three more systems (Toquart, Gordon, and Zeballos) were excluded from the 17 stream index due to reduced survey coverage. Removal of these streams from the index did not significantly change the trends in abundance displayed by the former seven-stream index. This 14 stream expanded index now includes escapements to the six stream; above plus the following WCVI streams: Colonial/Cayegle Creeks (Area 26), Leiner (Area 25), Megin, Bedwell/Ursus, Moyeha (Area 24) and Sarita, Nahmint (Area 23), and San Juan (Area 21),

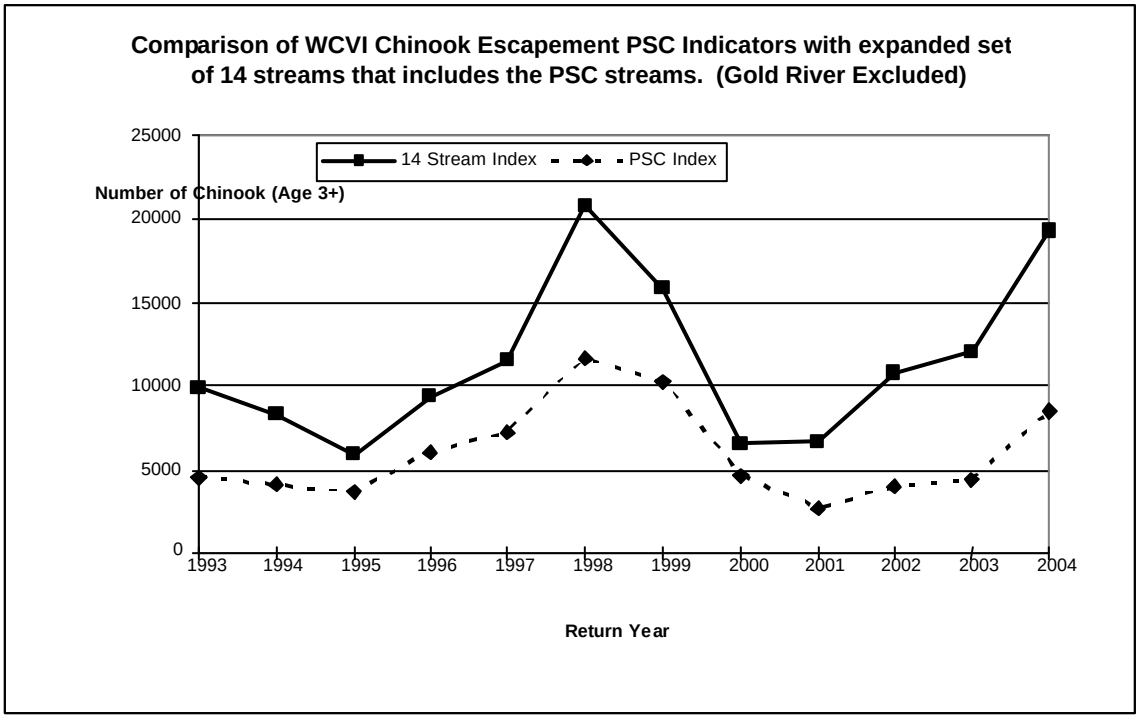
The reliability of assessments has increased through the years in all streams (a combination of more surveys and better timing and methods). Survey methods consist mainly of walks in lower reaches (greater frequency of use in early years), helicopter flights at key spawning periods, and snorkel surveys. In Area 24 (Clayoquot Sound) intensive snorkel surveys have been conducted on three natural systems since 1993. More intensive and systematic surveys, based mainly on snorkel swims, were introduced in 1995 to expand to 27 streams the total number of systems surveyed throughout the WCVI. A total of 22 WCVI streams are surveyed annually. Estimates since 1995 have been based on multiple surveys per stream, and total escapements have been estimated using the AUC method. Escapement values presented include the brood stock removed for the small enhancement programs in some streams.

Escapement Goal Basis: There is currently no CTC accepted escapement goal for this stock group.

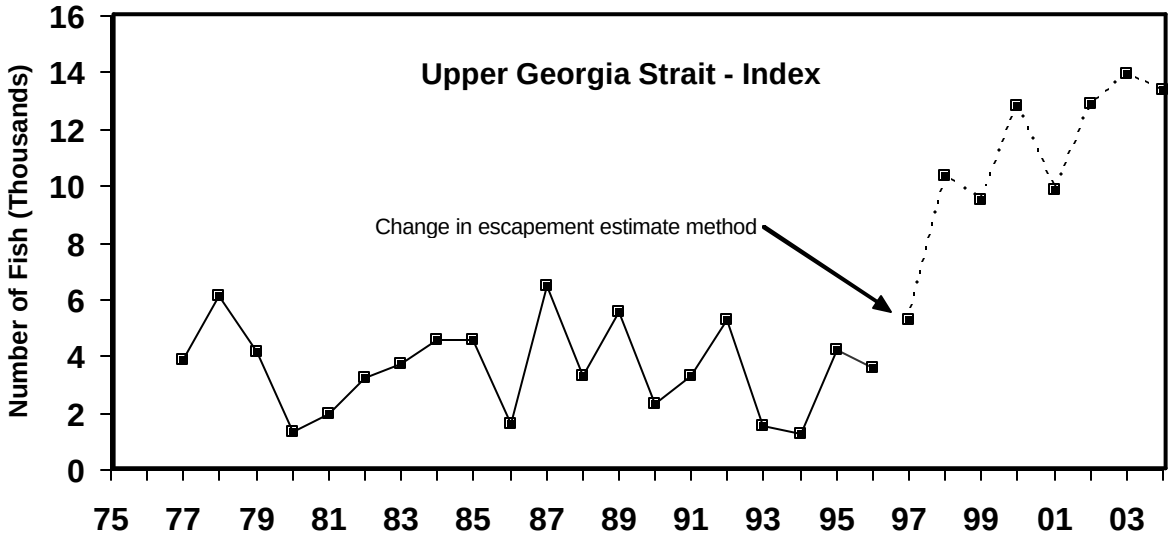
Agency Comments Agency Comments: The CDFO notes the need for biologically based escapement goals for individual populations in this stock group. The CDFO has been working to develop habitat-based escapement goals for some of these individual index rivers.

Escapements to all streams increased in 2004. The six-stream PSC index reached 8,941 spawners and the 14 stream index reached 19,253 in 2004 (See figure below). Escapements in all index streams improved relative to the preceding three years. Although escapements to wild stocks in

Area 24 remained constant, or increased, returns were less than 150 in the Bedwell/Ursus, and Megin Rivers. The Moyeha River escapement improved to 362 fish from less than 200 in 2003. Escapements to the Area 26 streams remain below 500 fish each. Escapements still remain below the agency goal of doubled 1979-82 base period average escapements. WCVI Chinook have remained below the agency goal for these streams since 1999 despite terminal fishing closures in effect in Areas 24-26 in July each year and other efforts to conserve WCVI Chinook. Escapements to all non-enhanced Clayoquot Sound and Kyuquot Sound Chinook streams in the indices all remain below 500 fish.



The returns to WCVI hatcheries have continued to increase since 2002. The preliminary estimate of escapement to the Robertson Creek Hatchery/Somass stock in 2004 is 80,000 Chinook. The forecast of RCH fish returning to Canadian waters was 96,437. Commercial and sport fisheries were managed to deliver 36,490 adults based on age structure to meet the requirement of 59 million Chinook eggs for the hatchery and river after provision for 20% pre-spawning mortality. Based on preliminary age and sex information 33,684 females and 36,465 age 3+ males and 9,850 age 2 males returned to spawn in the Somass system. The proportion of females was approximately 42% in 2004. The return of age–2 males (2002 brood) at 10,500 in 2004 was among the highest on record since 1991. The preliminary age distributions indicated good numbers of age-3 males (34%) in 2004.



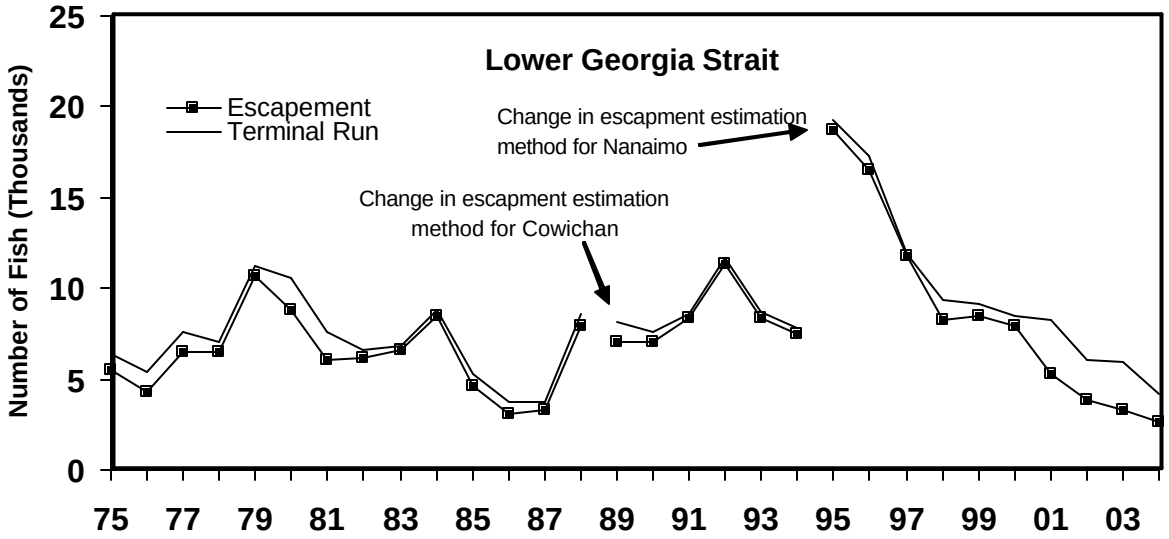
Escapement Methodology: The UGS stock index consists of four river systems (Klinaklini, Kakweiken, Wakeman, Kingcome) in Johnstone Strait mainland inlets and the Nimpkish River on northeast Vancouver Island. The accuracy of escapement estimates in the mainland inlet systems is likely poor due to their glacial nature and remote access. Escapement estimates have primarily been based on aerial counts. Swim surveys and stream walks have been conducted in the Nimpkish River

Klinaklini: An intensive assessment program on the Klinaklini system began in 1997 with a fish wheel on the mainstem and a fence on Devereux Creek. Fish captured at the fish wheel are tagged and released to estimate efficiency of the wheel and total escapement. Escapement estimates for the system are based on expanded fish wheel catch and counts at the fence. Prior to 1997 only aerial surveys (two flights over lower Devereux Creek and Dice Creek) were used to assess the system. From experience on these flights, observers could only see a limited amount of spawners that typically hold in clear pools early in the season. The apparent increase in escapements between 1996 and 1997 reflect changes in methodology rather than real increases in abundance. The intensive fish wheel program was discontinued in 2004 and no stream inspection was performed. However, observations by local stakeholders suggest that escapement was similar to that in 2003. Thus last year's escapement estimate of 13,365 Chinook will be used in the index for 2004.

Nimpkish: A more structured assessment program for the Nimpkish system was also established in 1997. The hatchery had been conducting swims and broodstock capture for several years but had not established an assessment program or documented methods. In 1997 these programs were reviewed. Since then escapement estimates have changed little but the confidence in the accuracy of these estimates has improved substantially. The escapement estimate was 408 Chinook for 2004.

Escapement Goal Basis: There is currently no CTC accepted escapement goal for this stock group.

Agency Comments: Assessment of stock status is highly uncertain. Recent increases in escapements are likely to reflect improved estimation of escapements and reduced fishing impacts. Differences in ocean distributions and run timing indicate that future assessments should separate the mainland inlet systems from the Nimpkish stock.



Escapement Methodology: The LGS rivers monitored for naturally spawning fall Chinook escapement are the Cowichan and Nanaimo rivers. Total Chinook returns to the Cowichan and Nanaimo rivers have been estimated since 1975. Prior to 1989, escapement estimates from the Cowichan River were derived from swim surveys and overflights by Fishery Officers and hatchery staff. The second approach was applied to the Nanaimo River prior to 1995. Since 1989 a counting fence has been used in the Cowichan, and a similar fence is also used in the Nanaimo. While the accuracy of these estimation procedures will vary

Escapement Goal Basis: There is no CTC accepted escapement goal for this stock. A recent assessment of the Cowichan Chinook stock suggests a biologically based escapement goal of 7,400 Chinook. CDFO will present documentation of this assessment and a proposed goal for the Cowichan to PSARC and the CTC for review in 2005.

Agency Comments: Escapement to the Cowichan in 2004 declined to 2002 adult Chinook, continuing a decline that started in the mid-1990s. This was the lowest escapement in the 1975-2004 Cowichan time series. Reduction in exploitation may no longer be compensating for reduced survival. Failure of the Cowichan hatchery power supply resulted in complete loss of the 2004 brood hatchery production, which will present challenges in estimating brood survival and exploitation for this indicator stock.

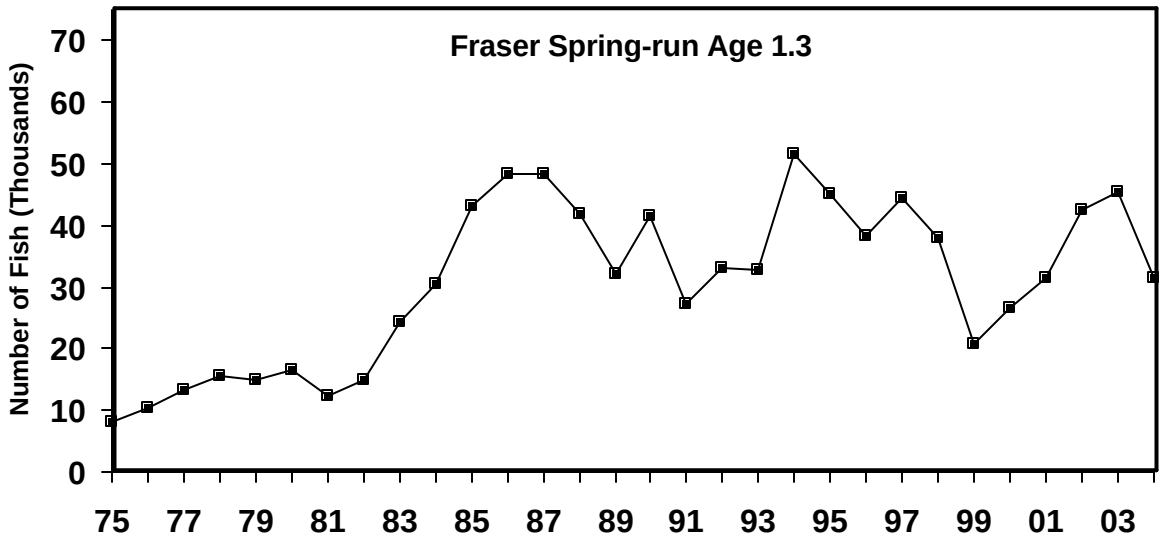
Returns of the Nanaimo fall Chinook population continue to be depressed. There is a smaller hatchery on the Nanaimo River and survival of this hatchery stock has usually been lower than for the Cowichan Chinook. The escapement to the Nanaimo River in 2004 was 600 fall Chinook adults after 132 fall Chinook were removed for hatchery broodstock .

2.4.3 Fraser River Stocks

The Fraser River watershed is the largest Canadian producer of Chinook salmon. Fraser Chinook are comprised of a large number of local populations as described in CTC (2002b).

Much of our understanding of the status of Fraser Chinook is based on spawner escapement data. Most data are from visual surveys, which are generally biased low, although many estimates are considered to be reasonably precise. Visual survey data are generated from aerial over-flight surveys and the escapement estimate is usually obtained by dividing the peak count by 0.65 (Farwell et al. 1999). The CDFO continues to evaluate the appropriateness of this expansion factor and AUC methodology through calibration studies. Counting fences and mark-recapture projects exist for some systems, although most of the time series of escapement data from these projects are relatively short.

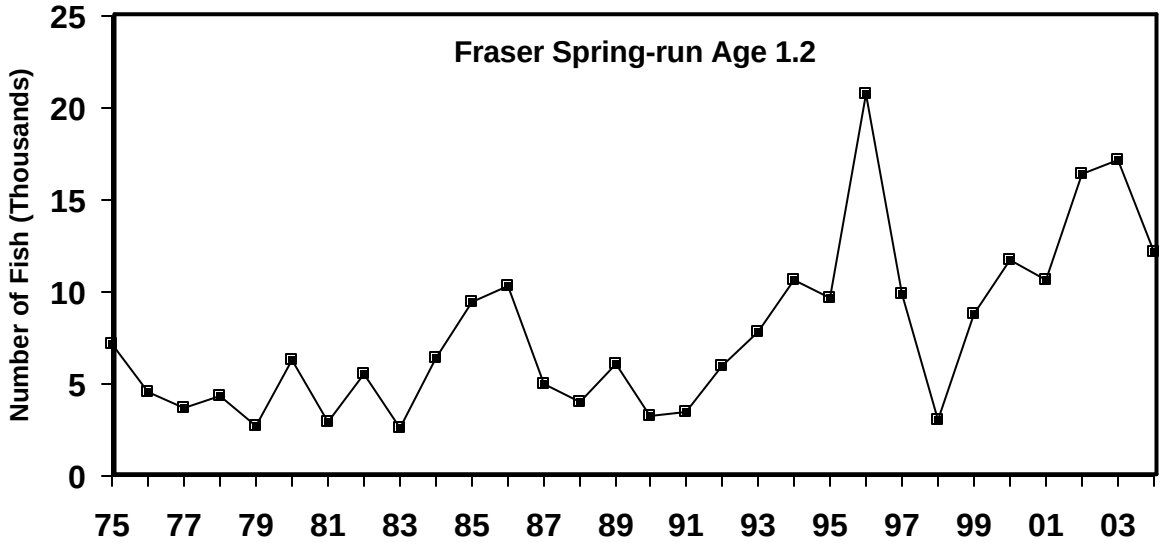
For populations other than the Harrison River, habitat-based models are being developed to estimate spawning capacity and spawner abundance producing maximum sustained yield. This habitat-based assessment will initially focus on predictive models based on Chinook stock-recruitment relationships, although other habitat-based approaches will also be considered.



Escapement Methodology: The Fraser Spring-Run Age 1.3 aggregate includes 31 populations that spawn in the Fraser River and its tributaries. Chinook in the Fraser Spring-Run Age 1.3 aggregate are stream-type, spending one year in freshwater before migrating to the sea. Most Chinook broods in this aggregate return at total age 5, although a portion (<10%) return at age 4 or 6. These stocks have a predominantly spring run-timing, returning to the Lower Fraser between late-March and mid-July, with the peak of migration occurring in June. The aggregate includes the Upper Pitt River and Birkenhead River stocks in the Lower Fraser, and the spring-run Chinook of the Mid and Upper Fraser, North Thompson, and South Thompson, but excluding those of the Lower Thompson (CTC 2002b). Stocks upstream of Prince George include the McGregor and Torpy River systems. In recent years, fence counts have been employed at the Chilako River in the Upper Fraser and at the Salmon River in Salmon Arm (South Thompson). Fence counts were discontinued at the Salmon River (Prince George) in 1998. Estimates for all other systems were generated from aerial surveys, typically, by dividing the peak count by 0.65.

Escapement Goal Basis: There is currently no CTC accepted escapement goal for this aggregate.

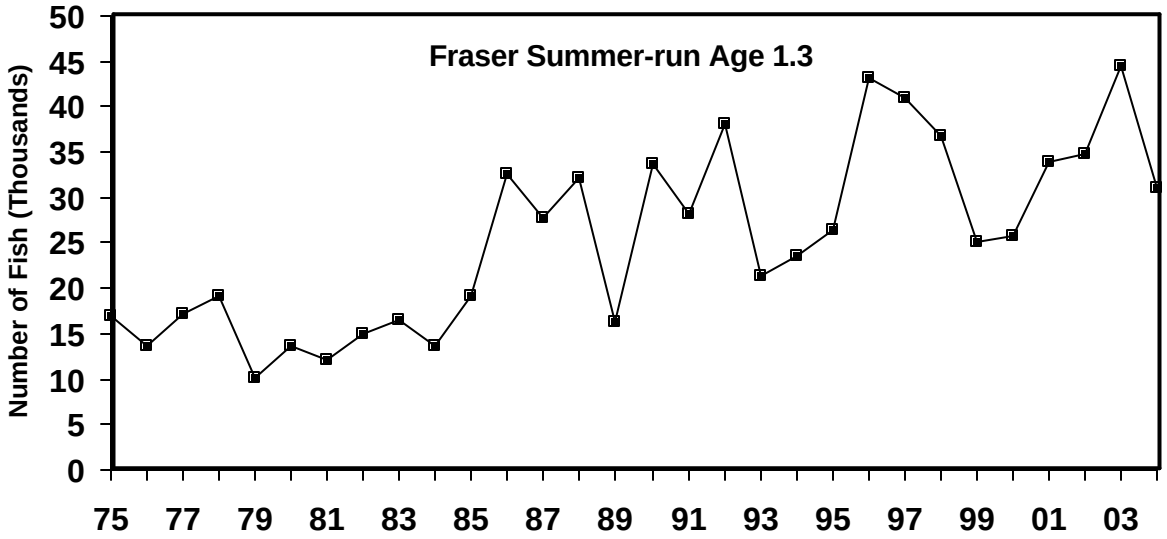
Agency Comments: Work is currently underway to evaluate habitat-based escapement goal methodology, and to calibrate aerial over-flight counts with area-under-the-curve methodology and intensive Petersen mark-recaptures. Total escapement for this aggregate declined to 31,164 in 2004.



Escapement Methodology: The Fraser Spring-Run Age 1.2 aggregate includes six smaller body size populations that spawn in the Lower Thompson River tributaries, Louis Creek of the North Thompson and the spring-run fish of Bessette Creek in the South Thompson (CTC 2002b). Chinook in this aggregate are stream-type, spending one year in freshwater before migrating to the sea. Broods return predominately as total age 4 adults, although a portion (<10%) return at age 3 or 5. Chinook in the Fraser Spring-Run Age 1.2 aggregate return to the Lower Fraser between March and early July. Escapement estimates for each system are generated from visual surveys, either from aerial over-flights or stream walks and by dividing the peak counts by 0.65. The Nicola watershed is a site for calibrating peak count expansion, area-under-the curve, and mark-recapture methods.

Escapement Goal Basis: There is currently no CTC accepted escapement goal for this aggregate.

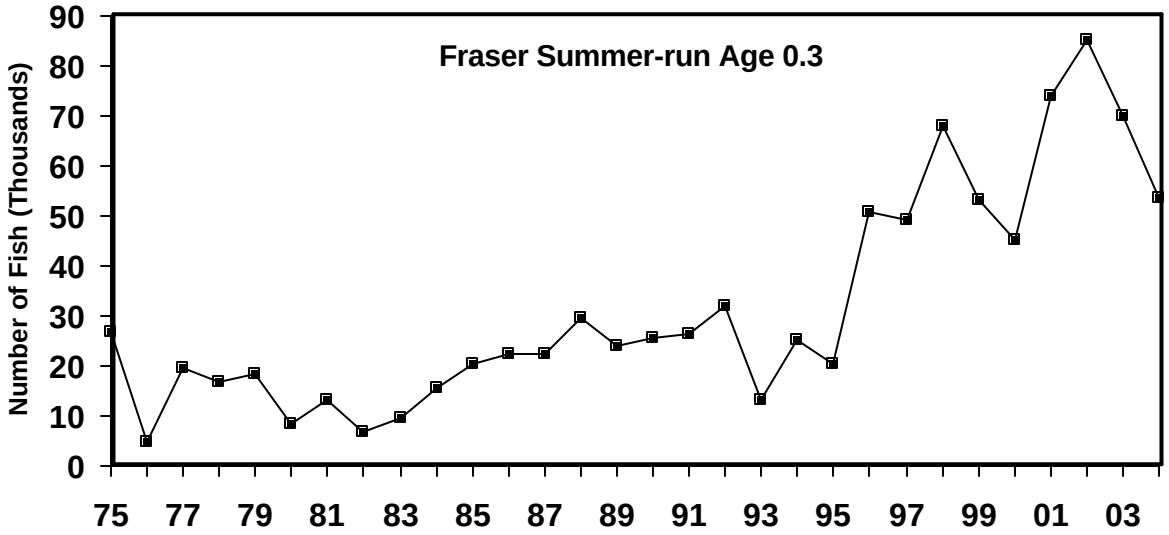
Agency Comments: Work is currently underway to evaluate habitat-based escapement goal methodology, and to calibrate aerial over-flight counts with area-under-the-curve methodology and intensive Petersen mark-recaptures. Overall escapement of this aggregate decreased in 2004 to 12,156.



Escapement Methodology: The Fraser Summer-Run Age 1.3 stock complex includes 11 populations, spawning in large rivers, mostly below the outlets of large lakes. These include the Stuart and Nechako rivers upstream of Prince George, Chilko and Quesnel rivers in the mid Fraser and the Clearwater and North Thompson rivers in the North Thompson watershed (CTC 2002b). Chinook in this aggregate return to the Lower Fraser between early June and early August. These stocks are dominated by yearling smolt production. Most broods return at total age 5 although a portion (~20%) return at age 4 or 6. Escapement estimates are generated from aerial surveys by dividing the peak count by 0.65, except for the Stuart system where a mark-recapture estimate is generated, and for the Nechako River where multiple aerial counts are analyzed with the AUC method.

Escapement Goal Basis: There is currently no CTC accepted escapement goal for the aggregate.

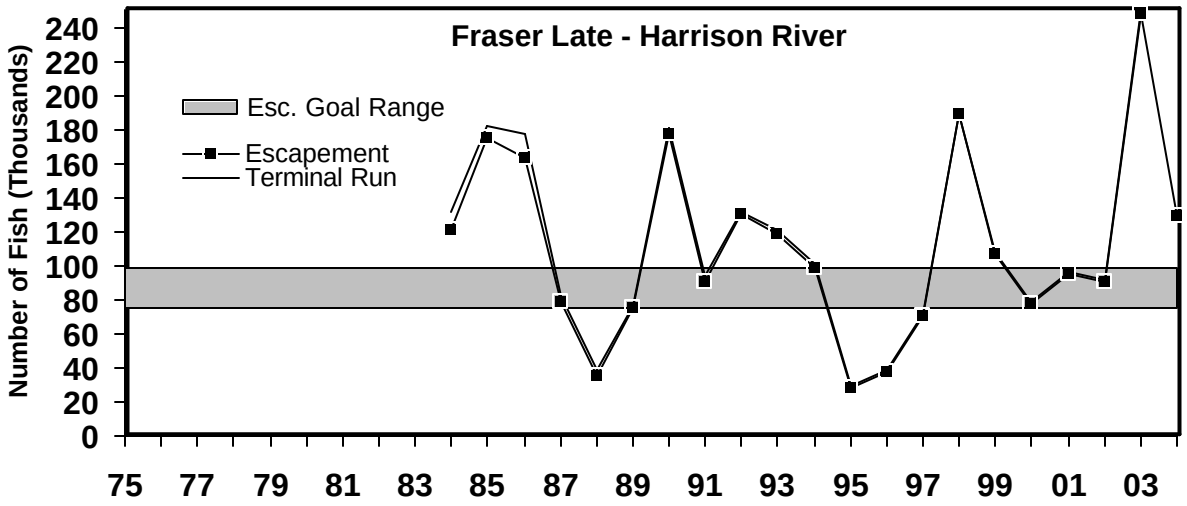
Agency Comments: Work is currently underway to evaluate habitat-based escapement goal methodology, and to calibrate aerial over-flight counts with area-under-the-curve methodology and intensive Petersen mark-recaptures. Aggregate escapement has been increasing over the past 15 years. Overall escapement of this aggregate decreased to near average level of 30,980 in 2004.



Escapement Methodology: The Fraser Summer-Run Age 0.3 aggregate includes six populations of Chinook spawning in the South Thompson watershed upstream of Kamloops and one in the lower Fraser. These include the Middle Shuswap, Lower Shuswap, Lower Adams, Little River and the South Thompson River mainstem, in the BC interior, and Maria Slough in the lower Fraser (CTC 2002b). Chinook in this aggregate return to the Lower Fraser between early July and early September. These stocks produce primarily sub-yearling smolts (ocean-type: entering the ocean during their first fall). Most broods return at total age 4 although significant numbers (~35%) return at age 2 (jacks), 3 or 5. Most escapements are estimated by expanding peak visual survey counts (as in previous three Fraser aggregates). Further, the lower Shuswap River is a site for calibrating peak count expansion, AUC, and mark-recapture methods.

Escapement Goal Basis: There is currently no CTC accepted escapement goal for the aggregate.

Agency Comments: Work is currently underway to evaluate habitat-based escapement goal methodology, and to calibrate aerial over-flight counts with AUC methodology and intensive Petersen mark-recaptures. Recent fishery reductions, designed in part to conserve interior Fraser watershed coho, sockeye and steelhead salmon, have resulted in dramatic increases in Chinook escapement since 1995, although escapements continued to decline to 53,764 Chinook in 2004 following the peak escapement reached in 2002 .



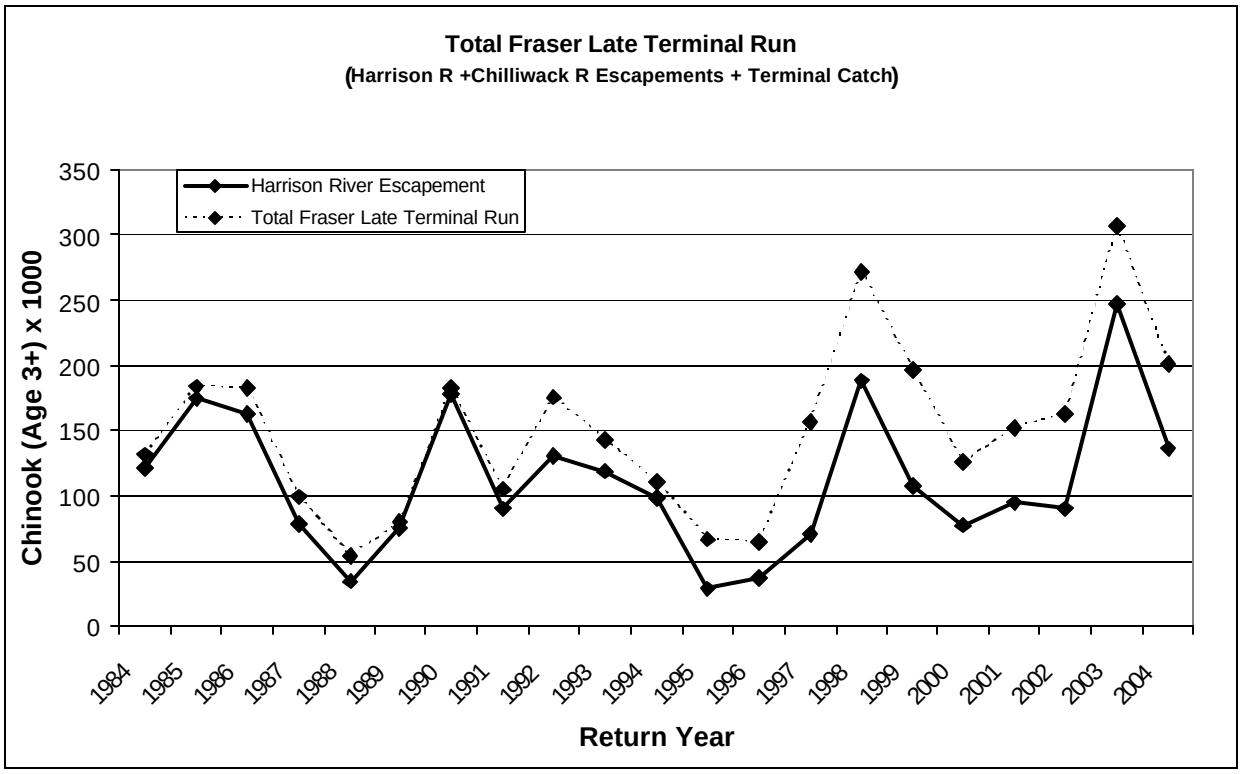
Escapement Methodology: The lower Fraser stock is dominated by fall returning Harrison-origin Chinook that includes natural spawners in the Harrison River and Harrison-origin fish that were introduced to the Chilliwack River. In 1984, the Harrison River population was selected as an escapement indicator stock for assessment of Chinook rebuilding. Since then, mark-recapture studies have been conducted annually to obtain reliable estimates of spawning escapements. Previous to 1984, escapements to the Harrison had been estimated through a variety of visual counting and estimation methods. Comparison of visual-based estimates with mark-recapture estimates of spawning escapements to the Harrison River indicate that quantitative estimates may be 4-8 times larger than the visual estimates. Estimates of fall Chinook escapement to the Chilliwack River are based on a procedure long established by the Chilliwack Hatchery staff for expanding the number of carcasses counted in standardized reaches of the river.

Escapement Goal Basis: Due to their natural abundance and importance in numerous British Columbia and Washington State fisheries, Harrison River Chinook were designated as an escapement indicator stock (i.e., 'key stream' indicator) to aid in fulfilling commitments under the 1985 Pacific Salmon Treaty. In 1986, an interim escapement goal for Harrison River Chinook was established at 241,700 fish, based on doubling of the escapement estimate obtained from a mark-recapture program in 1984. In 2001, an escapement goal range was developed for Harrison Chinook using a Ricker stock-recruit approach as described in CTC (2002b). The escapement goal range that was proposed was 75,100-98,500 with the upper bound equal to the upper 75% confidence limit derived from a bootstrap procedure. This range was reviewed and accepted by the CTC. Estimated spawning escapements in the Harrison have exceeded this escapement goal range in nine years from 1984 to the present. They have fluctuated substantially with no apparent increasing trend within the time series.

Agency Comments: Harrison River origin Chinook are white-fleshed fish that return to spawn during the fall. They are unusual in that fry migrate into the lower Fraser River and estuary shortly after emergence. This stock spends 2-4 years in the coastal marine environment before returning to spawn. The Harrison River stock is one of the largest naturally spawning Chinook populations in the world and makes important contributions to fisheries in the Strait of Georgia, southern BC, and upper Washington State.

The near final estimate of the 2004 Harrison River escapement is 128,944 age 3 and older Chinook. The estimate for age 2 male Chinook was not available. The hatchery program removed 1100 Chinook from the river. Sex and age of these fish was not available. The escapement to the Harrison exceeded the upper bound of the escapement goal again in 2004.

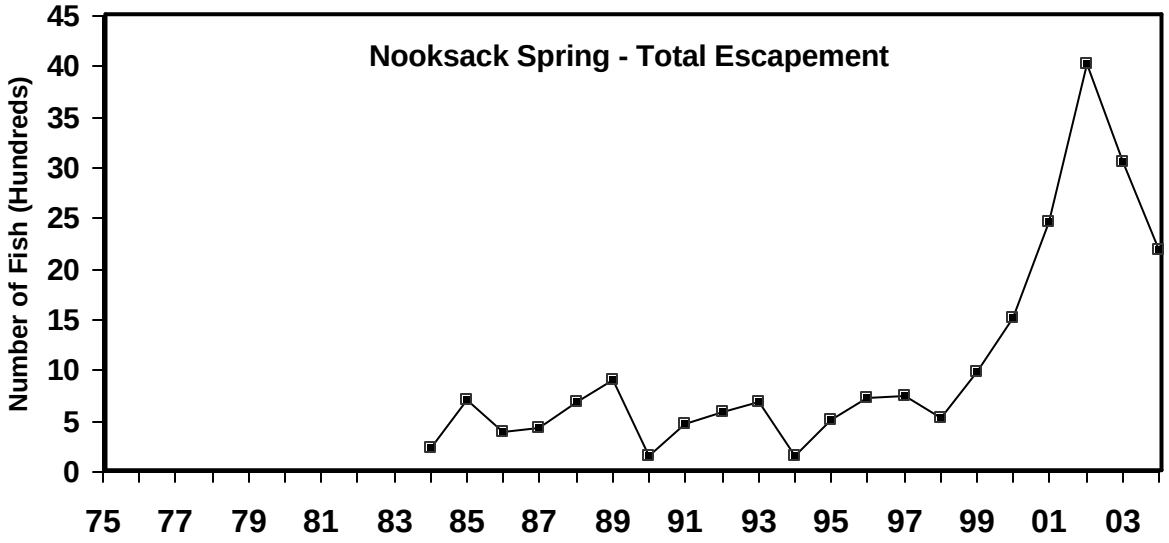
The preliminary estimate of the 2004 Chilliwack River spawning escapement was 55,682 age 3 and older and 12,270 age 2 male Chinook. The hatchery removed a further 2,345 adults and 2,316 jacks The difference between the two lines in the figure below reflects the increasing contribution of Chilliwack River and hatchery returns to the total terminal run of fall white Chinook. The terminal run size of lower Fraser whites in 2004 was 197,122 Chinook . The Chilliwack River spawning estimates used in the total terminal run series are based on those produced by the Chilliwack hatchery staff. The terminal catch estimate for late Fraser Chinook is composed of the Albion test fishery catch of white-fleshed fish after week 082, Fraser River net fisheries after week 083, and the Chilliwack River recreational catch.



2.4.4 Washington, Oregon and Columbia River Stocks

The PSC escapement indicator stocks in Washington, Oregon, and Idaho are separated into five groups: Puget Sound, Washington Coastal, Columbia River, North Oregon Coastal, and Mid Oregon Coastal. The indicator stocks include a variety of run timings and ocean distributions. In general, the marine catch of Puget Sound spring and fall stocks occurs in Puget Sound, the Strait of Georgia, and the West Coast of Vancouver Island. The marine harvest of Washington Coastal, Willamette Spring, and Columbia River summer and upriver fall stocks occurs primarily in West Coast Vancouver Island, Northern/Central British Columbia, and Southeast Alaska. The ocean migration of Columbia Upriver Spring and Washington Coastal spring stocks is largely unknown. Very few Columbia Upriver Spring CWT recoveries have been recovered in ocean fisheries; Washington Coastal spring stocks have been infrequently tagged. Both Oregon groups are fall stocks, with the Northern group migrating to far northern fisheries, while the Middle group migration has a more southerly distribution.

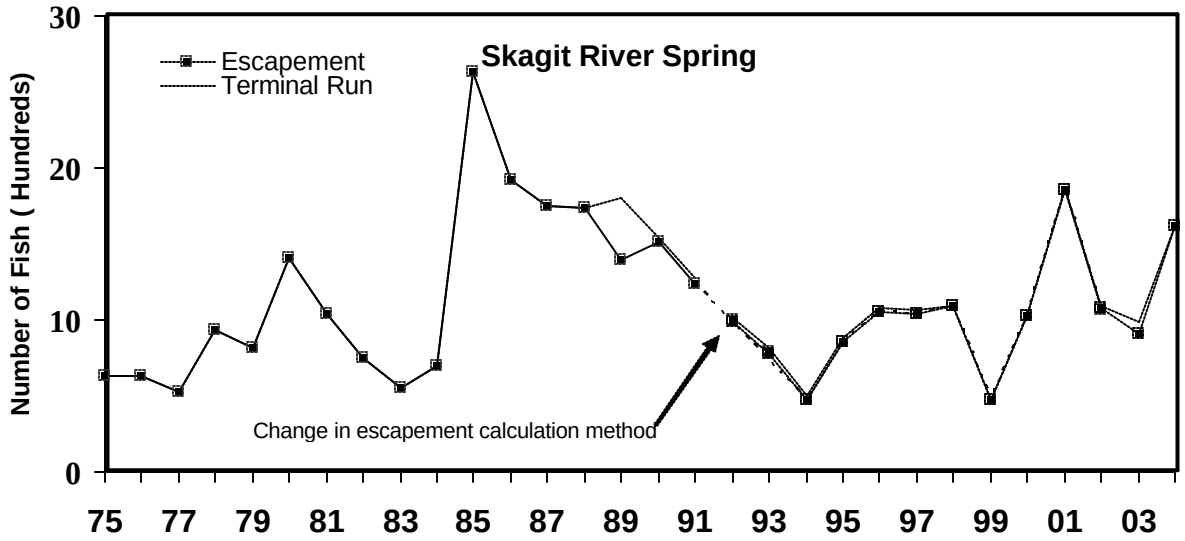
Biologically based escapement goals have been reviewed and accepted by the CTC for three fall (Queets, Quillayute, Hoh) stocks, two Spring/summer (Queets, Hoh) stocks, three Columbia River (Lewis, Upriver Brights and Columbia River summer) stocks, and three Oregon coastal (Nehalem, Siletz and Siuslaw).



Escapement Methodology: The Nooksack River is the most northerly river in Puget Sound. There are two populations of spring Chinook; one spawns in the North and Middle Fork and the other spawns in the South Fork. Turbid water often makes visual observation of spawning fish difficult. Carcass counts in the North/Middle Fork are multiplied by an expansion factor to estimate the spawning escapement. In the South Fork, escapement is estimated using redd survey counts and 2.5 adult spawners for each redd (CCMP 2004). Escapement estimates for the North and South Forks are summed to derive the total estimate presented in the graph above.

Escapement Goal Basis: There is currently no CTC accepted escapement goal for this escapement indicator stock.

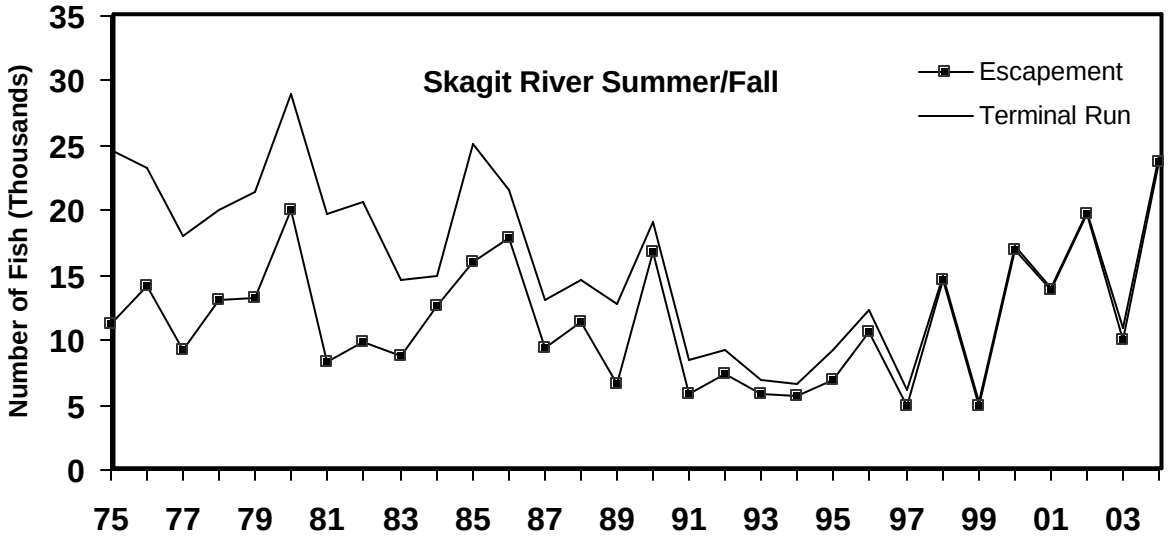
Agency Comments: The Kendall Creek Hatchery, located on the North Fork, is the site of recovery efforts directed at the North Fork Chinook. The recovery program involves several strategies, including on-station and off-station releases, with the latter comprised of both acclimated and unacclimated releases. All fish are marked to estimate survival rates for the various release methods. Although recovery programs on the South Fork were implemented in the past, they have been discontinued. The North/Middle Fork Restoration Program utilizes several release strategies from the Kendall Creek Hatchery. Thermal otolith marks are applied to each release group, so their survival and spawning distribution can be evaluated when the fish return as adults. The CCMP (2004) conservation objective for 2003 for Nooksack spring Chinook was for an AEQ exploitation rate across all southern U.S. fisheries not to exceed 9%. A postseason estimate of the AEQ exploitation rate is not available. The preseason estimate is 7%. The state-tribal escapement goal established for this stock is 4,000 spawners. In 2004, the escapement estimate for the North Fork is 3,085 Chinook and for the South Fork is 570. This increase from previous years is primarily due to supplemental hatchery releases. There is a small Ceremonial and Subsistence directed fishery on the spring Chinook and substantial incidental impacts during the terminal fall Chinook fisheries.



Escapement Methodology: The Skagit River drains into northern Puget Sound near Mount Vernon, and is the largest drainage basin in Puget Sound. It supports three stocks of spring Chinook, which use the upper Sauk, Suiattle, and upper Cascade rivers. Spring Chinook total escapements are estimated annually from redd counts made during aerial and raft surveys. The counts are expanded by the area-under-the-curve method (Smith and Castle 1994). This method assumes 2.5 adult spawners for each estimated redd. Redds counted by air are reduced by 5% to account for "false" redds counted during the surveys. Escapements in stream areas that are not included in redd counts are estimated by using peak live and dead fish counts from foot surveys.

Escapement Goal Basis: There is currently no CTC agreed escapement goal for this escapement indicator stock.

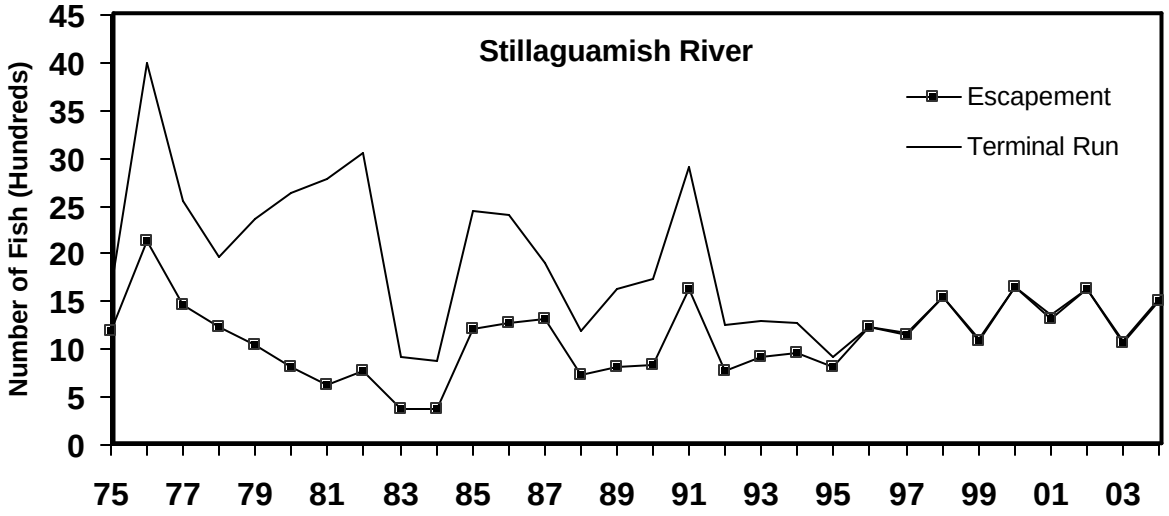
Agency Comments: Due to changes in spawning index areas, beginning in 1992 for the Cascade stock and 1994 for the Sauk and Suiattle stocks, escapements are not directly comparable to previous numbers. There is no production supplementation program for Skagit River spring Chinook. However, each year, wild broodstock are collected, spawned, and approximately 150,000 yearling and 250 fingerling spring Chinook are released with coded-wire tags. The past state-tribal escapement goal of 3,000 adults was the average of the estimated escapements from 1959-1968 (PFMC 1997). In 2003, the FMP conservation objective for this stock was for a total AEQ exploitation rate across all fisheries not to exceed 30%. In 2004 and in 2005 the RER for Skagit springs was/is 38%, with 576 spawners as the low abundance threshold. Proposed escapement goals, as stated in the draft Shared Strategy Recovery Plan, are 1,200 Chinook for low marine survival years and 2,100 Chinook for high marine survival years. While no postseason estimate is available, the preseason expectation was for a total rate of 24% (PFMC 2003). In 2003, the escapement estimate is 786 natural spawners (909 total spawners). The 2004 escapement estimate is 1,622 natural spawners.



Escapement Methodology: The Skagit River drains into northern Puget Sound near Mount Vernon, and is the largest drainage basin in Puget Sound. It supports two stocks of summer Chinook (Upper Skagit and Lower Sauk rivers) and one stock of fall Chinook (Lower Skagit). The summer/fall Chinook total escapements are estimated annually from redd counts made using aerial surveys. The counts are expanded by the area-under-the-curve method (Smith and Castle 1994). This method assumes a 21-day redd life and 2.5 adult spawners for each estimated redd. The estimate is then reduced by 5% to account for "false" redds counted during aerial surveys. Escapements in stream areas that are not included in aerial counts are estimated using cumulative redd counts.

Escapement Goal Basis: There is currently no CTC agreed escapement goal for this group.

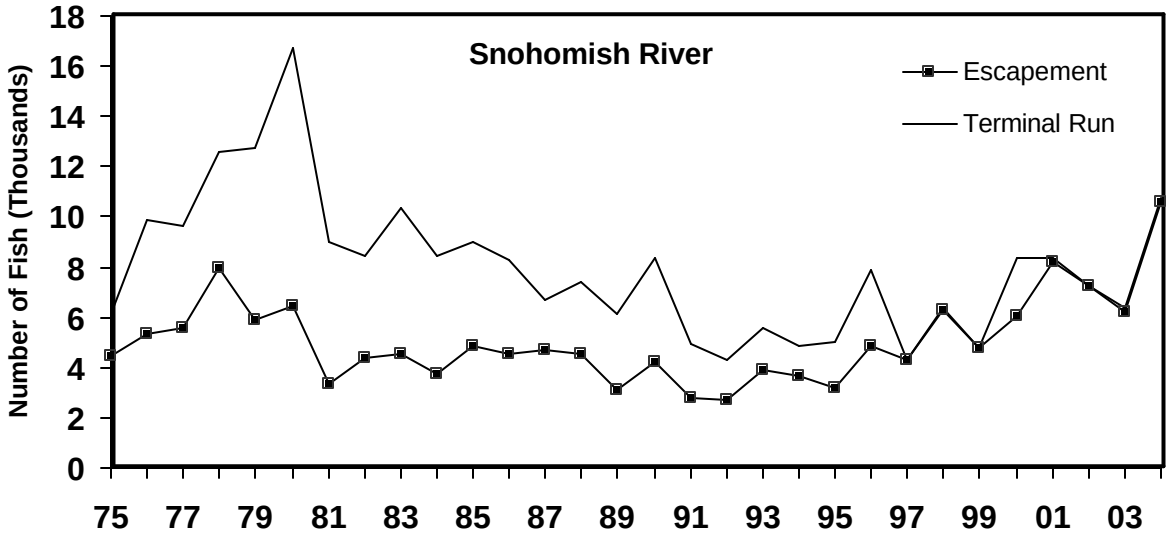
Agency Comments: Efforts were recently funded through the USCTC funding to improve escapement estimates of Skagit summer/fall Chinook. They included: development of variance estimates, determination of age and sex composition of the escapement, and evaluation of the 21-day redd life assumption and 2.5 fish/redd expansion value. The state-tribal escapement goal for this stock is 14,850, the average of the 1965-1976 escapements (Ames and Phinney 1977). Little terminal harvest has occurred since 1997. In 2003, the FMP conservation objective for this stock was for a total AEQ exploitation rate across all fisheries not to exceed 49%. The predicted exploitation rate was 50%. The 2004 escapement estimate is 23,750 and the terminal run estimate is 24,241.



Escapement Methodology: The Stillaguamish River drains into northern Puget Sound between Everett and Mount Vernon. A stock of summer Chinook uses the North Fork, while a stock of fall Chinook spawns in the South Fork, the main-stem, and several tributaries. Total escapements in the main-stem are estimated annually from redd counts made during aerial surveys. The counts are expanded by the area-under-the-curve method (Smith and Castle 1994). This method assumes a 21-day redd life and 2.5 adult spawners for each estimated redd. The estimate is then reduced by 5% to account for "false" redds counted during aerial surveys. Escapements in the tributaries are estimated by using cumulative redd counts from foot or boat surveys.

Escapement Goal Basis: There is currently no CTC agreed escapement goal for this escapement indicator stock.

Agency Comments: Broodstock are collected annually in the river to maintain a coded-wire tag indicator stock program and to augment natural production. From 1989 to 1996, approximately 35% of the escapement was comprised of returns from this program. (1996 to 2003 average is 38% HORs)The state-tribal escapement goal of 2,000 fish is the average of the 1973-1976 escapements (Ames and Phinney 1977).. There have been no terminal harvests since 1996. The 2003 FMP conservation objective for the combined summer/fall stock was for an AEQ exploitation rate not to exceed 24% across all fisheries. The preseason estimate of the total AEQ exploitation rate was 18%. The escapement estimate for 2003 is 988 Chinook (883 for the North Fork and 105 for the South Fork). The 2004 escapement estimate is 1,506 (North Fork is 1358 and the South Fork is 148).



Escapement Methodology: The Snohomish River is located in northern Puget Sound near Everett. It produces two stocks of summer/ fall Chinook, the Skykomish River stock and the Snoqualmie River stock. In most areas of the Snohomish River, summer/fall Chinook total escapements are estimated annually from redd counts made by aerial surveys. The counts are expanded by the area-under-the-curve method (Smith and Castle 1994). This method assumes a 21-day redd life and 2.5 adult spawners for each estimated redd. The estimate is then reduced by 5% to account for "false" redds counted during the surveys. Cumulative carcass counts, live counts, cumulative redd counts, or peak redd ratio comparisons are used to estimate escapements in stream areas that are not included in aerial counts, i.e. tributaries (USCTC 1997).

Escapement Goal Basis: There is currently no CTC agreed escapement goal for this stock.

Agency Comments: Some terminal area harvest of Snohomish River Chinook occurs in Area 8 incidental to net and sport fisheries targeting Tulalip Hatchery Chinook salmon. Historic terminal run size and catch estimates derived from run reconstruction are being revised to reflect the results of otolith marking studies. The state-tribal escapement goal for this stock is 6,211 fish (the average of the 1965-1976 escapements). In 2003, the escapement was estimated at 5,447 Chinook. The FMP conservation objective was for a total AEQ exploitation rate across all fisheries of 24%. The preseason prediction of that rate was 21%. The 2004 natural escapement estimate for the Snohomish River is 10,606.

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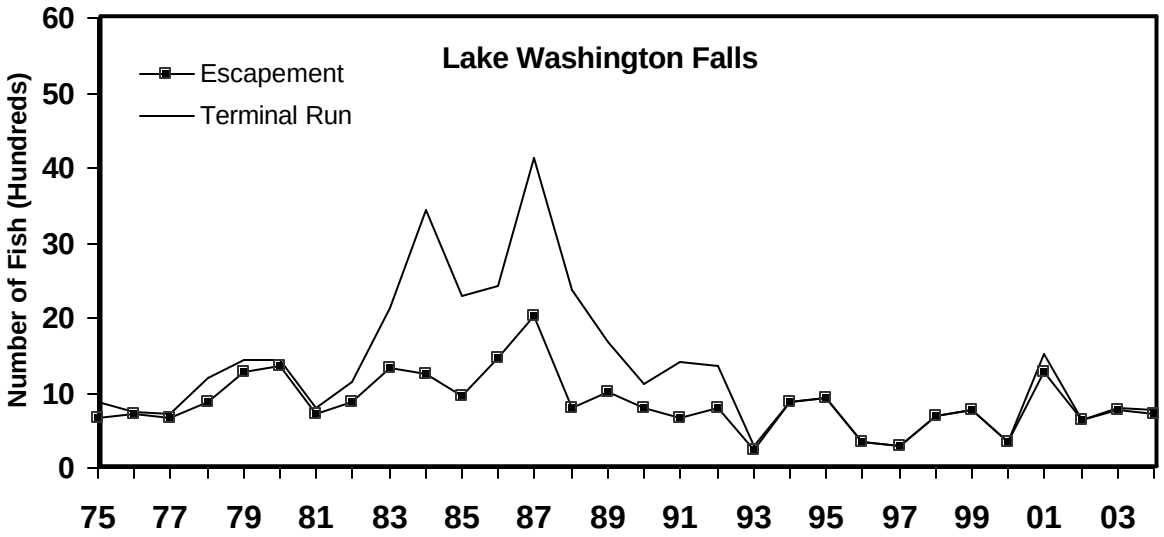
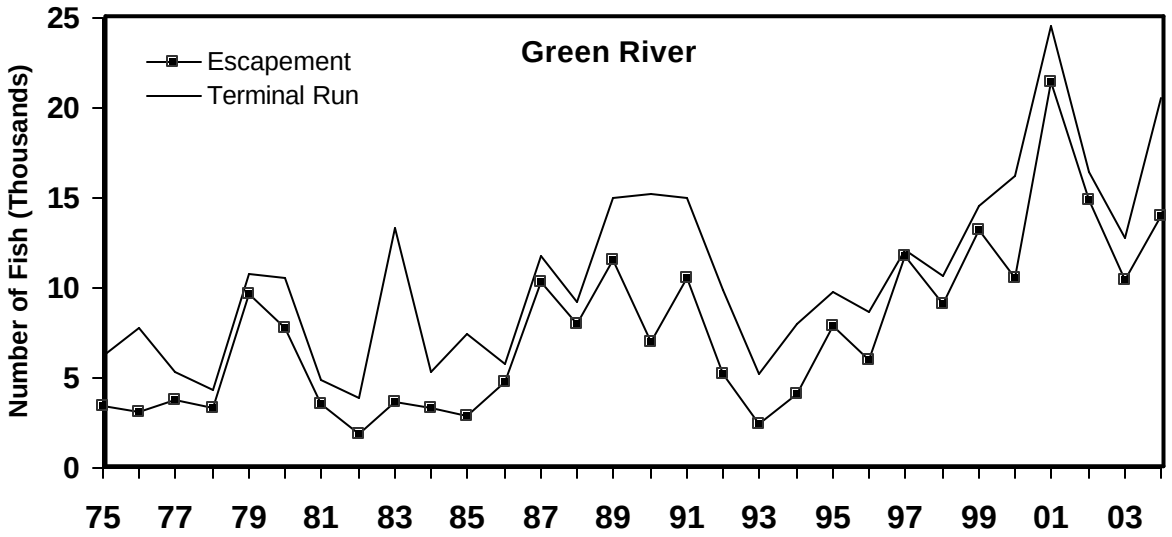


Escapement Methodology: Drainage from Lake Washington flows through the Lake Washington Ship Canal into Central Puget Sound in Seattle. Natural spawning of Chinook in the Lake Washington basin occurs primarily in Bear Creek, Cottage Creek, and the Cedar River. Annual surveys are conducted by walking in the north tributaries (Bear and Cottage creeks) and by float on the Cedar River. Escapement estimates are based on area under the curve estimates of live spawners. The entire Cedar River is surveyed, but only index areas are surveyed in the north tributaries with no expansion for un-surveyed areas.

Escapement Goal Basis: There is currently no CTC agreed escapement goal for this escapement indicator stock.

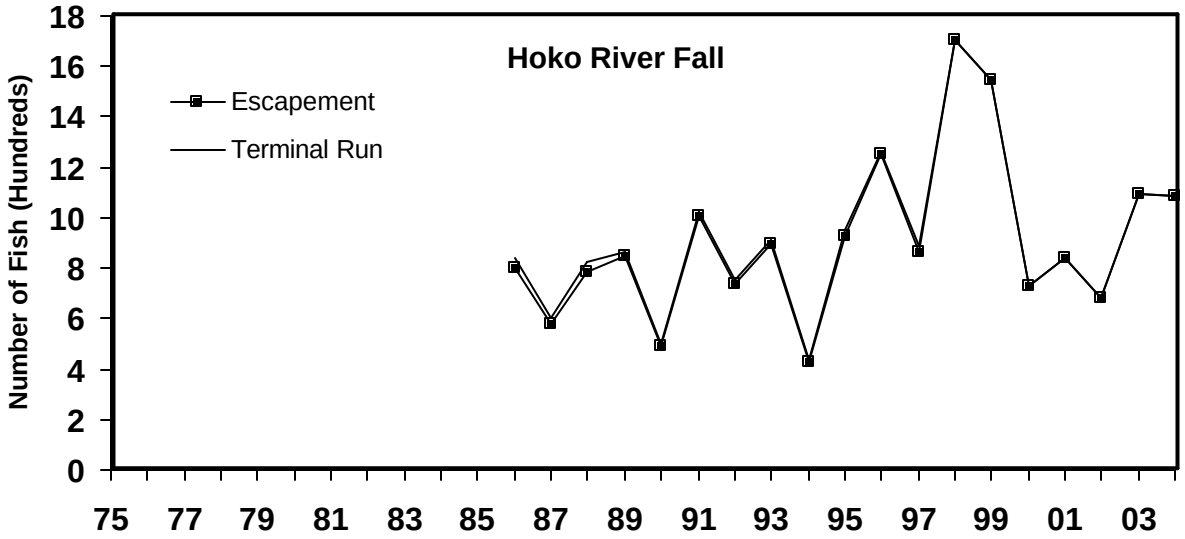
Agency Comments: Substantial artificial production occurs in Issaquah Creek and at the University of Washington. In 1994, spawning estimates were reviewed, and an attempt was made to find a consistent method to estimate escapement. A state-tribal escapement goal of 1,200 has been established for the Cedar River spawners. The single targeted goal represents an index count for the Cedar River. This objective reflects the average of observed spawning escapements from 1965-1969. In 2003, the escapement estimate for the Lake Washington Falls was 771 natural spawners, with 562 returning to Cedar River and 212 returning to the north tributaries. Total hatchery returns were 10,398. It should be noted that although there are no hatchery fish released from the Cedar River, nearly 40% of the spawning fish were of hatchery origin. The FMP conservation objective for 2003 for Lake Washington Fall Chinook was for an AEQ exploitation rate of 31% in all fisheries. The preseason expected AEQ exploitation rate was 12%. The 2004 escapement estimate for natural spawning Chinook is 730 (587 for Cedar and 143 for north tributaries). There have not been freshwater terminal fisheries on this stock since 1995.



Escapement Methodology: The Green River flows through Seattle into central Puget Sound. The basin has few tributaries available to anadromous fish; the only one with significant natural Chinook spawning is Newaukem Creek. Total escapement to the Green River system is estimated from a combination of aerial and float counts of redds in index and supplemental areas in the main-stem, combined with foot surveys in Newaukem Creek. Escapement estimation using cumulative redd counts assumes a 21-day redd life and 2.5 adult spawners for each redd (Ames and Phinney 1977). These estimates are then expanded to account for unsurveyed spawning areas in the main-stem. Finally, these estimates are added to the estimated numbers of naturally spawning hatchery-origin Chinook in Soos Creek derived from carcass counts to compute the total escapement estimates for the Green River shown in the graph above.

Escapement Goal Basis: There is currently no CTC agreed escapement goal for this escapement indicator stock.

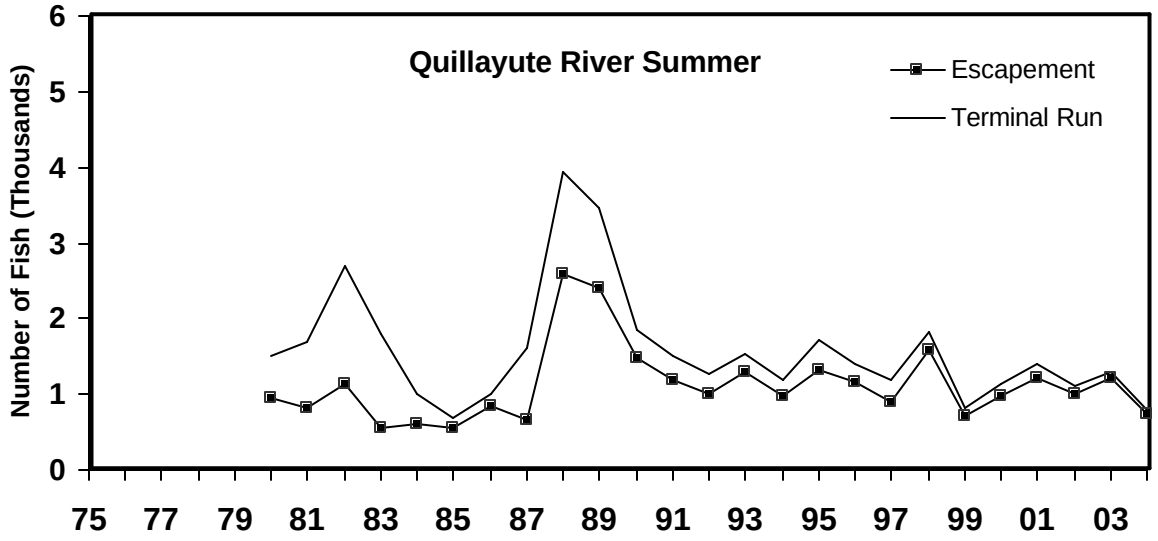
Agency Comments: There is a large hatchery program in this basin and these fish comprise a large portion of the return. The average is about 52% for the years 1996-2003. Tagging studies were conducted in 1975 and 1976 to estimate numbers of returning adults; results were in close agreement with estimates made from aerial surveys. No attempt is made to adjust the estimate of natural escapement for the presence of hatchery origin fish. The USCTC has funded recent efforts to improve escapement estimates of Green River fall Chinook, including evaluation of the spatial and temporal distribution of escapement, alternative methods of estimating escapement, and the validity of the 21-day redd life assumption and 2.5 fish/redd expansion value. The state-tribal escapement goal of 5,750 naturally spawning adults is the average of the 1965-1976 escapements (Ames and Phinney 1977). In 2003, the natural spawning escapement was estimated to be 10,405, while the natural run size estimate, based on run reconstruction was 11,187. The 2003 FMP conservation objective for this stock was for a total AEQ exploitation rate across all fisheries not to exceed 53%, with an escapement goal of at least 5,800 adults. The 2004 escapement estimate for natural spawning Chinook is 13,991.



Escapement Methodology: The Hoko River is located on the Strait of Juan de Fuca. Spawner escapement surveys are conducted on foot, on a weekly basis, from September through December. Methods for expanding the redd counts vary each year depending on visibility and flooding. The total run size is calculated by taking the sum of redds in the upper main-stem and tributaries, added to the expanded number of redds in the lower main-stem. Expansions are used only in the lower main-stem because a 10-year data series is only available for the lower main-stem; better visibility in the upper main-stem allows for direct counts in high-flow periods. Limiting the expansions to the lower main-stem also keeps methods consistent over the years. The total natural escapement is calculated by multiplying the number of redds by 2.5 adults per redd. Natural escapement estimates do not include the broodstock taken by the Hoko Hatchery.

Escapement Goal Basis: There is currently no CTC accepted escapement goal for this stock.

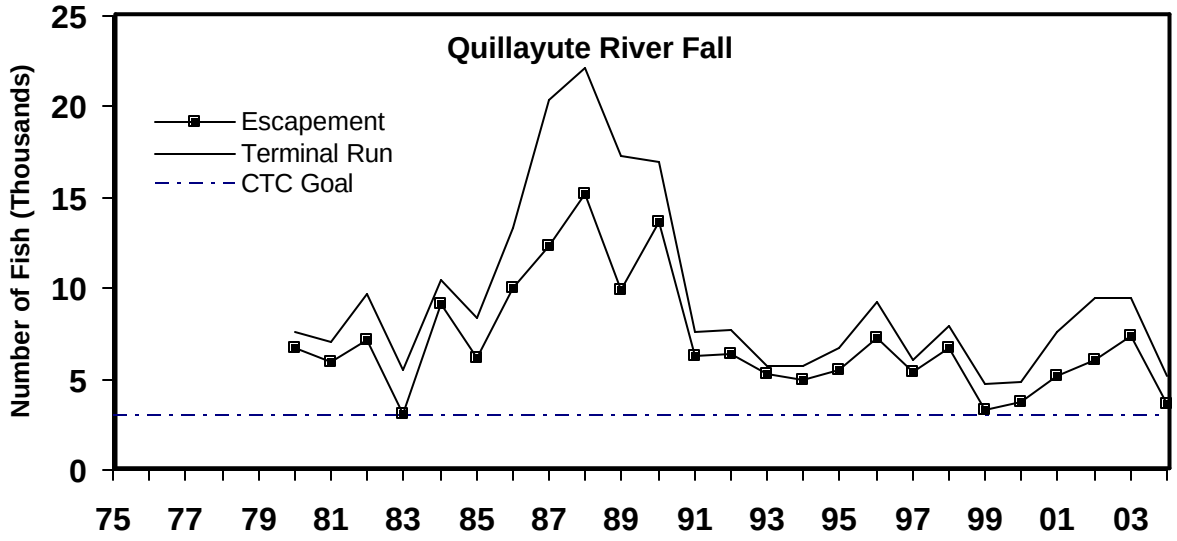
Agency Comments: There are no directed fisheries on Chinook returning to rivers entering the Strait of Juan de Fuca. The escapement goal established by state and tribal managers is 850 naturally spawning adults. This single targeted goal was developed as a MSY proxy. The escapement goal was calculated by estimating the amount of available spawning habitat, then expanded utilizing assumed optimal redds per mile and fish per redd values (Ames and Phinney 1977). The escapement and terminal run size estimates for 2003 are 1,098 adults. The 2004 escapement estimate is 1,089.



Escapement Methodology: The Quillayute River is located on the northwestern Washington coast. It is a short stretch of river formed when the Bogachiel and Sol Duc rivers meet near the town of La Push before emptying directly into the Pacific Ocean. The river system supports a stock of naturally spawning summer Chinook whose total natural escapement estimate includes hatchery strays. Prior to 1980 escapements were based on estimated gillnet exploitation rates. In this report, the CTC, after review, decided to remove the data points from this period because these estimates are of poor quality for evaluating escapement trends. Since 1980, total annual escapement has been estimated by redd count surveys (QDNR 1982) conducted by foot, boat, and helicopter. Frequent surveys are made in index areas throughout the spawning season. Surveys are conducted in areas outside index areas once or twice a year during peak spawning times and expanded by similar timed data from index areas. Redd counts in non-surveyed streams are approximated by assigning a redd per mile value from an index area. Escapement is estimated by multiplying estimated redds by 2.5 to account for number of fish per redd. Total natural escapement estimates include hatchery strays and, beginning in 1987, fish taken for hatchery broodstock programs.

Escapement Goal Basis: There is currently no CTC accepted escapement goal for this stock.

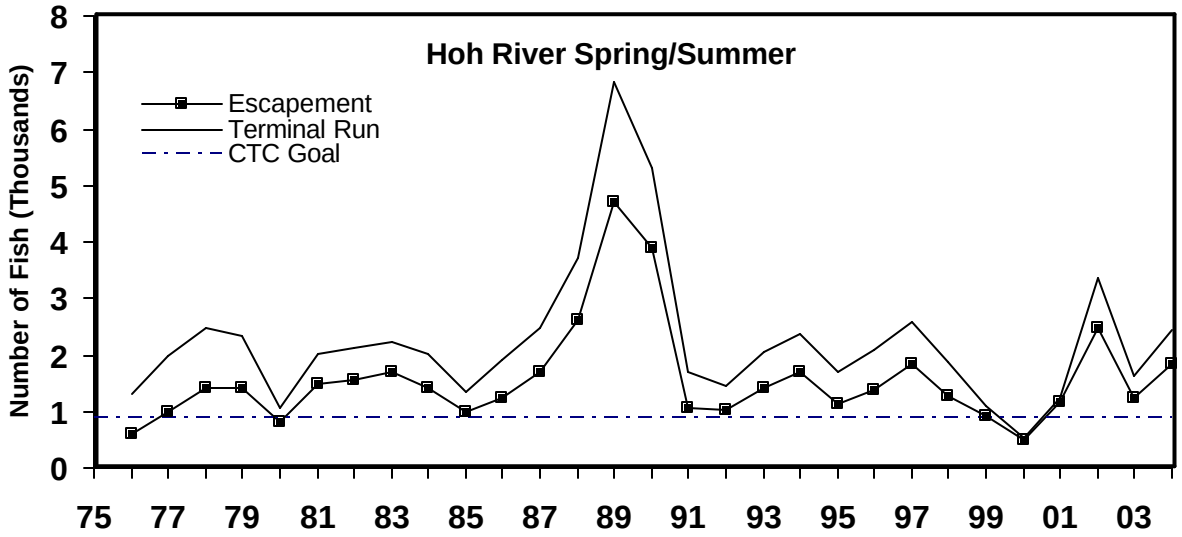
Agency Comments: A summer Chinook hatchery program using native stock operated from the mid-1970s to the mid-1980s. Spring Chinook of non-native origin were introduced in a hatchery program in the early 1970s. Coded-wire tag analyses since then have demonstrated significant straying of these spring Chinook into the summer Chinook spawning population. Estimates from 1991-1995 averaged 47% hatchery origin strays in the naturally spawning population. In 1996, fry plants were eliminated and the smolt plants were reduced. Summer Chinook are managed for a fixed escapement goal of 1,200 adults and jacks combined (PFMC 2003). Estimates of the terminal run size and escapement for 2004 are 788 adult Chinook and 745 adult Chinook, respectively. This continues a trend of stable returns near the management goal for this stock.



Escapement Methodology: The Quillayute River is located on the northwestern Washington coast near the town of La Push. The river system supports a stock of naturally spawning fall Chinook. Prior to 1980 escapements were based on estimated gillnet exploitation rates. In this report, the CTC, after review, decided to remove the data points from this period because these estimates are of poor quality for evaluating escapement trends. Since 1980, total annual escapement has been estimated by redd count surveys (QDNR 1982) conducted by foot, boat, and helicopter. Frequent surveys are made in index areas throughout the season. Surveys are conducted in areas outside index areas once or twice a year during peak spawning times and expanded by data from index areas. Escapement is estimated by multiplying the expanded redds by 2.5 to account for number of fish per redd. Redd counts in non-surveyed streams are approximated by assigning a redd-per-mile value from an index area.

Escapement Goal Basis: Escapement floor policy of 3,000 for the Quillayute fall Chinook was developed by Cooney (1984) and QDNR (1982), based on spawner-recruit analyses, and was accepted by the CTC in 2004. These goals have been corroborated by more recent analyses of data for the Quillayute fall Chinook stock.

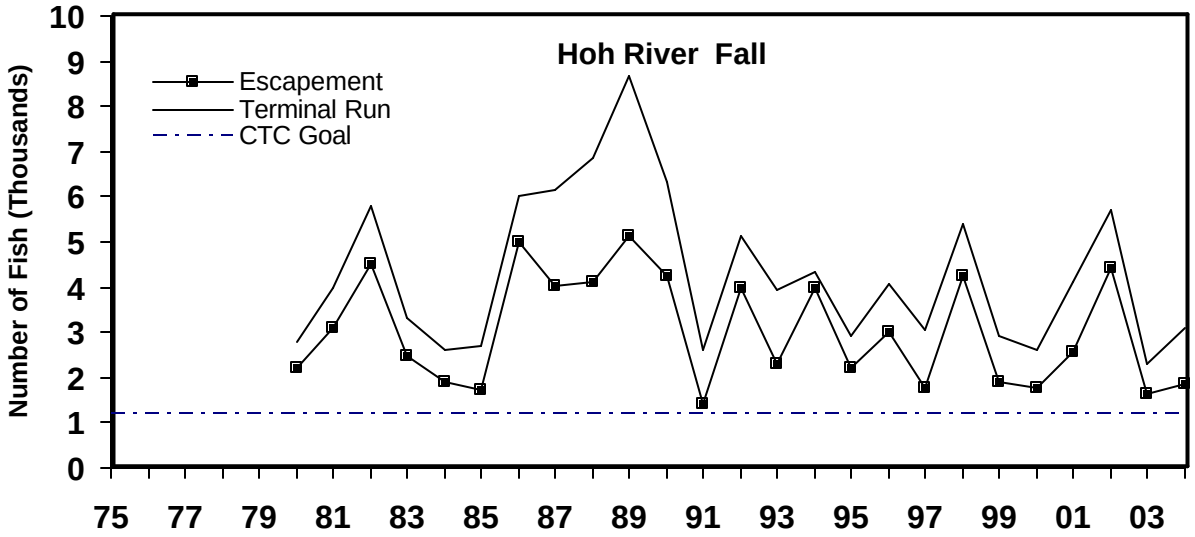
Agency Comments: No hatchery production of fall Chinook currently occurs in the Quillayute River basin; the program was discontinued in the late 1980s. Since 1991, the returning run size has fluctuated within a range comparable to run sizes observed prior to 1984. The estimate of the escapement of this stock in 2004 is 3,583 adults. The estimate of the terminal run is 5,216. Terminal fisheries are managed for a harvest rate of 40%, with an escapement floor of 3,000 fish (PFMC 2003). This objective is designed to actively probe at and above estimates of escapements that produce maximum sustained harvest (MSH), while minimizing potential detrimental effects of existing fisheries. Stock production analyses of spawning escapements from 1968-1982 were used to determine the initial escapement floor.



Escapement Methodology: The Hoh River is located on the northwestern coast of Washington north of the town of Kalaloch, and flows directly into the Pacific Ocean. The river system supports a naturally-spawning stock of spring/summer Chinook which is not enhanced by hatchery supplementation. Annual escapement has been estimated by redd count surveys conducted by foot, boat, and helicopter. Since the mid 1990s, additional foot and boat surveys have replaced helicopter surveys. Frequent surveys are made in index areas throughout the spawning season. One or two surveys are conducted in areas outside index areas during peak spawning times and expanded by data from index areas. Escapement is estimated by multiplying estimated redds by 2.5 to account for the number of fish per redd. Redd counts in non-surveyed streams are approximated by assigning a redd-per-mile value from an index area.

Escapement Goal Basis: Escapement floor policy of 900 for the Hoh spring/summer Chinook was developed by Cooney (1984) and QDNR (1982), based on spawner-recruit analyses, and was accepted by the CTC in 2004.

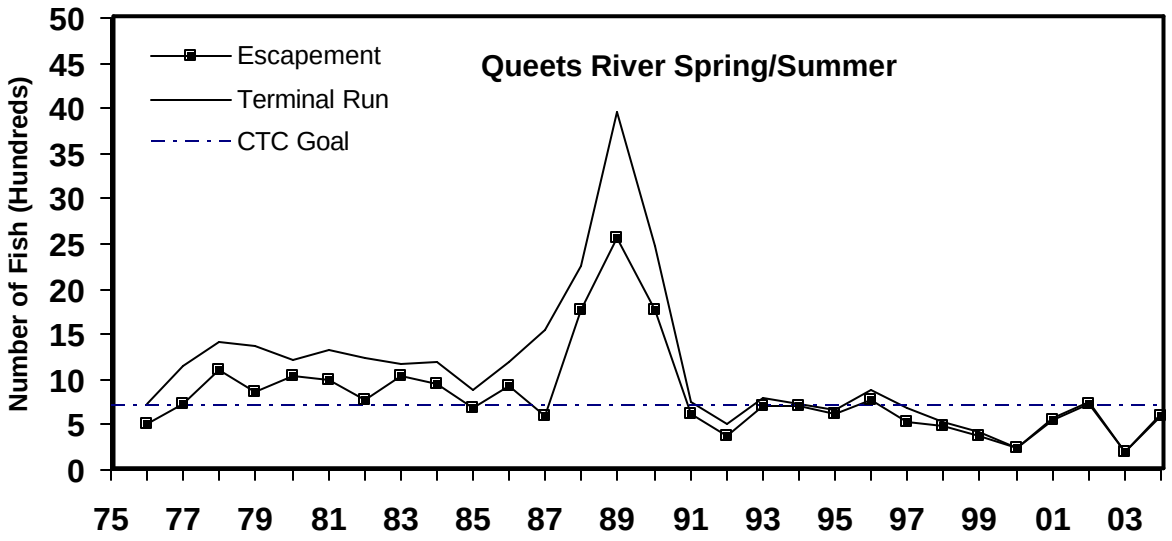
Agency Comments: Like many of the other Washington coastal stocks, the escapements have been relatively stable except for much larger returns in 1988, 1989, and 1990. The terminal return for this stock declined from 1997 to 2000, but has rebounded since then. In 2003, the estimates of terminal run size and escapement are 1,646 adult Chinook and 1,228 adult Chinook, respectively. Terminal fisheries are managed to harvest 31% of the river run, with an escapement floor of 900 fish (PFMC 2003). This objective is designed to allow a wide range of spawner escapements form which to eventually develop an MSY objective or proxy while protecting the long-term productivity of the stock. Stock production analysis of spawning escapement for brood years 1969-1976 was utilized to determine the initial escapement floor. The estimate of the escapement of this stock in 2004 is 1,829 adults. The estimate of the terminal run in 2004 is 2,455 adult Chinook.



Escapement Methodology: The Hoh River is located on the northwestern coast of Washington north of the town of Kalaloch, and flows directly into the Pacific Ocean. The river system supports a naturally spawning stock of fall Chinook, and is not enhanced by hatchery supplementation. Prior to 1980, escapements were based on estimated gillnet exploitation rates. In this report, the CTC, after review, decided to remove the data points from this period because these estimates are of poor quality for evaluating escapement trends. Since 1980, total annual escapement has been estimated by redd count surveys (QDNR 1982) conducted by foot, boat, and helicopter. Frequent surveys are made in index areas throughout the spawning season. One or two surveys are conducted in areas outside index areas during peak spawning times and expanded by similar timed data from index areas. Escapement is estimated by multiplying estimated redds by 2.5 to account for number of fish per redd. Redd counts in non-surveyed streams are approximated by assigning a redd-per-mile value from an index area.

Escapement Goal Basis: Escapement floor policy of 1200 for the Hoh fall Chinook was developed by Cooney (1984) and QDNR (1982), based on spawner-recruit analyses, and was accepted by the CTC in 2004.

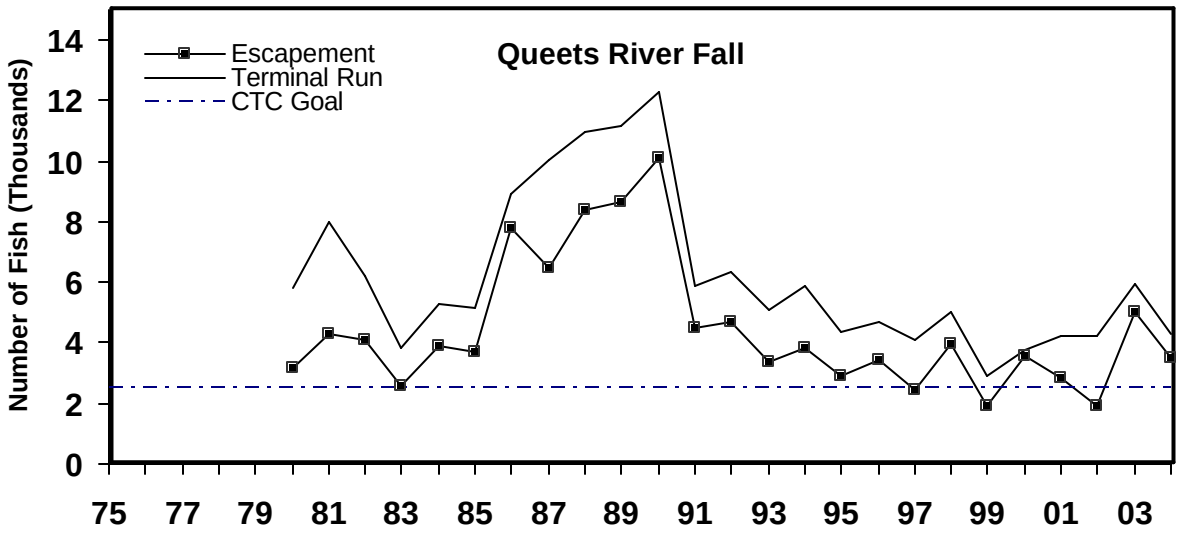
Agency Comments: The natural escapement estimates include fish taken for broodstock in the 1980's. This stock is managed to harvest 40% of the terminal run, with an escapement floor of 1,200 spawners (PFMC 2003). This objective is designed to actively probe at and above estimates of the escapements that produce MSH, while minimizing potential detrimental effects of existing fisheries. Stock production analyses of spawning escapements from 1968-1982 were utilized to determine the initial escapement floor The estimate of the escapement of this stock in 2004 is 1,845 adults. The estimate of the terminal run in 2004 is 3,078 adult Chinook.



Escapement Methodology: The Queets River is located on the northwestern coast of Washington, entering the Pacific Ocean near the village of Queets. Major tributaries to the Queets include the Clearwater and Salmon Rivers. The river system supports a naturally spawning stock of spring/summer Chinook that is not enhanced by hatchery supplementation. Since 1974, annual escapement has been estimated by redd count surveys (QDNR 1982) conducted by foot, boat, and helicopter. Frequent surveys are made in index areas throughout the spawning season. Surveys are conducted in areas outside index areas during peak spawning times and expanded by data from index areas. Escapement is estimated by multiplying expanded redds by 2.5 to account for number of fish per redd. Redd counts in non-surveyed streams are approximated by assigning a redd-per-mile value from an index area.

Escapement Goal Basis: Escapement floor policy of 700 for the Queets spring/summer was developed by Cooney (1984) and QDNR (1982), based on spawner-recruit analyses, and was accepted by the CTC in 2004.

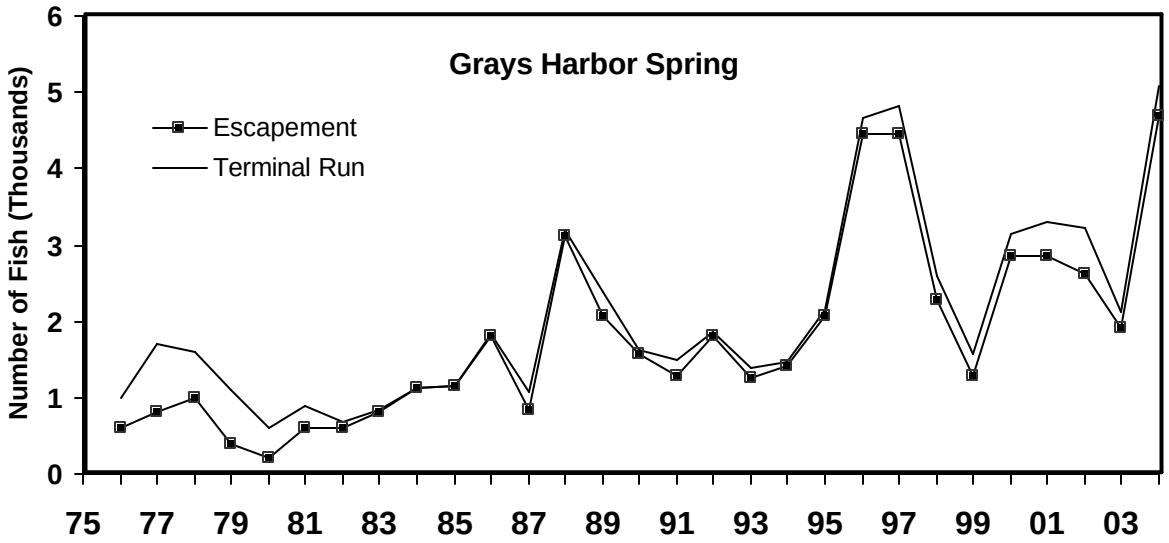
Agency Comments: The escapements between 1976 and 1987 were relatively stable, ranging from 500 to 1,100 fish. The escapements and terminal returns in 1988, 1989, and 1990 were almost double the previous period. Escapements and terminal run declined since 1996, with the exception of 2001 and 2002 return years. The 2004 preliminary terminal run size is estimated to be 619 adult Chinook and the preliminary escapement estimate is 604 adult Chinook. Terminal fisheries are managed to harvest 30% of the river run size, with an escapement floor of 700 fish (PFMC 2003). This objective is designed to actively probe at and above the estimates of escapement that produce MSH, while minimizing potential detrimental effects of existing fisheries. Since 1990, terminal fisheries have had minimal impact on this stock as returns to the river have rarely exceeded the escapement floor in this time frame. Since 2000, sport anglers have been required to release all Chinook during the summer, and tribal fisheries have been limited to one tribal netting day for ceremonial and subsistence purposes. Stock production analysis of spawning escapement for brood years 1969-1976 were used to determine the initial escapement floor.



Escapement Methodology: The Queets River is located on the northwestern coast of Washington, and enters the Pacific Ocean near the village of Queets. The river system supports a naturally spawning stock of fall Chinook, and is not enhanced by hatchery supplementation, although an exploitation rate indicator stock program has involved rearing of progeny taken from broodstock collected from the spawning grounds. Prior to 1980, escapements were based on estimated gillnet exploitation rates. In this report, the CTC, after review, decided to remove the data points from this period because these estimates are of poor quality for evaluating escapement trends. Since 1980, total annual escapement has been estimated by redd count surveys (QDNR 1982) conducted by foot, boat, and helicopter. Frequent surveys are made in index areas throughout the spawning season. Surveys are conducted in areas outside index areas during peak spawning times and expanded by data from index areas. The escapement estimate is derived by multiplying expanded redd counts by 2.5 to account for number of fish per redd. Redd counts in non-surveyed streams are approximated by assigning a redd-per-mile value from an index area.

Escapement Goal Basis: Escapement floor policy of 2,500 for the Queets fall Chinook was developed by Cooney (1984) and QDNR (1982), based on spawner-recruit analyses, and was accepted by the CTC in 2004. These goals have been corroborated by more recent analyses of data for Queets fall Chinook stock.

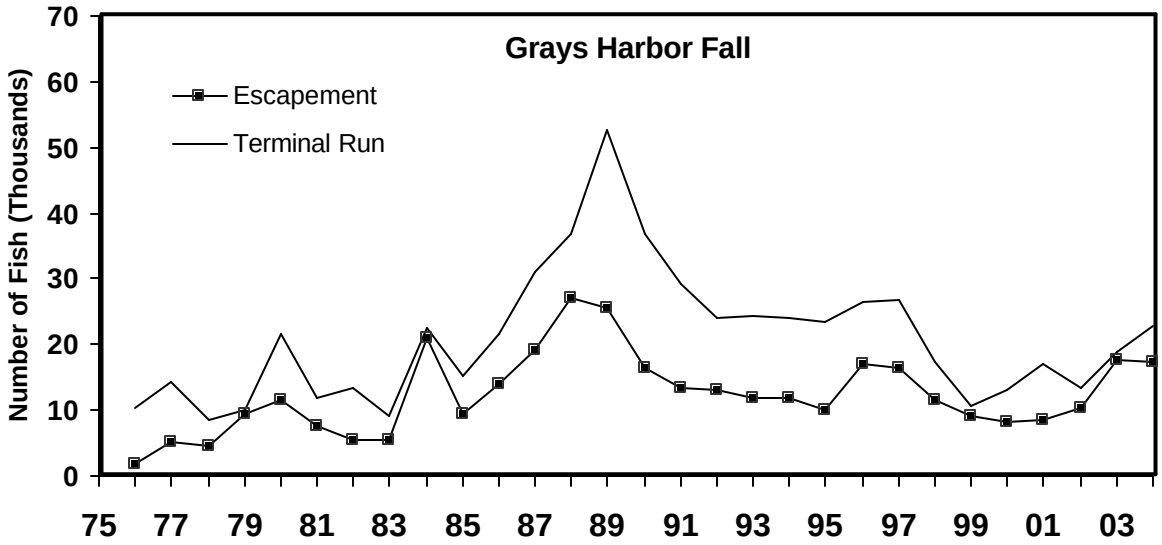
Agency Comments: Between 1975 and 1985, the escapement was relatively stable between 1,500 and 4,000 Chinook. The 1986–1990 escapements were double the levels estimated for 1975-1985. Escapements since 1991 have been comparable to the 1975-1985 levels. In 2004, the preliminary escapement estimate is 3,523 adult Chinook with a terminal run size of 4,324. Terminal fisheries are managed to harvest 40% of the river return, with an escapement floor of 2,500 spawners (PFMC 2003). This objective is designed to actively probe at and above estimates of the escapements that produce MSH, while minimizing potential detrimental effects of existing fisheries. Stock production analyses of spawning escapements from 1967-1982 were used to determine the initial escapement floor.



Escapement Methodology: The Humptulips and Chehalis Rivers both support fall Chinook. Before 1984 escapements were based on fish counts. Since 1984, total annual escapement has been estimated by redd count surveys conducted by foot, boat, and helicopter. Weekly surveys are made in index areas and adjusted by standardized factors to account for spawning timing, season total redds, redd life, and number of fish per redd. One-time surveys are conducted in areas outside index areas during peak spawning times and expanded by data from index areas. Redd counts in non-surveyed streams are approximated by assigning a redd-per-mile value from an index area.

Escapement Goal Basis: There is currently no CTC accepted escapement goal for this group of stocks.

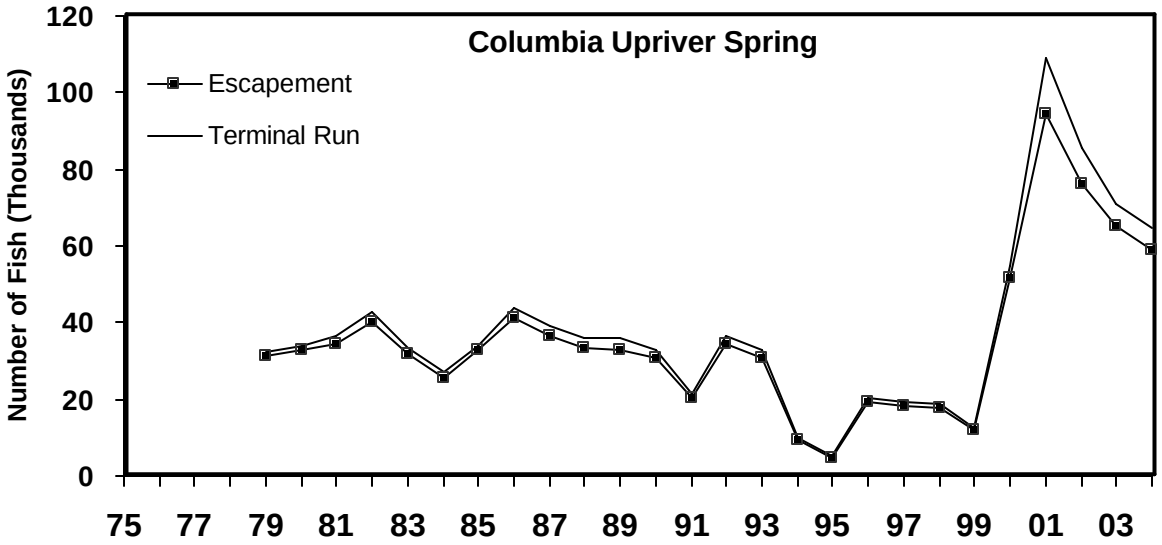
Agency Comments: There are some tribal net fisheries and a small recreational fishery on the Chehalis River. Historically the recreational fishery harvested fewer than 50 fish, but the fishery has increased in recent years to take 100 to 200 fish annually (PFMC 2003). Broodstock programs in Grays Harbor produce hatchery Chinook, which return and spawn naturally because there are no adult collection facilities. Hatchery-origin Chinook that spawn naturally in the Chehalis River are included in the natural escapement estimate because little or no tagging occurs to allow differentiation between the two. The Grays Harbor spring Chinook stock is managed for a fixed natural spawning escapement goal of 1,400 fish (PFMC 2003). This single targeted goal was developed as a MSY proxy. This objective is derived from actual spawning data from the mid- to late 1970's, expanded to include additional habitat not covered by spawner surveys. The 2004 escapement was 4,703 Chinook.



Escapement Methodology: The Humptulips and Chehalis Rivers both support fall Chinook. Before 1984 escapements were based on fish counts. Since 1984, total annual escapement has been estimated by redd count surveys conducted by foot, boat, and helicopter. Weekly surveys are made in index areas and adjusted by standardized factors to account for spawning timing, season total redds, redd life, and number of fish per redd. One-time surveys are conducted in areas outside index areas during peak spawning times and expanded by data from index areas. Redd counts in non-surveyed streams are approximated by assigning a redd-per-mile value from an index area.

Escapement Goal Basis: There is currently no CTC accepted escapement goal for this group of stocks.

Agency Comments: Terminal fisheries include both directed commercial and recreational harvests. Broodstock programs in Grays Harbor produce hatchery Chinook, which return and spawn naturally because there are no adult collection facilities. Hatchery-origin Chinook that spawn naturally are included in the natural escapement estimate because little or no tagging occurs to allow differentiation. Grays Harbor fall Chinook are managed for a maximum sustained production escapement goal of 14,600 spawners for the Chehalis and Humptulips systems combined (PFMC 2003). This single targeted goal was developed as an MSY proxy. The objective represents assumed optimal spawner density based on estimated available habitat. Escapements have been below agency goals since 1998. The 2004 escapement was 17,313 Chinook and the 2004 terminal run was 22,830 Chinook.



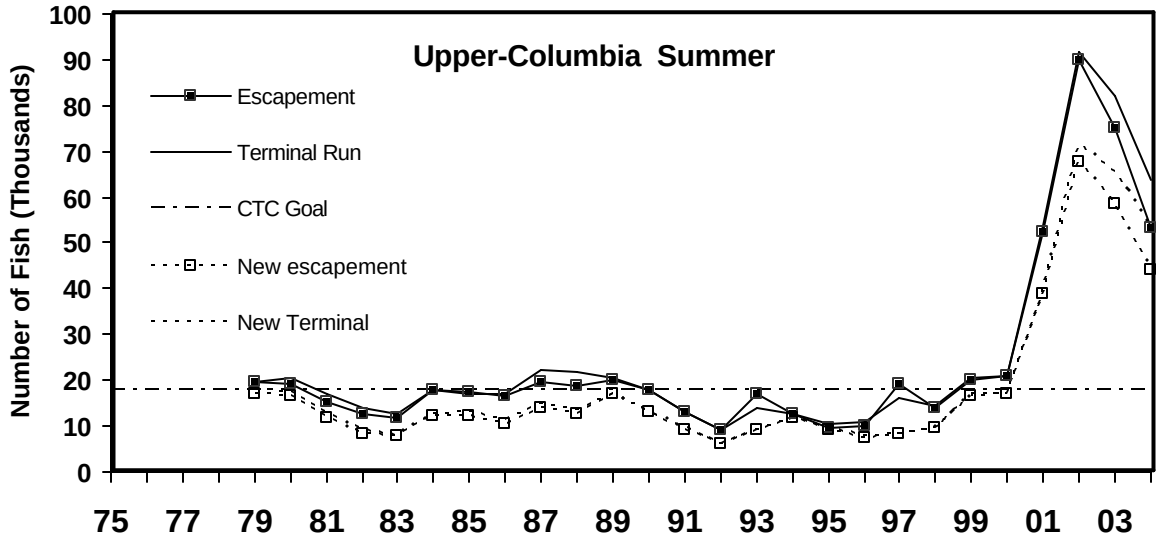
Escapement Methodology: Previously, spring Chinook escapement past Bonneville Dam was calculated as the dam count from March 15 through May 31 multiplied by the proportion of wild spawners estimated from run reconstruction, minus an estimate of wild harvest above Bonneville Dam. The run timing cut-off date has been changed to March 15 through June 15, to incorporate most of the Snake River spring/summer Chinook component. Historically, the Snake River produced most of this stock, but the majority of production above McNary Dam is now from Columbia River hatcheries.

Escapement Goal Basis: There is no CTC accepted escapement goal for this stock group.

Agency Comments: In 1992, Snake River spring/summer naturally spawning Chinook were listed under the U.S. Endangered Species Act. In past escapement assessments, the CTC used the goal of 84,000 natural spawners passing Bonneville Dam (an estimated 70% wild portion of the 120,000 specified in the original 5-year plan for U.S. v Oregon). The interim management goal for the Columbia River Fish Management Plan (CRFMP 1988) for Columbia River Springs was 115,000 hatchery and wild adult Chinook counted at Bonneville Dam and 25,000 naturally produced plus 10,000 hatchery produced adults counted at Lower Granite Dam. However, the CRFMP is currently being renegotiated.

There were record low returns of Columbia Upriver Springs in 1994 and 1995. However, water run-off levels in 1996, 1997 and 1998 were 3 of the largest in 70 years, resulting in good spill over the dams and cooler temperatures in-river. Ocean conditions have also been good. The 2001 total return was the largest run since Bonneville Dam was completed in 1938. The 2001-2004 natural runs have been between 32,900 and 60,200, much improved from the 1979-1999 average of about 22,000.

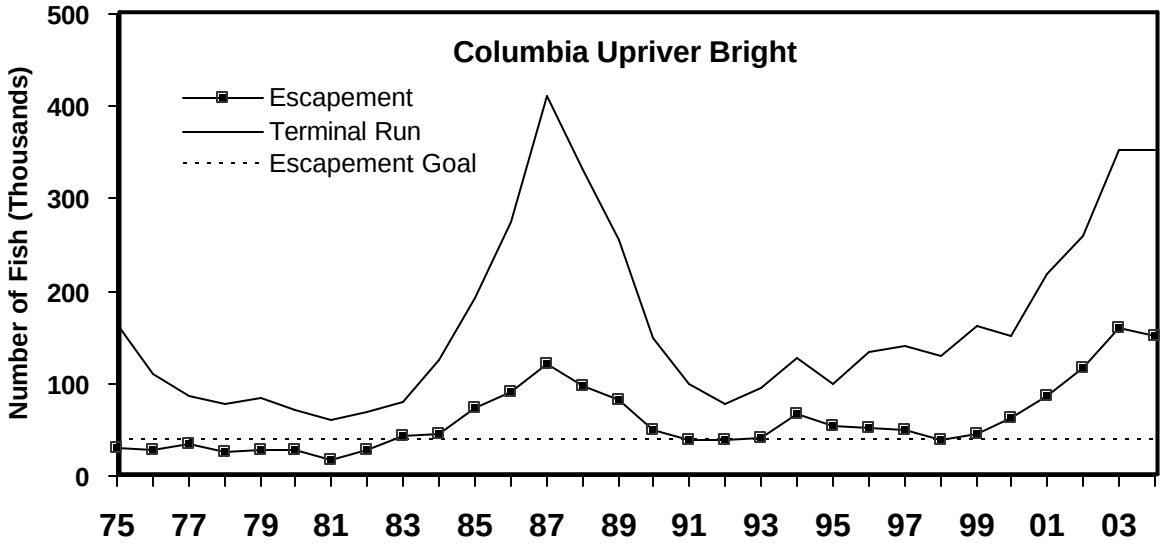
Terminal harvests were severely constrained from 1977 until recently, with incidental harvests in lower river fisheries averaging 2% and total harvest in treaty Indian fisheries averaging 6% (TAC 1999). On the recent large returns, there have been moderate terminal harvest rates of 18.3% in 2001 and 2002, 13.5% in 2003, and 19.0% in 2004.



Escapement Methodology: Estimates of naturally spawning upper-Columbia summer Chinook escapement past Bonneville Dam are based on the dam count, Zone 6 harvests, and the reconstructed proportion of upper Columbia River naturally spawning fish. The escapement indicator stock is Columbia Upriver Summers, which was previously comprised of both upper-Columbia summer Chinook and Snake River summer Chinook. The previous run timing dates for the Bonneville Dam count were June 1 through July 31, but these dates have been changed to June 16 through July 31, to remove the Snake River spring/summer component. The graph above shows both the previous and new data for comparison. Production is primarily from natural spawning in the Wenatchee, Methow, and Okanogan Rivers. The interim goal was developed using the Chinook model, which only includes upper-Columbia Chinook. The escapement goal is now consistent with the run timing in excluding the Snake River component, but it was based on the data including June 1-June 16.

Escapement Goal Basis: The CTC (1999) has developed an interim biologically based MSY escapement goal of 17,857 upper-Columbia summer Chinook past Bonneville Dam based on PSC Chinook model data. The methods used to reconstruct the escapements for developing the goal are different than the current methods used to estimate upper-Columbia escapements, graphed above. Also, the historical time series of escapement estimates in the TAC run reconstruction have changed. The current management goal of upper-Columbia summer Chinook is 29,000 at the mouth of the Columbia River and 20,000 spawners.

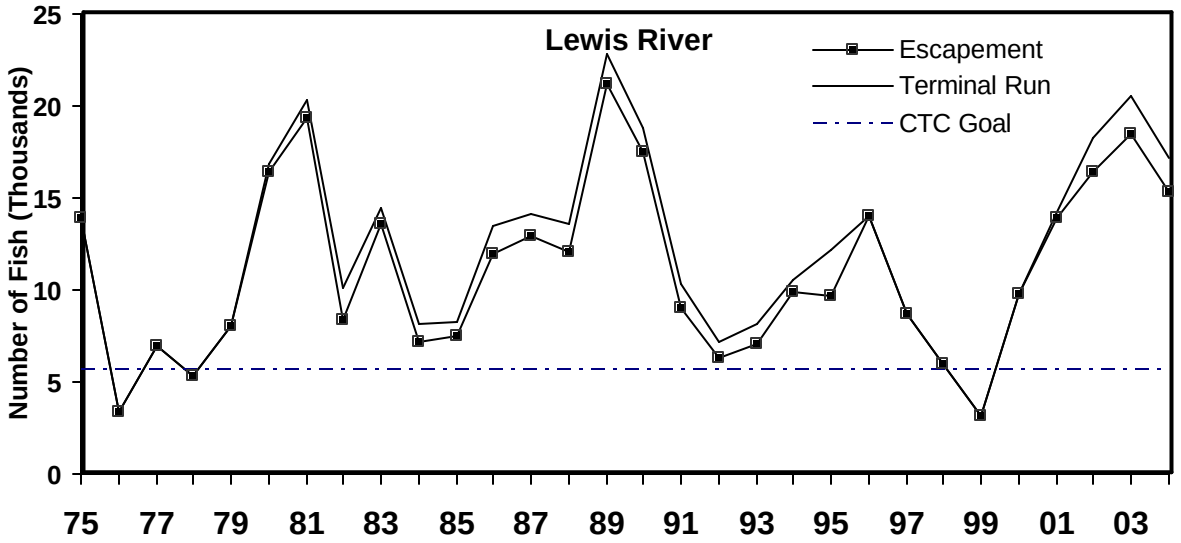
Agency Comments: Productivity is limited primarily by loss of downstream migrants and habitat degradation related to timber harvests, lack of screens on water diversions, high water temperatures, low flows, and sediment-laden irrigation water returns (CBFWA 1990). The 2002 total run was one of the largest since 1975. Water run-off levels in 1996, 1997 and 1998 were higher than average, resulting in good spill and in-river conditions. Ocean survival has improved vastly in the last few years, and is apparent for the 1997 and 1998 brood yearling migrants. Most harvest impacts still occur in ocean fisheries, and escapements have exceeded 96% of the terminal run since 1988. Since 2002, there were selective directed sport fisheries on hatchery summer Chinook, after almost 20 years of no directed sport fisheries



Escapement Methodology: Columbia Upriver Bright escapement graphed above is the adult count at McNary Dam minus the total of sport catch in the Hanford Reach and brood stock at Priest Rapids, Ringold, and Lyons Ferry hatchery facilities. Fall Chinook at McNary Dam are those counted after August 9. Terminal run graphed above is the total return of Upriver Brights to the Columbia River mouth, minus the total return of Deschutes River fall Chinook to the mouth of the Deschutes River.

Escapement Goal Basis: The CRFMP (1998) stated an interim escapement goal of 40,000 natural spawning URBs past McNary Dam based on a Ricker stock-recruitment function including 38,700 for the Hanford Reach and 1,100 for the Snake River. In 1991, the escapement goal was increased to 45,000 for increased hatchery programs. In 1994, a management goal of 46,000 was established, and in 1995, the management goal was retained while the escapement goal was reduced to 43,500. In 2002, the original CRFMP escapement goal of 40,000 was accepted by the CTC as an interim biologically based escapement goal for PSC purposes.

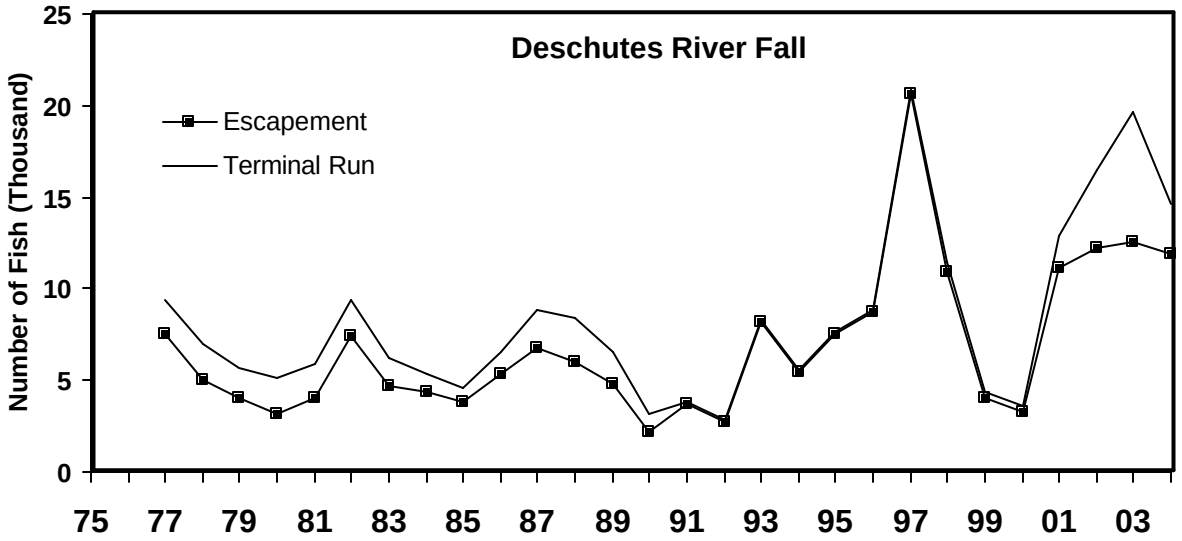
Agency Comments: The 2002, 2003, and 2004 escapements of 130,884, 170,128, and 161,108 were the largest since the peak escapement and terminal run in 1987.



Escapement Methodology: Most natural bright fall Chinook production below Bonneville Dam occurs in the North Fork Lewis River. The Lewis River Wild stock is the main component of the Lower River Wild management unit for fall Chinook, which also includes small amounts of wild production from the Cowlitz and Sandy River basins. In this report, the escapements and goal are for the Lewis River component. Annual escapement estimates are obtained by expanding peak counts from weekly counts of live and dead fish in the 6.4 km area below Merwin Dam (rkm 31.4) by the ratio of 5.2685 (total spawners/peak count). This expansion factor is from a 1976 carcass tagging and recapture study (McIsaac 1990). From 1999-2001, LOA funds were used to conduct a study to estimate and verify the expansion factor. A coded-wire tag program for wild fish has been in place since the 1977 brood. Methods of CWT recovery, escapement counting, and expansion of the index area fish counts have been consistent since 1964. All naturally spawning adult fish, both from hatchery and natural production, are included in the escapement. The terminal run is escapement plus the adult sport catch in the Lewis River.

Escapement Goal Basis: The escapement goal of 5,700 fall Chinook in the Lewis River was developed by McIsaac (1990), based on spawner-recruit analysis of the 1964-1982 broods and coded-wire tag recoveries from the 1977-1979 broods. This analysis was updated in CTC (1999) based on analysis of brood years 1964-1991 and the goal of 5,700 was reaffirmed and accepted as a biologically based goal.

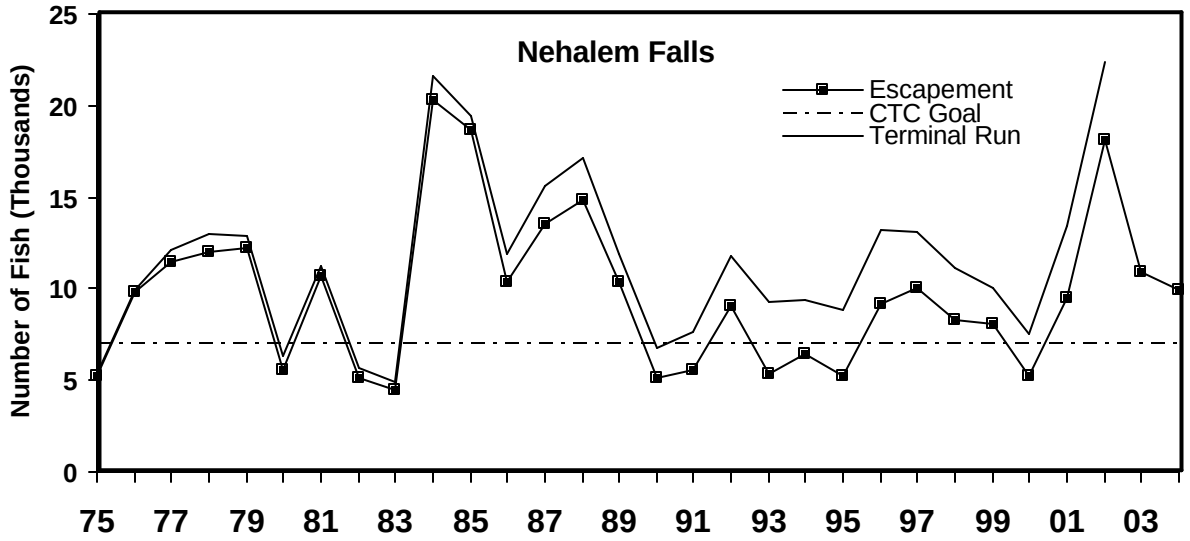
Agency Comments: The Lewis River escapements have been above their escapement goal since 1979 except in 1999. The PFMC "Review of 1999 Ocean Salmon fisheries" states "The ocean escapement of Lewis River Wild stock in 1999 was the lowest on record and due, in part, to flooding in 1995 and 1996." The 2002, 2003, and 2004 returns and escapements of Lewis River fall Chinook were the largest since 1990. The estimated escapement in 2004 was 15,342 Chinook.



Escapement Methodology: Fall Chinook are found throughout the Deschutes River below the Pelton Re-regulating Dam (rkm 161). From 1975 through 2000, escapement estimates were based on a mark-recapture project above Sherars Falls and a helicopter survey of redds below the falls. Marked fish were recaptured during carcass surveys and the population above Sherars falls was estimated using Chapman's modification of the Peterson mark-recapture estimate. The proportion of redds below the falls was then used to expand the mark-recapture estimate for spawning in the entire river. Starting in 2001, the escapement shown is from a USCTC funded mark-recapture project that provides an estimate for the entire river. The terminal run is the escapement plus Deschutes River harvest.

Escapement Goal Basis: The Deschutes Chinook salmon stock does not have a PSC accepted upon escapement goal.

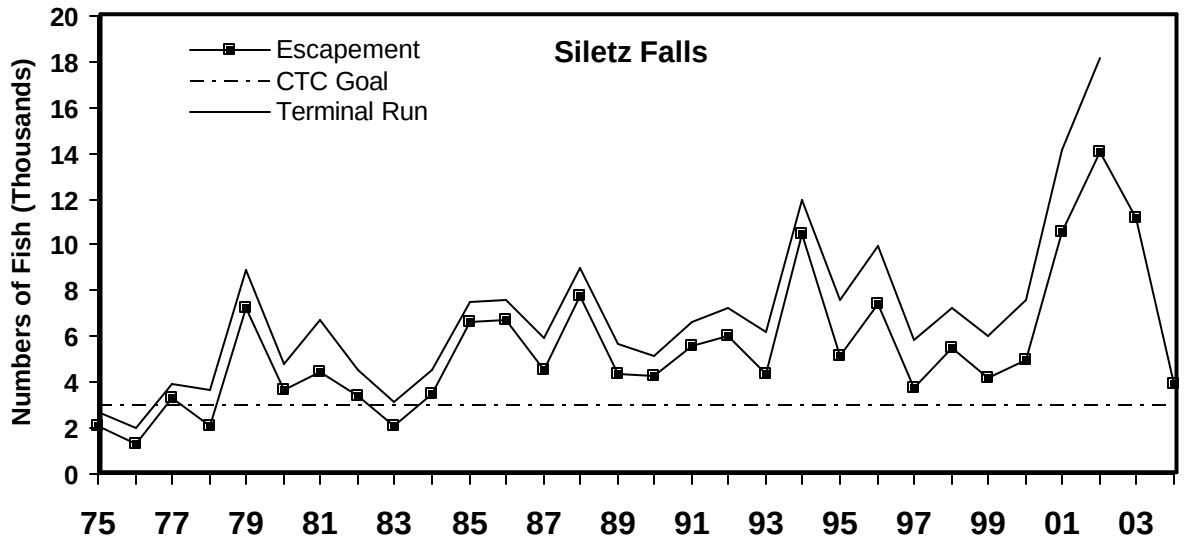
Agency Comments: Local management agencies use a management goal of 4,000 adult Chinook, which includes an escapement goal of 2,000 fish above Sherars Falls. This goal is based on average spawning escapement. The 2002 and 2003 escapements of Deschutes fall Chinook were at least 3 times the management goal, based on either the expansion of escapements above Sherars Falls, or the total river mark recapture estimate. They were also the largest escapements since the peak in 1997. The estimated escapement in 2004 was 13,369 Chinook.



Escapement Methodology: The Nehalem River fall Chinook stock is an escapement indicator stock for the Nehalem/Ecola gene conservation group (GCG). This GCG includes both summer and fall run populations from the Nehalem River, as well as a fall run from the Ecola River. This GCG is part of the NOC aggregate of stocks used in the CTC assessments. Each year multiple foot surveys are conducted on a weekly basis at numerous sites in the basin. There are six established standard survey sites ranging from 0.5 to 1.0 mile in length each that are surveyed every year. Additionally, numerous randomly selected sites are also surveyed each year. Counts of live and dead Chinook are made for each survey section. The measurement unit used to index escapement is the maximum (peak) count obtained during the season. Peak counts from all survey sites are summed and divided by the sum of the miles in the survey sections to derive a density index (fish/mile). The density in standard survey sites is considered biased and is adjusted by results from the random surveys. The total number of adult spawners is estimated by multiplying the density index by the total mileage of Chinook spawning habitat and an observation efficiency factor. The total mileage of spawning habitat in the Nehalem River is 120.8 miles and the observation efficiency factor is 0.5. Data used to provide the estimated escapements shown above were made from spawning ground surveys that were not statistically designed and may therefore be biased. Because the MSY goal was derived from these data, the goal may be biased in the same direction. Research is currently underway to provide an unbiased estimate of the terminal run and spawning escapement, which will conform to the stock assessment criteria established by the USCTC (1997).

Escapement Goal Basis: The CTC has reviewed and accepted a biologically based escapement goal of 6,989 adult spawners (90% CI: 5,789-9,405). This goal was derived from stock-recruitment analysis on brood years 1967-1991(CTC 1999).

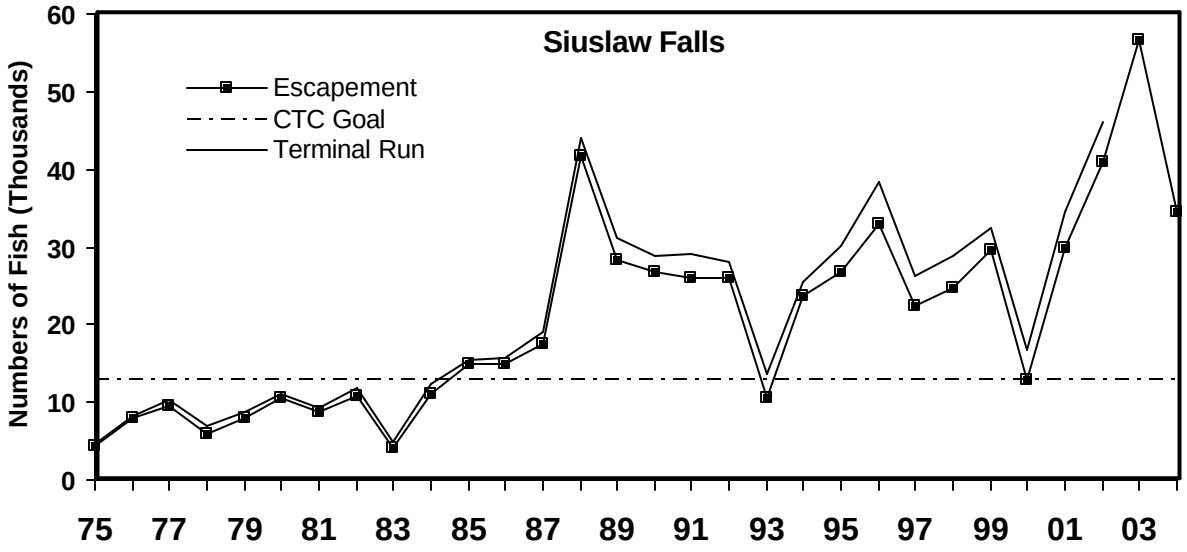
Agency Comments: We estimated the spawner abundance as 9,975 large (adult) Chinook for 2004. Punch card data used to estimate the recreational sport catch are unavailable for 2003 and 2004, hence terminal run sizes are not available for these two years.



Escapement Methodology: The Siletz River fall Chinook stock is an escapement indicator stock for the North-Mid Coast GCG, which includes 14 rivers ranging from the Tillamook Bay area down the coast to the Siuslaw River. This GCG is part of the NOC aggregate of stocks used in the CTC assessments. Within this group, both spring and fall run populations exist. The Siletz River has both a spring and fall run of Chinook. Each year multiple foot surveys are conducted on a weekly basis at numerous sites in the basin. There are four established standard survey sites ranging from 0.9 to 1.6 miles each that are surveyed every year. Additionally, numerous randomly selected sites are also surveyed each year. Counts of live and dead Chinook are made for each survey section. The measurement unit used to index escapement is the maximum (peak) count obtained during the season. Peak counts from all survey sites are summed and then divided by the sum of the miles in the survey sections to derive a density index (fish/mile). The density estimate in standard survey sites is considered biased and is adjusted by results from the random surveys. The total number of adult spawners is estimated by multiplying the density index by the total mileage of Chinook spawning habitat and an observation efficiency factor. The total mileage of spawning habitat in the Siletz River is 98.5 miles and the observation efficiency factor is 0.5. Data used to provide the estimated escapements shown above were made from spawning ground surveys that were not statistically designed and may therefore be biased. Because the MSY goal was derived from these data, the goal may be biased in the same direction.

Escapement Goal Basis: The CTC has reviewed and accepted a biologically based escapement goal of 2,944 adult spawners (90% CI: 2,527-3,481). This goal was derived from stock-recruitment analysis on brood years 1973-1991(CTC 1999).

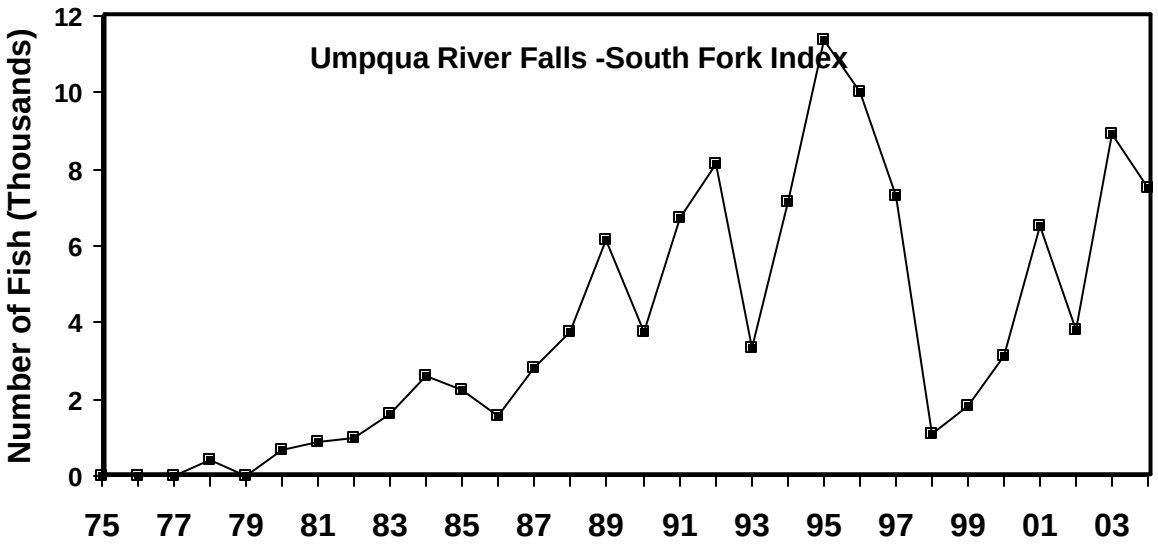
Agency Comments: The Siletz River spawner abundance in 2004 is estimated at 3,902 adult Chinook salmon. All four standard surveys were conducted in 2004. Punch card data to estimate the recreational sport catch are unavailable for 2003 and 2004, hence terminal run sizes are not available for these two years.



Escapement Methodology: The Siuslaw River fall Chinook stock is currently the southern most escapement indicator stock for the North-Mid Coast GCG. This GCG is part of the NOC aggregate of stocks used in the CTC assessments. Only a fall run is endemic to this river. Each year multiple foot surveys are conducted on a weekly basis at numerous sites in the basin. There are eight established standard survey sites ranging from 0.5 to 1.2 miles in length that are surveyed every year. Additionally, numerous randomly selected sites are also chosen each year. Counts of live and dead Chinook are made for each survey section. The measurement unit used to index escapement is the maximum (peak) count obtained during the season. Peak counts from all survey sites are summed and divided by the sum of the miles in the survey sections to derive a density index (fish/mile). The density in standard survey sites is considered biased and is adjusted by results from the random surveys. The total number of adult spawners is estimated by multiplying the density index by the total mileage of Chinook spawning habitat and an observation efficiency factor. The total mileage of spawning habitat in the Siuslaw River is 237.9 miles and the observation efficiency factor is 0.5. Data used to provide the estimated escapements shown above were made from spawning ground surveys that were not statistically designed and may therefore be biased. Because the MSY goal was derived from these data, the goal is thought to be biased in the same direction. Studies funded through the CTC's LOA process are being analyzed to help provide for the most precise, accurate estimate of spawning escapements into the Siuslaw River.

Escapement Goal Basis: The CTC has accepted a biologically based escapement goal of 12,925 adult spawners (90% CI: 9,541-20,958). This goal was derived from stock-recruitment analysis on brood years 1967-1991(CTC 1999).

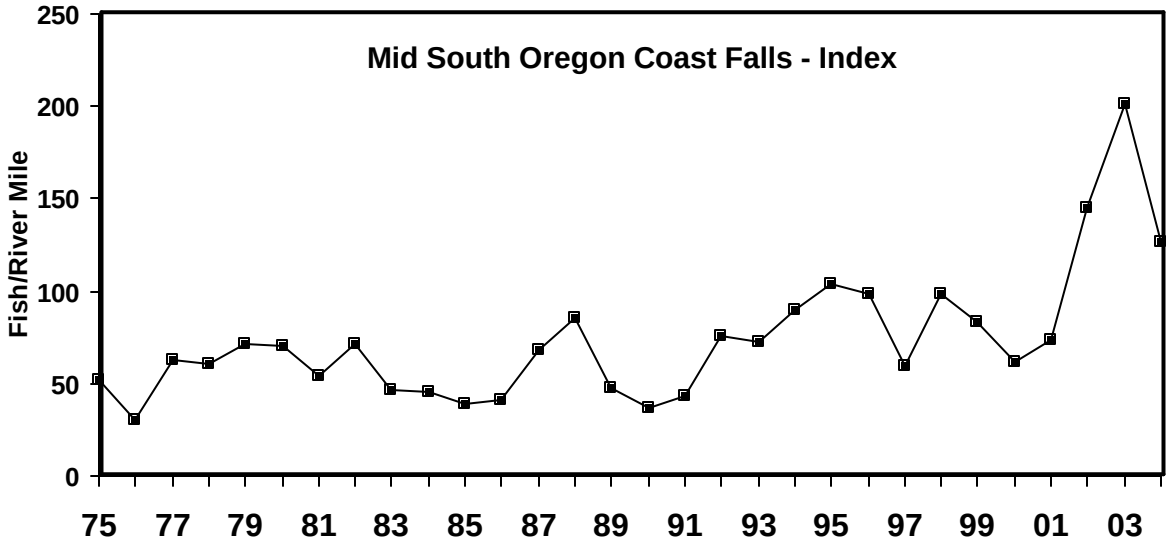
Agency Comments: The estimated spawner abundance in 2004 was 34,427 adult Chinook, down from the record high escapement in 2003. Punch card data to estimate the recreational sport catch are unavailable for 2003 and 2004; hence terminal run sizes are not available for these two years.



Escapement Methodology: The Umpqua River system is an extensive and diverse watershed that includes both coastal Douglas fir rainforest as well as an interior valley, oak savanna, environment. There are at least five distinct Chinook populations in this watershed with both spring (river) and fall (ocean) run types that together comprise the Umpqua GCG. The Smith River fall population returns to a lower river tributary located in a moist coastal rainforest environment. The remaining four interior populations are located in a much dryer oak savanna environment. The South Umpqua tributary population is currently the only group with sufficient data available to evaluate stock status for the fall run populations from this GCG. This GCG is part of the MOC aggregate of stocks. Two aerial flights are made each fall (October–November) when viewing conditions are acceptable. Redds are counted on the South Fork and Cow Creek tributaries. The annual index is the cumulative total number of fresh redds counted during these aerial flights. The annual index is then expanded by 3.45 fish per redd to derive the estimated spawning escapement for this tributary of the Umpqua River.

Escapement Goal Basis: No escapement goals have been proposed for this stock.

Agency Comments: The spring run populations are generally not intercepted in PSC fisheries and are currently not proposed for CTC analysis. Coded-wire tagged fall run Chinook from the Umpqua River are harvested in PSC fisheries, and should be evaluated by the CTC. Four years of USCTC funded research has allowed the calibration of the redd counts to derive a fish per redd expansion factor so that annual escapements estimates can be made. The average expansion factor from these studies is 3.45 fish per redd. The coefficient of variation of the expansion factor was found to be 14%, which shows that the average expansion factor is a reliable statistic to use for annual estimates of escapement. The escapement estimate for 2004 was 7,487 based on redd count expansions.



Escapement Methodology: This composite index represents populations classified as the Mid-South Coast GCG. This GCG is part of the MOC aggregate of stocks. The index is composed of spawning survey data from four rivers, the Coos, Coquille and Sixes Rivers and Floras Creek. To date there is no escapement indicator stock designated for this GCG. Foot or boat surveys are made weekly at several standard sites in each of these river basins throughout the survey period. Survey sites are generally 0.5 to 1.5 miles long and are chosen to be at least 10 miles distant from where hatchery smolts were released. Counts of live and dead Chinook are made for each survey section. The measurement unit used is the maximum (peak) count obtained during the season. For each river, all peak counts are summed and divided by the sum of the survey miles for that river to derive a peak spawner density index for the river. The composite stock index is a simple unweighted average of the four river density indices.

Escapement Goal Basis: No escapement goals have been proposed for populations within this GCG at this time.

Agency Comments: Based on methods described above, the 2004 MOC density index is calculated to be 127 fish/mile. Research funded by the CTC is underway that will provide information to designate the Coquille Chinook production river system as the escapement indicator stock for this stock aggregate. This field research began in 2001 and continue through 2004, and will provide precise estimates of spawner escapement and increased spawning ground survey coverage. ODFW will complete a biologically based escapement goal analysis and submit the analysis to the CTC in 2005.

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APPENDICES

Appendix A.1. Southeast Alaska (SEAK) Chinook catches, 1975-2004.

Year	Southeast Alaska						
	Troll	**Net**	**Sport**	**Total**	**Add-on**	**Terminal Exclusion**	**Treaty Catch**
1975	287,342	13,365	17,000	317,707	-	-	-
1976	231,239	10,523	17,000	258,762	-	-	-
1977	271,735	13,443	17,000	302,178	-	-	-
1978	375,919	25,492	17,000	418,411	-	-	-
1979	337,672	28,388	16,581	382,641	-	-	-
1980	303,643	20,114	20,213	343,970	-	-	-
1981	248,782	18,952	21,300	289,034	-	-	-
1982	241,938	46,992	25,756	314,686	-	-	-
1983	269,821	19,516	22,321	311,658	-	-	-
1984	235,622	32,405	22,050	290,077	-	-	-
1985	215,811	33,870	24,858	274,539	6,246	-	268,293
1986	237,703	22,099	22,551	282,353	11,091	-	271,262
1987	242,562	15,532	24,324	282,418	17,095	-	265,323
1988	231,364	21,788	26,160	279,312	22,525	-	256,787
1989	235,716	24,245	31,071	291,032	21,510	-	269,522
1990	287,939	27,712	51,218	366,869	45,873	-	320,996
1991	264,106	34,864	60,492	359,462	61,476	-	297,986
1992	183,759	32,140	42,892	258,791	36,811	-	221,980
1993	226,866	27,991	49,246	304,103	32,910	-	271,193
1994	186,331	35,654	42,365	264,350	29,185	-	235,165
1995	138,117	47,955	49,667	235,739	58,800	-	176,939
1996	141,452	37,298	57,509	236,259	72,599	8,663	154,997
1997	246,409	25,069	71,524	343,002	46,463	9,843	286,696
1998	192,066	23,514	55,013	270,593	25,021	2,420	243,152
1999	146,219	32,720	72,081	251,020	47,725	4,453	198,842
2000	158,717	41,400	63,173	263,290	74,316	2,481	186,493
2001	153,280	40,163	72,291	265,734	77,287	1,528	186,919
2002	325,308	31,689	69,537	426,534	68,164	1,237	357,133
2003	330,692	39,374	69,370	439,436	57,228	2,056	380,152
2004	354,664	64,038	87,505	506,207	72,025	5,409 736	428,773 433,446 [1]

Troll, net, sport and total catches include catch of SEAK hatchery-origin fish; catches that count towards the all-gear ceiling (with hatchery add-on subtracted) are shown in the "treaty catch" column.

"-" = not applicable.

[1] The value on top excludes terminal exclusion catch for the Stikine River. The value on the right below includes such terminal catch.

Appendix A.2. Northern British Columbia (NBC) Chinook catches, 1975-2004.

Year	Northern British Columbia						
			Tidal Sport				
	Area 1-5 Troll [1]	Area 1-5 Net	Areas 1,2E, 2W	Areas 3-5	Area 1-5 Freshwater Sport	Area 1-5 First Nations	Total
1975	228,121	25,095	NA	NA	NA	4,055	257,271
1976	190,267	16,105	NA	NA	NA	2,791	209,163
1977	130,899	44,196	106	1,670	2,158	6,998	186,027
1978	146,054	27,924	125	1,668	6,610	5,363	187,744
1979	147,576	40,640	0	2,523	1,960	5,266	197,965
1980	157,198	26,895	200	3,867	4,515	10,121	202,796
1981	153,065	41,724	184	2,760	2,613	11,115	211,461
1982	173,472	44,844	215	3,760	2,726	13,255	238,272
1983	162,837	17,134	90	4,092	5,374	15,532	205,059
1984	185,134	31,321	171	2,300	3,426	11,408	233,760
1985	165,845	39,562	600	3,600	3,186	15,794	228,587
1986	175,715	23,902	1,153	3,950	4,410	24,448	233,578
1987	177,457	18,357	2,644	4,150	3,625	16,329	222,562
1988	152,369	31,339	7,059	4,300	3,745	21,727	220,539
1989	207,679	38,623	20,652	4,150	5,247	21,023	297,374
1990	154,109	28,359	16,827	4,300	4,090	27,105	234,790
1991	194,018	40,899	15,047	4,256	4,764	23,441	282,425
1992	142,340	35,716	21,358	6,250	6,182	27,012	238,858
1993	161,686	33,944	25,297	3,279	7,813	21,353	253,372
1994	164,581	22,032	28,973	3,171	3,093	15,949	237,799
1995	56,857	18,076	22,531	2,475	3,503	13635	117,077
1996	21	28,894	670	3,382	1,250	13,345	47,562
1997	83,488	20,415	27,738	0	NA	14,610	146,251
1998	107,837	7,144	34,130	4,750	NA	20,622	174,483
1999	56,499	10,094	30,227	11,700	NA	27,399	135,919
2000	9,800	22,329	22,100	8,600	NA	23,476	86,305
2001	13,100	25,424	30,400	11,000	NA	23,508	103,432
2002	103,037	14,902	47,100	8,000	NA	14,125	187,164
2003	137,357	14,730	54,300	NA	5711	20,950	233,048
2004	167,508	16,187	74,000	NA	NA	20,548	278,243

[1] Since 1998, the catch accounting year for troll fisheries was set from October 1-September 30. To make comparisons to previous years more meaningful, the same catch accounting period was applied for years prior to 1998.

[2] Estimate of lower Skeena River sport catch only.

Note that Troll (Areas 1-5) and Tidal Sport (Areas 1, 2E, 2W) are the components of the NBC AABM fishery. Net catch excludes jacks and small red-fleshed Chinook.

NA=not available

Appendix A.3. Central British Columbia (CBC) Chinook catches, 1975-2004.

Year	Central British Columbia					
	Troll [1]	Net	Tidal Sport	Freshwater Sport	First Nations	Total
1975	135,470	40,985	NA	NA	NA	176,455
1976	145,204	32,669	NA	NA	NA	177,873
1977	122,689	32,409	4,773	1,544	6,972	168,387
1978	91,025	35,708	5,694	1,770	7,944	142,141
1979	107,884	50,445	5,225	1,940	7,585	173,079
1980	95,377	27,715	4,802	988	6,240	135,122
1981	69,247	18,912	3,490	1,261	5,701	98,611
1982	69,748	32,419	5,419	1,293	9,112	117,991
1983	97,447	12,556	4,271	821	6,442	121,537
1984	78,120	4,630	4,354	1,332	9,736	98,172
1985	27,090	12,391	3,943	823	6,019	50,266
1986	54,407	23,032	4,566	1,245	6,353	89,603
1987	65,776	10,893	3,933	1,563	6,296	88,461
1988	36,125	12,886	3,596	1,496	6,000	60,103
1989	21,694	6,599	3,438	4,526	8,992	45,249
1990	29,882	18,630	4,053	5,626	9,811	68,002
1991	29,843	15,926	4,409	3,335	8,801	62,314
1992	47,868	18,337	4,891	3,204	8,533	82,833
1993	23,376	10,579	6,114	2,880	9,095	52,044
1994	18,976	14,424	4,303	973	5,383	44,059
1995	5,819	11,007	2,172	1,180	3,501	23,679
1996	0	6,829	2,936	3,986	6,922	20,673
1997	12,351	3,575	8,524	1,139	9,764	35,353
1998	2,198	5,355	5,514	779	6,671	20,517
1999	2,074	4,320	10,300	NA[2]	5,440	22,134
2000	0	3,210	7,400	NA[2]	4,576	15,186
2001	0	6,462	7,650	1,024	5,435	20,571
2002	481	4,676	7,330	723	3,292	16,502
2003	20	2,806	8,385	491	3,173	14,875
2004	0	6,324	10,677	524	4,003	21,528

[1] Since 1998, the catch accounting year for troll fisheries was set from October 1-September 30. To make comparisons to previous years more meaningful, the same catch accounting period was applied for years prior to 1998.

[2] freshwater catch included with tidal catch

Net catch excludes jacks and small red-fleshed Chinook.

NA=not available

Appendix A.4. West Coast Vancouver Island (WCVI) Chinook catches, 1975-2004.

Year	West Coast Vancouver Island						
			Tidal Sport	Tidal Sport			
	Troll [1]	Net	Inside [2]	Outside	Freshwater Sport	First Nations	Total
1975	546,214	19,233	NA	-	NA	NA	565,447
1976	665,010	17,492	NA	-	NA	NA	682,502
1977	545,742	13,745	NA	-	NA	NA	559,487
1978	568,705	25,143	NA	-	NA	NA	593,848
1979	477,222	35,623	7,964	-	NA	NA	520,809
1980	486,303	34,732	8,539	-	NA	NA	529,574
1981	423,266	36,411	11,230	-	NA	NA	470,907
1982	538,510	41,172	17,100	-	NA	NA	596,782
1983	395,636	37,535	28,000	-	NA	NA	461,171
1984	471,294	43,792	44,162	-	NA	NA	559,248
1985	345,937	11,089	21,587	-	NA	NA	378,613
1986	350,227	3,276	13,158	-	NA	NA	366,661
1987	378,931	478	38,283	-	NA	NA	417,692
1988	408,668	15,438	35,820	-	NA	NA	459,926
1989	203,751	40,321	55,239	-	NA	NA	299,311
1990	297,858	29,578	69,723	-	NA	1,199	398,358
1991	203,035	60,797	85,983	-	NA	41,322	391,137
1992	340,146	9,486	46,968	18,518	NA	8,315	423,433
1993	277,033	28,694	65,604	23,312	NA	5,078	399,721
1994	150,039	2,369	52,526	10,313	NA	1,515	216,762
1995	81,454	458	21,675	13,956	NA	5,868	123,411
1996	4	0	2,266	10,229	NA	4,308	16,807
1997	52,748	486	47,355	6,400	NA	1,199	108,188
1998	2,282	1,643	55,697	4,177	NA	1,600	65,399
1999	5,307	970	47,163	31,106	NA	11,458	96,004
2000	63,400	100	4,468	38,038	NA	2,396	108,402
2001	77,491	0	6,423	40,179	6,198	930	131,221
2002	132,921	456	36,140	32,115	77	10,893	212,602
2003	151,826	9,057	51,622	23,995	NA	10,082	246,582
2004	174,128	12,532	62,607	42,038	26	20,000	311,331

Troll: Areas 21, 23-27, and 121-127

Net: Areas 21, and 23-27

Sport: Areas 23a, 23b, 24-27

[1] Since 1998, the catch accounting year for troll fisheries was set from October 1-September 30. To make comparisons to previous years more meaningful, the same catch accounting period was applied for years prior to 1998.

[2] Prior to 1992, catch was not reported as 'inside' or 'outside'. Therefore 'inside' catch for those years represents total tidal sport catch.

[3] Including 5,000 First Nations troll catch.

NA=not available; "-" = not applicable.

Appendix A.5. Johnstone Strait Chinook catches, 1975-2004.

Year	Johnstone Strait					
	Troll [1] Area 12	Net	Tidal Sport	Freshwater Sport	First Nations	Total
1975	18,065	30,295	NA	NA	NA	48,360
1976	30,838	31,855	NA	NA	NA	62,693
1977	26,868	49,511	NA	NA	NA	76,379
1978	13,052	55,148	NA	NA	NA	68,200
1979	13,052	31,291	NA	NA	NA	44,343
1980	11,743	30,325	NA	NA	NA	42,068
1981	13,035	28,620	NA	NA	NA	41,655
1982	11,234	29,454	NA	NA	NA	40,688
1983	14,653	28,364	NA	NA	NA	43,017
1984	9,260	18,361	NA	NA	NA	27,621
1985	3,567	38,073	NA	NA	NA	41,640
1986	3,951	17,866	NA	NA	NA	21,817
1987	1,780	13,863	NA	NA	NA	15,643
1988	1,566	6,292	NA	NA	NA	7,858
1989	1,825	29,486	NA	NA	NA	31,311
1990	2,298	18,433	NA	NA	NA	20,731
1991	1,228	15,071	10,075	NA	1,287	27,661
1992	2,721	9,571	14,715	NA	29	27,036
1993	4,172	15,530	NA	NA	20	19,722
1994	2,231	8,991	NA	NA	0	11,222
1995	4	970	NA	NA	71	1,045
1996	0	447	NA	NA	107	554
1997	1,380	819	NA	NA	179	2,378
1998	990	60	2,366	NA	138	3,554
1999	89	156	7,813	NA	469	8,527
2000	197	220	5,719	NA	212	6,348
2001	500 [2]	200	3,759	NA	370	4,329
2002	100	600	2,331	NA	400	3,431
2003	710	299	7585	NA	130	8724
2004	630	220	12,837	NA	28	13,715

Troll: Area 12
Net: Areas 11-13
Sport: Based on July - August creel census in Area 12 and northern half of Area 13

[1] Since 1998, the catch accounting year for troll fisheries was set from October 1-September 30. To make comparisons to previous years more meaningful, the same catch accounting period was applied for years prior to 1998.

[2] Preliminary estimate

NA=not available

Appendix A.6. Strait of Georgia/Fraser Chinook catches, 1975-2004.

Year	Strait of Georgia/Fraser					
	Troll [1]	Net	Tidal Sport	Freshwater Sport [2]	First Nations [3]	Total
1975	174,001	66,119	398,000	NA	20,170	658,290
1976	200,229	73,018	490,000	NA	19,189	782,436
1977	248,082	85,222	372,000	NA	23,310	728,614
1978	217,955	50,247	500,000	NA	19,541	787,743
1979	255,057	49,038	350,000	NA	14,931	669,026
1980	273,077	31,161	204,100	NA	15,252	523,590
1981	239,266	19,985	197,239	NA	11,987	468,477
1982	179,040	22,971	124,390	96	35,687	362,184
1983	105,133	17,520	198,433	NA	15,756	336,842
1984	90,280	19,851	369,445	7,880	22,784	510,240
1985	55,888	31,006	234,838	1,874	10,895	334,501
1986	44,043	32,359	181,896	1,573	15,646	275,517
1987	38,084	13,016	121,081	4,876	14,525	191,582
1988	20,224	8,373	119,117	7,546	15,589	170,849
1989	28,444	23,833	132,846	918	5,983	192,024
1990	34,304	15,298	111,914	2,341	17,948	181,805
1991	32,412	15,407	115,523	1,616	22,185	187,143
1992	37,250	9,159	116,581	1,677	20,038	184,705
1993	33,293	16,153	127,576	1,930	20,597	199,549
1994	12,916	14,078	70,839	2,475	22,476	122,784
1995	138	6,263	62,173	9,158	20,790	98,522
1996	2	9,591	89,589	6,749	17,781	123,712
1997	908	28,342	56,332	4,180	29,497	119,259
1998	105	6,779	20,923	22,709	18,926	69,442
1999	80	3,906	43,588	10,071	28,226	85,871
2000	270	5,584	32,750	2,078	26,213	66,895
2001	0	4,301	31,259	23,729	28,460	87,749
2002	506	8,980	52,979	21,400	27,774	111,639
2003	17	12,277	19,981	20,363	29,634	82,272
2004	17	12,318	13,475	16,885[4]	41,141	89,246

Troll: Areas 13-18 and 29

Net: Areas 14-19, 28 and 29

Sport: Areas 13-18, 19a, 28 and 29

[1] Since 1998, the catch accounting year for troll fisheries was set from October 1-September 30. To make comparisons to previous years more meaningful, the same catch accounting period was applied for years prior to 1998.

[2] Prior to 1990, catch includes catch from Fraser systems only; catch records not available those years from non-Fraser systems.

[3] No catch records are available for non-Fraser catch prior to 1990.

[4] Underestimate. NA=not available

Appendix A.7. Canada - Strait of Juan de Fuca Chinook catches, 1975-2004.

Year	Canada - Strait of Juan de Fuca				
	Net	Tidal Sport	Freshwater Sport [1]	First Nations	Total
1975	9,799	NA	NA	NA	9,799
1976	13,004	NA	NA	NA	13,004
1977	25,344	NA	NA	NA	25,344
1978	9,725	NA	NA	NA	9,725
1979	8,665	NA	NA	NA	8,665
1980	3,438	37,900	NA	NA	41,338
1981	9,982	29,832	NA	NA	39,814
1982	7,072	30,646	NA	NA	37,718
1983	328	30,228	NA	NA	30,556
1984	6,237	24,353	NA	NA	30,590
1985	17,164	27,843	NA	NA	45,007
1986	17,727	34,387	NA	NA	52,114
1987	6,782	24,878	NA	NA	31,660
1988	4,473	31,233	NA	NA	35,706
1989	21,238	32,539	NA	NA	53,777
1990	7,405	30,127	NA	42	37,574
1991	8,893	19,017	NA	250	28,160
1992	10,023	21,090	NA	302	31,415
1993	2,287	13,967	NA	317	16,571
1994	8,931	14,372	NA	600	23,903
1995	631	14,405	NA	751	15,787
1996	362	19,012	NA	20	19,394
1997	307	17,080	NA	42	17,429
1998	115	9,709	NA	1,500	11,324
1999	128	14,808	NA	52	14,988
2000	100	10,973	NA	272	11,345
2001	0	23,463	NA	135	23,598
2002	0	24,084	NA	NA	24,084
2003	292	26,630	NA	NA	26,922
2004	0	40,877	NA	NA	40.877

Net: Area 20
Sport: Areas 19b and 20
[1] While catch records are poor, in-river sport catch is believed to be small
NA=not available

Appendix A.8. Washington - Strait of Juan de Fuca Chinook catches, 1975-2004.

Year	Washington - Strait of Juan de Fuca			
	Troll	Net	Sport	Total
1975	5,752	8,048	81,681	95,481
1976	10,488	6,072	75,308	91,868
1977	8,915	14,930	53,238	77,083
1978	10,006	11,224	62,299	83,529
1979	7,804	10,939	67,094	85,837
1980	10,682	11,320	56,415	78,417
1981	15,638	18,541	51,352	85,531
1982	19,024	22,547	29,842	71,413
1983	18,489	16,141	58,060	92,690
1984	15,650	12,120	48,003	75,773
1985	11,808	12,784	44,267	68,859
1986	30,000	17,000	69,000	116,000
1987	45,000	11,000	53,000	109,000
1988	49,000	10,000	39,000	98,000
1989	65,000	10,000	52,000	127,000
1990	47,162	5,294	50,903	103,359
1991	37,127	3,390	39,667	80,184
1992	31,452	927	38,438	70,817
1993	9,794	1,482	32,434	43,710
1994	3,346	5,864	1,661	10,871
1995	6,397	4,769	6,349	17,515
1996	9,757	604	4,825	15,186
1997	829	492	12,238	13,559
1998	338	265	2,159	2,762
1999	544	589	1,990	3,123
2000	332	640	1,670	2,642
2001	1,974	931	4,819	7,724
2002	3,244	1,076	2,028	6,346
2003	523	908	5,290	6,721
2004	19,630	819	NA	NA

Troll: Areas 5 and 6C; Area 4B from Jan. 1 - April 30 and Oct. 1 - Dec. 31
Net: Areas 4B, 5, and 6C
Sport: Areas 5 and 6, 4B Neah Bay "add-on" fishery

Appendix A.9. Washington - San Juan Chinook catches, 1975-2004.

Year	Washington - San Juans			
	Troll	Net	Sport	Total
1975	3	90,100	31,988	122,091
1976	0	66,832	34,505	101,337
1977	62	84,316	14,049	98,427
1978	3	87,565	15,083	102,651
1979	5	53,750	17,367	71,122
1980	0	64,338	12,231	76,569
1981	4	50,695	9,727	60,426
1982	0	38,763	6,953	45,716
1983	2	28,497	15,166	43,665
1984	83	33,432	25,759	59,274
1985	872	33,579	12,610	47,061
1986	0	21,000	15,000	36,000
1987	0	29,000	14,000	43,000
1988	0	32,000	9,000	41,000
1989	1,000	16,000	9,000	26,000
1990	666	8,608	7,370	16,644
1991	135	11,753	5,115	17,003
1992	172	14,011	6,788	20,971
1993	243	14,002	6,916	21,161
1994	73	13,908	5,795	19,776
1995	9	5,333	7,863	13,205
1996	153	3,934	12,674	16,761
1997	29	29,593	9,155	38,777
1998	376	3,804	3,069	7,249
1999	114	3	3,421	3,538
2000	22	1,091	4,447	5,560
2001	0	970	6,522	7,492
2002	0	2,231	4,823	7,054
2003	0	4,827	3,036	7,863
2004		5,183	NA	NA

Troll: Areas 6, 6A, 7, and 7A
Net: Areas 6, 6A, 7 and 7A
Sport: Area 7
NA=not available

Appendix A.10. Washington - Other Puget Sound Chinook catches, 1975-2004.

Year	Washington - Other Puget Sound		
	Net	Sport	Total
1975	131,982	173,086	305,068
1976	141,281	151,246	292,527
1977	145,470	97,761	243,231
1978	150,298	116,979	267,277
1979	128,073	156,402	284,475
1980	171,516	142,799	314,315
1981	145,152	106,048	251,200
1982	149,274	85,703	234,977
1983	134,492	123,752	258,244
1984	180,248	102,740	282,988
1985	184,907	92,603	277,510
1986	153,000	88,000	241,000
1987	127,000	59,000	186,000
1988	133,000	63,000	196,000
1989	156,000	75,000	231,000
1990	179,593	71,000	250,593
1991	89,495	48,859	138,354
1992	63,460	51,656	115,116
1993	54,968	41,034	96,002
1994	63,577	44,181	107,758
1995	63,593	61,509	125,102
1996	61,658	58,538	120,196
1997	47,522	43,961	91,483
1998	50,915	30,016	80,931
1999	91,947	34,116	126,063
2000	70,995	29,328	100,323
2001	96,689	40,170	136,859
2002	96,115	35,836	131,951
2003	71,654	32,650	104,304
2004	75,777	NA	NA

Net: Areas 6B, 6D, 7B, 7C, and 7E; Areas 8-13 (including all sub-areas); Areas 74C - 83F
Sport: Areas 8-13 and all Puget Sound Rivers
NA=not available

Appendix A.11. Washington - Inside Coastal Chinook catches, 1975-2004.

Year	Washington - Inside Coastal		
	Net	Sport	Total
1975	34,859	1,716	36,575
1976	51,995	2,219	54,214
1977	72,467	2,043	74,510
1978	32,662	3,399	36,061
1979	36,501	2,199	38,700
1980	47,681	1,476	49,157
1981	36,880	786	37,666
1982	33,271	1,114	34,385
1983	16,210	1,452	17,662
1984	16,239	1,319	17,558
1985	25,162	1,955	27,117
1986	29,000	3,000	32,000
1987	51,000	3,000	54,000
1988	74,000	7,000	81,000
1989	85,000	6,000	91,000
1990	57,770	5,000	62,770
1991	54,397	6,070	60,467
1992	64,223	6,577	70,800
1993	59,285	9,180	68,465
1994	46,059	7,454	53,513
1995	46,490	9,881	56,371
1996	55,408	12,059	67,467
1997	28,269	6,619	34,888
1998	20,266	6,569	26,835
1999	11,400	3,165	13,582
2000	15,600	3,179	18,779
2001	19,384	8,645	28,029
2002	22,161	3,524	25,685
2003	18,104	6,044	24,148
2004	23,237	NA	23,237

Net: Areas 2A - 2M; Areas 72B - 73H
Sport: All coastal rivers, Area 2.1, and Area 2.2 (when Area 2 is open)
NA=not available

Appendix A.12. Washington/Oregon North of Cape Falcon Chinook catches, 1975-2004.

Year	Washington/Oregon North of Cape Falcon			
	Troll	Net	Sport	Total
1975	268,971	1,212	265,785	535,968
1976	371,239	203	215,319	586,761
1977	244,491	4	197,563	442,058
1978	150,673	4	104,306	254,983
1979	133,035	3	84,977	218,015
1980	125,709	1,215	59,099	186,023
1981	109,519	209	96,151	205,879
1982	154,720	267	114,952	269,939
1983	63,584	62	51,789	115,435
1984	15,392	0	6,980	22,372
1985	55,408	493	30,189	86,090
1986	52,000	0	23,000	75,000
1987	81,000	4,000	44,000	129,000
1988	108,000	3,000	19,000	130,000
1989	74,600	1,000	20,900	96,500
1990	65,800	0	32,900	98,700
1991	51,600	0	13,300	64,900
1992	69,000	0	18,900	87,900
1993	55,900	0	13,600	69,500
1994	4,500	0	0	4,500
1995	9,500	0	600	10,100
1996	12,300	0	200	12,500
1997	20,500	0	4,100	24,600
1998	20,300	0	2,200	22,500
1999	45,000	0	10,800	55,800
2000	20,600	0	9,200	29,800
2001	54,600	0	25,600	80,200
2002	120,700	0	60,600	181,300
2003	104,400	0	36,500	140,900
2004	96,691	0	26,615	123,306

Troll: OR Area 2; WA Areas 1, 2, 3 and 4: Area 4B from May 1 through Sept. 30 (during PFMC management)
Net: WA Areas 1, 2, 3, 4, 4A
Sport: OR Area 2; WA Areas 1, 1.1, 1.2, 2, 3, 4 and 2.2 (when Area 2 is open)

Appendix A.13. Columbia River Chinook catches, 1975-2004.

Year	Columbia River			
	Net	Ceremonial & Subsistence	Sport	Total
1975	323,000		34,870	357,870
1976	288,400		42,527	330,927
1977	255,600		58,838	314,438
1978	189,100		56,582	245,682
1979	169,691	7,865	38,700	216,256
1980	146,103	10,370	37,857	194,330
1981	94,904	10,985	48,496	154,385
1982	160,269	17,902	67,481	245,652
1983	70,371	15,979	60,918	147,268
1984	140,320	17,929	83,772	242,021
1985	159,577	16,213	62,484	238,274
1986	284,448	26,693	82,950	394,091
1987	492,685	25,337	123,145	641,167
1988	507,147	29,836	118,643	655,626
1989	289,647	27,377	110,936	427,960
1990	167,198	25,320	107,713	300,231
1991	119,276	13,471	113,153	245,900
1992	58,794	18,372	70,732	147,898
1993	51,867	24,295	80,667	156,829
1994	35,291	10,168	42,023	87,482
1995	29,708	14,269	53,335	97,312
1996	57,026	30,494	36,311	123,831
1997	48,108	32,336	35,744	116,188
1998[1]	49,800	19,500	27,700	97,000
1999[1]	85,400	35,600	29,600	150,600
2000[1]	72,500	18,300	24,700	115,500
2001[1]	195,600	55,400	61,300	312,300
2002[1]	233,700	44,800	88,700	367,200
2003[1]	162,900	59,100	92,700	314,700
2004	199,937	27,890	102,961	330,788

[1] Catches after 1998 include both adults and jacks caught in the Columbia River. Prior to that the catch only includes adults.

Appendix A.14. Washington/Oregon North of Cape Falcon Chinook catches, 1975-2004.

Year	Washington/Oregon North of Cape Falcon			
	Troll	Net	Sport	Total
1975	268,971	1,212	265,785	535,968
1976	371,239	203	215,319	586,761
1977	244,491	4	197,563	442,058
1978	150,673	4	104,306	254,983
1979	133,035	3	84,977	218,015
1980	125,709	1,215	59,099	186,023
1981	109,519	209	96,151	205,879
1982	154,720	267	114,952	269,939
1983	63,584	62	51,789	115,435
1984	15,392	0	6,980	22,372
1985	55,408	493	30,189	86,090
1986	52,000	0	23,000	75,000
1987	81,000	4,000	44,000	129,000
1988	108,000	3,000	19,000	130,000
1989	74,600	1,000	20,900	96,500
1990	65,800	0	32,900	98,700
1991	51,600	0	13,300	64,900
1992	69,000	0	18,900	87,900
1993	55,900	0	13,600	69,500
1994	4,500	0	0	4,500
1995	9,500	0	600	10,100
1996	12,300	0	200	12,500
1997	20,500	0	4,100	24,600
1998	20,300	0	2,200	22,500
1999	45,000	0	10,800	55,800
2000	20,600	0	9,200	29,800
2001	54,600	0	25,600	80,200
2002	120,700	0	60,600	181,300
2003	104,400	0	36,500	140,900
2004	89,600	0	26,600	106,200

Troll: OR Area 2; WA Areas 1, 2, 3 and 4: Area 4B from May 1 through Sept. 30 (during PFMC management)
Net: WA Areas 1, 2, 3, 4, 4A
Sport: OR Area 2; WA Areas 1, 1.1, 1.2, 2, 3, 4 and 2.2 (when Area 2 is open)

Appendix A.15. Oregon Chinook catches, 1975-2004.

Year	Oregon		
	Troll	Sport	Total
1975	300	19,000	19,300
1976	1,000	21,000	22,000
1977	3,000	34,000	37,000
1978	1,000	37,000	38,000
1979	800	31,000	31,800
1980	300	22,000	22,300
1981	300	28,000	28,300
1982	500	23,000	23,500
1983	700	19,000	19,700
1984	1,088	27,000	28,088
1985	1,700	25,000	26,700
1986	1,900	33,000	34,900
1987	3,600	46,000	49,600
1988	4,800	49,000	53,800
1989	4,500	45,000	49,500
1990	0	38,000	38,000
1991	0	44,500	44,500
1992	384	39,000	39,384
1993	649	52,000	52,649
1994	371	33,590	33,961
1995	206	48,366	48,572
1996	989	56,202	57,191
1997	513	37,659	38,172
1998	858	37,990	38,848
1999	1,233	30,735	31,968
2000	1,860	33,262	35,122
2001	1,184	55,497	56,681
2002	1,633	64,267	65,900
2003	1,459	NA	NA
2004	2,258	NA	NA

Troll: Late season off Elk River mouth.
Sport: Estuary and inland.
NA = not available.

Appendix B.1. Southeast Alaska and Transboundary river escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks, 1975-2004.

Year	Southeast Alaska					
	Situk esc.	t. run	King Salmon esc.	Andrew esc.	Blossom Index esc.	Keta Index esc.
1975			62	520	146	203
1976	1,421	3,184	96	404	68	84
1977	1,732	2,981	199	456	112	230
1978	808	1,745	84	388	143	392
1979	1,284	3,089	113	327	54	426
1980	905	2,504	104	282	89	192
1981	702	1,857	139	536	159	329
1982	434	949	354	672	345	754
1983	592	1,290	245	366	589	822
1984	1,726	2,948	265	389	508	610
1985	1,521	2,916	175	640	709	624
1986	2,067	2,873	255	1,416	1,278	690
1987	1,379	2,874	196	1,576	1,349	768
1988	868	1,596	208	1,128	384	575
1989	637	1,377	240	1,060	344	1,155
1990	628	1,643	179	1,328	257	606
1991	889	2,095	134	800	239	272
1992	1,595	3,819	99	1,556	150	217
1993	952	2,558	259	2,120	303	362
1994	1,271	6,085	207	1,144	161	306
1995	4,330	14,987	144	686	217	175
1996	1,800	8,100	284	670	220	297
1997	1,878	6,601	357	586	132	246
1998	924	5,420	132	974	91	180
1999	1,461	7,208	300	1,210	212	276
2000	1,785	4,941	137	1,380	231	300
2001	656	2,317	147	2,108	204	343
2002	1,000	3,017	153	1,752	224	411
2003	2,117	6,267	117	1,190	203	322
2004	798		134	3,068	333	376
Goal LL [a]	500		120	650	250	250
Goal UL [a]	1,000		240	1,500	500	500

(continued)

Appendix B.1. (Page 2 of 2).

	Transboundary Rivers							
Year	Alsek (Klukshu) Index esc.	Taku esc.	Stikine esc.	Unuk Index esc.	Unuk M-R esc.	Chickamin Index esc.	Chickamin M-R esc.	Chilkat esc.
1975		12,920	7,571			370		
1976	1,064	24,582	5,723			157		
1977	2,698	29,496	11,445	974		363		
1978	2,530	17,124	6,835	1,106		308		
1979	3,104	21,617	12,610	576		239		
1980	2,487	39,239	30,573	1,016		445		
1981	1,963	49,559	36,057	731		384		
1982	1,969	23,847	40,488	1,351		571		
1983	2,237	9,795	6,424	1,125		599		
1984	1,572	20,778	13,995	1,837		1,102		
1985	1,283	35,916	16,037	1,184		956		
1986	2,607	38,110	14,889	2,126		1,745		
1987	2,491	28,935	24,632	1,973		975		
1988	1,994	44,524	37,554	1,746		786		
1989	2,202	40,329	24,282	1,149		934		
1990	1,698	52,143	22,619	591		564		
1991	2,223	51,645	23,206	655		487		5,897
1992	1,243	55,889	34,129	874		346		5,284
1993	3,221	66,125	58,962	1,068		389		4,472
1994	3,620	48,368	33,094	711		388		6,795
1995	5,397	33,805	16,784	722		356		3,790
1996	3,382	79,019	23,886	1,167		422	1,587	4,920
1997	2,829	114,938	28,185	636	2,970	272		8,100
1998	1,347	31,039	25,968	840	4,132	391		3,675
1999	2,166	19,734	19,947	680	3,914	492		2,271
2000	1,321	30,529	27,531	1,341	5,872	801		2,035
2001	1,738	42,980	63,523	2,019	10,541	1,010	5,177	4,517
2002	2,140	52,409	50,875	897	6,988	1,013	5,007	4,051
2003	1,661	36,455	46,824	1,121	5,564	964	4,579	5,505
2004	2,525	69,199	48,900	1,008	3,963	798	3,294	3,422
Goal LL [a]	1,100	30,000	14,000	650		450		1,750
Goal UL [a]	2,300	55,000	28,000	1,400		900		3,500

[a] Goal LL is the lower end of the accepted escapement goal range and Goal UL is the upper end of the accepted escapement goal range.

Appendix B.2. Canadian escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks, 1975-2004.

Year	Northern B.C.								
	Area 1 Yakoun	Area 3[1] Nass			Area 4 Skeena		Area 8 Dean	Area 9 Rivers	Area 10 Smith
	esc.	Above GW[1]	Total esc.	t. run	esc.	t. run	Index	Inlet	Inlet
1975	1,500		14,895	17,874	20,319			3,280	960
1976	700		13,819	16,583	13,078			1,640	1,000
1977	800	13,688	14,288	18,410	29,018	39,606		2,225	1,050
1978	600	15,485	16,885	21,807	22,661	35,055	3,500	2,800	2,100
1979	400	11,253	12,783	16,229	18,488	28,166	4,000	2,150	500
1980	600	13,476	14,855	18,744	23,429	38,626	2,000	2,325	1,200
1981	750	12,625	13,925	17,606	24,523	42,018	3,500	3,175	1,020
1982	1,400	7,959	10,359	13,287	17,092	35,185		2,250	1,500
1983	600	13,252	16,301	20,516	23,562	39,510	500	3,320	1,050
1984	300	20,967	24,967	31,408	37,598	53,516	4,500	1,400	770
1985	1,500	17,782	19,694	24,768	53,599	76,544	4,000	3,371	230
1986	500	36,523	38,123	47,967	59,968	87,566	3,300	7,623	532
1987	2,000	19,540	20,986	26,568	59,120	76,349	1,144	5,239	1,050
1988	2,000	15,345	16,715	21,094	68,705	102,563	1,300	4,429	1,050
1989	2,800	28,133	29,175	36,594	57,202	83,439	2,300	3,265	225
1990	2,000	24,051	26,551	33,384	55,976	89,447	2,000	4,039	510
1991	1,900	6,907	8,259	13,136	52,753	79,343	2,400	6,635	500
1992	2,000	16,808	17,408	25,405	63,392	92,184	3,000	7,500	500
1993	1,000	24,814	26,508	36,678	66,977	96,018	700	10,000	500
1994	2,000	21,169	25,689	32,864	48,712	68,127	1,300	3,500	700
1995	1,500	7,844	8,776	16,187	34,390	48,351	1,100	3,196	400
1996	3,000	21,842	22,712	30,889	73,684	96,453	2,000	3,000	250
1997	2,500	18,702	20,584	27,658	42,539	65,350	1,400	4,980	100
1998	3,000	23,213	25,361	34,922	46,744	65,167	3,000	5,367	1,100
1999	3,200	11,544	13,118	22,310	43,775	70,993	1,800	2,739	500
2000	3,600	18,912	20,565	31,159	51,804	77,320	1,200	6,700	500
2001	3,500	29,687	31,915	44,595	81,504	112,346	3,795	5,062	300
2002	3,000	13,773	15,382	21,528	44,771	63,069	3,731	5,031	-[2]
2003	4,000	26,140	28,330	36,503	56,758	82,410	3,700	1,900	-[2]
2004	4,500	15,951	18,185	25,137	44,243[3]		3,500	3,950	

[1] GW refers to Gitwinksihlkw, the location of the lower fish wheels on the Nass Riv er used to capture Chinook for the mark-recapture estimate.

[2] The Docee River was dropped as an escapement indicator due to an inability to obtain reliable escapement estimates.

Appendix B.2. (Page 2 of 2).

	Southern B.C.				Fraser River						
Year	W. Coast Vancouver Island esc.	Lower Georgia Strait esc.	Lower Georgia Strait t. run	Upper Georgia Strait esc.	Fraser Spring Age 1.2 esc.	Fraser Spring Age 1.3 esc.	Fraser Summer Age 0.3 esc.	Fraser Summer Age 1.3 esc.	Fraser Spr/sum t. run	Harrison esc.	Harrison t. run
1975	800	5,475	6,390		7,179	8,184	26,875	16,875	119,081		
1976	1,075	4,340	5,390		4,600	10,307	4,925	13,630	98,691		
1977	1,835	6,530	7,590	3,880	3,675	13,261	19,600	17,240	132,553		
1978	2,750	6,495	7,035	6,150	4,305	15,725	16,700	19,200	109,119		
1979	2,048	10,686	11,209	4,127	2,770	14,985	18,275	10,205	101,252		
1980	5,974	8,819	10,519	1,367	6,255	16,521	8,350	13,625	71,504		
1981	5,050	6,007	7,607	1,945	2,975	12,274	13,120	12,202	62,668		
1982	6,812	6,186	6,657	3,260	5,510	15,010	6,850	15,088	85,140		
1983	2,700	6,582	6,862	3,770	2,641	24,225	9,500	16,604	72,526		
1984	3,862	8,456	8,861	4,600	6,380	30,370	15,522	13,595	95,681	120,837	131,740
1985	3,700	4,589	5,242	4,600	9,477	43,168	20,375	19,099	121,941	174,778	181,367
1986	2,760	3,105	3,776	1,630	10,275	48,446	22,460	32,505	144,617	162,596	177,662
1987	2,570	3,276	3,781	6,450	5,049	48,271	22,404	27,646	128,699	79,038	81,799
1988	4,560	7,957	8,638	3,300	4,003	41,783	29,567	32,066	129,587	35,116	38,285
1989	6,220	7,087	8,142	5,550	6,126	31,994	24,200	16,200	106,843	74,685	76,294
1990	3,660	7,023	7,627	2,320	3,225	41,560	25,425	33,747	135,124	177,375	180,837
1991	5,060	8,343	8,613	3,340	3,495	27,296	26,250	28,097	116,555	90,638	93,363
1992	4,830	11,377	11,637	5,268	5,937	33,038	32,200	38,011	130,249	130,411	132,042
1993	4,530	8,418	8,713	1,574	7,870	32,796	13,300	21,385	110,237	118,998	120,600
1994	4,080	7,463	7,808	1,237	10,696	51,655	25,350	23,657	145,303	98,334	100,839
1995	3,710	18,732	19,265	4,227	9,670	45,237	20,550	26,371	134,478	28,616	29,840
1996	6,026	16,465	17,275	3,600	20,726	38,398	50,900	43,142	185,559	37,394	38,568
1997	7,197	11,742	11,933	5,266	9,878	44,373	49,250	40,882	202,795	70,514	72,061
1998	11,643	8,246	9,319	10,350	3,003	37,862	68,033	36,750	169,333	188,425	189,103
1999	10,186	8,481	9,181	9,500	8,751	20,740	53,204	25,138	140,939	107,016	107,884
2000	4,675	7,933	8,500	12,850	11,731	26,773	45,161	25,869	155,209	77,035	78,098
2001	2,737	5,315	8,280	9,885	10,607	31,512	74,132	33,980	177,008	73,134	74,419
2002	4,036	3,840	6,022	12,865	16,423	42,408	85,132	34,886	221,020	89,968	91,122
2003	4,456	3,310	5,970	13,978	17,137	45,441	70,164	44,451	231,689	247,121	250,324
2004	8,491	2,602	4,140	13,365	12,156	31,614	53,764	30,980	194,440	135,895	138,890
Goal LL										75,100	
Goal UL										98,500	

Appendix B.3. Puget Sound escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks, 1975-2004.

Year	Puget Sound													
	Skagit Spring		Skagit Sum/fall		Stillaguamish		Snohomish		Green		Nooksack Spring esc.		Lake Washington Fall	
	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	N. Fork	S. Fork	esc.	t. run
1975	627	627	11,320	24,625	1,198	1,635	4,485	6,123	3,394	6,238			656	881
1976	633	633	14,120	23,306	2,140	4,002	5,315	9,889	3,140	7,732			719	759
1977	520	520	9,218	17,994	1,475	2,549	5,565	9,618	3,804	5,366			675	728
1978	932	932	13,075	20,030	1,232	1,959	7,931	12,591	3,304	4,349			890	1,202
1979	818	818	13,306	21,443	1,042	2,366	5,903	12,706	9,704	10,730			1,289	1,430
1980	1,408	1,408	20,058	28,938	821	2,647	6460	16,688	7743	10,608			1360	1,431
1981	1,045	1,045	8,283	19,675	630	2,783	3368	8,968	3606	4,912			721	792
1982	753	753	9,910	20,722	773	3,058	4379	8,470	1840	3,850			885	1,148
1983	554	554	8,723	14,671	387	925	4549	10,386	3679	13,290			1332	2,124
1984	696	696	12,628	15,005	374	883	3762	8,480	3353	5,381	45	188	1252	3,436
1985	2,634	2,634	16,002	25,075	1,223	2,455	4,873	9,005	2,908	7,444	258	445	949	2,305
1986	1,922	1,922	17,908	21,585	1,277	2,416	4,534	8,267	4,792	5,784	226	170	1,470	2,419
1987	1,745	1,745	9,409	13,037	1,321	1,906	4,689	6,670	10,338	11,724	181	248	2,038	4,124
1988	1,743	1,743	11,468	14,647	726	1,185	4,513	7,389	7,994	9,207	456	233	792	2,373
1989	1,400	1,809	6,684	12,787	811	1,642	3,138	6,142	11,512	15,000	303	606	1,011	1,688
1990	1,511	1,546	16,792	19,172	842	1,739	4,209	8,345	7,035	15,200	10	142	787	1,128
1991	1,236	1,273	5,824	8,423	1,632	2,913	2,783	4,964	10,548	14,967	108	365	661	1,415
1992	986	1,010	7,348	9,201	780	1,247	2,708	4,319	5,267	9,941	498	103	790	1,349
1993	782	812	5,801	6,879	928	1,299	3,866	5,602	2,476	5,202	449	235	245	304
1994	470	496	5,656	6,586	954	1,285	3,626	4,885	4,078	7,963	45	118	888	891
1995	855	887	6,985	9,209	822	920	3,176	5,000	7,939	9,743	230	290	930	944
1996	1,051	1,078	10,706	12,286	1,244	1,244	4,851	7,921	6,026	8,668	534	203	336	341
1997	1,041	1,064	4,951	6,134	1,156	1,167	4,292	4,334	11,800	12,097	570	180	294	296
1998	1,086	1,091	14,700	14,976	1,540	1,558	6,304	6,344	9,115	10,627	368	157	697	697
1999	471	476	5,002	5,249	1,098	1,101	4,799	4,817	13,173	14,595	823	166	778	778
2000	1,021	1,025	17,024	17,206	1,647	1,647	6,092	8,400	10,526	16,222	1245	284	347	347
2001	1,856	1,866	13,868	14,081	1,312	1,351	8,164	8,395	21,402	24,594	2209	267	1,269	1,516
2002	1,076	1,092	19,671	19,887	1,636	1,641	7,220	7,245	14,857	16,460	3741	289	637	647
2003	909	987	9,964	10,946	1,067	1,095	6,211	6,364	10,405	12,765	2857	204	771	800
2004	1,622	1,622	23,750	24,241	1,506	1,531	10,606	10,780	13,991	20,524	2064	130	730	773

Appendix B.4. Washington Coast escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks, 1975-2004.

Year	Washington Coast																	
	Quillayute Summer		Quillayute fall		Hoh spr/sum		Hoh Fall		Hoko Fall		Queets spr/sum		Queets fall		Grays Harbor spring		Grays Harbor fall	
	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run
1975																		
1976	1,300	1,700			600	1,300	2,500	3,100			505	737			600	1,000	1,836	10,313
1977	3,800	5,300			1,000	2,000	2,100	3,800			732	1,155			800	1,700	5,195	14,400
1978	2,300	2,700			1,400	2,472	1,900	2,900			1,110	1,406			1,000	1,600	4,555	8,372
1979	2,100	3,900			1,400	2,326	1,700	2,200			870	1,369			400	1,100	9,381	10,101
1980	964	1,500	6,700	7,600	800	1,079	2,200	2,800			1,038	1,213	3,200	5,800	200	600	11,656	21,639
1981	815	1,700	5,963	7,102	1,498	2,005	3,100	4,000			988	1,329	4,300	8,000	600	900	7,577	11,915
1982	1,126	2,700	7,107	9,651	1,553	2,125	4,500	5,800			781	1,244	4,100	6,200	610	669	5,606	13,296
1983	548	1,800	3,069	5,530	1,696	2,233	2,500	3,300			1,044	1,173	2,600	3,800	800	850	5,482	8,997
1984	618	1,000	9,128	10,447	1,430	2,005	1,900	2,600			958	1,189	3,900	5,300	1,128	1,130	21,058	22,616
1985	550	700	6,145	8,367	978	1,353	1,725	2,720			677	886	3,702	5,153	1,157	1,159	9,537	15,153
1986	853	1,000	10,006	13,380	1,248	1,912	4,981	6,000	801	839	925	1,193	7,805	8,890	1,795	1,826	13,988	21,568
1987	666	1,600	12,352	20,349	1,710	2,480	4,006	6,147	581	606	598	1,543	6,504	10,045	841	1,071	19,175	31,084
1988	2,599	3,943	15,168	22,115	2,605	3,708	4,128	6,873	784	821	1,765	2,267	8,390	11,000	3,106	3,208	27,216	36,725
1989	2,407	3,472	9,951	17,260	4,697	6,820	5,148	8,682	845	862	2,568	3,954	8,689	11,154	2,068	2,393	25,599	52,739
1990	1,483	1,840	13,711	16,914	3,886	5,294	4,236	6,327	493	498	1,780	2,480	10,103	12,297	1,567	1,630	16,580	36,802
1991	1,188	1,500	6,292	7,631	1,078	1,693	1,420	2,628	1,008	1,024	630	761	4,486	5,888	1,289	1,489	13,432	29,083
1992	1,009	1,271	6,342	7,750	1,018	1,443	4,003	5,139	741	750	375	505	4,695	6,338	1,813	1,851	13,175	24,113
1993	1,292	1,531	5,254	5,735	1,411	2,065	2,280	3,951	894	908	713	788	3,383	5,107	1,254	1,399	11,844	24,395
1994	974	1,187	4,932	5,692	1,699	2,372	3,967	4,322	429	440	705	727	3,805	5,866	1,403	1,479	11,817	23,961
1995	1,333	1,731	5,532	6,716	1,132	1,686	2,202	2,912	929	949	625	662	2,876	4,355	2,070	2,156	9,952	23,456
1996	1,170	1,388	7,316	9,293	1,371	2,083	3,022	4,061	1,256	1,258	776	891	3,441	4,693	4,462	4,655	16,988	26,461
1997	890	1,177	5,405	6,047	1,826	2,582	1,773	3,034	868	888	540	693	2,477	4,122	4,460	4,812	16,342	26,881
1998	1,599	1,829	6,752	7,940	1,287	1,880	4,257	5,388	1,702	1,702	492	537	3,951	5,009	2,283	2,585	11,476	17,257
1999	713	818	3,334	4,758	928	1,081	1,924	2,941	1,550	1,550	373	426	1,933	2,885	1,285	1,577	9,196	10,801
2000	989	1,149	3,730	4,794	492	529	1,749	2,632	730	730	248	250	3,572	3,752	2,867	3,149	8,288	13,215
2001	1,225	1,399	5,136	7,545	1,159	1,231	2,560	4,116	838	838	548	565	2,859	4,222	2,860	3,313	8,533	17,169
2002	1,002	1,100	6,067	9,512	2,464	3,375	4,415	5,716	680	680	738	755	1,938	4,250	2,613	3,232	10,250	13,541
2003	1,219	1,308	7,398	9,469	1,228	1,646	1,649	2,319	1,098	1,098	189	195	4,993	5,978	1,913	2,129	17,594	19,010
2004	745	788	3,583	5,216	1,829	2,455	1,845	3,078	1,088	1,088	604	619	3,523	4,324	4,703	5,075	17,313	22,830

Appendix B.5. Columbia River escapements and terminal runs of PSC CTC wild Chinook escapement indicator stocks, 1975-2004.

Year	Columbia Upriver Spring		Columbia Upriver Summers /1						Columbia Upriver Fall Chinook						
			Mid-Columbia		Snake River		Total		Lewis River /2		Deschutes River /3			Brights /4	
	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	t. run	esc.	esc.	t. run	esc.	t. run
1975									13,859	13,859	Mark	Above Falls		29,600	164,366
1976									3,371	3,371	Recapture	Expanded		27,700	109,589
1977									6,930	6,930		7,484	9,345	35,600	85,755
1978									5,363	5,363		5,049	7,020	25,800	78,280
1979	31,314	32,566	17,108	18,031	2,714	1,709	19,822	19,741	8,023	8,023		4,091	5,683	28,700	83,517
1980	32,775	33,876	16,583	17,494	2,688	2,919	19,271	20,413	16,394	16,856		3,159	5,110	27,700	71,690
1981	34,575	36,449	11,821	12,735	3,306	4,474	15,127	17,209	19,297	20,298		4,085	5,922	18,114	60,678
1982	39,918	42,934	8,269	9,150	4,210	4,745	12,479	13,894	8,370	10,126		7,406	9,422	27,226	69,578
1983	31,777	33,190	7,706	7,934	3,895	4,576	11,601	12,510	13,540	14,489		4,681	6,177	42,681	79,923
1984	25,394	27,279	12,369	12,689	5,429	5,079	17,798	17,768	7,132	8,128		4,404	5,374	45,452	126,026
1985	32,768	33,973	12,276	13,257	5,062	3,885	17,338	17,142	7,491	8,241		3,785	4,592	72,758	191,808
1986	41,413	44,030	10,640	11,361	6,154	5,824	16,794	17,185	11,983	13,504		5,355	6,508	90,961	275,061
1987	36,599	39,012	13,769	14,931	5,891	7,519	19,660	22,450	12,935	14,173		6,776	8,833	121,171	411,823
1988	33,237	35,781	12,527	13,442	6,145	8,304	18,672	21,747	12,059	13,636		5,982	8,373	97,781	331,542
1989	33,037	35,793	17,071	17,179	3,169	3,397	20,240	20,577	21,199	22,813		4,777	6,507	83,100	254,795
1990	30,760	33,053	12,883	12,976	5,093	5,123	17,976	18,099	17,506	18,784		2,224	3,194	48,891	150,399
1991	20,284	21,644	9,383	9,504	3,809	3,510	13,192	13,015	9,066	10,354		3,678	3,832	39,625	99,454
1992	34,250	36,492	6,133	6,200	3,014	3,125	9,147	9,325	6,307	7,129		2,777	2,814	38,879	78,202
1993	30,632	32,647	8,962	9,235	7,889	4,520	16,851	13,755	7,025	8,106		8,235	8,246	41,853	94,662
1994	9,578	10,091	11,771	11,970	795	907	12,566	12,877	9,939	10,541		5,455	5,524	66,470	127,315
1995	4,758	5,009	9,087	9,425	692	841	9,779	10,266	9,718	12,155		7,581	7,617	53,470	98,842
1996	19,063	20,124	7,597	7,880	2,607	2,832	10,204	10,712	13,971	13,971		8,759	8,837	51,973	134,356
1997	18,144	19,452	8,362	8,508	10,709	7,536	19,071	16,043	8,670	8,670		20,678	20,811	49,074	140,916
1998	17,751	18,708	9,525	9,757	4,355	4,739	13,880	14,496	5,929	5,929		10,923	11,428	40,012	130,874
1999	12,049	12,639	16,637	17,013	3,260	3,514	19,897	20,527	3,184	3,184		3,997	4,370	44,867	161,436
2000	51,506	54,850	16,889	17,080	3,933	4,017	20,822	21,097	9,820	9,820		3,230	3,637	62,675	152,107
2001	94,428	108,858	38,703	39,290	13,735	14,623	52,438	53,913	13,886	14,186	12,595	11,161	12,929	86,908	219,562
2002	76,392	85,808	67,688	71,620	22,159	20,104	89,847	91,723	16,380	18,230	15,505	12,252	16,475	116,237	260,794
2003	65,079	70,717	58,594	65,346	16,422	16,672	75,016	82,018	18,505	20,505	18,568	12,590	19,646	160,677	353,545
2004	58,884	64,577	44,320	53,413	8,813	10,206	53,133	63,619	15,342	17,133	13,369	11,879	14,593	150,440	353,265
Goal			17,857						5,700					40,000	

1/. Based on a Stock-Recruit analysis of model data, the interim goal for Upper-Columbia Summers is 17,857 until better data can be compiled.

2/ This is the number of naturally spawning adult fish in the Lewis River. The terminal run given is the escapement plus the Lewis River sport catch of wild adults.

3/ The first column gives the estimate based on a mark-recapture project for the entire river. The second column is the estimate based on using the ratio of redds above and below Sherar's Falls. The agencies' management goal is 4000 spawners.

4/ In 2002, the CRFMP escapement goal of 40,000 was accepted to by the CTC. Escapement numbers given are McNary adult dam count minus adult sport and broodstock above the dam. The terminal run is the Columbia River mouth terminal run of Upriver Brights minus the Deschutes River fall Chinook terminal run.

Appendix B.6. Oregon Coastal escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks, 1975-2004.

Year	Oregon							
	Nehalem		Siletz		Siuslaw		Umpqua River Redd Count	Mid-Oregon Coast
	esc.	t. run	esc.	t. run	esc.	t. run	Index	Density Index
1975	5,197	5,303	2,062	2,689	4,427	4,548	na	52
1976	9,807	9,908	1,326	2,036	7,999	8,153	na	30
1977	11,478	12,093	3,314	3,919	9,492	10,362	na	63
1978	12,059	12,960	2,062	3,703	5,872	6,879	400	61
1979	12,205	12,841	7,217	8,907	8,040	8,799	na	71
1980	5,555	6,379	3,680	4,823	10,630	11,183	697	70
1981	10,752	11,272	4,435	6,755	8,724	9,342	890	54
1982	5,085	5,675	3,415	4,514	10,870	11,774	1,011	71
1983	4,431	4,892	2,136	3,152	4,186	4,885	1,628	47
1984	20,341	21,623	3,461	4,571	11,168	12,437	2,594	45
1985	18,670	19,432	6,628	7,531	14,822	15,553	2,246	39
1986	10,389	11,873	6,748	7,639	14,844	15,775	1,573	41
1987	13,560	15,654	4,577	5,906	17,603	19,031	2,795	68
1988	14,889	17,138	7,805	8,992	41,746	43,975	3,778	85
1989	10,389	11,903	4,401	5,644	28,279	31,065	6,162	48
1990	5,104	6,726	4,313	5,148	26,799	28,893	3,761	37
1991	5,557	7,649	5,633	6,597	26,100	29,011	6,717	43
1992	9,060	11,780	6,044	7,217	26,090	27,958	8,149	76
1993	5,345	9,309	4,342	6,244	10,446	13,567	3,364	72
1994	6,486	9,400	10,475	11,990	23,570	25,584	7,128	90
1995	5,194	8,797	5,164	7,626	26,715	30,216	11,388	104
1996	9,211	13,241	7,394	9,917	33,051	38,485	10,019	99
1997	10,026	13,053	3,726	5,814	22,305	26,195	7,286	59
1998	8,245	11,134	5,516	7,247	24,708	28,907	1,104	98
1999	8,063	10,008	4,166	6,002	29,610	32,556	1,804	83
2000	5,257	7,491	4,982	7,626	12,999	16,830	3,140	62
2001	9,459	13,412	10,582	14,159	29,748	34,400	6,510	74
2002	18,089	22,425	14,054	18,195	41,058	46,177	3,831	145
2003	10,906	Na	11,149	Na	56,546	Na	8,918	201
2004	9,975	Na	3,902	Na	34,427	Na	7,487	127
Goal	6,989		2,944		12,925			