

**PACIFIC SALMON COMMISSION  
JOINT CHINOOK  
TECHNICAL COMMITTEE REPORT**

**CATCH AND ESCAPEMENT OF CHINOOK SALMON  
UNDER PACIFIC SALMON COMMISSION JURISDICTION,  
2003  
REPORT TCCHINOOK (04)-2**

June 22, 2004

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## LIST OF ACRONYMS WITH DEFINITIONS

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

## TABLE OF CONTENTS

|  | <u>Page</u> |
|--|-------------|
| LIST OF TABLES .....                                     | ii          |
| LIST OF APPENDICES .....                                 | iii         |
| EXECUTIVE SUMMARY .....                                  | iv          |
| CHINOOK CATCH 2003.....                                  | iv          |
| ESCAPEMENTS THROUGH 2003.....                            | iv          |
| 1 CHINOOK CATCH 2003.....                                | 1           |
| 1.1 REVIEW OF AABM FISHERIES .....                       | 1           |
| 1.1.1 Southeast Alaska Fisheries .....                   | 2           |
| 1.1.1.1 Troll Fishery Harvest .....                      | 3           |
| 1.1.1.2 Net Fisheries Harvest.....                       | 4           |
| 1.1.1.3 Recreational Fishery Harvest.....                | 4           |
| 1.1.1.4 Estimated Incidental Mortality .....             | 5           |
| 1.1.2 Northern British Columbia .....                    | 6           |
| 1.1.2.1 Troll Fishery Harvest .....                      | 6           |
| 1.1.2.2 Recreational Fishery Harvest.....                | 7           |
| 1.1.2.3 Estimated Incidental Mortality .....             | 7           |
| 1.1.3 West Coast Vancouver Island.....                   | 8           |
| 1.1.3.1 Troll Fishery Harvest .....                      | 8           |
| 1.1.3.2 Recreational Fishery Harvest.....                | 9           |
| 1.1.3.3 Estimated Incidental Mortality .....             | 10          |
| 2 ESCAPEMENTS THROUGH 2003.....                          | 11          |
| 2.1 INTRODUCTION .....                                   | 11          |
| 2.2 FRAMEWORK.....                                       | 11          |
| 2.2.1 Escapement and Terminal Run Data.....              | 11          |
| 2.2.1.1 Sources of Escapement Data.....                  | 11          |
| 2.2.1.2 Agency Procedures for Estimating Escapement..... | 11          |
| 2.2.2 MSY or Biologically-Based Escapement Goals .....   | 12          |
| 2.2.2.1 Origin of Goals .....                            | 12          |
| 2.3 ESCAPEMENT ASSESSMENTS.....                          | 15          |
| 2.4 STOCK SPECIFIC GRAPHS AND DESCRIPTIONS.....          | 17          |
| 2.4.1 SEAK/TBR Stocks.....                               | 17          |
| 2.4.2 Canadian Stocks.....                               | 30          |
| 2.4.3 Fraser River Stocks .....                          | 41          |
| 2.4.4 Washington, Oregon and Columbia River Stocks ..... | 48          |
| REFERENCES CITED.....                                    | 75          |
| APPENDICES .....   | 79          |

**LIST OF TABLES**

|            |  | <u><b>Page</b></u> |
|------------|--|--------------------|
| 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. ....   | 2                  |
| Table 1-2. | Harvest of Chinook salmon in SEAK by gear type in 2003. ....   | 3                  |
| Table 1-3. | Estimated encounters and incidental mortality in SEAK troll, net and sport fisheries for 2002-2003. 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. .... | 6                  |
| Table 1-4. | Summary of landed catch by gear for Canadian AABM fisheries in 2003. ....  | 7                  |
| Table 1-5. | Estimated encounters and incidental mortality in NBC troll and sport fisheries for 2002-2003. Mortality estimates of fish released in troll and sport fisheries include drop-off mortality. ....   | 8                  |
| Table 1-6. | Fishing periods and Chinook harvested and released during the 2003 accounting year in the full fleet WCVI troll fishery. ....  | 9                  |
| Table 1-7. | Outer WCVI recreational fishery catches of Chinook by statistical area in 2003. ....   | 10                 |
| Table 1-8. | Estimated encounters and incidental mortality in WCVI troll and sport fisheries for 2002-2003. Mortality estimates of fish released in troll and sport fisheries include drop-off mortality. ....  | 10                 |
| 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. ....   | 13                 |
| Table 2-2. | Escapement goals and 2003 escapements for PSC Chinook escapement indicator stocks with biologically-based goals accepted by the CTC. ....  | 15                 |

## LIST OF APPENDICES

|  | <u>Page</u> |
|--|-------------|
| Appendix A.1. Southeast Alaska (SEAK) Chinook catches, 1975-2003.....  | 80          |
| Appendix A.2. Northern British Columbia (NBC) Chinook catches, 1975-2003.....  | 81          |
| Appendix A.3. Central British Columbia (CBC) Chinook catches, 1975-2003.....   | 82          |
| Appendix A.4. West Coast Vancouver Island (WCVI) Chinook catches, 1975-2003.....   | 83          |
| Appendix A.5. Strait of Georgia/Fraser Chinook catches, 1975-2003.....   | 84          |
| Appendix A.6. Johnstone Strait Chinook catches, 1975-2003.....   | 85          |
| Appendix A.7. Canada - Strait of Juan de Fuca Chinook catches, 1975-2003. ....   | 86          |
| Appendix A.8. Washington - Strait of Juan de Fuca Chinook catches, 1975-2003. ....   | 87          |
| Appendix A.9. Washington - San Juan Chinook catches, 1975-2003.....  | 88          |
| Appendix A.10. Washington - Other Puget Sound Chinook catches, 1975-2003. ....   | 89          |
| Appendix A.11. Washington - Inside Coastal Chinook catches, 1975-2003. ....  | 90          |
| Appendix A.12. Columbia River Chinook catches, 1975-2003.....  | 91          |
| Appendix A.13. Washington/Oregon North of Cape Falcon Chinook catches, 1975-2003. ....   | 92          |
| Appendix A.14. Oregon Chinook catches, 1975-2003.....  | 93          |
| Appendix B.1. Southeast Alaska and Transboundary river escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks, 1975-2003..... | 94          |
| Appendix B.2. Canadian escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks, 1975-2003.....                                 | 96          |
| Appendix B.3. Puget Sound escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks, 1975-2003.....                              | 98          |
| Appendix B.4. Washington Coast escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks, 1975-2003. ....                        | 99          |
| Appendix B.5. Columbia River escapements and terminal runs of PSC CTC wild Chinook escapement indicator stocks, 1975-2003. ....  | 100         |
| Appendix B.6. Oregon Coastal escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks, 1975-2003. ....                          | 101         |

## **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 2003 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 2003a). Model calibration results will include postseason statistics for the 2003 fisheries and preseason predictions for the 2004 fisheries.

### **CHINOOK CATCH 2003**

Only catches 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 2003a).

This year's report differs from the previous three reports in several ways. First, 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 2002 and 2003. Commentary on these fisheries is also provided, as in previous reports. Second, the CTC is currently discussing how to restructure the ISBM section to make it more informative and relevant to the Agreement. This would include reporting estimates of incidental mortality for these fisheries in a similar manner as done for the AABM fisheries in this report. However, the new format has yet to be finalized, and therefore, due to time constraints, the CTC was unable to complete restructuring of the ISBM section for this report. Consequently, no commentary on ISBM fisheries is provided in this year's report. However, landed catch is reported in the appendices as done in previous reports. Landed catch and incidental mortality estimates for ISBM fisheries will be included in next years report.

### **ESCAPEMENTS THROUGH 2003**

The escapement review includes 50 naturally spawning escapement indicator stocks/stock aggregates. Biologically-based escapement goals have been accepted by the CTC for 22 of the 50 escapement indicator stocks/stock aggregates. For 11 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 2003, escapements were within

the goal range for five stocks, above the range or  $S_{MSY}$  point estimate for 14 stocks, and below the goal range for three stocks. 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 analyses to develop CTC accepted goals for the remaining stocks as they are provided.



## **1 CHINOOK CATCH 2003**

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 .

This year's report differs from the previous three reports in several ways. First, 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 2002 and 2003. Commentary on these fisheries is also provided, as in previous reports. Second, the CTC is currently discussing how to restructure the ISBM section to make it more informative and relevant to the Agreement. This would include reporting estimates of incidental mortality for these fisheries in a similar manner as done for the AABM fisheries in this report. However, the new format has yet to be finalized, and therefore, due to time constraints, the CTC was unable to complete restructuring of the ISBM section for this report. Consequently, no commentary on ISBM fisheries is provided in this year's report. However, landed catch is reported in the appendices as done in previous reports. Landed catch and incidental mortality estimates for ISBM fisheries will be included in near years report.

### **1.1 REVIEW OF AABM FISHERIES**

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.

| Year | SEAK (T, N, S)     |          |        | NBC (T), QCI (S)   |          | WCVI (T, S)        |                    |
|------|--------------------|----------|--------|--------------------|----------|--------------------|--------------------|
|      | Treaty Catch       |          | Add-on | Treaty Catch       |          | Treaty Catch       |                    |
|      | Limit <sup>1</sup> | Observed |        | Limit <sup>1</sup> | Observed | Limit <sup>1</sup> | Observed           |
| 1999 | 184.2              | 198.8    | 47.7   | 126.1              | 92.9     | 107.0              | 36.4 <sup>2</sup>  |
| 2000 | 178.5              | 186.5    | 74.3   | 123.5              | 31.9     | 86.2               | 101.4 <sup>2</sup> |
| 2001 | 250.3              | 186.9    | 77.3   | 158.9              | 43.5     | 145.5              | 117.7 <sup>2</sup> |
| 2002 | 371.9              | 357.1    | 68.2   | 237.8              | 150.6    | 196.8              | 165.0 <sup>2</sup> |
| 2003 | 366.1              | 383.4    | 57.2   | 197.1              | 191.7    | 181.8              | 175.8              |

<sup>1</sup> Target treaty catches correspond to the postseason AIs for 1999-2002, and the preseason AI for 2003.

<sup>2</sup> Size limits in WCVI troll and sport are provided in text.

### 1.1.1 Southeast Alaska Fisheries

The Southeast Alaska Chinook fishery has been managed to achieve the annual all gear PSC quota through a plan established by the Alaska Board of Fisheries. Once the all gear quota 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 set and drift gillnets. 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.

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 2003 were substantially higher than recent years prior to 2002. The pre-season AI of 1.79 allowed an initial all-gear catch of 366,100 fish per the Agreement. The all gear harvest was 443,030 and the treaty catch was 383,426 (Table 1-1), after subtracting an Alaskan hatchery add-on of 57,198 Chinook and a wild-stock terminal exclusion of 2,406

Chinook salmon. A breakdown by gear for total catch, Alaskan hatchery contributions and terminal exclusions is detailed in Table 1-2. Historical harvests for 1975-2003 are shown in Appendix A-1.

Table 1-2. Harvest of Chinook salmon in SEAK by gear type in 2003.

| <b>Gear</b>    | <b>Total Harvest</b> | <b>Alaskan Hatchery Harvest</b> | <b>Alaskan Hatchery Add-on</b> | <b>Wild<sup>1</sup> Terminal Exclusion</b> | <b>Treaty Catch</b> |
|----------------|----------------------|---------------------------------|--------------------------------|--|---------------------|
| <b>Troll</b>   |                      |                                 |                                |  |                     |
| Winter         | 50,854               | 4,375                           | 3,592                          | 0  | 47,262              |
| Spring         | 39,255               | 15,584                          | 13,440                         | 0  | 25,815              |
| Summer         | 240,573              | 7,684                           | 6,307                          | 0  | 234,266             |
| Troll subtotal | 330,686              | 27,643                          | 23,338                         | 0  | 307,348             |
| <b>Sport</b>   |                      |                                 |                                |  |                     |
|                | 72,971               | 23,557                          | 19,643                         | 840  | 52,488              |
| <b>Net</b>     |                      |                                 |                                |  |                     |
| Setnet         | 3,842                | 0                               | 0                              | 1,566                                      | 2,276               |
| Driftnet       | 11,397               | 8,026                           | 7,712                          | 0  | 3,685               |
| Seine          | 24,134               | 6,905                           | 6,505                          | 0  | 17,629              |
| Net subtotal   | 39,373               | 14,931                          | 14,217                         | 1,566                                      | 23,590              |
| <b>Total</b>   |                      |                                 |                                |  |                     |
|                | 443,030              | 66,131                          | 57,198                         | 2,406                                      | 383,426             |

<sup>1</sup> The CTC has completed its review of a terminal exclusion request for the Situk net and sport fisheries that was submitted by ADFG. The CTC has a recommendation for the Commission regarding the ADFG request; approval from the Commission has yet to take place. Exclusion catch claimed in 2003 is for the Situk only.

#### 1.1.1.1 Troll Fishery Harvest

Troll fishery regulations were similar in 2003, compared to the period of the previous report (2002). The accounting year began with the start of the winter fishery on October 11 of the previous calendar year and ended the following September; i.e., the 2003 accounting year is October 2002 through September 2003. The winter fishery continues until 45,000 total Chinook salmon are caught or through April 30, whichever is earlier. In 2003, the harvest in the winter fishery was greater than 45,000 and the winter troll fishery was closed on April 12. 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 small fisheries. Also, in 2003, 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 (in recent years, a large portion of the troll fleet has also targeted on chums). In 2003, no in-season adjustment of the AI was made because the results using the methodology established by the CTC and used since 1997 were poorly correlated with the first post-season calibration. A second summer Chinook retention period began after necessary management actions for coho salmon were determined.

In 2003, the troll fishery harvested a total of 330,686 Chinook salmon, including 27,643 Alaskan hatchery fish, of which 307,348 were treaty fish (Table 1-2). The winter fishery harvested 50,854 of which 4,375 (8.6%) were from Alaskan hatcheries, with a total of 47,262 treaty fish. The spring fishery harvested a total of 39,255 of which 15,584 (39.7%) were Alaskan hatchery fish and 25,815 were treaty fish.

The total summer harvest was 240,573 of which 7,684 were from Alaskan hatcheries. The areas of high Chinook abundance were closed for the remainder of the summer season after July 31 although there was no region-wide Chinook closure following the harvest of the initial 70% of the summer quota. The remaining 30% of the summer quota was harvested from August 1 through August 8. There was a total of 10,737 boat-days of chinook effort and 9,209 boat-days of Chinook non-retention effort in 2003.

#### *1.1.1.2 Net Fisheries Harvest*

Net harvest of Chinook salmon in the purse seine fishery is limited with a 28" (71 cm) 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 at all times. Gillnet harvest of Chinook is limited by a delayed season opening until late 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 catches during the base period (1979-1982) were 402 and 1,708 fish for the Stikine and Taku respectively, which were not reached in 2003. The Situk commercial set-gillnet catch during the base period was 776.

The 2003 total net harvest was 39,373 Chinook (Table 1-2). There was a total of 1,566 fish excluded (Situk River) and 14,931 Chinook were from Alaskan hatcheries. The total net harvest minus the claimed terminal exclusion and the allowed Alaskan hatchery add-on was 23,590 Chinook. The treaty harvest by gear type was 2,276 for set gillnet, 3,685 for drift gillnet and 17,629 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. In 2003, regulations for the recreational fishery included a two fish daily bag limit for

resident anglers and one fish daily bag limit 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 total harvest in 2003 was 72,971 Chinook of which 840 were wild fish that were excluded (Situk River), 19,057 Chinook were Alaskan hatchery fish taken in mixed stock fisheries, and another 4,500 Alaskan hatchery fish were taken in terminal hatchery areas (Table 1-2). The preliminary total sport harvest of 72,971, minus 20,483 combined allowed hatchery add-on and wild terminal exclusion fish, resulted in a treaty harvest of 52,488 Chinook. In the summer of 2004, preliminary harvests for 2003 will be updated after mail survey results are obtained.

Recreational harvests for SEAK in 2002 have been updated. In 2002, the total recreational harvest was 69,537 Chinook of which 727 were wild fish that were excluded in terminal areas, 20,562 were Alaskan hatchery fish and 7,036 fish were taken in terminal Alaskan hatchery areas. The total sport harvest of 69,537, minus 24,033 combined allowed hatchery add-on and wild terminal harvest fish, resulted in a treaty harvest of 45,504 Chinook.

#### *1.1.1.4 Estimated Incidental Mortality*

The incidental mortality estimates for the troll and recreational fisheries in 2002 and 2003 were from direct fishery observations programs. Estimates for the net fishery included estimates of 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 2002, including Alaskan hatchery fish, was 491,650 nominal fish. The landed catch component of this mortality was 426,534, of which 357,133 were treaty fish. The estimated incidental mortality was 65,115 fish, including 42,556 sublegal fish and 22,559 legal fish (Table 1-3). Estimated incidental mortality was 34,459 in the troll fishery, 16,928 in the recreational fishery, and 13,728 in the net fisheries. Table 1-3 summarizes encounter and incidental mortality estimates for these fisheries in 2002 by size class during retention and CNR fishing periods.

The estimated total mortality of Chinook salmon in SEAK fisheries in 2003 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 2003, including Alaskan hatchery fish but not including a complete estimate of the incidental mortality in the recreational fishery, was 520,163 nominal fish. The landed catch component of this mortality was 443,030, of which 383,490 were treaty fish. The incidental mortality estimate was 77,133 fish, including 55,851 sublegal fish and 21,282 legal fish (Table 1-3). The incidental mortality total includes 25,804 in the troll fishery, 48,702 in the net fishery, and 2,627 drop-off mortality of legal fish in the recreational fishery. Table 1-3 summarizes available encounter and incidental mortality estimates for these fisheries

in 2003 by size class during retention and CNR fishing periods. The estimates of sublegal and legal fish encountered and released in the recreational fishery will be available in September, 2004.

Table 1-3. Estimated encounters and incidental mortality in SEAK troll, net and sport fisheries for 2002-2003. 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

| Year |            | Troll             |          |             |          | Sport           |          |          |
|------|------------|-------------------|----------|-------------|----------|-----------------|----------|----------|
|      |            | Retention Fishery |          | CNR Fishery |          | Retention       | Releases |          |
|      |            | Legal             |          |             |          | Legal           |          |          |
|      |            | Drop-off          | Sublegal | Legal       | Sublegal | Drop-off        | Legal    | Sublegal |
| 2002 | Encounters | Na <sup>1</sup>   | 52,703   | 42,164      | 33,317   | Na <sup>1</sup> | 36,009   | 54,719   |
| 2002 | IM         | 2,602             | 13,861   | 9,234       | 8,762    | 2,503           | 5,725    | 8,700    |
| 2003 | Encounters | Na <sup>1</sup>   | 39,821   | 34,262      | 19,703   | Na <sup>1</sup> |          |          |
| 2003 | IM         | 2,645             | 10,473   | 7,503       | 5,182    | 2,627           |          |          |

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            |
| 2002 | Encounters | 676           | 4,343       | 14,363  | Na <sup>1</sup> |                            |                     |
| 2002 | IM         | 676           | 2,215       | 10,557  | 280             | 22,559                     | 42,556              |
| 2003 | Encounters | 1,103         | 16,081      | 53,188  | Na <sup>1</sup> |                            |                     |
| 2003 | IM         | 1,103         | 8,202       | 39,093  | 305             | 21,282 <sup>2</sup>        | 55,851 <sup>2</sup> |

<sup>1</sup> Legal drop-off mortality is computed from landed catch, incorporating both an encounter ratio and a mortality rate.

<sup>2</sup> Preliminary total as estimated releases and mortality estimates from the sport fishery in 2003 are not yet available.

### 1.1.2 Northern British Columbia

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). The total AABM catch (troll plus QCI sport) in 2003 was 191,657 (Table 1-4).

#### 1.1.2.1 Troll Fishery Harvest

The NBC troll fishery opened October 1, 2002 in portions of Areas 1, 2, 6, 7, 101, 102, 106, 107, 130, and 142 in Hecate Strait and on the west side of the QCI. Only 240 Chinook were caught in AABM areas in October. No catch occurred from November 2002 through February 2003. The areas open to the troll fishery in early 2003 were Areas 1, 2, 101, 102, 130 & 142. Very little effort was observed in March (22 vessel days). Effort increased steadily through April and the fishery was closed May 12. Catch from March to May 12 was 26,231 chinook salmon. The troll

fishery was opened from June 19 to July 5 in portions of Areas 1 and 101 and the portions of Areas 2 and 142 north of Skalu Point for a catch of 85,762 Chinook salmon. A final Chinook retention fishery occurred from September 4 to 9 for a catch of 24,024 Chinook salmon. A test fishery was conducted between the commercial openings for a catch of 1,100 Chinook salmon. The total troll fishery catch was 137,357 Chinook salmon. All of the 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 25 to August 31 and from September 13 to 30.

The total NBC troll catch from October 1, 2002 to September 30, 2003 was 137,357 chinook.

Table 1-4. Summary of landed catch by gear for Canadian AABM fisheries in 2003.

| <b>AABM Fishery</b> | <b>Troll</b> | <b>Sport</b> | <b>Total</b> |
|---------------------|--------------|--------------|--------------|
| NBC                 | 137,357      | 54,300       | 191,657      |
| WCVI                | 151,826      | 23,995       | 175,821      |

#### *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 and monitoring of these fisheries have also expanded. 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 have 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/day and four in possession applied in 2003. Catch for this fishery in 2003 was 54,300 Chinook salmon.

Thus, the total NBC AABM catch (troll plus sport) between October 1, 2002 and September 30, 2003 was 191,657 Chinook salmon (Table 1-4).

#### *1.1.2.3 Estimated Incidental Mortality*

The estimated total mortality of Chinook salmon in the NBC AABM fisheries in 2002 was 167,077 nominal fish, including 150,617 fish in the landed catch and 16,460 fish from incidental mortality (Table 1-5). The estimated incidental mortality included 14,237 legal and 2,223

sublegal fish in nominal numbers of fish, comprised of 5,103 fish the troll fishery and 11,357 in the recreational fishery. The incidental mortality estimates for the troll and recreational in 2002 and 2003 are based on direct fishery observations programs. Table 1-5 summarizes encounter and incidental mortality estimates for these fisheries in both years by size class during retention and CNR fishing periods.

The estimated total mortality of Chinook salmon in the NBC AABM fisheries in 2003 was 209,946 nominal fish, including 191,657 fish in the landed catch and 18,289 fish from incidental mortality (Table 1-5). The estimated incidental mortality included 17,806 legal and 483 sublegal fish in nominal numbers, comprised of 5,413 fish in the troll fishery and 12,876 in the recreational fishery.

Table 1-5. Estimated encounters and incidental mortality in NBC troll and sport fisheries for 2002-2003. Mortality estimates of fish released in troll and sport fisheries include drop-off mortality.

| Year |            | Troll             |          |             |          | Sport           |                       | Total Incidental Mortalities |          |
|------|------------|-------------------|----------|-------------|----------|-----------------|-----------------------|------------------------------|----------|
|      |            | Retention Fishery |          | CNR Fishery |          | Retention       | Releases <sup>2</sup> |                              |          |
|      |            | Legal Drop-off    | Sublegal | Legal       | Sublegal | Legal Drop-off  | Legal                 | Legal                        | Sublegal |
| 2002 | Encounters | NA <sup>1</sup>   | 8,573    | 5,544       | 501      | NA <sup>1</sup> | 42,226                |                              |          |
|      | IM         | 1,760             | 2,100    | 1,120       | 123      | 3,250           | 8,170                 | 14,237                       | 2,223    |
| 2003 | Encounters | NA <sup>1</sup>   | 1,802    | 12,846      | 171      | NA <sup>1</sup> | 47,549                |                              |          |
|      | IM         | 2,335             | 441      | 2,595       | 42       | 2,627           | 9,129                 | 17,806                       | 483      |

<sup>1</sup> Legal drop-off mortality is computed from landed catch, incorporating both an encounter ratio and a mortality rate.

<sup>2</sup> 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

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 catch (troll plus outside tidal sport) in 2003 was 175,821 Chinook (Table 1-4).

#### 1.1.3.1 Troll Fishery Harvest

The AABM troll catch includes Chinook caught in Statistical Areas 21, 23-27, and 121-127. In the 2003 season (October 1/2002-September 30/2003), 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).



Table 1-6. Fishing periods and Chinook harvested and released during the 2003 accounting year in the full fleet WCVI troll fishery.

| <b>Fishing period</b>          | <b>Landed Catch</b> | <b>Sub-legal Releases</b> |
|--------------------------------|---------------------|---------------------------|
| October 1–7, 2002              | 11,924              | 1,098                     |
| November 1-30, 2002            | 331                 | 100                       |
| December 1-31, 2002            | 449                 | 303                       |
| January 1-31, 2003             | 1,887               | 644                       |
| February 1-3, 2003             | 1,477               | 335                       |
| March 1-11, 2003 <sup>1</sup>  | 2,510               | 274                       |
| April 17-30, 2003 <sup>1</sup> | 31,722              | 2,750                     |
| May 1-24, 2003                 | 76,378              | 8,222                     |
| June 4-5, 2003 <sup>2</sup>    | 25,148              | 1,752                     |
| <b>Total</b>                   | <b>151,826</b>      | <b>15,478</b>             |

<sup>1</sup> Fisheries were not conducted during late March to mid-April to avoid impacts on earliest timing upper Fraser River spring run Chinook.

<sup>2</sup> Troll fisheries were closed after June 5 due to increased coho encounters.

The minimum size limit for troll-caught Chinook in all periods was 55 cm FL. Catches during these fisheries were extensively 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 total AABM catch for 2003 Area G troll fisheries between October 1, 2002 and September 30, 2003 was 151,826 Chinook (15,478 released).

### *1.1.3.2 Recreational Fishery Harvest*

The AABM sport fishery, i.e. ‘outside’ recreational fishery, includes all catch in northwest WCVI (Areas 25–27) prior to July 1 and the catch outside one nautical mile offshore after July 1, plus all the catch in southwest WCVI (Areas 21–24) prior to August 1 and the catch outside one NM offshore after August 1.

The 2003 WCVI Chinook fisheries were structured to meet conservation concerns for non-enhanced WCVI Chinook stocks. 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 through mid-September. Creel surveys are generally conducted from late May or early June to September 30 but vary with run timing. Creel observers in 2003 conducted 11,294 fishing interviews from 19 landing sites from June until September 30.

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.

The estimated 2003 AABM sport catch was approximately 23,995 Chinook (Table 1-7). In 2003, 26% fewer AABM Chinook were caught than in 2002, which at least in part was due to lower angler effort. Therefore, the total WCVI AABM catch for 2003 was 175,821 Chinook (Table 1-4).

Table 1-7. Outer WCVI recreational fishery catches of Chinook by statistical area in 2003.

| Statistical areas |        |        |        |        |    |        |
|-------------------|--------|--------|--------|--------|----|--------|
| 21/121            | 23/123 | 24/124 | 25/125 | 26/126 | 27 | Total  |
| 5,541             | 15,345 | 1,940  | 484    | 685    | 0  | 23,995 |

1.1.3.3 *Estimated Incidental Mortality*

The estimated total mortality of Chinook salmon in the WCVI AABM fisheries in 2003 was 178,406 nominal fish, including 165,036 fish in the landed catch and 13,370 fish from incidental mortality (Table 1-8). The estimated incidental mortality included 8,212 legal and 5,158 sublegal fish in nominal numbers of fish, comprised of 7,243 in the troll fishery and 6,127 in the recreational fishery. The estimates for the troll and recreational in 2002 and 2003 are from direct fishery observations programs. Table 1-8 summarizes encounter and incidental mortality estimates for these fisheries in both years by size class during retention and CNR fishing periods.

The estimated total mortality of Chinook salmon in the WCVI AABM fisheries in 2003 was 187,528 nominal fish, including 175,821 fish in the landed catch and 11,707 fish from incidental mortality (Table 1-8). The estimated incidental mortality included 6,364 legal and 5,343 sublegal fish in nominal numbers, comprised of 6,386 in the troll fishery and 5,321 in the recreational fishery. The estimates for the troll and recreational in both years are from direct fishery observations programs.

Table 1-8. Estimated encounters and incidental mortality in WCVI troll and sport fisheries for 2002-2003. Mortality estimates of fish released in troll and sport fisheries include drop-off mortality.

| Year |            | Troll             |          |             |          | Sport           |          |          | Total Incidental Mortalities |          |
|------|------------|-------------------|----------|-------------|----------|-----------------|----------|----------|------------------------------|----------|
|      |            | Retention Fishery |          | CNR Fishery |          | Retention       | Releases |          | Legal                        | Sublegal |
|      |            | Legal             | Sublegal | Legal       | Sublegal | Legal           | Legal    | Sublegal |                              |          |
| 2002 | Encounters | NA <sup>1</sup>   | 13,647   | 7,127       | 816      | NA <sup>1</sup> | 11,961   | 8,411    | 8,212                        | 5,158    |
|      | IM         | 2,260             | 3,344    | 1,440       | 200      | 2,216           | 2,297    | 1,615    |                              |          |
| 2003 | Encounters | NA <sup>1</sup>   | 15,479   | 63          | 7        | NA <sup>1</sup> | 11,016   | 8,073    | 6,364                        | 5,343    |
|      | IM         | 2,581             | 3,793    | 13          | 0        | 1,656           | 2,115    | 1,550    |                              |          |

<sup>1</sup> Legal drop-off mortality is computed from landed catch, incorporating both an encounter ratio and a mortality rate.

## **2 ESCAPEMENTS THROUGH 2003**

### **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 22 stocks included in this report. For these stocks, the CTC can evaluate stock status in relation to these 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<br>In Att. I-V          | Escapement<br>Indicator                            | Region       | Run           |
|--------------------------------|-------------|------|------------|-------------|-------------------------------------|--|--------------|---------------|
| SEAK                           | NBC/<br>QCI | WCVI | BC<br>ISBM | SUS<br>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 <sup>1</sup> (Spr/Sum) | Fraser Spring 1.3                                  | Fraser River | Spring        |
| ✓                              | ✓           |      | ✓          |             | Fraser Early <sup>1</sup> (Spr/Sum) | Fraser Spring 1.2                                  | Fraser River | Spring        |
| ✓                              | ✓           |      | ✓          |             | Fraser Early <sup>1</sup> (Spr/Sum) | Fraser Summer 1.3                                  | Fraser River | Summer        |
| ✓                              | ✓           |      | ✓          |             | Fraser Early <sup>1</sup> (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. (Page 2 of 2)

| Presence in Treaty Attachments |             |      |            |             | Stock Group<br>In Att. I-V    | Escapement<br>Indicator | Region | Run    |
|--------------------------------|-------------|------|------------|-------------|-------------------------------|-------------------------|--------|--------|
| SEAK                           | NBC/<br>QCI | WCVI | BC<br>ISBM | SUS<br>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<br>Coast. | Nehalem                 | NOC    | Fall   |
| ✓                              | ✓           |      |            | ✓           | Far N. Migrating OR<br>Coast. | Siletz                  | NOC    | Fall   |
| ✓                              | ✓           |      |            | ✓           | Far N. Migrating OR<br>Coast. | Siuslaw                 | NOC    | Fall   |
|                                |             |      |            |             |                               | Umpqua                  | MOC    | Fall   |
|                                |             |      |            |             |                               | Mid South OR            | MOC    | Fall   |

<sup>1</sup> 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 2003, similar to reporting through 2002 in CTC (2003b).

The escapement goals and 2003 escapements for the 22 stocks with CTC accepted escapement goals are listed in Table 2-2. For 11 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 2003, escapements were within the goal range for five stocks, above the range or  $S_{MSY}$  point estimate for 14 stocks, and below the goal range for three stocks.

Table 2-2. Escapement goals and 2003 escapements for PSC Chinook escapement indicator stocks with biologically-based goals accepted by the CTC.

| Stock                    | Region       | Stock Group     | Escapement Goal | 2003 Escapement |
|--------------------------|--------------|-----------------|-----------------|-----------------|
| Situk                    | SEAK         | Yakutat         | 500-1,000       | 2,117           |
| Alsek (Klukshu index)    | SEAK/<br>TBR | Yakutat         | 1,100-2,300     | 1,700           |
| Taku                     | SEAK/<br>TBR | TBR             | 30,000-55,000   | 41,678          |
| Stikine                  | SEAK/<br>TBR | TBR             | 14,000-28,000   | 42,712          |
| King Salmon              | SEAK         | Northern Inside | 120-240         | 117             |
| Andrew Creek             | SEAK         | Central Inside  | 650-1,500       | 1,190           |
| Unuk (survey index)      | SEAK         | Southern Inside | 650-1,400       | 1,121           |
| Chickamin (survey index) | SEAK         | Southern Inside | 450-900         | 964             |
| Blossom (survey index)   | SEAK         | Southern Inside | 250-500         | 203             |
| Keta (survey index)      | SEAK         | Southern Inside | 250-500         | 322             |
| Harrison                 | BC           | Fraser River    | 75,100-98,500   | 247,121         |
| Mid Col. Upr. Summer     | CR           | Columbia River  | 17,857          | 76,265          |
| Col. Upriver Brights     | CR           | Columbia River  | 40,000          | 160,677         |
| Lewis                    | CR           | Columbia River  | 5,700           | 18,505          |
| Quillayute Fall          | WAC          | Wa Coast        | 3,000           | 4,578           |
| Queets Spring/Summer     | WAC          | Wa Coast        | 700             | 189             |
| Queets Fall              | WAC          | Wa Coast        | 2,500           | 4,885           |
| Hoh Spring/Summer        | WAC          | Wa Coast        | 900             | 1,210           |
| Hoh Fall                 | WAC          | Wa Coast        | 1,200           | 1,681           |
| Nehalem                  | ORC          | NOC             | 6,989           | 10,906          |
| Siletz                   | ORC          | NOC             | 2,944           | 11,149          |
| Siuslaw                  | ORC          | NOC             | 12,925          | 56,546          |

The CTC has now assessed the status of stocks with CTC-accepted goals for return years 1999-2003. Over this time period, the number of stocks with CTC-accepted goals has increased from 16 to 22 (Figure 2.1). The percentage of stocks below escapement goals or goal ranges has varied over these years from 6% to 19%.

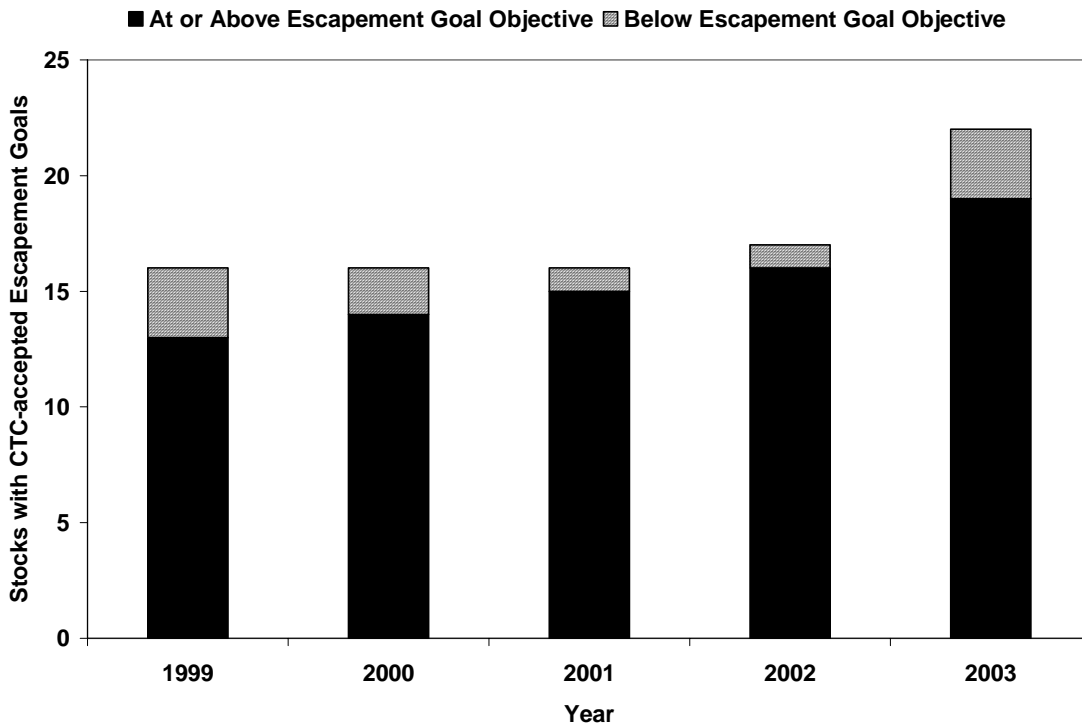


Figure 2.1. Number and status of stocks with CTC-accepted escapement goals for years 1999-2003.

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 (ordinate) 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

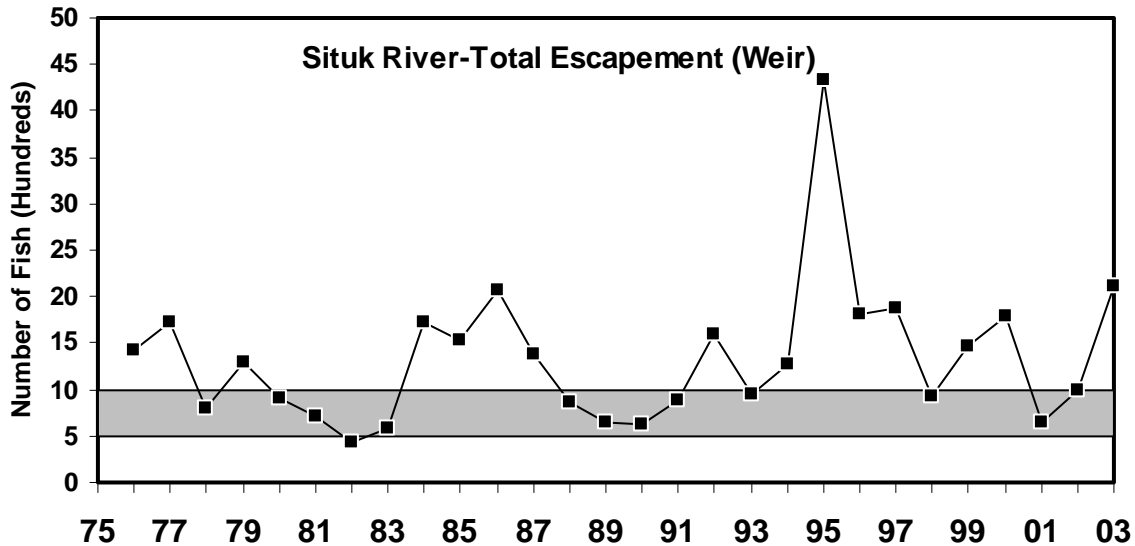
Of the 11 SEAK/TBR stocks included in the escapement assessment, six (Situk, Chilkat, Taku, King Salmon, and Stikine rivers and Andrew Creek) include estimates of total escapement of large (adult) fish. Large fish refers to age-.3 (European notation age classes 0.3, 1.3, 2.3) and older Chinook salmon 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 (Alek, 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 (Alek) 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, Alek, 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 ten stocks. A revised escapement goal has been recently completed for the Chilkat River stock and is pending review by the CTC. 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. After CTC

acceptance of the revised Chilkat River goal, all of the SEAK/TBR stocks will meet the assessment criteria detailed in the U.S. CTC Stock Assessment Review (USCTC 1997) and will have CTC accepted escapement goals.

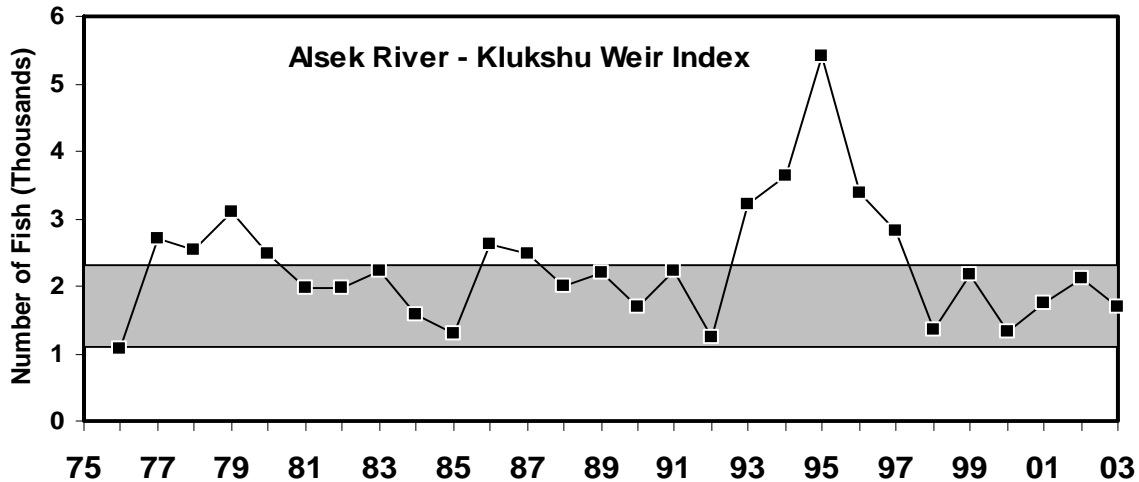
The State of Alaska adopted a Sustainable Salmon Fisheries Policy in March of 2000 (ADF&G/ABF 2000). The term “management concern” used later in this SEAK section of this report has the same meaning as given in the policy document described above, i.e., “Management concern: a concern arising from a chronic 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.



**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.

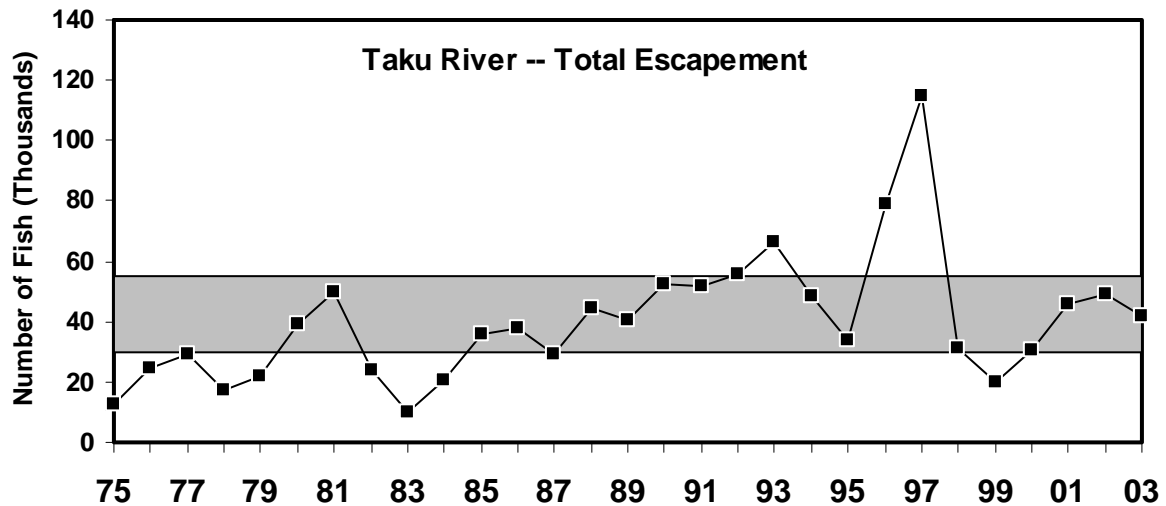
**Agency Comments:** During the 28-year period of 1976-2003, the Situk River Chinook salmon escapements have been below the goal range only once, in 1982. Directed U. S. sport, commercial and subsistence fisheries located both inside the river and inlet and in nearby surf waters target this stock under 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 1999-2003 have averaged 1,809 large Chinook salmon, well above the escapement goal range. In 2003 the escapement was 2,117 large Chinook salmon, and above the upper end of 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 Asek 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 Asek 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 Asek River. The weir counts from the Klukshu River represent an index of the overall Chinook salmon escapement into the Asek 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.

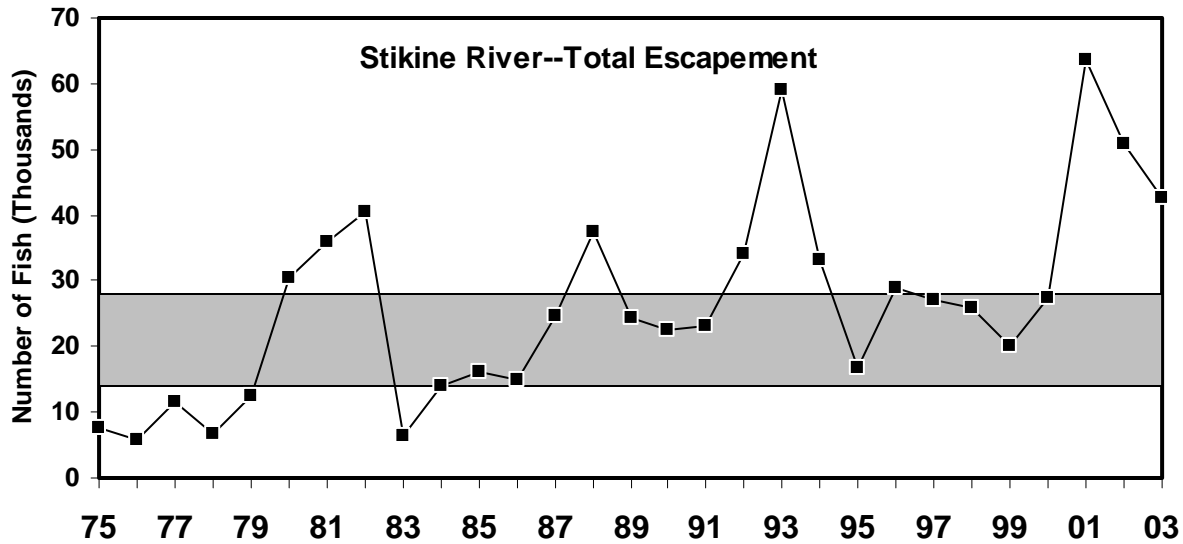
**Joint Agency Comments:** Directed Canadian sport and aboriginal fisheries take place in-river while - U. S. commercial and subsistence fisheries are located both inside the river and lagoon and in nearby surf waters. Total annual harvest rates have averaged 20% to 25% since 1981 (McPherson et al. 1998). Escapements in the Klukshu River have averaged 2,293 Chinook salmon over the 28-year period of 1976-2003. The 2003 escapement was 2,293 Chinook salmon. The joint ADF&G-CDFO assessment is that the Asek 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 is ongoing and was implemented in 1998; Asek 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 Asek 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 1995-2003. 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).

**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).

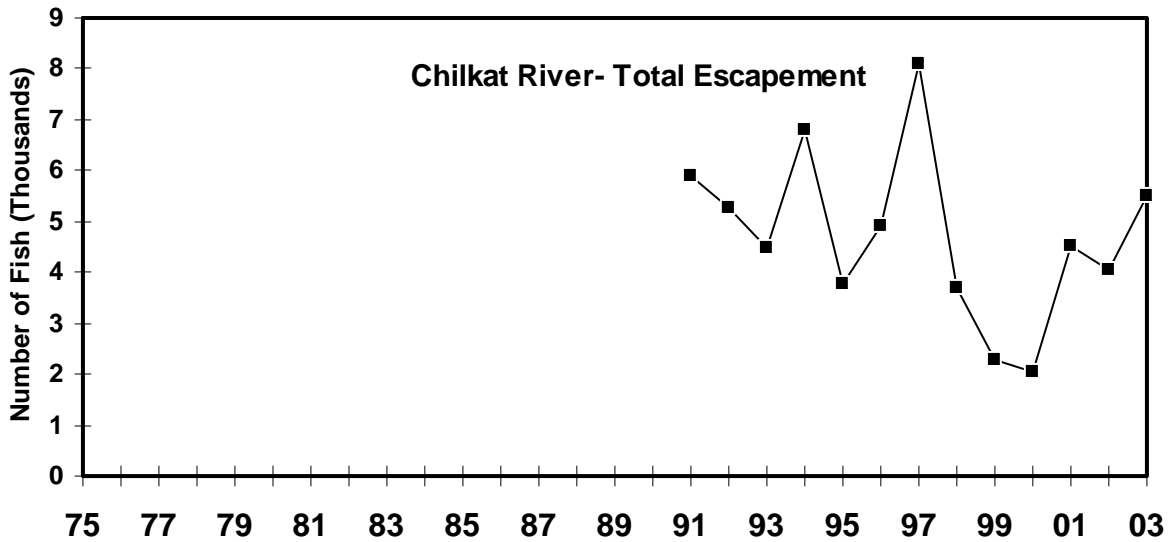
**Joint Agency Comments:** Estimated harvest rates on this stock range from 12% to 22% under the current management regime (McPherson et al. 2000). Smolt were marked with coded-wire tags from 1976 through 1981 and annually since 1993 (1991 brood). Data from recoveries of these CWTs in fisheries and inriver permits estimation of harvest and smolt production. The precision of harvest rate estimates will continue to improve over time. Historically, a significant terminal marine gillnet fishery occurred in the spring in Taku Inlet along with a spring SEAK troll fishery. Currently, there is no commercial fishery targeting this stock, although incidental harvests occur in other U.S. and Canadian commercial fisheries; however, sport fisheries in the U. S. and in Canada do target this stock. The Parties have developed the technical data for potential implementation of an abundance-based management regime for Taku River Chinook salmon, as specified in the June 1999 Agreement. Estimated escapements to the Taku River were within or above the escapement goal range from 1988 through 2003, except in 1999. In 2003, an estimated 41,678 large fish escaped into the Taku River, midway through the escapement goal range. 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.

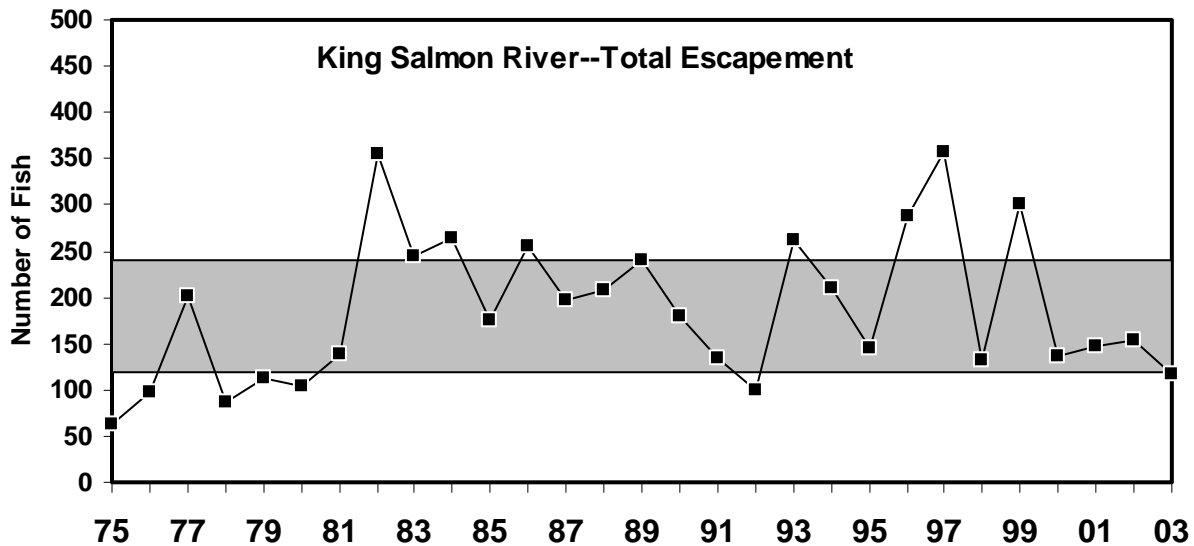
**Joint Agency Comments:** Under the current management regime, total harvest rates on Stikine River Chinook salmon are believed to range between 10% and 33% with an average of about 18% (Bernard et al. 2000). Prior to the early 1980s, harvests of this stock occurred in a significant terminal U.S. marine gillnet fishery operated near the mouth of the river. Currently, there are no U.S. commercial marine fisheries targeting this stock, but incidental harvests occur 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. Management agencies have recently embarked on joint programs to tag smolt and adults that will provide improved estimates of harvest, escapement, and smolt and adult production. The preliminary escapement estimate for 2003 is 42,712 large spawners, the fourth highest on record.



**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 2000). 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:** There is no CTC accepted escapement goal for this stock. 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 (McPherson et al. 2003) recommended a revised escapement goal of 1,750 to 3,500 Chinook salmon and this revised goal has been reviewed by ADF&G and will be submitted for review by the CTC by May of 2004.

**Agency Comments:** Relatively small U. S. marine sport and in-river 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 have averaged 4,716 large spawners, and have averaged 3,676 from 1999 to 2003. The escapement in 2003 was estimated at 5,505 large spawners, well above the upper end of the revised agency 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 are also well above minimum U.S. CTC data standards. The database is limited by the number of years of spawner estimates and by incomplete harvest/exploitation rate data.

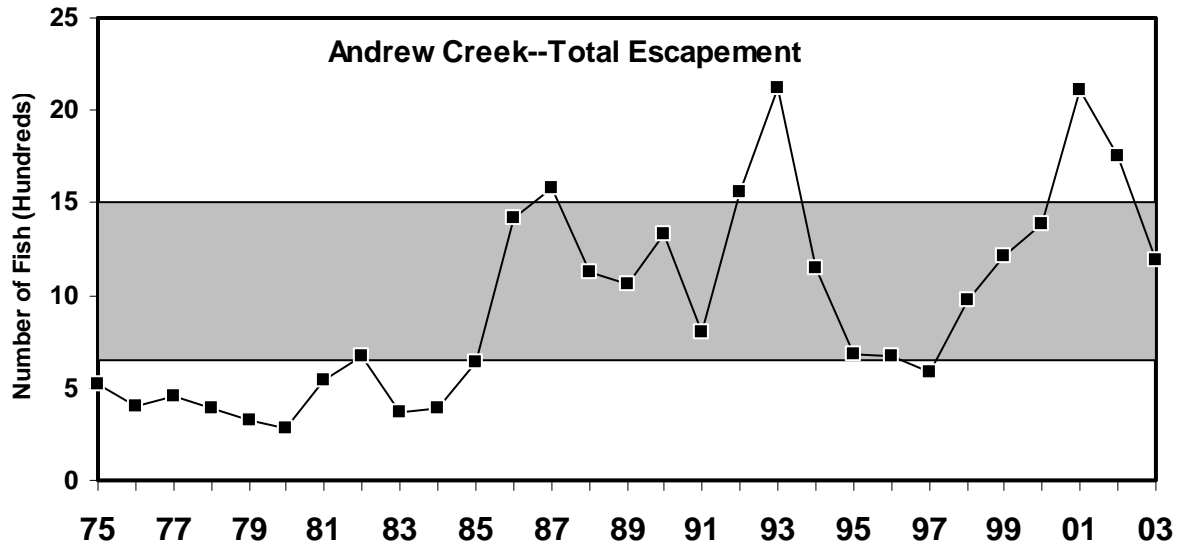


**Escapement Methodology:** The King Salmon River is a small clear-water system located on Admiralty Island southeast of Juneau that supports a small, inside-rearing stock. Escapements of large Chinook salmon are based upon weir counts (1983-1992) or expansions of index counts (1971-1982; 1993-2003). 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 28 year-period 1975-2003, 14 of the annual escapements were within the 1997 management range, seven were below the range and eight exceeded the range. The 2003 escapement was below the 1997 range by three fish and since 1999 the remaining four years have been within or exceeded the range. Survey conditions in 2003 were normal. The ADF&G considers the King Salmon River stock of Chinook salmon to be healthy.

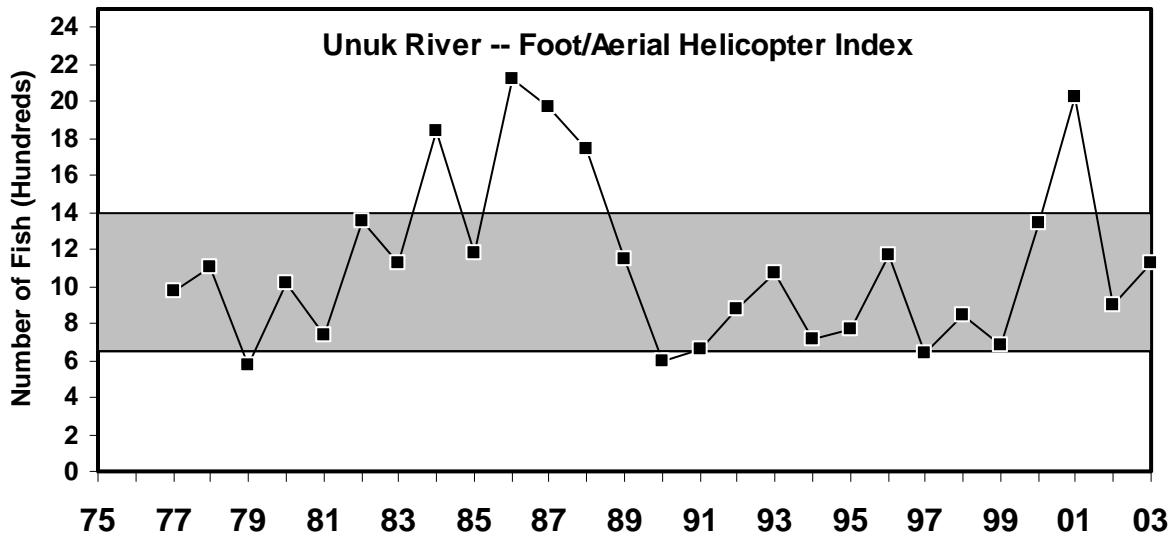




**Escapement Methodology:** Andrew Creek, near Petersburg, Alaska, is a clear-water U. S. tributary of the lower Stikine River that supports a moderate-sized, inside-rearing stock of Chinook salmon. Data shown in the above graph are total estimated escapements of large Chinook salmon based upon weir 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.

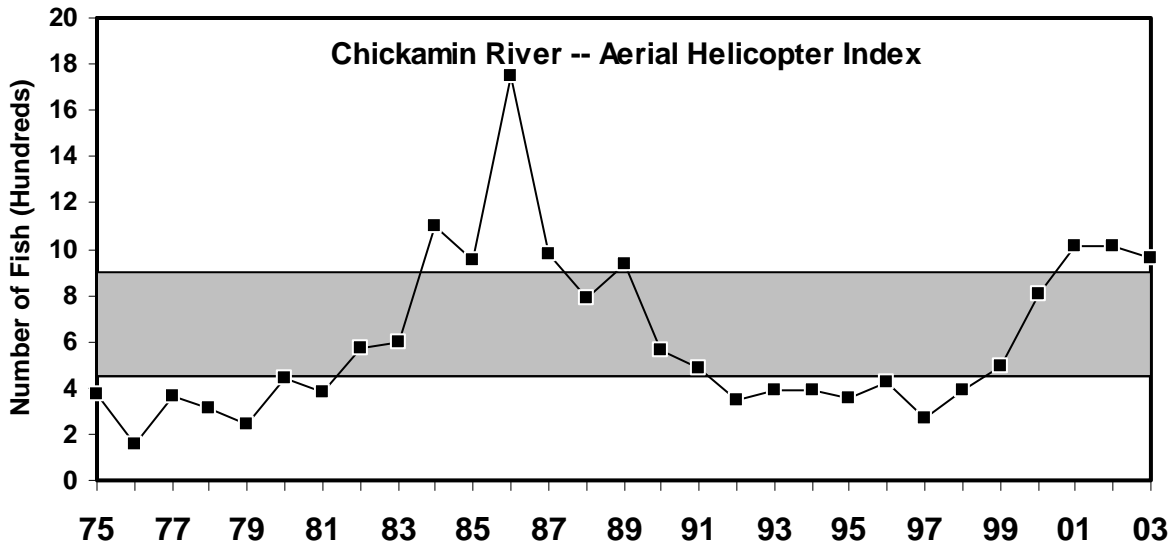
**Agency Comments:** Before 1976 a large terminal marine gillnet fishery occurred in the spring, targeting Stikine River and other nearby Chinook salmon stocks. Currently, there is no terminal fishery targeting this stock. Harvests of immature and mature fish occur primarily in SEAK and to a small extent 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 2003 escapement of 1,190 Chinook salmon was in the upper half of the escapement goal 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 five years of estimates (i.e., 1999-2003) have averaged 6,584 total large spawners and 1,212 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.

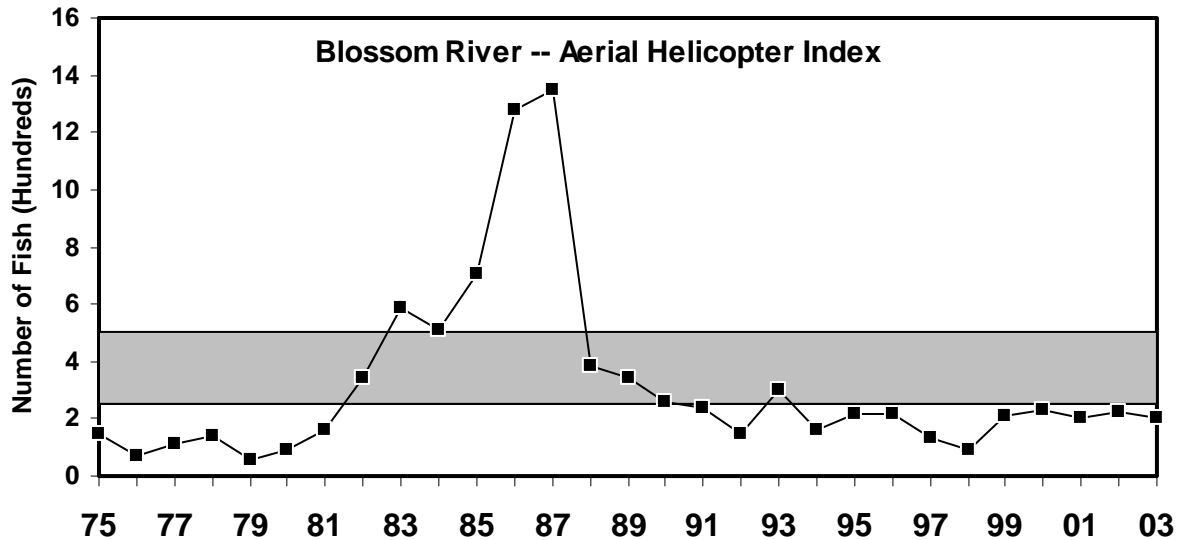
**Agency Comments:** There is no terminal fishery targeting this stock; harvests of immature and mature fish occur in SEAK and NBC fisheries. Estimated total exploitation rates average about 20% to 30% under current management (McPherson and Carlile 1997). Coded-wire tagging of this stock was conducted 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 27 years since 1977, the index counts have been within the escapement goal range, except for five which were above and three which were slightly below the range. The 2003 survey count was 1,121 large spawners, within the upper portion of the escapement goal range. Survey conditions were normal in 2003. The total escapement in 2003 as estimated through a mark-recapture study was about 5,600 (preliminary) 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 5.1 for survey counts using the results from the 1995, 1996, 2001 and 2002 studies (McPherson et al 2003).

**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.

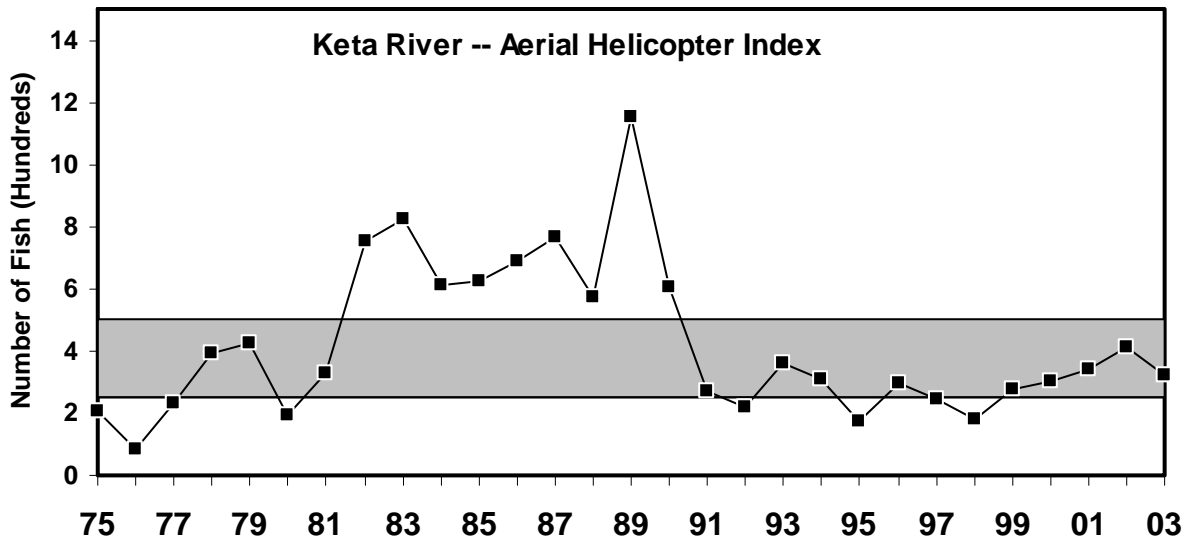
**Agency Comments:** There is no terminal fishery targeting this stock; harvests of immature and mature fish occur in marine SEAK and NBC fisheries. There are no subsistence or freshwater fisheries on any Behm Canal Chinook stocks. Coded-wire tagging was conducted for the 1982-1986 broods (Pahlke 1995) 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 have within or above (2001-2003) the escapement goal range. In 2003, the survey count was 964 which is about 23% of the preliminary mark-recapture estimate of 4,262 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). Only in 1998 was the total escapement 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 1994. 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.

**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, 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 since 1999 have averaged 215 large spawners. The 2003 survey count was 203 large spawners, which is 19% below the lower end of the MSY escapement goal range (i.e., 47 fish). ADF&G considers the Blossom River stock of Chinook salmon to be a management concern, and has obtained funding to implement mark-recapture studies in 2004 and 2005 to verify the expansion factor. Analysis of the improved stock assessment data for the Blossom River will be completed as new information is analyzed and may change this assessment. All waters of east Behm Canal are closed to Chinook salmon fishing year round.



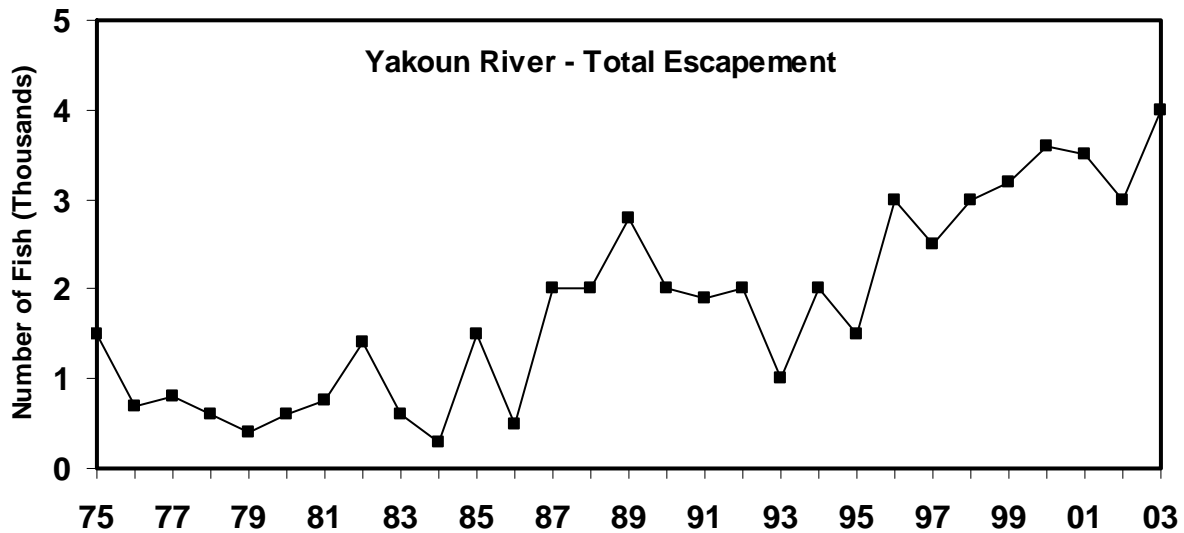
**Escapement Methodology:** The Keta River is located near Ketchikan, Alaska, and is a clear-water system that supports a small, inside-rearing stock. Recent studies indicate that about 10% of the annual run originates from under-yearling smolt. The escapements shown above are peak counts (unexpanded 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.

**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 12-year period (1991-2003) of lower survey counts. Survey counts for 1999-2003 have averaged 330 large spawners. The survey count in 2003 was 322 large spawners, 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 2003 is 966 large spawners. ADF&G judges this stock to be healthy.

## 2.4.2 Canadian Stocks

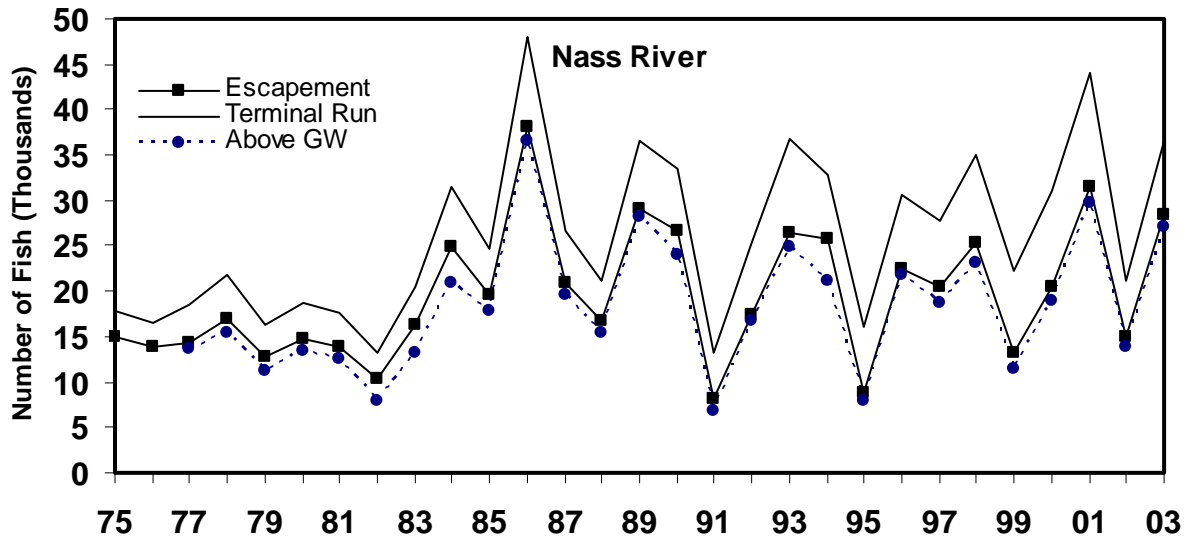
Since the beginning of the Chinook rebuilding program of the 1985 PST, escapement goals for Canadian Chinook stocks were generally based on doubling the average escapements recorded between 1979-1982. The doubling was based on the premise that Canadian Chinook stocks were over-fished and that doubling 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). Doubling was also expected to be a large enough change in escapements to allow detection of the change in numbers of spawners and the subsequent production. The escapement goals of the Canadian indicator stocks are currently being reviewed so that these interim goals may be replaced with goals based on quantitative stock assessments and/or evaluations of habitat capacity.



**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:** Increase in Yakoun Chinook escapements were attributed to reductions in NBC Chinook fisheries. A small enhancement program also exists on the system.



**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), >731 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.

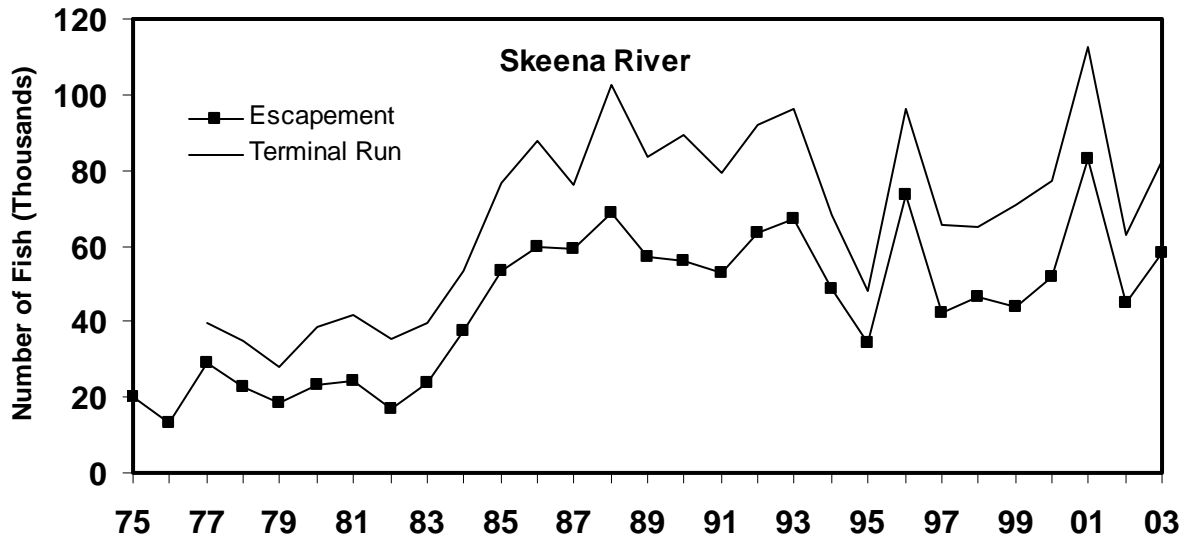
Because of these major changes in escapement methodology, the Nisga’a Tribal Council and CDFO have agreed to standardize the escapement time series. The consulting firm LGL Ltd., in conjunction with the Nisga’a Tribal Council, has developed a revised escapement data set using the two years (1992-1993) 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.

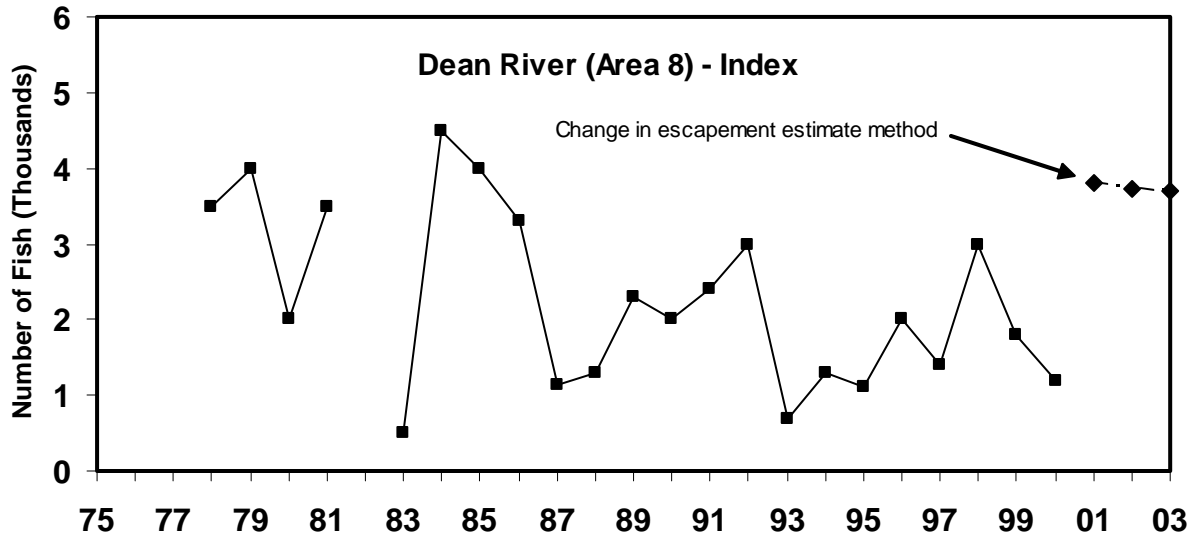




**Escapement Methodology:** The Skeena Chinook stock index represents 40 streams which are consistently surveyed. As a system, the Skeena supports over 75 separate Chinook spawning populations, but three spawning populations (Kitsumkalum, Morice, and Bear Rivers) account for about 70% of the total spawner 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 the stock. 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 are for total escapement into 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.

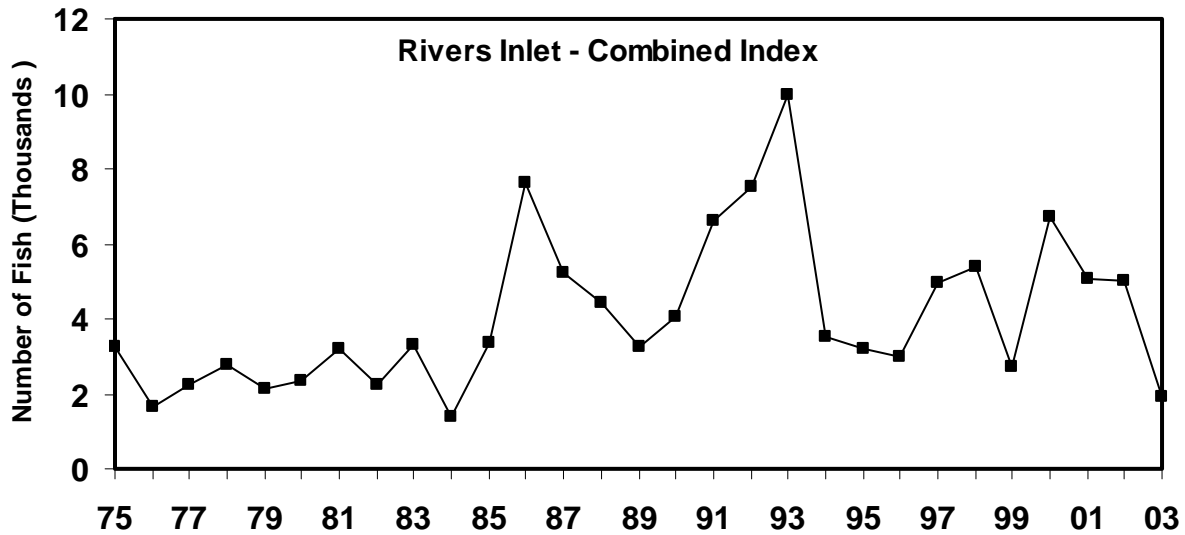
**Agency Comments:** Terminal catch in the Skeena River would normally include commercial gillnet catch in the terminal exclusion area (River Gap Slough, Area 4), in-river sport catch, and Native catch. Estimates of in-river sport catch were not available from 1997 to 2002. A creel survey was conducted 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 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; most of this stock is in the lower river by July. Escapement enumeration in the Dean River has been quite 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 conducted when spawning activity appears to peak numbers, usually. Up until 2000, 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 escapement estimates.

**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 2003, a total of six aerial counts and two stream walks were conducted to determine an area-under-the-curve escapement estimate. The resulting escapement estimate of 3,700 fish was similar to the previous year.



**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 sampling of carcasses along the spawning area. The number of carcasses sampled is expanded 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, DFO has maintained the expanded carcass estimates for comparison between years. However, during 1991-1993, it is possible that the greater effort and increased financial support for escapement surveys may have increased the escapement estimate that was based on carcass numbers.

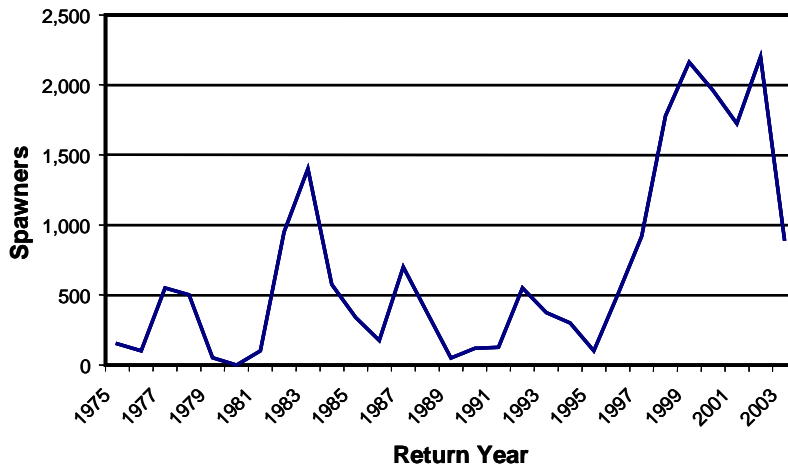
**Escapement Goal Basis:** There are currently no CTC accepted escapement goals for any of these stocks.

**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 due to improved returns of hatchery fish and reductions to ocean fisheries. In 2003, it was difficult to enumerate Chinook in the Chuckwalla and Kilbella

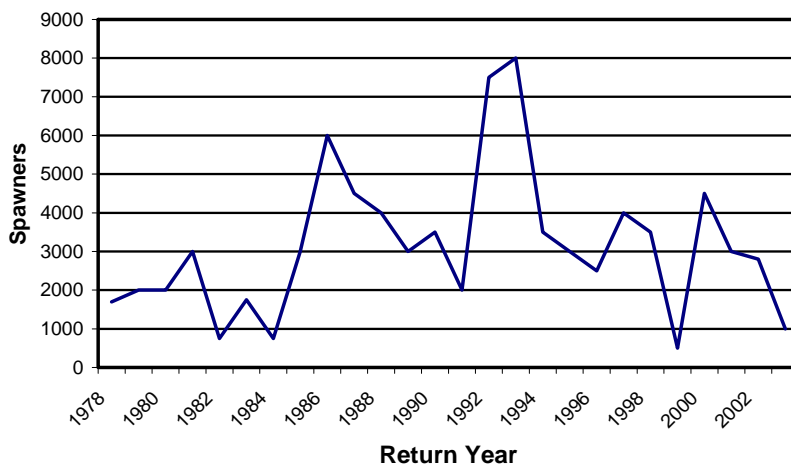
due to the high numbers of pink and chum in these systems. The subsequent estimates of 600 and 300 Chinook returning to the Chuckwalla and Kilbella are likely to be underestimates.

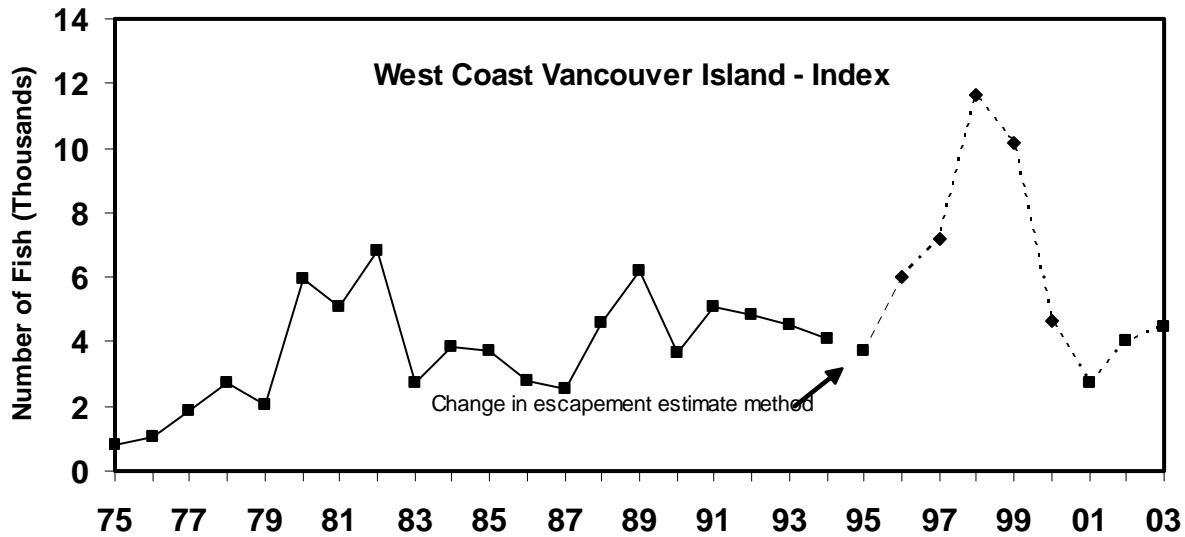
Escapement to the Wannock did not change significantly through 1997 and 1998, but declined sharply in 1999 to an estimated 500 fish. During 2000, the Wannock River Chinook stock was a significant conservation concern. Sport fishing restrictions were implemented in the terminal area and new assessment programs were implemented (radio-tagging and mark-recapture programs). 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 includes 4-year olds returning from the poor 1999 escapement. Age data will provide some insight into the 4-year old contribution to this year's escapement although it is not yet available. A recreational catch monitoring program was conducted in the inlet this year and DNA collected should provide valuable information as to the terminal exploitation of Wannock Chinook

**Chuckwalla + Kilbella -Index/AUC Total Estimate**



**Wannock-Total Escapement**





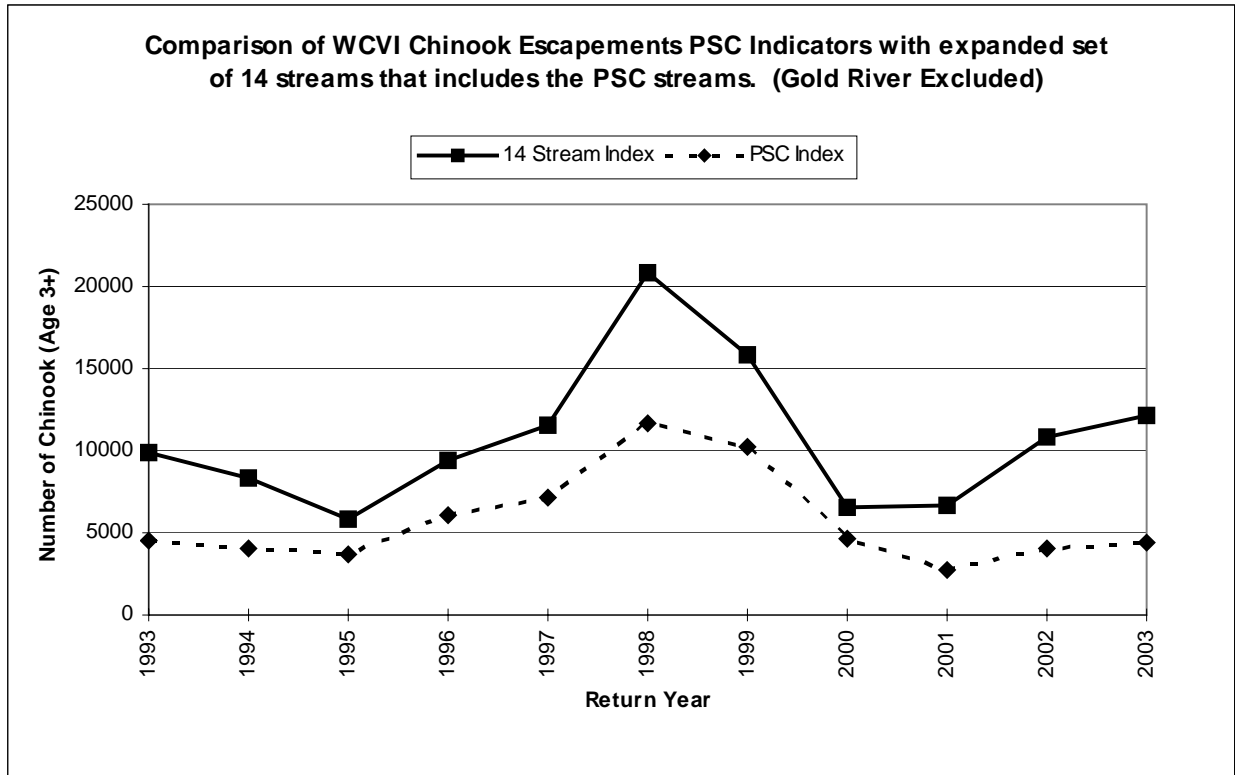
**Escapement Methodology:** The WCVI index represents the sum of escapements for six rivers (Marble, Tahsis, Burman, Artlish, Kaouk, and Tahsish), which were chosen to provide an ‘index’ of escapement for wild WCVI stocks in general. These stocks were chosen based on historical consistency of data quality. Up until 2002, Gold River had also been included, as part of a seven-stream index. However, some recent data indicate that escapement to this system may be largely of hatchery origin (Robertson Creek Hatchery). Thus this stock may not be a valid ‘wild’ escapement indicator. Consequently, pending further review, the Gold was removed from the indicator index, and historical index values recalculated. Removal of the Gold from the index did not significantly change the trends in abundance displayed by the seven-stream index.

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. More intensive and systematic surveys, based mainly on snorkel swims, were introduced in 1995. Estimates since 1995 have been based on multiple surveys per stream, conducted by trained crews, and total escapements have been estimated using the Area-Under-the-Curve method. These estimates are more reliable and are likely to account for a higher portion of the actual escapements. Escapement values presented include the brood stock removed for the small enhancement programs in some streams.

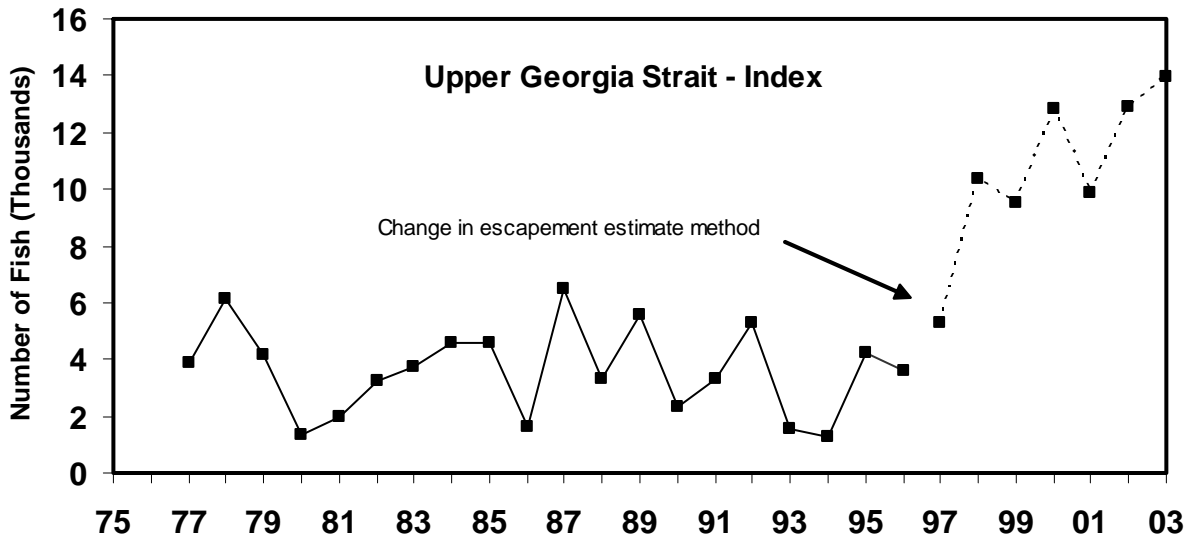
**Escapement Goal Basis:** There is currently no CTC accepted escapement goal for this stock group.

**Agency Comments:** 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 rivers. Further, the number of rivers surveyed annually has been expanded. In Area 24 (Clayoquot Sound) intensive snorkel surveys have been conducted on three natural systems since 1993. In 1995, this program of intensive swim surveys was expanded to 27 streams distributed throughout the WCVI. In total, 22 streams are now monitored with a consistent survey method. In 2003 three systems (Toquart, Gordon, and Zeballos) were excluded from the expanded index due to reduced survey coverage.

The figure below compares the six-stream PSC index with an expanded, 14 stream index, that represents the sum of escapements for 14 stocks. This index represents the sum of escapements for these 14 streams, and includes the six-stream index stocks. The six-stream index showed a slight increase in 2003 relative to 2002. Escapements of all stocks increased in 2003 except for two supplemented systems, the Leiner in Area 25 and the Marble in Area 27. Although escapements to wild stocks in Area 24 remained constant, or increased, returns were less than 200 in the Bedwell/Ursus, Moyeha, and Megin Rivers.



The returns to WCVI hatcheries in 2003 were up approximately 35% from 2002. The preliminary estimate of escapement to the Robertson Creek Hatchery/Somass stock in 2003 is 60,000 adults, exceeding the preseason forecast of 31,000. The return of age-2 males (2001 brood) at 6,500 was the highest on record since 1991. The proportion of females was approximately 35-40% in 2003.



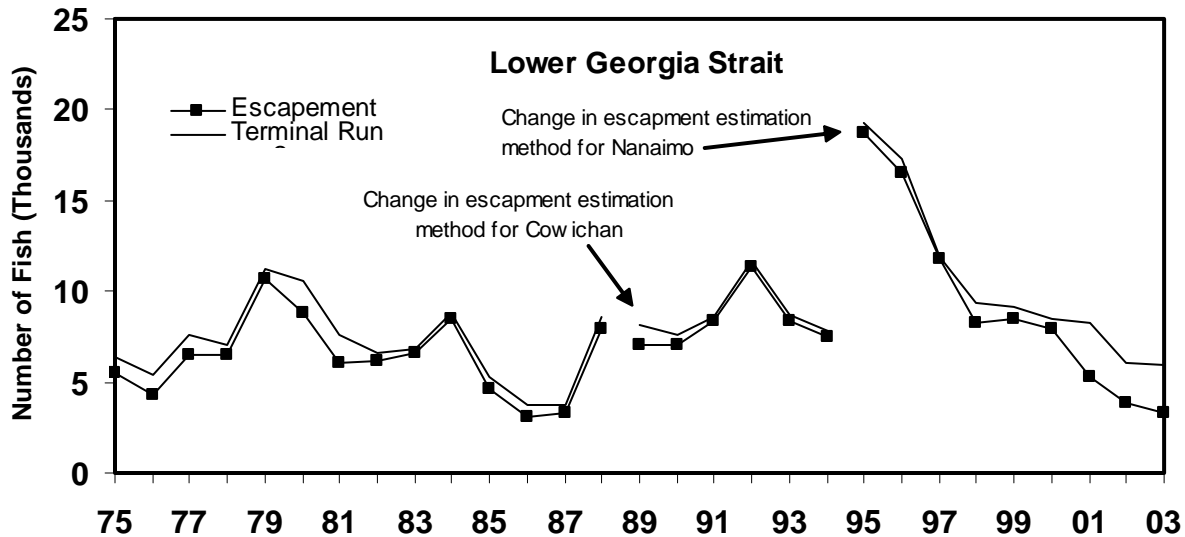
**Escapement Methodology:** The UGS stock index consists of four river systems (Klinaklini, Kakweiken, Wakeman, Kingcome) in Johnstone Strait mainland inlets and the Nimpkish River on northeast Vancouver Island. The accuracy of escapement estimates in the mainland inlet systems is likely poor due to 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 more accurate estimates provided by the new method, rather than real increases in abundance.

**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.

**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 Chinook.



**Escapement Methodology:** LGS rivers monitored for naturally spawning Chinook escapement are the Cowichan and Nanaimo rivers. Prior to 1989, escapement estimates from the Cowichan River, were derived from swim surveys and overflights by Fishery Officers and hatchery staff. This methodology was applied also to the Nanaimo River prior to 1995. Since 1989 and 1995 in respective streams, counting fence and carcass mark-recapture surveys have been established. While the accuracy of these estimation procedures will vary, total Chinook returns to the Cowichan and Nanaimo rivers have been estimated since 1975. Chinook return to the Cowichan River in late summer and fall but Chinook return to the Nanaimo River in spring and early summer, followed by a separate fall run. The Nanaimo spring/summer run is smaller than the fall component.

**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 goal for the naturally spawning component of 7,400 Chinook. CDFO will present documentation of this assessment and a proposed goal for both the Cowichan and Nanaimo Chinook in 2004 to PSARC and the CTC for review.

**Agency Comments:** The Cowichan Chinook stock showed considerable increase in 1995 and 1996. One explanation for these returns is that they can be attributed to substantial increases in enhanced contribution since 1992; however, the wild component of the run has also increased. Hatchery and wild Chinook are differentiated by patterns of daily growth rings on otoliths. Recovery of the Nanaimo fall population has not been as successful as in the Cowichan. There is a smaller hatchery on the Nanaimo River, but survival of this hatchery stock has usually been lower than for the Cowichan Chinook.

Recent reductions in the LGS Chinook escapements likely result from reduced marine survival noted since the 1991 brood year on Cowichan hatchery Chinook. However, reduced exploitation rates on this stock (by approximately 50%) are compensating for this reduced survival (Riddell et al. 2000). Escapement to the Cowichan declined 33% from that in 2002, continuing a decline that started in the mid-1990s. Escapement to the Nanaimo River, however, increased 20% in 2003.

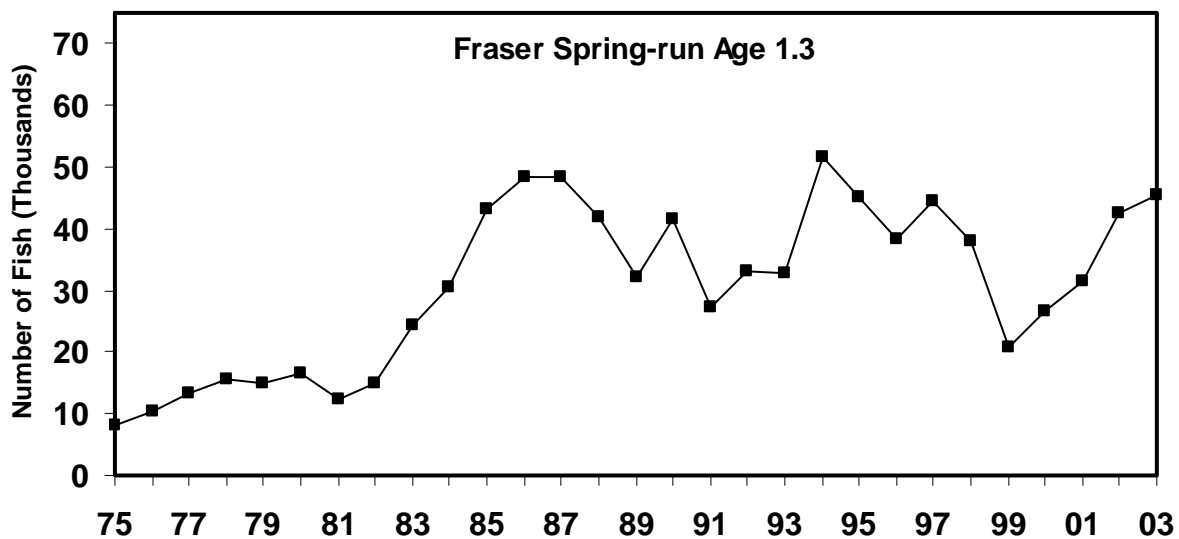


### **2.4.3 Fraser River Stocks**

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 to low counts 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 area-under-the-curve 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.

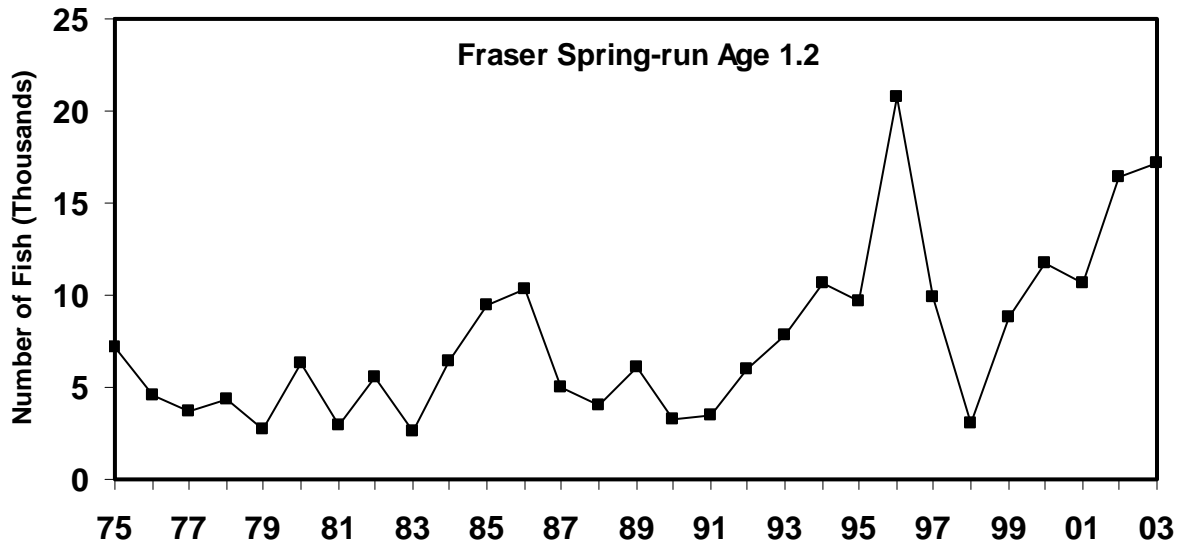
For populations other than the Harrison River, habitat-based models are being developed to estimate spawning capacity and spawner abundance producing maximum sustained yield. This habitat-based assessment will initially focus on predictive models based on Chinook stock-recruitment relationships, although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

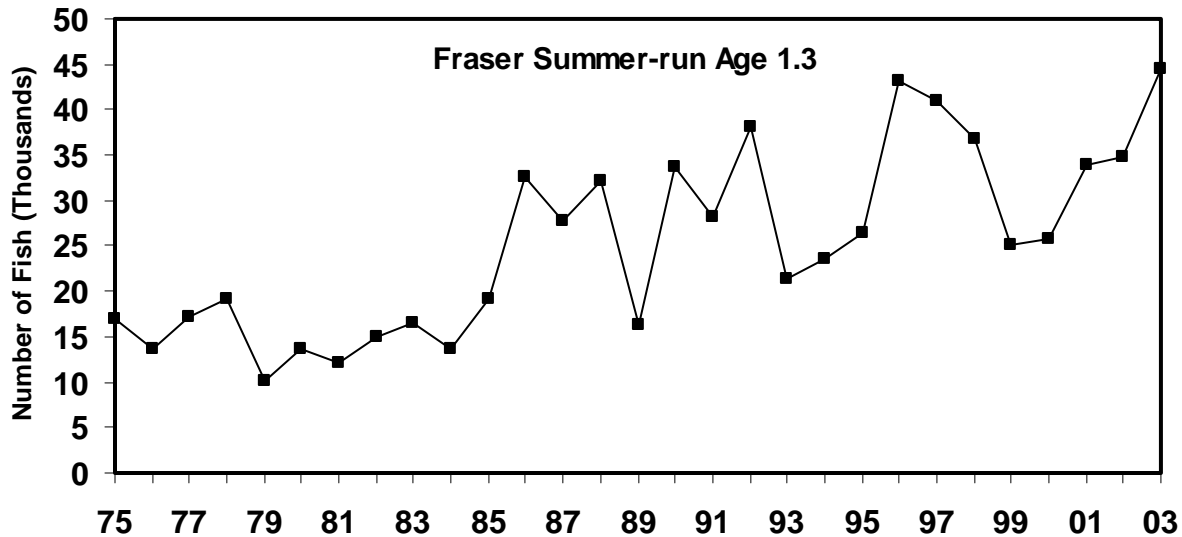
**Agency Comments:** Work is currently underway to evaluate habitat-based escapement goal methodology, and to calibrate aerial over-flight counts with area-under-the-curve methodology and intensive Petersen mark-recaptures. Total escapement for this aggregate increased in 2003.



**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.

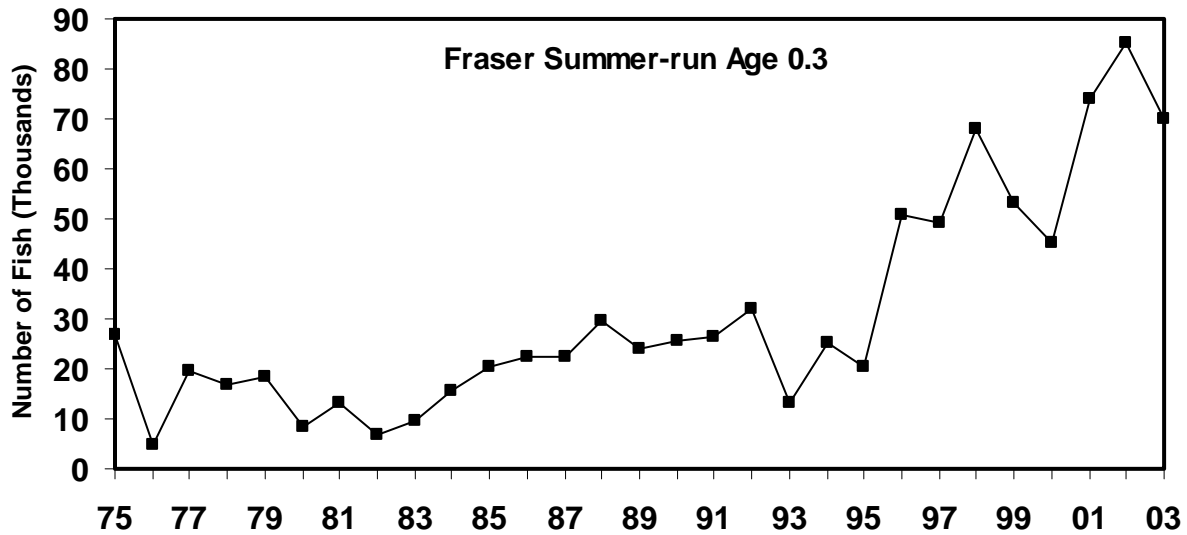
**Agency Comments:** Work is currently underway to evaluate habitat-based escapement goal methodology, and to calibrate aerial over-flight counts with area-under-the-curve methodology and intensive Petersen mark-recaptures. Overall escapement of this aggregate increased in 2003.



**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 area-under-the-curve method.

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

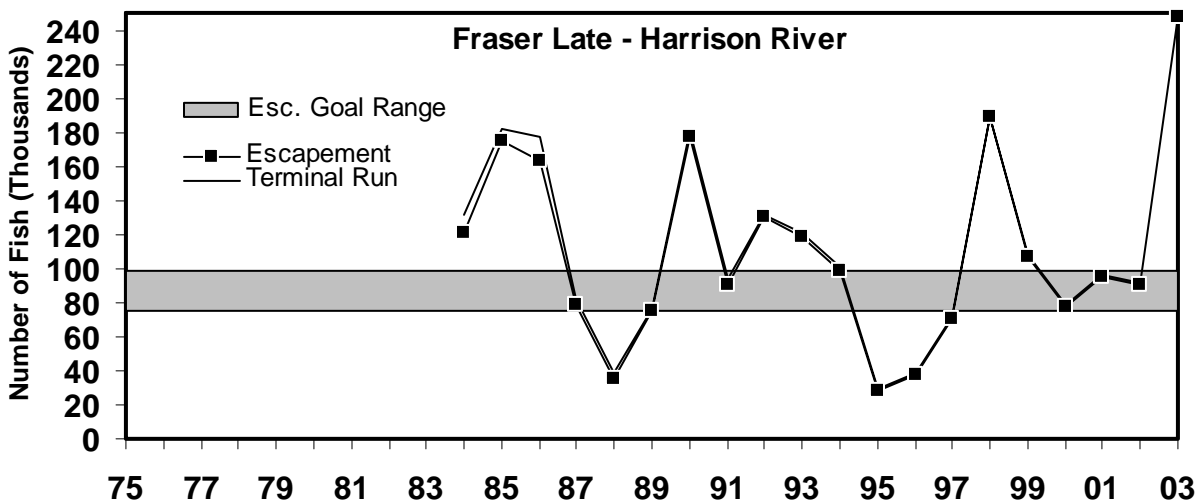
**Agency Comments:** Work is currently underway to evaluate habitat-based escapement goal methodology, and to calibrate aerial over-flight counts with area-under-the-curve methodology and intensive Petersen mark-recaptures. Aggregate escapement has been increasing over the past 15 years. Overall escapement of this aggregate increased considerably in 2003.



**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, area-under-the-curve, 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 area-under-the-curve 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 declined considerably in 2003.

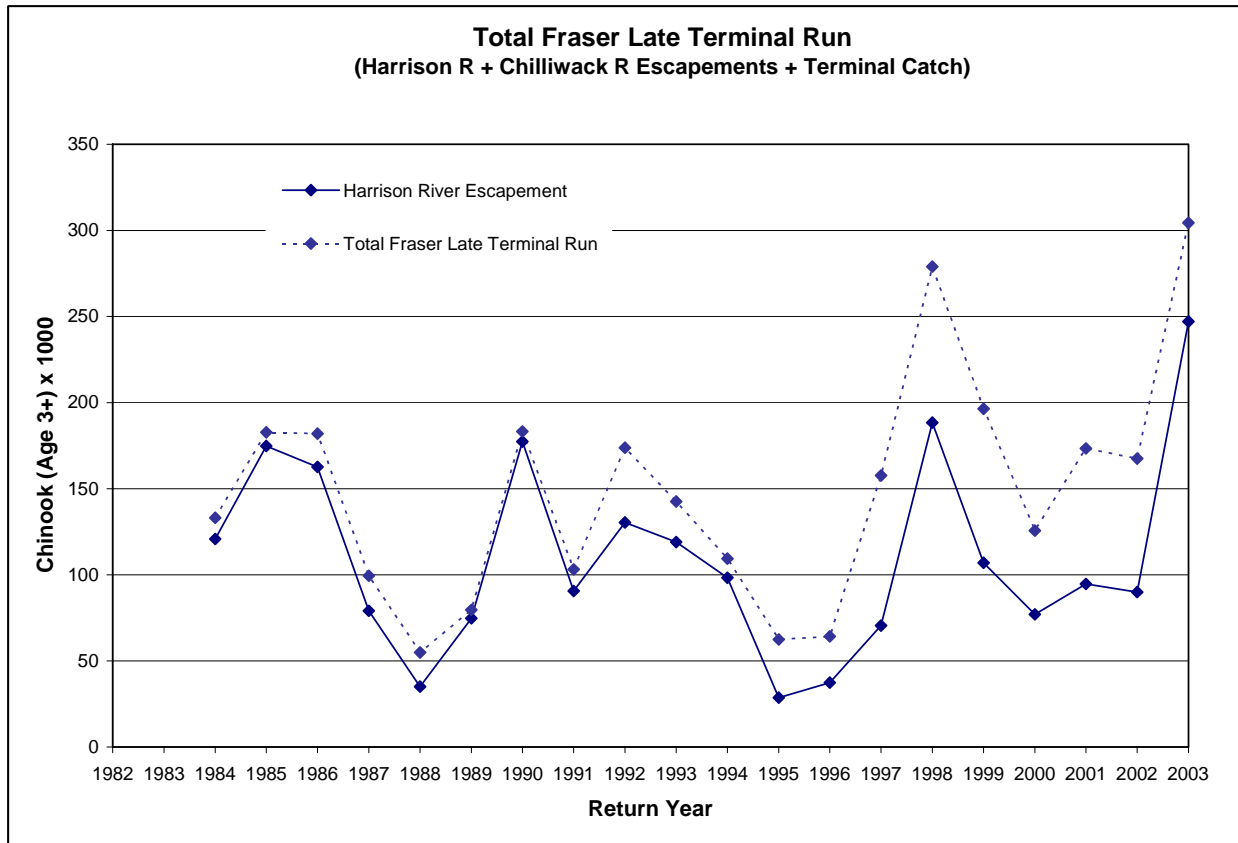


**Escapement Methodology:** The lower Fraser stock is dominated by fall returning Harrison-origin Chinook that includes natural spawners in the Harrison River and Harrison-origin fish that were introduced to the Chilliwack River. In 1984, the Harrison River population was selected as an escapement indicator 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 and is 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 eight 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 2003 Harrison River escapement is 247,121 age 3 and older Chinook and 9,584 age 2 male Chinook. There is large uncertainty around estimates of age 2 escapement because it was based on the recovery of a single tagged fish. The preliminary estimate of the 2003 Chilliwack River spawning escapement is 54,111 age 3 and older and 2,650 age 2 male Chinook. 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 Chilliwack River spawning estimates used in the total terminal run series are based on those produced by the Chilliwack hatchery staff.

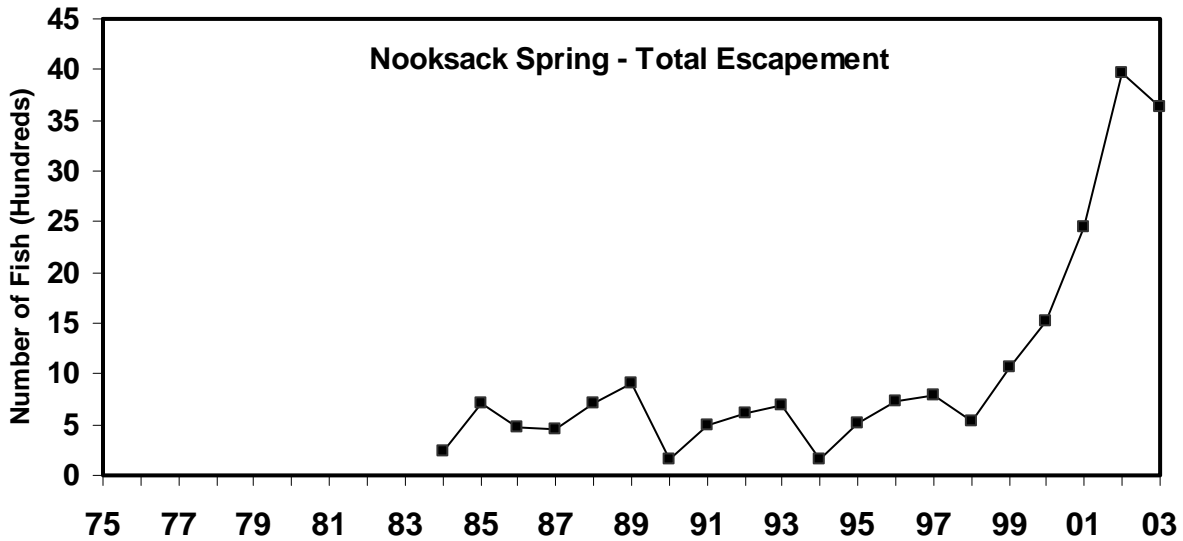


#### **2.4.4 Washington, Oregon and Columbia River Stocks**

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).

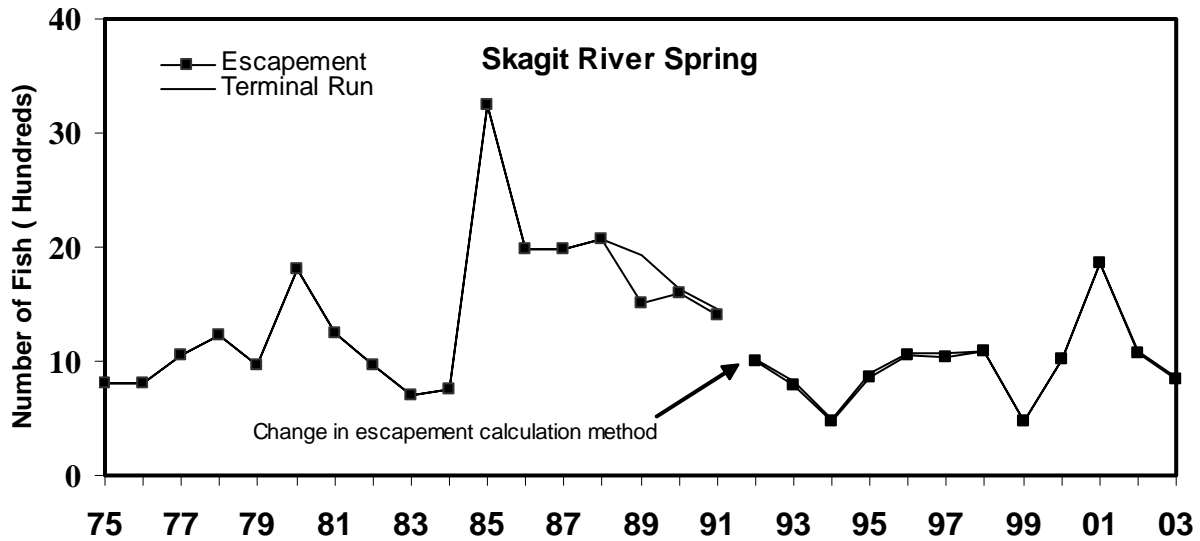




**Escapement Methodology:** The Nooksack River is the most northerly river in Puget Sound. There are two populations of spring Chinook; one spawns in the North and Middle Fork and the other spawns in the South Fork. Turbid water often makes visual observation of spawning fish difficult. Carcass counts 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.

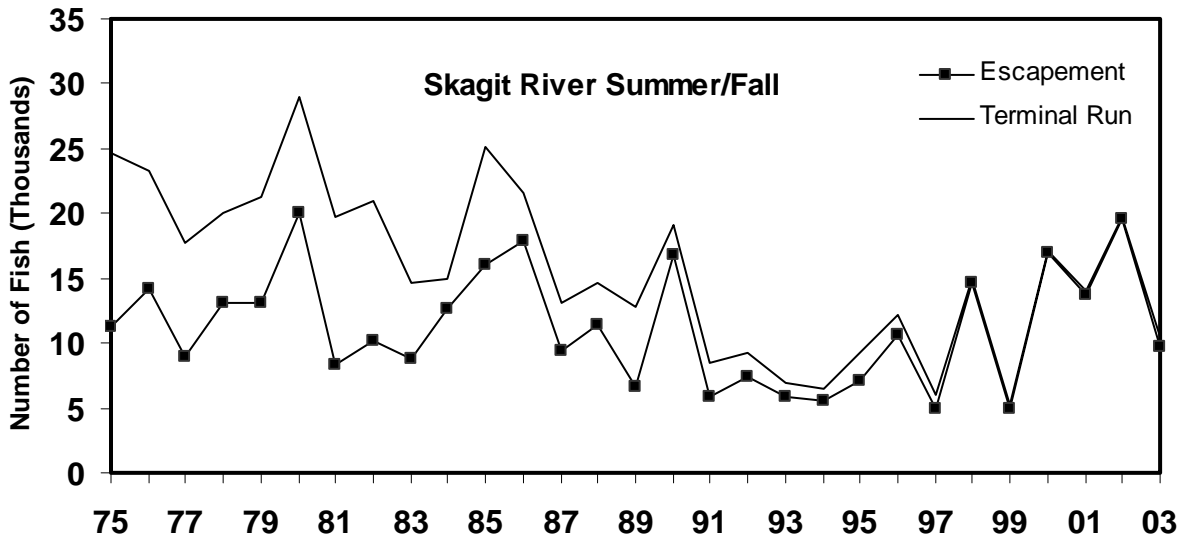
**Agency Comments:** The Kendall Creek Hatchery, located on the North Fork, is the site of recovery efforts directed at the North Fork Chinook. The recovery program involves several strategies, including on-station and off-station releases, with the latter comprised of both acclimated and unacclimated 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 2003, the preliminary 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 foot and raft surveys. This method assumes 2.5 adult spawners for each estimated redd.

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

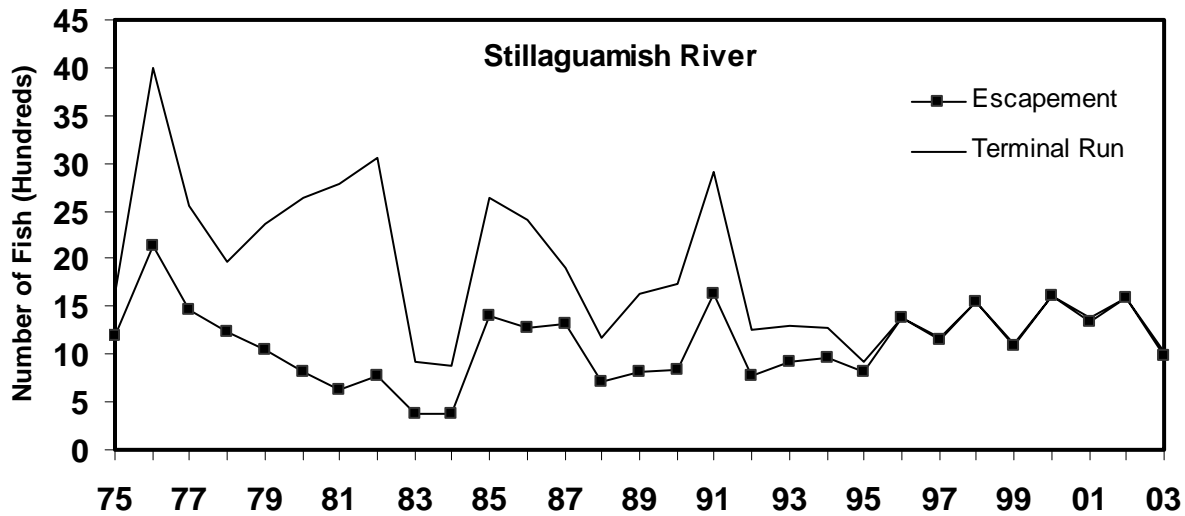
**Agency Comments:** Due to changes in spawning index areas and escapement estimation methods, beginning in 1992 for the Cascade stock and 1994 for the Sauk and Suiattle stocks, escapements are not directly comparable to previous numbers. There is no production supplementation program for Skagit River spring Chinook. However, there is a hatchery spring Chinook return to the Marblemount Hatchery, and approximately 150,000 yearling and 250,000 fingerling spring Chinook are released with coded-wire tags annually. In 2003, the Comprehensive Chinook Management Plan (CCMP 2004) conservation objective for this stock was for a total AEQ exploitation rate across all fisheries not to exceed 42%. While no postseason estimate is available, the preseason expectation was for a total rate of 24% (PFMC 2003). There was no upper management threshold (escapement level above which directed fisheries may be conducted) established for this stock in 2003, and the critical escapement level was 576. In 2003, the preliminary escapement estimate is 1,537 for hatchery and 843 natural, plus 64 fish that returned to the Baker River from an off-station plant of hatchery adults, for a total escapement of 2,444.



**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 accepted escapement goal for this group.

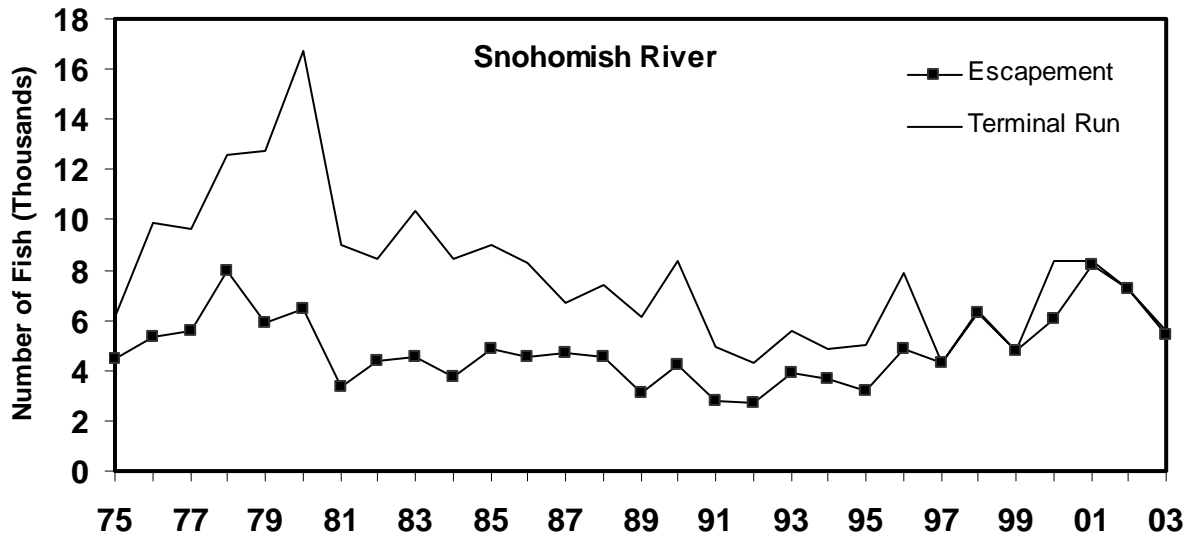
**Agency Comments:** Efforts were recently funded through the USCTC funding to improve escapement estimates of Skagit summer/fall Chinook. They included: development of variance estimates, determination of age and sex composition of the escapement, and evaluation of the 21-day redd life assumption and 2.5 fish/redd expansion value. There was no upper management threshold established for this stock in 2003, and the critical escapement level was 4,800. In 2003, the preliminary escapement estimate is 9,777 Chinook on the spawning grounds, and 179 wild Chinook taken from the spawning grounds as broodstock for two indicator stock programs (which target a total CWT fingerling release of 422,000), for a total escapement of 9,956. No Chinook-directed sport or commercial fisheries have occurred in the Skagit terminal area since 1994. In 2003, the CCMP (2004) conservation objective for this stock was for a total AEQ exploitation rate across all fisheries not to exceed 52%. A postseason estimate of the total AEQ ER is not available. The predicted exploitation rate was 50%. The preliminary terminal run estimate, which includes non-retention mortalities, and the 179 Chinook used for wild broodstock collections, is 10,471.



**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 accepted escapement goal for this escapement indicator stock.

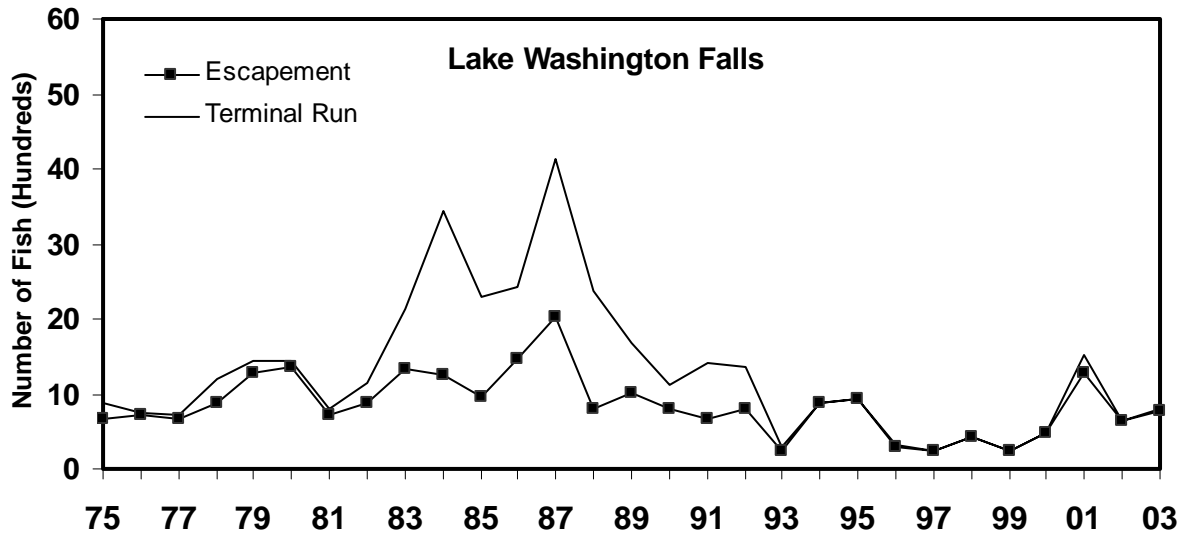
**Agency Comments:** Broodstock are collected annually in the river to maintain a coded-wire tag indicator stock program and to augment natural production. From 1989 to 1996, approximately 35% of the escapement was comprised of returns from this program. The state-tribal escapement goal of 2,000 fish is the average of the 1973-1976 escapements (Ames and Phinney 1977). In 2003, the preliminary escapement estimate is 988 Chinook. There have been no terminal harvests since 1996, and no terminal directed net harvest since 1984. The 2003, CCMP conservation objective for the combined summer/fall stock was for an AEQ exploitation rate not to exceed 24% across all fisheries. While no postseason estimate is available, the preseason estimate of the total AEQ exploitation rate was 18%. The preliminary terminal run estimate is 1,016.



**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 accepted escapement goal for this stock.

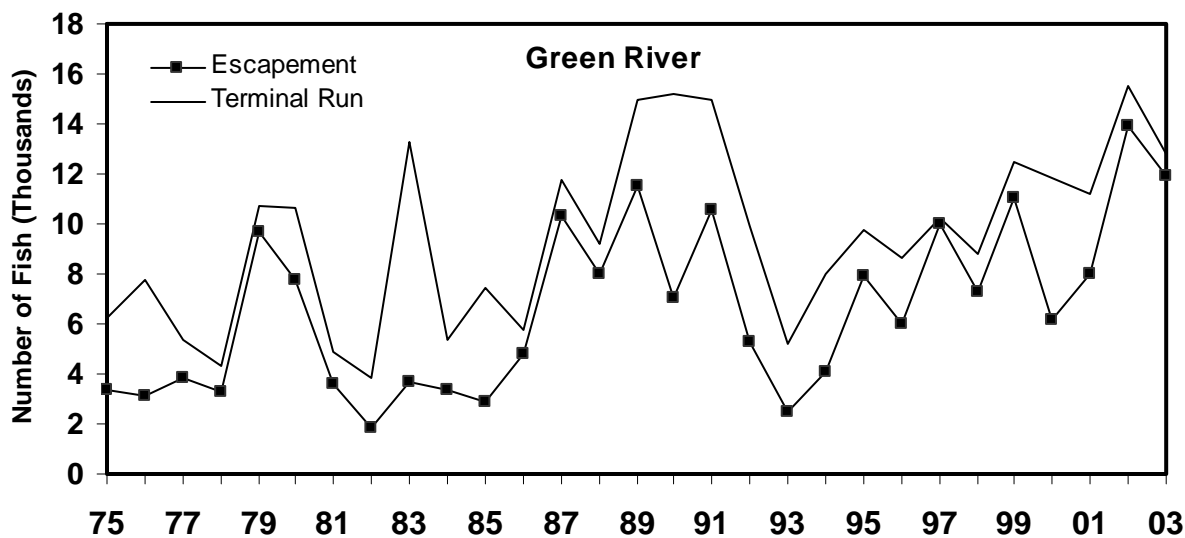
**Agency Comments:** Some terminal area harvest of Snohomish River Chinook occurs in Area 8D incidental to net and sport fisheries targeting Tulalip Hatchery Chinook salmon. Historic terminal run size and catch estimates derived from run reconstruction are being revised to reflect the results of otolith marking studies. The state-tribal escapement goal for this stock is 5,250 fish (the average of the 1965-1976 escapements. In 2003, the preliminary escapement estimate is 5,447 Chinook. The CCMP conservation objective was for a total AEQ exploitation rate across all fisheries of 24%. The preseason prediction of that rate was 21%. The preliminary terminal run estimates for 2003 is 5,600.



**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 accepted escapement goal for this escapement indicator stock.

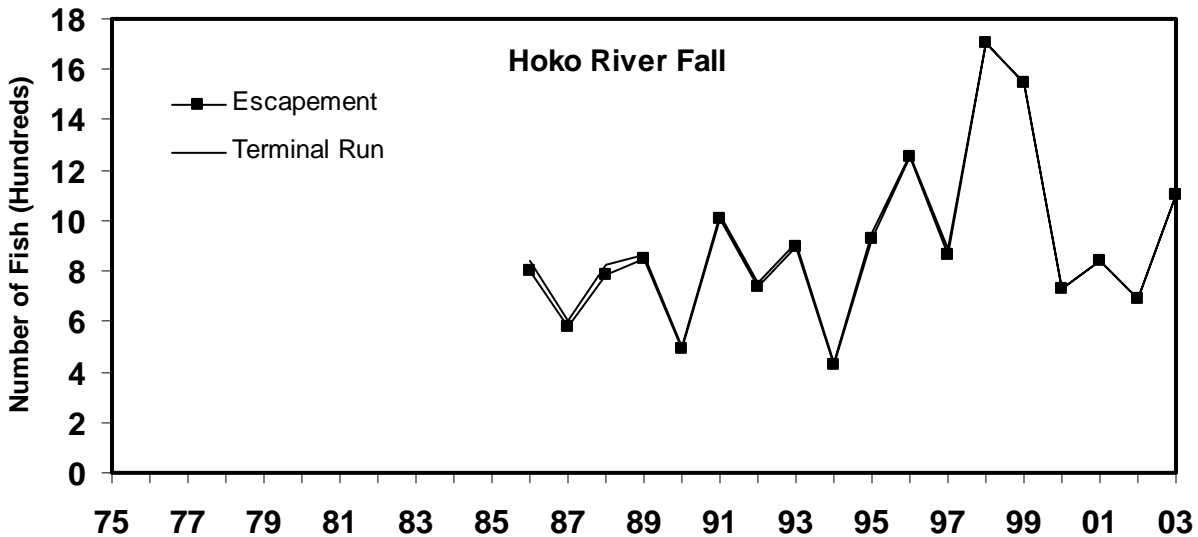
**Agency Comments:** Substantial artificial production occurs in Issaquah Creek and at the University of Washington. In 1994, spawning estimates were reviewed, and an attempt was made to find a consistent method to estimate escapement. A state-tribal escapement goal of 1,200 has been established for 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 preliminary escapement estimate for the Lake Washington Falls is 774 natural spawners and 7,398 hatchery returns. The CCMP conservation objective for 2003 for Lake Washington Fall Chinook was not to exceed a preterminal exploitation rate of 15%. The preseason expected AEQ exploitation rate was 12%. The 2003 estimate for the terminal run is 803. There have not been freshwater terminal fisheries on this stock since 1994.



**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 accepted 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. 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 preliminary escapement estimate is 10,405 Chinook. The 2003 CCMP conservation objective for this stock was for a preterminal southern U.S. AEQ exploitation rate not to exceed 15%, with an escapement goal of at least 5,800 adults. The preliminary terminal run estimate for 2003 is 12,765.

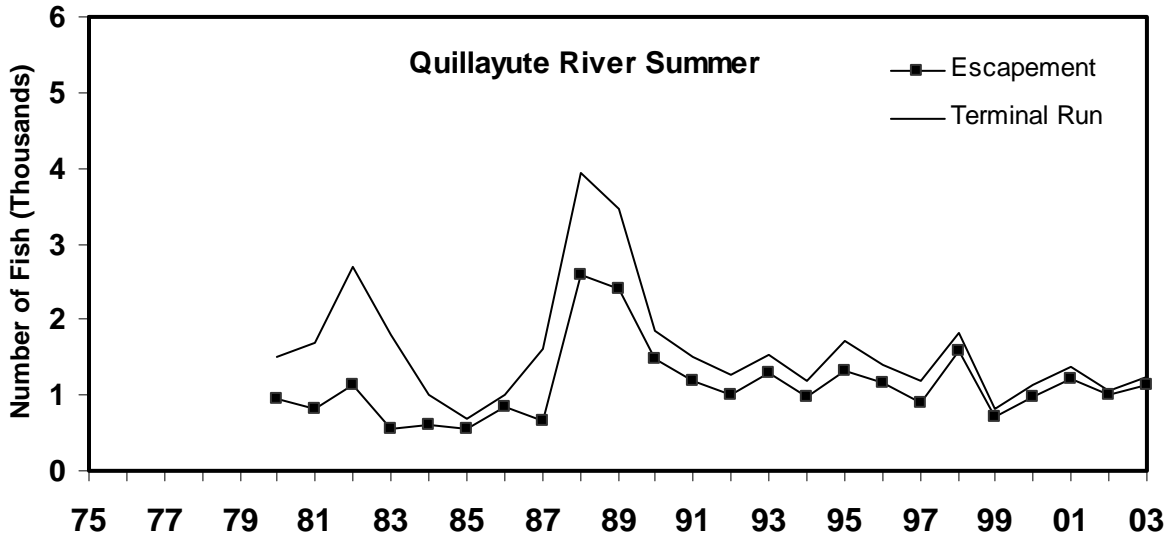


**Escapement Methodology:** The Hoko River is located on the Strait of Juan de Fuca. Spawner escapement surveys are conducted on foot, on a weekly basis, from September through December. Methods for expanding the redd counts vary each year depending on visibility and flooding. The total run size is calculated 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 1,100 adults.

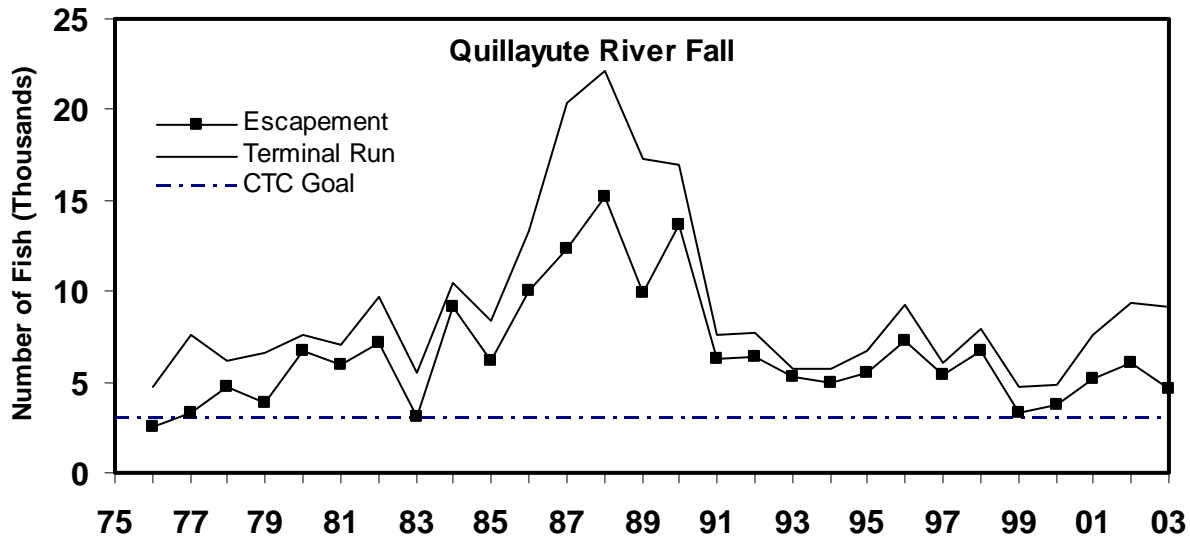




**Escapement Methodology:** The Quillayute River is located on the northwestern Washington coast. It is a short stretch of river formed when the Bogachiel and Sol Duc rivers meet near the town of La Push before emptying directly into the Pacific Ocean. The river system supports a stock of naturally spawning 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.

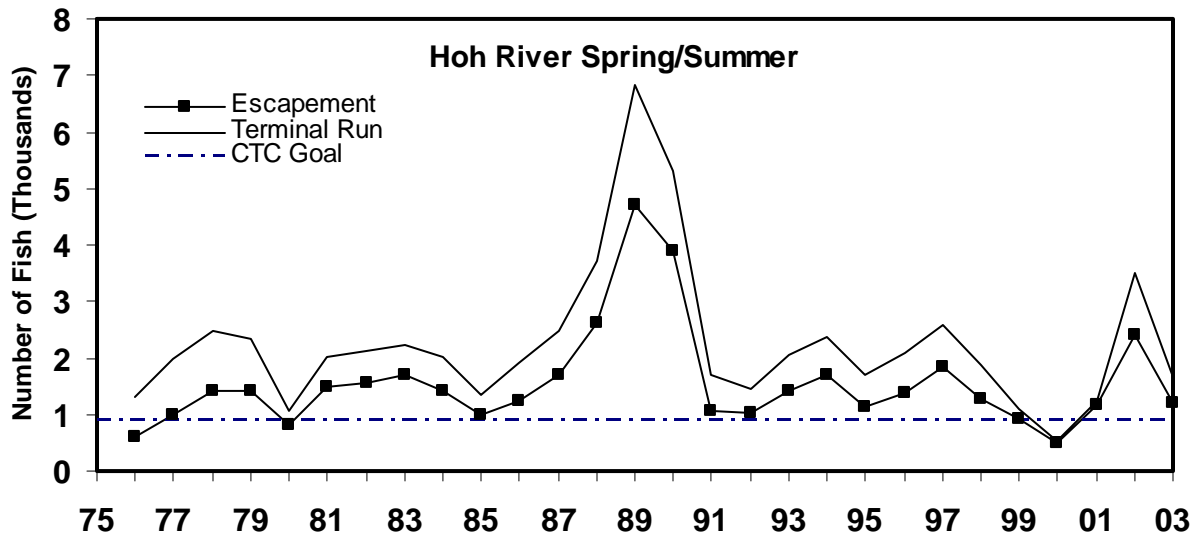
**Agency Comments:** A summer Chinook hatchery program using native stock operated from the mid-1970s to the mid-1980s. Spring Chinook of non-native origin were introduced in a hatchery program in the early 1970s. Coded-wire tag analyses since then have demonstrated significant straying of these spring 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). Preliminary estimates of the terminal run size and escapement for 2003 are 1,230 adult Chinook and 1,139 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 300 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.

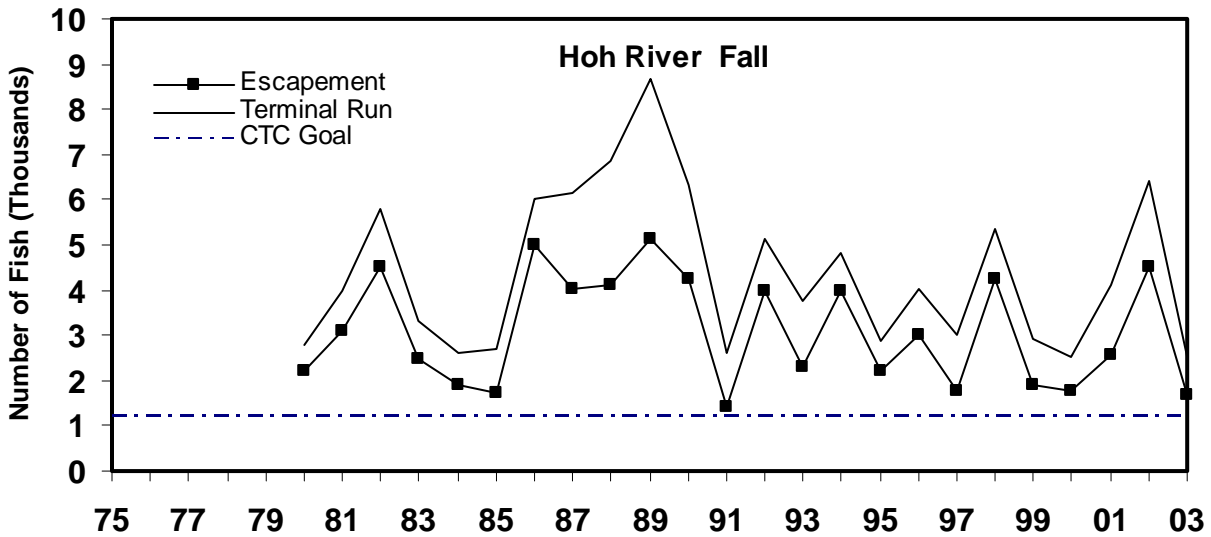
**Agency Comments:** No hatchery production of fall Chinook currently occurs in the Quillayute River basin; the program was discontinued in the late 1980s. Since 1991, the returning run size has fluctuated within a range comparable to run sizes observed prior to 1984. The preliminary estimate of the escapement of this stock in 2003 is 4,578 adults. The estimate of the terminal run is 9,170. 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-time 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.

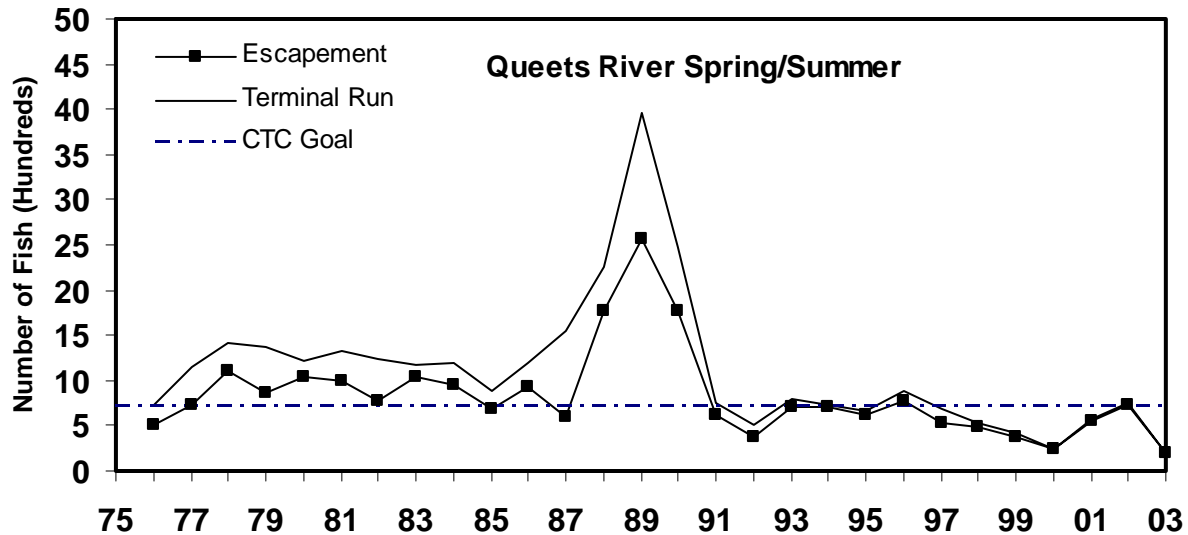
**Agency Comments:** Like many of the other Washington coastal stocks, the escapements have been relatively stable except for much larger returns in 1988, 1989, and 1990. The terminal return for this stock declined from 1997 to 2000, but has rebounded since then. In 2003, the preliminary estimates of terminal run size and escapement are 1,672 adult Chinook and 1,210 adult Chinook, respectively. Terminal fisheries are managed to harvest 31% of the river run, with an escapement floor of 900 fish (PFMC 2003). The escapement in 2003 is above this escapement floor. This objective is designed to allow a wide range of spawner escapements from 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 were utilized 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 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-time 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.

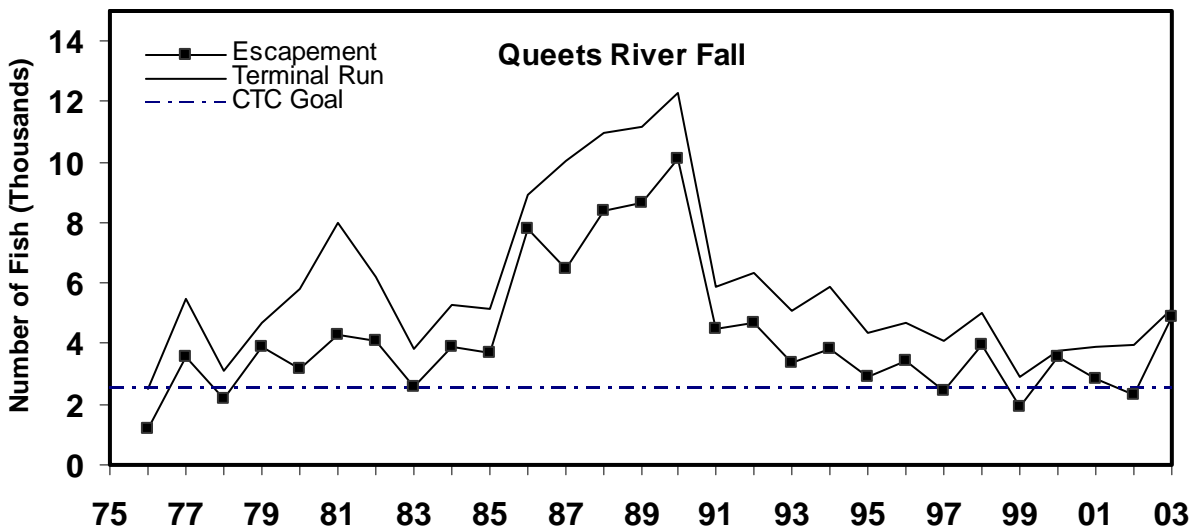
**Agency Comments:** The natural escapement estimates include fish taken for broodstock in the 1980s. This stock is managed to harvest 40% of the terminal run, with an escapement floor of 1,200 spawners (PFMC 2003). This objective is designed to actively probe at and above estimates of the escapements 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. In 2003, the preliminary estimate of terminal run size is 2,529 adult Chinook and the preliminary escapement estimate is 1,681 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.

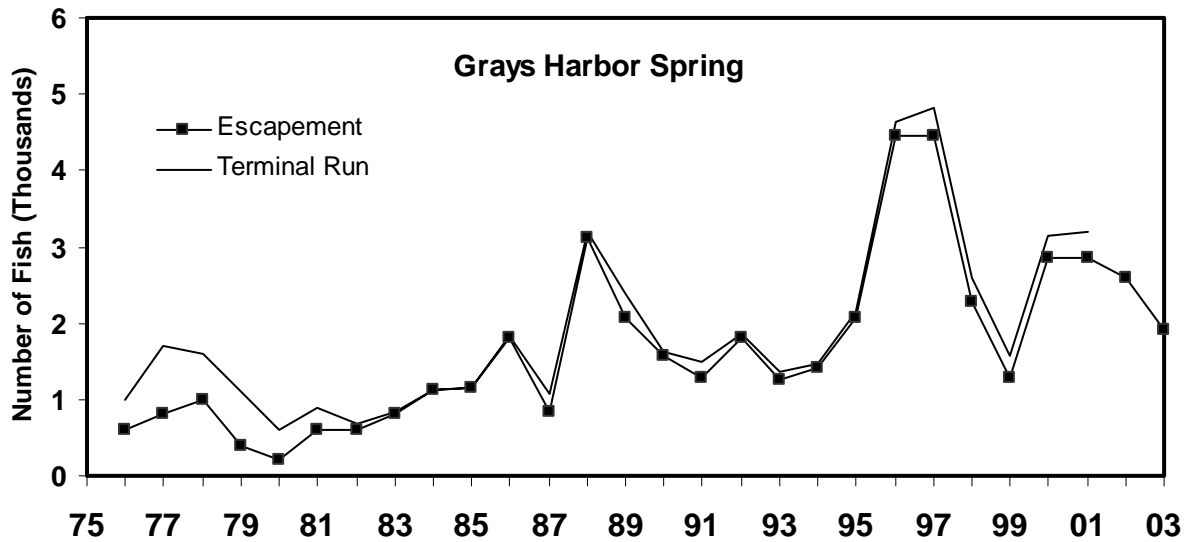
**Agency Comments:** The escapements between 1976 and 1987 were relatively stable, ranging from 500 to 1,100 fish. The escapements and terminal returns in 1988, 1989, and 1990 were almost double the previous period. Escapements and terminal run declined since 1996, with the exception of 2001 and 2002 return years. The 2003 preliminary terminal run size is estimated to be 190 adult Chinook and the preliminary escapement estimate is 189 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 year 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.

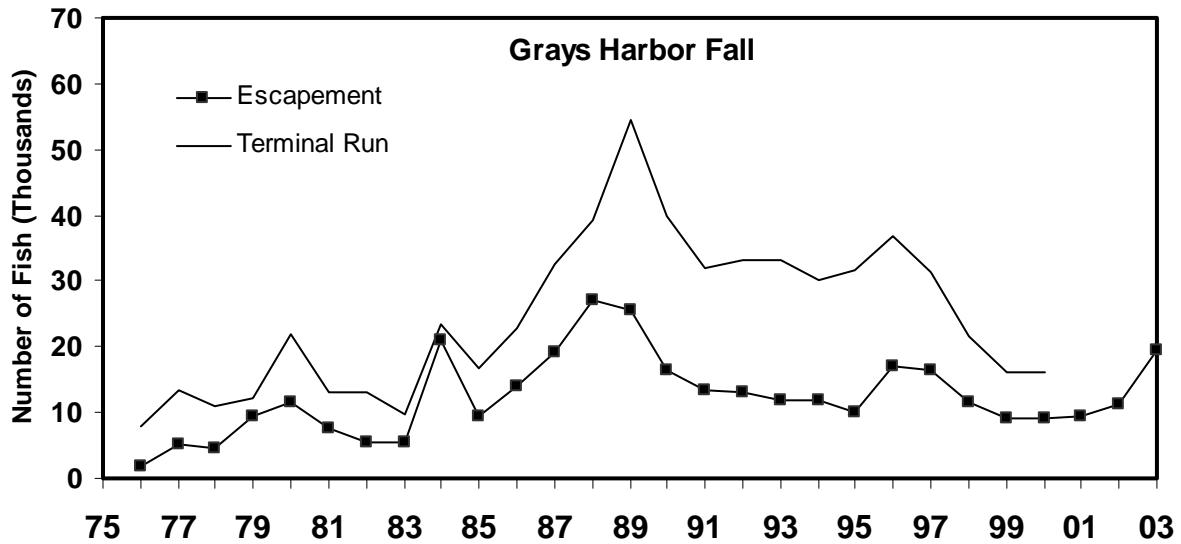
**Agency Comments:** Between 1975 and 1985, the escapement was relatively stable between 1,500 and 4,000 Chinook. The 1986–1990 escapements were double the levels estimated for 1975-1985. Escapements since 1991 have been comparable to the 1975-1985 levels. In 2003, the preliminary escapement estimate is 4,885 adult Chinook with a terminal run size of 5,154. 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:** 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). The preliminary escapement estimate for 2003 is 19,419; estimates of the terminal run for 2001, 2002, and 2003 are not available. 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.

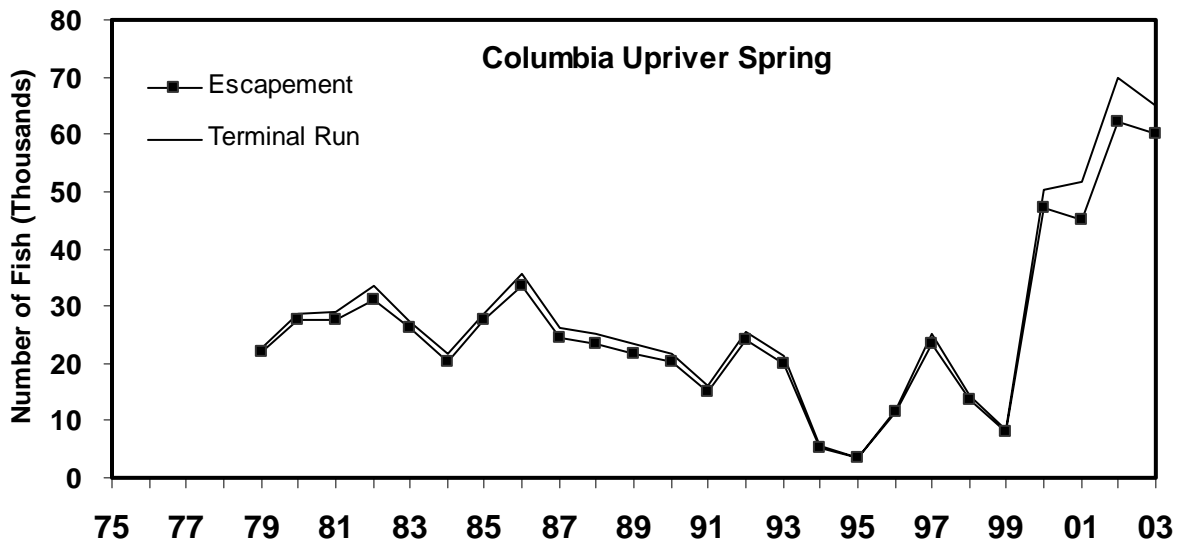


**Escapement Methodology:** The Humptulips and Chehalis Rivers both support fall Chinook. Before 1984 escapements were based on fish counts. Since 1984, total annual escapement has been estimated by redd count surveys conducted by foot, boat, and helicopter. Weekly surveys are made in index areas and 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). The preliminary escapement estimate for 2003 is 19,419; estimates of the terminal run for 2001, 2002, and 2003 are not available. This single targeted goal was developed as an MSY proxy. The objective represents assumed optimal spawner density based on estimated available habitat..





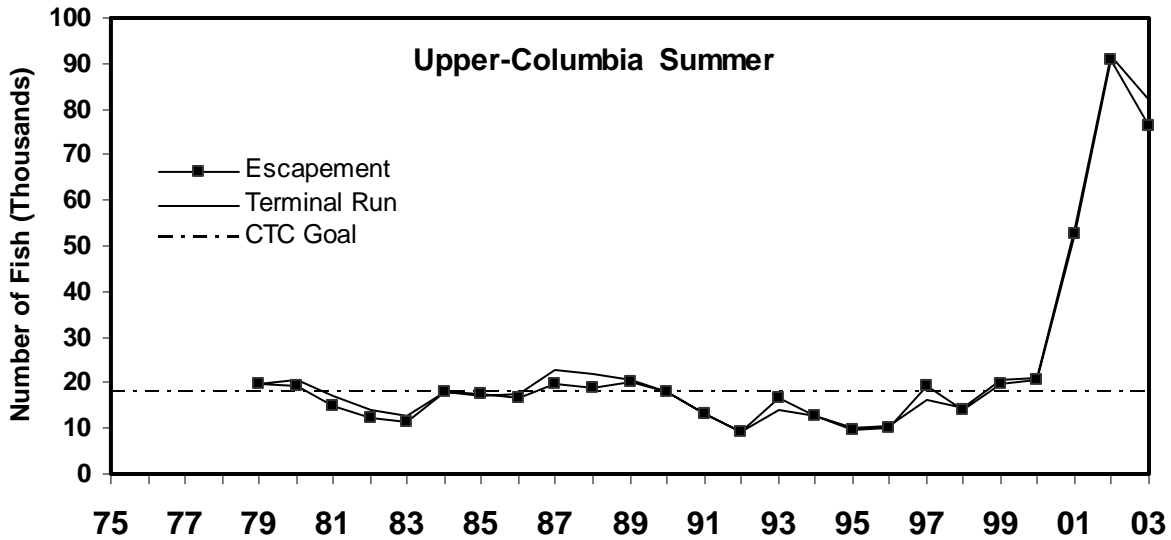
**Escapement Methodology:** Previously, spring Chinook escapement past Bonneville Dam was calculated as the dam count from March 15 through May 31 multiplied by the proportion of wild spawners estimated from run reconstruction, minus an estimate of wild harvest above Bonneville Dam. The run timing cut-off 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 2000-2003 natural runs have been between 50,378 and 69,819, much improved from the 1979-1999 average of about 22,000.

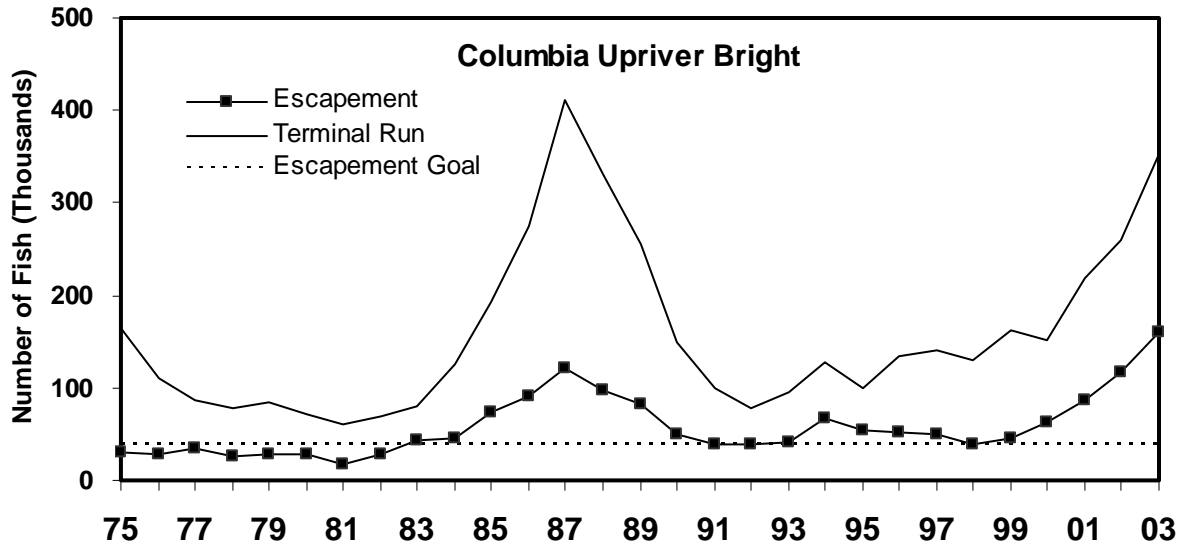
Terminal harvests were severely constrained from 1977 until recently, with incidental harvests in lower river fisheries averaging 2% and total harvest in treaty Indian fisheries averaging 6% (TAC 1999). On the recent large returns, there have been moderate terminal harvest rates of 18.3% in 2001 and 2002, and 13.6% in 2003.



**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. 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. This escapement goal is now consistent with the run timing in excluding the Snake River component.

**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. Therefore, the escapement goal should be revisited after the run reconstruction has been completed.

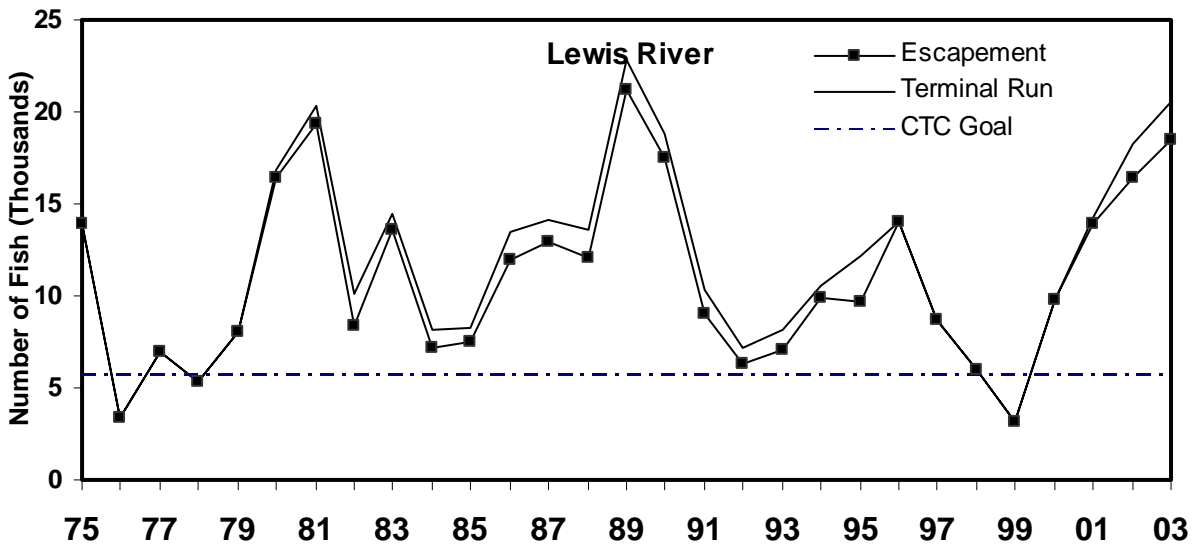
**Agency Comments:** Productivity is limited primarily by loss of downstream migrants and habitat degradation related to timber harvests, lack of screens on water diversions, high water temperatures, low flows, and sediment-laden irrigation water returns (CBFWA 1990). The 2002 total run was one of the 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. In 2002 and 2003, 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 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 1990, 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.

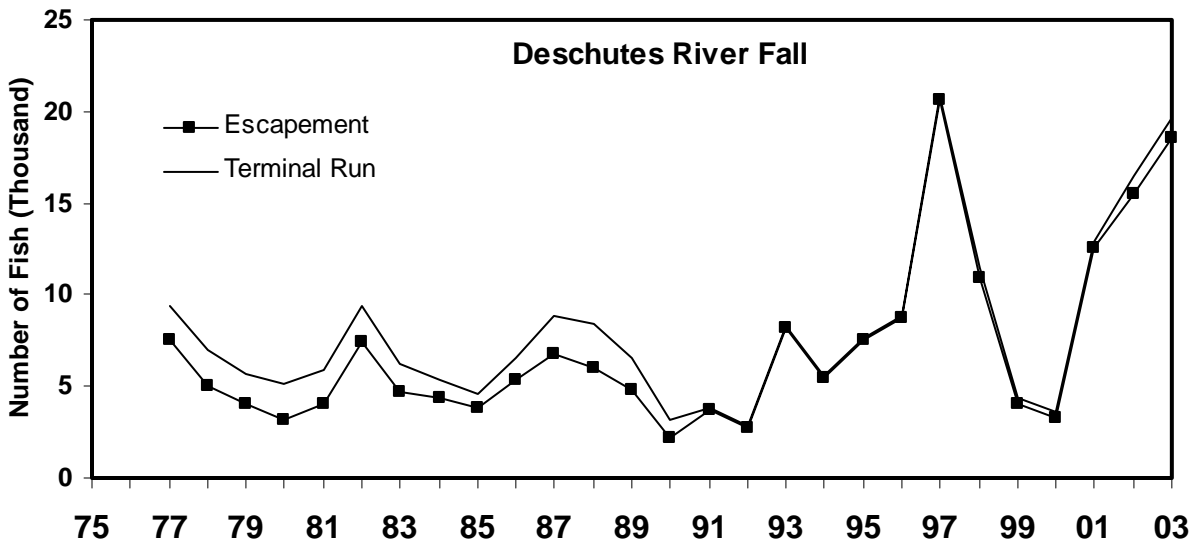
**Agency Comments:** The 2002 and 2003 escapements of 116,237 and 160,677 were the largest since the peak escapement and terminal run in 1987.



**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.

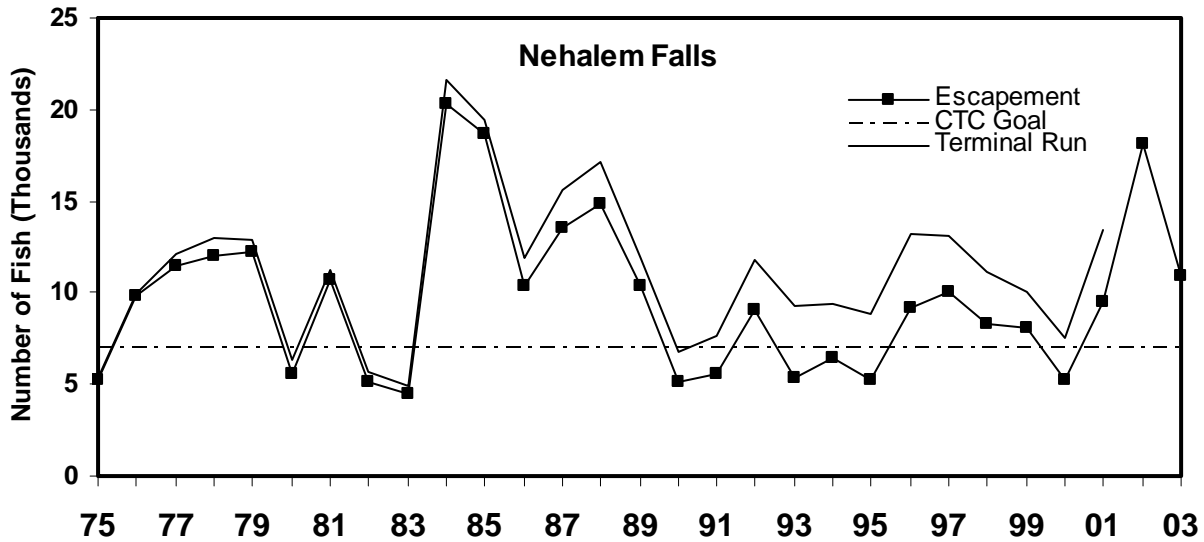
**Agency Comments:** The Lewis River escapements have been above their escapement goal since 1979 except in 1999. The PFMC "Review of 1999 Ocean Salmon fisheries" states "The ocean escapement of Lewis River Wild stock in 1999 was the lowest on record and due, in part, to flooding in 1995 and 1996." The 2002 and 2003 returns and escapements of Lewis River fall Chinook were the largest since 1990. The estimated escapement in 2003 was 18,505 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 funding 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.

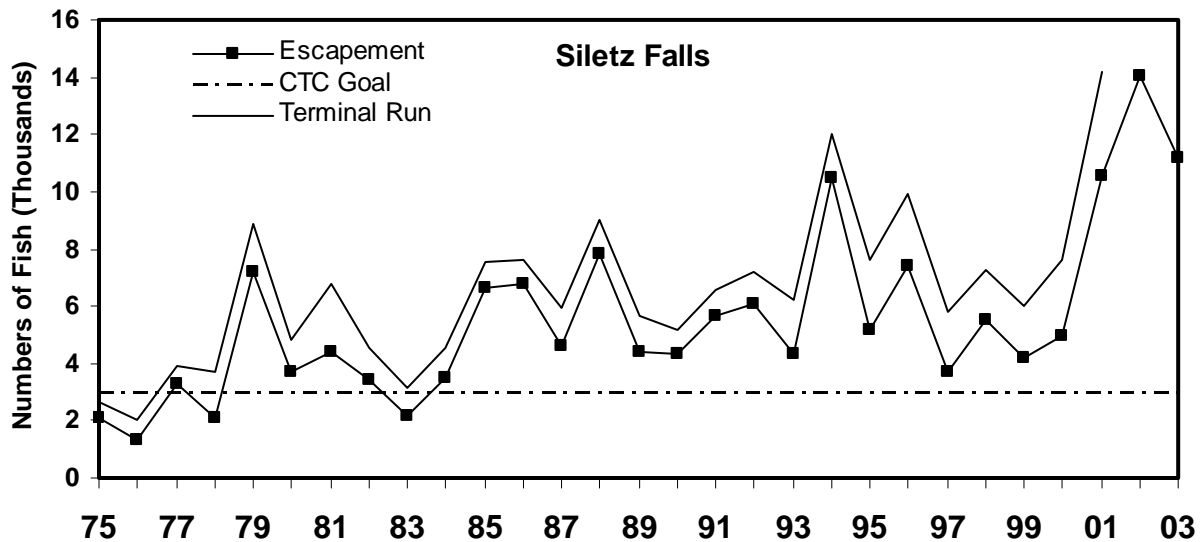
**Agency Comments:** Local management agencies use a management goal of 4,000 adult Chinook, which includes an escapement goal of 2,000 fish above Sherars Falls. This goal is based on average spawning escapement. The 2002 and 2003 escapements of Deschutes fall Chinook were at least 3 times the management 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 2003 was 18,568 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).

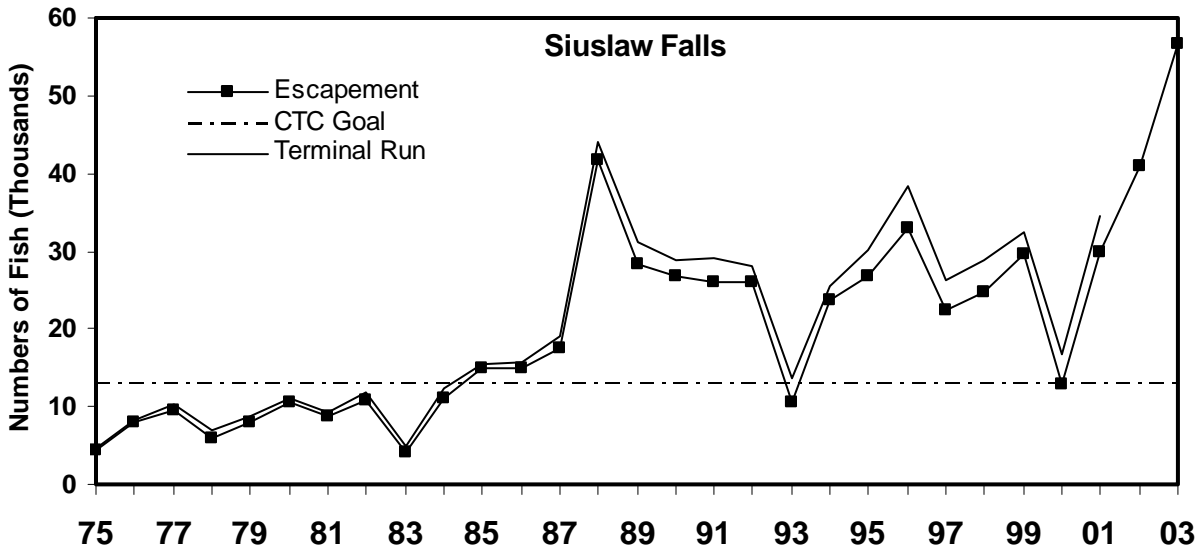
**Agency Comments:** The Nehalem escapement in 2003 declined from 2002's but was close to the previous four years average. We estimated the spawner abundance as 10,906 large (adult) Chinook, in excess of the MSY escapement goal. Punch card data used to estimate the recreational sport catch are unavailable for 2002 and 2003, 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 2003 is estimated at 11,149. Although this is less than the 2002 record high for this stock, it is the second largest escapement since 1975. All four standard surveys were conducted in 2003. Punch card data to estimate the recreational sport catch are unavailable for 2002 and 2003, hence terminal run sizes are not available for these two years.

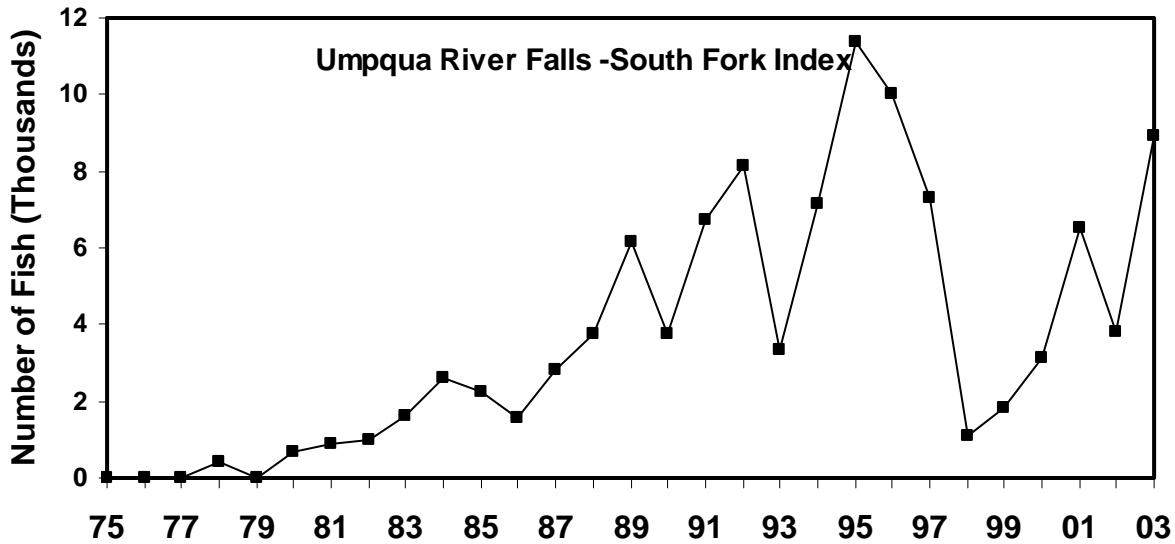


**Escapement Methodology:** The Siuslaw River fall Chinook stock is the southern most escapement indicator stock for the North-Mid Coast GCG. This GCG is part of the NOC aggregate of stocks used in the CTC assessments. Only a fall run is endemic to this river. Each year multiple foot surveys are conducted 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.

**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 escapement in the Siuslaw reached a record high in 2003. The estimated spawner abundance was 56,546 adult Chinook, well above that needed to achieve MSY. Punch card data to estimate the recreational sport catch are unavailable for 2002 and 2003; hence terminal run sizes are not available for these two years.

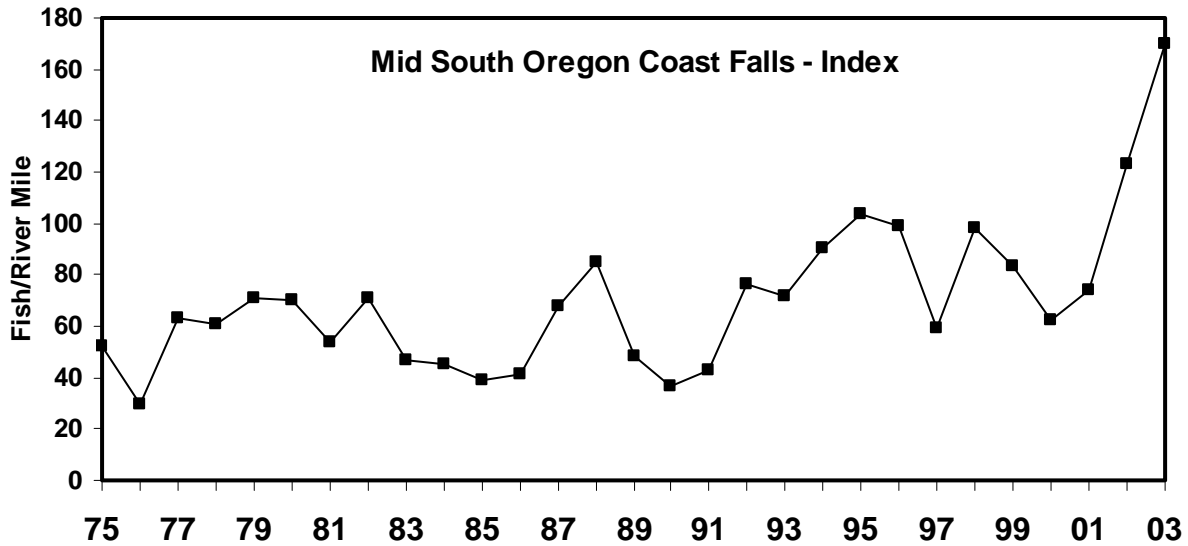




**Escapement Methodology:** The Umpqua River system is an extensive and diverse watershed that includes both coastal Douglas fir rainforest as well as an interior valley, oak savanna, environment. There are at least five distinct Chinook populations in this watershed with both spring (river) and fall (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 2003 was 8,918 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:** 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 will continue at least 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 2004.

## REFERENCES CITED

- ADF&G (Alaska Department of Fish and Game). 1981. Proposed management plan for Southeast Alaska chinook salmon runs in 1981. Southeast Region, Alaska Department of Fish and Game (January 1981). Regional Unpublished Report No. 1J81-3. Juneau, Alaska.
- ADF&G. 1997. Salmon escapement goal policy. Alaska Department of Fish and Game, Divisions of Sport Fish and Commercial Fisheries Management and Development.
- ADF&G/ABF (Alaska Department of Fish and Game and Alaska Board of Fisheries). 2000. Sustainable salmon fisheries policy for the State of Alaska. Available from the Commissioners Office of ADF&G, 1255 West 8<sup>th</sup> Street, P.O. Box 25526, Juneau, Alaska.
- Ames, J. and D. E. Phinney. 1977. 1977 Puget Sound summer-fall chinook methodology: escapement estimates and goals, run size forecasts, and in-season run size updates. Washington Department of Fisheries Technical Report 29. Olympia, Washington.
- Bernard, D. R., S. A. McPherson, K. A. Pahlke and P. Etherton. 2000. Optimal production of chinook salmon from the Stikine River. Alaska Department of Fish and Game, Sport Fish Division, Fishery Manuscript 00-1. Anchorage, Alaska.
- CBFWA (Columbia Basin Fish and Wildlife Authority). 1990. Integrated system plan for salmon and steelhead production in the Columbia River basin. Portland, Oregon.
- Clark, J. H., S. A. McPherson and D. G. Gaudet. 1998. Biological escapement goal for Andrew Creek chinook salmon. Alaska Department of Fish and Game, Regional Information Report 1J98-08. Juneau, Alaska.
- Cooney, T.D. 1984. A probing approach for determining spawning escapement goals for fall chinook salmon on the Washington north coast. Pages 205-213 in J.M. Walton and D.B. Houston, editors, Proceedings of the Olympic Wild Fish Conference, Peninsula College, Port Angeles, Washington.
- CCMP (Comprehensive Chinook Management Plan). 2004. Comprehensive chinook management plan for Puget Sound chinook: harvest management component. Northwest Indian Fisheries Commission. Olympia, Washington.
- CRFMP. 1988. Columbia River Fisheries Management Plan.
- CTC (Chinook Technical Committee). 1999. Maximum sustained yield or biologically based escapement goals for selected chinook salmon stocks used by the Pacific Salmon Commission's Chinook Technical Committee for escapement assessment. Pacific Salmon Commission, Report TCCHINOOK (99)-3. Vancouver, British Columbia.
- CTC (Chinook Technical Committee). 2002a. Relating risk of management error to lower bounds of escapement for additional management action. Pacific Salmon Commission, Report TCCHINOOK (02)-2. Vancouver, British Columbia.
- CTC (Chinook Technical Committee). 2002b. Catch and escapement of chinook salmon under Pacific Salmon Commission jurisdiction 2001. Pacific Salmon Commission, Report TCCHINOOK (02)-1. Vancouver, British Columbia.
- CTC (Chinook Technical Committee). 2003a. Annual exploitation rate analysis and model calibration. Pacific Salmon Commission, Report TCCHINOOK (03)-2. Vancouver, British Columbia.
- CTC (Chinook Technical Committee). 2003b. Catch and escapement of chinook salmon under Pacific Salmon Commission jurisdiction 2002. Pacific Salmon Commission, Report TCCHINOOK (03)-1. Vancouver, British Columbia.
- CTC (Chinook Technical Committee). 2004. Estimation and application of incidental fishing mortality in chinook salmon management under the 1999 Agreement of the Pacific Salmon Treaty. Pacific Salmon Commission, Report TTCHINOOK (04)-1. Vancouver, British Columbia.

- Ericksen, R. P. 2000. Sport fishing effort, catch and harvest, and inriver abundance of Chilkat River chinook salmon near Haines, Alaska in 1999. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Data Series 00-28, Anchorage, Alaska.
- Farwell, M. K., R. E. Bailey, and B. Rosenberger. 1999. Enumeration of the 1995 Nicola River chinook salmon escapement. Canadian Manuscript Report Fisheries and Aquatic Science 2491:44p.
- Freeman, G.M., S. A. McPherson and D.L. Magnus. 2001. A mark-recapture experiment to estimate the escapement of chinook salmon in the Keta River, 2000. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Data Series 01-19, Anchorage, Alaska.
- Link, M. R. and B. L. Nass. 1999. Estimated abundance of chinook salmon returning to the Nass River, B.C., 1997. Canadian Manuscript Report Fisheries and Aquatic Science 2475:64p.
- McIsaac, D. O. 1990. Factors affecting the abundance of 1977-79 brood wild fall chinook salmon (*Oncorhynchus tshawytscha*) in the Lewis River, Washington. Ph.D. dissertation. University of Washington, Seattle, Washington.
- McPherson, S. A. 1991. State of Alaska, Department of Fish and Game memorandum addressed to Keith Weiland; available from author, Douglas Island Center Building, 802 3rd Street, P. O. Box 240020, Douglas, Alaska 99824-0020.
- McPherson, S. A. and J. K. Carlile. 1997. Spawner-recruit analysis of Behm Canal chinook salmon stocks. Alaska Department of Fish and Game, Regional Information Report 1J97-06. Juneau, Alaska.
- McPherson, S. A., P. Etherton, and J. H. Clark. 1998. Biological escapement goal for Klukshu River chinook salmon. Alaska Department of Fish and Game, CDFO, Fishery Manuscript 98-2. Anchorage, Alaska.
- McPherson, S. A., D. R. Bernard, and J. H. Clark. 2000. Optimal production of chinook salmon from the Taku River. Alaska Department of Fish and Game, Sport Fish Division, Fishery Manuscript 00-2. Anchorage, Alaska.
- McPherson, S. A. and J. H. Clark 2001. Biological escapement goal for King Salmon River chinook salmon. Alaska Department of Fish and Game, Regional Information Report 1J01-40. Anchorage, Alaska.
- McPherson, S. A., D. R. Bernard, J. H. Clark, K. A. Pahlke, E. L. Jones III, J. A. Der Hovanisian, J. L. Weller, and R. P. Ericksen. 2003. Stock status and escapement goals for chinook salmon stocks in Southeast Alaska. Alaska Department of Fish and Game, Sport Fish Division, Special Publication No. 03-01. Anchorage.
- Pahlke, K. A. 1995. Coded-wire tagging studies of chinook salmon on the Unuk and Chickamin rivers, 1983-1993. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Fishery Research Bulletin 2(2):93-113. Juneau, Alaska.
- Pahlke, K. A. 1997. Abundance and distribution of the chinook salmon escapement on the Chickamin River, 1996. Alaska Department of Fish and Game, Sport Fish Division, Fishery Data Series No. 97-28. Anchorage, Alaska.
- Pahlke, K. A. 2003. Escapements of chinook salmon in Southeast Alaska and transboundary rivers in 2001. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Data Series 03-11, Anchorage, Alaska.
- Pahlke, K. A., S. A. McPherson and R. P. Marshall. 1996. Chinook salmon research on the Unuk River, 1994. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Data Series No. 96-14, Anchorage, Alaska.
- Pahlke, K. A., and P. Etherton. 1999. Chinook salmon research on the Stikine River, 1997. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Data Series No. 99-6, Anchorage, Alaska.

- PFMC (Pacific Fishery Management Council). 2003. Review of 2002 Ocean Salmon Fisheries. Pacific Fishery Management Council. Portland, Oregon.
- QDNR. 1982. Assessment of stock and recruitment relationships for north coastal Chinook stocks. Quinault Department of Natural Resources, Technical Services Section. Taholah, Washington.
- Riddell, B., D. A. Nagtegaal, and D. Chen. 2000. A biologically-based escapement goal for Cowichan River fall chinook salmon (*Oncorhynchus tshawytscha*). PSARC Working Paper S00-17. Pacific Biological Station, Nanaimo, British Columbia.
- Smith, C. J. and P. Castle. 1994. Puget Sound chinook salmon (*Oncorhynchus tshawytscha*) escapement estimates and methods --1991. Washington Department of Fish and Wildlife. Project Report Series No. 1 Olympia, Washington.
- TAC (U.S. v Oregon Technical Advisory Committee). 1999. All Species Review: Columbia River Fish Management Plan.
- USCTC (U.S. Chinook Technical Committee). 1997. A review of stock assessment data and procedures for U.S. chinook salmon stocks. Pacific Salmon Commission U.S. Chinook Technical Committee Report. USTCHINOOK (97)-1, Vancouver, British Columbia.
- Weller, Jan L. and Scott A. McPherson. 2003. A mark-recapture experiment to estimate the escapement of chinook salmon in the Unuk River, 2002. Alaska Department of Fish and Game, Fishery Data Series No. 03-15 , Anchorage, Alaska.



## APPENDICES

Appendix A.1. Southeast Alaska (SEAK) Chinook catches, 1975-2003.

| 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 | 330,686          | 39,373 | 72,971 | 443,030 | 57,198 | 2,406              | 383,426      |

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.



Appendix A.2. Northern British Columbia (NBC) Chinook catches, 1975-2003.

| Year | Northern British Columbia   |              |                |           |                           |                        |         |
|------|-----------------------------|--------------|----------------|-----------|---------------------------|------------------------|---------|
|      | Tidal Sport                 |              |                |           |                           |                        | Total   |
|      | Area 1-5 Troll <sup>1</sup> | Area 1-5 Net | Areas 1,2E, 2W | Areas 3-5 | Area 1-5 Freshwater Sport | Area 1-5 First Nations |         |
| 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                     | 13,635                 | 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                      | 9,965        | 30,227         | 11,700    | NA                        | 27,399                 | 135,790 |
| 2000 | 9,800                       | 22,661       | 22,100         | 8,600     | NA                        | 23,476                 | 86,637  |
| 2001 | 13,100                      | 25,435       | 30,400         | 11,000    | NA                        | 26,405                 | 106,340 |
| 2002 | 103,517                     | 15,115       | 47,100         | 8,000     | NA                        | 20,136                 | 193,868 |
| 2003 | 137,357                     | 14,894       | 54,300         | 8,000     | 6,280                     | 20,922                 | 241,753 |

<sup>1</sup> 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.

<sup>2</sup> 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.

NA=not available

Appendix A.3. Central British Columbia (CBC) Chinook catches, 1975-2003.

| Year | Central British Columbia |        |             |                  |               |         |
|------|--------------------------|--------|-------------|------------------|---------------|---------|
|      | Troll <sup>1</sup>       | 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                        | 7,172  | 2,936       | 3,986            | 6,922         | 21,016  |
| 1997 | 12,351                   | 3,647  | 8,524       | 1,139            | 9,764         | 35,425  |
| 1998 | 2,198                    | 5,468  | 5,514       | 779              | 6,671         | 20,630  |
| 1999 | 2,074                    | 4,342  | 10,300      | NA <sup>2</sup>  | 5,440         | 22,156  |
| 2000 | 0                        | 3,197  | 7,400       | NA <sup>2</sup>  | 4,576         | 15,173  |
| 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                       | 2,829  | 8,385       | 491              | 3,173         | 14,898  |

<sup>1</sup> 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.

<sup>2</sup> freshwater catch included with tidal catch

NA=not available

Appendix A.4. West Coast Vancouver Island (WCVI) Chinook catches, 1975-2003.

| Year | West Coast Vancouver Island |        |                     |             |                  |               |         |
|------|-----------------------------|--------|---------------------|-------------|------------------|---------------|---------|
|      |                             |        | Tidal Sport         | Tidal Sport |                  |               |         |
|      | Troll <sup>1</sup>          | Net    | Inside <sup>2</sup> | 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 |

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

Net: Areas 21, and 23-27

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

<sup>1</sup> 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.

<sup>2</sup> Prior to 1992, catch was not reported as 'inside' or 'outside'. Therefore 'inside' catch for those years represents total tidal sport catch.

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

Appendix A.5. Strait of Georgia/Fraser Chinook catches, 1975-2003.

| Year | Strait of Georgia/Fraser |        |             |                               |                            |         |
|------|--------------------------|--------|-------------|-------------------------------|----------------------------|---------|
|      | Troll <sup>1</sup>       | Net    | Tidal Sport | Freshwater Sport <sup>2</sup> | First Nations <sup>3</sup> | 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  |

Troll: Areas 13-18 and 29

Net: Areas 14-19, 28 and 29

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

<sup>1</sup> 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.

<sup>2</sup> Prior to 1990, catch includes catch from Fraser systems only; catch records not available those years from non-Fraser systems.

<sup>3</sup> No catch records are available for non-Fraser catch prior to 1990.

NA=not available

Appendix A.6. Johnstone Strait Chinook catches, 1975-2003.

| Year | Johnstone Strait              |        |             |                     |               |        |
|------|-------------------------------|--------|-------------|---------------------|---------------|--------|
|      | Troll <sup>1</sup><br>Area 12 | Net    | Tidal Sport | Freshwater<br>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 <sup>2</sup>              | 200    | 3,759       | NA                  | 370           | 4,329  |
| 2002 | 100                           | 600    | 2,331       | NA                  | 400           | 3,431  |
| 2003 | 710                           | 299    | 7585        | NA                  | 130           | 8724   |

Troll: Area 12

Net: Areas 11-13

Sport: Based on April - August creel census in Area 12 and northern half of Area 13

<sup>1</sup> 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.

<sup>2</sup> Preliminary estimate

NA=not available

Appendix A.7. Canada - Strait of Juan de Fuca Chinook catches, 1975-2003.

| Year | Canada - Strait of Juan de Fuca |             |                               |               |        |
|------|---------------------------------|-------------|-------------------------------|---------------|--------|
|      | Net                             | Tidal Sport | Freshwater Sport <sup>1</sup> | 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 |

Net: Area 20

Sport: Areas 19b and 20

<sup>1</sup> 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, 1975-2003.

| 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                               | 1,074  | 2,028  | 6,346   |
| 2003 | 523                                 | 908    | 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, 1975-2003.

| 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  | NA     | NA      |
| 2003 | 0                      | 4,827  | 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, 1975-2003.

| 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                         | NA      | NA      |
| 2003 | 71,654                         | 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, 1975-2003.

| 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                      | NA     | NA     |

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. Columbia River Chinook catches, 1975-2003.

| 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 <sup>1</sup> | 49,800         | 19,500                   | 27,700  | 97,000  |
| 1999 <sup>1</sup> | 85,400         | 35,600                   | 29,600  | 150,600 |
| 2000 <sup>1</sup> | 72,500         | 18,300                   | 24,700  | 115,500 |
| 2001 <sup>1</sup> | 195,600        | 55,400                   | 61,300  | 312,300 |
| 2002 <sup>1</sup> | 233,700        | 44,800                   | 88,700  | 367,200 |
| 2003 <sup>1</sup> | 162,900        | 59,100                   | 92,700  | 314,700 |

<sup>1</sup> Catches after 1998 include both adults and jacks caught in the Columbia River. Prior to that the catch only includes adults.

Appendix A.13. Washington/Oregon North of Cape Falcon Chinook catches, 1975-2003.

| 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 |

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.14. Oregon Chinook catches, 1975-2003.

| 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  | NA     | NA     |
| 2003 | 1,459  | 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, 1975-2003.

| Year                 | Southeast Alaska |        |                        |                |                          |                       |
|----------------------|------------------|--------|------------------------|----------------|--------------------------|-----------------------|
|                      | Situk<br>esc.    | t. run | King<br>Salmon<br>esc. | Andrew<br>esc. | Blossom<br>Index<br>esc. | Keta<br>Index<br>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                   |
| Goal LL <sup>a</sup> | 500              |        | 120                    | 650            | 250                      | 250                   |
| Goal UL <sup>a</sup> | 1,000            |        | 240                    | 1,500          | 500                      | 500                   |

(continued)

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

| Year                 | Transboundary Rivers              |              |                 |                       |                            |                 |
|----------------------|-----------------------------------|--------------|-----------------|-----------------------|----------------------------|-----------------|
|                      | Alesek<br>(Klukshu)<br>Index esc. | Taku<br>esc. | Stikine<br>esc. | Unuk<br>Index<br>esc. | Chickamin<br>Index<br>esc. | Chilkat<br>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                        | 4,920           |
| 1997                 | 2,829                             | 114,938      | 28,185          | 636                   | 272                        | 8,100           |
| 1998                 | 1,347                             | 31,039       | 25,968          | 840                   | 391                        | 3,675           |
| 1999                 | 2,166                             | 19,734       | 19,947          | 680                   | 492                        | 2,271           |
| 2000                 | 1,321                             | 30,529       | 27,531          | 1,341                 | 801                        | 2,035           |
| 2001                 | 1,738                             | 45,730       | 63,523          | 2,019                 | 1,010                      | 4,517           |
| 2002                 | 2,121                             | 48,848       | 50,875          | 897                   | 1,013                      | 4,051           |
| 2003                 | 1,700                             | 41,678       | 42,712          | 1,121                 | 964                        | 5,505           |
| Goal LL <sup>a</sup> | 1,100                             | 30,000       | 14,000          | 650                   | 450                        |                 |
| Goal UL <sup>a</sup> | 2,300                             | 55,000       | 28,000          | 1,400                 | 900                        |                 |

<sup>a</sup> 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, 1975-2003.

| Year | Northern B.C.            |                       |   |        |                          |         |                         |                           |                           |
|------|--------------------------|-----------------------|---|--------|--------------------------|---------|-------------------------|---------------------------|---------------------------|
|      | Area 1<br>Yakoun<br>esc. | Above GW <sup>1</sup> | Area 3 <sup>1</sup><br>Nass<br>Total esc. | t. run | Area 4<br>Skeena<br>esc. | t. run  | Area 8<br>Dean<br>Index | Area 9<br>Rivers<br>Inlet | Area 10<br>Smith<br>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                | 22,444                                    | 30,621 | 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                                    | 31,022 | 51,720                   | 77,320  | 1,200                   | 6,700                     | 500                       |
| 2001 | 3,500                    | 29,687                | 31,413                                    | 44,094 | 82,912                   | 112,346 | 3,795                   | 5,062                     | 300                       |
| 2002 | 3,000                    | 13,773                | 15,083                                    | 21,230 | 44,695                   | 63,069  | 3,731                   | 5,031                     | - <sup>2</sup>            |
| 2003 | 4,000                    | 27,087                | 28,478                                    | 36,623 | 58,199                   | 82,410  | 3700                    | 1900                      | - <sup>2</sup>            |

<sup>1</sup> GW refers to Gitwinksihlkw, the location of the lower fish wheels on the Nass River used to capture Chinook for the mark-recapture estimate.

<sup>2</sup> 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).

| Year | Southern B.C.                           |                                    |        | Fraser River                       |                                     |                                     |                                     |                                     |                             |                  |         |
|------|---|------------------------------------|--------|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------------------|------------------|---------|
|      | W. Coast<br>Vancouver<br>Island<br>esc. | Lower<br>Georgia<br>Strait<br>esc. | t. run | Upper<br>Georgia<br>Strait<br>esc. | Fraser<br>Spring<br>Age 1.2<br>esc. | Fraser<br>Spring<br>Age 1.3<br>esc. | Fraser<br>Summer<br>Age 0.3<br>esc. | Fraser<br>Summer<br>Age 1.3<br>esc. | Fraser<br>Spr/sum<br>t. run | Harrison<br>esc. | 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 |

Appendix B.3. Puget Sound escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks, 1975-2003.

| Year | Puget Sound   |        |                 |        |               |        |           |        |        |        |                     |         |                      |        |
|------|---------------|--------|-----------------|--------|---------------|--------|-----------|--------|--------|--------|---------------------|---------|----------------------|--------|
|      | Skagit Spring |        | Skagit Sum/fall |        | Stillaguamish |        | Snohomish |        | Green  |        | Nooksak 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 | 803           | 803    | 11,320          | 24,625 | 1,198         | 1,635  | 4,485     | 6,123  | 3,394  | 6,238  |                     |         | 656                  | 881    |
| 1976 | 812           | 812    | 14,120          | 23,306 | 2,140         | 4,002  | 5,315     | 9,889  | 3,140  | 7,732  |                     |         | 719                  | 759    |
| 1977 | 1,049         | 1,049  | 8,917           | 17,693 | 1,475         | 2,549  | 5,565     | 9,618  | 3,804  | 5,366  |                     |         | 675                  | 728    |
| 1978 | 1,220         | 1,220  | 13,075          | 20,030 | 1,232         | 1,959  | 7,931     | 12,591 | 3,304  | 4,349  |                     |         | 890                  | 1,202  |
| 1979 | 968           | 968    | 13,106          | 21,243 | 1,042         | 2,366  | 5,903     | 12,706 | 9,704  | 10,730 |                     |         | 1,289                | 1,430  |
| 1980 | 1,803         | 1,803  | 20,058          | 28,938 | 821           | 2,647  | 6,460     | 16,688 | 7,743  | 10,608 |                     |         | 1,360                | 1,431  |
| 1981 | 1,250         | 1,250  | 8,283           | 19,675 | 630           | 2,783  | 3,368     | 8,968  | 3,606  | 4,912  |                     |         | 721                  | 792    |
| 1982 | 965           | 965    | 10,210          | 21,022 | 773           | 3,058  | 4,379     | 8,470  | 1,840  | 3,850  |                     |         | 885                  | 1,148  |
| 1983 | 710           | 710    | 8,723           | 14,671 | 387           | 925    | 4,549     | 10,386 | 3,679  | 13,290 |                     |         | 1,332                | 2,124  |
| 1984 | 747           | 747    | 12,628          | 15,005 | 374           | 883    | 3,762     | 8,480  | 3,353  | 5,381  | 45                  | 188     | 1,252                | 3,436  |
| 1985 | 3,249         | 3,249  | 16,002          | 25,075 | 1,409         | 2,641  | 4,873     | 9,005  | 2,908  | 7,444  | 258                 | 445     | 949                  | 2,305  |
| 1986 | 1,978         | 1,978  | 17,908          | 21,585 | 1,277         | 2,416  | 4,534     | 8,267  | 4,792  | 5,784  | 226                 | 257     | 1,470                | 2,419  |
| 1987 | 1,979         | 1,979  | 9,409           | 13,037 | 1,321         | 1,906  | 4,689     | 6,670  | 10,338 | 11,724 | 181                 | 266     | 2,038                | 4,124  |
| 1988 | 2,064         | 2,064  | 11,468          | 14,647 | 717           | 1,176  | 4,513     | 7,389  | 7,994  | 9,207  | 456                 | 263     | 792                  | 2,373  |
| 1989 | 1,515         | 1,924  | 6,684           | 12,787 | 811           | 1,642  | 3,138     | 6,142  | 11,512 | 15,000 | 303                 | 608     | 1,011                | 1,688  |
| 1990 | 1,592         | 1,627  | 16,792          | 19,172 | 842           | 1,739  | 4,209     | 8,345  | 7,035  | 15,200 | 10                  | 152     | 787                  | 1,128  |
| 1991 | 1,411         | 1,448  | 5,826           | 8,425  | 1,632         | 2,913  | 2,783     | 4,964  | 10,548 | 14,967 | 108                 | 379     | 661                  | 1,415  |
| 1992 | 1,001         | 1,025  | 7,348           | 9,201  | 780           | 1,247  | 2,708     | 4,319  | 5,267  | 9,941  | 498                 | 122     | 790                  | 1,349  |
| 1993 | 788           | 818    | 5,801           | 6,879  | 928           | 1,299  | 3,866     | 5,602  | 2,476  | 5,202  | 449                 | 244     | 245                  | 304    |
| 1994 | 470           | 496    | 5,549           | 6,479  | 954           | 1,285  | 3,626     | 4,885  | 4,078  | 7,963  | 45                  | 118     | 888                  | 891    |
| 1995 | 855           | 887    | 7,077           | 9,301  | 822           | 920    | 3,176     | 5,000  | 7,939  | 9,743  | 230                 | 290     | 930                  | 944    |
| 1996 | 1,051         | 1,078  | 10,613          | 12,193 | 1,384         | 1,384  | 4,851     | 7,921  | 6,026  | 8,668  | 535                 | 203     | 303                  | 308    |
| 1997 | 1,041         | 1,064  | 4,872           | 6,055  | 1,156         | 1,167  | 4,295     | 4,337  | 9,967  | 10,264 | 617                 | 180     | 227                  | 229    |
| 1998 | 1,086         | 1,091  | 14,609          | 14,885 | 1,540         | 1,558  | 6,304     | 6,344  | 7,312  | 8,824  | 370                 | 157     | 432                  | 432    |
| 1999 | 471           | 476    | 4,924           | 5,171  | 1,098         | 1,101  | 4,799     | 4,817  | 11,025 | 12,447 | 892                 | 164     | 241                  | 241    |
| 2000 | 1,021         | 1,025  | 16,930          | 17,112 | 1,622         | 1,622  | 6,092     | 8,400  | 6,170  | 11,866 | 1,242               | 283     | 476                  | 476    |
| 2001 | 1,856         | 1,866  | 13,793          | 14,006 | 1,349         | 1,388  | 8,164     | 8,395  | 7,975  | 11,167 | 2,185               | 268     | 1,269                | 1,516  |
| 2002 | 1,065         | 1,081  | 19,591          | 19,807 | 1,588         | 1,593  | 7,220     | 7,245  | 13,950 | 15,553 | 3,687               | 282     | 637                  | 647    |
| 2003 | 843           | 864    | 9,777           | 10,471 | 988           | 1,016  | 5,447     | 5,600  | 11,921 | 12,765 | 3,058               | 570     | 774                  | 803    |

Appendix B.4. Washington Coast escapements and terminal runs of PSC Chinook Technical Committee wild Chinook escapement indicator stocks, 1975-2003.

| 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  | 2,500           | 4,700  | 600         | 1,300  | 2,500    | 3,100  |           |        | 505            | 737    | 1,200       | 2,500  | 600                 | 1,000  | 1,836             | 7,847  |
| 1977 | 3,800             | 5,300  | 3,300           | 7,600  | 1,000       | 2,000  | 2,100    | 3,800  |           |        | 732            | 1,155  | 3,600       | 5,500  | 800                 | 1,700  | 5,195             | 13,477 |
| 1978 | 2,300             | 2,700  | 4,700           | 6,200  | 1,400       | 2,472  | 1,900    | 2,900  |           |        | 1,110          | 1,406  | 2,200       | 3,100  | 1,000               | 1,600  | 4,555             | 10,907 |
| 1979 | 2,100             | 3,900  | 3,900           | 6,600  | 1,400       | 2,326  | 1,700    | 2,200  |           |        | 870            | 1,369  | 3,900       | 4,700  | 400                 | 1,100  | 9,581             | 12,258 |
| 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            | 22,002 |
| 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             | 13,182 |
| 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             | 13,084 |
| 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             | 9,852  |
| 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            | 23,466 |
| 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             | 16,852 |
| 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            | 22,677 |
| 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            | 32,553 |
| 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            | 39,346 |
| 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            | 54,354 |
| 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  | 16,581            | 39,869 |
| 1991 | 1,188             | 1,500  | 6,292           | 7,631  | 1,078       | 1,693  | 1,420    | 2,611  | 1,008     | 1,024  | 630            | 761    | 4,486       | 5,888  | 1,289               | 1,489  | 13,432            | 32,038 |
| 1992 | 1,009             | 1,271  | 6,342           | 7,750  | 1,018       | 1,443  | 4,003    | 5,136  | 741       | 750    | 375            | 505    | 4,695       | 6,338  | 1,813               | 1,851  | 13,175            | 33,124 |
| 1993 | 1,292             | 1,531  | 5,254           | 5,735  | 1,411       | 2,065  | 2,280    | 3,766  | 894       | 908    | 713            | 788    | 3,383       | 5,107  | 1,254               | 1,352  | 11,824            | 33,291 |
| 1994 | 974               | 1,187  | 4,932           | 5,692  | 1,699       | 2,372  | 3,967    | 4,806  | 429       | 440    | 705            | 727    | 3,805       | 5,866  | 1,403               | 1,479  | 11,817            | 30,239 |
| 1995 | 1,333             | 1,731  | 5,532           | 6,716  | 1,132       | 1,686  | 2,202    | 2,898  | 929       | 949    | 625            | 662    | 2,876       | 4,355  | 2,070               | 2,156  | 9,952             | 31,653 |
| 1996 | 1,170             | 1,388  | 7,316           | 9,293  | 1,371       | 2,083  | 3,022    | 4,020  | 1,256     | 1,258  | 776            | 891    | 3,441       | 4,693  | 4,462               | 4,642  | 16,988            | 36,733 |
| 1997 | 890               | 1,177  | 5,405           | 6,047  | 1,826       | 2,582  | 1,773    | 3,029  | 868       | 888    | 540            | 693    | 2,477       | 4,122  | 4,460               | 4,812  | 16,342            | 31,290 |
| 1998 | 1,599             | 1,829  | 6,752           | 7,940  | 1,287       | 1,880  | 4,257    | 5,369  | 1,702     | 1,702  | 492            | 537    | 3,951       | 5,009  | 2,283               | 2,586  | 11,476            | 21,648 |
| 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               | 1,561  | 9,196             | 16,053 |
| 2000 | 989               | 1,149  | 3,730           | 4,794  | 492         | 529    | 1,749    | 2,510  | 730       | 730    | 248            | 250    | 3,572       | 3,752  | 2,867               | 3,140  | 9,260             | 16,050 |
| 2001 | 1,225             | 1,372  | 5,136           | 7,559  | 1,159       | 1,231  | 2,560    | 4,113  | 838       | 838    | 548            | 565    | 2,871       | 3,918  | 2,860               | 3,200  | 9,483             |        |
| 2002 | 1,002             | 1,064  | 6,057           | 9,331  | 2,400       | 3,511  | 4,500    | 6,431  | 686       | 686    | 738            | 755    | 2,288       | 3,976  | 2,600               |        | 11,300            |        |
| 2003 | 1,139             | 1,230  | 4,578           | 9,170  | 1,210       | 1,672  | 1,681    | 2,529  | 1,100     | 1,100  | 189            | 190    | 4,885       | 5,154  | 1,904               |        | 19,419            |        |

Appendix B.5. Columbia River escapements and terminal runs of PSC CTC wild Chinook escapement indicator stocks, 1975-2003.

| Year | Columbia Upriver |        | Columbia Upriver Summers /1 |        |             |        |        |        | Columbia Upriver Fall Chinook |        |                    |             |        |            |         |
|------|------------------|--------|-----------------------------|--------|-------------|--------|--------|--------|-------------------------------|--------|--------------------|-------------|--------|------------|---------|
|      | Spring           |        | 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 | 21,916           | 22,792 | 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 | 27,547           | 28,472 | 16,583                      | 17,517 | 2,688       | 2,923  | 19,271 | 20,440 | 16,394                        | 16,856 |                    | 3,159       | 5,110  | 27,700     | 71,690  |
| 1981 | 27,622           | 29,119 | 11,821                      | 12,747 | 3,306       | 4,478  | 15,127 | 17,225 | 19,297                        | 20,298 |                    | 4,085       | 5,922  | 18,114     | 60,678  |
| 1982 | 31,239           | 33,598 | 8,269                       | 9,295  | 4,210       | 4,820  | 12,479 | 14,116 | 8,370                         | 10,126 |                    | 7,406       | 9,422  | 27,226     | 69,578  |
| 1983 | 26,084           | 27,244 | 7,706                       | 8,043  | 3,895       | 4,638  | 11,601 | 12,681 | 13,540                        | 14,489 |                    | 4,681       | 6,177  | 42,681     | 79,923  |
| 1984 | 20,313           | 21,820 | 12,369                      | 12,717 | 5,429       | 5,090  | 17,798 | 17,807 | 7,132                         | 8,128  |                    | 4,404       | 5,374  | 45,452     | 126,026 |
| 1985 | 27,701           | 28,720 | 12,276                      | 13,307 | 5,062       | 3,900  | 17,338 | 17,206 | 7,491                         | 8,241  |                    | 3,785       | 4,592  | 72,758     | 191,808 |
| 1986 | 33,387           | 35,497 | 10,640                      | 11,489 | 6,154       | 5,890  | 16,794 | 17,379 | 11,983                        | 13,504 |                    | 5,355       | 6,508  | 90,961     | 275,061 |
| 1987 | 24,464           | 26,077 | 13,773                      | 15,110 | 5,891       | 7,610  | 19,664 | 22,720 | 12,935                        | 14,173 |                    | 6,776       | 8,833  | 121,171    | 411,823 |
| 1988 | 23,504           | 25,303 | 12,531                      | 13,534 | 6,145       | 8,361  | 18,676 | 21,895 | 12,059                        | 13,636 |                    | 5,982       | 8,373  | 97,781     | 331,542 |
| 1989 | 21,634           | 23,439 | 17,084                      | 17,194 | 3,169       | 3,400  | 20,253 | 20,595 | 21,199                        | 22,813 |                    | 4,777       | 6,507  | 83,100     | 254,795 |
| 1990 | 20,119           | 21,619 | 12,887                      | 12,998 | 5,093       | 5,131  | 17,980 | 18,129 | 17,506                        | 18,784 |                    | 2,224       | 3,194  | 48,891     | 150,399 |
| 1991 | 14,965           | 15,969 | 9,385                       | 9,516  | 3,809       | 3,515  | 13,194 | 13,031 | 9,066                         | 10,354 |                    | 3,678       | 3,832  | 39,625     | 99,454  |
| 1992 | 24,008           | 25,579 | 6,141                       | 6,244  | 3,014       | 3,148  | 9,155  | 9,392  | 6,307                         | 7,129  |                    | 2,777       | 2,814  | 38,879     | 78,202  |
| 1993 | 20,045           | 21,364 | 8,971                       | 9,335  | 7,889       | 4,569  | 16,860 | 13,904 | 7,025                         | 8,106  |                    | 8,235       | 8,246  | 41,853     | 94,662  |
| 1994 | 5,412            | 5,701  | 11,793                      | 12,006 | 795         | 910    | 12,588 | 12,916 | 9,939                         | 10,541 |                    | 5,455       | 5,524  | 66,470     | 127,315 |
| 1995 | 3,415            | 3,596  | 9,100                       | 9,427  | 692         | 841    | 9,792  | 10,268 | 9,718                         | 12,155 |                    | 7,581       | 7,617  | 53,470     | 98,842  |
| 1996 | 11,384           | 12,017 | 7,614                       | 7,901  | 2,607       | 2,839  | 10,221 | 10,740 | 13,971                        | 13,971 |                    | 8,759       | 8,837  | 51,973     | 134,356 |
| 1997 | 23,577           | 25,276 | 8,370                       | 8,513  | 10,709      | 7,541  | 19,079 | 16,054 | 8,670                         | 8,670  |                    | 20,678      | 20,811 | 49,074     | 140,916 |
| 1998 | 13,504           | 14,233 | 9,539                       | 9,756  | 4,355       | 4,739  | 13,894 | 14,495 | 5,929                         | 5,929  |                    | 10,923      | 11,428 | 40,012     | 130,874 |
| 1999 | 8,111            | 8,508  | 16,662                      | 17,008 | 3,260       | 3,515  | 19,922 | 20,523 | 3,184                         | 3,184  |                    | 3,997       | 4,370  | 44,867     | 161,436 |
| 2000 | 47,307           | 50,378 | 16,872                      | 17,045 | 3,933       | 4,017  | 20,805 | 21,062 | 9,820                         | 9,820  |                    | 3,230       | 3,637  | 62,675     | 152,107 |
| 2001 | 44,908           | 51,771 | 38,738                      | 39,281 | 13,735      | 14,624 | 52,473 | 53,904 | 13,886                        | 14,186 | 12,595             | 11,161      | 12,929 | 86,908     | 219,562 |
| 2002 | 62,158           | 69,819 | 68,795                      | 71,629 | 22,159      | 20,107 | 90,954 | 91,736 | 16,380                        | 18,230 | 15,505             | 12,252      | 16,475 | 116,237    | 260,794 |
| 2003 | 59,928           | 65,119 | 59,843                      | 65,314 | 16,422      | 16,665 | 76,265 | 81,979 | 18,505                        | 20,505 | 18,568             | 12,590      | 19,646 | 160,677    | 353,545 |
| 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, 1975-2003.

| Year | Oregon  |        |        |        |         |        |                  |                     |
|------|---------|--------|--------|--------|---------|--------|------------------|---------------------|
|      | Nehalem |        | Siletz |        | Siuslaw |        | Umpqua River     | Mid-Oregon          |
|      | esc.    | t. run | esc.   | t. run | esc.    | t. run | Redd Count Index | Coast 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  |        | 14,054 |        | 41,058  |        | 3,831            | 123                 |
| 2003 | 10.906  |        | 11,149 |        | 56,546  |        | 8,918            | 170                 |
| Goal | 6.989   |        | 2.944  |        | 12.925  |        |                  |                     |