

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

**ANNUAL EXPLOITATION RATE ANALYSIS  
AND  
MODEL CALIBRATION**

**REPORT TCCHINOOK (04)-4**

December 31, 2004

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## LIST OF ACRONYMS WITH DEFINITIONS

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

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## EXECUTIVE SUMMARY

This report contains the results of the Chinook Technical Committee (CTC) annual exploitation rate assessment and the final pre-season Chinook model calibration for 2004 (CLB 0404).

Results include the Abundance Indices (AIs) for the Aggregate Abundance Based Management (AABM) fisheries and Individual Stock Based Management (ISBM) Indices for each party and a summary of pre-season forecast methods by stock.

### *AABM Abundance Indices and Associated Catches*

The AIs for the three AABM fisheries, i.e., Southeast Alaska All Gear (SEAK), Northern British Columbia Troll and Queen Charlotte Islands Sport (NBC), and West Coast Vancouver Island Troll and Outside Sport (WCVI), are presented in Table 1. The 1999 Agreement specified that the AABM fisheries were to be managed through the use of the AIs. Pre-season AIs are used to set allowable catch limits for management for the upcoming fishing season. Subsequently, post-season AIs (from the following year's calibration) are used to track overage and underage provisions. Each calibration provides the first post-season AIs for the previous year and the pre-season AIs for the current year. The first 2003 post-season AIs and the 2004 pre-season AIs have now been finalized.

Table 1. Abundance Indices for 1999 to 2004 for the SEAK, NBC, and WCVI AABM fisheries.

Year	SEAK		NBC		WCVI	
	Pre-season	Post-season	Pre-season	Post-season	Pre-season	Post-season
1999	1.15	1.12	1.12	0.97	0.60	0.50
2000	1.14	1.10	1.00	0.95	0.54	0.47
2001	1.14	1.29	1.02	1.22	0.66	0.68
2002	1.74	1.82	1.45	1.63	0.95	0.92
2003	1.79	2.17	1.48	1.90	0.85	1.10
2004	1.88	-	1.67	-	0.90	-

In general, the AIs for 1999 through 2001 are low compared to AIs in the late 1980s and early 1990s but values have increased since 2002. The recent AI values are comparable to the higher values in the time series. The Agreement specifies an allowable catch for each AI for each fishery. The specified Treaty catch by fishery and year and the actual (observed) catches are shown in Table 2.

Table 2. Observed catches and post-season allowable catches for 1999 to 2003, and pre-season allowable catches for 1999 to 2004, for AABM fisheries.

Year	Pacific Salmon Treaty Allowable and Observed Catches								
	SEAK			NBC			WCVI		
	Pre-season Allowable Catch	Post-season Allowable Catch	Observed Catch	Pre-season Allowable Catch	Post-season Allowable Catch	Observed Catch	Pre-season Allowable Catch	Post-season Allowable Catch	Observed Catch
1999	192,800	184,200	198,842	145,600	126,100	92,899	128,300	107,000	36,413
2000	189,900	178,500	186,493	130,000	123,500	31,880	115,500	86,200	101,442
2001	189,900	250,300	186,919	132,600	158,900	43,500	141,200	145,500	117,670
2002	356,500	371,900	357,133	192,700	237,800	137,632	203,200	196,800	166,188
2003	366,000	439,600	380,152	197,100	277,200	191,657	181,800	268,900	175,827
2004	383,500	-	-	243,600	-	-	192,500	-	-

The Agreement specifies that overage/underage provisions apply to both AABM and ISBM fisheries. However, the CTC identified, in a February 12, 2002 letter to the PSC, major technical obstacles and policy concerns for adjusting harvest levels in response to overages and underages. The major problem identified for AABM fisheries is the confounding of forecast and management error in assessing overages and underages. Forecast error is associated with the accuracy of the pre-season Abundance Indices (Table 1) which in turn is used to determine the preseason estimate of allowable catch. Management error is related to the harvest manager's ability to attain the pre-season estimates of allowable catch. Harvest managers have no prior knowledge of the post-season estimate of allowable catch which can be quite different from the pre-season estimate (Table 2).

Until an approach for full implementation has been developed and accepted by the PSC, the Commissioners have instructed the CTC to track overages and underages relative to agreed-upon harvest objectives. Table 3 shows the difference between the post-season allowable catch and the observed catch in AABM fisheries for 1999–2003, and the cumulative differential for those years. All three AABM fisheries have cumulative underages. In SEAK, observed catches have been below final allowable catches for two of the five years; the cumulative differential is –8.1%. In NBC, observed catches have been below the final allowable catches in all five years; the cumulative differential is -46.1%. In WCVI, observed catches have been below allowable catches for three of the four years; the cumulative differential is –25.7%.

Table 3. Differences between observed Treaty catch and the post-season Treaty allowances as number of fish and percentages of allowable catch for AABM fisheries in 1999 to 2003.

Year	SEAK		NBC		WCVI	
	Number of Fish	Percent Difference	Number of Fish	Percent Difference	Number of Fish	Percent Difference
1999	+14,642	+7.9%	-33,201	-26.3%	-70,587	-66.0%
2000	+7,993	+4.5%	-91,620	-74.2%	+15,242	+17.7%
2001	-63,381	-25.3%	-115,400	-72.6%	-27,830	-19.1%
2002	-14,767	-4.0%	-100,168	-42.1%	-30,612	-15.6%
2003	-59,448	-13.5%	-85,543	-30.9%	-93,073	-34.6%
Cum.	-114,961	-8.1%	-425,932	-46.1%	-206,860	-25.7%

### *ISBM Indices*

For ISBM fisheries, the Agreement specified that Canada and the United States would reduce base period exploitation rates on specified stocks by 36.5% and 40%, equivalent to ISBM indices of 63.5% and 60% percent, respectively. This requirement is referred to as the ‘general obligation’ and does not apply to stock groups that achieve their CTC agreed escapement goals. Estimated ISBM fishery indices are shown in Table 4 for Canadian fisheries and Table 5 for United States (U.S.) fisheries. Both tables present Coded-Wire Tag (CWT)-based indices for 2002, and Chinook model-based indices for 2004. The agreement specifies that the ISBM indices be forecasted pre-season and evaluated post-season for each escapement indicator stock listed in Attachments I to V of the Chinook Chapter.

### CWT-based Indices in 2002

All Canadian ISBM indices from the CWT-based estimates for 2002 show that exploitation rates were reduced more than required under the agreement for all stocks or stock groups. Four of the 16 U.S. ISBM indices for the CWT-based estimates for 2002 were reduced more than required under the agreement. Of the 12 U.S. CWT-based ISBM indices that exceeded 0.60, six (Quillayute, Upriver Brights, Mid-Columbia Summers, Nehalem, Siletz, and Siuslaw) have agreed escapement goals and all six exceeded their goal in 2002.

### Predicted ISBM Indices for 2004

Nine of the 20 ISBM indices for Canada in 2004 based on outputs from calibration 0404 are above the allowable value of 0.635 for Canadian ISBM fisheries. Only one, Fraser Late, has a CTC agreed escapement goal. Sixteen of the 24 U.S. ISBM indices for 2004 based on the calibration model are above the allowable limit for U.S. ISBM fisheries. Ten of the 16 have

CTC agreed escapement goals: Queets, Hoh, Quillayute, Upriver Brights, Lewis, Harrison, Mid-Columbia Summers, Nehalem, Siletz, and Siuslaw.

Table 4. ISBM Indices for Canadian fisheries, CWT-based for 2002, and the predicted indices for 2004 from the PSC Chinook Model. Order of the stock groups correspond to Annex 4, Chapter 3, Attachment IV of the PST 1999 Revised Annexes.

Stock Group	Escapement Indicator Stock	Canadian ISBM Indices	
		CWT Indices for 2002	Model Indices for 2004
Lower Strait of Georgia	Cowichan	0.247	0.593
	Nanaimo	0.247	0.695
Fraser Late	Harrison River <sup>2</sup>	0.105	0.719
North Puget Sound Natural Springs	Nooksack	0.023	0.273
	Skagit	NA	0.273
Upper Strait of Georgia	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	0.063	0.971
Fraser Early (spring and summers)	Upper Fraser, Mid Fraser, Thompson	NA	0.718
West Coast Vancouver Island Falls	WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble)	0.248	0.927
Puget Sound Natural Summer / Falls	Skagit	NA	0.438
	Stillaguamish	NA	0.567
	Snohomish	NA	0.445
	Lake Washington	NA	0.446
	Green River	0.323	0.466
North / Central B. C.	Yakoun, Nass, Skeena, Area 8	NA	0.804
Washington Coastal Fall Naturals <sup>3</sup>	Hoko, Grays Harbor, Queets, Hoh, Quillayute	NA	0.435
Columbia River Falls <sup>3</sup>	Upriver Brights	NA	0.663
	Deschutes	NA	0.663
	Lewis <sup>2</sup>	NA	0.480
Columbia R Summers <sup>3</sup>	Mid-Columbia Summers <sup>2</sup>	NA	0.333
Far North Migrating OR Coastal Falls <sup>3</sup>	Nehalem <sup>2</sup> , Siletz <sup>2</sup> , Siuslaw <sup>2</sup>	NA	0.672

<sup>1</sup> NA means not available because of insufficient data (lack of stock specific tag codes, base period CWT recoveries, etc).

<sup>2</sup> Stock or stock group with agreed escapement goal.

<sup>3</sup> Stock group listed in Annex Table V.

Table 5. ISBM indices for U.S. fisheries, CWT-based for 2002, and the predicted indices for 2004 from the PSC Chinook Model. Order of the stock groups correspond to Annex 4, Chapter 3, Attachment V of the PST 1999 Revised Annexes.

Stock Group	Escapement Indicator Stock	U.S. ISBM Indices	
		CWT Indices for 2002	Model Indices for 2004
Washington Coastal Fall Naturals	Hoko	NA <sup>1</sup>	0.966
	Grays Harbor	0.54	0.573
	Queets	0.84	0.932
	Hoh	0.95	1.214
	Quillayute	1.42	1.139
Columbia River Falls	Upriver Brights	1.32	0.906
	Deschutes	0.59	0.475
	Lewis <sup>4</sup>	0.56	1.008
Puget Sound Natural Summer / Falls	Skagit	NA	0.157
	Stillaguamish	NA	0.224
	Snohomish	NA	0.110
	Lake Washington	NA	0.411
	Green R	1.07	0.260
Fraser Late	Harrison River <sup>4</sup>	0.41	1.058
Columbia R Summers	Mid-Columbia Summers <sup>4</sup>	7.25	0.715
Far North Migrating OR Coastal Falls	Nehalem <sup>4</sup>	2.17	2.230
	Siletz <sup>4</sup>	1.31	1.288
	Siuslaw <sup>4</sup>	2.56	2.816
North Puget Sound Natural Springs	Nooksack	NA	0.974
	Skagit	1.12	0.663
Lower Strait of Georgia <sup>3</sup>	Cowichan,	5.78	0.915
	Nanaimo	5.78	0.915
Upper Strait of Georgia <sup>3</sup>	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	NA	NC <sup>2</sup>
Fraser Early (spring and summers) <sup>3</sup>	Upper Fraser, Mid Fraser, Thompson	NA	0.839
West Coast Vancouver Island Falls <sup>3</sup>	WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble)	NA	0.540
North / Central B. C. <sup>3</sup>	Yakoun, Nass, Skeena, Area 8	NA	NC

<sup>1</sup> NA means not available because of insufficient data (lack of stock specific tag codes, base period CWT recoveries, etc).

<sup>2</sup> NC means that the current model assumes the stock is not caught in U.S. ISBM fisheries.

<sup>3</sup> Stock group listed in Annex Table IV.

<sup>4</sup> Stock with agreed escapement goal.

### *Stock Forecasts*

In general, the model does a very good job of matching the agency supplied forecasts (average error = -0.5%, standard deviation = 13%, median error = -0.9%). Agency forecasts are, on average, also good predictors of observed returns (average error = -13.9%, standard deviation = 39%, median error = -12.8%). The model's prediction of observed returns, including stocks for which there is no agency forecast, is also good (average error = -8.6%, standard deviation = 35%, median error = -10.0%).

## 1. INTRODUCTION

The annexes of the Pacific Salmon Treaty (PST), dated June 30, 1999, changed the way Chinook salmon fisheries were managed by the Pacific Salmon Commission (PSC). Fisheries are no longer designated as “ceiling” or “pass through,” but as Aggregate Abundance Based Management (AABM) or Individual Stock Based Management (ISBM) fisheries. AABM fisheries are managed according to the abundance of Chinook salmon in each fishery. ISBM fisheries are managed to control impacts on individual stocks. Pre-season allowable catch in each AABM fishery (Southeast Alaska All Gear (SEAK), Northern British Columbia Troll and Sport (NBC), and West Coast Vancouver Island Troll and Outside Sport (WCVI)) is determined through an Abundance Index (AI) calculated from an agreed pre-season calibration of the Chinook Technical Committee (CTC) Chinook model (see Table 1 of Chapter 3 in the Agreement). This same calibration is also used to compute the post-season AIs for the previous year. Under the Agreement, annual aggregate impacts in Canadian and U.S. ISBM fisheries on specified stocks or stock groups are to be reduced by 36.5% and 40.0%, respectively, from the average of those in the base period (1979–1982). Such reductions will remain in effect until these fisheries can be managed to achieve escapement at Maximum Sustained Yield (MSY) or some other biologically based escapement goal. Pre-season and post-season indices are also calculated for ISBM fisheries using the Chinook model.

This annual report describes the methods and results of 1) the cohort analysis used to estimate exploitation rates from coded-wire tag (CWT) data and 2) the Chinook model calibration. The results of the 2004 pre-season calibration (CLB 0404) are based on completion of the CWT exploitation rate analysis for indicator stocks through 2002 fisheries, coast-wide data on catch, spawning escapements and age structure through 2003, and forecasts of Chinook returns expected in 2004. This report includes:

- ◆ estimates of the abundance indices for the years 1979 through 2003 and a projection for 2004 for the AABM fisheries,
- ◆ estimates of the non-ceiling indices, referred to as the ISBM indices in this report, for 1999 to 2003 and projections for the 2004 ISBM fisheries,
- ◆ estimates for 1979 through 2003 and a projection for 2004 of stock composition in the AABM and other fisheries,
- ◆ the distribution of landed and total fishing mortality in all fisheries for the indicator stocks,
- ◆ estimates of harvest rates (fishery indices) in the AABM fisheries,
- ◆ forecast methods and results for selected stocks, and
- ◆ survival indices for selected stocks.

Appendices A to L summarizes the indicator stocks, ISBM indices, fisheries, forecasts, survival indices, ocean exploitation rates, distribution of total mortality rates and indices, abundance indices, stock composition of AABM fisheries, abundance indices, fishery indices, exploitation rate indices, and tag codes, respectively.

## 2. METHODS

The Exploitation Rate assessment is performed through cohort analysis, a procedure that reconstructs the exploitation history of a given stock and brood year using CWT release and recovery data (CTC 1988). The procedure produces a variety of statistics, including total exploitation rates, age and fishery specific exploitation rates, maturation rates, pre-age 2 recruitment survival indices, and annual distribution of fishery-related mortalities. Estimates of age and fishery-specific exploitation and maturation rates from the cohort analysis are combined with data on catches, escapements, non-retention, and enhancement to complete the annual calibration of the CTC Model. The calibration procedure estimates pre-age 2 recruitment survivals for the stocks included in the model.

Results from the annual pre-season calibration of the Chinook model are used to calculate: (a) AIs for the three AABM fisheries to determine the allowable 2004 catch of Treaty Chinook; (b) the post-season AIs for the previous year; and (c) pre-season and post-season ISBM indices.

Projected AIs for 2004 are used to determine preseason allowable catches for AABM fisheries. The post-season AIs are used to determine postseason allowable catches and to evaluate compliance for AABM fisheries.

For the ISBM fisheries, the Agreement specifies that Canada and the United States will reduce the exploitation rate from the 1979–1982 base period by 36.5% and 40.0%, respectively, on stocks that have not achieved their CTC agreed escapement goals. The ISBM Index is used to estimate the annual reduction in exploitation rates relative to the base period. Post-season ISBM indices for 2002 are computed using results of the exploitation rate analysis. Forecasts of the 2004 ISBM indices are computed using the CTC model. The Agreement specifies that the ISBM indices estimated through exploitation rate analysis of CWT recoveries will be used for final post-season assessment.

### *2.1. Exploitation Rate Assessment (Through Calendar Year 2002)*

The Exploitation Rate (ER) Assessment relies on CWT release and recovery data from a set of exploitation rate indicator stocks to estimate: (1) brood year exploitation rates, (2) the distribution of catch and total mortality among fisheries, (3) survival rates to ocean age 2 by brood year; (4) trends in fishery harvest rates, and (5) maturation rates and AEQs. Statistics reported in the Exploitation Rate Assessment are based on cohort analysis. Cohort analysis simply reconstructs the production of a CWT group by starting with the escapement, catch, and incidental fishing mortality of the oldest age class and working backwards in time to calculate the total abundance of ocean age 2 Chinook prior to any fishing-related mortality. These reconstructions are based on estimated CWT recoveries by stock, brood year, and age in fisheries and escapements.

The CTC currently monitors 39 exploitation rate indicator stocks with CWTs, but only 36 were used for analyses in this chapter (Table 2.1). An exploitation rate indicator stock is not used in the exploitation rate analysis if the number of CWT recoveries is very limited<sup>1</sup> or there is no quantitative estimate of tags in the spawning escapement (see footnotes in Table 2.2). Those used

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<sup>1</sup> 35 estimated recoveries for a given stock and age combination.



for exploitation rate analysis and the type of analysis performed for each are shown in Table 2.2. The relationship between the exploitation rate indicator stocks, model stocks, and PST Annex stocks are shown in Appendix A. A list of tag codes used for each exploitation rate indicator stock is provided in Appendix L. Extrapolation of results to similar stocks and/or generalizations about fishery impacts will only be appropriate to the extent that the exploitation rate indicator stocks are representative of the array of stocks harvested in the fisheries or the stock groups they represent.

Table 2.1. The 39 exploitation rate indicator stocks monitored by the CTC and their location, run type, and smolt age. Stocks in bold, italic text were not used in the 2004 exploitation rate analysis.

Area	Exploitation Rate Indicator Stocks	Location	Run Type	Smolt Age
S.E. Alaska	Alaska Spring	Southeast Alaska	Spring	Age 1
British Columbia	Kitsumkalum	North/Central BC	Summer	Age 1
	<i>Atnarko</i> <sup>1</sup>	<i>North/Central BC</i>	<i>Spring/Summer</i>	<i>Age 0</i>
	<i>Kitimat River</i> <sup>1</sup>	<i>North/Central BC</i>	<i>Summer</i>	<i>Age 0</i>
	Robertson Creek	WCVI	Fall	Age 0
	Quinsam	Georgia Strait	Fall	Age 0
	Puntledge	Georgia Strait	Summer	Age 0
	Big Qualicum	Georgia Strait	Fall	Age 0
	Cowichan	Georgia Strait	Fall	Age 0
	<i>Chehalis (Harrison Stock)</i> <sup>1</sup>	<i>Lower Fraser River</i>	<i>Fall</i>	<i>Age 0</i>
	Chilliwack (Harrison Stock)	Lower Fraser River	Fall	Age 0
Puget Sound	Nooksack Spring Fingerling	North Puget Sound	Spring	Age 0
	Nooksack Spring Yearling	North Puget Sound	Spring	Age 1
	Skagit Spring Fingerling	Central Puget Sound	Spring	Age 0
	Skagit Spring Yearling	Central Puget Sound	Spring	Age 1
	Samish Fall Fingerling	North Puget Sound	Summer/Fall	Age 0
	Skagit Summer Fingerling	Central Puget Sound	Summer	Age 0
	Stillaguamish Fall Fingerling	Central Puget Sound	Summer/Fall	Age 0
	Nisqually Fall Fingerling	Central Puget Sound	Summer/Fall	Age 0
	University of Washington Accelerated	Central Puget Sound	Summer/Fall	Age 0
	George Adams Fall Fingerling	Hood Canal	Summer/Fall	Age 0
	South Puget Sound Fall Fingerling	South Puget Sound	Summer/Fall	Age 0
	South Puget Sound Fall Yearling	South Puget Sound	Summer/Fall	Age 1
	Squaxin Pens Fall Yearling	South Puget Sound	Summer/Fall	Age 1
	White River Spring Yearling	South Puget Sound	Spring	Age 1
Washington Coast /Juan de Fuca	Elwha Fall Fingerling	Strait of Juan de Fuca	Summer/Fall	Age 0
	Hoko Fall Fingerling	Strait of Juan de Fuca	Summer/Fall	Age 0
	Sooes Fall Fingerling	North Wash. Coast	Fall	Age 0
	Queets Fall Fingerling	North Wash. Coast	Fall	Age 0
Columbia River	Willamette Spring	Lower Columbia R.	Spring	Age 1
	Columbia Summers	Columbia R. (WA)	Summer	Age 1

Table 2.1. (Page 2 of 2)

<b>Area</b>	<b>Exploitation Rate Indicator Stocks</b>	<b>Location</b>	<b>Run Type</b>	<b>Smolt Age</b>
	Cowlitz Tule	Columbia R. (WA)	Fall Tule	Age 0
	Spring Creek Tule	Columbia R. (WA)	Fall Tule	Age 0
	Columbia Lower River Hatchery	Columbia River (OR)	Fall Tule	Age 0
	Columbia Upriver Bright	Upper Columbia R.	Fall Bright	Age 0
	Hanford Wild	Upper Columbia R.	Fall Bright	Age 0
	Lyons Ferry <sup>2</sup>	Snake River	Fall Bright	Age 0
	Lewis River Wild	Lower Columbia R.	Fall Bright	Age 0
Oregon Coast	Salmon River	North Oregon Coast	Fall	Age 0

1 These stocks are CWT-tagged, but there is no quantitative CWT escapement data, useful for distribution only.

2 Subyearlings have been CWT-tagged since brood year 1986, except for brood years 1993 through 1997.

Table 2.2. The 36 CWT exploitation rate indicator stocks used in this year’s exploitation rate analysis and the data derived from them: fishery, ISBM and survival indices, brood exploitation rates (Brood Exp), and stock catch distribution (Dist) with quantitative escapement estimates (Esc) and tagging during the base period years 1979–1982.

Exploitation Rate	Fishery Index	ISBM	Brood <sup>1</sup>	Survival	Dist	Esc	Base Tagging
Indicator Stocks		Index	Exp	Index			
Alaska Spring	yes	—	Total	yes	yes	yes	yes
Kitsumkalum	—	—	Total	yes	yes	yes	—
Robertson Creek	yes	yes	Ocean <sup>1</sup>	yes	yes	yes	yes
Quinsam	yes	yes	Total	yes	yes	yes	yes
Puntledge	yes	—	Total	yes	yes	yes	yes
Big Qualicum	yes	yes	Total	yes	yes	yes	yes
Cowichan	yes	yes	Total	yes	yes	yes	—
Chilliwack (Harrison Fall Stock)	—	yes	Total	yes	yes	yes	—
Nooksack Spring Fingerling	?	?	<sup>4</sup>	—	yes	yes	?
Nooksack Spring Yearling	—	yes	<sup>4</sup>	yes	yes	yes <sup>3</sup>	—
Skagit Spring Fingerling	?	?	Ocean	—	yes	yes	?
Skagit Spring Yearling	—	—	Ocean	yes	yes	yes <sup>3</sup>	—
Samish Fall Fingerling	yes	—	Ocean	yes	yes	yes <sup>3</sup>	yes
Skagit Summer Fingerling	?	?	Ocean	—	yes	yes	?
Stillaguamish Fall Fingerling	—	yes	<sup>4</sup>	—	yes	—	—
Nisqually Fall Fingerling	—	—	<sup>4</sup>	—	yes	—	yes
University of Washington Accelerated	yes	<sup>2</sup>	<sup>2</sup>	—	yes	yes <sup>3</sup>	yes
George Adams Fall Fingerling	yes	<sup>2</sup>	<sup>2</sup>	yes	yes	yes <sup>3</sup>	yes
South Puget Sound Fall Fingerling	yes	yes	Ocean	yes	yes	yes <sup>3</sup>	yes
South Puget Sound Fall Yearling	yes	<sup>2</sup>	<sup>2</sup>	yes	yes	yes <sup>3</sup>	yes
Squaxin Pens Fall Yearling	—	<sup>2</sup>	<sup>2</sup>	yes	yes	yes <sup>3</sup>	—
White River Spring Yearling	—	—	<sup>4</sup>	yes	yes	yes <sup>3</sup>	yes
Elwha Fall Fingerling	—	—	<sup>4</sup>	yes	yes	—	—
Hoko Fall Fingerling	—	—	Ocean	yes	yes	yes	—
Sooes Fall Fingerling	—	—	Ocean	yes	yes	yes	—
Queets Fall Fingerling	—	yes	<sup>4</sup>	yes	yes	—	yes
Willamette Spring	yes	—	Ocean	yes	yes	yes	yes
Columbia Summers	yes	yes	Total	yes	yes	yes	—
Cowlitz Tule	yes	—	Ocean	yes	yes	yes	yes
Spring Creek Tule	yes	—	<sup>2</sup>	yes	yes	yes	—
Columbia Lower River Hatchery	yes	—	<sup>2</sup>	yes	yes	yes	yes
Upriver Bright	yes	yes	Total	yes	yes	yes	yes
Hanford Wild	—	—	Total	yes	yes	yes	—
Lyons Ferry	—	—	Total	yes	yes	yes	—
Lewis River Wild	yes	yes	Total	yes	yes	yes	yes
Salmon River	yes	yes	Ocean	yes	yes	yes	yes

1 For stocks of hatchery origin and subject to terminal fisheries directed at harvesting surplus hatchery production, ocean fisheries do not include terminal net fisheries. Otherwise, total fishery includes terminal net fisheries.

2 Hatchery stock not used to represent naturally spawning stock.

3 Only hatchery rack recoveries are included in escapement.

4 Insufficient escapement data for exploitation rate analysis

### 2.1.1. Assumptions of the Analyses

Assumptions used in the cohort analysis and other procedures used in the Exploitation Rate Assessment are summarized below. Detailed discussions of assumptions and parameter values have been reported previously (CTC 1988). The analysis is necessary to calculate the fishery indices for the AABM fisheries and the non-ceiling index for the ISBM fisheries.

The primary assumptions of the cohort analysis are:

- 1) CWT recovery data are obtained in a consistent manner from year to year or can be adjusted to make them comparable. Many of the analyses rely upon indices that are computed as the ratio of a statistic in a particular year to the value associated with a base period. Use of ratios may reduce or eliminate the effect of data biases that are consistent from year to year.
- 2) For ocean age 2 and older fish, natural mortality varies by age but is constant across years. Natural mortality rates (NM) applied by age are: age 2, 40%; age 3, 30%; age 4, 20%; and age 5 and older 10% (i.e., after fishing mortality and maturation of the age 4 cohort, 10% of the remaining immature fish die due to natural sources before becoming age 5 fish and the commencement of fishing the next year).
- 3) All stocks within a fishery have the same size distribution for each age and the size distribution at age is constant among years.
- 4) The spatial and temporal catch distribution of sublegal-size fish of a given age from a stock is the same as legal-size fish of a given age of that stock.
- 5) Incidental mortality rates per encounter are constant between years. The rates vary by fish size (legal or sub-legal) and fishery and are those published by the CTC (1997) for troll and sport fisheries.
- 6) The procedures for estimating the mortality of CWT fish of legal size during periods of Chinook non-retention (CNR) assume that the stock distribution in any year remains unchanged from the period of legal catch retention in the same year. However, gear and/or area restrictions during CNR fisheries are believed to reduce the number of encounters of legal-size fish. To account for this, the number of legal encounters during the CNR fishery was adjusted by a selectivity factor. A factor of 0.34 was used for the WCVI and Strait of Georgia (GS) troll fisheries. This value was the average selectivity factor calculated from 3 years of observer data in the Alaska troll fishery. A factor of 0.20 was used in the North Central British Columbia (NCBC) troll fishery. This factor corresponds to the proportion of fishing areas that remain open during non-retention periods. A selectivity factor was not required for the SEAK troll fishery since an independent estimate of legal and sublegal encounters has been provided annually.
- 7) Maturation rates for brood years in which all ages have not matured (incomplete broods) are equal to the average of completed brood years. Maturation rates are stock specific.

- 8) Recoveries of age 4 and older Chinook in ocean net fisheries are assumed to be mature fish (ocean terminal catches).

In addition, when using the fishery indices as a measure of the change in fishery harvest rates between years, the temporal and spatial distribution of stocks in and among fisheries and years is assumed to be stable.

For AABM fisheries, the fishery indices are presented for both reported catch (same as landed catch) and total mortality; only total mortality indices are presented for the ISBM fisheries. The difference between reported catch and total mortality is incidental mortality, which includes the mortality of legal-size fish in CNR fisheries and the mortality of sublegal-size fish in both retention and CNR fisheries. Management strategies have changed considerably for fisheries of interest to the PSC since 1985. Regulatory changes have included size limit changes, extended periods of CNR in troll fisheries, and mandatory release of Chinook caught in some net fisheries. Estimates of incidental mortality are crucial for assessment of total fishery impacts, yet they cannot be determined directly from CWT recovery data. There are four categories of incidental mortality that are estimated in the Chinook model and the CWT cohort analysis. Legal and sublegal fishery specific mortality rates are applied to the following types of Chinook encounters:

1. Shakers: Chinook below the legal size limit that are encountered, brought to the boat, and released during a Chinook retention fishery.
2. Sublegal CNR: Chinook below the legal size limit that are encountered, brought to the boat, and released during a Chinook non-retention fishery. The mortality rate per encounter applied to sublegal CNR is the same applied to shakers.
3. Legal CNR: Chinook above the legal size limit that are encountered, brought to the boat, and released during a Chinook non-retention fishery.
4. Drop-off: Chinook above or below the legal size limit that are encountered but are lost from the gear before they reach the boat during either retention or non-retention fisheries. Drop-off mortality is assumed the same for legal and sublegal fish, but can vary by gear type.

There are several methods used to estimate the number of CNR mortalities in the model and the CWT cohort analysis. The 'season length' method uses the relative length of the Chinook retention and non-retention periods. This is usually expressed in days or boat-days. Agencies can also provide direct estimates of CNR encounters for use with the method. The CWT cohort analysis can also use a method based on catchability coefficients where no associated Chinook retention period exists for the fishery. The 'season length' method used in the exploitation rate assessment was described in CTC (1988). The Chinook model also can use a method, known as the 'RT' method, based on the difference between base period exploitation rates and the current year exploitation rates, and current cohort sizes. In both the season length and RT methods, the stock composition of the legal CNR encounters is assumed to be the same as the stock composition of the legal catch. The stock composition of the shakers and sublegal CNR encounters is estimated using the non-vulnerable portions of the cohorts for stocks that

contribute to the landed catch. The procedures used to estimate incidental mortality in the Chinook model have been described by AWG (1991) and CTC (2004).

For some fisheries or years, CWT recoveries are either lacking or cannot be used in certain analyses of this exploitation rate assessment. In some of these situations the model can be used for ER assessment.

### 2.1.2. Brood Year Exploitation Rates

Brood year exploitation rates provide the best measure of the cumulative impact of fisheries upon all age classes of a stock. The rates are computed as the ratio of adult equivalent (AEQ) total fishing mortality to AEQ total fishing mortality plus escapement. The AEQ factor represents the proportion of fish of a given age that would, in the absence of fishing, subsequently leave the ocean to return to the terminal area on the spawning migration. The numerator may be partitioned into components for AEQ reported catch and AEQ incidental mortality, with each component occurring in either ocean fisheries or freshwater fisheries.

The exploitation rate on an indicator stock may differ from the exploitation rate on the wild stock it represents if the indicator stock is of hatchery origin and subject to terminal fisheries directed at harvesting surplus hatchery production. In the case of the brood exploitation rate, this difference was addressed by computing a rate for ocean fisheries and a total for all fisheries. Ocean fisheries were defined to include marine sport and troll fisheries, and CWT recoveries of ocean age 2 and age 3 fish in all non-terminal net fisheries. By partitioning the fisheries in this way, the most appropriate measure of brood exploitation rates on wild stocks could be selected. The method selected for each exploitation rate indicator stock is given in Table 2.2. If broods are incomplete but have data through age 4, then average maturation rates are applied to predict the completed brood value.

The brood year exploitation rate is calculated as:

$$BYEXP_{BY,F} = \frac{\sum_{a=Minage}^{Maxage} \left( \sum_{f \in \{F\}} TotMorts_{BY,a,f} * AEQ_{BY,a,f} \right)}{\sum_{a=Minage}^{Maxage} \left( \sum_{f=1}^{Numfisheries} TotMorts_{BY,a,f} * AEQ_{BY,a,f} + Esc_{BY,a} \right)}$$

The Adult Equivalent (AEQ) rate is calculated as:

$$AEQ_{BY,a-1,f} = MatRte_{a-1,BY} + (1 - MatRte_{a-1,BY}) * Surv_a * AEQ_{BY,a,f}$$

$$AEQ_{BY,Maxage,f} \equiv 1.0$$

See Table 2.3 for a description of notation.

### 2.1.3. Brood Year Survival Rates and Indices

The brood year survival of CWT-tagged smolts after release is calculated for most exploitation rate indicator stocks (Table 2.2). This survival rate is frequently referred to as the marine survival of the tag group but also includes any mortality occurring in freshwater following release. Interpretation of this survival rate is stock specific. Two measures of survival indices or patterns are computed: survival to the age 2 cohort based on CWT recoveries, and the “environmental variate” (EV) determined from the calibration of the Chinook model (described in the following section). The CWT-based estimate is our most direct measure of a brood’s survival but this measure is not available until the brood is complete (i.e., all ages have returned to spawn). The model EV parameter, however, provides a more current measure of the survival rates expected in brood years contributing to present and future fisheries. For CWT data, the survival rate for a stock and brood year is the estimated age 2 cohort (from the cohort analysis) divided by the number of CWT fish released.

Table 2.3. Parameter definitions for all equations except those used for SPFI in SEAK.

Parameter	Description
$a$	age class
$A$	set of all ages that meet selection criteria
$AEQ_{BY,a,f}$	adult equivalent factor in brood year $BY$ , age $a$ , and fishery $f$ (for terminal fisheries, $AEQ = 1.0$ for all ages)
$Age2CohSurv_{BY}$	cohort survival of CWT fish to age 2 (pre-fishery) for brood year $BY$
$AvgMatRte_a$	average maturation rate for age $a$
$BPER$	base period years (1979 through 1982)
$BYEXP_{BY,F}$	brood year exploitation rate in adult equivalent for brood year $BY$ and set of fishery $F$
$BPISBMER_{f,a}$	average base period ISBM exploitation rate for fishery $f$ and age $a$
$BY$	brood year
$Cohort_{BY,a}$	Cohort by brood year $BY$ and age $a$ (where stock is implied from context)
$Cohort_{s,BY,a}$	Cohort by stock $s$ , brood year $BY$ and age $a$ (where stocks are defined explicitly in a summation)
$CY$	calendar year
$CYDist_{CY,F}$	proportion of total stock mortality (or escapement) in a calendar year $CY$ attributable to a fishery or a set of fisheries $F$
$CY_{end}$	end year for average
$CY_{start}$	start year for average
$d_{t,s,a}$	Distribution parameter for timestep $t$ , stock $s$ , and age $a$
$Esc_{Y,a}$	escapement past all fisheries for either brood year $BY$ or calendar year $CY$ and age $a$
$ER_{s,a,f,CY}$	Exploitation rate (based on total mortality) at age $a$ divided by cohort size at age $a$ for stock $s$ in fishery $f$ in year $CY$
$EV_{n,BY}$	the stock productivity scalar for iteration $n$ and brood year $BY$
$f$	a single fishery
$f \in \{F\}$	a fishery $f$ within the set of fisheries of interest



$F$  = ocean, terminal or other sets of fisheries or spawning escapements  
 $FI_{f,CY}$  = fishery exploitation rate index for fishery  $f$  in year  $CY$   
 $FP_{a.s.CY,f}$  = ratio of  $ER_{s,a,f,CY}$  to BPISBMER  
 $ISBMIdx_{CY}$  = ISBM index for calendar year  $CY$   
 $MatRte_{a-1,BY}$  = maturity rate at next younger age by brood year  
 $Maxage$  = maximum age of stock (generally age 6 for stream type stocks, age 5 for ocean type stocks)  
 $Minage$  = minimum age of stock (generally age 3 for stream type stocks, age 2 for ocean type stocks)  
 $Morts_{CY,a,f}$  = landed or total fishing mortality in year  $CY$  and age  $a$  in fishery  $f$   
 $NM_a$  = annual natural mortality prior to fishing on age  $a$  cohort  
 $Numfisheries$  = total number of fisheries  
 $RT_{CY}$  = ratio of the catch quota in the current year to the catch that would be predicted given current abundance, current size limits, and base period exploitation rates  
 $s$  = a particular stock  
 $S$  = set of all stocks that meet selection criteria  
 $SC_{BY}$  = ratio of the estimated terminal run and model predicted terminal run for brood year  $BY$   
 $Surv_a$  = survival rate  $(1-NM_a)$  by age  
 $TotMorts_{BY,a,f}$  = total fishing related mortality for brood year  $BY$  or calendar year  $CY$  or during the base period  $BPER$  and age  $a$  in fishery  $f$   
 $TotCWTRelease_{BY}$  = number of CWT fish released in the indicator group in brood year  $BY$

$$Age2CohSurv_{BY} = \frac{Cohort_{BY,2}}{TotCWTRelease_{BY}}$$

where  $Cohort_{BY,2}$  is calculated recursively from the oldest age down to age-2 using:

$$Cohort_{BY,a} = \frac{\sum_{f=1}^{Numfisheries} TotMorts_{BY,a,f} + Esc_{BY,a} + Cohort_{BY,a+1}}{1 - NM_a}$$

If ocean age-5 is absent, the age-4 cohort size is estimated using the following formula:

$$Cohort_{BY,4} = \frac{\sum_{f \in \text{Preterminal}} TotMorts_{BY,4,f} + \frac{Esc_{BY,4} + \sum_{f \in \text{Terminal}} TotMorts_{BY,4,f}}{AvgMatRte_4}}{1 - NM_4}$$

#### 2.1.4. Stock Distribution Patterns

Brood year exploitation rates can indicate the fisheries that exploit a stock and the rates that occur on a specific brood, but do not indicate the exploitation pattern on a stock during one calendar year (across broods). Stock mortality distributions (reported catch or total) in a calendar year are calculated over all ages in the fisheries (if at least three brood years contribute to recoveries).

$$CYDist_{CY,F} = \frac{\sum_{a=Minage}^{Maxage} \sum_{f \in \{F\}} Morts_{CY,a,f} * AEQ_{BY=CY-a,a,f}}{\sum_{a=Minage}^{Maxage} \left( \sum_{f=1}^{Numfisheries} Morts_{CY,a,f} * AEQ_{BY=CY-a,a,f} + Esc_{CY,a} \right)}$$

It should be noted that catch distributions may not indicate the relative distribution of an indicator stock. For example, closure of a fishery would result in no reported catch but this would not necessarily indicate zero abundance of the stock in that fishing area.

### 2.1.5. Fishery Indices

When the PST was negotiated in 1985, catch ceilings and increases in stock abundance were expected to reduce harvest rates in fisheries. The Fishery Index (FI) provided a means to assess performance against this expectation. Relative to the base period, an index less than 1.0 represents a decrease from base period harvest rates while an index greater than 1.0 represents an increase. While the determination of allowable catch for AABM fisheries in the 1999 Agreement is different from the original PST catch ceilings, these fishery indices continue to provide a useful index of change in harvest rates in these fisheries. Fishery indices are used to measure relative changes in fishery harvest rates because it is not possible to directly estimate the fishery harvest rates.

Fishery indices are computed in AEQ for both reported catch and total mortality (reported catch plus estimated incidental mortality). The total mortality index provides a consistent means of representing changes in reported catch and incidental mortality, including those associated with regulatory measures such as minimum size limits and CNR periods. Equations used to define the index are shown below.

$$ER_{s,a,f,CY} = \frac{TotMorts_{s,a,f,CY} * AEQ_{s,BY=CY-a,a,f}}{Cohort_{s,BY=CY-a,a} * (1 - NM_a)}$$

$$FI_{f,CY} = \frac{\sum_{s \in \{S\}} \sum_{a \in \{A\}} ER_{s,a,f,CY}}{\left( \frac{\sum_{BPER=79}^{82} \sum_{s \in \{S\}} \sum_{a \in \{A\}} ER_{s,a,f,BPER}}{4} \right)}$$

For AABM fisheries, indices are presented for troll gear only although the catch limitations also apply to recreational fisheries and net fisheries in SEAK and the recreational fisheries in NBC and WCVI. As in past years, recoveries from the troll fishery were used because the majority of the catch and the most reliable CWT sampling occur in these fisheries. In addition, there are

data limitations in the base period for the sport fisheries. Because the allocation of the catch among gear types has changed in some fisheries (e.g., the proportion of the catch harvested by the sport fishery has increased in the SEAK and NCBC fisheries), the indices may not represent the harvest impact of all gear types.

#### 2.1.5.1. Modifications of SEAK Troll Fishery Index

The CTC uses fishery indices to reflect changes in fishery impacts relative to the base period (1979–1982). The form of the fishery index limits inclusion of stocks to those with adequate tagging during the base period, but fishing patterns for some fisheries have changed substantially since then. One example of this is the SEAK troll fishery where the catch during the winter season has increased, the spring fishery has been largely curtailed, and the summer season has become markedly shorter. Because stock complexes are dynamic throughout the year, stock specific impacts of the SEAK fishery have likely changed over time as season structure has been altered. To incorporate changes in stock composition and to include stocks without base period data, the CTC examined alternative derivations of fishery indices (CTC 1996).

The CTC determined that a useful fishery index should reflect both changes in harvest rates and stock distribution. Three general, desirable characteristics were identified:

- 1) the index should measure changes in fishery harvest rates if the distribution of stocks is unchanged from the base period;
- 2) the index should have an expected value of 1.0 for random variation around the base period fishery harvest rate, cohort size, and stock distributions; and
- 3) the index should weight changes in stock distribution by abundance.

After exploring several alternatives, the CTC concluded that the best estimate for a fishery index would consist of the product of a fishery harvest rate index and an index of stock abundance weighted by average distribution (i.e., the proportion of a cohort vulnerable to the fishery). This assessment supported the application of the stratified proportional harvest rate index adjusted for untagged stocks (SPFI), as presented by Alaska Department of Fish and Game (ADF&G). Computation of the SPFI is discussed below.

Initially the CWT harvest rate ( $h_{t,cy}$ ) must be set to an arbitrary value between 0 and 1. Then, the distribution parameter ( $d_{t,s,a}$ ) is calculated, and the result is substituted into the second equation below to recursively recalculate  $h_{t,cy}$  and subsequently  $d_{t,s,a}$ . The largest stock-age distribution parameter in a stratum is then set to 1 to create a unique solution. See Table 2.4 for notation description.

$$d_{t,s,a} = \sum_{CY} r_{t,CY,s,a} / \sum_{CY} (h_{t,CY} * n_{CY,s,a})$$

$$h_{t,CY} = \sum_s \sum_a r_{t,CY,s,a} / \sum_s \sum_a (d_{t,s,a} * n_{CY,s,a})$$

The resulting unique solution is inserted into the following equations.

$$H_{t,CY} = \left[ \left( \frac{\sum_s \sum_a c_{t,CY,s,a}}{\sum_s \sum_a r_{t,CY,s,a}} \right) * (C_{t,CY} - A_{t,CY}) \right] / [(C_{t,CY} - A_{t,CY}) / h_{t,CY}]$$

$$H_{.CY} = \sum_t \left[ \left( \frac{\sum_s \sum_a c_{t,CY,s,a}}{\sum_s \sum_a r_{t,CY,s,a}} \right) * (C_{t,CY} - A_{t,CY}) \right] / \sum_t [(C_{t,CY} - A_{t,CY}) / h_{t,CY}]$$

$$S_{t,CY} = H_{t,CY} / \sum_{CY=1979}^{1982} H_{t,CY}$$

$$S_{.CY} = H_{.CY} / \sum_{CY=1979}^{1982} H_{.CY}$$

Table 2.4. Parameter definitions for equations used for SPFI in SEAK.

Parameter	Description
$A_{t,CY}$	Alaska hatchery origin catch by strata $t$ , year $CY$
$c_{t,CY,s,a}$	adult equivalent CWT catch by strata $t$ , year $CY$ , stock $s$ and age $a$
$C_{t,CY}$	catch by strata $t$ , year $CY$
$d_{t,s,a}$	distribution parameter by strata $t$ , stock $s$ and age $a$
$h_{t,CY}$	CWT harvest rate by strata $t$ , year $CY$
$H_{.CY}$	harvest rate by year $CY$
$H_{t,CY}$	harvest rate by strata $t$ , year $CY$
$n_{CY,s,a}$	CWT cohort size by year $CY$ , stock $s$ and age $a$
$r_{t,CY,s,a}$	CWT recoveries by strata $t$ , year $CY$ , stock $s$ and age $a$
$S_{.CY}$	SPFI by year $CY$
$S_{t,CY}$	SPFI by strata $t$ , year $CY$

2.1.6. ISBM Indices

In previous reports, the CTC (1996) proposed a non-ceiling fishery index as a measure of the pass-through provision in the 1985 PST. This index compares an ‘expected’ AEQ mortality (assuming base period exploitation rates and current stock abundance) with the observed AEQ mortality on a stock within a calendar year, over all non-ceiling fisheries of a party (Table 2.5). Index values less than 1.0 indicate that the exploitation rates have decreased relative to the base period. Under the new Agreement, the CTC is required to continue to use the ISBM indices to measure the performance of ISBM fisheries. Paragraph 4, chapter 3 states:

- “4. The Parties agree that in respect of ISBM fisheries:
- (a) their intent is that the fisheries shall be managed over time to contribute to the achievement of MSY or other agreed biologically-based escapement objectives;
  - (b) until such times as the ISBM fisheries are managed to meet those escapement objectives, and unless otherwise recommended by the CTC, the non-ceiling index defined in TCChinook (96)-1 (February 15, 1996) will be used to measure performance of ISBM fisheries;
  - (c) the non-ceiling index for ISBM fisheries will be computed pre-season based on forecasted abundance and fishing plans and evaluated post season for each of the escapement indicator stocks listed in Attachments I to V to this chapter;
  - (d) for the purposes of this paragraph, until agreed escapement objectives for the stock groups listed in Attachments I to V to this Chapter have been achieved, Canada and the United States shall reduce by 36.5 and 40 percent respectively, the total adult equivalent mortality rate, relative to the 1979-82 base period, in their respective ISBM fisheries that affect those stock groups. The reduction identified in this subparagraph shall be referred to as the “general obligation”.”

Table 2.5. Fisheries included in the ISBM Index by nation.

<b>Fisheries Included in ISBM Index</b>	
<b>United States</b>	<b>Canada</b>
Washington/Oregon Ocean Troll	Central BC Troll
Puget Sound Northern Net	Strait of Georgia Troll
Puget Sound Southern Net	North BC Net
Washington Coastal Net	Central BC Net
Freshwater Terminal Net	West Coast Vancouver Island Net
Washington/Oregon Ocean Sport	Strait of Juan de Fuca Net
Puget Sound Northern Sport	Johnstone Net
Puget Sound Southern Sport	Fraser Net
Freshwater Terminal Sport	Freshwater BC Net
	Strait of Georgia Sport
	Freshwater BC Sport

The formula proposed by the CTC in 1991 and referred to in CTC (1996) for a stock/country combination is:

$$ISBMIdx_{CY} = \frac{\sum_{f \in \{F\}} \sum_{a=Minage}^{Maxage} (TotMorts_{CY,f,a} * AEQ_{BY=CY-a,a,f})}{\sum_{f \in \{F\}} \sum_{a=Minage}^{Maxage} (BPISBMER_{f,a} * Cohort_{BY=CY-a,a})}$$

$$BPISBMER_{f,a} = \frac{\sum_{BPER=79}^{82} (TotMorts_{BPER,f,a} * AEQ_{BY=BPER-a,a,f})}{Cohort_{BY=BPER-a,a}}$$

4

Direct application of the CTC model alone or CWT data alone was not possible in the computation of all ISBM indices since fisheries required a finer resolution than the CTC model currently provides or because in some cases terminal fisheries occur that make the estimated CWT-based exploitation rate not representative of the untagged stocks.

In those instances the following methods were used:

- 1) For 2004, two preseason models, the Fisheries Resource Assessment Model (FRAM) and the Columbia River Harvest Model, were used to predict stock-specific impacts in inside fisheries (Puget Sound net and sport, and the Columbia River net and sport fisheries respectively). These estimated impacts were then used to compute the Chinook model fishery policy (FP) scalars for the corresponding CTC model fisheries.
- 2) For 2004, many ISBM fisheries or stock/fishery combinations had no preseason predictions of harvest rates and in some cases, no prediction of abundance. In those cases, a repeat of 2003 harvest rates, or a repeat of 2002 rates if estimates of 2003 were also unavailable, was assumed.
- 3) In 1999, 2000-2003 external estimates of impacts in terminal ISBM fisheries were used to generate FP scalars (for model generated estimates) or to modify estimated CWT recoveries (for CWT-based estimates) for many stocks. This was necessary because terminal impacts on some CWT exploitation rate indicator stocks were not representative of the fishery impacts on the untagged stock of interest.
- 4) For the CWT-based estimates, some indicator stocks did not have 1979 – 1982 base period recoveries. For these stocks, base period exploitation rates for the model stock associated with the wild stock were used, if available.

Tables 2.6 and 2.7 show which model stock or CWT exploitation rate indicator stock was used to represent each wild stock. The tables also summarize the methods (if any) used to compute the FP scalars for the model stocks or to adjust the CWT data for exploitation rate indicator stocks for the computation of the ISBM indices.

Table 2.6. Methods used to compute FP scalars for input into the CTC Chinook Model to produce ISBM Indices. See Section 2.1.6 for descriptions of stock specific methods. Order of the stock groups correspond to Annex 4, Chapter 3, Attachment IV and V of the PST 1999 Revised Annexes.

Stock Group	Escapement Indicator Stock	Model Stock	Stock Specific Method
			2004
Lower Strait of Georgia	Cowichan Nanaimo	GST	2
			2
Fraser Late	Harrison	FRL	1, 2
North Puget Sound Natural Spring	Nooksack Spring Skagit Spring	NKS	1, 2
			1, 2
Upper Strait of Georgia	Klinaklini Kakweikan Wakeman Kingcome Nimpkish	GSQ	Model defaults
Fraser Early (springs and summers)	Upper Fraser Mid Fraser Thompson	FRE	2
West Coast Vancouver Island Falls	Artlish Burman Kauok Tahsis Tashish Marble	RBT	2
Puget Sound Natural Summer/Falls	Skagit Stillaguamish Snohomish Lake Washington Green River	SKG STL SNO PSN PSN	1
			1
			1
			1
			1
North/Central BC	Yakoun Nass Skeena Area 8	NTH	Model defaults
Washington Coastal Fall Naturals	Hoko Grays Harbor Queets Hoh Quillayute	WCN	2
			2
			2
			2
			2
Columbia River Falls	Upriver Brights Deschutes Lewis	URB URB LRW	1
			2
			1
Columbia River Summers	Mid-Columbia Summers	SUM	2
Far North Migrating Oregon Coastal Falls	Nehalem Siletz Siuslaw	SRH	2
			2
			2

Table 2.7. Methods used to adjust CWT data for computation of the ISBM indices. See Section 2.1.6 for descriptions of stock specific methods. Order of the stock groups correspond to Annex 4, Chapter 3, Attachment IV and V of the PST 1999 Revised Annexes.

<b>Stock Group</b>	<b>Escapement Indicator Stock</b>	<b>Exploitation Rate Indicator Stock</b>	<b>Stock Specific Method</b>
Lower Strait of Georgia	Cowichan Nanaimo	Cowichan Big Qualicum River	4 3
Fraser Late	Harrison	Chilliwack (Harrison Fall Stock)	Not needed
North Puget Sound Natural Spring	Nooksack Spring Skagit Spring	Nooksack Spring N/A	4 N/A
Upper Strait of Georgia	Klinaklini Kakweikan Wakeman Kingcome Nimpkish	Quinsam	Not needed
Fraser Early (springs and summers)	Upper Fraser Mid Fraser Thompson	N/A	N/A
West Coast Vancouver Island Falls	Artlish Burman Kauok Tahsis Tashish Marble	Robertson Creek	3
Puget Sound Natural Summer/Falls	Skagit Stillaguamish Snohomish Lake Washington Green River	N/A Stillaguamish Fall Fingerling N/A N/A South Puget Sound Fall Fingerlings	4 Not needed N/A N/A Not needed
North/Central BC	Yakoun Nass Skeena Area 8	N/A	N/A
Washington Coastal Fall Naturals	Hoko Grays Harbor Queets Hoh Quillayute	Queets Queets Queets Queets Queets	3 3 Not needed 3 3
Columbia River Falls	Upriver Brights Deschutes Lewis	Upriver Bright Upriver Bright Lewis River Wild	Not needed 3 Not needed
Columbia River Summers	Mid-Columbia Summers	Columbia Summers	Not needed
Far North Migrating Oregon Coastal Falls	Nehalem Siletz Siuslaw	Salmon River Hatchery Salmon River Hatchery Salmon River Hatchery	3 3 3



## *2.2. Model Calibration*

This section describes the calibration data and procedures. For reference, a list of stocks and fisheries in the model is provided in Appendix C. Estimation of the model base period parameters is discussed in detail in the model documentation (Analytic Work Group 1991). For 2004, the model used was the same as used during the Pacific Salmon Treaty negotiations (CLB 9812) but with the exception that the actual catches, escapements, and other data through 2003 were added. In addition, CTC-accepted escapement goals were used where available and the form of the Ricker production function was adjusted for those stocks with newly accepted goals (e.g. Harrison River fall white Chinook).

### 2.2.1. Calibration Data

The first step in the annual calibration process is to gather new or revised data and update the appropriate model input files. The frequency of updates depends on the frequency of data changes made by the reporting agencies, the magnitude of the change, and the significance of the change to the current model application. For example, the file containing run size data is updated as pre-season forecasts and post-season estimates become available since model predictions are sensitive to pre-season forecasts and post-season estimates of terminal runs. Months in which forecasts are made for each stock, and the month the final return estimate becomes available, are presented in Table 2.8.

The model is recalibrated annually to incorporate observed data from the previous year and available abundance forecasts for next year. In addition, recalibration may also occur when significant changes in one or more of the following model input files are made.

**BSE (base).** This file contains basic information describing the structure of the model, including, but not limited to, the number of stocks, age classes and fisheries, the names of fisheries and the proportion of each age class that was not vulnerable to the gear during the base period, identification of terminal fisheries, stock names and production parameters. This file may be modified annually to incorporate productivity parameters that correspond to new CTC agreed escapement goals.

**CEI (ceiling).** This file contains historical catch data for the 19 fisheries that are modeled as ceiling or catch quota fisheries (as opposed to fisheries modeled solely through control of exploitation rates) through the most recent fishing season.

**CNR (Chinook nonretention).** Data used by the model to estimate mortalities during CNR periods are read from the CNR file. The data in the CNR file depends on which method is used to calculate CNR mortality. It may include direct estimates of encounters during the CNR period or indicators of fishing effort in the CNR period relative to the retention period.

Table 2.8. Months that final return estimate are available for the previous year and pre-season forecasts of abundance are available for the next fishing year from agencies.

<b>Model Stock</b>	<b>Month Final Return Estimate Available</b>	<b>Month(s) Forecast Available</b>
Alaska South SE	January	None
North/Central BC	November	None
WCVI Natural	January	February
WCVI Hatchery	January	February
Upper Strait of Georgia	January	None
Lower Strait of Georgia Hatchery	December	None
Lower Strait of Georgia Natural	December	None
Fraser Early	January	None
Fraser Late	February	February
Nooksack Spring	June	Not Used
Nooksack Fall (Samish)	June	February
Snohomish Wild	June	February
Skagit Wild	June	February
Puget Sound Natural Fingerling	June	February
Stillaguamish Wild	June	February
Puget Sound Hatchery Fingerling	June	February
Puget Sound Hatchery Yearling	June	February
Washington Coastal Wild	June	None
Washington Coastal Hatchery	June	None
Cowlitz Spring Hatchery	June	December
Willamette River Hatchery	June	December
Columbia River Summer	September	March
Fall Cowlitz Hatchery	April	February, April <sup>2</sup>
Spring Creek Hatchery	April	February, April
Lower Bonneville Hatchery	April	February, April
Upriver Brights	April	February, April
Snake River Wild Fall	April	April
Mid-Columbia River Bright	April	February, April
Lewis River Wild	April	February, April
Oregon Coast	February	February

ENH (enhancement file). This file contains productivity parameters and smolt production for 13 hatchery stocks and one natural stock (Lower Georgia Strait Naturals) with supplementation. Smolt production is expressed as the deviation from the average production during the model base period; as a result, values in the ENH file can be negative if releases in a given year are less

<sup>2</sup> A preliminary ocean escapement forecast is released in February. An updated ocean escapement forecast reflecting the ocean fishery option adopted by PFMC is released in April.

than the average reported for the model base period. Additional discussion of the productivity parameters may be found in the model documentation (Analytic Work Group 1991).

FCS (forecast). Estimates of terminal run sizes or escapements and agency supplied pre-season forecasts (Table 2.9) are included in the FCS file. Age-specific information is used for those stocks and years with age data.

FP (fishery policy). This file contains year-fishery-stock-age-specific scalars to be applied to base period fishery exploitation rates. The FPs are used to scale fishery exploitation rates relative to the model base period and can be used for a variety of purposes. For example, in the Ocean areas off Washington and Oregon North of Cape Falcon (WA/OR) troll fishery, the FPs are used to model the differential impacts on Columbia River and Puget Sound stocks as the proportion of the catch occurring in the Strait of Juan de Fuca varies. The source of the FPs is generally the reported catch fishery index computed from CWT data in the annual exploitation rate analysis or the ratios of harvest rates computed from terminal area run reconstructions.

IDL (interdam loss). The IDL file contains stock-specific conversion factors for the Columbia River Summer, Columbia Upriver Bright, Spring Creek Tule, and Snake River Fall stocks provided each year by Columbia River fishery managers. The factors represent the fraction of the stock that can be accounted for after mainstem dam passage in the Columbia River; losses can be attributed to direct mortality at the various dams, mortality in the reservoirs between dams, fall-backs, tailrace spawning, and other factors. The interdam loss factor is equal to one minus the conversion factor.

IM (changes in incidental mortality rates). The IM file contains the incidental mortality rates by fishery for legal and sublegal fish that differ from those used in the base period due to alterations in gear, regulations, or fishery conduct.

MAT (maturity and adult equivalent factors). The MAT file has annual estimates of maturation rates and adult equivalent factors for 11 stocks<sup>3</sup>. These estimates replace the base period rates in the BSE file. The annual estimates are obtained from the annual exploitation rate analysis. The average value is used for years beyond the last year for which estimates are available (due to incomplete broods and the one year lag for completion of the annual exploitation rate analysis).

PNV (proportion nonvulnerable). A PNV file is created for each fishery for which a size limit change has occurred since the model base period. Each file contains age-specific estimates of the proportion of fish not vulnerable to the fishing gear or smaller in length than the minimum size limit. The PNVs were estimated from empirical size distribution data; in some instances, independent surveys of encounter rates were used to adjust the PNV for age 2 fish to account for the proportion of the cohort that was not vulnerable to the fishing gear.

STK (stock). This file contains the stock and age-specific starting (base period) cohort sizes, the base period exploitation rates on the vulnerable cohort for each model fishery, maturation schedules, and adult equivalent factors. This file is updated if new stocks or fisheries are added, new CWT tag codes are used to represent distribution patterns of existing model stocks, or a re-

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<sup>3</sup> The 11 stocks are AKS, BON, CWF, FRL, GSH, LRW, ORC, RBH, RBT, SPR, URB, and WSH.

estimation of base period data occurs. Modification of this file will result in a model different from that used in the negotiations (CLB 9812).

The calibration is controlled through a file designated OP7.

Table 2.9. Methods used to forecast the abundance of stocks in PSC Chinook Model: Externally provided forecast type codes are S = sibling; R = return rate; C = model internally estimated projection.

Model Stock	Forecast Characteristics			Comments
	Forecast Type	Pre-season Age- Specific	Post-season Age- Specific	
Alaska South SE	C	-	Yes	Calibrated to escapement
North/Central BC	C	-	No	Calibrated to terminal run
WCVI Hatchery + Natural (RBH and RBT model stocks)	S	Yes	Yes	Robertson Creek Hatchery forecasts plus expansion for other WCVI stocks based on ratio of terminal run sizes
Upper Strait of Georgia	C	-	Partial	Calibrated to escapement
Lower Strait of Georgia Hatchery	C	-	Yes	Calibrated to escapement to GSH hatchery systems and Squamish River
Lower Strait of Georgia Natural	C	-	Yes	Calibrated to escapement to Cowichan and Nanaimo Rivers
Fraser Early	C	-	No	Calibrated to terminal run
Fraser Late	S	Yes	Yes	Combined forecasts for Harrison River and Chilliwack Hatchery
Nooksack Spring	C	Partial	No	No data since 1987
Nooksack Fall (Samish)	R	No	No	2001-2002 return rate
Snohomish Wild	R	No	No	Recruits per Spawner
Skagit Wild	S	Yes	Yes	Cohort return rate
Puget Sound Natural Fingerling	R	No	No	Calibrated to terminal run
Stillaguamish Wild	R	No	No	Recruits per Spawner
Puget Sound Hatchery Fingerling + Yearling	R	No	No	Age-specific forecasts not available for all components
Washington Coastal Wild	R	No	No	Calibrated to terminal run
Washington Coastal Hatchery	C	No	No	Calibrated to terminal run
Cowlitz Spring Hatchery	S	Yes	Yes	Prediction is to mouth of tributary streams.
Willamette River Hatchery	S	Yes	Yes	Prediction is to mouth of Willamette River
Columbia River Summer	S	No	No	Changed in 2001 to 5-year average
Spring Creek Hatchery	S	Yes	Yes	Run reconstruction used to estimate Columbia River mouth return
Lower Bonneville Hatchery	S	Yes	Yes	Run reconstruction used to estimate Columbia River mouth return
Upriver Brights	S	Yes	Yes	Run reconstruction used to estimate Columbia River mouth return
Snake River Wild Fall	C	-	No	Calibrated to escapement to Lower Granite. External forecast is sometimes available.
Mid-Columbia River Bright	S	Yes	Yes	Run reconstruction used to estimate Columbia River mouth return
Lewis River Wild	S	Yes	Yes	Run reconstruction used to estimate Columbia River mouth return
Oregon Coast	S	Yes	Yes	Weighted average age composition from four index rivers

### 2.2.2. Calibration Procedures

The objective of the calibration is to estimate stock and brood year specific environmental variant (EV) scalars. The calibration uses an iterative algorithm to estimate the EV scalars for each brood year and model stock to account for annual variability in natural mortality in the initial year of ocean residence. EV scalars are applied to production resulting from brood year escapements and the base period spawner-recruit function to produce the age 1 abundance by stock. Fishing impacts and natural mortalities are then applied through model processes. EVs also adjust for biases resulting from errors in the data or assumptions used to estimate the base period parameters for the spawner-recruit function.

EVs are estimated through the following steps for stocks calibrated to age-specific terminal run sizes:

- (1) Predicted terminal runs are computed for each year using the input files discussed above and with values of all stock productivity scalars (EVs set equal to 1).
- (2) The ratio of the estimated terminal run and model predicted terminal run ( $SC_{BY}$ ) is computed for each brood year. For example, if the estimated and model predicted terminal runs for the 1979 brood were 900 and 1,500 age 3 fish in 1982, 4,000 and 4,500 age 4 fish in 1983, and 1,000 and 1,500 age 5 fish in 1983, the ratio would be computed as:

$$SC_{BY} = \frac{\sum_{a=Minage}^{Maxage} (EstimatedTerminalRun)_a}{\sum_{a=Minage}^{Maxage} (ModelPredictedTerminalRun)_a}$$

$$SC_{BY} = \frac{900 + 4000 + 1000}{1500 + 4500 + 1500}$$

In the absence of age-specific estimates of the terminal run, the components are computed by multiplying the total terminal run by the model predictions of age composition.

- (3) The stock productivity scalar for iteration  $n$  and brood year  $BY$  is computed as:

$$EV_{n,BY} = EV_{n-1,BY} * SC_{BY}$$

- (4) Steps 1–3 are repeated until the absolute change in the stock productivity scalars for all stocks is less than a predetermined tolerance level (currently set at 0.05).

Several options for the calibration are provided in the OP7 control file. The options include the brood years for which the stock productivity scalars are estimated in each iteration and the type of the convergence test. For the 2004 calibration, stock productivity scalars were estimated for

each brood year in each iteration. Convergence was defined to occur when the absolute value of the difference in stock productivity scalars between successive iterations did not exceed 0.05.

Stock-specific calibration options are specified in the FCS file and discussed below:

*Minimum Number of Age Classes.* Data for all age classes will not be available when the stock productivity scalars are estimated for recent broods. Since considerable uncertainty may exist in a single data point, application of the calibration algorithm can be restricted to cases in which a specific minimum number of age classes are present.

*Minimum Age.* Considerable uncertainty often exists in the estimates of terminal runs or escapements for younger age classes, particularly age 2. The minimum age class to include in the calibration algorithm is specified in the FCS file.

*Estimation of Age Composition.* Age-specific estimates of the terminal run or escapement may not be available. An option is provided to estimate the age composition using base period maturation and exploitation rates.

The forecasts provided by the management agencies typically represent terminal runs or escapements without adjustments for changes in ocean fisheries. Since the forecasts implicitly include exploitation in pre-terminal fisheries, the expansion of the forecasts to total cohort size should be made using the average exploitation rate for the period of years in the forecast database.

The 2004 calibration was completed in two stages to facilitate computation of the average exploitation rates and incorporation of the agency forecasts. The Stage 1 calibration provided initial estimates of exploitation rate scalars for fishing years 1979 through 2003 using updated catch and escapement data through 2003. Average exploitation rate scalars were then computed and used as input values for 2003 fisheries in the Stage 2 calibration, except for the WCVI and Fraser Late (FRL) stocks whose forecasts already account for changes in the ocean fisheries.

The average exploitation rate scale factors ( $\overline{FP}$ ) for each model fishery were obtained from the Stage 1 calibration using the following formula:

$$\overline{FP}_{a,s,CY,f} = \frac{\sum_{CY=CY_{start}}^{CY_{end}} RT_{CY} * FP_{s,a,CY,f}}{(CY_{end} - CY_{start})}$$

The range of years used to compute the average varied between stocks and was fishery and age-specific. The input files used in the Stage 2 calibration were identical to those used in Stage 1 with two exceptions:

- (1) the average exploitation rate scale factors for each fishery were inserted into the FP file for 2004; and

(2) the Stage 1 EVs were used as starting values for the Stage 2 calibration.

To determine the acceptability of a calibration by the CTC (i.e., whether an annual calibration is deemed final by the CTC), several results are examined:

- (1) accuracy of the reconstructed catches in the fisheries (these values will consistently differ from the actual catches if the calibration is not able to recreate exactly the actual catches in the years 1979 through 1984, the model years prior to implementation of the ceiling algorithm);
- (2) accuracy of model predicted terminal runs or escapements relative to the data used for calibration of each stock;
- (3) comparison of model predicted age structure in terminal runs or escapements with data used for calibration (consistent biases in age structure are addressed by changing maturation rates);
- (4) patterns in the stock productivity scalars compared with marine survival patterns generated by the annual exploitation rate analysis;
- (5) comparison of CWT and model estimates of fishery harvest rate indices;
- (6) comparison of model estimates of mortality distributions for individual stocks to those generated from the annual CWT-based exploitation rate analysis; and
- (7) comparison of model estimated AIs with those AIs estimated by model CLB 9812.

Calibration usually involves an iterative process until a judgment is made by the CTC that an acceptable fit to all the data was achieved. This decision usually involves an inspection and trial-and-error process. The determination of whether or not further calibrations are necessary is based principally on the significance of deviations from observed or estimated values for stocks and fisheries most relevant to the issues to be evaluated and on the time constraints established for completion of the calibration.

### 2.2.3. Changes from Previous Calibration Procedures

#### 2.2.3.1. Data Changes Involved in the Exploitation Rate Analysis

1. All three tag codes from brood 1999 for LYF (Snake River Fall Wild stock) were deleted from the Exploitation Rate Analysis upon discovery that these releases did not have an adipose fin clip mark. These tag codes had been included in the previous analysis.
2. A review of PNV values for the fisheries in the Exploitation Rate Analysis and the Chinook model revealed that many of the values were incorrect due to improper assumptions about size limits in the fisheries. PNV values for numerous fisheries (North Troll, Central Troll, WCVI Troll, North/Central Sport, WCVI Sport, Georgia Strait Sport, WA/OR Troll, Washington Coastal Sport, Puget Sound North Sport, and Puget Sound Other Sport) and years were changed in the PSL input files to reflect the actual size limits in place for the years and fisheries in the Exploitation Rate Analysis.

### 2.2.3.2. Changes to the Input Data for the Chinook Model

1. The Stillaguamish forecast of 3,300 for 2004 was deleted from the forecast (FCS) file due to the inability of the model to produce enough fish to achieve the forecast (i.e., EVs kept increasing and the calibration never converged).
2. Certain stocks and brood years were set to missing in the MATAEQ file even though the broods existed (see below). This was done because of generally poor survival rates and low numbers of recoveries for these broods. Cohort analysis based on the actual recovery data generated highly skewed or unrealistic maturation rates that were highly suspect (e.g. 0.000 for age 2 etc.). The stocks and brood years are as follows:

LRH 1977, 1986, 1991, 1992  
CWF 1994, 1997  
BQR 1992  
LRW 1996, 1997  
RBT 1992, 1997  
WSH 1982, 1994

3. PNV values were revised in the PNV input file for the model calibration to match those used in the Exploitation Rate Analysis. This resulted in an increase in abundances in the WCVI troll fishery due to changes in the base period PNV values.
4. Columbia River Summers calibration data was changed from escapement to terminal run.
5. The times series of FRE (Fraser Early) terminal run estimates were revised in the FSC input file because it was discovered that it was not the same as that used to calculate the annual terminal FP scalars.

### *2.3 General Forecast Methods*

For those stocks with externally provided forecasts of abundance in 2004, management agencies used two general methods to predict terminal returns or escapements:

**Sibling Models.** Empirical relationships between abundance (commonly measured as terminal run size) of age  $a$  fish in calendar year  $CY$  and the comparable abundance of age  $a+1$  fish in year  $CY+1$  are used to predict abundance in 2004 from data collected in previous years (forecast type S in Table 2.9).

**Average Return Rate Models.** Return rates of adults by age from smolts or parents are averaged over past brood years, then these averages are used to discount abundance of smolts or parents for brood years that will be exploited in 2004 (forecast type R in Table 2.9).

A more detailed description of the forecast methods used for specific stocks is found in Appendix D.



### 3. RESULTS

#### 3.1. Exploitation Rate Analysis

##### 3.1.1. Brood Year Exploitation Rates

Brood year exploitation rates for 23 stocks were computed (Appendix F, Figures F.1–F.23). These figures are presented as cumulative bar graphs with landed catch plus incidental mortality (non-landed catch mortality due to fishing) summing to the total mortality for each brood year. Figures labeled as ocean mortality exclude terminal fishery mortality<sup>4</sup>, while total mortality indicates ocean plus terminal fishery mortality. In general, exploitation rates for these stocks have declined from the base period years.

##### 3.1.2. Survival Indices

Estimated total brood year survival from CWT exploitation rate analysis and EV scalars from the model are presented for 30 of the index stocks in Appendix E. In general, recent brood year survivals are lower than in earlier years of the time series for completed brood years. For some stocks, survivals for recent incomplete broods have been increasing. Correlation coefficients ( $r$  values) were computed as a measure of association between the two indices of survival (Table 3.1). A correlation approaching 1.0 indicates a strong linear relationship and provides evidence that the EV is predictive of the final cohort survival. Conversely, a correlation approaching 0 indicates little relationship between the EV scalar and final cohort survival. The degree of correlation varied substantially among stocks. Of the 30 stocks, 18 had  $r$  values that were significantly different from zero ( $P < 0.05$ ). Correlation coefficients for these 19 stocks ranged from 0.49 to 0.82.

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<sup>4</sup> Because the terminal fishery is directed at harvesting only surplus hatchery production.

Table 3.1. Correlation coefficient ( $r$ ) between total brood year survival estimated from CWTs and EV scalars for 30 stocks.  $N$  is the number of brood years with survival and EV data;  $P$  is the probability that the true  $r$  is equal to 0. A low  $P$  value indicates a significant correlation.

Exploitation Rate Indicator Stock	N	r	P
Alaska Spring	19	0.40	0.093
Kitsumkalum	17	0.43	0.083
Robertson Creek	24	0.72	<0.001
Quinsam	22	0.74	<0.001
Puntledge	24	0.56	0.004
Big Qualicum	24	0.60	0.002
Cowichan	12	0.53	0.078
Chilliwack	17	0.71	0.001
Nooksack Spring Yearling	10	0.78	0.008
Skagit Spring Yearling	12	0.07	0.838
Samish Fall Fingerling	16	0.72	0.002
George Adams Fall Fingerlings	19	0.59	0.008
South Puget Sound Fall Fingerling	22	0.49	0.021
South Puget Sound Fall Yearling	15	-0.04	0.898
Squaxin Pens Fall Yearling	8	0.08	0.845
White River Spring Yearling	19	-0.18	0.460
Elwha Fall Fingerling	9	0.48	0.188
Hoko Fall Fingerling	11	-0.06	0.863
Sooes Fall Fingerling	11	-0.11	0.744
Queets Fall Fingerling	18	0.44	0.065
Willamette Spring	22	0.67	0.001
Columbia River Summers	18	0.57	0.013
Cowlitz Tule	21	0.82	<0.001
Spring Creek Tule	24	0.71	<0.001
Columbia Lower River Hatchery	22	0.52	0.012
Columbia Upriver Brights	23	0.54	0.007
Hanford Wild	12	0.73	0.007
Lyons Ferry	9	-0.40	0.286
Lewis River Wild	18	0.52	0.026
Salmon River	19	0.66	0.002

### 3.1.3. Stock Distribution

Tables in Appendix G provide the distribution of a stock's catch mortality among fisheries, as well as escapement, for both reported catch and total mortality in a calendar year. The distribution is shown as a percentage of the annual production; values within a year sum to 100%.

### 3.2 Model Output

#### 3.2.1. AABM Abundance Indices and Associated Catches

Beginning with the 1999 fishing season, the Agreement specified that the AABM fisheries be managed through the use of the pre-season AIs, where specific allowable harvest corresponds to a given AI for each fishery. All of the pre-season AIs (Table 3.2) that were used to establish harvest management targets are summarized in Table 3.2. The Agreement also stipulated the AIs could be adjusted in season using CTC approved methodologies. This has been invoked only once in 1999 when an inseason AI of 1.14 was used instead of the preseason 1.10 for SEAK. The 2004 AI for the SEAK troll fishery is 1.88, for the NBC troll it is 1.67, and for the WCVI troll is 0.90.

Table 3.2. Abundance Indices for 1999 to 2004 for the SEAK, NBC, and WCVI troll fisheries.

Year	SEAK		NBC		WCVI	
	pre-season	post-season	pre-season	post-season	pre-season	post-season
1999	1.15 <sup>1</sup>	1.12 <sup>3</sup>	1.12 <sup>1</sup>	0.97 <sup>3</sup>	0.60 <sup>1</sup>	0.50 <sup>3</sup>
2000	1.14 <sup>2</sup>	1.10 <sup>3</sup>	1.00 <sup>2</sup>	0.95 <sup>3</sup>	0.54 <sup>2</sup>	0.47 <sup>3</sup>
2001	1.14 <sup>3</sup>	1.29 <sup>4</sup>	1.02 <sup>3</sup>	1.22 <sup>4</sup>	0.66 <sup>3</sup>	0.68 <sup>4</sup>
2002	1.74 <sup>4</sup>	1.82 <sup>5</sup>	1.45 <sup>4</sup>	1.63 <sup>5</sup>	0.95 <sup>4</sup>	0.92 <sup>5</sup>
2003	1.79 <sup>5</sup>	2.17 <sup>6</sup>	1.48 <sup>5</sup>	1.90 <sup>6</sup>	0.85 <sup>5</sup>	1.10 <sup>6</sup>
2004	1.88 <sup>6</sup>		1.67 <sup>6</sup>		0.90 <sup>6</sup>	

<sup>1</sup> From CTC Chinook Model Calibration #9902.

<sup>2</sup> From CTC Chinook Model Calibration #0021.

<sup>3</sup> From CTC Chinook Model Calibration #0107.

<sup>4</sup> From CTC Chinook Model Calibration #0206.

<sup>5</sup> From CTC Chinook Model Calibration #0308.

<sup>6</sup> From CTC Chinook Model Calibration #0404

The Agreement specifies the allowable catch for various values of AI for each fishery. The specified treaty catch by fishery and year and the actual (observed) catches are shown in Table 3.3.

Table 3.3 Observed catches and post-season allowable catches for 1999 to 2003, and pre-season allowable catches for 1999 to 2004, for AABM fisheries.

Year	PST Treaty Allowable and Observed Catches								
	SEAK (T, N, S)			NBC (T, S)			WCVI (T, S)		
	Pre-season Allowable Catch	Post-season Allowable Catch	Observed Catch	Pre-season Allowable Catch	Post-season Allowable Catch	Observed Catch	Pre-season Allowable Catch	Post-season Allowable Catch	Observed Catch
1999	192,800	184,200	198,842	145,600	126,100	92,899	128,300	107,000	36,413
2000	189,900	178,500	186,493	130,000	123,500	31,880	115,500	86,200	101,442
2001	189,900	250,300	186,919	132,600	158,900	43,500	141,200	145,500	117,670
2002	356,500	371,900	357,133	192,700	237,800	137,632	203,200	196,800	166,188
2003	366,000	439,600	380,152	197,100	277,200	191,657	181,800	268,900	175,827
2004	383,500	-	-	243,600	-	-	192,500	-	-

3.2.1.1. Stock composition of AABM fisheries, 1979-2003

There are 30 stocks used in the model. However, the majority of catches in AABM fisheries are often composed of only a few major stocks (Figures 3.1 through 3.3). The relative abundance for each major stock is shown in the following graphs (see Appendix I for tubular results). A time series of abundance estimates for each of the 30 model stocks in each AABM fishery based on the 2004 CTC calibration (CLB 0404) are shown in Appendix J and H, respectively. In general, AIs had a peak during the late 1980s and another in 2003.

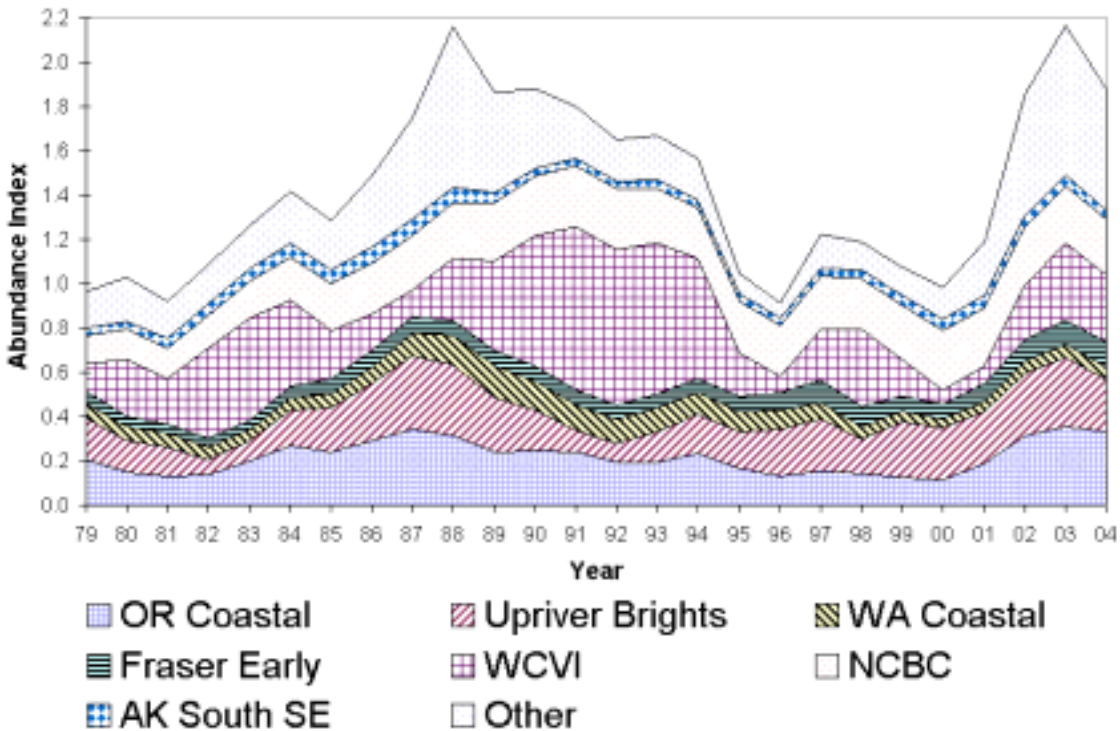


Figure 3.1. Total abundance indices for the Southeast Alaska troll fishery with annual stock composition indicated by abundance indices for major model stocks from CLB 0404.

The major model stocks contributing to the SEAK AIs, on average, are: WCVI Natural and Hatchery, Upriver Brights, North/Central BC, and Oregon Coastal (Figure 3.1). The 2004 forecast for Upriver Bright is lower compared to the 2003 post-season assessment. The “other” category is primarily Upper Georgia Strait, Columbia River Summers and Mid Columbia River Brights.

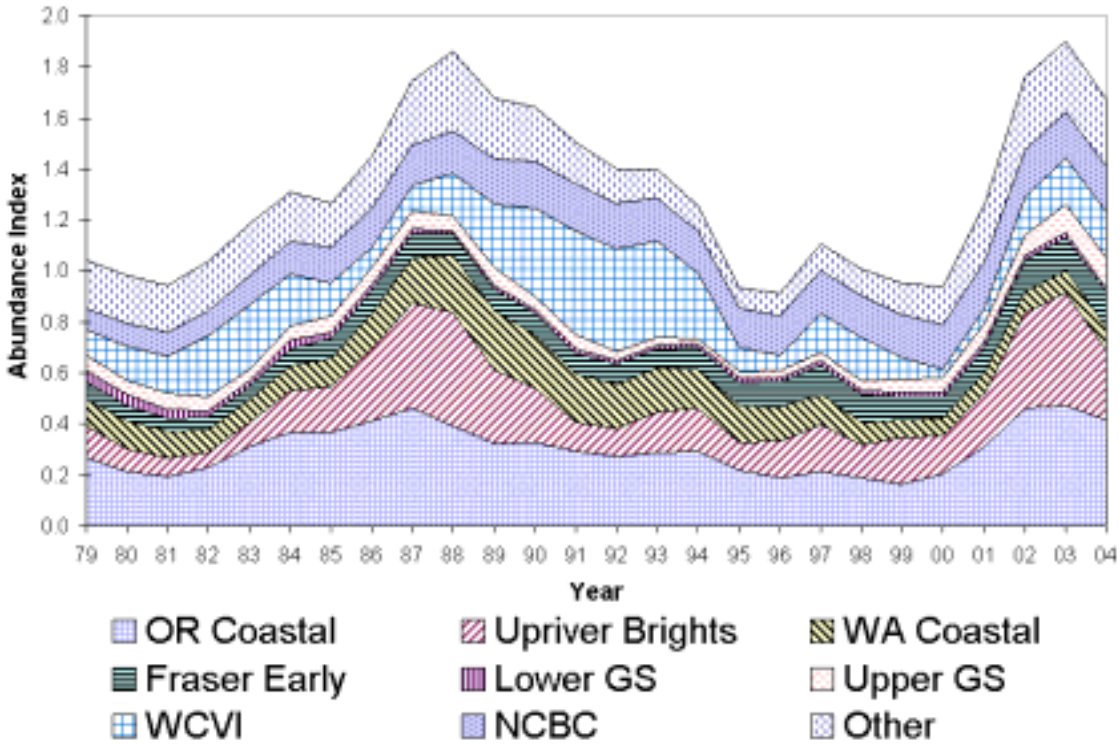


Figure 3.2. Total abundance indices for the Northern BC troll fishery with annual stock composition indicated by abundance indices for major model stocks from CLB 0404.

The major model stock groups in the NBC AABM fishery are WCVI Natural and Hatchery, Upriver Brights, Oregon Coastal, North/Central BC, and Washington Coastal Wild and Hatchery (Figure 3.2). The 2004 preseason AI is noticeably lower for Upriver Brights compared to the 2003 post-season AI.

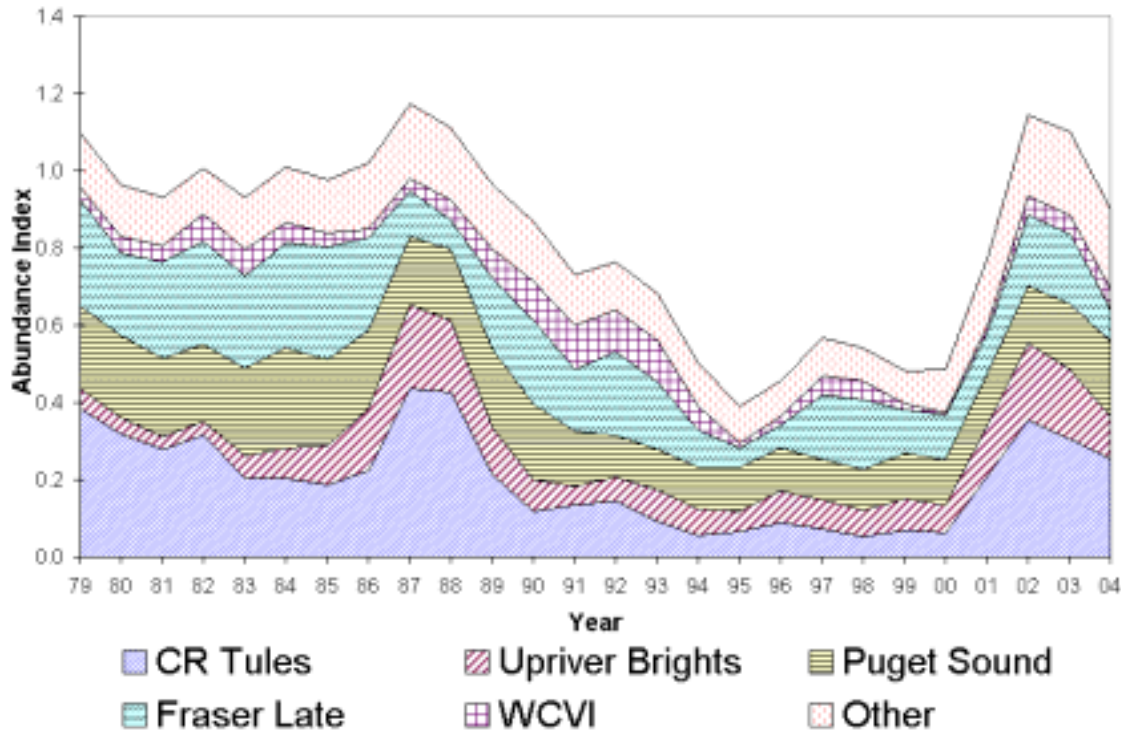


Figure 3.3. Total abundance indices for the WCVI troll fishery with annual stock composition indicated by abundance indices for major model stocks from CLB 0404.

The major model stock groups in the WCVI fishery are: Fraser Late, Puget Sound, Upriver Brights, and Columbia River Tules (Figure 3.3). The 2004 forecast is for lower abundances of Fraser Late, Upriver Brights, and “other”. The “Other” category is similar in both years and is comprised primarily of Columbia River lower river hatcheries, Columbia River summers, Mid Columbia River Brights and Oregon Coastal fish.

### 3.2.2. Overages and Underages

The Agreement specified that the first post-season calibration will be used to generate the final estimate of allowable catch for the purpose of tracking overage and underage provisions. The CTC did not produce a final calibration in 2000, thus the 2001 calibration (CLB 0107) was used to generate final AIs for both 1999 and 2000. All of the first post-season AIs used to evaluate overage and underage are also summarized in Table 3.2.

The overage/underage provisions applies to both AABM and ISBM fisheries. However, the CTC identified, in a February 12, 2002 letter to the PSC, major technical obstacles and policy concerns for adjusting harvest levels in response to overage and underages. The major problem identified for AABM fisheries is the confounding of forecast and management error in assessing overages and underages. Forecast error is associated with the accuracy of the pre-season Abundance Indices (Table 3.2) which in turn is used to determine the preseason estimate of allowable catch. Management error is related to the harvest manager’s ability to attain the pre-

season estimates of allowable catch. Harvest managers have no prior knowledge of the post-season estimate of allowable catch which can be quite different from the pre-season estimate (Table 3.3).

Evaluation of overage/underage in ISBM fisheries is confronted with even greater problems than AABM fisheries. Final evaluation using CWT-based estimates of exploitation cannot be carried out until several years after fisheries have occurred, and the tag recoveries for all ages of a cohort are complete. Pre-season estimates of ISBM indices are projected using the model. Model-based and CWT-based estimates of the indices, while generally exhibiting similar trends, are not consistent enough to evaluate small differences in exploitation rates. Even when CWT recoveries are complete for a cohort, because of low tagging rates or low base period exploitation rates, the calculated ISBM indices may lack the statistical power to determine whether or not an overage or underage has actually occurred.

Until an approach for full implementation of overage/underage provisions has been developed and accepted by the PSC, the Commissioners have instructed the CTC to track overages and underages relative to agreed-upon harvest objectives.

### 3.2.3. AABM Fisheries

Table 3.4 shows the difference between the post-season allowable catch and the observed catch in AABM fisheries for 1999–2003, and the cumulative differential for those years. All three AABM fisheries have cumulative underages. In SEAK, observed catches have been below final allowable catches for two of the five years; the cumulative differential is –8.1%. In NBC, observed catches have been below the final allowable catches in all five years; the cumulative differential is –46.1%. In WCVI, observed catches have been below allowable catches for three of the four years; the cumulative differential is –25.7%.



Table 3.4 Deviations in numbers of Chinook salmon and percentages from catch targets derived from the first post-season AI (Table 3.2) for Pacific Salmon Treaty AABM fisheries in 1999 to 2003.

Year	SEAK		NBC		WCVI	
	Number of Fish	Percent Difference	Number of Fish	Percent Difference	Number of Fish	Percent Difference
1999	+14,642	+7.9%	-33,201	-26.3%	-70,587	-66.0%
2000	+7,993	+4.5%	-91,620	-74.2%	+15,242	+17.7%
2001	-63,381	-25.3%	-115,400	-72.6%	-27,830	-19.1%
2002	-14,767	-4.0%	-100,168	-42.1%	-30,612	-15.6%
2003	-59,448	-13.5%	-85,543	-30.9%	-93,073	-34.6%
Cum.	-114,961	-8.1%	-425,932	-46.1%	-206,860	-25.7%

### 3.2.4. ISBM Indices by Stock

For ISBM fisheries, the Agreement specified that Canada and the United States would reduce base period exploitation rates on specified stocks by 36.5% and 40%, equivalent to ISBM indices of 63.5% and 60% percent, respectively. This requirement is referred to as the ‘general obligation’ and does not apply to stocks that achieve their CTC agreed escapement goal. Estimated ISBM fishery indices are shown in Table 3.5 for Canadian fisheries and Table 3.6 for U.S. fisheries. Both tables present CWT-based indices for 2002, and Chinook model-based predicted indices for 2004. The agreement specifies that the indices for post-season assessment be assessed using the CWT-based estimates, 2002 is the most recent analysis available. CWT-based indices for 1999-2002 and model-based indices for 1999-2004 are presented in Appendix B.

### 3.2.5. CWT-based Indices in 2002

All Canadian ISBM indices from the CWT-based estimates for 2002 show that exploitation rates were reduced more than required under the agreement for all stocks or stock groups (Table 3.5). Four of the 16 U.S. ISBM indices for the CWT-based estimates for 2002 were reduced more than required under the agreement (Table 3.6). Of the 12 U.S. CWT-based ISBM indices that exceeded 0.60, six (Quillayute Fall, Columbia River Summers, Columbia Upriver Brights, Nehalem, Siletz, Siuslaw) have agreed escapement goals and all six exceeded their goal in 2002 (Table 3.10).

### 3.2.6. Predicted ISBM Indices for 2004

Model projected indices (Table 3.5 and Table 3.6) show that the ISBM fisheries are expected to increase harvest in response to overall abundance with projected indices being over 0.635 for most Canadian stocks other than Cowichan in Lower Georgia Straits (Table 3.5). Similarly in the southern US fisheries (Table 3.6) some stocks are projected to have ISBM index values over 0.6.

Table 3.5. Canadian 2002 ISBM Indices based on CWT and the 2004 indices predicted from the PSC Chinook Model. Order of the stock groups correspond to Annex 4, Chapter 3, Attachment IV of the PST 1999 Revised Annexes.

Stock Group	Escapement Indicator Stock	Canadian ISBM Indices	
		CWT Indices for 2002	Model Indices for 2004
Lower Strait of Georgia	Cowichan	0.247	0.593
	Nanaimo	0.247	0.695
Fraser Late	Harrison River <sup>2</sup>	0.105	0.719
North Puget Sound Natural Springs	Nooksack	0.023	0.273
	Skagit	NA	0.273
Upper Strait of Georgia	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	0.063	0.971
Fraser Early (spring and summers)	Upper Fraser, Mid Fraser, Thompson	NA	0.718
West Coast Vancouver Island Falls	WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble)	0.248	0.927
Puget Sound Natural Summer / Falls	Skagit	NA	0.438
	Stillaguamish	NA	0.567
	Snohomish	NA	0.445
	Lake Washington	NA	0.446
	Green River	0.323	0.466
North / Central B. C.	Yakoun, Nass, Skeena, Area 8	NA	0.804
Washington Coastal Fall Naturals <sup>3</sup>	Hoko, Grays Harbor, Queets, Hoh, Quillayute	NA	0.435
Columbia River Falls <sup>3</sup>	Upriver Brights	NA	0.663
	Deschutes	NA	0.663
	Lewis <sup>2</sup>	NA	0.480
Columbia R Summers <sup>3</sup>	Mid-Columbia Summers <sup>2</sup>	NA	0.333
Far North Migrating OR Coastal Falls <sup>3</sup>	Nehalem <sup>2</sup> , Siletz <sup>2</sup> , Siuslaw <sup>2</sup>	NA	0.672

<sup>1</sup> NA means not available because of insufficient data (lack of stock specific tag codes, base period CWT recoveries, etc).

<sup>2</sup> Stock or stock group with agreed escapement goal.

<sup>3</sup> Stock group listed in Annex 4, Chapter 3, Attachment V.

Table 3.6. U.S. 2002 ISBM Indices based on CWT and the 2004 indices predicted from the PSC Chinook Model. Order of the stock groups correspond to Annex 4, Chapter 3, Attachment V of the PST 1999 Revised Annexes.

Stock Group	Escapement Indicator Stock	U.S. ISBM Indices	
		CWT Indices for 2002	Model Indices for 2004
Washington Coastal Fall Naturals	Hoko	NA	0.966
	Grays Harbor	0.54	0.573
	Queets	0.84	0.932
	Hoh	0.95	1.214
	Quillayute	1.42	1.139
Columbia River Falls	Upriver Brights	1.32	0.906
	Deschutes	0.59	0.475
	Lewis <sup>4</sup>	0.56	1.008
Puget Sound Natural Summer / Falls	Skagit	NA	0.157
	Stillaguamish	NA	0.224
	Snohomish	NA	0.110
	Lake Washington	NA	0.411
	Green R	1.07	0.260
Fraser Late	Harrison River <sup>4</sup>	0.41	1.058
Columbia R Summers	Mid-Columbia Summers <sup>4</sup>	7.25	0.715
Far North Migrating OR Coastal Falls	Nehalem <sup>4</sup>	2.17	2.230
	Siletz <sup>4</sup>	1.31	1.288
	Siuslaw <sup>4</sup>	2.56	2.816
North Puget Sound Natural Springs	Nooksack	NA	0.974
	Skagit	1.12	0.663
Lower Strait of Georgia <sup>3</sup>	Cowichan,	5.78	0.915
	Nanaimo	5.78	0.915
Upper Strait of Georgia <sup>3</sup>	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	NA	NC
Fraser Early (spring and summers) <sup>3</sup>	Upper Fraser, Mid Fraser, Thompson	NA	0.839
West Coast Vancouver Island Falls <sup>3</sup>	WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble)	NA	0.540
North / Central B. C. <sup>3</sup>	Yakoun, Nass, Skeena, Area 8	NA	NC

<sup>1</sup> NA means not available because of insufficient data (lack of stock specific tag codes, base period CWT recoveries, etc).

<sup>2</sup> NC means that the current model assumes the stock is not caught in U.S. ISBM fisheries.

<sup>3</sup> Stock group listed in Annex 4, Chapter 3, Attachment IV.

<sup>4</sup> Stock with agreed escapement goal.

### 3.3. Model Calibration Evaluation

The model catches and stock escapements or terminal runs estimated by CLB 0404 were evaluated by calculating the average deviations of the model estimates from the observed values (Table 3.7 for the fisheries that are modeled as operating under catch ceilings or quotas for past years, and Table 3.8 for terminal run size/escapements by model stocks).

The model does not estimate catches with equal accuracy in every fishery. This may reflect inadequate representation of the stocks by base period tag data, incomplete representation of the fishery by model stocks, or errors in the estimation of initial stock abundances used to initiate the model. This has been a consistent problem for certain fisheries that cannot be corrected without a base period recalibration. The effect of these deviations depends on the direction of the error (over- or under-estimation), magnitude of the catches, and the stocks contributing to each fishery.

The model catch as a proportion of the true catch is determined by comparing the 1979–1984 model estimated catches by fishery with the actual catches for those years. It is a measure of what proportion of the total catch in the fishery can be explained by stocks in the model. This proportion is only calculated by the model for fisheries that occur in the ceiling file.

Table 3.7. Average proportion of observed catch explained by CLB 0404 modeled catch for PST fisheries.

<b>Model Fishery</b>	<b>Model Catch as Proportion of Observed Catch</b>
Southeast Alaska Troll	0.812
Northern BC Troll	0.882
Central BC Troll	1.019
WCVI Troll	0.860
Washington/Oregon North of Falcon Ocean Troll	1.147
Strait of Georgia Troll	0.881
Southeast Alaska Net	0.595
Northern BC Net	0.657
Central BC Net	1.086
Puget Sound North Net	0.782
Southeast Alaska Sport	0.774
QCI Sport	2.893
WCVI Sport	0.465
Washington/Oregon North of Falcon Ocean Sport	0.891
Puget Sound North Sport	0.902
Puget Sound South Sport	0.594
Strait of Georgia Sport	1.359

The ability of the model to estimate escapements and terminal run sizes varies between stocks. The last four columns of Table 3.8 present summary statistics on the fit achieved by CLB 0404. The column entitled “Average” represents the 1979–2003 average ratio between the model-generated estimate and reported escapement or terminal run size. On average, the model accurately estimates the observed terminal run or escapements used in the calibration process.

Table 3.8. Ratio of model calibration estimates of terminal run sizes or escapements to observed estimated from 1979 to 2003. For most stocks (or stock groups) included in the model calibration, n = 25 years, except for Nooksack Springs, (n = 8, years 1980–1987) and the Mid-Columbia River Bright Hatchery group (n = 23, years 1981–2003).

<b>Model Stock</b>	<b>Ratio of:</b>	<b>Average</b>	<b>SD</b>	<b>Min.</b>	<b>Max.</b>
Alaska South SE	Escapement	1.035	0.216	0.744	1.522
North/Central BC	Term. Run	1.016	0.111	0.796	1.297
WCVI Hatchery & Natural	Term. Run	1.020	0.196	0.688	1.641
Upper Strait of Georgia	Escapement	1.076	0.300	0.746	2.143
Lower Strait of Georgia Hatchery	Term. Run	1.009	0.164	0.680	1.400
Lower Strait of Georgia Natural	Escapement	1.035	0.200	0.740	1.467
Fraser Early	Term. Run	1.014	0.089	0.857	1.168
Fraser Late	Escapement	1.010	0.139	0.731	1.214
Nooksack Spring	Escapement	1.059	0.216	0.860	1.537
Nooksack Fall (Samish)	Term. Run	1.026	0.144	0.775	1.276
Snohomish Wild	Term. Run	1.041	0.171	0.816	1.616
Skagit Wild	Term. Run	1.056	0.267	0.722	1.820
Puget Sound Natural Fingerling	Term. Run	1.019	0.126	0.819	1.376
Stillaguamish Wild	Escapement	1.052	0.212	0.739	1.687
Puget Sound Hatchery Fingerling & Yearling	Term. Run	1.022	0.113	0.819	1.218
Washington Coastal Wild	Term. Run	1.031	0.152	0.811	1.405
Washington Coastal Hatchery	Term. Run	1.044	0.175	0.817	1.450
Cowlitz Spring Hatchery	Term. Run	1.040	0.195	0.633	1.511
Willamette River Hatchery	Term. Run	0.998	0.197	0.659	1.410
Columbia River Summer	Escapement	1.019	0.119	0.858	1.382
Lower Bonneville Hatchery & Cowlitz Fall Hatchery	Term. Run	0.998	0.197	0.659	1.410
Spring Creek Hatchery	Term. Run	1.008	0.102	0.849	1.286
Upriver Brights	Term. Run	1.015	0.123	0.798	1.254
Lyons Ferry	Escapement	1.136	0.526	0.519	2.974
Mid-Columbia River Bright	Term. Run	1.032	0.163	0.765	1.470
Lewis River Wild	Term. Run	1.016	0.150	0.828	1.377
Oregon Coast	Escapement	1.045	0.210	0.721	1.518

The annual ratios of model predictions to observed estimates varies among model stocks. The variability tends to be greatest in less abundant model stocks or in those with highly variable marine survivals. Since the variability is not consistently related to specific stocks, the most likely impacts are annual variations in age-specific survival rates (i.e., random error in estimates of abundance).

The columns entitled “Min” and “Max” are the extreme ranges of annual fits from 1979 through 2003 and represent the smallest and largest ratios between the agency supplied value and the model estimate, respectively. The significance of these deviations depends upon the questions being evaluated. For example, a large deviation for a stock during the first few years of the calibration or for a stock that has a minor impact on a fishery of concern may not necessitate further attempts at model calibration.

Fishery mortality indices generated by CLB 0404 can be compared to the CWT-based exploitation rate analysis. Model and CWT-based fishery mortality indices use the same equation, but the former are derived from model estimates of catch for all model stocks instead of CWT recovery data from specific exploitation rate indicator stocks.

The CWT fishery mortality indices are considered to be the most accurate, and a comparison of these estimates with those derived from the model provides one measure of how well the model represents fisheries. Two types of fishery indices are presented; reported catch and total mortality. Correlation coefficients between the CWT and model estimates for each type of index for the three AABM troll fisheries (Table 3.9) were all significant ( $P < 0.01$ ;  $n = 24$  years). The model results are closely associated with the CWT-based indices and changes in fishery exploitation rates as indicated in Figures 3.4 through 3.9.

Table 3.9. Correlation coefficients between CWT and model fishery indices for landed catch and total mortality in the AABM troll fisheries from 1979 to 2002.

	<b>AABM Troll Fishery</b>		
	<b>SEAK</b>	<b>NBC</b>	<b>WCVI</b>
<b>Landed Catch Mortality</b>	0.892	0.884	0.919
<b>Total Mortality</b>	0.812	0.882	0.921

The model fishery mortality index for SEAK closely follows the trend of the CWT derived estimate from 1979 through 1989 for both landed and total mortality (Figures 3.4 and 3.5). However, after 1989, the model estimate of both landed catch and total mortality indices is less than the CWT-derived estimates for most years. Since 1990, the model estimates also show less variability compared to the CWT-derived indices.

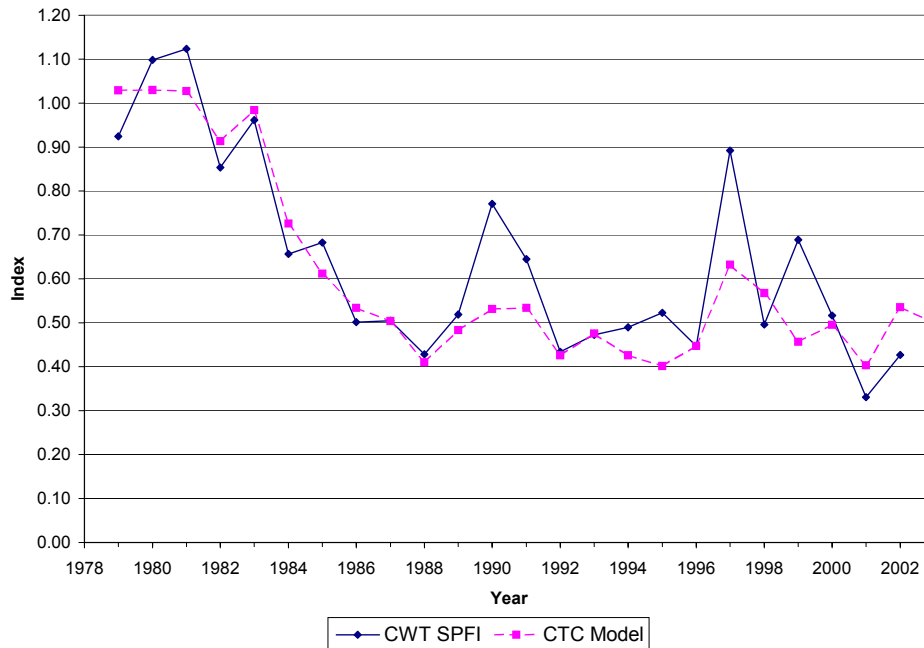


Figure 3.4. Estimated CWT (through 2002) and model landed catch fishery indices (through 2003) for SEAK troll fishery.

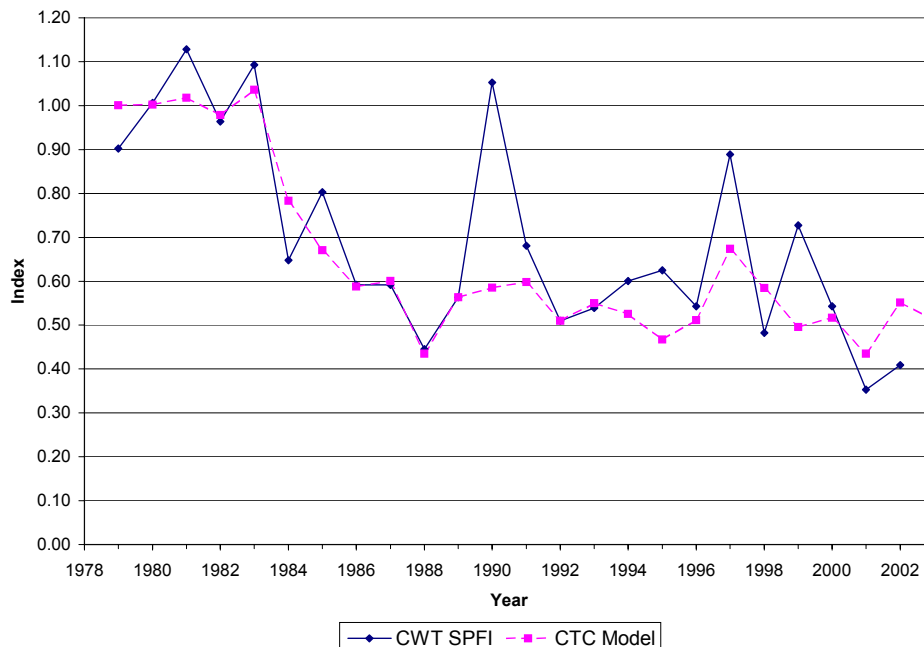


Figure 3.5. Estimated CWT (through 2002) and model total mortality fishery indices (through 2003) for SEAK troll fishery.

The model-derived fishery mortality indices for NBC generally follow the same trend as CWT-derived indices (Figures 3.6 and 3.7). However, since 1991, the model-based estimates have exceeded the CWT-derived estimates in all but two years for both landed catch and total mortality indices.

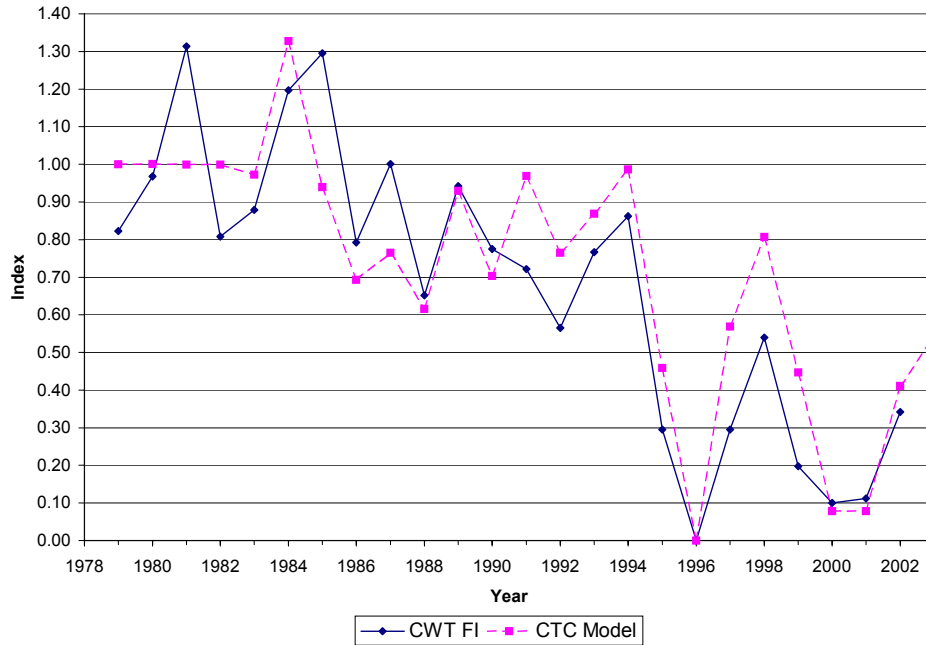


Figure 3.6. Estimated CWT (through 2002) and model landed catch fishery indices (through 2003) for the NBC troll fishery.

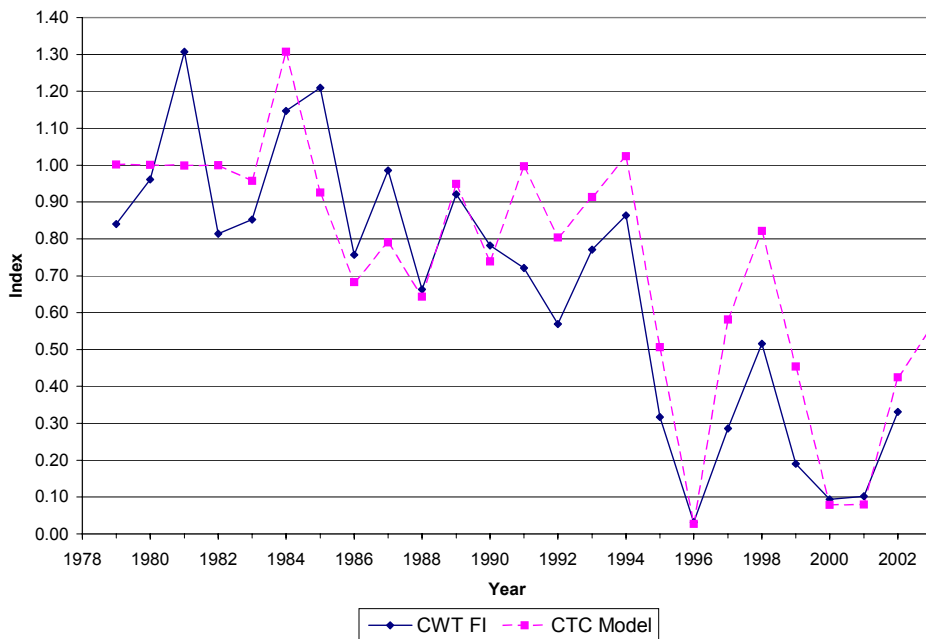


Figure 3.7. Estimated CWT (through 2002) and model total mortality fishery indices (through 2003) for the NBC troll fishery.



Since the base period, the model derived reported catch fishery index estimates and trends for the WCVI troll fishery have been similar to those derived from CWTs. However, from 1987 through 1995, the model estimates are consistently greater than the CWT-based estimates and the opposite is true from 1997 to present (Figures 3.8 and 3.9).

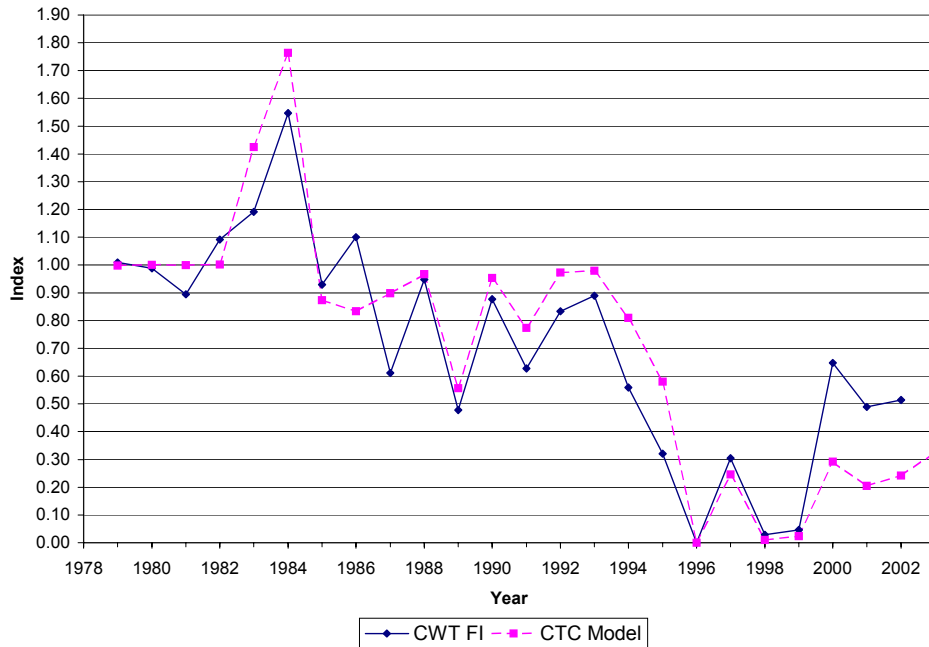


Figure 3.8. Estimated CWT (through 2002) and model landed catch fishery indices (through 2003) for the WCVI troll fishery.

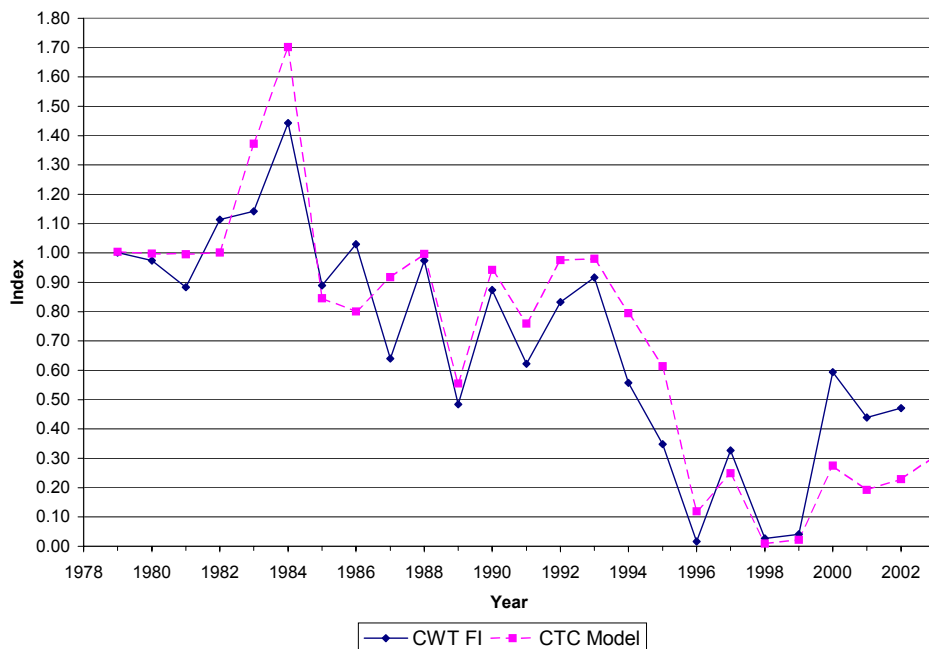


Figure 3.9. Estimated CWT (through 2002) and model total mortality fishery indices (through 2003) for the WCVI troll fishery.

### *3.4. Summary of Agency Stock Forecasts Used in the Model*

A summary of model produced and agency provided forecasts from 1999-2004 is shown in Table 3.10. A major factor influencing how well the model can predict Chinook abundance in AABM fisheries is how well the model can predict the returns of Chinook (in terms of ocean escapement or spawning escapement) in the forecast year. During model calibration, agency forecasts are input to the model for all model stocks for which forecasts are available. Thus, for model stocks with external forecasts, the variation between model forecasts and actual returns can be broken into two parts – the ability of the model to match the input agency forecasts, and the ability of the agency forecasts to accurately predict the actual return of Chinook in the upcoming year. In Table 3.10, the column labeled ‘Model Fcst/Agency Fcst’ shows the absolute percentage deviation of the model prediction of the return from the agency provided total return. The column labeled ‘Agency Fcst/Postseason’ shows the absolute percentage deviation of the agency forecast from the actual return. The column furthest to the right, labeled ‘Model Fcst/Postseason’, shows the absolute percentage deviation of the model prediction of the return from the observed return.

In general, the model does a very good job of matching the agency supplied forecasts (average error = -0.5%, standard deviation = 13%, median error = -0.9%). Agency forecasts are, on average, also good predictors of observed returns (average error = -13.9%, standard deviation = 39%, median error = -12.8%). The model’s prediction of observed returns, including stocks for which there is no agency forecast, is also good (average error = -8.6%, standard deviation = 35%, median error = -10.0%).

The effect of the error in predicting terminal returns or escapement on the AABM abundance indices varies between fisheries and stocks and with the consistency of the error. For example, a small stock (small in ocean abundance terms) that is over or under predicted will generally not have a large effect on a fisheries’ abundance index. Errors in predicting a large stock also may or may not affect a fisheries’ index, depending on the contribution of that stock to the fishery in question (see Appendix I for the model estimated stock composition of selected ocean fisheries). In addition, since the abundance index is an index, rather than an absolute measure of abundance, over or under prediction of a stock’s terminal return or escapement would not affect the abundance index of a fishery if the bias in the prediction is consistent over all years in the index, including the base.

Table 3.10. Comparison of pre-season forecasts and post-season estimates for PSC model stocks, 1999-2001.

Stock	Year	Model Forecast	Agency Forecast	Postseason Return	Model Fcst/ Agency Fcst	Agency Fcst/ Postseason	Model Fcst/ Postseason
AKS (Alaska SSE)	1999	11,866	n/a	12,654	n/a	n/a	-6%
	2000	18,886	n/a	15,909	n/a	n/a	19%
	2001	22,130	n/a	21,226	n/a	n/a	4%
	2002	15,650	n/a	19,473	n/a	n/a	-20%
	2003	22,316	n/a	14,206	n/a	n/a	57%
	2004	11,880	n/a	-	-	-	-
NTH (North/ Central BC)	1999	149,387	n/a	151,341	n/a	n/a	-1%
	2000	159,769	n/a	188,482	n/a	n/a	-15%
	2001	189,088	n/a	228,774	n/a	n/a	-17%
	2002	228,073	n/a	136,625	n/a	n/a	67%
	2003	154,103	n/a	166,568	n/a	n/a	-7%
	2004	171,070	n/a	-	-	-	-
RBH+RBT (WCVI Hatchery + Natural)	1999	77,836	68,400	98,410	14%	-30%	-21%
	2000	19,985	15,040	37,055	33%	-59%	-46%
	2001	33,702	30,633	86,787	10%	-65%	-61%
	2002	128,068	109,882	109,882	17%	0%	17%
	2003	111,430	105,801	215,345	5%	-51%	-48%
	2004	166,548	144,180	-	16%	-	-
GSQ (Upper Georgia Strait)	1999	16,450	n/a	16,140	n/a	n/a	2%
	2000	19,562	n/a	22,603	n/a	n/a	-13%
	2001	25,828	n/a	30,219	n/a	n/a	-15%
	2002	41,492	n/a	30,675	n/a	n/a	35%
	2003	36,882	n/a	31,059	n/a	n/a	19%
	2004	39,766	n/a	-	-	-	-

Table 3.10. Continued.

Stock	Year	Model Forecast	Agency Forecast	Postseason Return	Model Fcst/ Agency Fcst	Agency Fcst/ Postseason	Model Fcst/ Postseason
GSH (Lower Georgia Strait Hatchery)	1999	22,896	n/a	23,527	n/a	n/a	-3%
	2000	19,325	n/a	20,286	n/a	n/a	-5%
	2001	17,547	n/a	27,458	n/a	n/a	-36%
	2002	25,051	n/a	23,557	n/a	n/a	6%
	2003	21,222	n/a	24,084	n/a	n/a	-12%
	2004	16,573	n/a	-	-	-	-
GST (Lower Georgia Strait Natural)	1999	14,236	n/a	9,233	n/a	n/a	54%
	2000	11,012	n/a	8,119	n/a	n/a	36%
	2001	7,955	n/a	8,836	n/a	n/a	-10%
	2002	8,833	n/a	8,188	n/a	n/a	8%
	2003	8,088	n/a	5,374	n/a	n/a	51%
	2004	5,157	n/a	-	-	-	-
FRE (Fraser Early)	1999	162,865	n/a	105,473	n/a	n/a	54%
	2000	118,048	n/a	116,233	n/a	n/a	2%
	2001	122,333	n/a	154,175	n/a	n/a	-21%
	2002	170,232	n/a	186,827	n/a	n/a	-9%
	2003	202,363	n/a	188,183	n/a	n/a	8%
	2004	185,450	n/a	-	-	-	-
FRL (Fraser Late)	1999	84,686	82,650	184,099	2%	-55%	-54%
	2000	185,981	222,400	120,744	-16%	84%	54%
	2001	141,745	131,800	141,196	8%	-7%	0%
	2002	132,946	160,100	165,245	-17%	-3%	-20%
	2003	127,144	114,780	313,929	11%	-63%	-59%
	2004	104,597	97,227	-	8%	-	-

Table 3.10 Continued.

Stock	Year	Model Forecast	Agency Forecast	Postseason Return	Model Fcst/ Agency Fcst	Agency Fcst/ Postseason	Model Fcst/ Postseason
NKS (Nooksack Spring)	1999	1,048	n/a	n/a	n/a	n/a	n/a
	2000	866	n/a	n/a	n/a	n/a	n/a
	2001	982	n/a	n/a	n/a	n/a	n/a
	2002	1,216	n/a	n/a	n/a	n/a	n/a
	2003	1,301	n/a	n/a	n/a	n/a	n/a
	2004	1,708	n/a	-	-	-	-
NKF (Nooksack/ Samish Fall Fingerling)	1999	27,206	27,000	41,186	1%	-34%	-34%
	2000	21,378	19,000	33,588	13%	-43%	-36%
	2001	33,974	36,450	36,450	-7%	0%	-7%
	2002	50,361	54,420	54,118	-7%	1%	-7%
	2003	48,259	45,750	n/a	5%	n/a	n/a
	2004	37,980	34,200	-	11%	-	-
SNO (Snohomish Wild)	1999	5,804	5,600	4,832	4%	16%	20%
	2000	6,003	6,000	6,000	0%	0%	0%
	2001	5,876	5,760	8,421	2%	-32%	-30%
	2002	6,524	6,700	7,261	-3%	-8%	-10%
	2003	6,033	5,450	-	11%	n/a	n/a
	2004	12,845	15,700	-	-18%	-	-
SKG (Skagit Summer/ Fall Wild)	1999	8,967	7,600	4,924	18%	54%	82%
	2000	6,994	7,300	16,843	-4%	-57%	-58%
	2001	9,064	9,184	14,005	-1%	-34%	-35%
	2002	12,635	13,455	19,851	-6%	-32%	-36%
	2003	11,906	11,348	n/a	5%	n/a	n/a
	2004	18,761	20,359	-	-8%	-	-

Table 3.10 Continued.

Stock	Year	Model Forecast	Agency Forecast	Postseason Return	Model Fcst/ Agency Fcst	Agency Fcst/ Postseason	Model Fcst/ Postseason
PSN (Puget Sound Natural)	1999	28,536	28,400	20,941	0%	36%	36%
	2000	15,410	10,000	16,569	54%	-40%	-7%
	2001	19,938	18,900	22,991	5%	-18%	-13%
	2002	20,008	19,801	25,853	1%	-23%	-23%
	2003	25,743	26,600	n/a	-3%	n/a	n/a
	2004	24,616	23,200	-	6%	-	-
STL (Stillaguamish Summer/Fall Wild)	1999	1,303	n/a	1,098	n/a	n/a	19%
	2000	1,373	1,500	1,457	-8%	3%	-6%
	2001	1,328	1,360	1,360	-2%	0%	-2%
	2002	1,372	1,449	1,597	-5%	-9%	-14%
	2003	1,860	2,050	-	-9%	n/a	n/a
	2004	1,795	n/a	-	-	-	-
PSF+PSY (Puget Sound Fingerling + Yearling)	1999	66,260	69,285	116,204	-4%	-40%	-43%
	2000	67,481	69,800	76,777	-3%	-9%	-12%
	2001	102,899	105,955	105,955	-3%	0%	-3%
	2002	114,889	124,608	110,629	-8%	13%	4%
	2003	114,275	133,850	n/a	-15%	n/a	n/a
	2004	127,902	132,300	-	-3%	-	-
WCN (Washington Coastal Natural)	1999	42,107	43,780	24,884	-4%	76%	69%
	2000	34,788	n/a	22,978	n/a	n/a	51%
	2001	34,563	35,306	35,794	-2%	-1%	-3%
	2002	33,902	33,489	35,378	1%	-5%	-4%
	2003	32,785	n/a	25,479	n/a	n/a	29%
	2004	28,185	n/a	-	-	-	-

Table 3.10 Continued.

Stock	Year	Model Forecast	Agency Forecast	Postseason Return	Model Fcst/ Agency Fcst	Agency Fcst/ Postseason	Model Fcst/ Postseason
WCH (Washington Coastal Hatchery)	1999	35,221	42,752	14,044	-18%	204%	151%
	2000	16,254	n/a	23,036	n/a	n/a	-29%
	2001	15,792	n/a	23,359	n/a	n/a	-32%
	2002	23,678	n/a	30,491	n/a	n/a	-22%
	2003	20,755	18,222	25,812	14%	-29%	-20%
	2004	28,900	n/a	-	-	-	-
CWS (Cowlitz Spring)	1999	3,363	3,950	4,798	-15%	-18%	-30%
	2000	4,921	6,050	6,068	-19%	0%	-19%
	2001	3,684	4,849	7,127	-24%	-32%	-48%
	2002	5,534	6,800	9,923	-19%	-31%	-44%
	2003	9,550	11,700	22,691	-18%	-48%	-58%
	2004	20,802	27,350	-	-24%	-	-
WSH (Willamette Spring)	1999	46,181	49,875	55,801	-7%	-11%	-17%
	2000	57,187	61,211	57,592	-7%	6%	-1%
	2001	59,207	59,600	82,017	-1%	-27%	-28%
	2002	73,151	77,434	127,200	-6%	-39%	-42%
	2003	108,530	112,521	129,700	-4%	-13%	-16%
	2004	113,708	112,701	-	1%	-	-
SUM (Columbia River Summer)	1999	21,653	20,900	22,349	4%	-6%	-3%
	2000	27,180	28,038	23,171	-3%	21%	17%
	2001	27,029	24,500	54,937	10%	-55%	-51%
	2002	70,290	77,700	92,836	-10%	-16%	-24%
	2003	97,280	87,600	83,084	11%	5%	17%
	2004	83,246	78,569	-	6%	-	-

Table 3.10 Continued.

Stock	Year	Model Forecast	Agency Forecast	Postseason Return	Model Fcst/ Agency Fcst	Agency Fcst/ Postseason	Model Fcst/ Postseason
BON+CWF (Bonneville + Cowlitz Hatcheries)	1999	26,112	34,800	39,888	-25%	-13%	-35%
	2000	17,167	23,700	26,959	-28%	-12%	-36%
	2001	28,732	32,200	94,208	-11%	-66%	-70%
	2002	100,401	137,600	156,400	-27%	-12%	-36%
	2003	100,196	115,900	154,983	-14%	-25%	-35%
	2004	64,696	77,100	-	-16%	-	-
SPR (Spring Creek Hatchery)	1999	63,203	65,800	50,100	-4%	31%	26%
	2000	17,367	21,900	20,600	-21%	6%	-16%
	2001	56,089	56,600	124,900	-1%	-55%	-55%
	2002	153,070	144,400	160,900	6%	-10%	-5%
	2003	89,116	96,900	180,600	-8%	-46%	-51%
	2004	124,820	138,000	-	-10%	-	-
URB (Columbia Upriver Bright)	1999	173,712	147,500	166,100	18%	-11%	5%
	2000	211,676	171,100	155,700	24%	10%	36%
	2001	150,973	127,200	232,500	19%	-45%	-35%
	2002	249,721	281,000	276,900	-11%	1%	-10%
	2003	246,890	280,400	373,200	-12%	-25%	-34%
	2004	246,943	292,200	-	-15%	-	-
LYF (Snake River Wild)	1999	523	n/a	905	n/a	n/a	-42%
	2000	1,235	n/a	1,148	n/a	n/a	8%
	2001	733	734	5,163	0%	-86%	-86%
	2002	2,066	n/a	2,116	n/a	n/a	-2%
	2003	2,493	2,185	3,895	14%	-44%	-36%
	2004	4,323	3,725	-	16%	-	-



Table 3-10 Continued.

Stock	Year	Model Forecast	Agency Forecast	Postseason Return	Model Fcst/ Agency Fcst	Agency Fcst/ Postseason	Model Fcst/ Postseason
MCB (Mid-Columbia Bright)	1999	37,951	38,300	35,300	-1%	8%	8%
	2000	53,272	50,600	36,900	5%	37%	44%
	2001	45,055	43,500	76,600	4%	-43%	-41%
	2002	102,085	96,200	108,500	6%	-11%	-6%
	2003	126,698	104,800	150,300	21%	-30%	-16%
	2004	94,895	90,400	-	5%	-	-
LRW (Lewis River Wild)	1999	3,068	2,600	3,400	18%	-24%	-10%
	2000	4,046	3,500	10,200	16%	-66%	-60%
	2001	16,574	16,700	15,700	-1%	6%	6%
	2002	18,910	18,200	24,900	4%	-27%	-24%
	2003	25,820	24,600	25,900	5%	-5%	0%
	2004	24,590	24,100	-	2%	-	-
ORC (Oregon Coastal)	1999	65,249	72,084	66,039	-9%	9%	-1%
	2000	61,250	63,259	52,889	-3%	20%	16%
	2001	58,062	66,412	100,886	-13%	-34%	-42%
	2002	73,055	73,914	149,525	-1%	-51%	-51%
	2003	101,310	85,483	145,302	19%	-41%	-30%
	2004	135,716	131,904	-	3%	-	-

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## **APPENDICES**

Appendix A. Relationship between exploitation rate indicator stocks, escapement indicator stocks, model stocks, and additional management action stocks identified in the PST annex.

**LIST OF APPENDIX A TABLES**

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Table A.1. Indicator stocks for Southeast Alaska and Transboundary Rivers.

Area	Annex Stock Group <sup>1</sup>	Annex Indicator Stocks	Run Type	Escapement Indicator Stock	Escapement Objective	Model Stock	Escapement Goal in Model	Exploitation Rate Indicator Stock	CWT Acronym
SEAK/TBR			Spring	Taku	30,000–55,000	Alaska South SE	9,110	NA	AKS
				Stikine	14,000–28,000			NA	
Yakutat				Situk	500–1,000			NA	
				Alsek	1,100–2,300			NA	
SEAK Northern Inside				Chilkat				NA	
				King Salmon	120–240			Alaska Spring	
SEAK Central Inside				Andrew Creek	650–1,500			(Little Port Walter, Neets Bay Hatchery, Whitman Lake Hatchery, Carroll Inlet Releases, Deer Mountain Hatchery, Crystal Lake Hatchery)	
SEAK Southern Inside				Unuk	650–1,400				
				Chickamin	450–900				
				Blossom	250–500				
			Keta	250–500					

<sup>1</sup> SEAK fisheries will be managed to achieve escapement objectives for Southeast Alaska and Transboundary River Chinook stocks.

NA = not available

Table A.2. Indicator stocks for Canada.

Area	Annex Stock Group	Annex Indicator Stocks	Run Type	Escapement Indicator Stock	Escapement Objective	Model Stock	Escapement Goal in Model	Exploitation Rate Indicator Stock	CWT Acronym
NBC-Area 1	North / Central British Columbia	Yakoun	Summer	Yakoun	Escapement goal range by stock	North / Central BC	117,500	Kitsumkalum	KLM
NBC-Area 3		Nass	Spring/Summer	Nass					
NBC-Area 4		Skeena		Skeena					
CBC-Area 8			Spring	Dean					
CBC-Area 9			Spring/Fall	Rivers Inlet					
WCVI	West Coast Vancouver Island Falls	Artlish, Burman, Gold, Kauok, Tahsis, Tashish, Marble	Fall	WCVI Aggregate (Artlish, Burman, Kauok, Tahsis, Tashish, Marble)	Escapement goal range for aggregate	WCVI Natural	42,734	Robertson Creek	RBT
					WCVI Hatchery	6,472			
Upper Strait of Georgia	Upper Strait of Georgia	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	Summer/ Fall	Upper Strait of Georgia (Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish)	Escapement goal range for aggregate	Upper Strait of Georgia	23,300	Quinsam	QUI
Lower Strait of Georgia	Lower Strait of Georgia		Summer/ Fall			Lower Strait of Georgia Hatchery	5,318	Puntledge	PPS
								Big Qualicum	BQR
		Cowichan, Nanaimo	Fall	Lower Strait of Georgia (Cowichan / Nanaimo)	Escapement goal range for aggregate	Lower Strait of Georgia Natural	21,935	Cowichan	COW
Fraser River	Fraser Early	Upper Fraser Mid Fraser Thompson	Spring	Fraser Spring-run Age 1.2	Escapement goal range by stock	Fraser Early	93,700	NA	
				Fraser Spring-run Age 1.3					
			Summer	Fraser Summer-run Age 1.3					
				Fraser Summer-run Age 0.3					
Fraser Late	Harrison River	Harrison River	Fall	Harrison River	75,100-98,500	Fraser Late	75,100	Chilliwack	CHI

Table A.3. Indicator stocks for Puget Sound.

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Area	Annex Stock Group	Annex Indicator Stocks	Run Type	Escapement Indicator Stock	Escapement Objective	Model Stock	Escapement Goal in Model	Exploitation Rate Indicator Stock	CWT Acronym	
North/ Central Puget Sound	North Puget Sound Natural Springs	Nooksack	Spring	Nooksack	Escapement goal range by stock	Nooksack Spring	4,000	Nooksack Spring Fingerling Nooksack Spring Yearling	NKF NKS	
		Skagit		Skagit spring				Skagit Spring Fingerling Skagit Spring Yearling	SKF SKS	
	North Puget Sound Natural Summer/Falls		Summer/ Fall			Escapement goal range by stock	Samish Fall	11,923	Samish Fall Fingerling	SAM
		Snohomish		Snohomish			Snohomish Wild	5,250	NA	
		Skagit group		Skagit sum/fall			Skagit Wild	9,778	Skagit Summer Fingerling	SSF
		Lake Washington		Lake Washington Falls			Puget Sound Natural Fingerling	16,966	NA	
		Green River		Green River						
		Stillaguamish		Stillaguamish			Stillaguamish Wild	2,000	Stillaguamish Fall Fingerling	STL
										Nisqually Fall Fingerling
							Univ. of Washington Accelerated Fall	UWA		
Hood Canal	Not an Annex stock		Fall				George Adams Fall Fingerling	GAD		
South Puget Sound	Not an annex stock		Fall			Puget Sound Hatchery Fingerling	24,769	South Puget Sound Fall Fingerling	SPS	
							9,136	South Puget Sound Fall Yearling	SPY	
			Spring			Puget Sound Hatchery Yearling			Squaxin Pens Fall Yearling	SQP
								White River Spring Yearling	WRY	

NA = not available

Table A.4. Indicator stocks for the Washington Coast.

Area	Annex Stock Group	Annex Indicator Stocks	Run Type	Escapement Indicator Stock	Escapement Objective	Model Stock	Escapement Goal in Model	Exploitation Rate Indicator Stock	CWT Acronym
WA Coast/ Juan de Fuca	Washington Coastal Fall Naturals	Hoko	Fall	Hoko	Escapement goal range by stock	Washington Coastal Wild	21,500	Elwha Fall Fingerling	ELW
								Hoko Fall Fingerling	HOK
		Grays Harbor		Grays Harbor Fall				NA	
		Queets		Queets Fall				Sooes Fall Fingerling	SOO
		Hoh		Hoh Fall				NA	
		Quillayute		Quillayute Fall				NA	
		Queets		Queets Fall				Queets Fall Fingerling	QUE
	Not an annex stock		Fall			Washington Coastal Hatchery	6,703	NA	
	Not an annex stock		Spring	Grays Harbor Spring				NA	
	Not an annex stock		Spring/ Summer	Queets Spring/Summer				NA	
				Hoh Spring/Summer				NA	
	Not an annex stock		Summer	Quillayute Summer				NA	

NA = not available



Table A.5. Indicator stocks for Columbia River and Oregon Coast.

Area	Annex Stock Group	Annex Indicator Stocks	Run Type	Escapement Indicator Stock	Escapement Objective	Model Stock	Escapement Goal in Model	Exploitation Rate Indicator Stock	CWT Acronym		
Columbia River	Not an Annex stock		Spring			Cowlitz Spring Hatchery	2,500	NA			
						Willamette River Hatchery	13,500	Willamette Spring	WSH		
	Columbia River Summers	Mid-Columbia Summers	Summer	Mid Columbia Summer	17,857 <sup>1</sup>	Columbia River Summer	17,857	Columbia Summers	SUM		
	Columbia River Falls		Fall			Fall Cowlitz Hat.	8,800	Cowlitz Tule	CWF		
						Spring Creek Hatchery	7,000	Spring Creek Tule	SPR		
						Lower Bonneville Hatchery	26,200	Columbia Lower River Hatchery	LRH		
				Upriver Brights	Columbia Upriver Bright	Columbia River Upriver Brights	40,000	Columbia River Upriver Bright	URB		
								Hanford Wild	HAN		
				Deschutes	Deschutes River Fall			NA			
								Lyons Ferry Hatchery	3,430	Lyons Ferry	LYF
								Mid Columbia River Brights	12,500	NA	
Lewis River	Lewis	5,700	Lewis River Wild	5,700	Lewis River Wild	LRW					
North Oregon Coast	Far North Migrating Oregon Coastal Falls	Nehalem	Fall	Nehalem	6,989	Oregon Coast	62,382	Salmon River			
		Siuslaw		Siuslaw	12,925						
		Siletz		Siletz	2,944						
Mid-Oregon Coast	Not an Annex stock		Fall	Umpqua					NA		
				Mid South Oregon Coastal Falls					NA		

NA – not available

<sup>1</sup> Interim goal for modeling based on stock recruitment analysis of model data.

Appendix B. ISBM indices.

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Stock Group	Escapement Indicator Stocks	Canadian ISBM Indices									
		CWT Indices <sup>1</sup>				Model Indices					
		1999	2000	2001	2002	1999	2000	2001	2002	2003	2004
Lower Strait of Georgia	Cowichan	0.381	0.182	0.19	0.247	0.345	0.296	0.333	0.364	0.490	0.593
	Nanaimo <sup>5</sup>	0.381	0.182	0.19	0.247	0.265	0.153	0.188	0.311	0.498	0.695
Fraser Late	Harrison River <sup>3</sup>	0.166	0.084	0.110	0.105	0.297	0.179	0.193	0.275	0.352	0.719
North Puget Sound Natural Springs	Nooksack, Skagit	0.030	0.010	0.040	0.023	0.257	0.151	0.721	0.200	0.251	0.273
		NA	NA	NA	NA	0.257	0.151	0.721	0.200	0.251	0.273
Upper Strait of Georgia	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	0.038	0.081	0.043	0.063	0.209	0.152	0.195	0.172	0.649	0.971
Fraser Early (spring and summers)	Upper Fraser, Mid Fraser, Thompson	NA	NA	NA	NA	0.151	0.141	0.128	0.179	0.661	0.718
West Coast Vancouver Is Falls	WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble)	0.288	0.060	0.057	0.248	0.622	0.189	0.175	0.633	0.744	0.927
Puget Sound Natural Summer / Falls	Skagit	NA	NA	NA	NA	0.228	0.131	0.480	0.198	0.436	0.438
	Stillaguamish	0.150	0.160	0.145	NA	0.409	0.253	1.030	0.324	0.513	0.567
	Snohomish	NA	NA	NA	NA	0.233	0.133	0.457	0.196	0.435	0.445
	Lake Washington	NA	NA	NA	NA	0.233	0.212	0.767	0.342	0.508	0.446
	Green River	0.175	0.156	0.405	0.323	0.404	0.212	0.767	0.342	0.508	0.466
North / Central BC	Yakoun, Nass, Skeena, Area 8	NA <sup>2</sup>	NA <sup>2</sup>	NA	NA	0.245	0.282	0.442	0.219	0.689	0.804
Washington Coastal Fall Naturals <sup>4</sup>	Hoko, Grays Harbor, Queets <sup>3</sup> , Hoh <sup>3</sup> , Quillayute <sup>3</sup>	NA	NA	NA	NA	0.310	0.215	0.701	0.279	0.292	0.435
Columbia River Falls <sup>4</sup>	Upriver Brights <sup>3</sup>	NA	NA	NA	NA	0.219	0.190	0.239	0.175	0.686	0.663
	Deschutes	NA	NA	NA	NA	0.219	0.190	0.239	0.175	0.686	0.663
	Lewis <sup>3</sup>	NA	NA	NA	NA	0.059	0.081	0.087	0.064	0.515	0.480
Columbia R Summers <sup>4</sup>	Mid-Columbia Summers <sup>3</sup>	NA	NA	NA	NA	0.246	0.151	0.552	0.153	0.352	0.333
Far North Migrating OR Coastal Falls <sup>4</sup>	Nehalem <sup>3</sup> , Siletz <sup>3</sup> , Siuslaw <sup>3</sup>	NA	NA	NA	NA	0.087	0.115	0.122	0.086	0.689	0.672

<sup>1</sup> The CWT-based estimates, not the model estimates, are to be used in post season assessments.

<sup>2</sup> NA means not available because of insufficient data (lack of stock specific tag codes, base period CWT recoveries, etc).

<sup>3</sup> Stock or stock group with agreed escapement goal.

<sup>4</sup> Stock group not in Annex Attachment IV.

<sup>5</sup> Indices for this stock are calculated from CWT recoveries for Cowichan; differences between Nanaimo and Cowichan stock indices are due to differences in terminal harvest.

Appendix B.2. ISBM Indices for U.S. fisheries, from both the CWT-based exploitation rate analysis (1999-2004) and the Chinook model (1999-2004) used to establish the AI for each year. Order of the stock groups correspond to Annex 4, Chapter 3, Attachment IV and V of the PST 1999 Revised Annexes.

Stock Group	Escapement Indicator Stocks	US ISBM Indices									
		CWT Indices <sup>1</sup>				Model Indices					
		1999	2000	2001	2002	1999	2000	2001	2002	2003	2004
Washington Coastal Fall Naturals	Hoko	NA	NA	NA	NA <sup>1</sup>	0.434	0.292	0.431	0.527	0.682	0.966
	Grays Harbor	0.600	0.440	0.990	0.54	0.670	0.892	0.895	0.478	0.494	0.573
	Queets <sup>5</sup>	0.240	0.030	1.100	0.84	0.861	0.158	0.702	1.406	1.063	0.932
	Hoh <sup>5</sup>	1.110	0.370	1.550	0.95	1.326	1.341	1.195	1.154	1.208	1.214
	Quillayute <sup>5</sup>	0.960	0.220	1.260	1.42	1.100	0.801	1.246	1.239	1.292	1.139
Columbia River Falls	Upriver Brights <sup>5</sup>	1.530	2.280	1.320	1.32	1.060	1.002	0.793	0.962	1.022	0.906
	Deschutes	0.500	0.580	0.480	0.59	0.681	0.576	0.506	0.535	0.561	0.475
	Lewis <sup>5</sup>	0.040	0.310	0.500	0.56	0.209	0.184	0.651	1.386	0.851	1.008
Puget Sound Natural Summer / Falls	Skagit	NA	NA	NA	NA	0.265	0.179	0.816	0.311	0.406	0.157
	Stillaguamish	0.110	0.130	0.890	NA	0.252	0.221	0.397	0.213	0.184	0.224
	Snohomish	NA	NA	NA	NA	0.080	0.078	0.484	0.135	0.072	0.110
	Lake Washington	NA	NA	NA	NA	0.564	0.587	0.625	1.282	0.768	0.411
	Green R	0.620	0.730	0.820	1.07	0.564	0.587	0.634	0.375	0.263	0.260
Fraser Late	Harrison River <sup>5</sup>	0.760	0.220	0.380	0.41	0.736	0.450	0.538	0.675	0.981	1.058
Columbia R Summers	Mid-Columbia Summers <sup>5</sup>	1.340	0.720	3.950	7.25	0.479	0.289	0.422	0.662	0.794	0.715
Far North Migrating OR Coastal Falls	Nehalem <sup>5</sup>	1.560	1.470	1.950	2.17	1.707	1.742	1.975	2.309	2.346	2.230
	Siletz <sup>5</sup>	1.110	1.060	1.30	1.31	1.135	1.110	1.180	1.276	1.302	1.288
	Siuslaw <sup>5</sup>	1.150	1.690	2.220	2.56	1.223	2.080	2.396	2.856	2.856	2.816
North Puget Sound Natural Springs	Nooksack	0.260	0.010	0.040	NA	0.241	0.269	0.134	0.064	0.121	0.974
	Skagit	NA	NA	NA	1.12	0.241	0.269	0.179	0.147	0.119	0.663
Lower Strait of Georgia <sup>4</sup>	Cowichan,	4.080	4.130	6.460	5.78	0.253	0.260	0.429	0.342	0.452	0.915
	Nanaimo	4.080	4.130	6.460	5.78	0.253	0.260	0.429	0.342	0.452	0.915
Upper Strait of Georgia <sup>4</sup>	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	NA	NA	NA	NA	NC	NC	NC	NC	NC	NC
Fraser Early (spring and summers) <sup>4</sup>	Upper Fraser, Mid Fraser, Thompson	NA	NA	NA	NA	0.061	0.091	0.093	0.169	0.277	0.839
West Coast Vancouver Island Falls <sup>4</sup>	WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble)	NA	NA	NA	NA	0.459	0.377	0.498	0.523	0.658	0.540
North / Central B. C.	Yakoun, Nass, Skeena, Area 8	NA <sup>2</sup>	NA	NA	NA	NC <sup>3</sup>	NC	NC	NC	NC	NC

<sup>1</sup> The CWT-based estimates, not the model estimates, are to be used in post season assessments.

<sup>2</sup> NA means not available because of insufficient data (lack of stock specific tag codes, base period CWT recoveries, etc).

<sup>3</sup> NC means that the current model assumes the stock is not caught in U.S. ISBM fisheries.

<sup>4</sup> Stock group not in Annex Attachment V.

<sup>5</sup> Stock with agreed escapement goal.

Appendix C. Stocks.

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Appendix C.1 Stocks used in the exploitation rate analysis.

<b>Stock Acronym</b>	<b>Stock Name</b>	<b>Jurisdiction</b>
AKS	Alaska Spring	AK
BQR	Big Qualicum River Falls	CA
CHI	Chilliwack River Falls	CA
COW	Cowichan River Falls	CA
CWF	Cowlitz Tule	OR
ELW	Elwha Fall Fingerling	WA
GAD	George Adams Fall Fingerling	WA
HAN	Hanford Wild	OR
HOK	Hoko Fall Fingerling	WA
KLM	Kitsumkalum River Summers	CA
LRH <sup>1</sup>	Columbia Lower River Hatchery	OR
LRW	Lewis River Wild	OR
LYF	Lyons Ferry	OR
NIS	Nisqually Fall Fingerling	WA
NKF	Nooksack Spring Fingerling	WA
NKS	Nooksack Spring Yearling	WA
PPS	Puntledge River Summers	CA
QUE	Queets Fall Fingerling	WA
QUI	Quinsam River Falls	CA
RBT	Robertson Creek Falls	CA
SAM	Samish Fall Fingerling	WA
SKF	Skagit Spring Fingerling	WA
SKS	Skagit Spring Yearling	WA
SNO	Snootli River Summers	CA
SOO	Sooes Fall Fingerling	WA
SPR	Spring Creek Tule	OR
SPS	South Puget Sound Fall Fingerling	WA
SPY	South Puget Sound Fall Yearling	WA
SQP	Squaxin Pens Fall Yearling	WA
SRH	Salmon River	OR
SSF	Skagit Summer Fingerling	WA
STL	Stillaguamish Fall Fingerling	WA
SUM	Columbia Summers	OR
URB	Upriver Bright	OR
	University of Washington	
UWA	Accelerated	WA
WRY	White River Spring Yearling	WA
WSH	Willamette Spring	OR

1.LRH is an aggregate of two stocks, Stayton Ponds (Lower Bonneville Hatchery, i.e., BON, in the previous analyses) and Big Creek Hatchery used for the first time in the 2002 exploitation rate analysis.

Appendix C.2 Stocks and fisheries included in the Chinook model.

STOCK #	MODEL STOCK	FISHERY #	MODEL FISHERY
1	Alaska South SE	1	Alaska Troll
2	North/Central BC	2	North Troll
3	Fraser Early	3	Central Troll
4	Fraser Late	4	WCVI Troll
5	WCVI Hatchery	5	WA/OR Troll
6	WCVI Natural	6	Strait of Georgia Troll
7	Upper Strait of Georgia	7	Alaska Net
8	Lower Strait of Georgia Natural	8	North Net
9	Lower Strait of Georgia Hatchery	9	Central Net
10	Nooksack Fall Fingerling	10	WCVI Net
11	Puget Sound Hatchery Fingerling	11	Juan De Fuca Net
12	Puget Sound Natural Fingerling	12	Puget Sound North Net
13	Puget Sound Hatchery Yearling	13	Puget Sound South Net
14	Nooksack Spring Yearling	14	Washington Coast Net
15	Skagit Wild	15	Columbia River Net
16	Stillaguamish Wild	16	Johnstone Strait Net
17	Snohomish Wild	17	Fraser Net
18	Washington Coastal Hatchery	18	Alaska Sport
19	Columbia Upriver Brights	19	North/Central Sport
20	Spring Creek Hatchery	20	WCVI Sport
21	Lower Bonneville Hatchery	21	Washington Ocean Sport
22	Fall Cowlitz Hatchery	22	Puget Sound North Sport
23	Lewis River Wild	23	Puget Sound South Sport
24	Willamette River Hatchery	24	Strait of Georgia Sport
25	Cowlitz Spring Hatchery	25	Columbia River Sport
26	Columbia River Summer		
27	Oregon Coast		
28	Washington Coastal Wild		
29	Lyons Ferry		
30	Mid Columbia River Brights		

Appendix D. Detailed description of external stock forecasts.

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## **Southeast Alaska Stocks**

The PSC CTC Model is used to internally forecast abundance of southern Southeast Alaska hatchery stocks and the aggregate of six wild stocks in the SSEAK Model Stock, which are Andrew Creek and the King Salmon, Unuk, Chickamin, Blossom and Keta Rivers.

## **Canadian Stocks**

### West Coast Vancouver Island

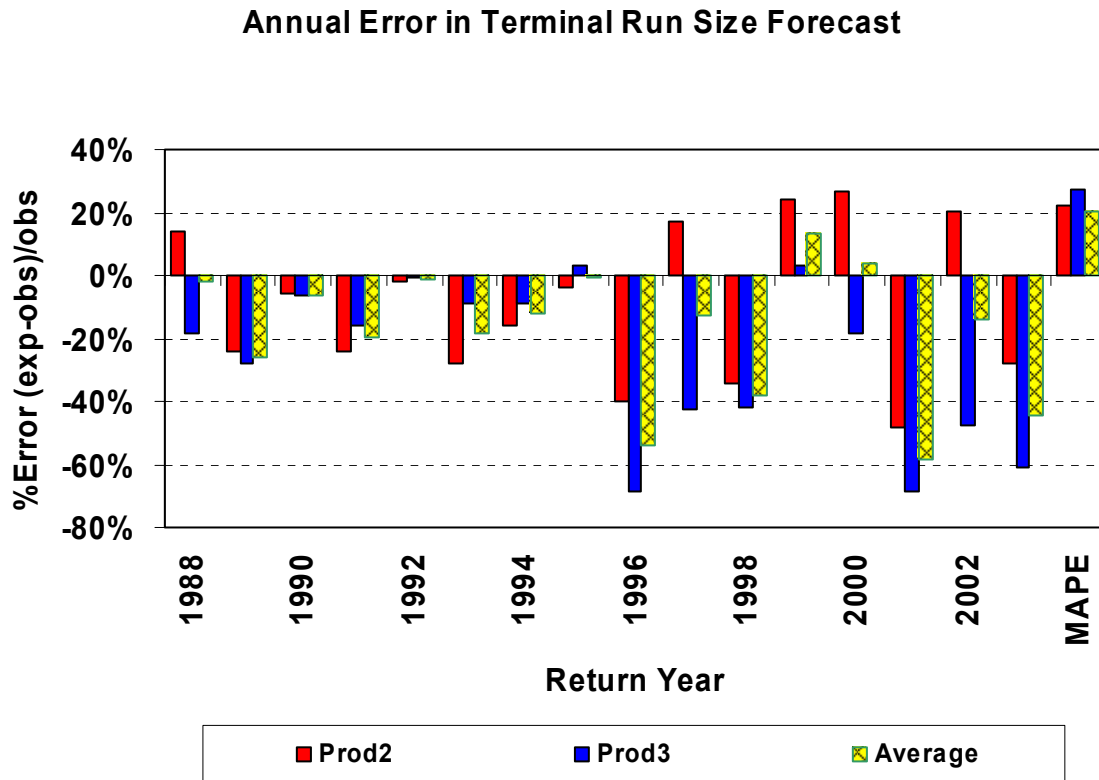
The abundance forecast for the West Coast Vancouver Island (WCVI) model stock is based on the RBH/Somass forecast and the relative run size of other WCVI Chinook populations in the past year. The method used to forecast the terminal run of RBH/Somass Chinook is documented annually in the Canadian Stock Assessment Secretariat (CSAC) Research Documents ([www.dfo-mpo.gc.ca/sci/csac/](http://www.dfo-mpo.gc.ca/sci/csac/)) and has previously been reviewed by a working group of the CTC (March 26, 1996 Interim Report of CTC Workgroup, on file with PSC).

RBH/Somass Forecast: Predictions of ocean abundance for RBH/RBT fall Chinook were developed from the CWT data used for the exploitation rate analyses. Sibling regression models were developed using estimated (observed recovery expanded by the catch/sample ratio) CWT recoveries in the fisheries and spawning escapement. The independent variable in these regression models may be the terminal run size at age, or the total production at age (ocean fishing mortality plus terminal run), but the dependent variable in both models is the pre-fishery ocean abundance in the next age class. The terminal run used in these regressions includes the catch of RBH/RBT and Somass River Chinook in the Barkley Sound sport fishery, terminal commercial and native gillnet fisheries, and spawning escapement to the Somass system. These regression models only account for production associated with the CWT groups selected to represent RBH/RBT brood years.

To account for the total production of RBH/RBT and natural Somass production, a ratio is calculated of total terminal return of all hatchery and wild Chinook salmon (by age and brood year) divided by the terminal return of Chinook salmon by age and brood year for the specified CWT groups. Due to the multiple age classes in Chinook salmon, ratios are based on observations in the previous year within the same cohort. For example, the expansion for the age-4 cohort in 2004 would be expanded by the ratio of age-3 Chinook salmon observed in 2003 and the age-2 Chinook salmon observed in 2002. Note that this expansion assumes natural production from the Stamp River exhibits similar behavior and encounters similar fishing pressure as the hatchery stock.

The estimates of age-specific ocean abundance for RBH/Somass Chinook are input to a spreadsheet model used to predict the terminal run size. Terminal runs at age, expected in the next year, are predicted based on changes in ocean exploitation rates (i.e., management scalars) and maturation rates at age. Over the past eight years of extensive changes in ocean and terminal fisheries, this spreadsheet model has predicted the observed terminal run with a mean absolute percent error of 30% (Figure 2). Error rates were less than half of this value in the past when survival of RBH Chinook was greater and more data were available from fisheries.

Figure 2. Estimated % annual error  $[(\text{Expected return} - \text{Observed return})/\text{Observed Return}]$  for Prod2, Prod3, and average forecast models when applied to estimating the terminal run size of Stamp Chinook into Barkley Sound in 1988 – 2003, based on a leave-one-out retrospective assessment of the regression models and fishery-specific exploitation rate analyses from the cohort analysis. The mean absolute percent error (MAPE) is also shown.



Based on the age-structured terminal run to as many as 25 indicator streams, the forecasted terminal run of RBH/Somass Chinook is expanded to account for other WCVI Chinook populations. For example, the 2004 forecast of RBH/Somass was expanded as follows:

Age Class	RBH/Somass Forecast*	WCVI Expansion Factor	Total WCVI Forecast	Comments
Age 3	24,272	2.2	53,476	Average expansion of past age-3 returns
Age 4	28,591	1.91	54,610	Age-4 expansion based on observed expansion for age-3 returns in the brood year
Age 5	16,885	2.14	36,094	Expansion based on average value of age-3 and age-4 returns within brood year
Total	69,748		144,180	RBH/Somass = 54% of Total

\* The forecast used in calibration of the CTC model uses base period exploitation rates (i.e., management scalars = 1.0).

The age-structured total WCVI forecast is used in the CTC model calibration process.

### Fraser Late

The abundance forecast for Fraser Late Chinook (FRL in the Chinook model) consists of age-structured forecasts for two systems, the Harrison and Chilliwack Rivers, that are summed to project a total spawning escapement of lower Fraser River fall white Chinook. The Harrison River spawning population, estimated annually since 1984 through a mark-recapture program, is large and essentially natural. The Chehalis River Hatchery, located near the confluence of the Chehalis and Harrison Rivers, has released coded-wire tagged juveniles originating from adults captured from the Harrison River each year since 1982. Recoveries of CWT tagged adults in the Harrison River are so few, however, that this component in the fall white spawning population is not estimated nor considered in the Harrison River forecast. The Chilliwack River spawning population, recently approaching that of the Harrison River in size, was originally founded from Harrison River brood stock. It has increased substantially since adults began returning to the Chilliwack River and Hatchery (1983) and now includes a component returning directly to the hatchery as well as a substantial number of natural spawners. Both components are enumerated annually and included in the Chilliwack River forecast. CWT tagged juveniles have been released from Chilliwack Hatchery into the Chilliwack River (entering on the south side of the Fraser River opposite to that of the Harrison River) every year since 1981 enabling this population to be used as an exploitation rate indicator for the Harrison River natural population.

The foundation for the two forecasts is an estimate of the terminal run to each river system. The combination of two distinguishing characters of Fraser Late Chinook (late return timing and white flesh color) make it possible to estimate a total terminal catch from the Area 29 Fraser River commercial and test gillnet fisheries, the lower Fraser River sport and native food and ceremonial fisheries, and the in-river sport fisheries. These catches are apportioned to the Harrison and Chilliwack River populations by using information from estimated Chilliwack CWT recoveries where possible or by using the proportion of each in the total estimated escapement. Separate programs provide independent estimates of the spawning populations and these are added to each terminal catch estimate to derive terminal run estimates by age class. Terminal fisheries for Fraser Late Chinook are generally small (although the Chilliwack River sport fishery has grown considerably in recent years) and are usually only a modest component of the terminal runs.

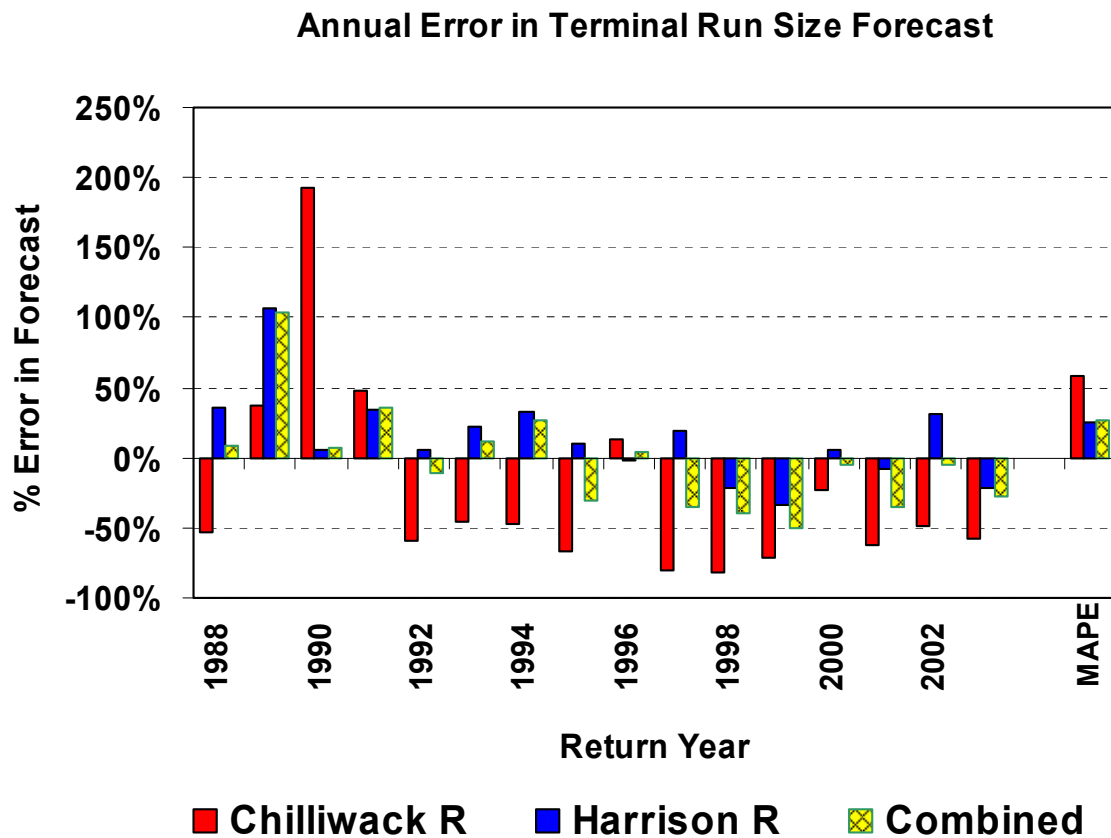
The CWT recoveries for Chilliwack Hatchery fall whites are used in a cohort analysis to obtain exploitation rates, maturation rates, and adult equivalent factors by age and brood year. These data are then used in linear sibling regression models to estimate ocean abundance at age for both the Chilliwack and Harrison River populations. The strongest regression models for the Harrison River Chinook are based on the terminal run at one age against the ocean cohort abundance of the following age. For the Chilliwack River Chinook, the strongest sibling regression models result from regressing the ocean cohort abundance at one age against that of the following age. The weaker relationships involving terminal run sizes may be due to uncertainties in the estimation of the escapements of the large, natural spawning component.

The estimates of age-specific ocean abundance for Chilliwack and Harrison Chinook are combined in a spreadsheet model analogous to that previously developed for the Robertson Creek fall Chinook salmon stock (RBH in the Chinook model). Terminal runs at age are then

predicted based on changes in ocean exploitation rates and maturation rates at age. One notable difference from the RBH model, however, is that only the terminal run vs. ocean production spreadsheet models are applicable to the FRL forecasts since catch and CWT data will not be available from the past year's fisheries in Washington State. Consequently, the regression models include only brood years with complete recovery data and the independent variable (terminal run at age) is limited to returns within the Fraser River. These latter data are available within the time required for annual forecasts.

A persistent problem observed with the Fraser Late forecast is significant under-estimation of the Chilliwack terminal runs. The source of this bias has not yet been identified but it has been estimated using a retrospective 'leave-one-out' analysis (Figure 1). The recent 5-year average percent error in the forecast for Chilliwack River (e.g., -53% for years 1999-2003) is used to adjust the estimated annual ocean abundance in order to derive the terminal run forecast.

Figure 1. Estimated % annual error  $[(\text{Expected return} - \text{Observed return})/\text{Observed Return}]$  in Chilliwack and Harrison River Chinook forecasts based on a leave-one-out retrospective assessment of the regression models and fishery-specific exploitation rate analyses from the cohort analysis. The 'Combined' bars are the error estimates for the sum of the Chilliwack and Harrison population-specific forecasts. MAPE is the mean absolute percent error.



## **Puget Sound and Strait of Juan de Fuca Stocks**

Methodologies for pre-season forecasts are described in joint WDFW-Tribal annual Puget Sound management reports (starting in 1993, reports are available by Puget Sound management unit, not by individual species).

### Hoko River

*Summer/fall chinook (natural)—Four year average of 2000-2003 terminal run size (escapement plus river harvest). Terminal prediction for 2004 is 866.*

### Elwha River

*Summer/fall chinook (hatchery and natural)—Four year average 2000-2003 terminal run (escapement plus river harvest) times the ratio of 4B run size/terminal run size of 1,0024. terminal prediction for 2004 is 2,220.*

### Dungeness River

*Summer chinook (natural)—Four year average (2000-2003) escapement proves a terminal run size forecast for 2004 of 486.*

### Nooksack River

*North Fork Spring Chinook (wild natural origin)—average return rates of the most recent age classes (1998-2003) times parent brood escapement. Prediction for 2004 is 293.*

*North Fork Spring Chinook (wild culture origin)—average return rates of the most recent age classes (1998-2003) times parent brood acclimation releases and escapements. Prediction for 2004 is 2,236.*

*North Fork spring chinook (hatchery)—Average of 1995-2002 age class return rates times the appropriate brood year releases. Prediction for 2004 is 6,142.*

*South Fork spring chinook (natural origin)—Average recruit (BY+4) per spawner (1.02) for years 1988-2003. Prediction for 2004 is 288.*

### Nooksack/Samish

*Summer/fall chinook (hatchery)—2002+2003 return rate times 2000 brood release from all sites (Samish Hatchery, Slater Slough, Lummi Sea Ponds and Maritime Heritage Center. Prediction for 2004 is 34,212.*

### Glenwood Springs

*Summer/fall chinook (hatchery)--1991-2000 average Nooksack/Samish fall chinook return rate (0.00237) times 2000 brood release of 300,000 yearlings at Glenwood Springs. 4B prediction for 2004 is 771. 100% marked.*

### Skagit River

Spring Chinook (wild)—Brood-specific estimates based on 1990-2003 samples applied to terminal run sizes to estimate mean cohort return rate. This was then applied to the appropriate brood year to obtain age-specific returns per spawner estimates, which were summed for a total estimate. Prediction for 2004 is 1,168.

Spring Chinook (hatchery)— Estimate for fingerlings are base on 1998-2002 brood releases. Yearling estimate is based on the returns per releases (BY-4) of hatchery yearlings multiplying brood year release times average return/release of brood years 85-99 (0.0056). Prediction for 2004 is 2,116 with 1,216 from fingerling releases and 900 from yearling releases.

*Summer/Fall Chinook (Wild)-- Forecast year age-specific estimates derived age data, estimating mean cohort return rate for each age class times appropriate brood year escapement. Brood years 1987-2001 were used for the average brood at age return rates. Prediction for 2004 is 20,354 terminal run size.*

Summer Chinook Indicator Stock: The 2004 forecast was generated by multiplying the average return/smolt (Bys 94-98) by the 2000 release, yielding an estimated 456 terminal run.

Fall Chinook Indicator Stock: since this program is relatively new, specific return data is incomplete. Forecasting is done by using the 2003 return age composition and the return/smolt return rate from BY 1999 (no fives). This return rate was multiplied by the 2000 release number to give a return of five fish.

### Stillaguamish River

Summer Chinook (natural origin)—Recruits per spawner of natural escapement for each age cohort multiplied by the geometric mean of estimated marine survival and freshwater indices. Prediction is based on zero fishing within all waters. Recruits per spawner based on North Fork only. Prediction for 2004 is 2,190.

Summer Chinook (hatchery origin, supplemented)—Release numbers multiplied by geometric mean of survival rates, based on CWT returns and adjusted for AEQ. Marked and unmarked fish are calculated separately. Prediction for 2004 is 1,063.

### Tulalip Hatchery

*Summer/fall Chinook (hatchery)—cohort specific release numbers for brood years 1999 through 2002 multiplied by survival rates from CWTs released in brood years 1986-1991, adjusted by Adult Equivalency. Prediction is based on zero fishing. Prediction for 2004 is 7,597.*

### Snohomish River

Wallace River Hatchery: AEQ survival rates are based the geometric mean of CWT information 1986 through 1991. Cohort analysis of BYs 1999 through 2002 provided age composition for those release years. Forecast for 2004 is 10,104.

Summer/falls—Brood forecast returns (97-2000) times recruit per spawner of natural escapement for each age cohort multiplied by the geometric mean of estimated marine survival and freshwater indices time percent at age applied AEQ to estimated cohort forecasts and potential returns. Prediction for 2004 is 15,696 for both Skykomish and Snoqualmie.

### Lake Washington

Cedar River Summer/fall Chinook (natural)—forecast was generated by applying the three year average 4B run size for a prediction of 469.

North Tributary Summer/fall Chinook (natural)—forecast was generated by applying the three-years average 4B run size for a prediction of 292.

Issaquah Hatchery Chinook—2000 brood hatchery pounds released (30,912) times 1999-02 average (UW + Issaquah) return /pound (0.2233). Prediction for 2004 is 6,904.

University of Washington Hatchery (Portage Bay)--2000 brood hatchery pounds released (7,468) times 1999-02 average (UW + Issaquah) return /pound (0.2233). Prediction for 2004 is 1,672.

### Green River

Summer/Fall Chinook (natural spawners)—2000 brood year escapement (6,170) times average R/S (1.6256) from years with similar escapement (1978, 1984, 1990, 1992, 1994, 1996, 1999, 2000, 2002). 4B prediction for 2004 is 10,030.

Soos Creek Hatchery Chinook (fingerlings)—Average cohort return rate (since 1985) for age 3's (0.0955), age 4's (0.1656) and age 5's (0.0136) times pounds released, which are 46,586, 44,001, 40,213; respectively. 4B prediction for 2004 is 12,282, with 83.4 of the return marked.

Icy Creek Hatchery Chinook (yearlings)-- Average cohort return rate (since 1985) for age 3's (0.0081), age 4's (0.0234) and age 5's (0.0045) times pounds of smolts released, which are 32,079, 34,332, 30,163; respectively. 4B prediction for 2004 is 1,041. 100% of the fish are marked.

### Kitsap Tributaries

Grovers Creek Fall Chinook (hatchery fingerlings)—Recent 10 year average (90-99) return per number released for individual contributing brood years. Return rate base on 78-99 brood year mean: 3s—0.0037433, 4s—0.0026238, 5s—7.98E-05, for forecasts of 3,363, 1,504, 49, respectively. Total 4,916 rounded to 4,900 for 2004 forecast.

Gorst Creek Fall Chinook (hatchery fingerlings)—Long-term brood survival averages (78-99 Grovers) for BY 99 and 01. BY 2000 used a less productive period (84-91 Grovers) to capture health issues at release, which is corroborated with 2003 scales, indicating decrease survival. Prediction for 2004 3s, 4s, and 5s is 8,483, 1,749, 203 for a total of 10,435.

### **Columbia River Stocks**

The Upriver *Brights* (URB) and Lewis River Wild (LRW) are primarily naturally produced stocks while the Spring Creek tule (SCH) is a hatchery stock. The *tule* stocks generally mature at an earlier age than the *bright* stocks and do not migrate as far north in the ocean. Minor stocks include Lower River *Brights* (LRB).

### Cowlitz Spring

The forecast is the sum of predicted tributary mouth returns of the Cowlitz, Kalama, and Lewis river spring Chinook stocks. In turn, each tributary forecast was the aggregate of age-specific linear regressions of historical cohort returns, i.e. age 4 was predicted from age 3 and age 5 was predicted from age 4. The preliminary forecast for 2004 ocean escapement is 15,900, compared to the 2003 return of 13,400.

### Willamette Spring

The current year forecast was made from a mix of average age-specific run sizes and age-specific linear regressions of cohort returns. The recent 5-year average age-3 run size was used as the age-3 forecast. The regressions of age 4 on age 3 and age 5 on age 4 were used to forecast age 4 and 5 return, respectively. The preliminary forecast for 2004 ocean escapement is 109,400, compared to the 2003 return of 126,600.

### Columbia River Summer

The current year forecast was based on a relationship between jacks and adult returns at the Columbia River mouth. The preliminary forecast for 2004 ocean escapement is 102,800, compared to the 2003 return of 116,900.

### Cowlitz Fall and Bonneville Tule

The Bonneville tule and Cowlitz fall stocks comprise the LRH stock and their individual forecasts are based on an estimate of their proportion of the forecasted total LRH return. The LRH forecast was from brood cohort regressions by age group. Ocean escapement in 2004 is forecast to be 79,000 LRH adults, less than the 2003 actual return of 155,000 adults but more than the recent 10-year average of 75,100. The recent 10-year average LRH forecast error is -30% with a range between -6% and -66% of actual. The Bonneville tule and Cowlitz fall individual forecasts are much less accurate than the composite LRH forecast.

### Spring Creek Hatchery

The forecast was based on the cohort ratio of age 3 to age 2, the regression of age 4 on age 2 & 3, and the regression of age-5 on age-4. Ocean escapement in 2004 is projected to be 150,000 adults, less than the 2003 actual return of 180,6000 adults but more than the recent 10-year average of 67,000. The recent 10-year average forecast error is -18% with a range of -55% to 9%.

### Upriver Brights

The current year forecast was the sum of 22 individual forecast, i.e. 6 stocks X 4 age groups less two exceptions (Lower River Hatchery (LRH) age 6 and Bonneville Pool Hatchery (SCH) age 6). The six stocks were LRH, LRW, SCH, URB, Bonneville Upriver Brights (BUB), and Pool



Upriver Bright (PUB). The four age groups were age 3, 4, 5, and 6. Both age-specific average cohort ratios and age specific cohort regressions were used in the individual forecasts. The preliminary forecast for 2004 ocean escapement is 622,600 adults, compared to the 2003 run of 727,500.

### Mid-Columbia Brights

The current year forecast for Mid-Columbia Brights (MCB) is the sum of the BUB and PUB forecasts. For the BUB component, the age 3 and 4 forecasts were made from brood cohort ratios, and age 5 and 6 from cohort regressions. For the PUB component, the age 3 forecast was made from a recent 5-year average return, and the other age groups from brood cohort regressions. Ocean escapement in 2004 is forecast to be 88,800 MCB adults, less than the 2003 actual return of 150,300 adults but more than the recent 10-year average of 64,600. The recent 10-year average forecast error is -0% with a range of -43% to 38%.

### Lewis River Wild

The forecasts are based on cohort regressions by age group except for age-4 which is based on cohort ratios. Ocean escapement in 2004 is forecast at 24,200 adults, which is slightly less than the 2003 actual return of 26,000, both an improvement over the recent 10-year average of 14,300. The recent 10-year average forecast error is -12% with a range of -66% to 20%.

### **Oregon Coastal North Migrating**

Forecasts of spawning escapements are made for an aggregate of Chinook salmon populations from seven major river systems on the North Oregon Coast (NOC). River systems in the aggregate include: Nehalem, Tillamook, Nestucca, Siletz, Yaquina, Alsea, and Siuslaw. Annual escapement estimates are made from expansions of fish density indices (peak live + dead fish per mile) observed at standard survey sites in each river basin. These river specific indices are adjusted for observation efficiency and for bias. The abundance for each river is then estimated by multiplying the index by the assumed length of spawning habitat in the river. A three-year-moving-average of escapement is used as the forecast for each river in the forthcoming year. The NOC escapement forecast is the sum of the seven river forecasts. The 2004 forecast is 131,900.

Appendix E. CWT (Cohort) release to age 2 survival indices (completed brood years only) and Chinook model-derived age 1 to age 2 survival indices (up to 2002) for exploitation rate indicator stocks. Indices are survival indices relative to base period.

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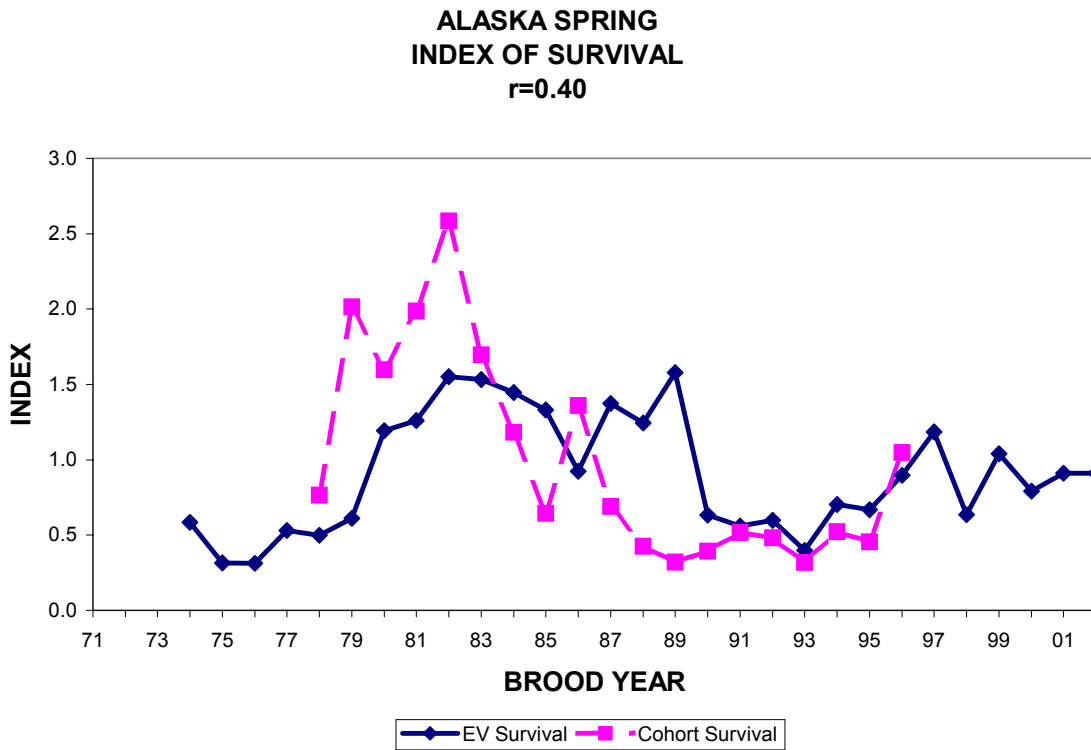


Figure E.1. Alaska Spring CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

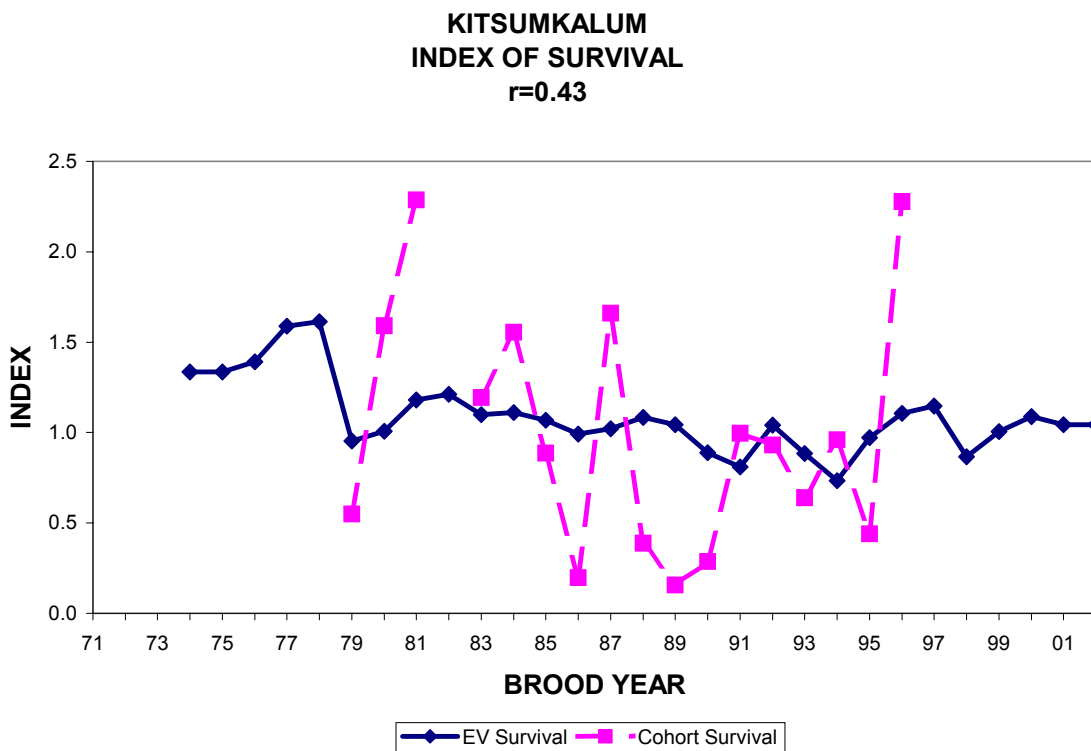


Figure E.2. Kitsumkalum CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**ROBERTSON CREEK  
INDEX OF SURVIVAL  
r=0.72**

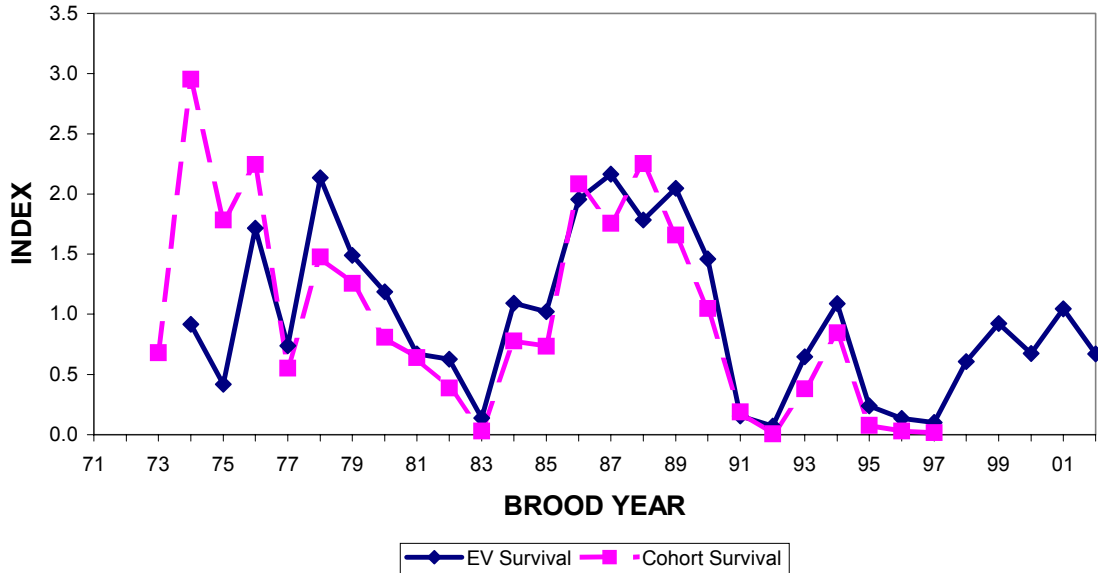


Figure E.3. Robertson Creek CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**QUINSAM  
INDEX OF SURVIVAL  
r=0.74**

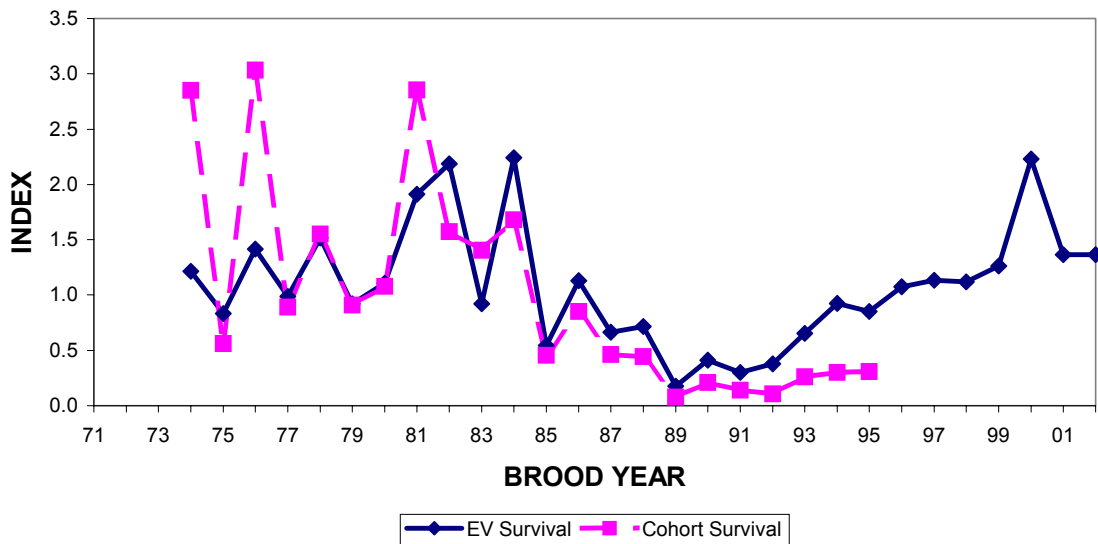


Figure E.4. Quinsam CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**PUNTLLEDGE  
INDEX OF SURVIVAL  
r=0.56**

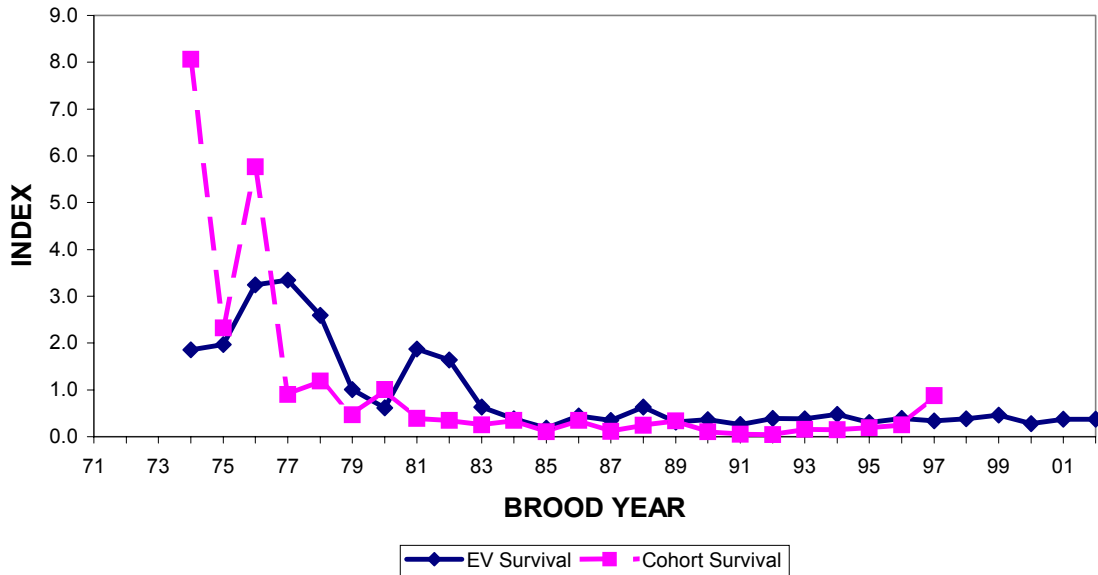


Figure E.5. Puntledge CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**BIG QUALICUM  
INDEX OF SURVIVAL  
r=0.60**

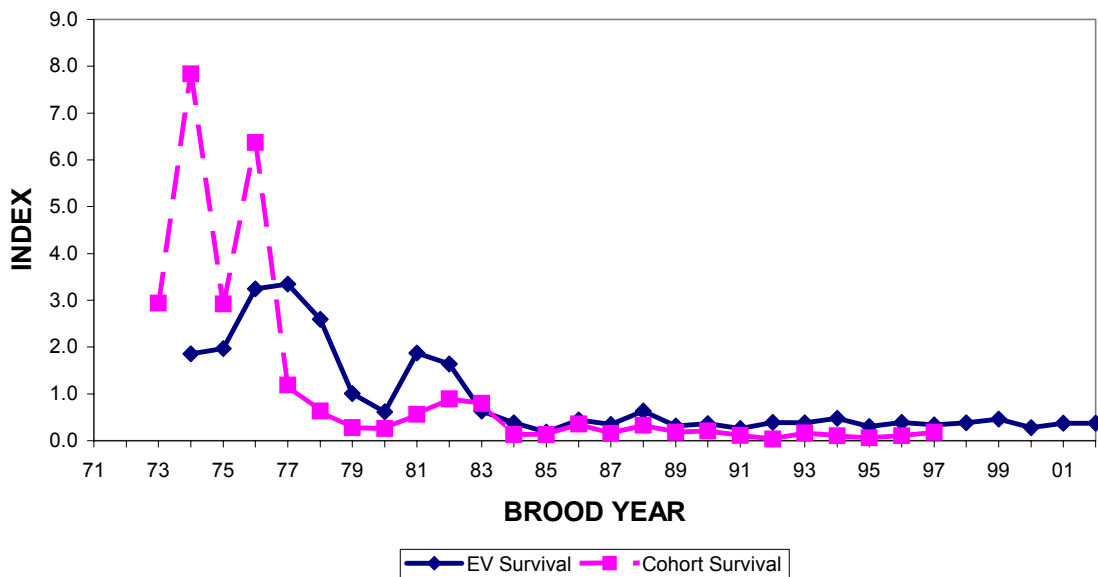


Figure E.6. Big Qualicum CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**COWICHAN  
INDEX OF SURVIVAL  
r=0.53**

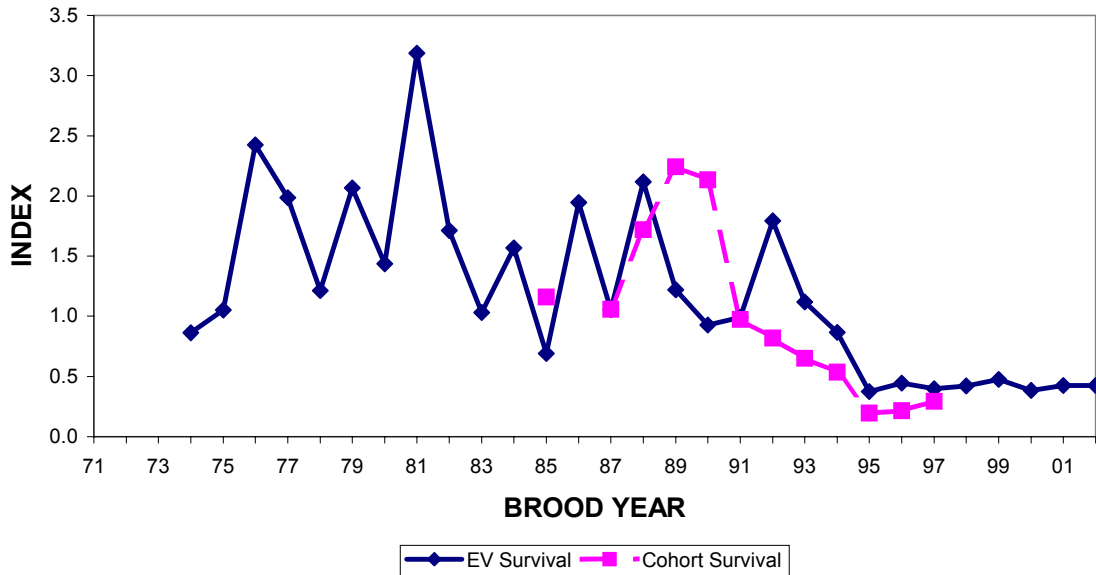


Figure E.7. Cowichan CWT (cohort) and model (EV) age 2 survival indices (r=correlation between survival indices).

**CHILLIWACK  
INDEX OF SURVIVAL  
r=0.71**

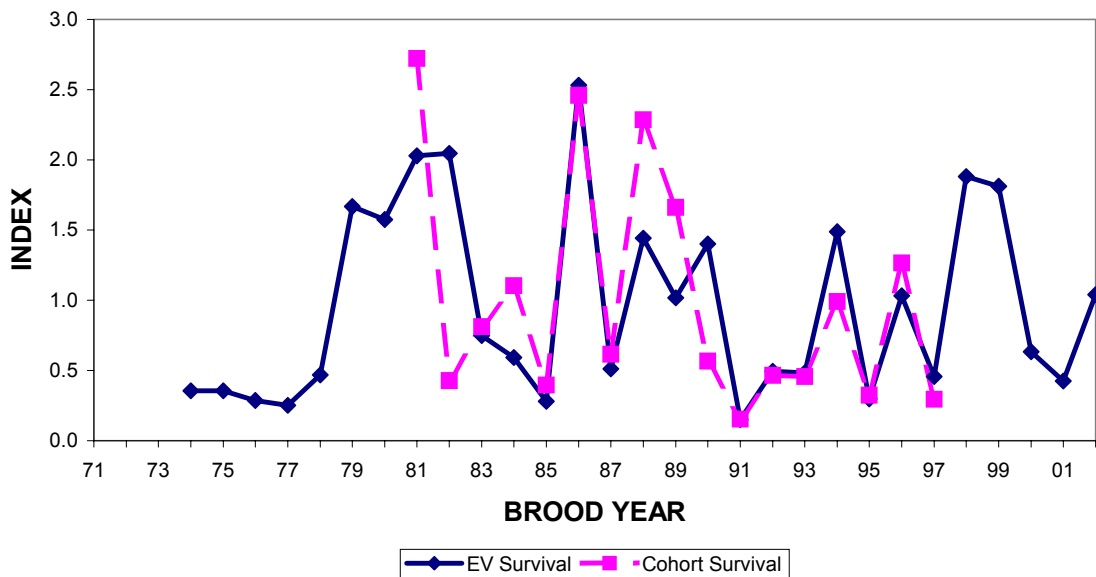


Figure E.8. Chilliwack CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**NOOKSACK SPRING YEARLING  
INDEX OF SURVIVAL  
r=0.78**

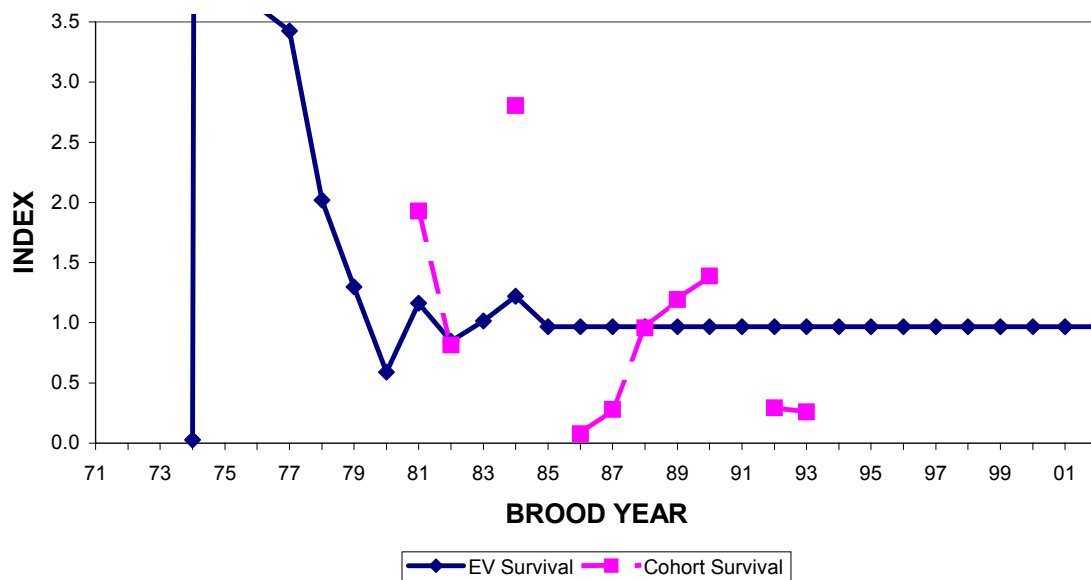


Figure E.9. Nooksack Spring Yearling CWT (cohort) and model age 2 survival indices (r=correlation between survival rates).

**SKAGIT SPRING YEARLING  
INDEX OF SURVIVAL  
r=.07**

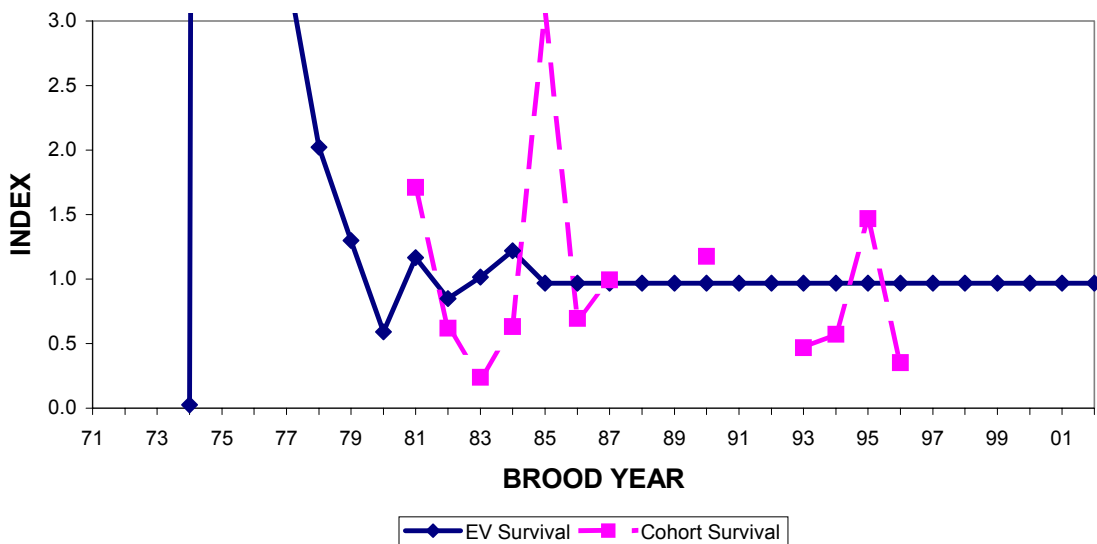


Figure E.10. Skagit Spring Yearling CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).



**SAMISH FALL FINGERLING  
INDEX OF SURVIVAL  
r=0.72**

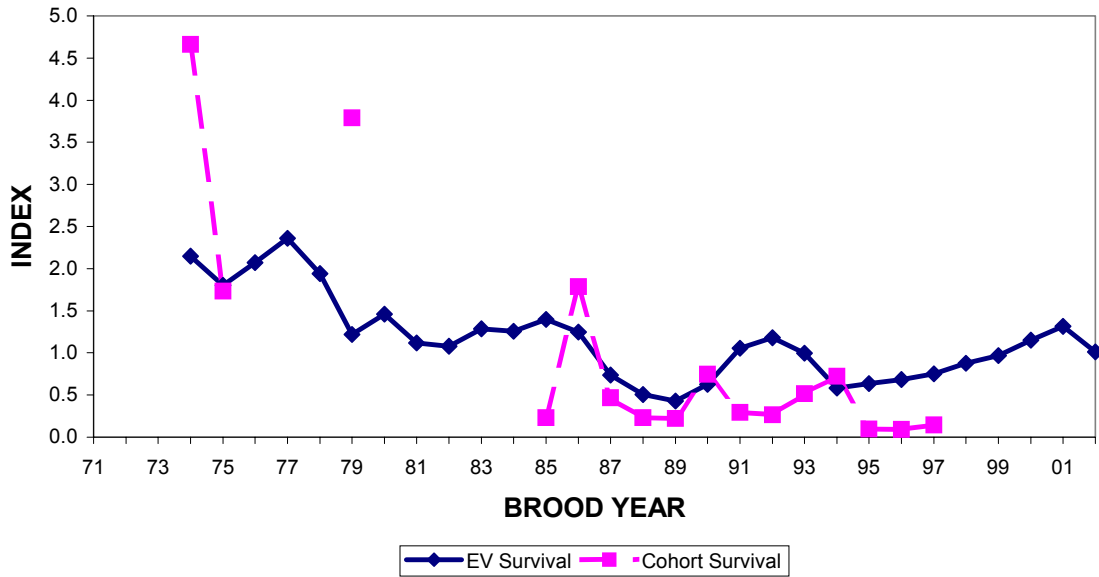


Figure E.11. Samish Fall Fingerling CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**GEORGE ADAMS FALL FINGERLING  
INDEX OF SURVIVAL  
r=0.59**

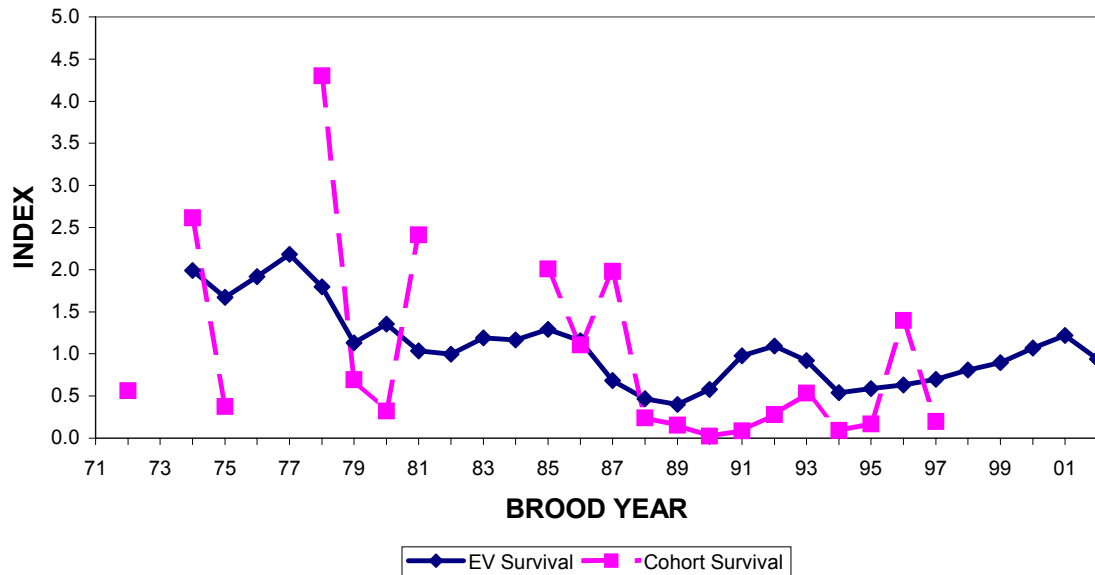


Figure E.12. George Adams Fall Fingerling CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**SOUTH PUGET SOUND FALL YEARLING  
INDEX OF SURVIVAL  
r=-.04**

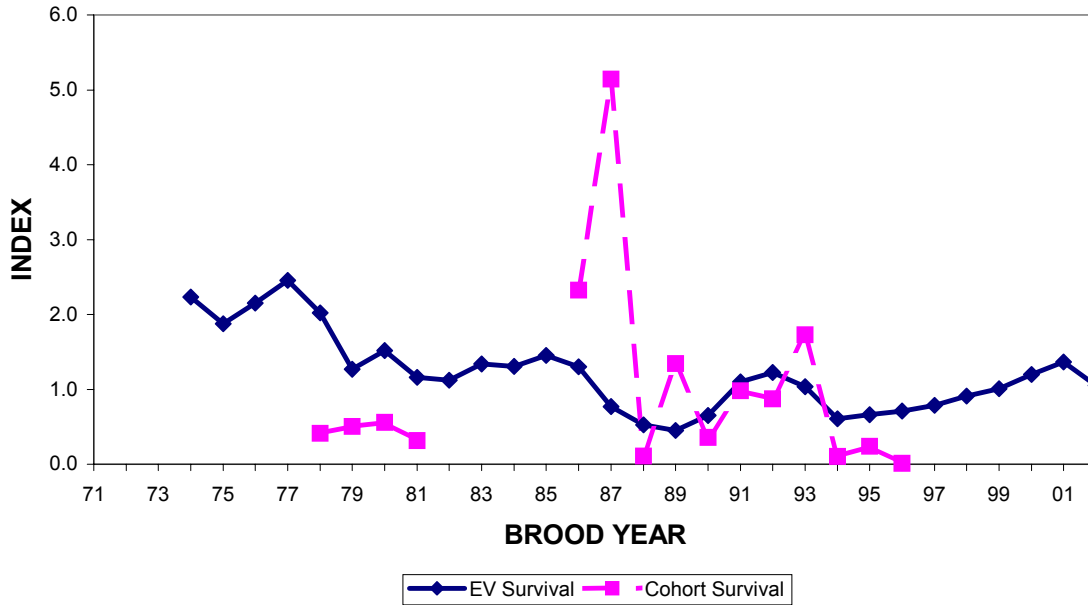


Figure E.13. South Puget Sound Fall Fingerling CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**SOUTH PUGET SOUND FALL FINGERLING  
INDEX OF SURVIVAL  
r=0.49**

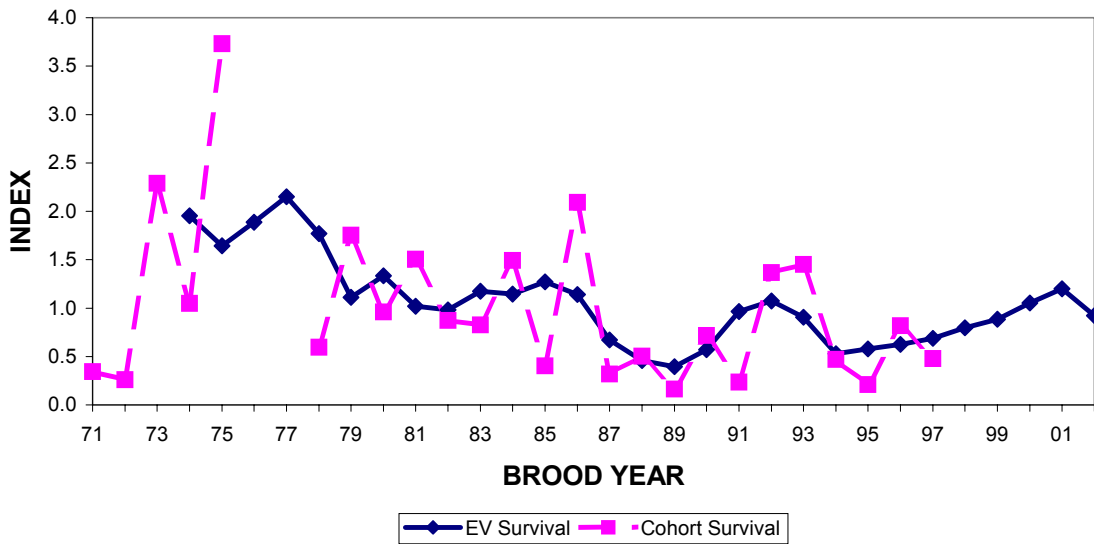


Figure E.14. South Puget Sound Fall Yearling CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**SQUAXIN PENS FALL YEARLING  
INDEX OF SURVIVAL  
r=0.08**

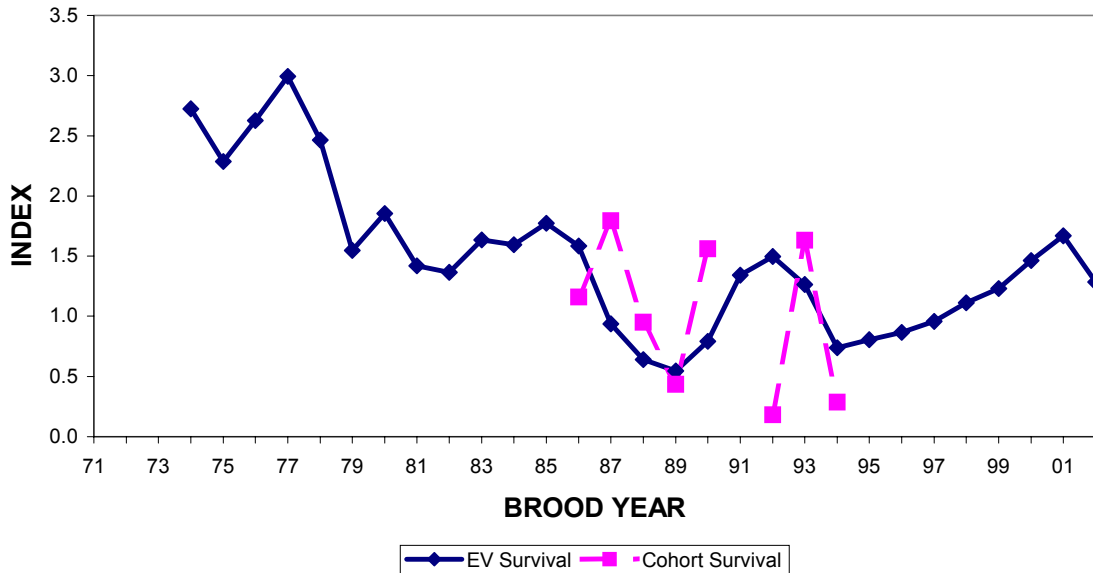


Figure E.15. Squaxin Pens Fall Yearling CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**WHITE RIVER SPRING YEARLING  
INDEX OF SURVIVAL  
r=-.18**

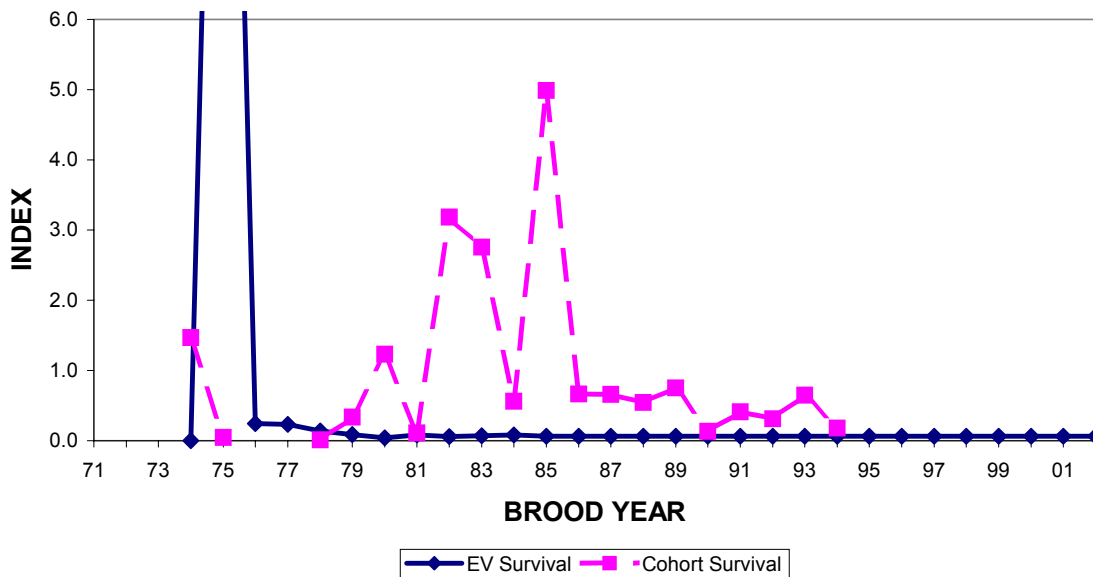


Figure E.16. White River Spring Yearling CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**ELWHA FALL FINGERLING  
INDEX OF SURVIVAL  
r=0.48**

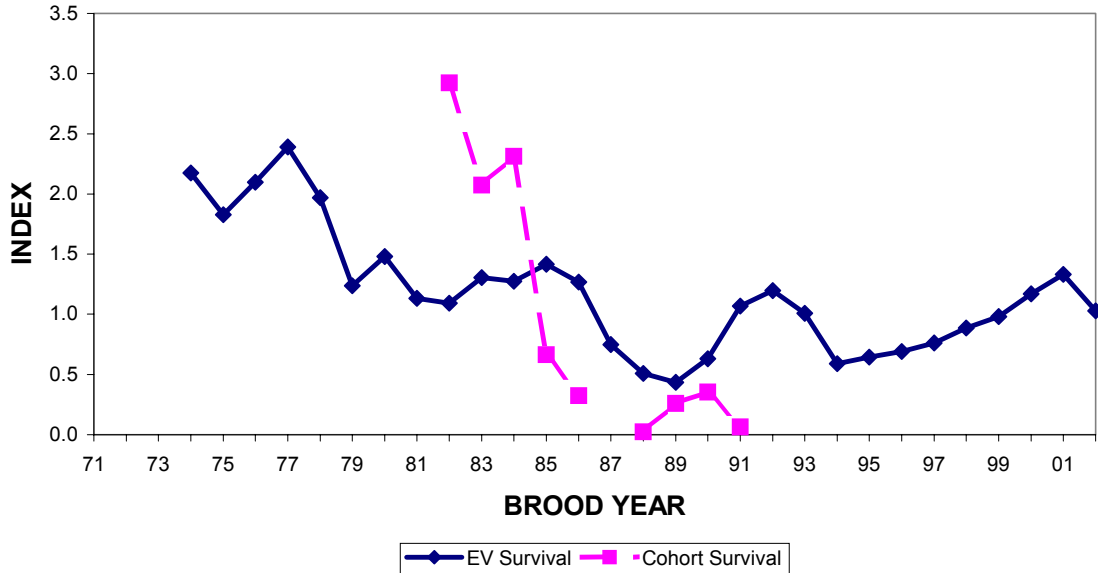


Figure E.17. Elwha Fall Fingerling CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**HOKO FALL FINGERLING  
INDEX OF SURVIVAL  
r=-.06**

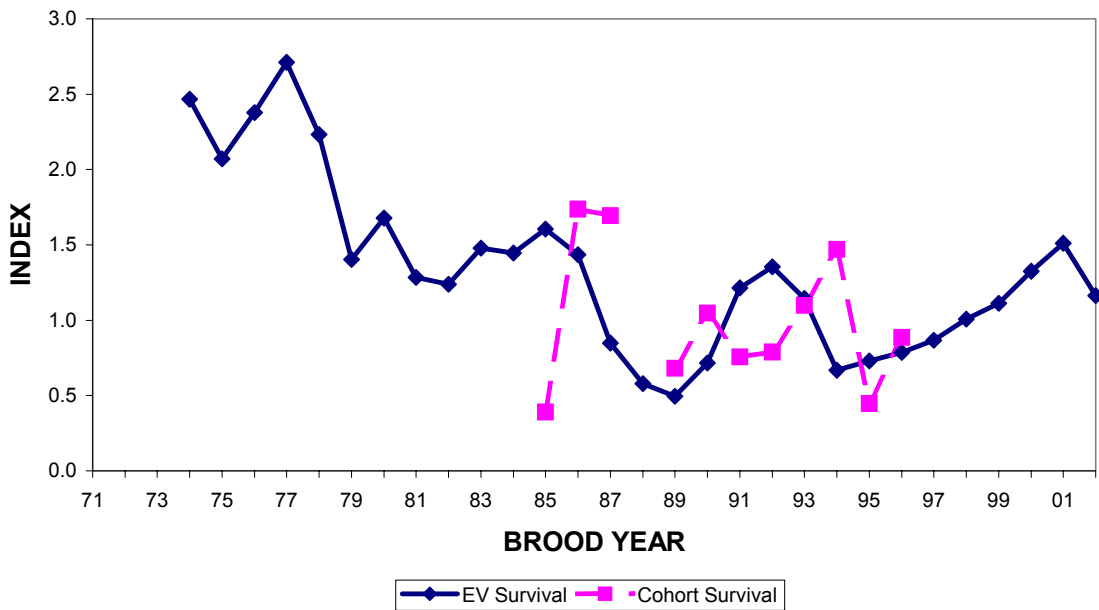


Figure E.18. Hoko Fall Fingerling CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**SOOES FALL FINGERLING  
INDEX OF SURVIVAL  
r=-.11**

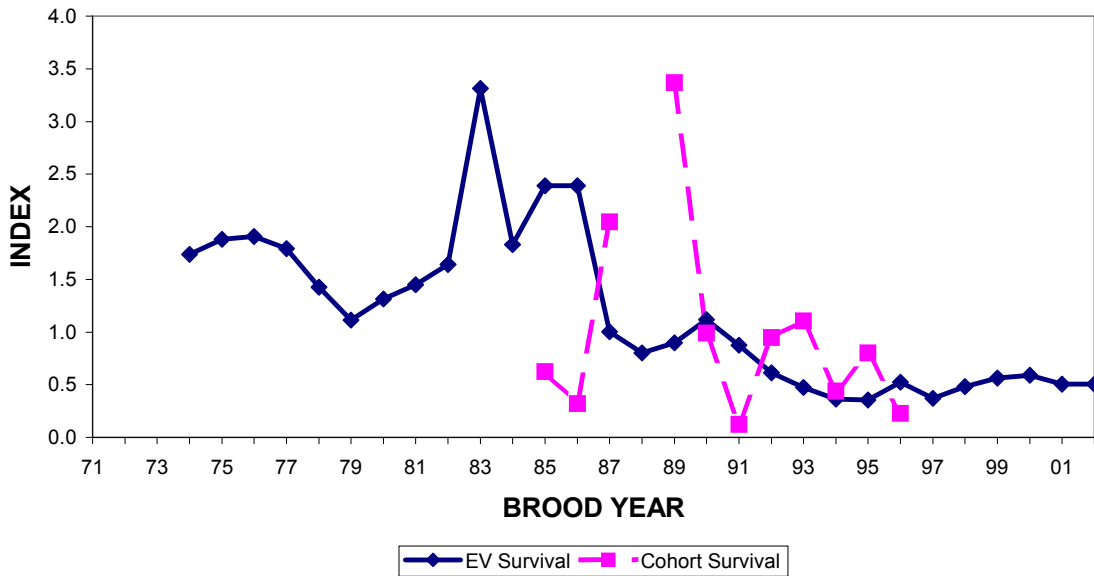


Figure E.19. Sooes Fall Fingerling CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**QUEETS FALL FINGERLING  
INDEX OF SURVIVAL  
r=0.44**

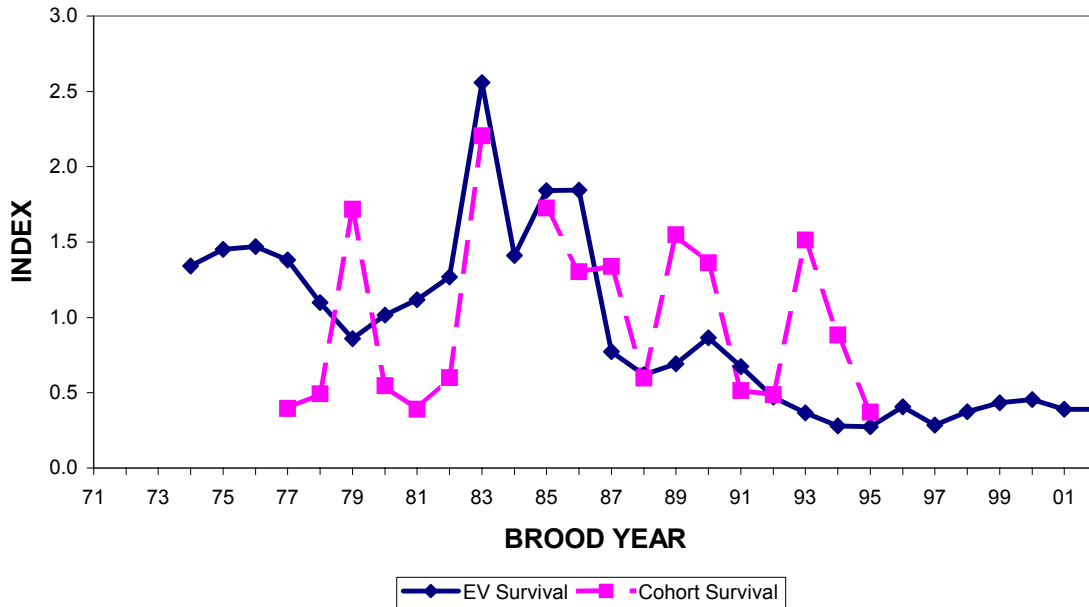


Figure E.20. Queets Fall Fingerling CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**WILLAMETTE SPRING  
INDEX OF SURVIVAL  
r=0.67**

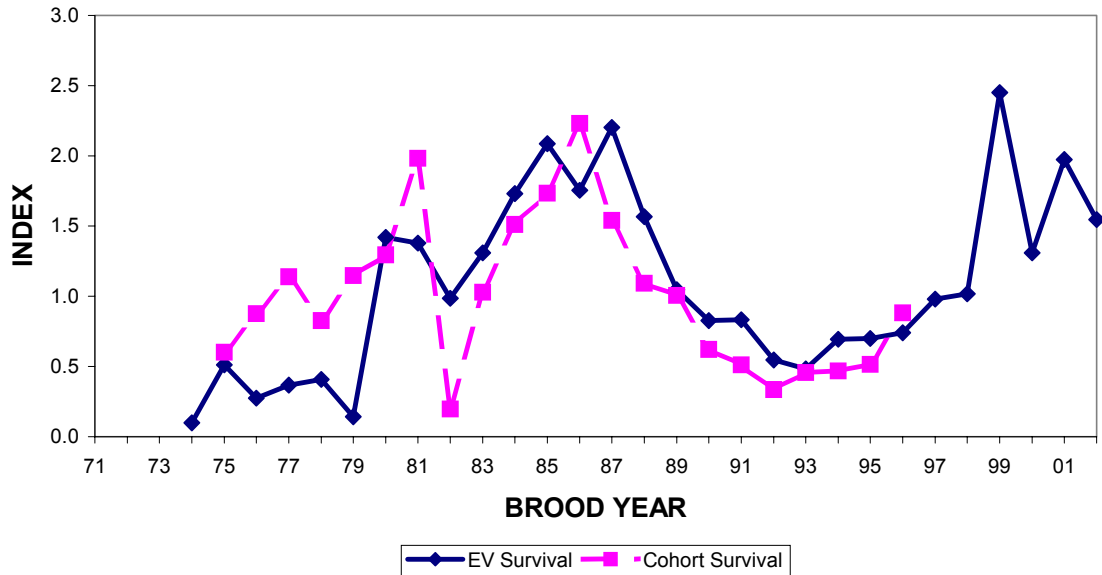


Figure E.21. Willamette Spring CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**COLUMBIA RIVER SUMMERS  
INDEX OF SURVIVAL  
r=.57**

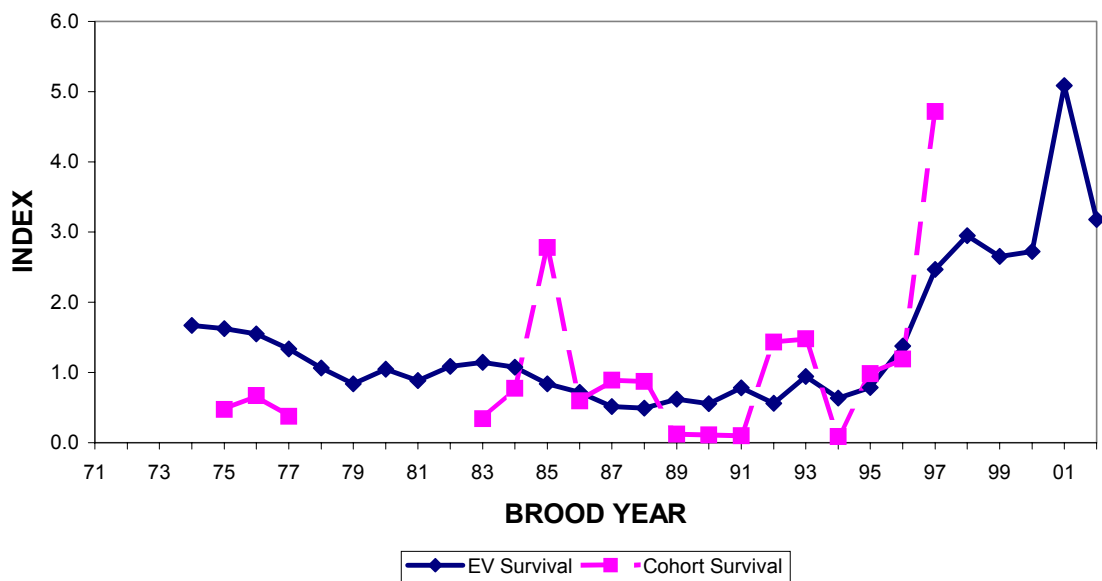


Figure E.22. Columbia River Summers CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**COWLITZ FALL TULE  
INDEX OF SURVIVAL  
r=0.82**

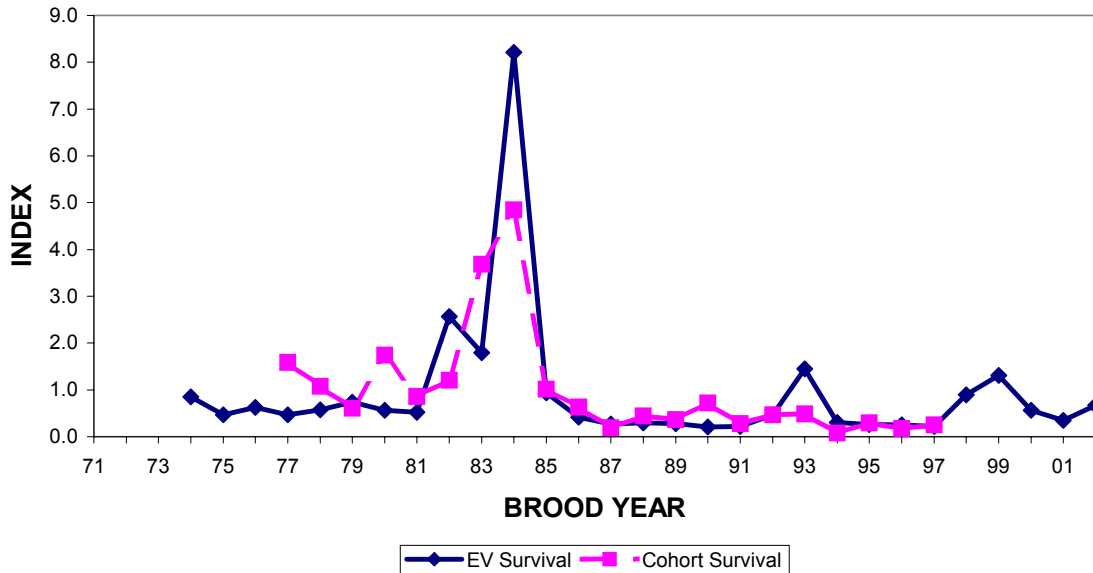


Figure E.23. Cowlitz Fall Tule CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**SPRING CREEK TULE  
INDEX OF SURVIVAL  
r=0.71**

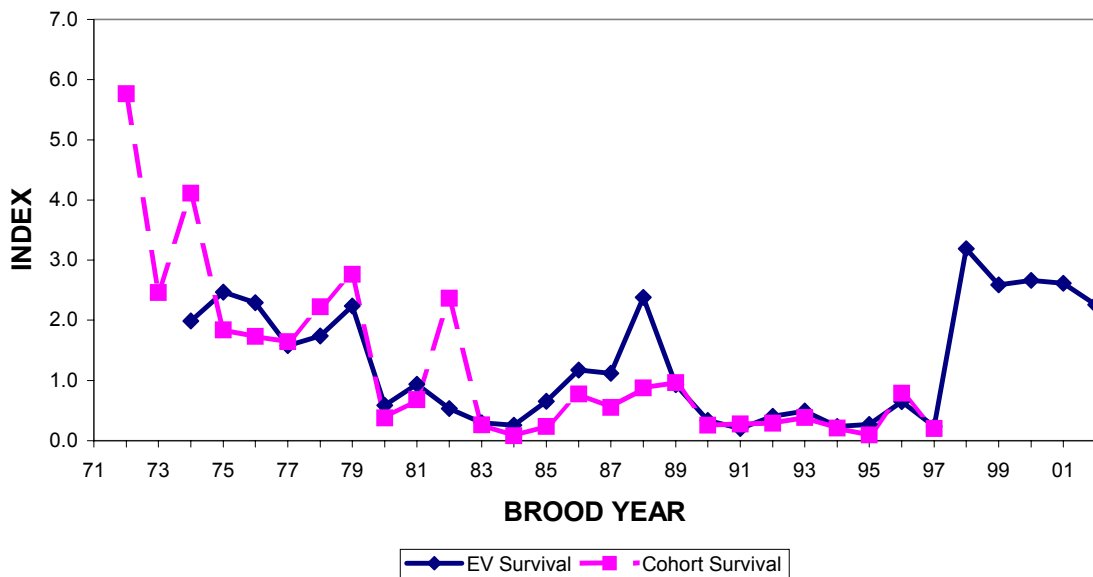


Figure E.24. Spring Creek Tule CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**COLUMBIA LOWER RIVER HATCHERY TULE  
INDEX OF SURVIVAL  
r=0.52**

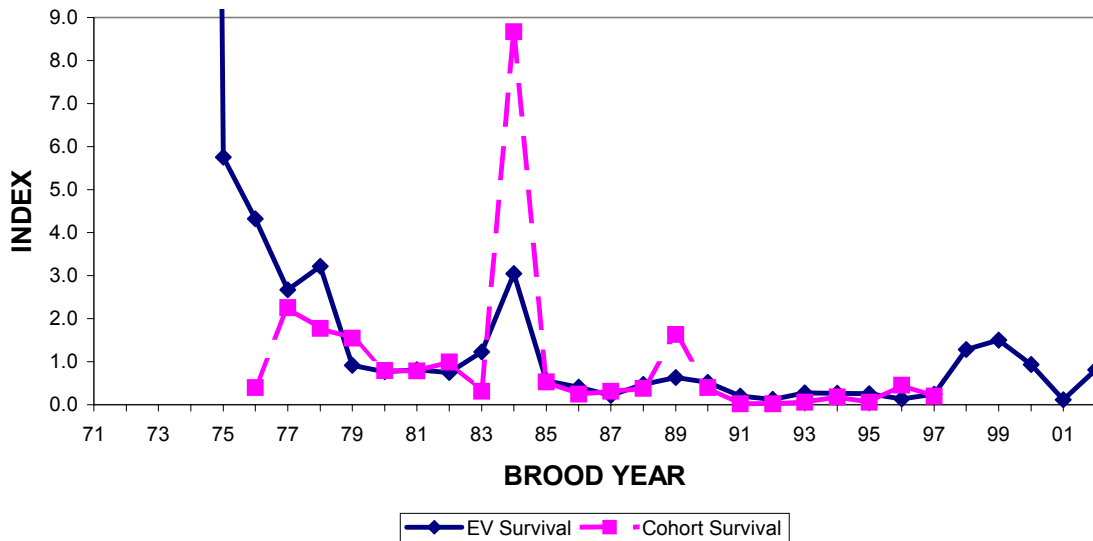


Figure E.25. Columbia Lower River Hatchery Tule CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**COLUMBIA RIVER UPRIVER BRIGHTS  
INDEX OF SURVIVAL  
r=0.54**

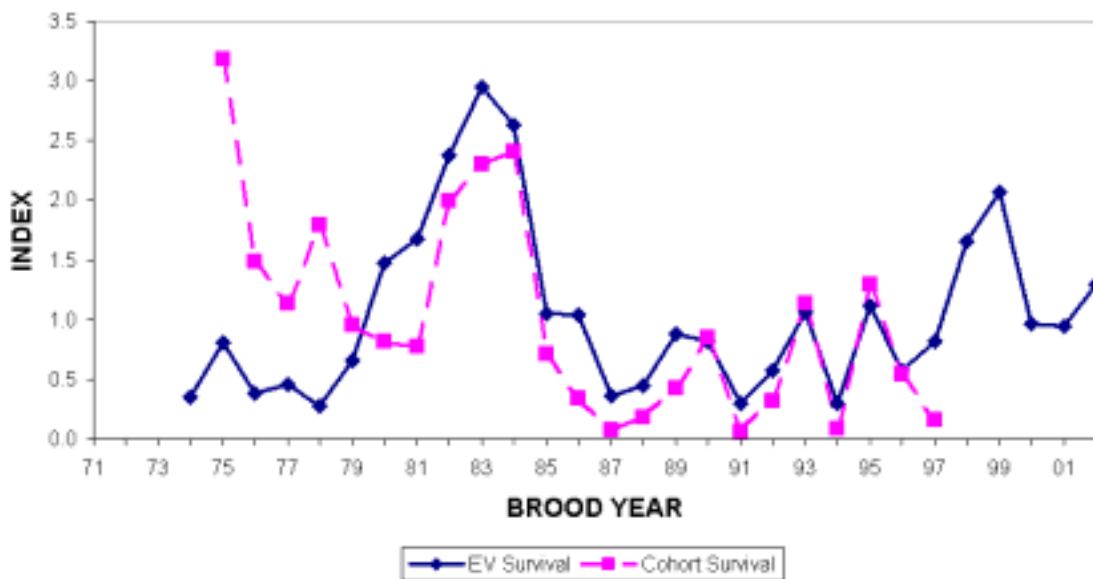


Figure E.26. Columbia River Upriver Brights CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).



**HANFORD WILD BRIGHTS  
INDEX OF SURVIVAL  
r=0.73**

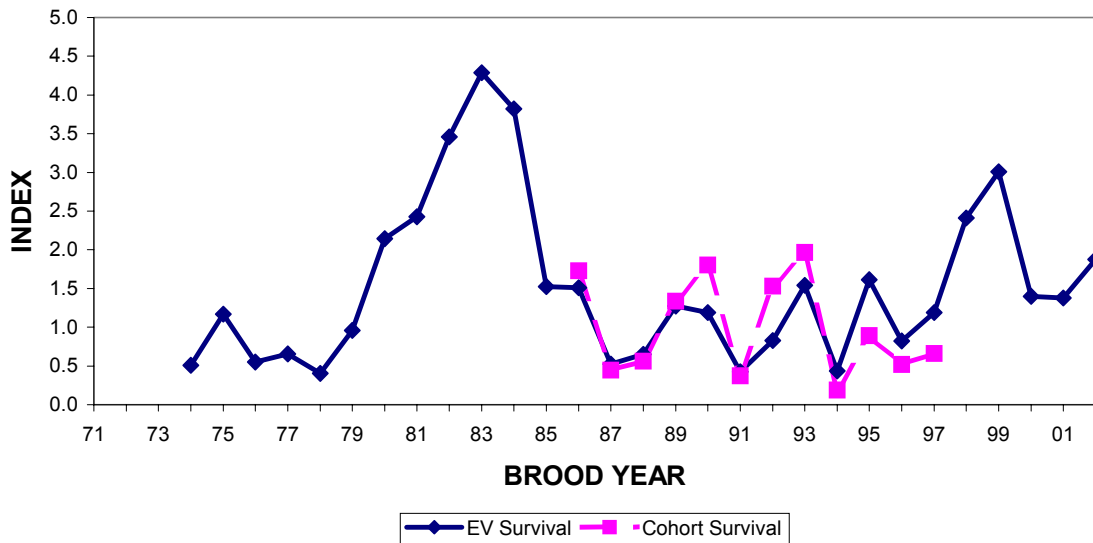


Figure E.27. Hanford Wild Brights CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**LYONS FERRY FALL HATCHERY  
INDEX OF SURVIVAL  
r=-.40**

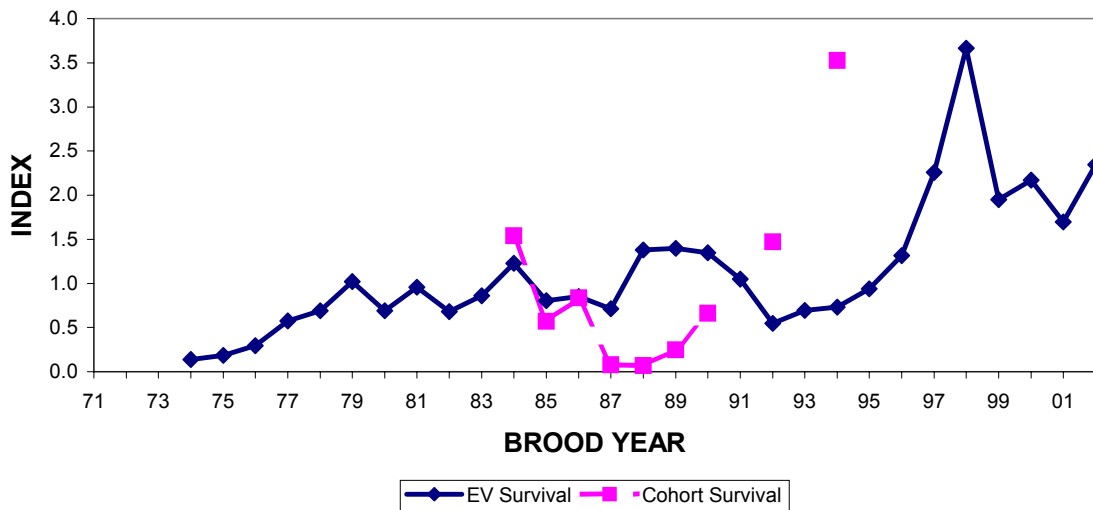


Figure E.28. Lyons Ferry Fall Hatchery CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**LEWIS RIVER WILD  
INDEX OF SURVIVAL  
r=0.52**

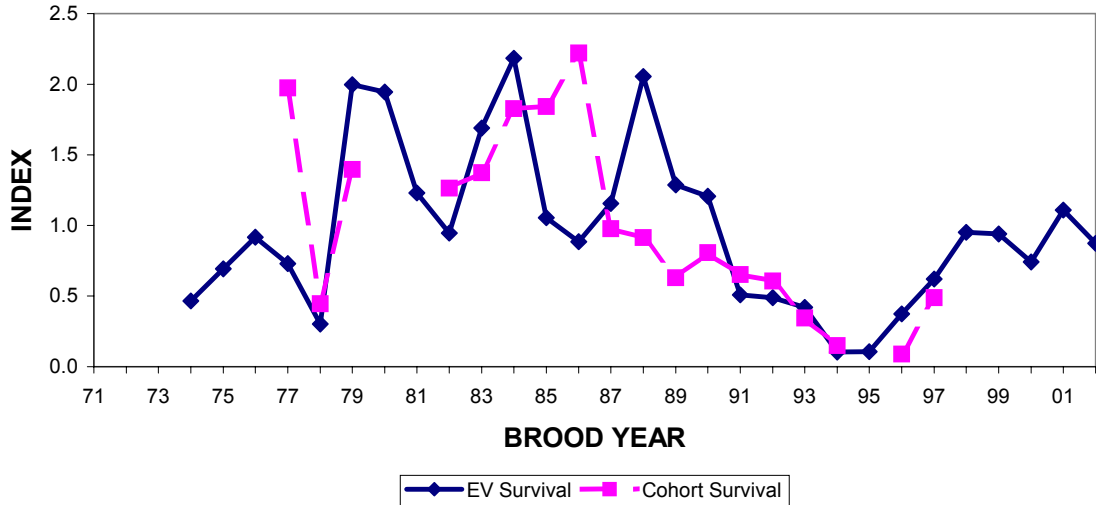


Figure E.29. Lewis River Wild CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

**SALMON RIVER (NOC)  
INDEX OF SURVIVAL  
r=0.66**

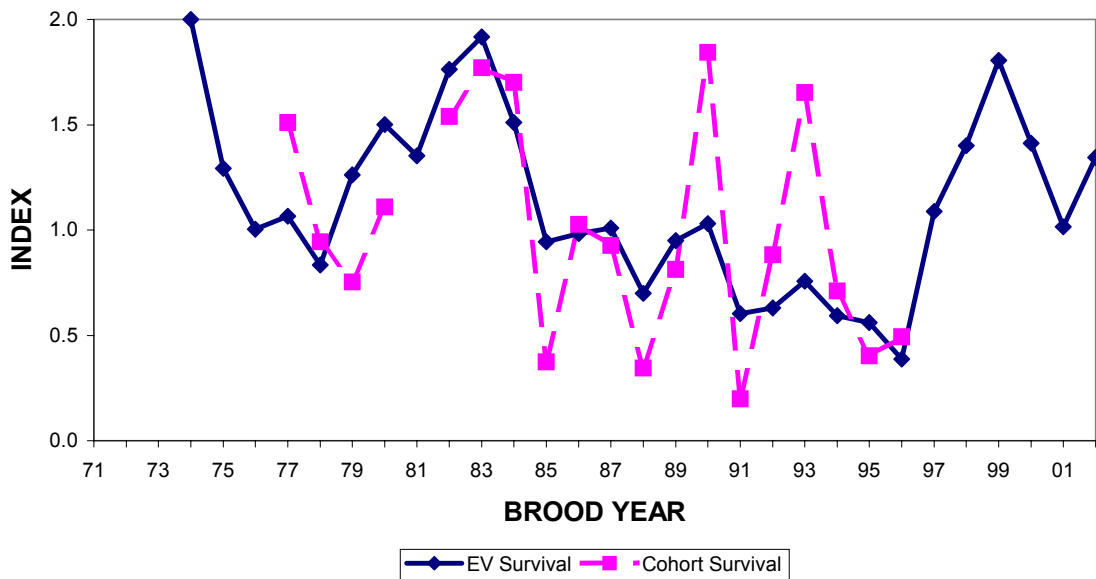


Figure E.30. Salmon River (NOC) CWT (cohort) and model age 2 survival indices (r=correlation between survival indices).

Appendix F. Total mortality and landed catch exploitation rates for exploitation rate indicator stocks<sup>1</sup> for complete broods up to 1998.

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<sup>1</sup> The corresponding stocks used in the Chinook model calibration are indicated in brackets.

Ocean exploitation rates based only on ocean fisheries are shown for stocks in which terminal fisheries differentially impact the coded-wire tagged indicator compared to the associated wild stock. Total exploitation rates based on ocean plus terminal fisheries are shown for stocks in which fishery impacts on the indicator and the associated wild stock are similar in terminal areas. Exploitation rates are not shown for the following hatchery stocks because they are not associated with a wild stock: University of Washington Accelerated, George Adams Fall Fingerling, South Puget Sound Fall Yearling, Squaxin Pens Fall Yearling, Spring Creek Tule, and Columbia Lower River Hatchery. Exploitation rates cannot be calculated for the following stocks without sufficient escapement data: Nooksack spring Yearling, Nooksack spring Yearling, Stillaguamish Fall Fingerling, Nisqually Fall Fingerling, White River Spring Yearling, Elwha Fall Fingerling, Queets Fall Fingerling.

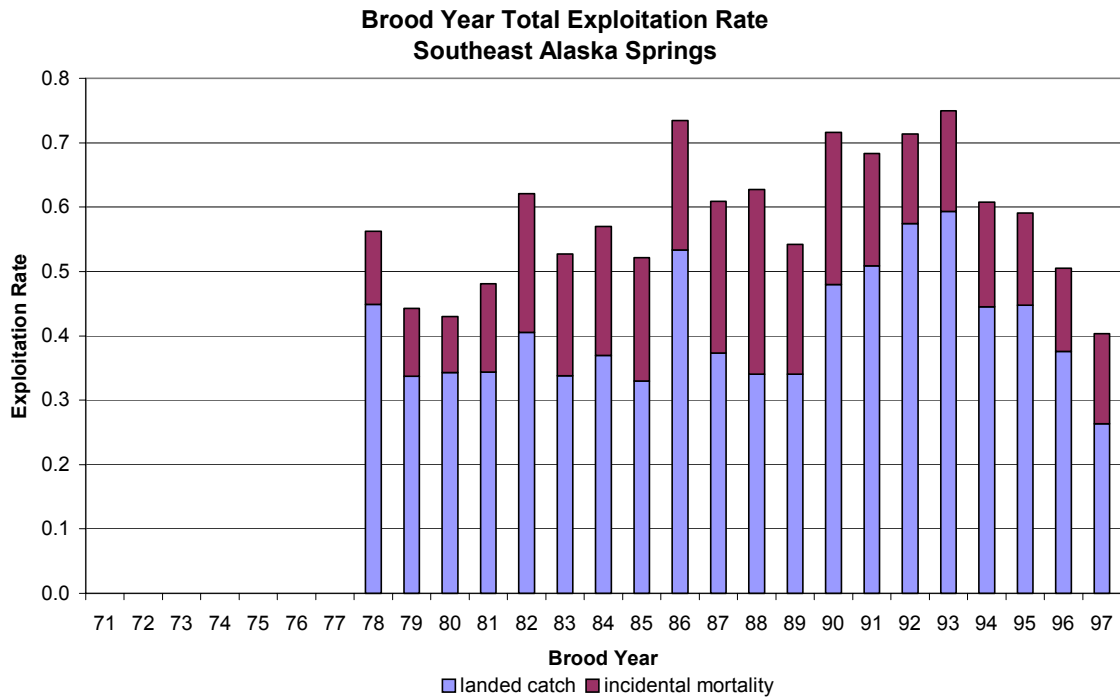


Figure F.1. Southeast Alaska springs total exploitation rates by brood year.

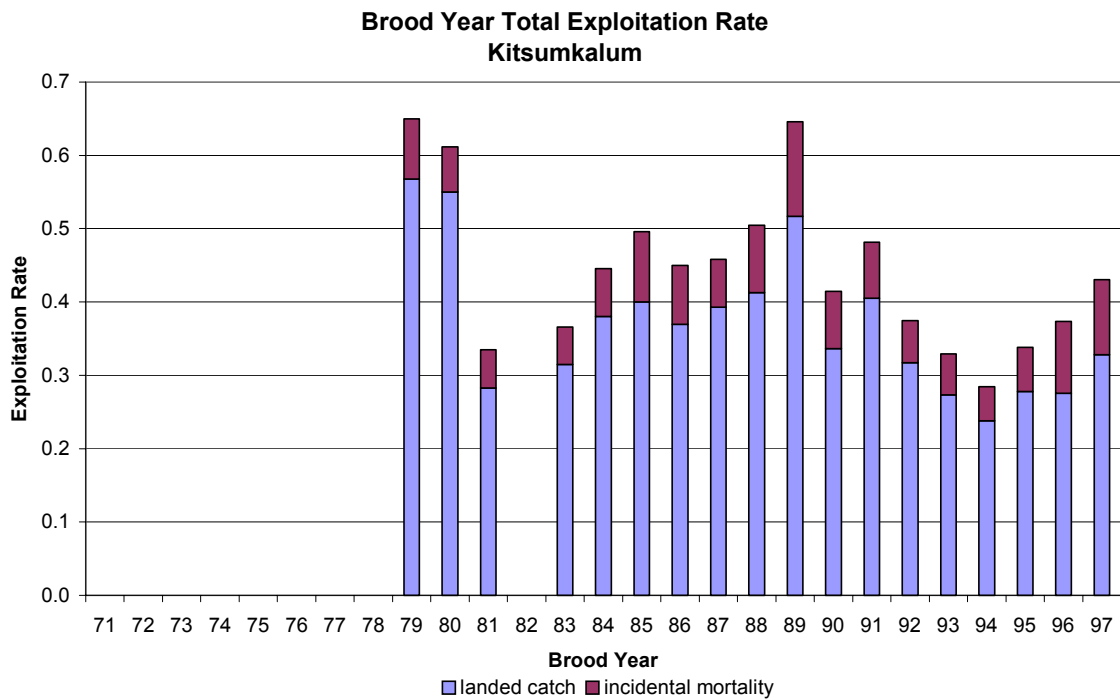


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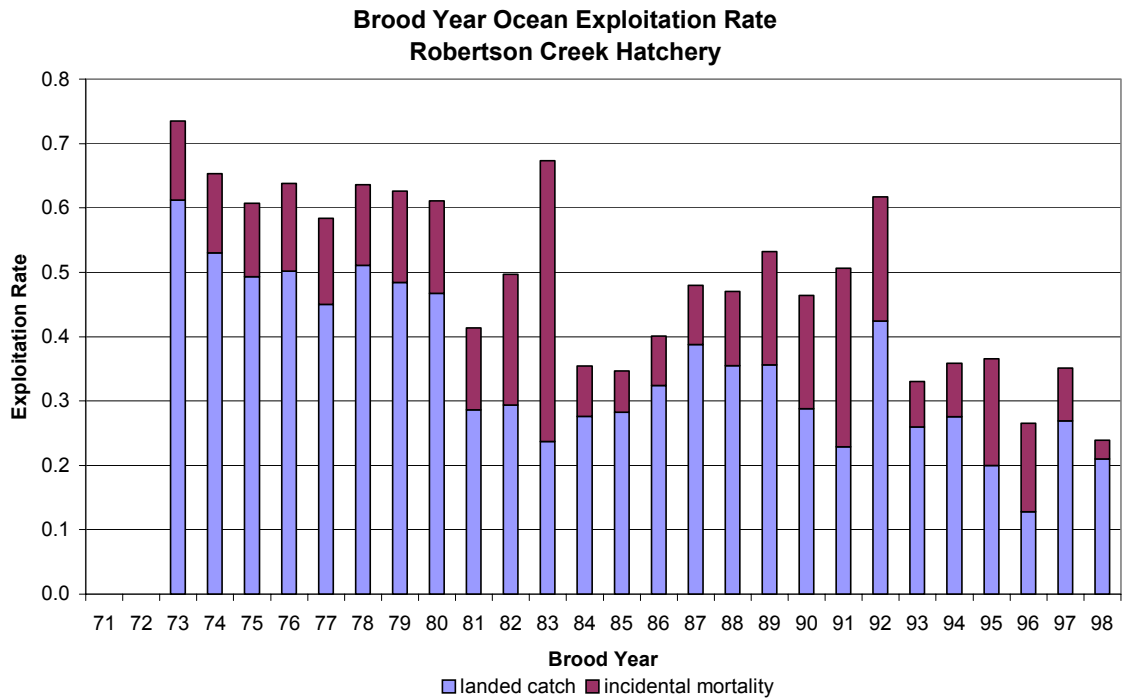


Figure F.3. Robertson Creek (West Coast Vancouver Island Hatchery and Natural) ocean exploitation rates by brood year.

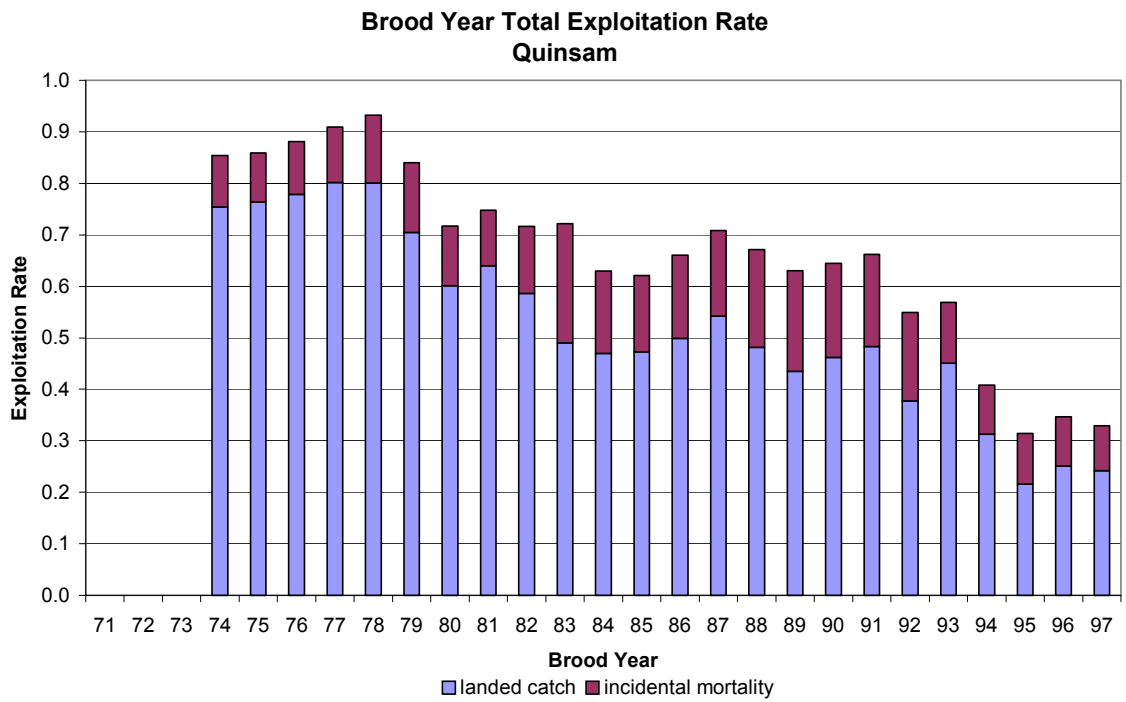


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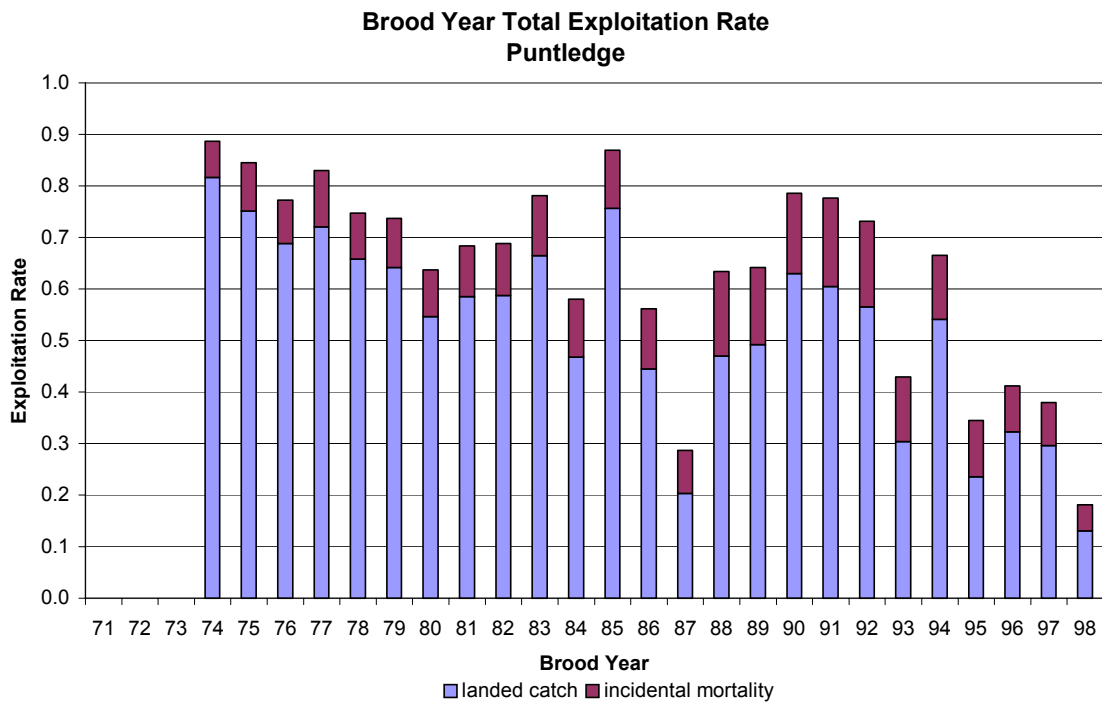


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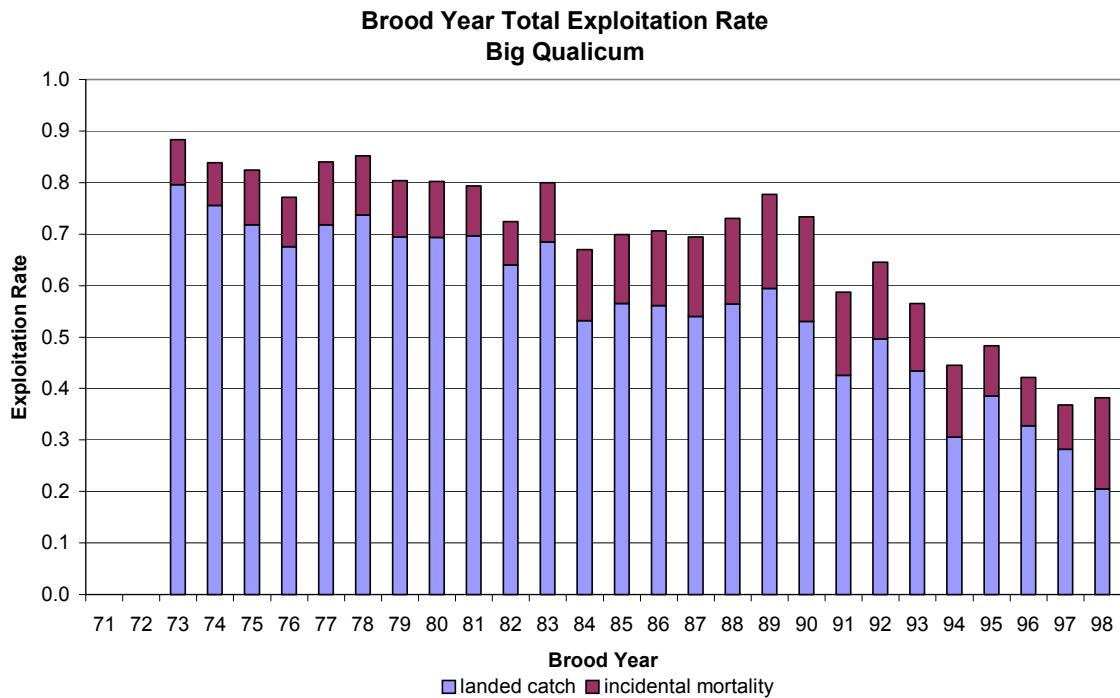


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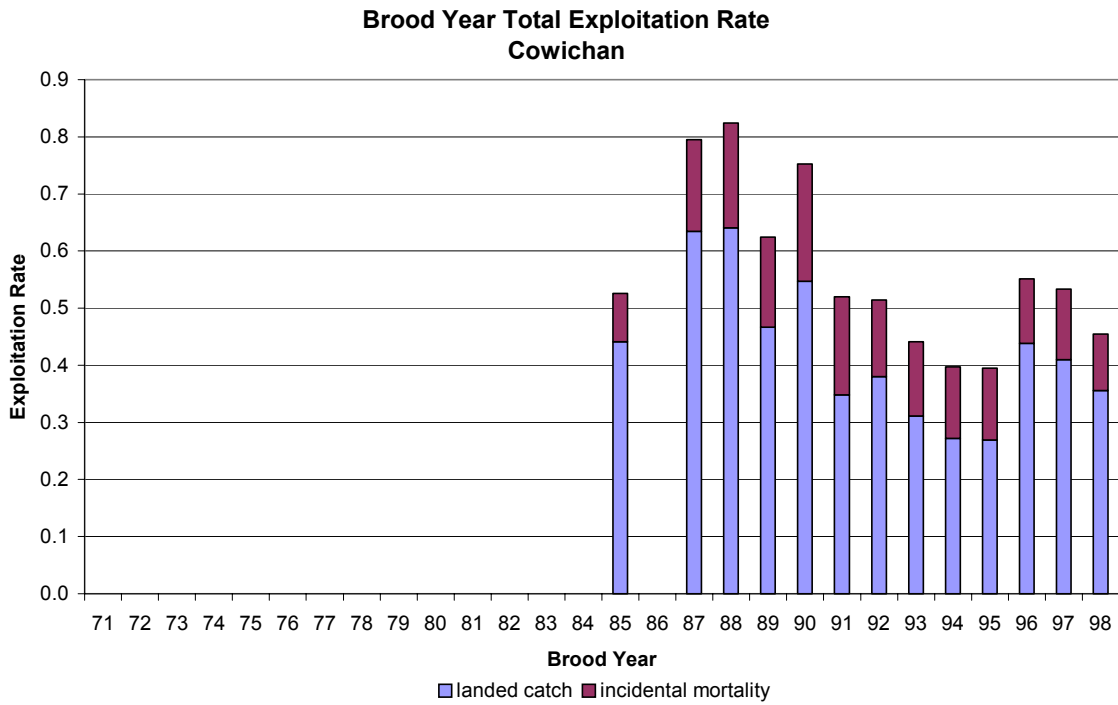


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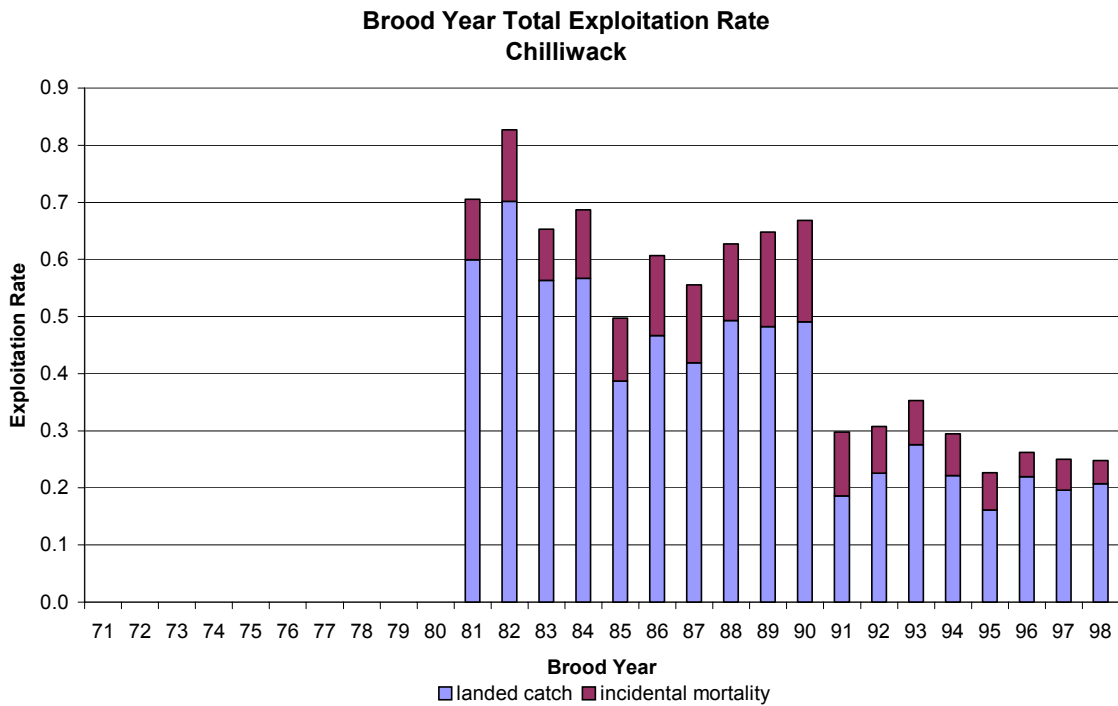


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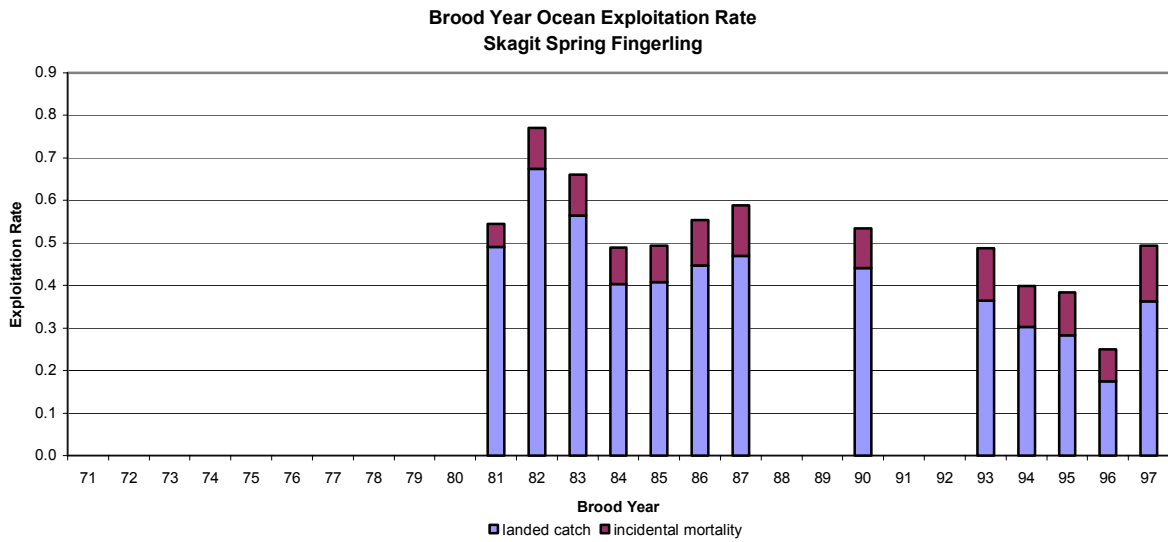


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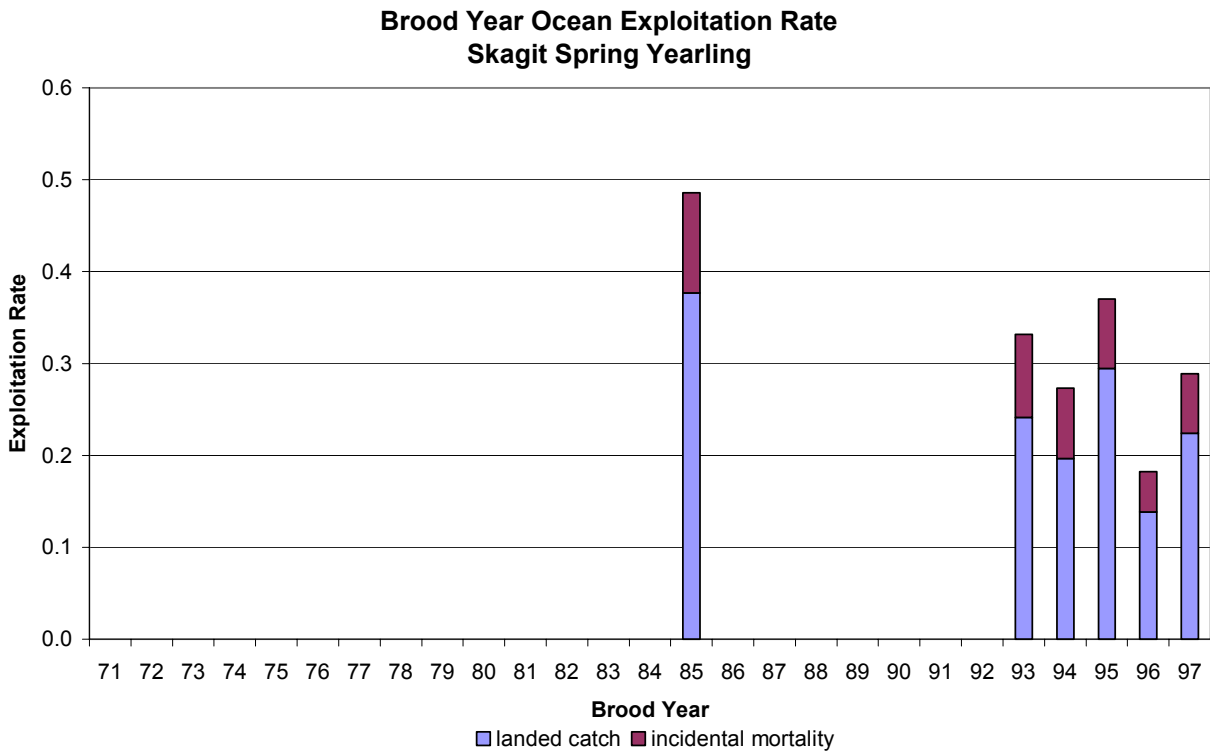


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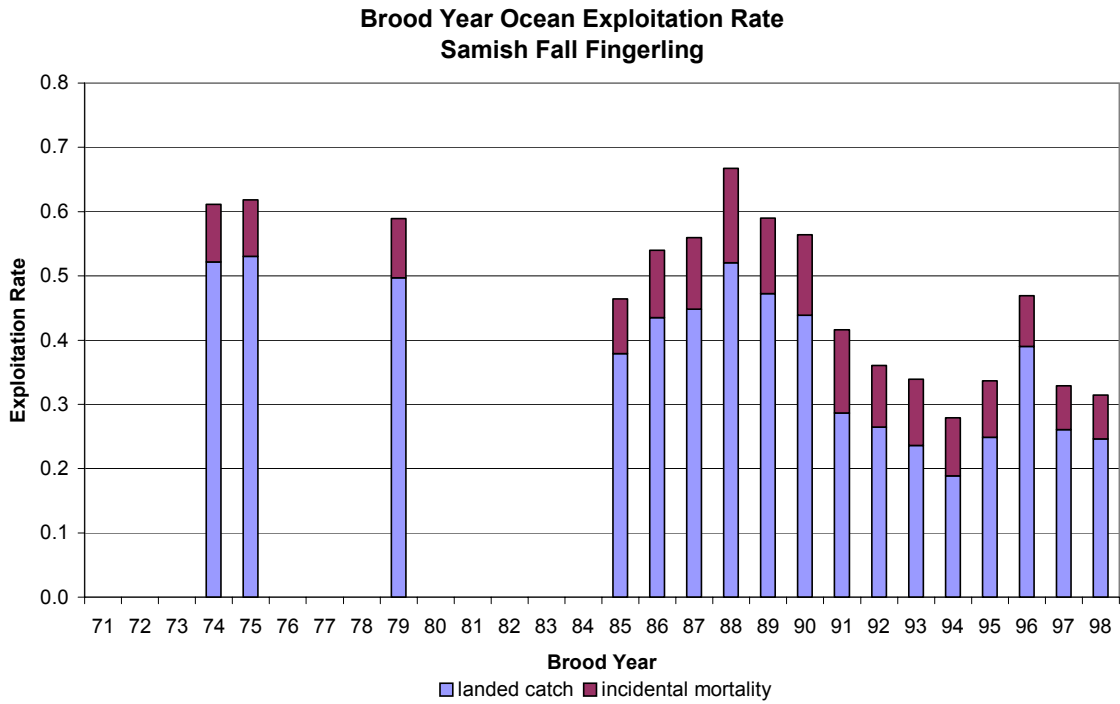


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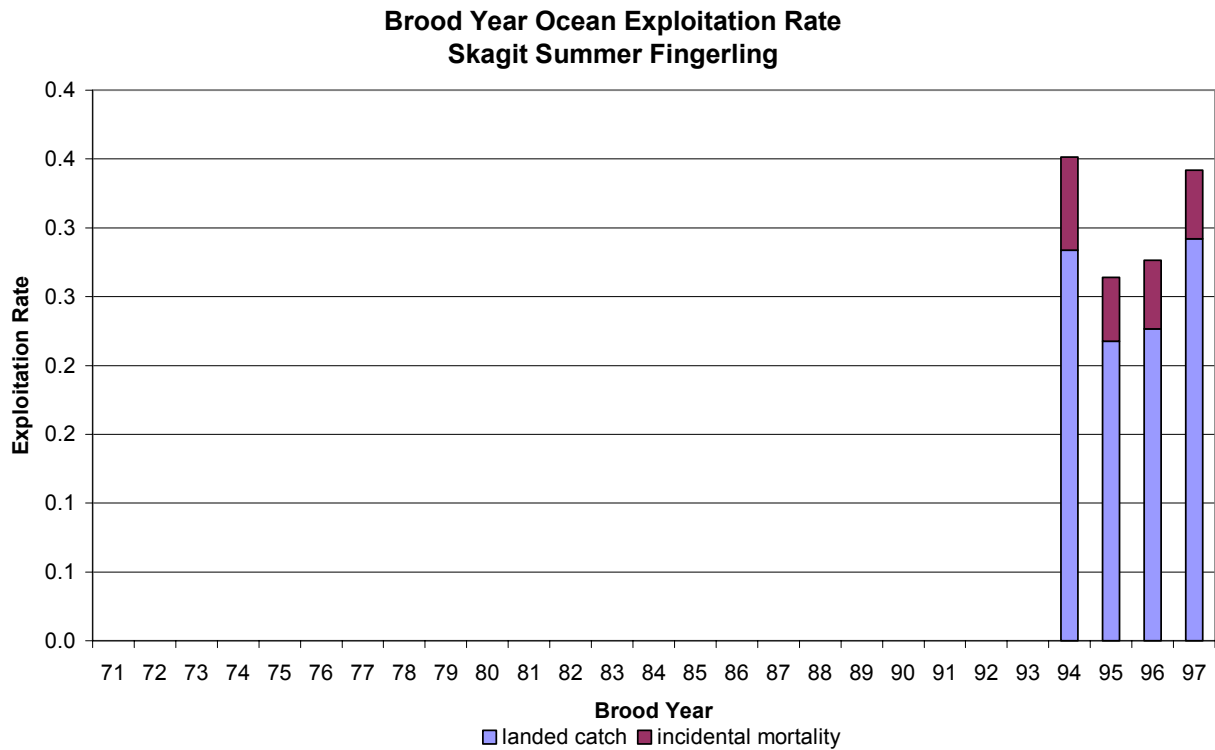


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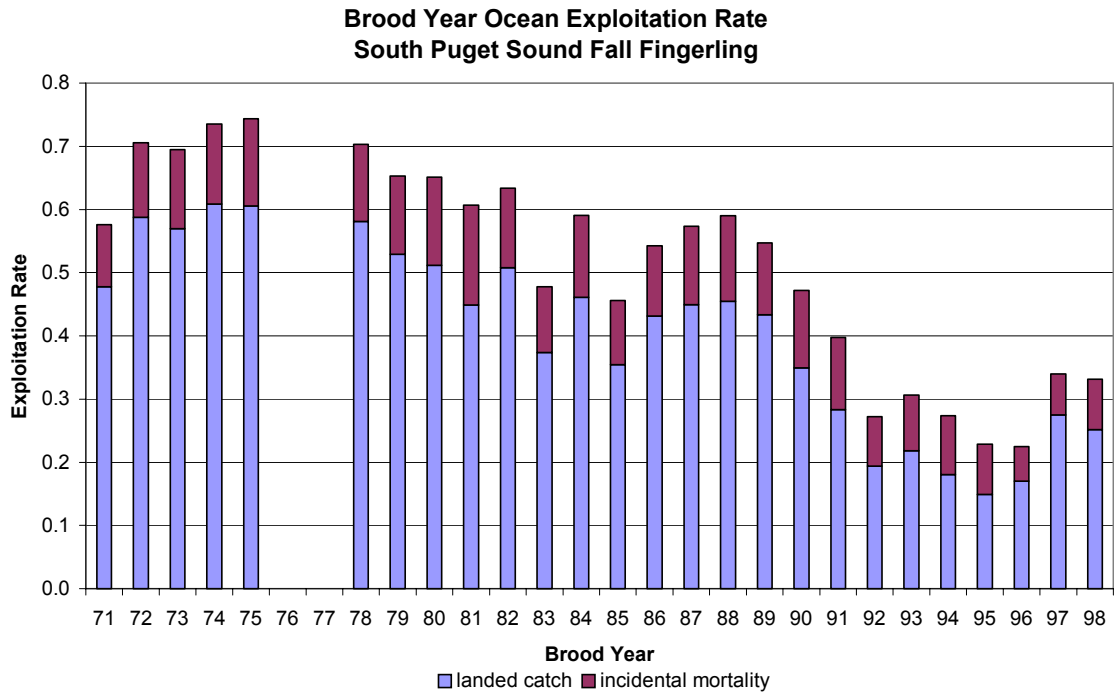


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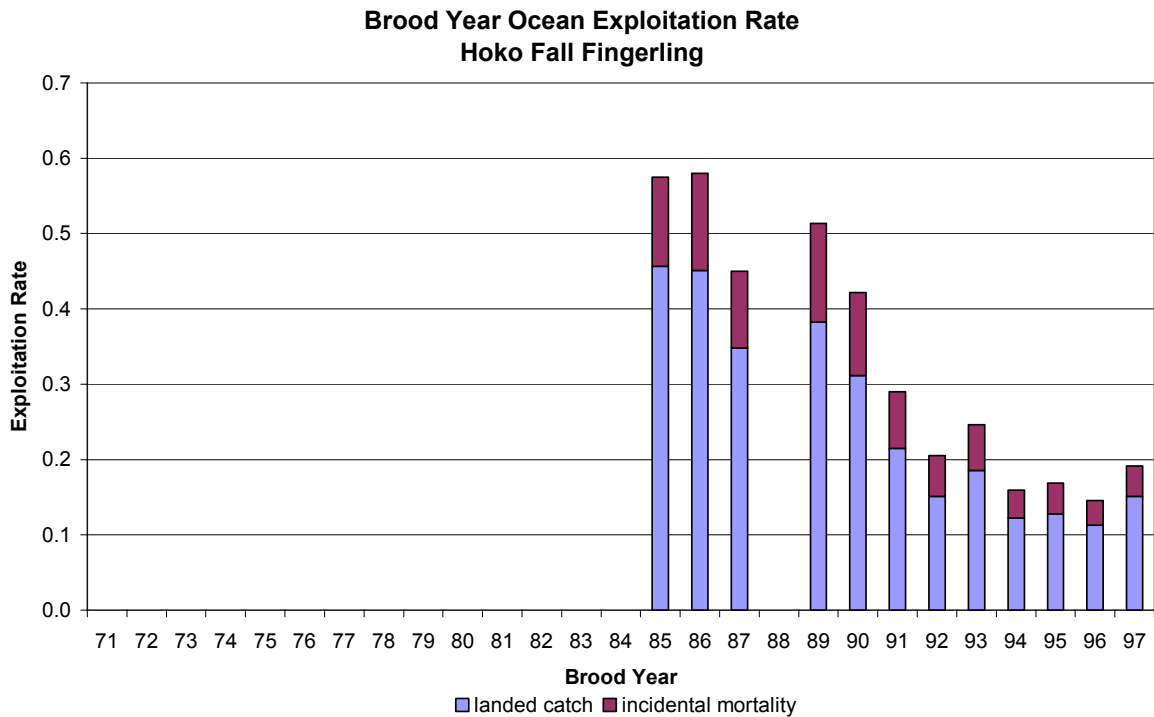


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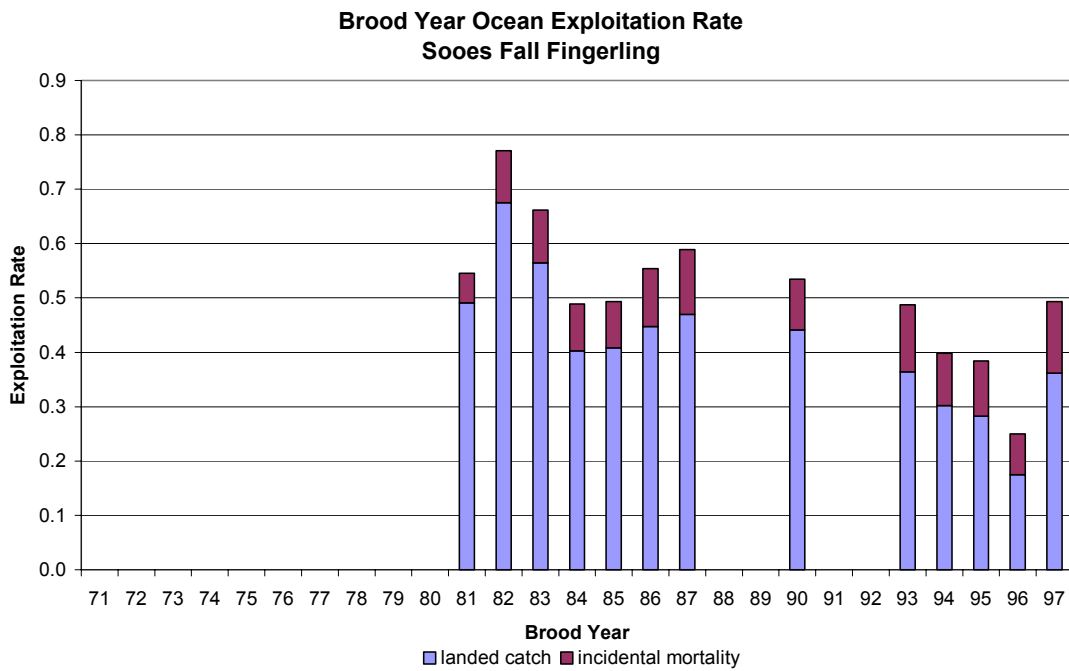


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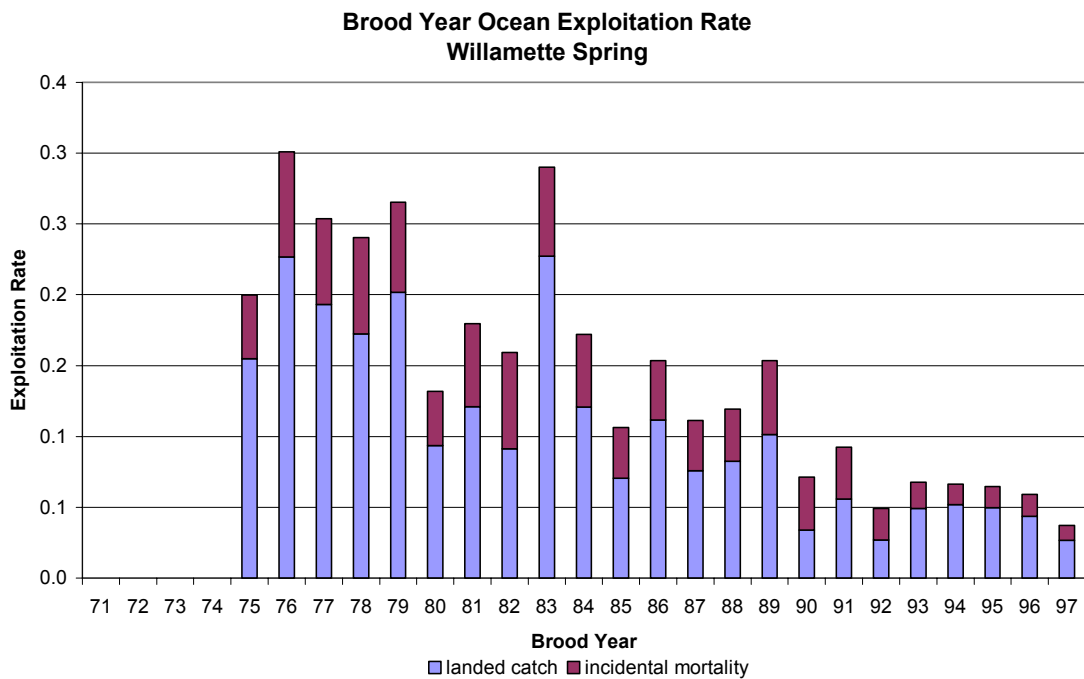


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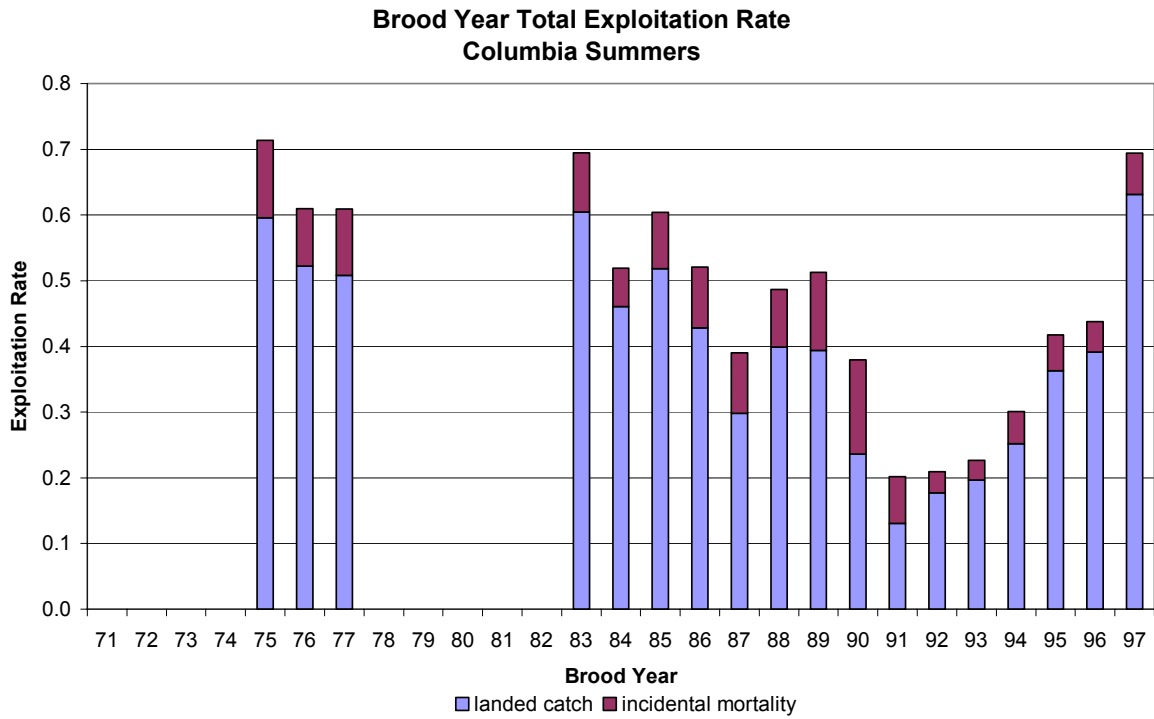


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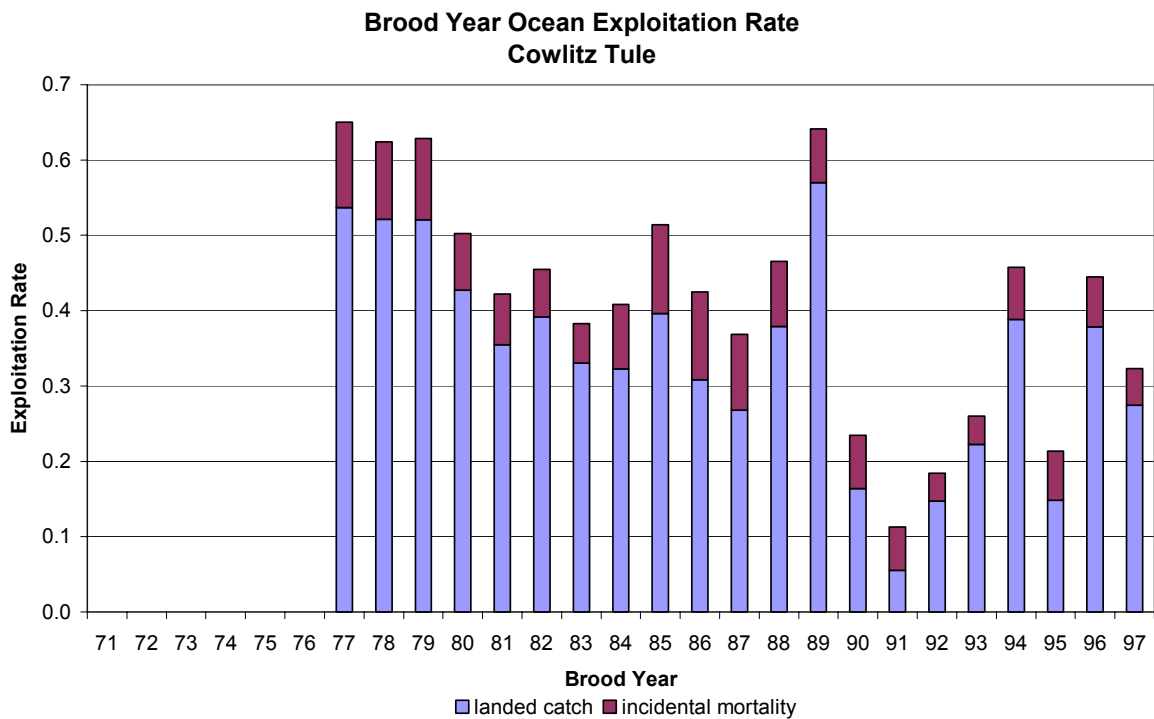


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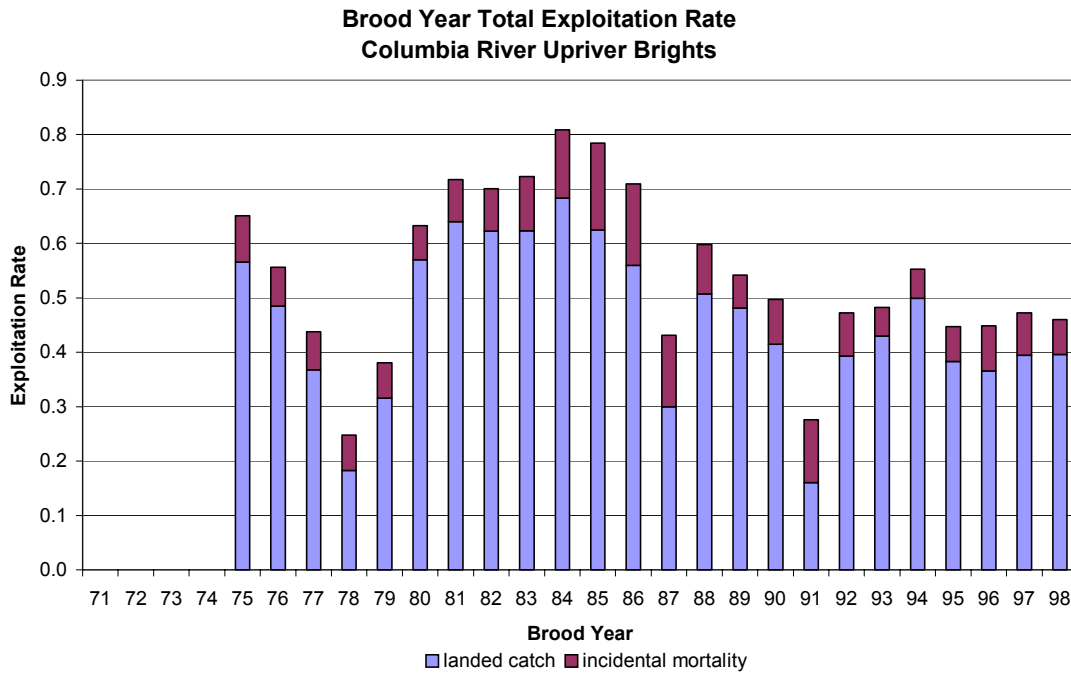


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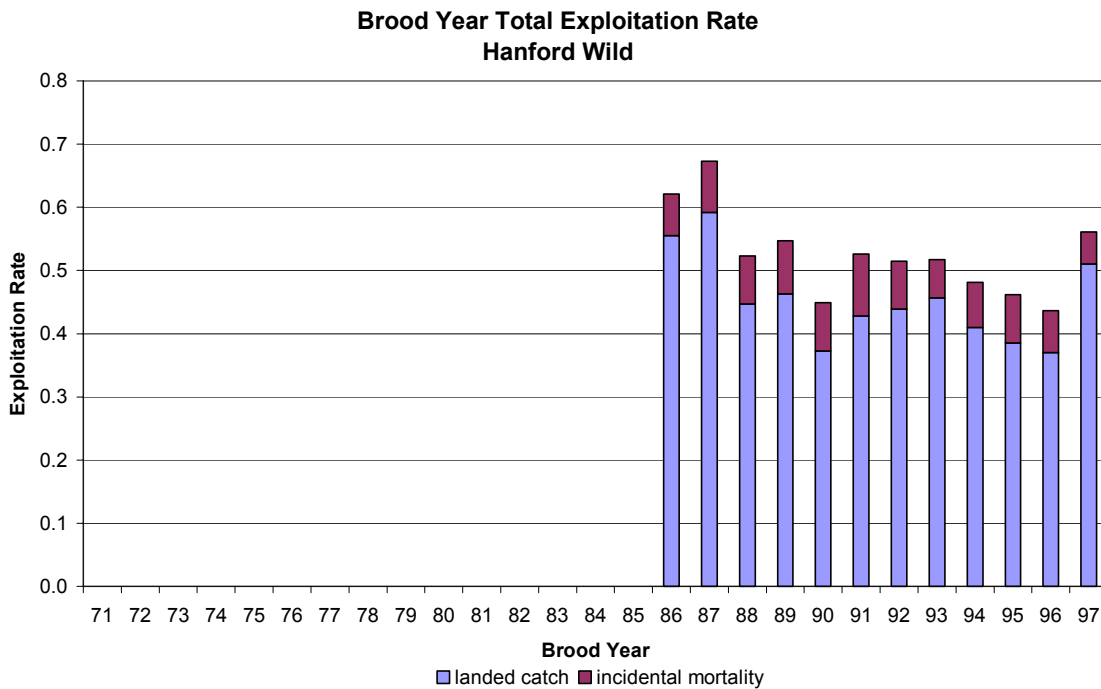


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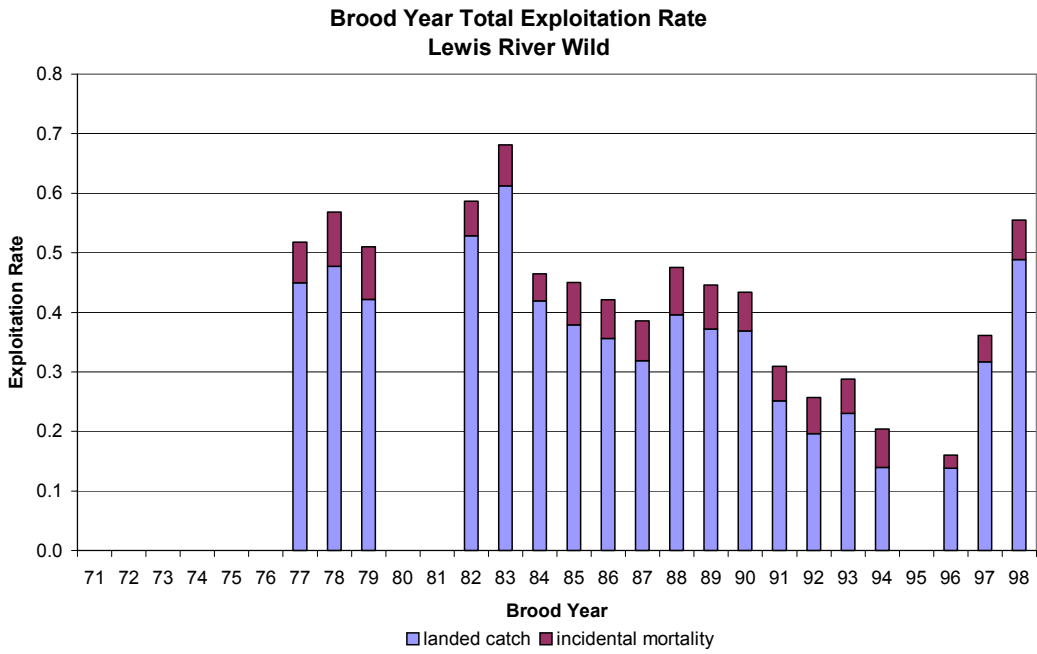


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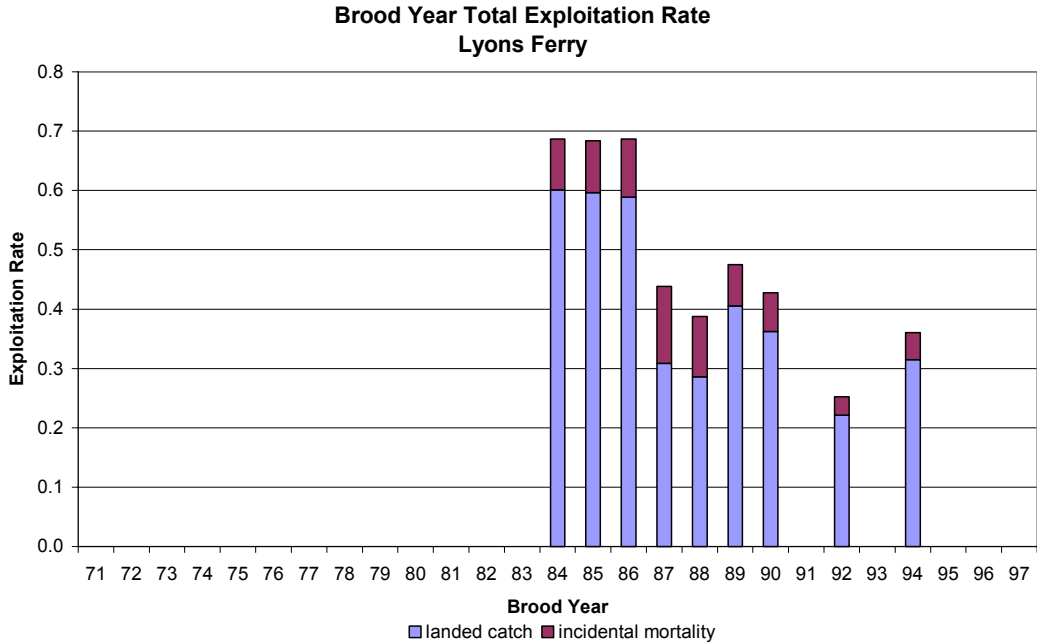


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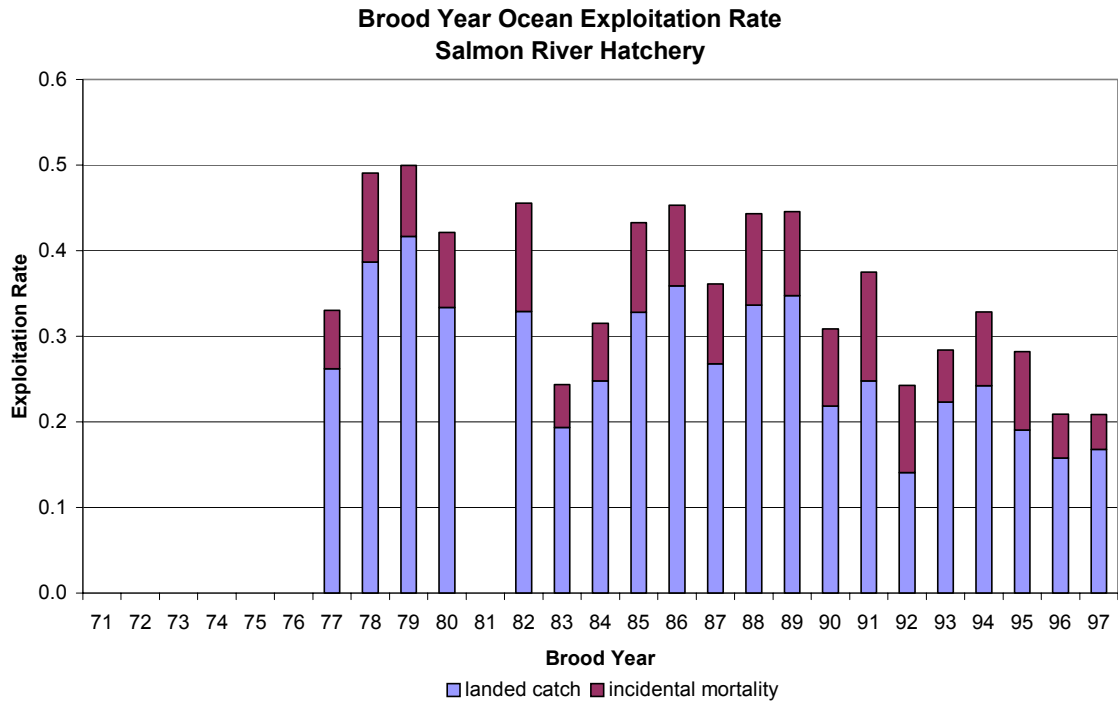


Figure F.23. Salmon River (North Oregon Coast) ocean exploitation rates by brood year.

Appendix G. Percent distribution of landed catch and total mortality among fisheries and escapement for exploitation rate indicator stocks by calendar year.

These data result from cohort analysis of CWT recoveries for the indicator stocks; data within a row for each calendar year sum to 100%. Many changes are present in these distribution tables compared to those presented in previous reports. There are various reasons for the changes including updates to escapement time series or in the case of some Columbia River stocks, the inter-dam loss rates (IDLs), which affect estimated escapements. In addition, some CWT codes have either been added to or excluded from the historical series affecting the outcome of the cohort analysis. Finally, a computational rule used in producing the stock-specific distribution tables determines whether data are generated for any particular calendar year. The rule is that at least three-year classes of CWT recoveries (out of four or five) must be available in any calendar year. Lack of CWT tagging in recent years for some of the indicators has resulted in no distribution data for 2000 and/or 2001. Missing broods are noted in the caption of those tables.

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Table G.1. Percent distribution of Alaska Spring Chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr& Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1983	27.9%	1.3%	6.6%	1.7%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	62.2%
1984	23.0%	2.6%	13.7%	0.9%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	59.4%
1985	24.1%	5.6%	13.7%	1.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	55.5%
1986	25.1%	5.2%	11.9%	0.6%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	57.1%
1987	30.9%	2.8%	10.6%	0.4%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	54.8%
1988	29.9%	2.0%	14.5%	1.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	52.2%
1989	25.3%	9.5%	10.4%	0.6%	0.0%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	53.9%
1990	37.0%	2.4%	13.4%	1.7%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	45.4%
1991	40.0%	3.5%	17.0%	0.6%	0.0%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	38.4%
1992	26.1%	6.8%	20.2%	0.4%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	46.2%
1993	19.8%	5.9%	19.2%	0.1%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	54.6%
1994	16.2%	16.1%	13.5%	0.4%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	53.2%
1995	26.9%	14.0%	17.7%	0.3%	0.0%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	40.6%
1996	24.4%	10.3%	30.4%	0.0%	0.0%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	34.4%
1997	25.7%	8.3%	29.5%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	36.3%
1998	28.8%	10.3%	25.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	35.5%
1999	20.0%	5.5%	29.5%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	44.7%
2000	23.0%	5.3%	24.2%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	47.2%
2001	15.7%	4.3%	18.2%	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	61.6%
2002	11.1%	3.9%	16.0%	0.7%	0.0%	0.0%	0.8%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	67.3%
(83-02)	25.0%	6.3%	17.8%	0.5%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%
(85-02)	25.0%	6.8%	18.6%	0.4%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	48.8%

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Table G.3. Percent distribution of Kitsumkalum Chinook reported catch among fisheries and escapement (NA=not available).

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1984	50.8%	0.0%	0.0%	18.5%	0.0%	30.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	NA <sup>1</sup>
1985	26.1%	0.0%	1.6%	7.1%	0.0%	13.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	51.6%
1986	8.9%	0.0%	0.0%	14.1%	0.0%	8.9%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	65.7%
1987	7.4%	0.0%	0.0%	9.1%	0.0%	7.8%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	71.4%
1988	17.4%	0.6%	1.9%	3.1%	0.0%	23.0%	7.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	46.6%
1989	10.9%	0.3%	6.8%	5.0%	0.0%	11.3%	6.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	59.1%
1990	10.7%	0.0%	2.8%	6.6%	0.3%	7.1%	7.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	65.0%
1991	14.6%	0.0%	3.7%	8.8%	0.7%	16.7%	13.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	41.8%
1992	13.9%	0.0%	1.9%	7.0%	0.0%	9.4%	6.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	60.7%
1993	10.4%	0.9%	2.2%	10.0%	0.0%	18.7%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	53.5%
1994	11.1%	0.0%	0.0%	5.6%	0.0%	19.0%	6.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	57.9%
1995	12.1%	0.0%	2.7%	7.1%	0.0%	29.1%	6.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	42.9%
1996	8.5%	0.2%	6.0%	0.0%	0.0%	18.5%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	61.9%
1997	10.6%	0.0%	7.5%	0.0%	0.0%	8.3%	11.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	62.6%
1998	8.6%	0.0%	3.1%	0.0%	0.0%	1.2%	5.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	81.6%
1999	14.7%	0.0%	9.7%	0.0%	0.0%	0.9%	6.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	68.0%
2000	6.8%	0.0%	6.8%	0.0%	0.0%	9.8%	5.5%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	70.7%
2001	7.9%	0.0%	5.2%	0.4%	0.0%	6.9%	10.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	69.4%
2002	12.1%	0.2%	5.1%	1.4%	0.0%	2.4%	12.8%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	65.6%
(84-02)	13.9%	0.1%	3.5%	5.5%	0.1%	12.8%	6.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	57.7%
(85-02)	11.8%	0.1%	3.7%	4.7%	0.1%	11.8%	6.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	60.9%

1. Values represent estimates of catch distribution only for this year.

Table G.4. Percent distribution of Kitsumkalum Chinook total fishing mortalities among fisheries and escapement (NA=not available).

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1984	52.6%	0.0%	0.0%	21.1%	0.0%	26.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	NA <sup>1</sup>
1985	29.6%	0.0%	1.5%	7.7%	0.0%	12.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	48.5%
1986	10.2%	0.0%	0.0%	13.9%	0.0%	8.8%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	64.8%
1987	12.8%	0.0%	2.6%	9.8%	0.0%	7.2%	5.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	62.3%
1988	23.4%	2.4%	4.9%	7.3%	0.0%	18.0%	7.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	36.6%
1989	14.2%	0.6%	6.9%	5.3%	0.0%	10.6%	6.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	55.6%
1990	11.7%	0.0%	3.3%	7.8%	0.3%	6.8%	7.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	62.2%
1991	19.9%	0.0%	4.2%	10.7%	0.9%	14.8%	13.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	36.5%
1992	15.3%	0.0%	2.0%	7.9%	0.0%	9.1%	6.9%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	58.4%
1993	11.6%	1.7%	2.1%	11.6%	0.0%	17.8%	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.8%
1994	13.3%	0.0%	0.0%	6.7%	0.0%	17.8%	8.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	54.1%
1995	13.5%	0.0%	2.8%	9.8%	0.0%	31.6%	6.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	36.3%
1996	10.1%	0.2%	6.4%	0.2%	0.0%	20.5%	5.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	57.0%
1997	12.0%	0.0%	8.5%	0.0%	0.0%	8.7%	12.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	58.6%
1998	10.4%	0.0%	3.3%	0.0%	0.0%	1.4%	6.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	78.7%
1999	16.0%	0.0%	12.3%	0.0%	0.0%	1.0%	8.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	62.5%
2000	8.3%	0.0%	9.3%	0.0%	0.0%	10.0%	7.5%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	64.5%
2001	8.8%	0.0%	5.7%	0.4%	0.0%	13.1%	11.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	60.9%
2002	12.6%	1.1%	5.4%	1.5%	0.0%	4.3%	14.7%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	60.0%
(84-02)	16.1%	0.3%	4.3%	6.4%	0.1%	12.7%	7.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	53.1%
(85-02)	14.1%	0.3%	4.5%	5.6%	0.1%	11.9%	7.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	56.0%

1. Values represent estimates of catch distribution only for this year.

Table G.5. Percent distribution of Robertson Creek Chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries			Escapement		
										Canada Net	Canada Sport	U.S. Troll		U.S. Net	U.S. Sport
1979	18.4%	0.8%	0.6%	11.6%	10.8%	7.7%	0.3%	8.0%	1.7%	2.3%	5.2%	0.0%	0.1%	0.0%	32.2%
1980	26.8%	7.0%	0.9%	8.1%	8.2%	4.4%	0.1%	7.0%	0.1%	11.4%	3.4%	0.0%	0.2%	0.0%	22.4%
1981	29.6%	1.6%	0.8%	12.1%	8.2%	4.9%	0.5%	5.3%	0.6%	13.7%	5.7%	0.0%	0.4%	0.0%	16.5%
1982	25.2%	3.4%	0.8%	13.6%	7.6%	5.0%	0.1%	5.8%	0.9%	15.0%	6.5%	0.1%	0.5%	0.2%	15.4%
1983	36.0%	3.3%	0.6%	10.4%	8.0%	2.4%	0.3%	5.3%	0.3%	18.2%	4.6%	0.0%	0.2%	0.0%	10.4%
1984	26.5%	4.0%	0.2%	14.6%	3.0%	2.7%	0.0%	6.7%	0.8%	17.7%	15.9%	0.0%	0.2%	0.0%	7.6%
1985	14.1%	5.8%	0.0%	17.7%	0.5%	4.5%	0.0%	2.0%	0.8%	3.6%	17.7%	0.0%	2.0%	0.0%	31.3%
1986	13.9%	4.6%	0.0%	8.1%	1.1%	3.1%	0.7%	4.4%	0.0%	1.5%	26.6%	0.0%	0.0%	1.1%	35.0%
1987	6.5%	1.5%	0.6%	6.1%	2.9%	2.4%	0.5%	2.2%	0.5%	1.1%	20.9%	0.0%	0.3%	0.1%	54.3%
1988	9.9%	2.1%	0.9%	6.6%	1.2%	2.0%	1.1%	4.1%	0.6%	8.1%	18.6%	0.0%	0.3%	0.2%	44.4%
1989	8.0%	2.5%	0.4%	7.8%	0.8%	1.1%	1.0%	1.6%	0.8%	20.5%	18.5%	0.0%	0.1%	0.1%	36.9%
1990	15.8%	1.1%	1.3%	7.3%	2.0%	1.7%	0.9%	6.3%	0.3%	10.4%	10.8%	0.0%	0.0%	0.1%	41.9%
1991	16.9%	1.1%	3.1%	9.1%	2.7%	0.6%	0.8%	4.4%	0.3%	14.9%	13.6%	0.0%	0.0%	0.1%	32.3%
1992	13.7%	3.0%	1.7%	7.2%	3.0%	0.9%	1.5%	18.8%	0.1%	0.8%	8.0%	0.0%	0.1%	0.1%	41.1%
1993	13.9%	1.0%	2.5%	7.1%	2.0%	0.4%	1.4%	13.7%	0.5%	8.4%	15.7%	0.0%	0.0%	0.1%	33.2%
1994	15.8%	2.2%	3.7%	9.5%	1.1%	1.1%	1.1%	5.3%	0.4%	12.8%	21.3%	0.0%	0.0%	0.1%	25.6%
1995	15.3%	0.0%	4.0%	3.1%	0.3%	0.3%	0.9%	1.5%	1.4%	7.3%	12.5%	0.0%	0.2%	0.0%	53.2%
1996	5.6%	0.1%	1.9%	0.0%	0.7%	0.0%	2.8%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	87.4%
1997	10.7%	3.2%	3.9%	4.5%	1.8%	0.4%	2.8%	0.1%	0.5%	6.5%	20.0%	0.1%	0.0%	0.0%	45.1%
1998	16.5%	1.2%	5.1%	6.2%	0.0%	0.0%	2.0%	0.0%	0.6%	4.2%	19.1%	0.1%	0.0%	0.0%	45.1%
1999	12.2%	0.4%	7.9%	3.3%	0.2%	0.0%	2.9%	0.0%	0.8%	7.0%	22.3%	0.0%	0.0%	0.0%	42.9%
2000	5.6%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%	0.0%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	88.4%
2001	3.2%	0.0%	2.0%	0.0%	0.0%	0.0%	0.4%	0.0%	2.0%	0.0%	3.2%	0.0%	0.0%	0.0%	89.0%
2002	12.3%	0.3%	1.7%	3.5%	0.2%	0.0%	4.2%	0.4%	0.6%	8.6%	8.9%	0.0%	0.0%	0.0%	59.3%
(79-02)	15.5%	2.1%	1.9%	7.4%	2.8%	1.9%	1.2%	4.3%	0.8%	8.1%	12.5%	0.0%	0.2%	0.1%	41.3%
(85-02)	11.7%	1.7%	2.3%	5.9%	1.1%	1.0%	1.6%	3.6%	0.8%	6.4%	14.3%	0.0%	0.2%	0.1%	49.3%

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Table G.6. Percent distribution of Robertson Creek Chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries			Escapement		
										Canada Net	Canada Sport	U.S. Troll		U.S. Net	U.S. Sport
1979	21.1%	0.7%	0.7%	13.0%	11.9%	7.0%	0.3%	8.9%	1.5%	2.0%	4.8%	0.0%	0.1%	0.0%	27.8%
1980	27.7%	6.9%	1.0%	8.6%	8.7%	4.4%	0.1%	7.5%	0.1%	10.8%	3.4%	0.0%	0.2%	0.0%	20.6%
1981	32.9%	1.5%	1.0%	13.1%	8.9%	4.4%	0.5%	5.8%	0.6%	11.9%	5.2%	0.0%	0.5%	0.0%	13.8%
1982	28.9%	3.2%	0.9%	14.4%	7.9%	4.6%	0.1%	6.2%	0.8%	13.1%	6.0%	0.1%	0.6%	0.1%	13.2%
1983	40.7%	3.0%	0.6%	10.1%	7.7%	2.2%	0.3%	5.1%	0.3%	16.3%	4.4%	0.0%	0.2%	0.0%	9.2%
1984	27.9%	3.8%	0.2%	14.8%	3.0%	2.7%	0.0%	6.9%	0.8%	16.7%	15.9%	0.0%	0.2%	0.0%	7.1%
1985	14.9%	16.8%	0.0%	16.0%	0.4%	3.7%	0.0%	1.8%	0.7%	3.0%	15.4%	0.0%	1.9%	0.0%	25.4%
1986	18.0%	12.7%	0.0%	8.7%	1.2%	2.9%	1.1%	4.4%	0.0%	1.2%	22.2%	0.0%	0.0%	1.1%	26.4%
1987	10.2%	3.4%	1.1%	7.5%	3.5%	2.3%	0.6%	2.7%	0.5%	1.0%	19.7%	0.0%	0.3%	0.1%	47.1%
1988	11.0%	4.8%	1.2%	7.3%	1.3%	1.9%	1.1%	4.7%	0.7%	7.3%	18.3%	0.0%	0.4%	0.2%	39.8%
1989	10.9%	6.9%	0.5%	9.1%	1.0%	1.1%	1.0%	1.9%	0.8%	18.1%	17.3%	0.0%	0.1%	0.1%	31.1%
1990	19.4%	2.9%	1.5%	8.9%	2.3%	1.6%	0.9%	6.8%	0.3%	9.2%	10.0%	0.0%	0.0%	0.1%	36.1%
1991	19.9%	2.5%	3.3%	9.9%	2.9%	0.6%	0.8%	4.8%	0.3%	13.4%	13.0%	0.0%	0.0%	0.1%	28.6%
1992	16.6%	8.3%	1.7%	7.5%	3.0%	0.8%	1.4%	18.6%	0.1%	0.6%	7.2%	0.0%	0.1%	0.0%	34.1%
1993	15.9%	2.3%	2.5%	7.6%	2.1%	0.4%	1.4%	14.5%	0.5%	7.6%	15.2%	0.0%	0.0%	0.1%	30.0%
1994	17.9%	4.9%	3.6%	9.3%	1.0%	1.0%	1.1%	5.2%	0.4%	11.6%	20.7%	0.0%	0.0%	0.1%	23.2%
1995	17.3%	0.0%	4.6%	3.7%	0.4%	0.5%	1.1%	1.9%	1.5%	6.8%	13.3%	0.0%	0.2%	0.0%	48.7%
1996	9.1%	0.1%	4.4%	2.7%	0.7%	0.0%	5.9%	0.7%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	74.6%
1997	13.8%	8.3%	4.4%	5.1%	2.0%	0.4%	3.1%	0.2%	0.6%	5.6%	18.2%	0.1%	0.0%	0.0%	38.2%
1998	17.0%	3.1%	5.1%	6.2%	0.0%	0.0%	2.3%	0.0%	0.6%	3.9%	19.2%	0.1%	0.0%	0.0%	42.4%
1999	12.9%	0.8%	8.1%	3.3%	0.2%	0.0%	3.2%	0.0%	0.8%	6.8%	23.1%	0.0%	0.0%	0.0%	40.8%
2000	6.5%	0.0%	0.0%	0.0%	0.0%	0.0%	6.1%	0.0%	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	84.1%
2001	4.7%	0.0%	3.3%	0.0%	0.0%	0.0%	0.6%	0.0%	2.6%	0.0%	3.9%	0.0%	0.0%	0.0%	84.9%
2002	14.0%	0.8%	1.9%	3.9%	0.2%	0.0%	5.1%	0.4%	0.8%	8.1%	9.5%	0.0%	0.0%	0.0%	55.4%
(79-02)	17.9%	4.1%	2.1%	7.9%	2.9%	1.8%	1.6%	4.5%	0.8%	7.3%	11.9%	0.0%	0.2%	0.1%	36.8%
(85-02)	13.9%	4.4%	2.6%	6.5%	1.2%	1.0%	2.0%	3.8%	0.9%	5.8%	13.7%	0.0%	0.2%	0.1%	43.9%

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Table G.7. Percent distribution of Quinsam Chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1979	6.3%	6.8%	0.9%	7.3%	13.6%	25.7%	4.1%	0.0%	9.3%	5.8%	0.0%	0.0%	0.0%	0.0%	20.1%
1980	15.4%	5.2%	3.1%	10.9%	17.2%	13.5%	5.5%	0.0%	7.0%	9.1%	0.0%	0.0%	0.0%	0.0%	13.0%
1981	12.7%	2.8%	1.9%	15.4%	14.2%	12.2%	7.5%	0.7%	13.9%	7.6%	0.0%	0.0%	0.0%	0.0%	11.2%
1982	18.4%	8.0%	5.7%	8.4%	7.2%	21.8%	2.5%	0.4%	4.4%	8.5%	0.0%	0.0%	0.0%	0.0%	14.7%
1983	22.9%	1.7%	2.2%	16.1%	12.5%	18.5%	2.9%	0.8%	5.1%	9.1%	0.0%	0.0%	0.0%	0.0%	8.2%
1984	14.5%	6.0%	4.7%	5.9%	5.0%	15.1%	4.1%	0.8%	7.9%	6.6%	0.0%	0.0%	0.0%	0.0%	29.3%
1985	25.9%	5.8%	4.4%	5.1%	3.6%	11.1%	1.0%	0.1%	4.4%	8.3%	0.0%	0.0%	0.0%	0.0%	30.2%
1986	13.8%	4.3%	2.8%	6.6%	7.3%	19.9%	2.9%	0.0%	6.2%	6.4%	0.0%	0.0%	0.0%	0.0%	29.7%
1987	10.8%	3.7%	2.8%	6.3%	6.1%	17.3%	6.6%	0.4%	4.0%	7.3%	0.4%	0.0%	0.0%	0.0%	34.3%
1988	19.0%	1.8%	1.0%	6.6%	2.4%	5.5%	2.9%	0.7%	3.7%	4.1%	0.9%	0.0%	0.0%	0.1%	51.2%
1989	12.6%	2.8%	2.8%	3.9%	1.9%	4.9%	3.2%	0.3%	7.3%	13.0%	0.0%	0.0%	0.1%	0.0%	47.1%
1990	17.3%	2.2%	0.6%	6.7%	4.9%	11.2%	9.0%	1.4%	3.5%	4.8%	0.0%	0.0%	0.0%	0.0%	38.5%
1991	10.1%	2.8%	1.4%	5.7%	9.1%	10.2%	11.9%	0.5%	4.4%	3.5%	0.8%	0.0%	0.0%	0.0%	39.7%
1992	11.5%	0.5%	2.4%	10.1%	9.3%	7.4%	6.3%	0.3%	3.5%	2.6%	0.0%	0.0%	0.0%	0.0%	46.2%
1993	8.0%	3.4%	1.2%	5.8%	5.8%	19.6%	8.9%	1.2%	10.7%	3.4%	0.0%	0.0%	0.0%	0.0%	32.1%
1994	5.3%	6.0%	4.0%	9.3%	1.3%	14.0%	5.0%	0.0%	6.0%	4.0%	0.0%	0.0%	0.0%	0.0%	45.0%
1995	7.1%	5.0%	0.0%	9.2%	0.0%	14.6%	7.9%	0.0%	6.7%	0.8%	0.0%	0.0%	0.0%	0.0%	48.8%
1996	6.8%	0.4%	0.0%	0.0%	0.0%	17.4%	4.5%	0.0%	6.0%	0.4%	0.0%	0.0%	0.0%	0.0%	64.5%
1997	9.1%	3.2%	2.5%	4.1%	3.4%	2.3%	8.9%	0.7%	8.7%	0.2%	5.0%	0.0%	0.0%	0.0%	51.9%
1998	14.2%	2.2%	2.0%	0.0%	0.0%	0.4%	8.7%	0.0%	5.4%	0.0%	0.0%	0.0%	0.4%	0.0%	66.8%
1999	9.0%	3.4%	4.2%	1.3%	0.2%	1.4%	9.5%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	69.3%
2000	13.1%	2.2%	5.0%	0.3%	0.0%	0.0%	5.5%	0.0%	2.7%	0.5%	0.0%	0.0%	0.0%	0.0%	70.7%
2001	9.3%	1.4%	1.8%	0.1%	0.0%	0.0%	5.7%	0.0%	1.6%	0.1%	0.0%	0.0%	0.0%	0.0%	80.1%
2002	14.6%	3.1%	0.9%	0.4%	0.1%	0.0%	11.7%	0.0%	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	66.4%
(79-02)	12.8%	3.5%	2.4%	6.1%	5.2%	11.0%	6.1%	0.3%	5.7%	4.4%	0.3%	0.0%	0.0%	0.0%	42.0%
(85-02)	12.1%	3.0%	2.2%	4.5%	3.1%	8.7%	6.7%	0.3%	5.0%	3.3%	0.4%	0.0%	0.0%	0.0%	50.7%

G-115

Table G.8. Percent distribution of Quinsam Chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1979	8.4%	6.5%	1.5%	8.7%	15.3%	24.0%	3.9%	0.1%	8.5%	5.6%	0.0%	0.0%	0.0%	0.0%	17.6%
1980	16.0%	5.0%	3.3%	11.5%	18.1%	13.4%	5.3%	0.0%	6.8%	8.8%	0.0%	0.0%	0.0%	0.0%	11.7%
1981	13.3%	2.6%	2.1%	16.5%	14.8%	11.7%	7.5%	0.7%	13.5%	7.1%	0.0%	0.0%	0.0%	0.0%	10.1%
1982	22.2%	7.7%	6.1%	8.7%	7.4%	20.7%	2.4%	0.4%	4.0%	7.7%	0.0%	0.0%	0.0%	0.0%	12.5%
1983	26.7%	1.5%	2.7%	15.7%	12.2%	17.6%	3.0%	0.7%	4.6%	8.2%	0.0%	0.0%	0.0%	0.0%	6.9%
1984	15.9%	6.0%	5.5%	6.2%	5.2%	14.9%	4.2%	0.9%	7.8%	6.3%	0.0%	0.0%	0.0%	0.0%	27.2%
1985	27.4%	12.8%	4.2%	4.7%	3.3%	10.0%	1.0%	0.1%	4.0%	7.2%	0.0%	0.0%	0.0%	0.0%	25.3%
1986	15.4%	10.9%	3.1%	6.6%	7.2%	18.5%	3.0%	0.0%	5.5%	5.8%	0.0%	0.0%	0.0%	0.0%	24.0%
1987	16.0%	10.4%	2.8%	6.8%	6.7%	14.4%	5.7%	0.4%	3.4%	6.0%	0.3%	0.0%	0.0%	0.0%	27.0%
1988	20.0%	4.5%	1.1%	7.0%	2.6%	5.5%	3.0%	0.8%	3.9%	3.9%	0.9%	0.0%	0.0%	0.2%	46.5%
1989	14.1%	8.1%	2.8%	4.1%	2.0%	4.6%	3.2%	0.3%	7.6%	11.9%	0.0%	0.0%	0.1%	0.0%	41.3%
1990	18.7%	5.5%	0.6%	7.4%	5.3%	10.5%	8.9%	1.5%	3.7%	4.4%	0.0%	0.0%	0.0%	0.0%	33.5%
1991	11.3%	7.9%	1.4%	5.9%	9.4%	9.1%	11.3%	0.5%	4.5%	3.2%	0.7%	0.0%	0.0%	0.0%	34.7%
1992	15.2%	1.1%	2.6%	10.6%	9.6%	7.2%	6.4%	0.3%	3.7%	2.4%	0.0%	0.0%	0.0%	0.0%	40.9%
1993	8.9%	7.1%	1.3%	6.5%	6.5%	18.1%	8.6%	1.3%	11.3%	2.9%	0.0%	0.0%	0.0%	0.0%	27.5%
1994	6.6%	12.8%	4.0%	9.7%	1.4%	12.5%	4.8%	0.0%	6.3%	3.4%	0.0%	0.0%	0.0%	0.0%	38.5%
1995	8.6%	5.1%	0.0%	11.3%	0.0%	16.8%	9.6%	0.0%	6.5%	2.1%	0.0%	0.0%	0.0%	0.0%	40.1%
1996	7.3%	0.7%	0.0%	1.3%	0.0%	19.8%	7.6%	0.0%	6.6%	0.3%	0.0%	0.0%	0.0%	0.0%	56.4%
1997	9.9%	5.8%	2.9%	4.3%	3.5%	2.3%	10.9%	0.8%	9.0%	1.4%	4.7%	0.0%	0.0%	0.0%	44.4%
1998	14.7%	6.5%	2.4%	0.0%	0.0%	0.3%	11.3%	0.0%	5.9%	0.2%	0.0%	0.0%	0.5%	0.0%	58.3%
1999	10.3%	7.1%	5.2%	1.4%	0.2%	1.7%	11.2%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	61.2%
2000	14.5%	3.7%	5.6%	0.2%	0.0%	0.0%	7.0%	0.0%	3.1%	1.7%	0.0%	0.0%	0.0%	0.0%	64.2%
2001	10.5%	2.8%	2.0%	0.1%	0.0%	0.0%	7.2%	0.0%	1.8%	0.6%	0.0%	0.0%	0.0%	0.0%	75.0%
2002	14.0%	7.0%	0.8%	0.4%	0.1%	0.0%	13.5%	0.0%	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	61.0%
(79-02)	14.4%	6.2%	2.7%	6.5%	5.5%	10.6%	6.7%	0.4%	5.7%	4.2%	0.3%	0.0%	0.0%	0.0%	36.9%
(85-02)	13.5%	6.7%	2.4%	4.9%	3.2%	8.4%	7.5%	0.3%	5.1%	3.2%	0.4%	0.0%	0.0%	0.0%	44.4%

G-116

Table G.9. Percent distribution of Puntledge Chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1979	1.6%	0.3%	0.2%	3.2%	8.3%	6.7%	0.3%	0.9%	39.7%	6.5%	0.0%	0.0%	0.0%	0.0%	32.2%
1980	2.4%	0.0%	0.4%	2.0%	5.9%	4.4%	1.3%	4.9%	38.6%	5.9%	0.0%	0.0%	0.0%	0.0%	34.2%
1981	0.8%	0.0%	0.0%	5.4%	7.2%	3.6%	4.0%	0.0%	60.2%	5.4%	0.0%	0.0%	0.0%	0.0%	13.3%
1982	0.9%	0.3%	0.0%	2.2%	12.8%	5.5%	1.0%	1.6%	19.2%	14.7%	0.0%	0.0%	0.0%	0.0%	41.7%
1983	1.0%	0.2%	0.0%	7.5%	16.0%	5.1%	3.0%	2.4%	25.5%	2.6%	0.0%	0.0%	0.0%	0.0%	36.6%
1984	0.0%	1.2%	0.0%	2.0%	5.9%	3.9%	1.2%	2.3%	26.6%	2.7%	0.0%	0.0%	0.0%	0.0%	54.3%
1985	10.9%	0.8%	2.3%	6.2%	1.6%	8.5%	6.2%	0.0%	33.3%	6.2%	0.0%	0.0%	0.0%	0.0%	24.0%
1986	5.6%	0.0%	4.5%	2.8%	3.9%	10.1%	0.0%	2.8%	43.3%	1.7%	0.0%	0.0%	0.0%	0.0%	25.3%
1987	2.7%	0.7%	0.0%	12.1%	2.0%	6.7%	10.1%	0.0%	16.8%	0.0%	4.7%	0.0%	0.0%	0.0%	44.3%
1988	12.0%	0.0%	0.0%	0.0%	0.0%	4.3%	14.1%	0.0%	17.4%	1.1%	0.0%	0.0%	0.0%	0.0%	51.1%
1989	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	45.5%	0.0%	0.0%	0.0%	0.0%	0.0%	51.5%
1990	9.4%	0.0%	0.0%	0.0%	3.5%	11.8%	3.5%	0.0%	9.4%	4.7%	0.0%	0.0%	0.0%	0.0%	57.6%
1991	5.2%	5.2%	0.0%	0.0%	0.0%	5.2%	7.8%	0.0%	23.5%	5.2%	0.0%	0.0%	0.0%	0.0%	47.8%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	3.5%	0.0%	37.2%	15.1%	0.0%	0.0%	0.0%	0.0%	37.2%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	6.6%	10.5%	0.0%	44.7%	0.0%	0.0%	0.0%	0.0%	0.0%	38.2%
1994	7.1%	0.0%	0.0%	0.0%	0.0%	7.1%	0.0%	0.0%	53.6%	3.6%	0.0%	0.0%	0.0%	0.0%	28.6%
1995	5.9%	2.9%	0.0%	0.0%	0.0%	14.7%	0.0%	0.0%	32.4%	0.0%	0.0%	0.0%	0.0%	0.0%	44.1%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	7.9%	0.0%	34.2%	2.6%	0.0%	0.0%	0.0%	0.0%	52.6%
1997	0.0%	0.0%	0.0%	9.8%	0.0%	7.8%	13.7%	0.0%	7.8%	0.0%	0.0%	0.0%	0.0%	0.0%	60.8%
1998	21.2%	6.1%	0.0%	0.0%	0.0%	0.0%	15.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	57.6%
1999	9.1%	0.0%	0.0%	0.0%	0.0%	1.8%	9.1%	0.0%	12.1%	0.0%	0.0%	0.0%	0.0%	0.0%	67.9%
2000	1.6%	0.8%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	71.1%
2001	8.3%	0.6%	0.0%	0.0%	0.0%	0.0%	4.9%	1.2%	7.4%	0.0%	0.0%	0.0%	0.0%	0.0%	77.6%
2002	5.7%	0.6%	0.0%	0.6%	0.0%	0.0%	11.5%	0.0%	5.1%	1.3%	7.6%	0.0%	0.0%	0.0%	67.5%
(79-02)	4.8%	0.8%	0.3%	2.3%	2.8%	5.2%	5.4%	0.7%	27.4%	3.3%	0.5%	0.0%	0.0%	0.0%	46.5%
(85-02)	6.0%	1.0%	0.4%	1.8%	0.6%	5.2%	6.6%	0.2%	24.9%	2.3%	0.7%	0.0%	0.0%	0.0%	50.3%

G-117

Table G.10. Percent distribution of Puntledge chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1979	2.0%	0.3%	0.3%	4.4%	10.5%	6.5%	0.3%	1.2%	38.7%	6.3%	0.0%	0.0%	0.0%	0.0%	29.6%
1980	2.8%	0.0%	0.5%	2.3%	6.8%	4.6%	1.4%	5.7%	38.4%	5.9%	0.0%	0.0%	0.0%	0.0%	31.6%
1981	0.9%	0.0%	0.0%	6.6%	8.8%	3.3%	4.0%	0.0%	58.9%	5.3%	0.0%	0.0%	0.0%	0.0%	12.1%
1982	0.9%	0.5%	0.0%	2.5%	14.7%	5.8%	1.3%	1.9%	19.3%	15.0%	0.0%	0.0%	0.0%	0.0%	38.1%
1983	2.0%	0.2%	0.0%	8.2%	17.0%	5.1%	3.1%	2.6%	25.5%	2.6%	0.0%	0.0%	0.0%	0.0%	33.8%
1984	0.0%	1.1%	0.0%	2.6%	6.6%	4.0%	1.5%	2.6%	27.6%	2.9%	0.0%	0.0%	0.0%	0.0%	51.1%
1985	14.2%	1.4%	3.4%	6.8%	1.4%	8.8%	6.8%	0.0%	31.1%	5.4%	0.0%	0.0%	0.0%	0.0%	20.9%
1986	6.0%	0.0%	5.5%	3.0%	4.5%	10.1%	0.0%	3.0%	43.7%	1.5%	0.0%	0.0%	0.0%	0.0%	22.6%
1987	3.1%	1.2%	0.0%	15.3%	2.5%	6.1%	10.4%	0.0%	16.6%	0.0%	4.3%	0.0%	0.0%	0.0%	40.5%
1988	11.9%	0.0%	0.0%	0.0%	0.0%	5.0%	15.8%	0.0%	19.8%	1.0%	0.0%	0.0%	0.0%	0.0%	46.5%
1989	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	52.6%	0.0%	0.0%	0.0%	0.0%	0.0%	44.7%
1990	10.9%	0.0%	0.0%	0.0%	4.3%	12.0%	4.3%	0.0%	9.8%	5.4%	0.0%	0.0%	0.0%	0.0%	53.3%
1991	5.6%	14.0%	0.0%	0.0%	0.0%	4.2%	8.4%	0.0%	24.5%	4.9%	0.0%	0.0%	0.0%	0.0%	38.5%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	7.3%	3.1%	0.0%	42.7%	13.5%	0.0%	0.0%	0.0%	0.0%	33.3%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	5.9%	10.6%	0.0%	49.4%	0.0%	0.0%	0.0%	0.0%	0.0%	34.1%
1994	9.4%	0.0%	0.0%	0.0%	0.0%	6.3%	0.0%	0.0%	56.3%	3.1%	0.0%	0.0%	0.0%	0.0%	25.0%
1995	5.1%	2.6%	0.0%	0.0%	0.0%	15.4%	0.0%	0.0%	35.9%	2.6%	0.0%	0.0%	0.0%	0.0%	38.5%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	11.4%	0.0%	38.6%	2.3%	0.0%	0.0%	0.0%	0.0%	45.5%
1997	0.0%	0.0%	0.0%	10.2%	0.0%	8.5%	18.6%	0.0%	8.5%	1.7%	0.0%	0.0%	0.0%	0.0%	52.5%
1998	19.0%	16.7%	0.0%	0.0%	0.0%	0.0%	19.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	45.2%
1999	9.8%	0.0%	0.0%	0.0%	0.0%	2.2%	12.6%	0.0%	14.2%	0.0%	0.0%	0.0%	0.0%	0.0%	61.2%
2000	2.2%	1.4%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	29.5%	0.0%	0.0%	0.0%	0.0%	0.0%	65.5%
2001	10.0%	0.9%	0.0%	0.0%	0.0%	0.0%	6.6%	1.4%	8.6%	0.0%	0.0%	0.0%	0.0%	0.0%	72.5%
2002	6.5%	1.0%	0.0%	0.5%	0.0%	0.0%	12.4%	0.0%	5.5%	13.9%	7.5%	0.0%	0.0%	0.0%	52.7%
(79-02)	5.2%	1.7%	0.4%	2.7%	3.2%	5.1%	6.3%	0.8%	29.0%	3.9%	0.5%	0.0%	0.0%	0.0%	41.2%
(85-02)	6.5%	2.2%	0.5%	2.1%	0.7%	5.2%	7.8%	0.2%	27.1%	3.1%	0.7%	0.0%	0.0%	0.0%	44.1%

G-118

Table G.11. Percent distribution of Big Qualicum chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1979	3.4%	0.9%	0.3%	1.7%	9.4%	4.1%	0.4%	2.2%	39.3%	8.0%	0.1%	0.0%	0.3%	0.1%	29.8%
1980	1.4%	1.6%	0.4%	4.3%	6.6%	3.4%	1.3%	4.2%	39.2%	9.4%	0.0%	0.1%	0.3%	0.2%	27.6%
1981	1.9%	0.3%	0.4%	1.3%	11.5%	4.5%	0.8%	1.6%	54.7%	9.7%	0.3%	0.0%	0.1%	0.6%	12.3%
1982	4.5%	0.4%	1.2%	4.5%	5.8%	8.5%	0.4%	4.3%	25.6%	12.1%	0.0%	0.0%	1.1%	0.7%	30.9%
1983	5.4%	0.3%	0.3%	4.9%	6.8%	4.5%	1.0%	1.1%	36.6%	14.6%	0.0%	0.0%	0.0%	0.6%	23.7%
1984	1.4%	0.4%	0.0%	1.4%	6.6%	3.6%	5.8%	1.4%	52.3%	6.2%	0.0%	0.0%	0.0%	0.0%	20.7%
1985	3.9%	0.3%	0.6%	1.7%	3.7%	6.8%	1.7%	1.4%	35.6%	12.4%	0.0%	0.0%	2.6%	0.0%	29.3%
1986	1.9%	0.3%	0.0%	0.8%	12.8%	8.3%	2.9%	1.4%	45.4%	7.5%	0.0%	0.0%	0.0%	0.0%	18.8%
1987	8.8%	0.0%	1.0%	4.0%	2.5%	2.6%	2.7%	4.2%	31.7%	5.2%	0.0%	0.8%	0.7%	0.0%	35.8%
1988	2.8%	0.5%	0.0%	2.3%	1.3%	10.2%	1.3%	2.8%	32.1%	4.8%	2.0%	0.0%	1.0%	0.0%	38.9%
1989	4.2%	1.6%	0.6%	3.2%	0.6%	1.0%	1.8%	4.8%	39.0%	8.2%	0.0%	0.2%	0.0%	1.0%	34.0%
1990	4.8%	1.9%	0.0%	6.0%	1.6%	6.7%	2.4%	3.0%	22.7%	11.3%	0.0%	0.2%	0.0%	1.9%	37.5%
1991	2.4%	1.3%	0.0%	2.1%	1.1%	2.9%	1.9%	1.9%	44.7%	5.6%	0.0%	0.5%	0.5%	0.0%	35.0%
1992	2.3%	0.0%	2.5%	5.4%	5.9%	1.6%	7.7%	3.4%	41.3%	3.9%	0.0%	0.0%	0.4%	0.0%	25.5%
1993	1.2%	1.2%	0.0%	1.5%	3.9%	2.9%	3.2%	1.7%	45.0%	6.8%	0.0%	0.0%	0.0%	1.0%	31.5%
1994	4.5%	0.0%	0.0%	1.6%	1.6%	3.7%	2.0%	2.8%	34.6%	2.4%	0.0%	0.0%	2.8%	0.0%	43.9%
1995	7.0%	0.0%	0.0%	1.5%	0.0%	7.0%	2.5%	0.0%	21.0%	0.5%	0.0%	0.0%	0.0%	0.0%	60.5%
1996	2.9%	0.0%	0.0%	0.0%	0.0%	0.7%	1.1%	0.0%	46.8%	0.0%	0.0%	0.0%	0.0%	1.1%	47.5%
1997	3.0%	0.0%	0.0%	5.0%	1.5%	1.5%	2.0%	0.0%	30.5%	0.5%	4.5%	0.0%	0.0%	0.0%	51.5%
1998	7.6%	0.6%	0.0%	0.0%	0.0%	0.0%	6.5%	0.0%	21.2%	0.0%	0.0%	0.0%	0.0%	0.0%	64.1%
1999	6.0%	2.6%	0.0%	2.1%	2.6%	0.0%	2.1%	0.0%	12.3%	0.0%	3.8%	0.0%	0.9%	0.0%	67.7%
2000	14.2%	0.9%	0.0%	0.0%	0.0%	0.5%	3.2%	0.0%	11.5%	0.0%	0.0%	0.0%	3.2%	0.0%	66.5%
2001	4.0%	6.8%	0.0%	0.0%	0.0%	0.0%	5.1%	0.6%	10.2%	0.0%	0.0%	0.0%	1.5%	0.0%	71.7%
2002	8.2%	0.0%	2.4%	2.2%	0.0%	0.0%	6.0%	1.9%	7.6%	0.3%	1.4%	0.0%	1.6%	0.8%	67.7%
(79-02)	4.5%	0.9%	0.4%	2.4%	3.6%	3.5%	2.7%	1.9%	32.5%	5.4%	0.5%	0.1%	0.7%	0.3%	40.5%
(85-02)	5.0%	1.0%	0.4%	2.2%	2.2%	3.1%	3.1%	1.7%	29.6%	3.9%	0.7%	0.1%	0.8%	0.3%	46.0%

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Table G.12. Percent distribution of Big Qualicum chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1979	4.3%	0.9%	0.4%	2.2%	11.7%	4.0%	0.4%	2.8%	38.0%	7.6%	0.1%	0.0%	0.3%	0.1%	27.1%
1980	1.5%	1.7%	0.4%	5.0%	7.5%	3.4%	1.3%	5.0%	38.7%	9.3%	0.0%	0.2%	0.3%	0.2%	25.5%
1981	2.4%	0.3%	0.4%	1.6%	13.4%	4.5%	0.8%	1.9%	53.1%	9.4%	0.3%	0.0%	0.2%	0.6%	11.1%
1982	5.7%	0.5%	1.4%	4.9%	6.4%	8.4%	0.4%	4.9%	25.2%	11.8%	0.0%	0.0%	1.1%	0.6%	28.7%
1983	5.5%	0.3%	0.7%	5.1%	7.2%	4.6%	1.2%	1.2%	37.4%	14.2%	0.0%	0.0%	0.0%	1.0%	21.6%
1984	2.4%	0.4%	0.0%	1.6%	7.3%	3.6%	6.5%	1.6%	51.6%	6.2%	0.0%	0.0%	0.0%	0.0%	18.7%
1985	6.8%	1.1%	0.9%	2.1%	4.3%	6.6%	2.1%	1.6%	34.0%	12.0%	0.0%	0.0%	3.3%	0.0%	25.2%
1986	3.2%	1.4%	0.0%	0.8%	13.7%	7.8%	2.9%	1.4%	45.3%	7.0%	0.0%	0.0%	0.0%	0.0%	16.7%
1987	10.6%	0.0%	1.0%	4.3%	2.8%	2.5%	2.9%	4.8%	31.5%	5.0%	0.0%	0.9%	0.8%	0.0%	33.0%
1988	3.0%	2.0%	0.0%	2.6%	1.3%	10.0%	1.3%	3.3%	35.4%	4.3%	2.0%	0.0%	1.5%	0.0%	33.3%
1989	4.5%	4.6%	0.8%	3.6%	0.5%	0.8%	1.8%	5.1%	41.1%	7.3%	0.0%	0.3%	0.0%	1.0%	28.4%
1990	5.1%	5.0%	0.0%	7.0%	1.8%	6.5%	2.6%	3.2%	24.3%	10.5%	0.0%	0.1%	0.0%	1.9%	31.9%
1991	3.1%	3.6%	0.0%	2.4%	1.3%	2.7%	1.9%	2.1%	47.8%	5.0%	0.0%	0.5%	0.4%	0.0%	29.1%
1992	3.8%	0.0%	2.7%	6.1%	6.2%	1.5%	7.5%	3.6%	43.8%	3.4%	0.0%	0.0%	0.4%	0.0%	21.0%
1993	1.6%	2.8%	0.0%	1.6%	4.7%	2.6%	3.0%	1.8%	48.4%	6.1%	0.0%	0.0%	0.0%	1.2%	26.1%
1994	5.1%	0.0%	0.0%	1.8%	1.8%	3.3%	1.8%	2.9%	38.2%	2.2%	0.0%	0.0%	2.9%	0.0%	39.7%
1995	7.4%	0.0%	0.0%	2.2%	0.0%	8.7%	3.5%	0.0%	22.6%	3.0%	0.0%	0.0%	0.0%	0.0%	52.6%
1996	3.3%	0.0%	0.0%	0.6%	0.0%	0.9%	1.5%	0.3%	51.8%	0.3%	0.0%	0.0%	0.0%	1.2%	40.0%
1997	3.9%	0.0%	0.0%	5.7%	1.7%	1.7%	2.6%	0.0%	31.9%	3.1%	4.4%	0.0%	0.0%	0.0%	45.0%
1998	8.0%	1.1%	0.0%	0.0%	0.0%	0.0%	9.0%	0.0%	23.4%	0.5%	0.0%	0.0%	0.0%	0.0%	58.0%
1999	6.8%	6.1%	0.0%	2.7%	3.0%	0.0%	2.7%	0.0%	13.6%	0.0%	4.2%	0.0%	0.8%	0.0%	60.2%
2000	16.6%	2.1%	0.0%	0.0%	0.0%	0.4%	4.1%	0.0%	12.9%	0.0%	0.0%	0.0%	3.7%	0.0%	60.2%
2001	4.5%	16.2%	0.0%	0.0%	0.0%	0.0%	6.1%	0.5%	10.3%	0.0%	0.0%	0.0%	1.6%	0.0%	60.7%
2002	9.1%	0.0%	2.9%	2.4%	0.0%	0.0%	7.5%	1.7%	8.7%	4.1%	1.4%	0.0%	1.7%	0.7%	59.9%
(79-02)	5.4%	2.1%	0.5%	2.8%	4.0%	3.5%	3.1%	2.1%	33.7%	5.5%	0.5%	0.1%	0.8%	0.4%	35.6%
(85-02)	5.9%	2.6%	0.5%	2.5%	2.4%	3.1%	3.6%	1.8%	31.4%	4.1%	0.7%	0.1%	1.0%	0.3%	40.0%

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Table G.13. Percent distribution of Chilliwack chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1985	0.5%	0.0%	0.0%	0.3%	2.3%	0.8%	0.2%	34.2%	28.6%	5.9%	0.0%	3.9%	4.1%	3.6%	15.3%
1986	0.0%	0.0%	0.0%	0.7%	2.5%	1.5%	0.2%	19.0%	27.6%	12.3%	0.0%	2.6%	3.9%	5.8%	24.0%
1987	0.0%	0.0%	0.0%	0.7%	0.4%	0.3%	0.3%	16.0%	34.9%	2.2%	0.5%	3.7%	3.9%	2.7%	34.3%
1988	0.4%	0.1%	0.0%	0.2%	0.0%	0.1%	0.0%	17.0%	18.8%	2.1%	0.0%	4.0%	2.9%	1.7%	52.7%
1989	0.3%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	17.8%	15.7%	3.3%	0.0%	4.8%	3.4%	1.2%	53.0%
1990	0.8%	0.0%	0.0%	0.0%	0.1%	1.4%	0.3%	8.7%	14.2%	4.0%	2.2%	5.8%	11.4%	5.1%	46.0%
1991	0.3%	0.1%	0.0%	0.4%	0.2%	1.0%	0.2%	18.9%	22.6%	4.3%	0.8%	13.8%	5.4%	4.8%	27.3%
1992	0.3%	0.0%	0.0%	0.1%	0.7%	0.3%	0.2%	19.3%	17.2%	1.0%	0.1%	8.8%	0.9%	3.6%	47.3%
1993	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	14.8%	18.2%	1.8%	0.5%	8.8%	0.0%	1.2%	54.0%
1994	0.3%	0.1%	0.0%	0.6%	0.3%	1.4%	0.0%	5.7%	11.9%	3.9%	2.1%	1.4%	3.1%	3.3%	65.9%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.1%	8.5%	6.3%	0.6%	0.4%	1.1%	1.1%	1.6%	79.5%
1996	0.2%	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	0.0%	16.3%	1.2%	0.6%	4.6%	1.0%	2.8%	72.1%
1997	0.7%	0.0%	0.0%	0.1%	0.4%	0.6%	0.6%	10.0%	15.1%	1.6%	2.0%	4.9%	2.4%	3.3%	58.4%
1998	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	3.8%	0.2%	0.2%	2.9%	0.2%	0.4%	91.4%
1999	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.2%	0.3%	10.1%	0.5%	1.8%	11.4%	0.7%	0.8%	73.9%
2000	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	4.8%	5.5%	0.0%	1.9%	3.6%	0.5%	0.4%	82.8%
2001	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.3%	3.2%	8.4%	0.0%	1.5%	5.5%	0.9%	2.5%	77.5%
2002	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	8.5%	7.7%	0.2%	2.9%	7.2%	0.3%	2.5%	70.3%
(85-02)	0.3%	0.0%	0.0%	0.2%	0.4%	0.5%	0.2%	11.5%	15.7%	2.5%	1.0%	5.5%	2.6%	2.6%	57.0%
(85-02)	0.3%	0.0%	0.0%	0.2%	0.4%	0.5%	0.2%	11.5%	15.7%	2.5%	1.0%	5.5%	2.6%	2.6%	57.0%

Table G.14. Percent distribution of Chilliwack chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1985	1.1%	0.1%	0.0%	0.4%	2.3%	0.7%	0.2%	34.0%	28.6%	5.6%	0.0%	3.9%	4.9%	4.5%	13.7%
1986	0.0%	0.0%	0.0%	0.8%	2.6%	1.5%	0.2%	20.2%	28.0%	11.4%	0.0%	2.8%	5.0%	7.0%	20.7%
1987	0.0%	0.0%	0.0%	0.8%	0.4%	0.3%	0.3%	18.7%	35.4%	2.0%	0.5%	3.9%	3.9%	2.9%	30.7%
1988	0.4%	0.2%	0.0%	0.2%	0.0%	0.1%	0.0%	17.7%	19.5%	2.1%	0.0%	4.1%	4.0%	2.6%	49.1%
1989	0.3%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	22.4%	19.4%	3.0%	0.0%	5.6%	3.4%	1.5%	44.0%
1990	0.9%	0.0%	0.0%	0.0%	0.1%	1.3%	0.3%	10.8%	15.2%	3.5%	2.1%	6.3%	16.1%	6.6%	36.8%
1991	0.3%	0.2%	0.0%	0.4%	0.2%	0.9%	0.2%	20.5%	24.9%	3.8%	0.7%	14.1%	6.2%	5.4%	22.3%
1992	0.4%	0.0%	0.0%	0.1%	0.7%	0.3%	0.2%	21.5%	19.4%	0.9%	0.2%	9.3%	1.0%	3.8%	42.2%
1993	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	16.5%	21.0%	1.7%	0.4%	9.3%	0.0%	1.2%	49.0%
1994	0.4%	0.3%	0.0%	0.8%	0.4%	1.5%	0.0%	7.2%	13.4%	4.6%	2.4%	1.4%	4.8%	4.7%	58.3%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.2%	12.8%	7.3%	0.9%	0.4%	1.1%	1.5%	2.4%	72.6%
1996	0.3%	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%	2.1%	18.8%	1.3%	0.6%	4.5%	1.3%	4.9%	64.8%
1997	0.8%	0.0%	0.0%	0.2%	0.4%	0.6%	0.8%	12.5%	16.8%	1.8%	1.9%	5.5%	2.5%	3.9%	52.2%
1998	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	4.4%	0.3%	0.3%	3.4%	0.3%	0.9%	89.6%
1999	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.3%	0.3%	12.0%	0.5%	1.9%	13.4%	0.7%	1.0%	69.7%
2000	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	5.2%	6.3%	0.0%	2.3%	4.3%	0.7%	1.0%	79.5%
2001	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.4%	3.3%	9.8%	0.0%	1.7%	6.4%	1.2%	5.0%	71.9%
2002	0.3%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	8.7%	8.9%	0.2%	3.4%	8.3%	0.4%	3.2%	66.3%
(85-02)	0.3%	0.0%	0.0%	0.2%	0.4%	0.6%	0.3%	13.0%	17.2%	2.4%	1.0%	6.0%	3.2%	3.5%	51.9%
(85-02)	0.3%	0.0%	0.0%	0.2%	0.4%	0.6%	0.3%	13.0%	17.2%	2.4%	1.0%	6.0%	3.2%	3.5%	51.9%

Table G.15. Percent distribution of Cowichan chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1990	0.0%	0.0%	0.0%	0.0%	1.4%	4.7%	0.3%	1.3%	52.7%	13.1%	0.0%	0.7%	3.2%	2.2%	20.4%
1991	0.0%	0.0%	0.0%	0.1%	0.2%	0.5%	1.0%	2.3%	40.6%	3.6%	0.5%	0.6%	2.6%	0.6%	47.3%
1992	0.1%	0.0%	0.0%	0.3%	0.9%	1.0%	0.8%	8.5%	56.1%	3.8%	1.2%	0.2%	1.2%	1.1%	24.6%
1993	0.2%	0.0%	0.0%	0.1%	0.4%	0.5%	1.3%	6.8%	52.4%	3.0%	1.4%	0.5%	0.8%	0.4%	32.1%
1994	0.5%	0.0%	0.0%	0.3%	0.2%	2.2%	0.0%	3.6%	33.9%	5.6%	0.8%	0.3%	3.3%	0.4%	48.8%
1995	0.3%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	3.4%	28.8%	0.4%	0.6%	0.0%	1.9%	0.7%	62.8%
1996	0.2%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	33.3%	0.3%	0.9%	0.0%	0.7%	2.8%	61.4%
1997	0.9%	0.0%	0.0%	0.0%	0.0%	0.5%	0.6%	2.8%	25.9%	0.2%	1.1%	0.0%	3.6%	3.0%	61.5%
1998	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.6%	31.7%	0.3%	1.8%	0.0%	3.3%	0.0%	56.9%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	42.4%	1.3%	4.5%	1.1%	7.4%	0.8%	41.6%
2000	1.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	21.9%	0.0%	5.9%	0.0%	4.8%	1.3%	63.1%
2001	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	11.0%	22.4%	0.3%	0.0%	0.2%	12.9%	0.9%	51.4%
2002	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	3.8%	25.7%	0.1%	1.5%	0.7%	2.8%	3.4%	58.4%
(90-02)	0.7%	0.0%	0.0%	0.1%	0.2%	0.8%	0.7%	3.5%	36.0%	2.5%	1.5%	0.3%	3.7%	1.4%	48.5%
(90-02)	0.7%	0.0%	0.0%	0.1%	0.2%	0.8%	0.7%	3.5%	36.0%	2.5%	1.5%	0.3%	3.7%	1.4%	48.5%

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Table G.16. Percent distribution of Cowichan chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1990	0.0%	0.0%	0.0%	0.1%	1.4%	3.6%	0.7%	2.8%	59.1%	10.0%	0.1%	0.8%	4.6%	2.5%	14.2%
1991	0.1%	0.0%	0.0%	0.2%	0.3%	0.5%	1.1%	3.3%	47.2%	3.3%	0.6%	0.6%	2.9%	0.6%	39.4%
1992	0.1%	0.1%	0.0%	0.4%	1.0%	0.9%	0.8%	8.9%	60.8%	3.3%	1.1%	0.2%	1.3%	1.2%	20.0%
1993	0.3%	0.0%	0.0%	0.1%	0.5%	0.5%	1.2%	7.4%	57.2%	2.7%	1.3%	0.5%	0.8%	0.4%	27.2%
1994	0.5%	0.0%	0.0%	0.4%	0.2%	2.0%	0.0%	4.1%	38.9%	5.8%	0.8%	0.4%	4.1%	0.6%	42.3%
1995	0.3%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	5.0%	32.8%	1.5%	0.6%	0.0%	2.3%	0.9%	55.3%
1996	0.3%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.3%	38.4%	0.5%	0.9%	0.0%	0.9%	3.7%	54.6%
1997	1.2%	0.0%	0.0%	0.0%	0.0%	0.4%	0.7%	3.6%	29.9%	1.1%	1.1%	0.0%	4.3%	3.4%	54.3%
1998	4.8%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.5%	36.1%	0.3%	1.9%	0.0%	4.5%	0.0%	50.8%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	46.8%	1.1%	4.4%	1.1%	9.7%	0.7%	34.9%
2000	1.7%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	25.8%	0.0%	6.4%	0.0%	6.1%	2.7%	55.4%
2001	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	10.5%	25.0%	0.3%	0.0%	0.1%	16.1%	2.9%	43.8%
2002	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	2.8%	3.4%	31.3%	0.1%	1.5%	0.7%	2.8%	4.4%	51.5%
(90-02)	0.8%	0.0%	0.0%	0.1%	0.3%	0.7%	0.8%	3.9%	40.7%	2.3%	1.6%	0.3%	4.6%	1.9%	41.8%
(90-02)	0.8%	0.0%	0.0%	0.1%	0.3%	0.7%	0.8%	3.9%	40.7%	2.3%	1.6%	0.3%	4.6%	1.9%	41.8%



Table G.17. Percent distribution of Samish Fall Fingerling chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1989	0.0%	0.0%	0.0%	0.2%	0.2%	0.2%	0.3%	6.8%	17.2%	3.5%	1.9%	7.4%	36.2%	9.7%	16.5%
1990	2.1%	0.0%	0.0%	0.5%	0.1%	0.2%	0.0%	18.5%	12.9%	1.3%	2.0%	9.0%	30.5%	7.4%	15.4%
1991	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%	13.4%	11.3%	2.6%	3.2%	8.9%	23.0%	10.8%	26.4%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.5%	11.4%	14.6%	2.1%	0.9%	10.2%	15.6%	17.2%	27.4%
1993	0.0%	0.0%	0.0%	0.3%	0.2%	0.5%	0.3%	12.3%	19.0%	2.3%	8.5%	3.9%	16.5%	12.7%	23.6%
1994	0.2%	0.0%	0.0%	0.4%	0.0%	0.4%	0.0%	11.8%	13.8%	1.9%	5.4%	2.2%	38.5%	3.9%	21.2%
1995	0.3%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	5.8%	5.1%	0.3%	3.4%	3.4%	27.2%	15.0%	38.8%
1996	0.0%	0.1%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	10.7%	0.1%	0.7%	1.9%	33.9%	24.1%	28.1%
1997	0.5%	0.2%	0.0%	0.3%	0.7%	0.8%	0.3%	2.0%	8.2%	0.1%	1.8%	0.9%	34.5%	9.8%	40.0%
1998	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	10.9%	0.0%	1.7%	0.7%	44.2%	4.1%	33.3%
1999	3.7%	0.0%	0.0%	1.2%	0.0%	0.0%	3.3%	1.6%	11.0%	0.0%	10.2%	1.6%	38.6%	3.7%	25.2%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.4%	6.1%	0.0%	9.5%	0.4%	38.0%	1.5%	33.1%
2001	0.0%	0.3%	0.0%	0.0%	0.0%	0.1%	0.3%	4.6%	8.1%	0.0%	6.7%	2.3%	38.9%	3.9%	34.8%
2002	0.9%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	8.9%	7.5%	0.0%	4.2%	2.9%	37.8%	5.2%	32.3%
(89-02)	0.8%	0.0%	0.0%	0.2%	0.1%	0.3%	0.4%	7.9%	11.2%	1.0%	4.3%	4.0%	32.4%	9.2%	28.3%
(89-02)	0.8%	0.0%	0.0%	0.2%	0.1%	0.3%	0.4%	7.9%	11.2%	1.0%	4.3%	4.0%	32.4%	9.2%	28.3%

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Table G.18. Percent distribution of Samish Fall Fingerling chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1989	0.2%	0.0%	0.0%	0.2%	0.2%	0.2%	0.2%	9.1%	18.4%	3.1%	1.8%	8.0%	33.3%	11.0%	14.3%
1990	2.1%	0.0%	0.0%	0.5%	0.1%	0.2%	0.0%	19.9%	13.5%	1.3%	2.0%	9.3%	28.7%	8.2%	14.2%
1991	0.0%	0.0%	0.0%	0.0%	0.1%	0.4%	0.0%	14.6%	12.2%	2.5%	3.2%	9.4%	21.6%	12.0%	24.1%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.6%	11.6%	15.4%	1.8%	0.8%	10.0%	14.2%	23.7%	21.9%
1993	0.0%	0.0%	0.0%	0.3%	0.2%	0.4%	0.3%	14.0%	21.7%	2.0%	8.0%	4.1%	15.3%	13.6%	20.1%
1994	0.5%	0.0%	0.0%	0.5%	0.0%	0.4%	0.0%	13.1%	15.1%	1.9%	5.5%	2.1%	37.0%	4.6%	19.3%
1995	0.2%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	7.3%	5.3%	0.7%	3.3%	3.0%	24.3%	22.6%	32.3%
1996	0.0%	0.1%	0.0%	0.1%	0.0%	0.4%	0.0%	1.0%	11.4%	0.2%	0.7%	1.7%	32.6%	29.1%	22.9%
1997	0.6%	0.4%	0.0%	0.4%	0.8%	0.8%	0.4%	2.5%	9.3%	0.4%	1.7%	1.1%	33.6%	11.7%	36.5%
1998	3.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	11.9%	0.0%	1.8%	0.8%	43.2%	5.5%	31.6%
1999	4.0%	0.0%	0.0%	1.5%	0.0%	0.0%	3.6%	1.5%	12.4%	0.0%	10.5%	1.8%	36.4%	5.8%	22.5%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.7%	5.9%	0.0%	8.8%	0.3%	38.1%	11.5%	25.7%
2001	0.0%	0.8%	0.0%	0.0%	0.0%	0.2%	0.3%	4.3%	9.5%	0.0%	7.0%	2.6%	37.5%	7.1%	30.7%
2002	0.9%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	8.6%	9.5%	0.0%	4.7%	3.0%	36.0%	7.0%	29.9%
(89-02)	0.9%	0.1%	0.0%	0.3%	0.1%	0.3%	0.4%	8.5%	12.2%	1.0%	4.3%	4.1%	30.8%	12.4%	24.7%
(89-02)	0.9%	0.1%	0.0%	0.3%	0.1%	0.3%	0.4%	8.5%	12.2%	1.0%	4.3%	4.1%	30.8%	12.4%	24.7%

Table G.19. Percent distribution of Squaxin Pens Fall Yearling chinook reported catch among fisheries and escapement.

Catch <sup>1</sup> Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement <sup>2</sup>
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1990	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	3.3%	0.7%	1.2%	0.6%	4.0%	32.7%	54.9%	2.5%
1991	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%	1.5%	0.6%	0.0%	8.8%	32.8%	48.5%	3.5%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.5%	2.3%	3.4%	1.2%	0.8%	7.1%	22.3%	57.1%	4.7%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	9.7%	5.4%	1.4%	2.3%	13.5%	3.4%	49.9%	13.5%
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	24.7%	5.9%	3.5%	4.7%	6.5%	22.4%	10.6%	21.8%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	47.5%	30.5%	22.0%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	0.0%	0.0%	1.1%	4.7%	89.8%	2.5%
1997	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%	0.0%	0.0%	0.0%	2.8%	8.0%	85.2%	0.6%
1998	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.9%	2.9%	91.3%	2.9%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%	62.5%	25.0%
(90-99)	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	6.0%	1.9%	0.8%	0.8%	4.7%	17.7%	58.0%	9.9%
(90-99)	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	6.0%	1.9%	0.8%	0.8%	4.7%	17.7%	58.0%	9.9%

1. No data are shown for 2000-2002 because of lack of coded-wire tagging of broods from 1998-2000.

2. Values represent estimates of catch distribution only.

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Table G.20. Percent distribution of Squaxin Pens Fall Yearling chinook total fishing mortalities among fisheries and escapement.

Catch <sup>1</sup> Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement <sup>2</sup>
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1990	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	3.2%	0.8%	1.0%	0.6%	4.1%	31.6%	56.7%	2.0%
1991	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.3%	1.6%	0.5%	0.0%	8.9%	30.9%	50.8%	3.0%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.4%	2.0%	3.0%	0.9%	0.6%	6.0%	22.1%	61.2%	3.5%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	10.7%	5.9%	1.3%	2.0%	13.0%	3.6%	50.9%	12.0%
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	23.3%	5.8%	4.2%	4.8%	6.3%	20.6%	15.3%	19.6%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.4%	0.0%	0.0%	0.0%	22.4%	71.1%	5.7%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	0.0%	0.0%	0.9%	5.2%	90.0%	2.0%
1997	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	0.0%	0.0%	0.0%	2.1%	6.4%	88.0%	0.4%
1998	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	2.3%	93.0%	2.3%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.5%	0.0%	0.5%	1.0%	0.5%	93.5%	2.0%
(90-99)	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	4.9%	2.0%	0.8%	0.8%	4.5%	14.6%	67.0%	5.3%
(90-99)	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	4.9%	2.0%	0.8%	0.8%	4.5%	14.6%	67.0%	5.3%

1. No data are shown for 2000-2002 because of lack of coded-wire tagging of broods from 1998-2000.

2. Values represent estimates of catch distribution only.

Table G.21. Percent distribution of Stillaguamish Fall Fingerling chinook reported catch among fisheries and escapement (NA=not available).

Catch <sup>1</sup> Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1984	0.0%	0.0%	0.0%	3.6%	19.3%	2.4%	3.6%	7.2%	15.7%	24.1%	0.0%	0.0%	4.8%	19.3%	NA <sup>2</sup>
1985	7.3%	0.0%	0.0%	4.2%	0.0%	4.2%	0.0%	30.2%	10.4%	11.5%	9.4%	0.0%	9.4%	13.5%	NA <sup>2</sup>
1986	4.2%	0.0%	0.0%	0.0%	0.0%	4.2%	0.0%	30.2%	18.8%	0.0%	0.0%	0.0%	15.6%	19.8%	7.3%
1990	0.4%	0.0%	0.0%	0.7%	6.2%	4.0%	0.0%	16.2%	7.5%	4.2%	4.9%	4.2%	7.1%	10.4%	34.3%
1991	0.3%	0.0%	0.0%	0.0%	0.0%	0.1%	0.4%	5.9%	4.4%	0.9%	2.6%	5.1%	6.9%	7.9%	65.5%
1992	0.0%	0.0%	0.0%	0.3%	0.0%	2.4%	0.0%	17.0%	5.1%	2.5%	4.0%	5.7%	11.9%	28.1%	23.0%
1993	0.0%	0.0%	0.0%	0.6%	0.4%	1.0%	1.4%	11.5%	8.7%	1.4%	9.6%	5.4%	1.5%	22.5%	36.1%
1994	2.4%	0.0%	0.0%	0.7%	0.0%	1.3%	0.0%	6.7%	7.8%	0.9%	5.3%	0.0%	2.4%	5.8%	66.7%
1995	2.3%	0.0%	0.0%	0.0%	0.0%	9.8%	0.0%	2.3%	4.1%	1.0%	9.6%	1.0%	2.3%	13.7%	53.6%
1996	0.9%	0.0%	0.0%	0.0%	0.0%	8.3%	1.4%	0.0%	6.3%	0.6%	7.6%	0.0%	0.3%	19.4%	55.2%
1997	8.3%	0.4%	0.0%	0.5%	0.0%	1.3%	1.0%	6.5%	4.5%	0.0%	4.7%	0.0%	1.8%	14.3%	56.7%
1998	12.7%	0.3%	0.4%	1.2%	0.0%	0.0%	0.8%	1.3%	2.2%	0.1%	2.9%	0.0%	2.4%	2.5%	73.3%
1999	0.9%	2.2%	0.0%	0.0%	0.0%	0.7%	0.4%	1.5%	7.9%	0.0%	10.5%	0.0%	0.4%	3.5%	72.0%
2000	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.6%	2.0%	0.0%	1.5%	0.5%	0.4%	1.6%	82.8%
2001	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.2%	5.6%	0.0%	4.9%	0.3%	1.4%	10.5%	69.9%
(84-01)	3.1%	0.2%	0.0%	0.8%	1.7%	2.6%	0.6%	9.9%	7.4%	3.2%	5.2%	1.5%	4.6%	12.9%	46.4%
(85-01)	3.3%	0.2%	0.0%	0.6%	0.5%	2.7%	0.4%	10.1%	6.8%	1.7%	5.5%	1.6%	4.6%	12.4%	49.7%

Table G.22. Percent distribution of Stillaguamish Fall Fingerling chinook total fishing mortalities among fisheries and escapement.

Catch <sup>1</sup> Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1984	0.9%	0.0%	0.0%	3.7%	16.8%	1.9%	2.8%	10.3%	13.1%	19.6%	0.0%	0.0%	4.7%	26.2%	NA <sup>2</sup>
1985	7.1%	0.0%	0.0%	4.5%	0.0%	3.6%	0.0%	31.3%	8.9%	9.8%	8.9%	0.0%	8.0%	17.9%	NA <sup>2</sup>
1986	5.7%	0.0%	0.0%	0.0%	0.0%	3.8%	0.0%	29.5%	19.0%	0.0%	0.0%	0.0%	14.3%	21.0%	6.7%
1990	0.6%	0.0%	0.0%	0.8%	6.1%	3.6%	0.0%	17.0%	8.4%	3.8%	4.8%	5.1%	7.4%	13.0%	29.5%
1991	0.3%	0.0%	0.0%	0.0%	0.0%	0.1%	0.5%	6.8%	5.1%	1.0%	2.6%	5.9%	6.9%	10.0%	60.9%
1992	0.0%	0.0%	0.0%	0.4%	0.0%	2.1%	0.0%	16.6%	4.9%	2.0%	3.4%	5.3%	10.4%	38.7%	16.1%
1993	0.0%	0.0%	0.0%	0.9%	0.5%	1.0%	1.3%	13.8%	10.0%	1.3%	9.1%	5.9%	1.4%	23.5%	31.3%
1994	2.9%	0.0%	0.0%	0.6%	0.0%	1.3%	0.0%	7.3%	8.6%	1.0%	5.7%	0.0%	2.3%	7.1%	63.1%
1995	2.4%	0.0%	0.0%	0.0%	0.0%	10.7%	0.0%	3.8%	4.4%	1.8%	8.9%	0.8%	2.2%	24.2%	41.0%
1996	1.1%	0.0%	0.0%	0.0%	0.0%	9.2%	2.1%	1.1%	6.7%	0.6%	7.3%	0.0%	0.3%	26.0%	45.5%
1997	9.0%	0.8%	0.0%	0.4%	0.0%	1.4%	1.2%	7.2%	4.7%	0.3%	4.6%	0.0%	1.7%	17.2%	51.4%
1998	14.0%	1.0%	0.5%	2.2%	0.0%	0.0%	1.1%	1.2%	2.4%	0.1%	3.0%	0.0%	2.3%	4.0%	68.1%
1999	1.0%	9.3%	0.0%	0.0%	0.0%	0.6%	0.4%	1.4%	8.5%	0.0%	10.2%	0.0%	0.4%	4.8%	63.5%
2000	5.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.7%	2.3%	0.0%	1.7%	0.5%	0.4%	2.6%	80.5%
2001	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.2%	5.5%	0.0%	5.2%	0.3%	1.3%	15.9%	64.7%
(84-01)	3.5%	0.7%	0.0%	0.9%	1.6%	2.6%	0.6%	10.6%	7.5%	2.8%	5.0%	1.6%	4.3%	16.8%	41.5%
(85-01)	3.7%	0.8%	0.0%	0.7%	0.5%	2.7%	0.5%	10.6%	7.1%	1.6%	5.4%	1.7%	4.2%	16.1%	44.4%

1. No data are shown for 2002 because of lack of coded-wire tagging of broods from 1999-2000.

2. Values represent estimates of catch distribution only for this year.

Table G.23. Percent distribution of George Adams Fall Fingerling chinook among fisheries reported catch and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1982	0.0%	0.0%	0.0%	0.0%	0.5%	0.3%	0.0%	20.8%	4.4%	0.4%	0.0%	3.0%	38.1%	10.7%	21.9%
1983	0.0%	0.0%	0.0%	0.0%	1.6%	1.6%	0.0%	15.7%	3.5%	4.2%	0.5%	0.2%	29.8%	25.8%	17.2%
1984	0.0%	0.1%	0.0%	0.5%	3.2%	0.7%	0.4%	18.1%	5.7%	1.2%	0.0%	2.2%	31.3%	20.6%	15.9%
1989	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	8.5%	3.8%	4.6%	1.7%	12.9%	38.6%	17.2%	12.2%
1990	0.1%	0.0%	0.0%	0.4%	0.3%	0.5%	0.0%	19.3%	4.7%	1.0%	5.0%	15.0%	28.4%	18.4%	6.8%
1991	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	18.4%	2.2%	0.4%	4.5%	8.6%	33.3%	18.0%	14.4%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	15.6%	2.1%	5.2%	0.0%	20.3%	9.4%	39.6%	7.3%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	33.9%	4.3%	0.0%	7.8%	8.7%	4.3%	22.6%	18.3%
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%	0.0%	0.0%	14.0%	7.0%	72.1%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	7.9%	3.9%	0.5%	3.9%	1.0%	4.4%	18.7%	57.6%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	12.6%	0.0%	4.7%	5.9%	0.0%	13.8%	60.6%
1997	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%	3.0%	0.3%	1.4%	3.0%	0.8%	18.8%	66.5%
1998	0.7%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.7%	0.0%	1.1%	1.8%	1.8%	7.4%	86.2%
1999	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	2.5%	0.0%	9.0%	5.0%	2.9%	10.9%	68.4%
2000	0.4%	0.0%	0.0%	0.3%	0.0%	0.1%	0.0%	20.7%	3.7%	0.0%	11.5%	3.7%	0.4%	9.8%	49.3%
2001	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	12.2%	3.1%	0.0%	2.7%	6.7%	4.9%	10.6%	58.4%
2002	1.5%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	11.4%	1.9%	0.0%	7.0%	4.3%	11.0%	15.5%	46.5%
(82-02)	0.4%	0.0%	0.0%	0.1%	0.3%	0.5%	0.1%	12.2%	4.1%	1.0%	3.6%	6.0%	14.9%	16.8%	40.0%
(85-02)	0.4%	0.0%	0.0%	0.1%	0.0%	0.4%	0.0%	10.9%	4.0%	0.9%	4.3%	6.9%	11.0%	16.3%	44.6%

Table G.24. Percent distribution of George Adams Fall Fingerling chinook total fishing among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1982	0.0%	0.0%	0.0%	0.0%	0.6%	0.3%	0.0%	21.6%	4.3%	0.5%	0.0%	2.9%	36.7%	12.8%	20.3%
1983	0.0%	0.0%	0.0%	0.0%	1.2%	1.1%	0.0%	12.6%	2.4%	3.1%	0.3%	0.1%	25.7%	42.4%	11.0%
1984	0.0%	0.1%	0.0%	0.6%	3.2%	0.7%	0.5%	18.2%	5.6%	1.1%	0.0%	2.3%	30.6%	22.5%	14.6%
1989	0.0%	0.7%	0.0%	0.1%	0.1%	0.3%	0.0%	10.2%	3.9%	4.0%	1.8%	13.1%	35.6%	19.9%	10.3%
1990	0.8%	0.0%	0.0%	0.5%	0.4%	0.5%	0.0%	21.2%	4.9%	1.0%	4.7%	15.5%	25.9%	18.9%	5.9%
1991	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	19.4%	2.3%	0.4%	4.5%	8.7%	31.6%	19.7%	13.3%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	16.6%	1.8%	4.6%	0.0%	20.3%	8.3%	41.5%	6.5%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	33.6%	5.1%	0.0%	7.3%	8.0%	4.4%	26.3%	15.3%
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.2%	0.0%	0.0%	0.0%	16.3%	10.2%	63.3%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	0.0%	9.7%	4.3%	1.2%	3.9%	0.8%	4.3%	28.3%	45.3%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%	0.0%	1.3%	14.3%	0.0%	4.6%	5.7%	0.0%	15.9%	55.5%
1997	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.5%	3.0%	0.8%	1.3%	3.0%	0.8%	24.2%	60.6%
1998	0.7%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.9%	0.0%	1.2%	1.7%	2.1%	26.7%	66.0%
1999	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	3.1%	0.0%	9.2%	5.8%	2.8%	14.3%	63.5%
2000	0.3%	0.0%	0.0%	0.2%	0.0%	0.2%	0.0%	19.8%	3.8%	0.0%	12.2%	3.7%	0.3%	16.5%	43.0%
2001	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	11.6%	3.6%	0.0%	2.8%	7.2%	4.9%	17.2%	50.9%
2002	1.8%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	11.1%	2.4%	0.0%	7.8%	4.6%	10.7%	17.9%	42.5%
(82-02)	0.4%	0.1%	0.0%	0.1%	0.3%	0.5%	0.1%	12.5%	4.5%	1.0%	3.6%	6.1%	14.2%	22.1%	34.6%
(85-02)	0.5%	0.1%	0.0%	0.1%	0.0%	0.5%	0.1%	11.4%	4.5%	0.9%	4.4%	7.0%	10.6%	21.2%	38.7%

Table G.25. Percent distribution of Nisqually Fall Fingerling chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1983	0.0%	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%	16.4%	12.4%	6.0%	0.0%	4.5%	10.9%	45.8%	1.5%
1984	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.8%	1.5%	2.5%	0.0%	1.5%	37.9%	21.7%	6.1%
1985	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	30.3%	0.0%	6.1%	3.0%	7.6%	31.8%	16.7%	4.5%
1986	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	15.7%	13.0%	1.7%	0.0%	0.0%	35.7%	14.8%	19.1%
1987	0.0%	0.0%	0.0%	0.0%	2.0%	1.3%	0.0%	10.7%	13.3%	0.7%	0.0%	5.3%	35.3%	18.7%	12.7%
1988	0.0%	0.0%	0.0%	0.7%	2.2%	0.7%	2.2%	5.4%	17.7%	4.7%	0.0%	8.7%	17.3%	10.5%	30.0%
1989	0.0%	0.0%	0.0%	0.3%	0.0%	0.7%	0.0%	4.4%	2.5%	3.6%	6.3%	13.3%	42.6%	18.3%	8.0%
1990	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	22.5%	3.1%	0.2%	5.8%	10.2%	37.7%	12.2%	8.2%
1991	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	8.2%	3.3%	2.5%	2.1%	16.5%	23.0%	24.3%	18.1%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.8%	7.6%	2.9%	2.6%	4.2%	7.6%	18.2%	16.7%	39.3%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	12.4%	3.9%	2.2%	1.8%	2.9%	22.4%	19.2%	34.3%
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	4.5%	2.4%	2.4%	0.5%	0.8%	22.0%	21.2%	46.2%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.2%	5.4%	1.7%	0.1%	3.1%	2.7%	32.4%	24.4%	29.7%
1996	0.2%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	3.3%	0.0%	1.1%	1.7%	42.0%	21.3%	29.4%
1997	0.0%	0.3%	0.0%	0.0%	0.0%	0.3%	0.6%	2.4%	0.6%	0.0%	4.5%	0.8%	18.9%	24.4%	47.0%
1998	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.5%	1.5%	0.0%	0.7%	0.5%	36.4%	12.0%	47.9%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	2.9%	0.0%	2.7%	2.8%	43.8%	19.6%	27.7%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.8%	3.6%	0.0%	6.2%	1.9%	38.8%	19.5%	15.2%
2001	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	2.0%	0.0%	3.7%	4.1%	29.7%	14.6%	42.6%
2002	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	1.0%	0.0%	2.1%	3.4%	42.7%	11.0%	32.8%
(83-02)	0.0%	0.0%	0.0%	0.3%	0.2%	0.3%	0.2%	10.0%	4.6%	1.8%	2.4%	4.8%	31.0%	19.3%	25.0%
(85-02)	0.0%	0.0%	0.0%	0.2%	0.2%	0.3%	0.2%	8.6%	4.4%	1.5%	2.7%	5.0%	31.7%	17.7%	27.4%

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Table G.26. Percent distribution of Nisqually Fall Fingerling chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1983	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	15.0%	8.8%	4.8%	0.0%	3.1%	9.2%	56.5%	1.0%
1984	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.8%	1.3%	2.5%	0.0%	1.7%	35.2%	25.4%	5.1%
1985	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.6%	0.0%	4.8%	3.6%	7.1%	31.0%	21.4%	3.6%
1986	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.4%	12.5%	1.6%	0.0%	0.0%	32.8%	19.5%	17.2%
1987	0.0%	0.0%	0.0%	0.0%	2.7%	1.1%	0.0%	14.4%	11.8%	0.5%	0.0%	5.9%	29.9%	23.5%	10.2%
1988	0.0%	0.0%	0.0%	0.8%	2.1%	0.8%	2.6%	5.8%	18.6%	3.7%	0.0%	8.1%	16.0%	19.7%	21.8%
1989	0.0%	0.0%	0.0%	0.4%	0.0%	0.6%	0.0%	5.4%	3.0%	3.2%	6.0%	14.6%	40.4%	19.1%	7.2%
1990	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	23.4%	3.2%	0.1%	5.9%	10.4%	35.6%	13.6%	7.6%
1991	0.0%	0.0%	0.0%	2.2%	0.0%	0.0%	0.0%	9.1%	3.6%	2.2%	1.8%	17.2%	21.2%	26.6%	16.1%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	1.0%	7.2%	2.9%	1.9%	3.7%	7.0%	18.4%	28.5%	29.3%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	14.7%	4.5%	2.0%	1.7%	3.2%	21.6%	21.8%	29.6%
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	4.2%	2.3%	2.4%	0.4%	0.6%	17.8%	39.9%	32.3%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.3%	8.0%	2.0%	0.3%	3.0%	2.4%	30.3%	27.7%	25.8%
1996	0.2%	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	0.7%	3.6%	0.0%	1.2%	1.6%	38.9%	26.3%	26.4%
1997	0.0%	0.6%	0.0%	0.0%	0.0%	0.3%	0.8%	2.8%	0.7%	0.3%	4.3%	0.8%	17.4%	31.9%	40.2%
1998	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.4%	1.5%	0.0%	0.7%	0.5%	31.6%	26.2%	38.4%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	3.3%	0.0%	2.6%	3.1%	41.8%	24.1%	24.6%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.6%	3.3%	0.0%	5.8%	1.7%	31.4%	33.7%	11.5%
2001	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%	2.1%	0.0%	3.8%	4.3%	26.5%	25.1%	35.2%
2002	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.7%	1.2%	0.0%	2.3%	3.8%	41.5%	14.4%	30.1%
(83-02)	0.0%	0.0%	0.0%	0.3%	0.2%	0.3%	0.3%	10.4%	4.5%	1.5%	2.3%	4.9%	28.4%	26.2%	20.6%
(85-02)	0.0%	0.0%	0.0%	0.2%	0.3%	0.3%	0.3%	9.1%	4.5%	1.3%	2.6%	5.1%	29.1%	24.6%	22.6%

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Table G.27. Percent distribution of South Puget Sound Fall Fingerling chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1982	0.2%	0.0%	0.0%	0.1%	0.8%	0.4%	0.1%	23.0%	13.8%	1.6%	0.1%	2.8%	24.8%	21.3%	10.9%
1983	0.1%	0.0%	0.0%	0.7%	1.8%	0.6%	0.1%	17.3%	4.6%	2.6%	0.3%	1.6%	27.4%	28.6%	14.3%
1984	0.1%	0.2%	0.0%	0.7%	1.4%	0.2%	0.1%	20.5%	8.5%	1.0%	0.3%	1.4%	24.6%	22.5%	18.5%
1985	0.8%	0.0%	0.0%	0.0%	0.3%	0.4%	0.2%	18.7%	6.3%	1.6%	0.8%	1.9%	29.3%	18.2%	21.6%
1986	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	18.4%	7.5%	1.7%	0.0%	4.0%	10.7%	22.4%	34.0%
1987	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.7%	12.7%	3.9%	0.0%	7.2%	13.9%	10.9%	38.8%
1988	0.1%	0.0%	0.0%	0.2%	0.5%	0.8%	0.5%	5.4%	7.5%	3.8%	4.2%	7.3%	26.4%	14.7%	28.6%
1989	0.1%	0.0%	0.0%	0.2%	0.3%	0.1%	0.0%	7.4%	4.5%	3.9%	2.5%	11.0%	21.4%	16.1%	32.3%
1990	0.0%	0.0%	0.1%	0.3%	0.3%	0.3%	0.0%	22.7%	3.6%	1.0%	4.3%	9.0%	23.7%	12.5%	22.3%
1991	0.4%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	15.1%	1.8%	1.0%	2.6%	11.6%	26.5%	13.1%	27.7%
1992	0.6%	0.1%	0.0%	0.0%	0.9%	0.5%	0.0%	17.2%	3.7%	2.5%	2.2%	9.1%	23.7%	18.0%	21.5%
1993	0.2%	0.1%	0.0%	0.0%	0.1%	0.6%	0.0%	15.7%	3.8%	2.2%	4.6%	5.5%	15.7%	21.0%	30.4%
1994	0.0%	0.0%	0.0%	0.5%	0.0%	0.2%	0.0%	8.9%	3.0%	4.1%	1.3%	0.7%	16.3%	10.0%	55.0%
1995	0.2%	0.0%	0.0%	0.1%	0.0%	0.9%	0.0%	3.7%	1.8%	0.2%	1.1%	1.3%	5.6%	11.7%	73.4%
1996	0.1%	0.0%	0.0%	0.0%	0.0%	0.4%	0.1%	0.0%	4.1%	0.1%	1.8%	2.9%	6.3%	14.8%	69.4%
1997	0.5%	0.0%	0.0%	0.3%	0.0%	0.5%	0.0%	5.2%	1.8%	0.0%	1.5%	1.6%	2.9%	13.2%	72.5%
1998	1.3%	0.0%	0.0%	0.9%	0.0%	0.0%	0.2%	0.5%	1.7%	0.0%	0.8%	1.0%	8.0%	6.3%	79.3%
1999	0.5%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.7%	2.4%	0.0%	4.0%	3.0%	9.2%	5.3%	74.8%
2000	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.2%	1.9%	0.0%	4.2%	0.3%	11.3%	6.6%	66.0%
2001	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.3%	7.4%	3.3%	0.0%	4.5%	4.1%	10.9%	8.8%	60.6%
2002	0.8%	0.0%	0.0%	0.7%	0.0%	0.1%	0.3%	11.7%	3.8%	0.0%	2.1%	4.2%	16.1%	7.2%	53.0%
(82-02)	0.3%	0.0%	0.0%	0.2%	0.3%	0.3%	0.1%	11.5%	4.9%	1.5%	2.1%	4.4%	16.9%	14.4%	43.1%
(85-02)	0.3%	0.0%	0.0%	0.2%	0.1%	0.3%	0.1%	10.0%	4.2%	1.5%	2.4%	4.8%	15.4%	12.8%	47.8%

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Table G.28. Percent distribution of South Puget Sound Fall Fingerling chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1982	0.2%	0.0%	0.0%	0.2%	1.0%	0.3%	0.1%	24.6%	12.5%	1.5%	0.1%	2.7%	23.2%	24.1%	9.3%
1983	0.1%	0.0%	0.0%	0.7%	1.8%	0.5%	0.1%	16.8%	3.9%	2.3%	0.2%	1.6%	25.3%	35.5%	11.2%
1984	0.1%	0.2%	0.0%	0.7%	1.4%	0.2%	0.1%	20.8%	8.3%	0.9%	0.3%	1.5%	23.9%	24.7%	16.9%
1985	0.8%	0.0%	0.0%	0.0%	0.3%	0.3%	0.2%	18.6%	6.2%	1.6%	0.9%	1.9%	28.4%	20.7%	20.2%
1986	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	18.5%	7.1%	1.6%	0.0%	4.0%	9.9%	28.0%	29.6%
1987	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	21.3%	10.5%	3.4%	0.0%	8.9%	11.8%	15.3%	28.8%
1988	0.4%	0.0%	0.0%	0.2%	1.0%	0.6%	0.4%	10.1%	9.2%	3.0%	3.3%	7.8%	22.1%	22.6%	19.2%
1989	0.1%	0.0%	0.0%	0.3%	0.4%	0.1%	0.0%	8.8%	5.2%	3.6%	2.4%	12.2%	20.5%	17.4%	28.9%
1990	0.0%	0.1%	0.1%	0.3%	0.3%	0.3%	0.0%	23.9%	3.8%	0.9%	4.3%	9.2%	22.4%	13.9%	20.5%
1991	0.5%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	16.5%	1.9%	0.9%	2.6%	12.3%	25.2%	14.5%	25.4%
1992	0.6%	0.2%	0.0%	0.0%	0.9%	0.5%	0.0%	17.4%	3.8%	2.4%	2.1%	9.1%	21.1%	24.0%	18.0%
1993	0.3%	0.1%	0.0%	0.0%	0.1%	0.6%	0.0%	18.2%	4.5%	2.0%	4.3%	5.9%	14.7%	22.7%	26.5%
1994	0.0%	0.0%	0.0%	0.5%	0.0%	0.2%	0.0%	9.4%	3.3%	4.8%	1.3%	0.6%	15.5%	17.4%	46.9%
1995	0.2%	0.0%	0.0%	0.1%	0.0%	1.1%	0.0%	5.4%	2.1%	0.7%	1.2%	1.3%	5.8%	17.3%	64.9%
1996	0.2%	0.0%	0.0%	0.0%	0.0%	0.4%	0.2%	0.9%	4.8%	0.2%	1.8%	2.8%	6.3%	17.9%	64.5%
1997	0.5%	0.0%	0.0%	0.3%	0.0%	0.6%	0.0%	6.2%	2.0%	0.3%	1.5%	1.7%	2.8%	16.3%	67.7%
1998	1.4%	0.0%	0.0%	0.9%	0.0%	0.0%	0.3%	0.5%	1.8%	0.0%	0.8%	1.1%	8.0%	11.9%	73.2%
1999	0.6%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.7%	3.0%	0.0%	4.3%	3.5%	9.3%	7.9%	70.5%
2000	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	9.1%	2.2%	0.0%	4.7%	0.3%	10.9%	13.8%	58.5%
2001	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.4%	7.1%	3.9%	0.0%	4.8%	4.5%	10.6%	14.0%	54.6%
2002	0.9%	0.0%	0.0%	0.8%	0.0%	0.2%	0.3%	11.4%	4.8%	0.0%	2.4%	4.6%	15.6%	9.4%	49.6%
(82-02)	0.4%	0.0%	0.0%	0.3%	0.3%	0.3%	0.1%	12.7%	5.0%	1.4%	2.1%	4.6%	15.9%	18.5%	38.3%
(85-02)	0.4%	0.0%	0.0%	0.2%	0.2%	0.3%	0.1%	11.3%	4.4%	1.4%	2.4%	5.1%	14.5%	16.9%	42.7%

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Table G.29. Percent distribution of South Puget Sound Fall Yearling chinook reported catch among fisheries and escapement.

Catch <sup>1</sup> Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1982	0.0%	0.0%	0.0%	0.0%	2.5%	0.0%	0.0%	2.8%	3.2%	0.0%	0.0%	1.1%	14.5%	67.5%	8.5%
1983	0.0%	0.0%	0.0%	0.0%	1.8%	0.0%	0.0%	5.8%	0.5%	0.0%	0.0%	0.0%	9.8%	76.3%	5.8%
1984	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.3%	1.6%	0.0%	0.0%	0.0%	33.6%	43.3%	14.2%
1990	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.0%	0.3%	0.0%	0.5%	0.0%	1.4%	32.3%	54.7%	10.6%
1991	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.6%	0.7%	0.0%	0.0%	3.7%	12.8%	57.6%	19.6%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.6%	0.8%	0.0%	1.2%	4.6%	28.2%	48.7%	11.9%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	1.1%	0.0%	0.0%	1.4%	10.4%	57.7%	28.0%
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.5%	2.2%	0.7%	0.0%	15.6%	63.3%	16.9%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.4%	2.6%	0.0%	2.0%	0.4%	10.4%	68.2%	10.0%
1996	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	0.0%	1.3%	0.7%	3.2%	89.3%	3.3%
1997	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	1.1%	0.0%	0.4%	1.3%	4.0%	66.6%	25.2%
1998	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	5.6%	82.2%	10.0%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	15.0%	0.0%	0.0%	7.5%	2.5%	70.0%	5.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.8%	6.3%	11.3%	67.5%	6.3%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.5%	0.0%	0.0%	0.0%	3.0%	0.0%	74.6%	17.9%
(82-01)	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	2.7%	1.9%	0.2%	1.0%	2.2%	12.9%	65.8%	12.9%
(85-01)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	2.0%	0.2%	1.2%	2.7%	11.4%	66.7%	13.7%

1. No data are shown for 2002 because of lack of coded-wire tagging of broods from 1998 and 2000.

Table G.30. Percent distribution of South Puget Sound Fall Yearling chinook for total fishing mortalities among fisheries and escapement.

Catch <sup>1</sup> Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1982	0.0%	0.0%	0.0%	0.0%	2.2%	0.0%	0.0%	3.8%	2.7%	0.0%	0.0%	0.8%	12.7%	71.4%	6.5%
1983	0.0%	0.0%	0.0%	0.0%	1.8%	0.0%	0.0%	5.5%	0.4%	0.0%	0.0%	0.0%	8.8%	78.8%	4.7%
1984	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	1.8%	0.0%	0.0%	0.0%	31.7%	46.5%	12.9%
1990	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.8%	0.1%	0.4%	0.0%	1.6%	30.5%	56.9%	9.5%
1991	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.4%	0.6%	0.0%	0.0%	3.5%	11.4%	62.5%	16.5%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.9%	0.9%	0.0%	1.2%	4.8%	26.8%	51.2%	10.2%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	1.0%	0.0%	0.0%	1.2%	6.7%	75.0%	15.0%
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.6%	2.3%	0.6%	0.0%	14.5%	67.0%	14.0%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.9%	2.0%	0.4%	1.6%	0.3%	8.2%	74.7%	6.9%
1996	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	1.9%	0.0%	1.2%	0.6%	2.8%	90.0%	2.8%
1997	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	1.0%	0.0%	0.3%	1.2%	3.4%	72.0%	20.6%
1998	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	4.3%	86.1%	7.8%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.5%	0.0%	0.0%	3.8%	0.9%	84.9%	1.9%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.2%	6.1%	9.2%	71.4%	5.1%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.3%	0.0%	0.0%	0.0%	2.2%	0.0%	81.3%	13.2%
(82-01)	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	2.7%	1.4%	0.2%	0.9%	1.8%	11.5%	71.3%	9.8%
(85-01)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	1.4%	0.3%	1.1%	2.2%	9.9%	72.7%	10.3%

1. No data are shown for 2002 because of lack of coded-wire tagging of broods from 1998 and 2000.

Table G.31. Percent distribution of Nooksack Spring Yearling chinook reported catch among fisheries and escapement.

Catch <sup>1</sup> Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1986	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.9%	4.7%	0.0%	0.0%	0.0%	1.6%	84.7%
1989	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.3%	0.0%	0.0%	0.0%	14.3%	7.1%	72.3%
1990	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.9%	0.0%	14.6%	9.8%	0.0%	2.4%	4.9%	34.1%	29.3%
1991	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	2.1%	32.5%	5.9%	7.0%	2.1%	8.4%	5.2%	36.0%
1992	0.4%	0.4%	0.0%	0.0%	1.0%	0.6%	0.4%	17.8%	12.5%	1.1%	2.4%	1.0%	0.4%	8.0%	54.2%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	4.6%	15.4%	6.4%	7.9%	0.8%	5.6%	12.0%	46.8%
1994	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.1%	34.3%	1.0%	0.0%	0.2%	6.3%	3.3%	49.2%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%	3.2%	7.7%	64.1%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	12.4%	0.0%	3.2%	0.5%	0.0%	3.2%	79.5%
1997	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.2%	2.7%	5.3%	0.0%	3.5%	15.9%	58.4%
1998	0.0%	0.0%	0.0%	0.0%	0.0%	4.5%	4.5%	0.0%	20.2%	1.1%	7.9%	0.0%	5.6%	6.7%	49.4%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	27.7%	0.0%	1.2%	3.0%	5.4%	1.2%	58.4%
(86-99)	0.1%	0.0%	0.0%	0.0%	0.1%	0.9%	0.5%	2.7%	18.7%	2.7%	2.9%	0.8%	4.8%	8.9%	56.9%
(86-99)	0.1%	0.0%	0.0%	0.0%	0.1%	0.9%	0.5%	2.7%	18.7%	2.7%	2.9%	0.8%	4.8%	8.9%	56.9%

1. No data are shown for 2000-2002 because of lack of coded-wire tagging of broods from 1997-2000.

Table G.32. Percent distribution of Nooksack Spring Yearling chinook total fishing mortalities among fisheries and escapement.

Catchh <sup>1</sup> Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1986	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	2.1%	11.8%	4.6%	0.8%	0.4%	8.0%	3.8%	67.9%
1989	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.3%	0.0%	0.0%	0.0%	15.0%	9.2%	67.5%
1990	0.0%	0.0%	0.0%	0.0%	1.4%	4.2%	0.0%	9.7%	26.4%	8.3%	1.4%	1.4%	2.8%	27.8%	16.7%
1991	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	2.4%	36.9%	5.7%	6.8%	2.4%	7.7%	6.8%	30.7%
1992	1.9%	0.9%	0.0%	0.0%	1.1%	0.6%	0.4%	19.9%	14.1%	1.0%	2.3%	1.0%	0.4%	9.9%	46.3%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	5.0%	18.4%	5.9%	8.0%	0.8%	5.3%	12.8%	43.3%
1994	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.1%	36.0%	0.9%	0.0%	0.2%	6.0%	4.0%	47.3%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	26.6%	0.6%	0.0%	0.0%	3.4%	13.0%	56.5%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.5%	14.6%	0.0%	3.5%	0.5%	0.0%	5.6%	74.2%
1997	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	15.6%	2.3%	5.5%	0.0%	3.1%	21.9%	51.6%
1998	0.0%	0.0%	0.0%	0.0%	0.0%	4.7%	6.6%	0.0%	20.8%	1.9%	7.5%	0.0%	4.7%	12.3%	41.5%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.8%	30.7%	0.0%	1.7%	3.4%	5.0%	2.2%	54.2%
(86-99)	0.2%	0.1%	0.0%	0.0%	0.2%	0.9%	0.7%	4.0%	21.7%	2.6%	3.1%	0.8%	5.1%	10.8%	49.8%
(86-02)	0.2%	0.1%	0.0%	0.0%	0.2%	0.9%	0.7%	4.0%	21.7%	2.6%	3.1%	0.8%	5.1%	10.8%	49.8%

1. No data are shown for 2000-2002 because of lack of coded-wire tagging of broods from 1997-2000.

Table G.33. Percent distribution of Skagit Spring Yearling chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1985	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.7%	29.2%	26.7%	0.0%	0.0%	10.0%	15.8%	11.7%
1986	1.4%	0.0%	0.0%	0.0%	4.3%	6.6%	0.0%	6.2%	41.7%	2.8%	5.7%	0.0%	3.3%	7.6%	20.4%
1987	0.0%	0.0%	0.0%	4.6%	0.0%	6.5%	0.0%	3.7%	10.2%	5.6%	0.0%	1.9%	24.1%	20.4%	23.1%
1988	0.0%	0.0%	0.0%	0.0%	0.0%	5.9%	0.0%	1.8%	14.9%	7.7%	9.6%	1.8%	20.6%	14.5%	23.2%
1989	0.0%	0.0%	0.0%	0.0%	0.8%	0.1%	0.0%	3.4%	17.5%	3.3%	1.8%	4.3%	30.4%	8.4%	29.9%
1990	0.0%	0.0%	0.0%	0.0%	0.4%	1.9%	1.0%	4.9%	14.0%	4.0%	8.7%	3.4%	15.4%	22.9%	23.3%
1997	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	2.0%	19.6%	1.6%	10.2%	0.0%	2.4%	20.9%	42.2%
1998	0.6%	0.0%	0.0%	0.0%	0.0%	0.2%	3.5%	1.3%	9.1%	0.0%	7.2%	0.0%	3.2%	17.2%	57.8%
1999	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	1.2%	7.7%	0.0%	4.5%	0.2%	1.1%	9.1%	75.5%
2000	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	6.3%	15.7%	0.0%	3.5%	0.0%	1.8%	16.8%	54.5%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	11.6%	0.0%	2.4%	3.2%	2.0%	10.8%	66.7%
2002	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	12.6%	0.0%	10.2%	0.0%	1.2%	8.9%	65.0%
(85-02)	0.4%	0.0%	0.0%	0.4%	0.5%	1.9%	0.4%	3.5%	17.0%	4.3%	5.3%	1.2%	9.6%	14.4%	41.1%
(85-02)	0.4%	0.0%	0.0%	0.4%	0.5%	1.9%	0.4%	3.5%	17.0%	4.3%	5.3%	1.2%	9.6%	14.4%	41.1%

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Table G.34. The distribution of Skagit Spring Yearling chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1985	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	6.9%	29.2%	24.6%	0.0%	0.0%	9.2%	18.5%	10.8%
1986	1.8%	0.0%	0.0%	0.0%	4.0%	6.6%	0.0%	6.2%	41.6%	2.7%	5.8%	0.0%	3.1%	9.3%	19.0%
1987	0.0%	0.0%	0.0%	4.9%	0.0%	4.9%	0.0%	3.1%	7.4%	4.3%	0.0%	1.2%	19.0%	39.9%	15.3%
1988	0.0%	0.0%	0.0%	0.0%	0.0%	5.5%	0.0%	2.4%	17.6%	7.1%	9.3%	2.1%	19.5%	16.2%	20.3%
1989	0.0%	0.0%	0.0%	0.0%	0.8%	0.1%	0.0%	4.0%	19.5%	3.3%	1.9%	4.7%	28.2%	10.4%	26.9%
1990	0.0%	0.0%	0.0%	0.0%	0.4%	1.9%	1.1%	5.1%	14.8%	3.7%	8.6%	3.7%	14.6%	24.6%	21.6%
1997	0.3%	0.0%	0.0%	0.0%	0.0%	0.8%	1.0%	2.6%	19.3%	2.8%	9.0%	0.0%	1.8%	31.3%	31.1%
1998	0.7%	0.0%	0.0%	0.0%	0.0%	0.2%	4.0%	1.2%	10.1%	0.2%	7.1%	0.0%	3.0%	21.1%	52.4%
1999	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	1.2%	8.1%	0.0%	4.7%	0.2%	1.0%	12.7%	71.3%
2000	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	5.9%	16.5%	0.0%	3.7%	0.0%	1.7%	21.3%	49.6%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.8%	12.0%	0.0%	2.8%	3.2%	1.8%	19.0%	58.5%
2002	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	15.6%	0.0%	10.8%	0.0%	1.1%	11.2%	59.5%
(85-02)	0.4%	0.0%	0.0%	0.4%	0.4%	1.7%	0.6%	3.5%	17.6%	4.1%	5.3%	1.3%	8.7%	19.6%	36.4%
(85-02)	0.4%	0.0%	0.0%	0.4%	0.4%	1.7%	0.6%	3.5%	17.6%	4.1%	5.3%	1.3%	8.7%	19.6%	36.4%

Table G.35. Percent distribution of White River Spring Yearling chinook reported catch among fisheries and escapement.

Catch <sup>1</sup> Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1982	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	73.2%	23.2%	1.2% <sup>2</sup>
1983	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	0.0%	4.3%	0.0%	0.0%	0.0%	1.6%	11.3%	59.7%	21.5%
1984	0.0%	0.0%	0.0%	0.0%	5.8%	0.0%	0.0%	4.5%	5.2%	0.0%	0.0%	2.6%	9.0%	25.2%	47.7%
1985	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.9%	2.2%	0.0%	30.8%	50.6%	13.5%
1986	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.6%	2.4%	2.0%	0.0%	0.4%	15.3%	52.3%	26.8%
1987	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	0.4%	0.0%	3.3%	11.3%	42.3%	41.2%
1988	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	2.5%	0.2%	0.8%	1.3%	13.0%	48.4%	33.6%
1989	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	1.2%	1.0%	0.0%	6.0%	13.6%	41.1%	35.8%
1990	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	0.4%	0.6%	0.0%	5.2%	15.4%	44.6%	31.8%
1991	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	1.3%	0.0%	1.3%	4.1%	10.8%	38.1%	43.6%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	2.4%	1.9%	2.3%	0.8%	2.4%	7.8%	45.5%	36.2%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	2.9%	3.6%	30.5%	62.4%
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	0.9%	0.0%	0.0%	1.4%	45.2%	50.7%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.8%	29.4%	69.3%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.3%	42.9%	55.9%
1997	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.7%	40.4%	55.8%
1998	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	1.6%	27.0%	69.8%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	2.4%	0.0%	0.0%	0.0%	0.0%	30.5%	64.6%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.7%	0.0%	0.0%	0.0%	0.0%	2.3%	38.4%	54.7%
(82-00)	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%	0.0%	1.2%	1.3%	0.5%	0.3%	1.7%	11.9%	39.7%	42.9%
(85-02)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	1.1%	0.7%	0.3%	1.7%	8.2%	40.4%	46.6%

1. No data are shown for 2001 and 2002 because of lack of coded-wire tagging of broods from 1998-2000.

2. Values represent estimates of catch distribution only for this year.

Table G.36. Percent distribution of White River Spring Yearling chinook total fishing mortalities among fisheries and escapement.

Catch <sup>1</sup> Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1982	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	1.9%	1.9%	0.0%	0.0%	0.9%	59.8%	33.6%	0.9% <sup>2</sup>
1983	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%	4.3%	0.0%	0.0%	0.0%	1.4%	10.4%	63.5%	19.0%
1984	0.0%	0.0%	0.0%	0.0%	4.8%	0.0%	0.0%	3.9%	4.4%	0.0%	0.0%	1.8%	7.0%	45.6%	32.5%
1985	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.5%	1.8%	0.0%	25.7%	60.3%	9.6%
1986	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.6%	2.3%	2.0%	0.0%	0.4%	14.1%	56.5%	23.6%
1987	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.4%	0.0%	2.5%	8.2%	61.9%	25.9%
1988	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	2.9%	0.2%	0.8%	1.4%	12.6%	52.3%	29.6%
1989	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	1.3%	1.0%	0.0%	6.3%	12.3%	46.5%	31.4%
1990	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.4%	0.6%	0.0%	5.5%	13.7%	50.6%	27.2%
1991	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	1.3%	0.0%	1.3%	4.1%	9.8%	46.0%	36.7%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	2.7%	2.1%	2.1%	0.7%	2.7%	7.5%	49.0%	32.9%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	2.8%	3.1%	39.3%	54.2%
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.8%	0.0%	0.0%	1.6%	52.4%	43.3%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.9%	41.3%	57.2%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.3%	48.5%	50.1%
1997	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.5%	49.5%	47.0%
1998	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	1.4%	33.3%	63.8%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	1.9%	0.0%	0.0%	0.0%	0.0%	45.2%	51.0%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%	0.0%	0.0%	0.0%	0.0%	2.1%	44.8%	49.0%
(82-00)	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%	0.0%	1.3%	1.2%	0.5%	0.2%	1.7%	10.2%	48.4%	36.0%
(85-02)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	1.1%	0.6%	0.3%	1.7%	7.3%	48.6%	39.5%

1. No data are shown for 2001 and 2002 because of lack of coded-wire tagging of broods from 1998-2000.

2. Values represent estimates of catch distribution only for this year

Table G.37. Percent distribution of Hoko Fall Fingerling chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1989	4.8%	0.8%	0.0%	7.6%	0.4%	6.0%	0.0%	10.8%	1.6%	15.3%	0.0%	0.8%	0.8%	21.7%	29.3%
1990	15.8%	1.9%	0.5%	8.0%	0.7%	2.4%	0.0%	17.0%	0.8%	1.9%	0.0%	0.5%	1.0%	14.4%	35.1%
1991	15.2%	0.0%	0.0%	5.0%	1.1%	0.3%	0.6%	6.9%	0.4%	0.6%	0.5%	0.2%	1.0%	8.2%	59.8%
1992	7.7%	1.7%	1.2%	4.4%	1.2%	1.4%	0.7%	9.8%	0.5%	0.0%	2.1%	0.0%	0.2%	2.4%	66.6%
1993	6.6%	0.0%	2.0%	6.6%	0.0%	3.3%	0.0%	14.9%	0.3%	2.0%	0.0%	0.0%	0.3%	4.6%	59.4%
1994	13.6%	2.1%	2.4%	14.8%	0.6%	1.5%	0.0%	11.4%	2.1%	1.5%	2.1%	0.0%	0.0%	0.0%	47.9%
1995	12.6%	0.0%	4.1%	6.2%	0.0%	0.3%	0.4%	2.9%	0.8%	0.1%	0.0%	0.0%	0.0%	0.7%	71.9%
1996	10.6%	0.0%	3.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	85.2%
1997	13.9%	0.0%	0.0%	1.7%	0.2%	0.0%	0.6%	0.9%	0.0%	0.0%	0.6%	0.0%	0.0%	0.5%	81.7%
1998	9.0%	0.0%	0.4%	5.9%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.3%	0.0%	0.0%	0.0%	84.1%
1999	6.6%	0.0%	0.7%	4.3%	0.0%	0.0%	0.6%	0.0%	0.3%	0.0%	1.4%	0.0%	0.1%	0.0%	86.0%
2000	4.4%	0.2%	1.8%	0.0%	0.0%	0.0%	0.0%	0.2%	1.2%	0.0%	0.0%	0.6%	0.0%	0.0%	91.7%
2001	6.0%	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.4%	90.3%
2002	17.1%	0.0%	0.9%	3.7%	0.3%	0.0%	4.6%	1.5%	1.9%	0.0%	0.0%	0.0%	0.0%	1.0%	69.0%
(89-02)	10.3%	0.5%	1.4%	4.9%	0.3%	1.1%	0.5%	5.5%	0.8%	1.5%	0.5%	0.2%	0.3%	3.9%	68.4%
(89-02)	10.3%	0.5%	1.4%	4.9%	0.3%	1.1%	0.5%	5.5%	0.8%	1.5%	0.5%	0.2%	0.3%	3.9%	68.4%

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Table G.38. Percent distribution of Hoko Fall Fingerling chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1989	11.7%	3.1%	0.3%	8.5%	1.1%	4.8%	0.0%	13.7%	1.7%	11.4%	0.0%	0.6%	0.6%	21.7%	20.8%
1990	18.3%	4.8%	0.6%	8.4%	0.9%	2.0%	0.0%	16.9%	0.7%	1.6%	0.0%	0.6%	0.9%	14.1%	30.1%
1991	18.6%	0.0%	0.1%	5.2%	1.1%	0.3%	0.5%	7.0%	0.4%	0.6%	0.4%	0.2%	1.0%	8.8%	55.7%
1992	8.6%	4.9%	1.6%	5.5%	1.1%	1.4%	0.6%	10.3%	0.6%	0.0%	2.1%	0.0%	0.2%	2.7%	60.4%
1993	12.0%	1.1%	2.3%	7.7%	0.0%	2.9%	0.0%	14.9%	0.6%	1.7%	0.0%	0.0%	0.3%	4.9%	51.6%
1994	20.4%	4.8%	2.8%	13.5%	0.5%	1.3%	0.0%	10.7%	2.0%	1.5%	1.8%	0.0%	0.0%	0.0%	40.6%
1995	16.2%	0.0%	4.7%	7.8%	0.0%	0.4%	0.5%	3.7%	0.8%	0.1%	0.0%	0.0%	0.0%	1.0%	64.8%
1996	13.8%	0.0%	4.4%	0.7%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	79.3%
1997	16.3%	0.0%	0.0%	1.9%	0.2%	0.0%	0.7%	1.1%	0.0%	0.1%	0.5%	0.0%	0.0%	0.4%	78.8%
1998	10.0%	0.0%	0.3%	6.4%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.3%	0.0%	0.0%	0.0%	82.8%
1999	8.0%	0.0%	0.7%	4.6%	0.0%	0.0%	0.7%	0.0%	0.3%	0.0%	1.5%	0.0%	0.1%	0.0%	84.2%
2000	5.9%	0.2%	2.9%	0.0%	0.0%	0.0%	0.0%	0.2%	1.3%	0.0%	0.0%	0.8%	0.0%	0.0%	88.7%
2001	8.9%	0.0%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	0.0%	0.0%	0.0%	0.0%	0.6%	86.1%
2002	18.6%	0.0%	0.8%	3.9%	0.3%	0.0%	5.6%	1.4%	2.4%	0.0%	0.0%	0.0%	0.0%	1.1%	65.8%
(89-02)	13.4%	1.4%	1.7%	5.3%	0.4%	0.9%	0.6%	5.8%	0.9%	1.2%	0.5%	0.2%	0.2%	3.9%	63.5%
(89-02)	13.4%	1.4%	1.7%	5.3%	0.4%	0.9%	0.6%	5.8%	0.9%	1.2%	0.5%	0.2%	0.2%	3.9%	63.5%

Table G.39. Percent distribution of Sooes Fall Fingerling chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1989	7.0%	1.3%	0.0%	0.0%	0.0%	4.4%	0.0%	1.9%	0.0%	1.9%	8.2%	0.0%	0.0%	0.0%	75.3%
1990	9.9%	2.8%	4.3%	14.2%	1.4%	0.7%	0.0%	17.7%	7.1%	2.1%	0.0%	1.4%	0.0%	3.5%	34.8%
1991	11.9%	0.0%	0.0%	9.9%	0.0%	1.7%	0.0%	5.2%	0.0%	2.0%	0.0%	0.0%	0.0%	4.9%	64.3%
1992	8.5%	0.0%	0.0%	9.5%	2.0%	0.0%	0.0%	19.3%	1.0%	3.4%	1.7%	0.3%	0.0%	2.4%	51.9%
1993	4.6%	0.0%	0.0%	7.6%	2.1%	2.1%	2.1%	16.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.8%	64.1%
1994	17.0%	3.0%	4.0%	10.5%	1.0%	0.0%	1.0%	8.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	55.5%
1995	8.5%	0.0%	0.0%	4.6%	0.0%	0.7%	0.0%	9.8%	0.0%	0.0%	0.0%	0.0%	2.6%	0.0%	73.9%
1996	8.7%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	90.3%
1997	10.3%	0.0%	5.2%	5.5%	0.7%	0.3%	0.0%	0.0%	1.4%	0.0%	2.8%	1.0%	23.4%	0.0%	49.3%
1998	9.0%	0.0%	1.5%	17.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	72.0%
1999	12.3%	0.0%	12.3%	4.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	70.5%
2000	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.7%	0.0%	0.0%	0.0%	86.9%
2001	6.1%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%	2.0%	0.0%	0.0%	0.0%	88.5%
2002	10.9%	0.2%	1.3%	1.7%	0.0%	0.0%	1.9%	0.6%	1.0%	0.0%	0.0%	0.0%	0.0%	0.8%	81.6%
(89-02)	8.9%	0.5%	2.4%	6.1%	0.5%	0.7%	0.4%	5.6%	0.8%	0.7%	1.8%	0.2%	1.9%	0.9%	68.5%
(89-02)	8.9%	0.5%	2.4%	6.1%	0.5%	0.7%	0.4%	5.6%	0.8%	0.7%	1.8%	0.2%	1.9%	0.9%	68.5%

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Table G.40. Percent distribution of Sooes Fall Fingerling chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1989	10.5%	3.7%	0.5%	3.2%	0.0%	3.7%	0.0%	4.7%	0.0%	2.1%	7.4%	0.0%	0.0%	1.6%	62.6%
1990	11.6%	7.0%	4.1%	16.3%	1.7%	0.6%	0.0%	17.4%	6.4%	1.7%	0.0%	1.7%	0.0%	2.9%	28.5%
1991	13.6%	0.0%	0.3%	10.7%	0.3%	1.6%	0.0%	7.2%	0.0%	1.9%	0.0%	0.0%	0.0%	5.1%	59.4%
1992	11.0%	0.3%	0.3%	10.7%	2.1%	0.0%	0.0%	20.4%	1.2%	3.0%	1.5%	0.3%	0.0%	2.4%	46.6%
1993	7.5%	0.4%	0.0%	7.9%	2.0%	2.0%	2.0%	16.9%	0.0%	0.0%	0.0%	0.4%	0.0%	1.2%	59.8%
1994	20.6%	7.5%	3.5%	9.6%	0.9%	0.0%	0.9%	7.5%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	48.7%
1995	14.4%	0.0%	0.0%	6.1%	0.0%	1.1%	0.0%	12.8%	0.0%	0.6%	0.0%	0.0%	2.2%	0.0%	62.8%
1996	15.5%	0.0%	0.0%	0.9%	0.0%	0.4%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	82.3%
1997	12.0%	0.0%	5.8%	5.8%	0.6%	0.3%	0.0%	0.0%	1.3%	0.3%	2.6%	1.0%	23.7%	0.0%	46.4%
1998	10.3%	0.0%	1.8%	19.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	68.7%
1999	13.4%	0.0%	13.9%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	67.1%
2000	0.0%	0.0%	5.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	13.3%	0.0%	0.0%	0.0%	81.1%
2001	9.6%	0.0%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	0.0%	2.3%	0.0%	0.0%	0.0%	83.9%
2002	13.0%	0.4%	1.5%	1.8%	0.0%	0.0%	2.4%	0.6%	1.3%	0.0%	0.0%	0.0%	0.0%	0.7%	78.3%
(89-02)	11.7%	1.4%	2.8%	6.9%	0.5%	0.7%	0.4%	6.3%	0.8%	0.7%	1.9%	0.2%	2.0%	1.0%	62.6%
(89-02)	11.7%	1.4%	2.8%	6.9%	0.5%	0.7%	0.4%	6.3%	0.8%	0.7%	1.9%	0.2%	2.0%	1.0%	62.6%

Table G.41. Percent distribution of Queets Fall Fingerling chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1981	9.5%	0.0%	0.0%	13.7%	2.1%	2.1%	0.0%	11.6%	0.0%	1.1%	0.0%	1.1%	31.6%	3.2%	24.2%
1982	11.8%	2.4%	0.0%	22.9%	0.0%	0.8%	1.2%	12.2%	0.0%	0.0%	0.0%	0.0%	25.7%	0.0%	22.9%
1983	33.3%	0.0%	0.0%	6.8%	0.0%	0.8%	0.0%	7.6%	0.0%	2.3%	0.0%	0.8%	25.8%	0.0%	22.7%
1984	16.1%	0.7%	0.0%	19.6%	0.0%	0.0%	2.1%	7.7%	0.0%	0.0%	0.0%	2.1%	28.7%	0.0%	23.1%
1985	15.6%	0.0%	0.0%	31.6%	0.0%	0.0%	0.0%	2.0%	0.0%	1.6%	0.0%	0.0%	14.4%	1.2%	33.6%
1986	17.3%	0.0%	1.1%	11.6%	1.8%	0.0%	0.0%	7.0%	0.0%	1.1%	0.0%	0.0%	9.9%	0.0%	50.4%
1987	22.3%	0.2%	0.0%	11.7%	0.9%	0.6%	0.9%	0.7%	0.0%	0.0%	0.0%	0.6%	22.7%	0.6%	38.7%
1988	14.6%	0.8%	1.6%	7.8%	2.5%	0.4%	0.0%	4.0%	0.0%	0.0%	1.1%	0.0%	16.6%	3.3%	47.3%
1989	11.1%	0.0%	0.0%	9.1%	0.5%	0.2%	1.1%	7.6%	0.0%	0.0%	0.0%	0.0%	27.8%	1.6%	41.1%
1990	12.6%	0.0%	0.0%	5.5%	0.3%	0.3%	1.8%	6.6%	0.0%	0.0%	0.0%	0.0%	13.9%	0.0%	58.9%
1991	20.5%	0.2%	1.1%	9.7%	0.0%	0.0%	1.3%	4.8%	0.0%	0.0%	0.0%	0.0%	15.7%	0.5%	46.3%
1992	8.3%	0.8%	2.2%	7.7%	0.0%	0.2%	1.9%	17.5%	0.0%	0.0%	0.0%	0.0%	19.2%	0.8%	41.4%
1993	15.5%	0.0%	0.7%	14.1%	0.3%	0.0%	2.1%	12.3%	0.0%	0.0%	0.0%	0.5%	16.0%	2.8%	35.7%
1994	15.6%	0.3%	0.5%	20.9%	0.2%	0.4%	1.5%	3.9%	0.3%	0.0%	1.0%	0.0%	20.6%	0.0%	34.9%
1995	17.3%	0.0%	1.6%	6.0%	0.0%	0.1%	2.0%	0.7%	0.3%	0.0%	0.4%	0.7%	33.4%	0.0%	37.4%
1996	10.4%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	17.5%	0.6%	70.2%
1997	34.4%	0.3%	0.0%	6.0%	0.8%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	20.9%	0.0%	37.4%
1998	23.7%	0.0%	3.0%	19.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.1%	5.2%	37.0%
1999	9.1%	0.0%	1.4%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.9%	0.3%	78.5%
2000	8.6%	0.0%	3.6%	3.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%	82.5%
2001	20.6%	0.0%	5.3%	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	36.6%	0.6%	32.5%
2002	25.2%	0.0%	3.3%	5.8%	0.0%	0.0%	2.4%	0.0%	0.2%	0.0%	0.0%	0.0%	24.6%	0.2%	38.2%
(81-02)	17.0%	0.3%	1.2%	10.9%	0.4%	0.3%	0.8%	4.8%	0.0%	0.3%	0.1%	0.3%	20.2%	0.9%	42.5%
(85-02)	16.8%	0.1%	1.5%	9.8%	0.4%	0.1%	0.8%	3.7%	0.0%	0.1%	0.1%	0.2%	18.5%	1.0%	46.8%

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Table G.42. Percent distribution of Queets Fall Fingerling chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1981	12.9%	0.0%	0.0%	18.1%	1.7%	1.7%	0.0%	12.9%	0.0%	0.9%	0.0%	1.7%	26.7%	3.4%	19.8%
1982	14.2%	2.2%	0.0%	24.0%	0.0%	0.7%	1.1%	12.0%	0.0%	0.0%	0.0%	0.0%	24.7%	0.0%	21.0%
1983	50.5%	0.0%	0.0%	5.5%	0.0%	0.5%	0.0%	5.5%	0.0%	1.6%	0.0%	0.5%	19.2%	0.0%	16.5%
1984	20.9%	0.6%	0.0%	20.2%	0.0%	0.0%	2.5%	7.4%	0.0%	0.0%	0.0%	2.5%	25.8%	0.0%	20.2%
1985	20.2%	0.0%	0.0%	33.6%	0.0%	0.0%	0.0%	2.1%	0.0%	1.4%	0.0%	0.0%	12.3%	1.7%	28.8%
1986	26.8%	0.0%	1.2%	11.0%	1.5%	0.0%	0.0%	6.8%	0.0%	0.9%	0.0%	0.0%	9.2%	0.0%	42.6%
1987	28.7%	0.5%	0.0%	11.7%	0.8%	0.5%	1.0%	1.3%	0.0%	0.0%	0.0%	0.5%	20.2%	0.7%	34.2%
1988	17.5%	2.4%	1.6%	9.4%	2.4%	0.4%	0.1%	5.5%	0.0%	0.0%	1.0%	0.0%	14.8%	3.4%	41.5%
1989	16.9%	0.2%	0.2%	10.6%	0.6%	0.3%	1.1%	8.9%	0.0%	0.0%	0.0%	0.0%	24.3%	1.7%	35.3%
1990	15.4%	0.1%	0.1%	6.4%	0.3%	0.3%	1.9%	7.1%	0.0%	0.0%	0.0%	0.0%	13.4%	0.0%	55.0%
1991	24.2%	0.3%	1.2%	10.2%	0.0%	0.0%	1.4%	5.0%	0.0%	0.0%	0.0%	0.0%	14.6%	0.5%	42.6%
1992	15.1%	2.2%	2.4%	8.7%	0.0%	0.1%	1.8%	18.0%	0.0%	0.0%	0.0%	0.0%	16.3%	0.8%	34.6%
1993	19.8%	0.0%	0.7%	15.3%	0.3%	0.0%	2.0%	13.0%	0.0%	0.0%	0.0%	0.4%	14.3%	2.9%	31.2%
1994	23.6%	0.6%	0.4%	20.4%	0.2%	0.3%	1.4%	3.9%	0.2%	0.0%	0.9%	0.0%	18.0%	0.0%	30.1%
1995	21.9%	0.0%	1.8%	7.5%	0.0%	0.2%	2.5%	0.8%	0.2%	0.0%	0.4%	0.7%	30.3%	0.0%	33.6%
1996	18.3%	0.0%	1.5%	1.1%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	15.9%	0.5%	62.2%
1997	38.3%	0.5%	0.0%	6.1%	0.7%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	19.5%	0.0%	34.7%
1998	26.0%	0.0%	3.2%	20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.3%	5.2%	34.3%
1999	13.5%	0.0%	1.9%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.5%	0.3%	73.8%
2000	10.8%	0.0%	4.4%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	79.1%
2001	26.1%	0.0%	5.8%	3.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	33.8%	0.5%	29.2%
2002	27.0%	0.0%	3.3%	5.8%	0.0%	0.0%	2.9%	0.0%	0.3%	0.0%	0.0%	0.0%	23.8%	0.3%	36.7%
(81-02)	22.2%	0.4%	1.3%	11.6%	0.4%	0.2%	0.9%	5.0%	0.0%	0.2%	0.1%	0.3%	18.1%	1.0%	38.0%
(85-02)	21.7%	0.4%	1.6%	10.4%	0.4%	0.1%	0.9%	4.1%	0.0%	0.1%	0.1%	0.1%	16.8%	1.0%	42.2%

G-139

Table G.43. Percent distribution of Cowlitz Fall Tule chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1981	5.6%	0.0%	0.0%	2.4%	0.0%	1.3%	6.5%	16.1%	0.0%	2.4%	0.0%	9.7%	15.1%	12.9%	28.0%
1982	3.7%	0.0%	0.2%	1.4%	0.5%	2.1%	0.0%	14.5%	0.0%	1.2%	0.9%	18.5%	9.7%	12.5%	34.9%
1983	3.7%	0.0%	0.0%	6.7%	3.7%	0.5%	0.0%	17.8%	0.4%	0.5%	0.0%	6.9%	4.8%	18.7%	36.2%
1984	4.4%	0.0%	0.0%	7.2%	2.1%	0.1%	0.8%	24.5%	0.0%	1.7%	0.0%	4.4%	15.1%	3.6%	36.0%
1985	3.7%	0.3%	0.0%	4.0%	0.0%	4.4%	0.0%	11.4%	0.4%	1.2%	0.0%	4.4%	6.5%	13.7%	49.9%
1986	0.4%	0.1%	0.0%	0.2%	0.6%	0.8%	0.0%	12.6%	0.4%	1.1%	0.0%	13.0%	30.9%	12.5%	27.4%
1987	3.7%	0.3%	0.0%	3.9%	1.2%	0.0%	0.0%	9.7%	0.0%	0.8%	1.0%	11.4%	22.9%	16.1%	29.0%
1988	1.7%	0.3%	0.0%	1.9%	0.0%	0.1%	0.0%	15.9%	0.0%	0.6%	0.0%	15.5%	24.0%	12.3%	27.7%
1989	3.3%	0.0%	0.7%	4.5%	0.0%	0.3%	0.0%	6.6%	0.0%	1.0%	0.0%	17.8%	7.1%	10.6%	48.1%
1990	4.4%	0.0%	0.0%	1.8%	2.9%	2.6%	0.0%	14.2%	0.0%	0.7%	0.0%	9.5%	0.0%	12.0%	51.8%
1991	9.7%	0.0%	0.0%	3.2%	1.6%	0.0%	0.0%	5.6%	0.0%	0.0%	3.2%	10.5%	11.3%	9.7%	45.2%
1992	2.2%	0.0%	0.0%	0.0%	2.2%	0.0%	1.6%	17.7%	0.0%	0.0%	0.0%	7.0%	5.4%	4.8%	59.1%
1993	3.4%	0.0%	0.0%	2.5%	0.0%	0.9%	0.0%	6.7%	0.0%	0.0%	0.0%	17.5%	3.1%	22.4%	43.6%
1994	4.2%	0.0%	0.0%	1.9%	0.0%	0.0%	0.0%	1.9%	0.0%	0.0%	0.0%	3.3%	0.0%	0.0%	88.7%
1995	0.6%	0.0%	0.0%	1.8%	0.0%	1.2%	0.0%	1.8%	0.0%	0.0%	2.4%	4.7%	2.4%	1.8%	83.4%
1996	4.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	0.0%	0.0%	5.9%	1.1%	3.7%	83.0%
1997	4.9%	0.0%	9.8%	3.0%	0.0%	0.0%	0.0%	4.9%	2.4%	0.0%	0.0%	5.5%	0.0%	1.2%	68.3%
1998	3.7%	0.0%	0.0%	7.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.9%	0.0%	2.5%	76.5%
1999	4.5%	0.0%	3.8%	0.0%	0.0%	0.0%	2.3%	3.8%	0.0%	0.0%	0.0%	9.0%	0.0%	18.0%	58.6%
2000	3.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.2%	0.0%	0.0%	12.4%	13.4%	5.2%	7.2%	51.5%
2001	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	2.9%	10.4%	1.5%	11.7%	71.7%
2002	6.3%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	7.3%	0.0%	0.0%	1.9%	26.2%	3.4%	25.9%	28.2%
(81-02)	3.7%	0.0%	0.7%	2.5%	0.7%	0.7%	0.5%	9.1%	0.3%	0.5%	1.1%	10.7%	7.7%	10.6%	51.2%
(85-02)	3.6%	0.1%	0.8%	2.0%	0.5%	0.6%	0.2%	7.1%	0.3%	0.3%	1.3%	10.8%	6.9%	10.3%	55.1%

G-140

Table G.44. Percent distribution of Cowlitz Fall Tule chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1981	6.0%	0.0%	0.0%	2.4%	0.0%	1.2%	6.3%	18.8%	0.0%	2.2%	0.0%	11.3%	14.2%	12.7%	25.0%
1982	4.3%	0.0%	0.4%	1.6%	0.4%	2.2%	0.0%	16.8%	0.0%	1.2%	1.0%	20.2%	9.5%	12.6%	29.8%
1983	4.4%	0.0%	0.0%	7.1%	4.1%	0.5%	0.0%	18.8%	0.3%	0.5%	0.0%	7.8%	4.7%	18.7%	33.1%
1984	4.5%	0.0%	0.0%	7.5%	2.3%	0.1%	0.9%	25.6%	0.0%	1.8%	0.0%	4.7%	14.8%	3.7%	34.2%
1985	3.9%	1.1%	0.0%	4.3%	0.0%	4.4%	0.0%	12.7%	0.4%	1.2%	0.0%	5.1%	6.3%	15.0%	45.6%
1986	0.5%	0.2%	0.0%	0.2%	0.7%	0.8%	0.0%	13.9%	0.3%	1.0%	0.0%	14.6%	30.1%	12.7%	24.9%
1987	6.0%	0.7%	0.0%	4.6%	1.4%	0.0%	0.0%	11.2%	0.0%	0.7%	0.9%	12.1%	21.2%	15.5%	25.6%
1988	1.8%	0.8%	0.0%	2.1%	0.0%	0.1%	0.0%	17.8%	0.0%	0.6%	0.0%	16.0%	22.7%	12.5%	25.7%
1989	4.4%	0.0%	0.7%	4.7%	0.0%	0.3%	0.0%	7.2%	0.0%	1.0%	0.0%	18.7%	6.8%	10.9%	45.3%
1990	4.4%	0.0%	0.0%	2.4%	3.4%	2.7%	0.0%	15.5%	0.0%	1.0%	0.0%	10.1%	0.0%	12.8%	47.8%
1991	12.4%	0.0%	0.0%	3.6%	1.5%	0.0%	0.0%	6.6%	0.0%	0.0%	2.9%	11.7%	10.9%	9.5%	40.9%
1992	2.5%	0.0%	0.0%	0.0%	2.5%	0.0%	2.0%	20.1%	0.0%	0.0%	0.0%	8.3%	5.4%	5.4%	53.9%
1993	4.1%	0.0%	0.0%	3.0%	0.0%	1.1%	0.0%	7.6%	0.0%	0.0%	0.0%	18.8%	3.0%	23.9%	38.6%
1994	5.1%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%	3.2%	0.0%	0.0%	87.1%
1995	1.1%	0.0%	0.0%	2.8%	0.0%	1.1%	0.0%	2.3%	0.0%	2.3%	2.3%	4.5%	2.3%	1.7%	79.7%
1996	5.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.5%	0.0%	0.0%	6.1%	1.1%	4.0%	80.9%
1997	5.7%	0.0%	10.8%	3.4%	0.0%	0.0%	0.0%	5.7%	2.8%	1.1%	0.0%	5.7%	0.0%	1.1%	63.6%
1998	4.8%	0.0%	0.0%	8.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.7%	0.0%	2.4%	73.8%
1999	6.9%	0.0%	4.1%	0.0%	0.0%	0.0%	2.8%	3.4%	0.0%	0.0%	0.0%	9.7%	0.0%	19.3%	53.8%
2000	3.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.4%	0.0%	0.0%	13.9%	16.7%	4.6%	7.4%	46.3%
2001	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	3.2%	12.0%	1.5%	12.6%	68.4%
2002	7.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	6.8%	0.0%	0.0%	2.1%	27.8%	3.3%	26.3%	25.7%
(81-02)	4.5%	0.1%	0.7%	2.8%	0.7%	0.7%	0.5%	10.1%	0.3%	0.7%	1.2%	11.6%	7.4%	10.9%	47.7%
(85-02)	4.5%	0.2%	0.9%	2.4%	0.5%	0.6%	0.3%	7.9%	0.3%	0.5%	1.4%	11.8%	6.6%	10.7%	51.5%

G-141

Table G.45. Percent distribution of Columbia Lower River Hatchery chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1980	0.8%	0.0%	0.0%	0.0%	0.5%	1.3%	0.0%	16.0%	3.4%	6.4%	1.3%	18.3%	9.8%	22.4%	19.8%
1981	0.0%	0.0%	0.0%	0.0%	0.5%	0.1%	0.0%	30.6%	1.8%	2.4%	0.3%	22.6%	1.9%	11.6%	28.2%
1982	0.0%	0.0%	0.0%	0.3%	1.8%	0.0%	0.0%	26.0%	0.8%	0.3%	0.5%	18.6%	16.4%	9.0%	26.5%
1983	0.0%	0.0%	0.0%	0.0%	2.3%	0.3%	0.1%	35.0%	1.4%	0.6%	0.4%	11.2%	6.8%	8.5%	33.4%
1984	0.0%	0.0%	0.0%	0.0%	3.2%	0.0%	0.0%	49.9%	1.3%	1.6%	0.3%	5.9%	11.3%	3.7%	22.7%
1985	0.0%	0.0%	0.0%	0.0%	0.9%	0.4%	0.0%	28.2%	1.1%	1.2%	0.7%	15.6%	4.1%	5.8%	41.9%
1986	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.1%	9.1%	2.5%	7.5%	2.7%	6.9%	11.2%	11.5%	47.9%
1987	0.0%	0.0%	0.0%	0.2%	1.6%	0.0%	0.0%	26.9%	0.5%	0.2%	2.5%	16.6%	20.7%	9.5%	21.3%
1988	0.3%	0.0%	0.0%	0.3%	0.6%	0.0%	0.0%	28.8%	1.0%	0.0%	2.4%	11.5%	24.3%	3.2%	27.6%
1989	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	15.4%	0.0%	2.0%	0.0%	22.4%	5.9%	5.1%	49.2%
1990	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	19.8%	0.0%	1.7%	0.0%	16.3%	0.3%	11.1%	50.3%
1991	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	10.2%	0.7%	2.5%	2.0%	9.3%	2.3%	14.9%	57.9%
1992	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	16.3%	0.0%	1.0%	1.9%	28.0%	0.8%	11.0%	40.5%
1993	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	18.4%	0.0%	0.0%	4.5%	19.7%	2.0%	11.1%	43.6%
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.6%	10.3%	0.0%	0.0%	0.0%	0.0%	0.0%	62.1%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.3%	10.0%	86.7%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.1%	6.5%	0.0%	85.5%
1997	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.4%	2.9%	0.0%	3.9%	8.7%	1.0%	11.6%	55.6%
1998	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	1.0%	0.0%	0.0%	5.1%	1.0%	2.0%	23.2%	63.6%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	0.0%	0.0%	9.1%	6.8%	3.3%	9.8%	68.7%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	15.9%	2.2%	0.0%	16.4%	2.2%	2.6%	4.3%	56.5%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.1%	0.2%	0.0%	3.3%	19.1%	1.5%	8.7%	59.1%
2002	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.7%	0.0%	0.0%	2.1%	21.2%	8.5%	11.1%	46.0%
(80-02)	0.1%	0.0%	0.0%	0.0%	0.6%	0.1%	0.2%	17.9%	1.3%	1.2%	2.6%	12.6%	6.4%	9.4%	47.6%
(85-02)	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.2%	14.2%	1.2%	0.9%	3.1%	11.9%	5.6%	9.0%	53.6%

G-142

Table G.46. Percent distribution of Columbia Lower River Hatchery chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1980	0.4%	0.0%	0.0%	0.1%	0.8%	0.8%	0.0%	32.4%	2.0%	4.2%	0.7%	23.1%	6.7%	17.7%	10.9%
1981	0.0%	0.0%	0.0%	0.0%	0.5%	0.1%	0.0%	33.4%	1.6%	2.2%	0.3%	25.0%	1.8%	11.5%	23.6%
1982	0.0%	0.0%	0.0%	0.3%	2.0%	0.0%	0.0%	29.2%	0.8%	0.3%	0.5%	20.0%	15.2%	8.9%	22.9%
1983	0.0%	0.0%	0.0%	0.0%	2.4%	0.3%	0.1%	37.0%	1.3%	0.5%	0.4%	12.3%	6.7%	9.6%	29.4%
1984	0.0%	0.0%	0.0%	0.0%	3.4%	0.0%	0.0%	51.6%	1.3%	1.6%	0.2%	6.3%	11.1%	4.1%	20.4%
1985	0.0%	0.0%	0.0%	0.0%	0.9%	0.4%	0.0%	30.3%	1.1%	1.2%	0.7%	17.7%	4.1%	5.9%	37.7%
1986	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.2%	8.5%	1.9%	6.3%	2.5%	6.3%	9.5%	30.0%	34.1%
1987	0.0%	0.0%	0.0%	0.2%	1.9%	0.0%	0.0%	33.0%	0.5%	0.2%	2.2%	17.3%	18.4%	8.6%	17.6%
1988	0.3%	0.0%	0.0%	0.3%	0.6%	0.0%	0.0%	31.6%	1.0%	0.0%	2.4%	11.7%	23.1%	3.3%	25.8%
1989	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	17.0%	0.0%	1.8%	0.0%	25.3%	5.4%	5.4%	45.1%
1990	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	22.8%	0.0%	1.5%	0.0%	18.2%	0.3%	12.0%	44.8%
1991	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	12.3%	1.0%	2.4%	2.2%	10.9%	2.4%	18.2%	50.6%
1992	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	19.5%	0.0%	0.8%	1.8%	30.3%	0.7%	11.3%	34.9%
1993	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	20.8%	0.0%	0.0%	4.3%	20.8%	1.9%	11.6%	39.9%
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	31.3%	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%	56.3%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%	0.0%	0.0%	3.1%	12.5%	81.3%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.1%	6.5%	0.0%	85.5%
1997	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	20.2%	3.1%	0.4%	3.5%	9.2%	0.9%	12.3%	50.4%
1998	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.5%	0.9%	0.0%	0.0%	5.6%	0.9%	1.9%	25.9%	58.3%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	0.0%	0.0%	9.6%	8.0%	3.4%	11.5%	65.3%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.3%	2.7%	0.0%	19.0%	2.3%	2.3%	7.6%	49.8%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.3%	0.2%	0.0%	3.7%	21.9%	1.5%	10.5%	54.0%
2002	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.3%	0.0%	0.0%	2.3%	24.1%	8.4%	11.7%	42.6%
(80-02)	0.1%	0.0%	0.0%	0.0%	0.6%	0.1%	0.3%	20.4%	1.3%	1.2%	2.7%	13.9%	5.9%	10.9%	42.7%
(85-02)	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%	0.4%	15.8%	1.3%	1.0%	3.3%	13.0%	5.2%	11.0%	48.6%

G-143

Table G.47. Percent distribution of Spring Creek Tule chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1979	0.0%	0.0%	0.0%	0.1%	0.6%	0.3%	0.0%	23.5%	1.4%	2.4%	0.1%	17.5%	23.1%	13.1%	17.9%
1980	0.1%	0.0%	0.0%	0.1%	0.5%	0.1%	0.0%	25.4%	2.8%	1.0%	0.1%	23.5%	23.6%	10.2%	12.6%
1981	0.0%	0.0%	0.0%	0.1%	0.2%	0.1%	0.0%	21.0%	1.5%	1.9%	0.1%	23.5%	20.7%	12.6%	18.3%
1982	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	22.0%	1.0%	0.2%	0.0%	19.6%	35.6%	8.3%	12.7%
1983	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	29.8%	1.1%	0.0%	0.5%	8.4%	20.2%	9.8%	29.7%
1984	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	27.5%	0.0%	1.3%	0.4%	6.0%	25.9%	7.4%	29.1%
1985	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	14.2%	0.0%	0.2%	0.7%	13.8%	27.2%	4.0%	39.7%
1986	0.0%	0.0%	0.0%	0.0%	2.9%	0.0%	0.0%	20.6%	1.9%	1.6%	2.5%	2.5%	36.2%	7.9%	23.8%
1987	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.9%	0.0%	0.0%	0.0%	14.0%	38.6%	20.2%	19.3%
1988	0.0%	0.0%	0.0%	0.5%	0.3%	0.2%	0.0%	23.2%	0.9%	1.9%	2.2%	18.3%	31.0%	10.3%	11.3%
1989	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	14.4%	0.4%	0.4%	3.3%	24.7%	34.5%	8.3%	13.7%
1990	0.0%	0.0%	0.0%	0.2%	0.3%	0.1%	0.0%	17.6%	0.7%	0.8%	4.5%	14.3%	23.0%	13.1%	25.3%
1991	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%	0.0%	13.1%	0.2%	0.4%	1.3%	16.9%	34.2%	11.0%	22.5%
1992	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	11.9%	0.6%	0.5%	2.5%	26.5%	14.6%	11.9%	31.3%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	17.7%	0.0%	0.4%	4.2%	17.7%	21.4%	10.5%	28.2%
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	18.6%	0.0%	0.8%	3.9%	3.5%	28.9%	0.8%	43.4%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.7%	0.0%	0.2%	2.7%	1.8%	37.9%	0.0%	50.7%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%	6.1%	57.8%	3.3%	29.7%
1997	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.9%	0.0%	0.0%	2.7%	5.4%	24.3%	11.7%	44.0%
1998	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.5%	2.8%	15.0%	12.7%	68.6%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%	0.0%	3.7%	16.5%	37.9%	9.0%	32.3%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.7%	0.0%	0.0%	6.2%	5.4%	21.7%	9.6%	53.4%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%	0.4%	0.0%	1.2%	18.4%	31.0%	7.3%	37.6%
2002	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.8%	0.2%	0.0%	0.9%	19.3%	28.9%	12.6%	25.4%
(79-02)	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	14.5%	0.6%	0.6%	2.0%	13.6%	28.9%	9.4%	30.0%
(85-02)	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	11.1%	0.3%	0.4%	2.6%	12.7%	30.2%	9.1%	33.3%

G-144

Table G.48. Percent distribution of Spring Creek Tule chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1979	0.0%	0.0%	0.0%	0.1%	0.7%	0.2%	0.0%	26.8%	1.3%	2.2%	0.1%	19.0%	21.1%	13.6%	14.9%
1980	0.1%	0.0%	0.0%	0.1%	0.6%	0.1%	0.0%	27.8%	2.5%	0.9%	0.1%	24.7%	21.8%	10.9%	10.5%
1981	0.0%	0.0%	0.0%	0.1%	0.2%	0.1%	0.0%	22.9%	1.4%	1.8%	0.1%	24.7%	19.7%	12.9%	16.1%
1982	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	25.0%	1.0%	0.2%	0.0%	21.4%	32.9%	8.0%	11.1%
1983	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	31.5%	1.1%	0.0%	0.5%	9.1%	18.9%	12.1%	26.4%
1984	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	27.2%	0.0%	1.2%	0.3%	6.1%	24.6%	12.7%	25.5%
1985	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	15.3%	0.0%	0.2%	0.6%	16.0%	27.0%	4.1%	36.6%
1986	0.0%	0.0%	0.0%	0.0%	2.9%	0.0%	0.0%	21.8%	1.8%	1.8%	2.7%	2.7%	35.4%	8.8%	22.1%
1987	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.9%	0.0%	0.0%	0.0%	15.2%	40.4%	19.9%	14.6%
1988	0.0%	0.0%	0.0%	0.5%	0.2%	0.2%	0.0%	26.8%	1.0%	1.5%	2.2%	18.8%	27.3%	12.6%	8.9%
1989	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	16.5%	0.5%	0.4%	3.2%	26.7%	31.9%	8.8%	11.8%
1990	0.0%	0.0%	0.0%	0.2%	0.4%	0.1%	0.0%	19.9%	0.7%	0.8%	4.5%	15.5%	21.1%	14.9%	21.7%
1991	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%	0.0%	15.2%	0.3%	0.4%	1.3%	18.6%	32.0%	12.2%	19.6%
1992	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	14.0%	0.7%	0.5%	2.4%	28.7%	13.8%	12.3%	27.5%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	19.7%	0.0%	0.3%	4.2%	19.2%	19.8%	11.7%	25.0%
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.0%	0.0%	0.9%	4.0%	3.5%	28.6%	1.1%	39.9%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.9%	0.0%	2.3%	2.7%	1.8%	37.1%	0.0%	46.2%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	6.1%	58.7%	3.9%	28.1%
1997	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.6%	0.0%	0.8%	2.6%	5.8%	23.3%	13.1%	39.9%
1998	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.6%	3.3%	15.3%	16.7%	63.8%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%	0.0%	3.8%	18.9%	37.1%	10.4%	29.3%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	0.0%	0.0%	7.4%	6.1%	20.9%	14.0%	47.6%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%	0.5%	0.0%	1.3%	20.9%	30.1%	9.3%	33.9%
2002	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.4%	0.3%	0.0%	1.0%	21.8%	28.1%	13.4%	23.1%
(79-02)	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	16.2%	0.6%	0.7%	2.0%	14.8%	27.8%	10.7%	26.8%
(85-02)	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	12.6%	0.3%	0.5%	2.6%	13.9%	29.3%	10.4%	30.0%

G-145

Table G.49. Percent distribution of Columbia River Summer chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1979	10.7%	0.0%	1.1%	6.7%	2.2%	9.0%	0.0%	15.2%	7.3%	1.7%	0.0%	0.0%	4.5%	4.5%	37.1%
1980	32.8%	0.0%	0.9%	8.7%	3.9%	1.2%	0.0%	16.7%	0.0%	0.0%	0.0%	1.5%	0.6%	0.0%	33.7%
1987	13.7%	0.0%	0.0%	5.6%	4.8%	4.0%	3.2%	0.0%	0.0%	0.0%	0.0%	20.2%	15.3%	0.0%	33.1%
1988	1.2%	0.8%	0.0%	7.9%	0.0%	7.9%	2.0%	16.7%	0.0%	1.6%	4.4%	3.6%	15.9%	3.2%	34.9%
1989	4.6%	0.5%	0.6%	4.9%	0.6%	0.3%	0.6%	14.5%	1.4%	2.2%	2.3%	13.9%	8.2%	2.5%	43.0%
1990	9.9%	0.0%	0.0%	6.8%	1.1%	1.3%	0.0%	19.9%	0.6%	0.4%	0.0%	5.8%	11.0%	2.5%	40.7%
1991	3.9%	0.0%	0.0%	2.2%	0.5%	1.6%	0.0%	5.7%	0.0%	1.1%	0.7%	3.4%	3.9%	2.2%	74.7%
1992	13.5%	0.0%	0.0%	3.3%	2.0%	1.0%	0.0%	14.1%	0.7%	0.0%	0.0%	6.3%	1.3%	1.3%	56.6%
1993	7.1%	0.0%	0.0%	1.4%	0.0%	2.4%	0.0%	14.3%	0.0%	0.0%	1.9%	5.2%	3.3%	1.4%	62.9%
1994	13.2%	0.0%	0.0%	0.0%	0.0%	0.0%	13.2%	0.0%	0.0%	0.0%	0.0%	0.0%	10.5%	0.0%	63.2%
1995	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.6%	0.0%	0.0%	0.0%	2.0%	1.3%	0.0%	89.5%
1996	13.3%	0.3%	0.0%	0.0%	0.0%	2.8%	0.0%	0.0%	2.2%	0.0%	0.0%	2.8%	3.9%	4.2%	70.6%
1997	8.5%	0.1%	3.6%	0.3%	0.0%	0.4%	0.9%	1.8%	0.0%	0.0%	0.0%	3.2%	1.3%	0.8%	79.1%
1998	8.9%	0.1%	0.9%	0.5%	0.0%	0.1%	0.5%	0.0%	0.0%	0.0%	0.6%	1.9%	5.2%	1.0%	80.3%
1999	10.1%	2.6%	1.8%	0.4%	0.0%	0.6%	2.7%	0.6%	0.0%	0.0%	5.0%	8.5%	1.2%	3.4%	63.0%
2000	20.5%	1.3%	2.5%	0.4%	0.0%	0.0%	1.4%	4.2%	0.6%	0.0%	4.7%	2.9%	1.0%	3.8%	56.6%
2001	14.3%	2.9%	1.5%	0.5%	0.0%	0.0%	1.5%	12.6%	0.2%	0.0%	4.5%	17.9%	0.8%	6.4%	37.1%
2002	24.9%	0.0%	1.6%	12.0%	0.0%	0.0%	2.2%	17.3%	0.1%	0.0%	0.9%	9.6%	0.5%	6.5%	24.3%
(79-02)	11.9%	0.5%	0.8%	3.4%	0.8%	1.8%	1.6%	8.8%	0.7%	0.4%	1.4%	6.0%	5.0%	2.4%	54.5%
(85-02)	10.6%	0.5%	0.8%	2.9%	0.6%	1.4%	1.8%	7.9%	0.4%	0.3%	1.6%	6.7%	5.3%	2.5%	56.8%

Table G.50. Percent distribution of Columbia River Summer chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1979	13.6%	0.0%	0.9%	8.5%	3.8%	8.0%	0.0%	17.8%	6.6%	1.4%	0.0%	0.5%	3.8%	4.2%	31.0%
1980	32.4%	0.0%	0.9%	9.1%	4.3%	1.1%	0.0%	17.9%	0.0%	0.0%	0.0%	1.7%	0.6%	0.0%	32.1%
1987	16.1%	0.0%	0.0%	8.1%	3.7%	4.3%	2.5%	7.5%	0.0%	0.0%	0.0%	19.9%	11.8%	0.6%	25.5%
1988	1.9%	2.3%	0.0%	10.4%	0.0%	7.8%	1.9%	21.7%	0.0%	1.3%	4.2%	3.6%	13.6%	2.9%	28.5%
1989	6.9%	2.0%	0.7%	5.4%	0.7%	0.3%	0.5%	16.0%	1.4%	1.9%	2.3%	14.5%	7.3%	2.4%	37.8%
1990	10.8%	0.0%	0.0%	7.7%	1.1%	1.4%	0.0%	20.7%	0.6%	0.3%	0.0%	5.8%	10.5%	2.6%	38.4%
1991	4.1%	0.0%	0.0%	2.3%	0.5%	1.7%	0.0%	6.3%	0.0%	1.1%	0.7%	3.6%	4.0%	2.3%	73.4%
1992	17.5%	0.0%	0.0%	3.3%	1.8%	0.9%	0.0%	14.8%	0.6%	0.0%	0.0%	6.3%	1.2%	1.5%	52.0%
1993	7.8%	0.0%	0.0%	1.4%	0.0%	2.8%	0.0%	15.6%	0.0%	0.0%	1.8%	5.5%	3.2%	1.4%	60.6%
1994	17.1%	0.0%	0.0%	0.0%	0.0%	0.0%	14.6%	0.0%	0.0%	0.0%	0.0%	0.0%	9.8%	0.0%	58.5%
1995	3.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.6%	0.0%	3.6%	0.0%	1.8%	2.4%	0.0%	82.0%
1996	21.8%	0.7%	0.0%	0.2%	0.0%	3.1%	0.0%	0.0%	2.6%	0.2%	0.0%	2.6%	3.4%	4.1%	61.2%
1997	9.7%	0.1%	4.0%	0.2%	0.0%	0.5%	1.3%	2.0%	0.0%	0.2%	0.0%	3.6%	1.2%	1.0%	76.3%
1998	10.6%	0.5%	1.2%	0.5%	0.0%	0.1%	0.7%	0.0%	0.0%	0.0%	0.6%	2.2%	5.1%	1.0%	77.5%
1999	14.0%	5.1%	2.9%	0.4%	0.0%	0.6%	3.9%	0.5%	0.0%	0.0%	5.2%	9.3%	1.0%	3.3%	53.8%
2000	24.9%	2.4%	3.0%	0.4%	0.0%	0.0%	1.7%	4.0%	0.7%	0.1%	5.0%	3.1%	1.0%	3.9%	49.9%
2001	16.3%	6.0%	1.4%	0.5%	0.0%	0.0%	1.7%	11.4%	0.2%	0.0%	4.5%	17.6%	0.7%	6.7%	32.9%
2002	25.6%	0.1%	1.6%	12.1%	0.0%	0.1%	2.6%	16.8%	0.1%	0.0%	1.0%	9.8%	0.4%	6.7%	23.1%
(79-02)	14.2%	1.1%	0.9%	3.9%	0.9%	1.8%	1.7%	10.0%	0.7%	0.6%	1.4%	6.2%	4.5%	2.5%	49.7%
(85-02)	13.0%	1.2%	0.9%	3.3%	0.5%	1.5%	2.0%	9.0%	0.4%	0.5%	1.6%	6.8%	4.8%	2.5%	51.9%



Table G.51. Percent distribution of Willamette Spring chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1980	6.5%	0.9%	0.3%	11.0%	0.3%	0.8%	0.1%	4.7%	0.0%	0.1%	0.0%	0.9%	0.6%	15.8%	57.9%
1981	8.7%	1.1%	0.2%	12.0%	0.8%	0.2%	0.0%	2.7%	0.0%	0.0%	0.0%	0.7%	3.1%	18.4%	52.2%
1982	4.1%	1.1%	0.1%	6.6%	0.1%	0.3%	0.1%	4.1%	0.0%	0.0%	0.0%	1.1%	7.3%	24.9%	50.1%
1983	12.8%	0.1%	0.0%	12.0%	0.3%	0.0%	0.0%	1.9%	0.8%	0.0%	0.0%	1.9%	6.5%	21.2%	42.6%
1984	4.0%	0.3%	0.3%	2.1%	0.1%	0.1%	0.1%	1.9%	0.1%	0.0%	0.0%	1.0%	6.2%	23.9%	59.8%
1985	5.1%	0.1%	0.0%	0.5%	0.2%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.3%	18.3%	20.5%	54.6%
1986	3.1%	0.4%	0.0%	6.6%	0.6%	2.5%	0.0%	5.5%	0.0%	0.0%	0.6%	0.0%	9.2%	17.1%	54.4%
1987	9.8%	0.0%	0.6%	13.3%	0.8%	1.1%	0.0%	0.9%	0.0%	0.0%	1.3%	2.4%	6.3%	27.0%	36.5%
1988	8.6%	0.2%	0.4%	6.2%	0.6%	0.1%	0.0%	3.1%	0.0%	0.0%	0.0%	2.2%	6.9%	28.8%	42.9%
1989	4.4%	0.0%	0.2%	1.8%	0.0%	0.1%	0.0%	1.4%	0.5%	0.2%	0.5%	1.5%	12.6%	20.3%	56.6%
1990	6.3%	0.3%	0.2%	1.4%	0.2%	0.5%	0.2%	2.1%	0.0%	0.1%	0.7%	1.3%	17.0%	27.7%	42.0%
1991	3.1%	1.2%	0.6%	1.7%	0.0%	0.2%	0.0%	0.4%	0.2%	0.0%	0.2%	0.7%	6.0%	42.8%	43.0%
1992	3.5%	1.3%	0.2%	1.7%	0.0%	0.2%	0.2%	2.7%	0.0%	0.1%	0.2%	2.4%	5.8%	31.3%	50.4%
1993	8.1%	0.0%	0.0%	1.3%	0.0%	0.0%	0.1%	1.4%	0.0%	0.0%	0.2%	1.5%	0.8%	43.1%	43.5%
1994	4.1%	0.3%	0.9%	0.7%	0.2%	0.2%	0.1%	0.6%	0.0%	0.0%	0.0%	0.2%	5.1%	38.9%	48.7%
1995	2.8%	0.1%	0.3%	1.0%	0.0%	0.3%	0.0%	0.3%	0.0%	0.0%	0.1%	0.0%	0.3%	43.8%	50.9%
1996	2.2%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	1.2%	7.9%	88.6%
1997	3.6%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.8%	15.8%	79.0%
1998	4.2%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.4%	16.4%	78.5%
1999	4.8%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.9%	16.2%	77.1%
2000	7.9%	0.1%	0.5%	0.1%	0.0%	0.0%	0.3%	0.3%	0.0%	0.0%	0.3%	0.3%	2.5%	30.4%	57.4%
2001	1.4%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.1%	0.3%	3.5%	23.2%	70.9%
2002	2.1%	0.1%	0.1%	0.7%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.9%	17.6%	23.1%	54.6%
(80-02)	5.3%	0.3%	0.2%	3.5%	0.2%	0.3%	0.1%	1.6%	0.1%	0.0%	0.2%	0.9%	6.0%	25.1%	56.2%
(85-02)	4.7%	0.2%	0.2%	2.1%	0.1%	0.3%	0.0%	1.1%	0.0%	0.0%	0.3%	0.8%	6.4%	26.3%	57.2%

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Table G.52. Percent distribution of Willamette Spring chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1980	8.7%	0.9%	0.3%	14.2%	0.4%	0.8%	0.1%	5.8%	0.0%	0.1%	0.0%	1.1%	0.7%	15.2%	51.5%
1981	10.7%	1.1%	0.3%	14.8%	0.9%	0.2%	0.0%	3.3%	0.0%	0.0%	0.0%	0.8%	3.0%	17.8%	47.0%
1982	5.8%	1.2%	0.2%	8.2%	0.1%	0.4%	0.1%	5.1%	0.0%	0.0%	0.0%	1.3%	7.0%	24.8%	45.9%
1983	18.9%	0.1%	0.0%	13.2%	0.3%	0.0%	0.0%	2.0%	0.8%	0.0%	0.0%	2.1%	5.9%	19.9%	36.6%
1984	4.6%	0.3%	0.4%	2.5%	0.1%	0.1%	0.1%	2.1%	0.1%	0.0%	0.0%	1.2%	6.3%	24.7%	57.6%
1985	7.9%	0.3%	0.0%	0.5%	0.2%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	17.7%	20.8%	51.8%	51.8%
1986	4.9%	1.2%	0.0%	7.5%	0.7%	2.6%	0.0%	6.2%	0.0%	0.0%	0.7%	0.0%	8.8%	17.1%	50.3%
1987	18.8%	0.0%	1.0%	15.4%	1.2%	1.0%	0.0%	1.5%	0.0%	0.0%	1.2%	3.1%	5.3%	23.1%	28.4%
1988	11.5%	0.4%	0.6%	7.8%	0.8%	0.0%	0.0%	3.7%	0.0%	0.0%	0.0%	2.4%	6.5%	30.3%	36.0%
1989	5.7%	0.0%	0.2%	2.2%	0.0%	0.1%	0.0%	1.6%	0.6%	0.1%	0.6%	1.7%	12.2%	22.1%	52.8%
1990	10.2%	0.8%	0.3%	2.0%	0.2%	0.5%	0.2%	2.7%	0.0%	0.1%	0.7%	1.5%	15.6%	28.0%	37.3%
1991	4.1%	2.9%	0.7%	2.1%	0.0%	0.2%	0.0%	0.4%	0.2%	0.0%	0.2%	0.7%	5.7%	44.3%	38.5%
1992	7.6%	3.2%	0.2%	2.0%	0.0%	0.1%	0.2%	3.1%	0.0%	0.1%	0.2%	2.8%	5.3%	31.5%	43.5%
1993	13.2%	0.0%	0.0%	1.5%	0.0%	0.0%	0.1%	1.6%	0.0%	0.0%	0.2%	1.6%	0.7%	44.0%	37.0%
1994	5.7%	0.7%	1.1%	0.9%	0.3%	0.2%	0.1%	0.8%	0.0%	0.0%	0.0%	0.2%	4.8%	40.8%	44.4%
1995	5.1%	0.1%	0.4%	1.4%	0.0%	0.4%	0.0%	0.5%	0.0%	0.0%	0.1%	0.0%	0.3%	46.0%	45.6%
1996	3.4%	0.0%	0.0%	0.2%	0.0%	0.3%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	1.2%	8.9%	86.0%
1997	4.4%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.8%	17.2%	76.5%
1998	5.7%	0.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.2%	0.4%	18.5%	74.4%
1999	10.2%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.9%	17.6%	69.3%
2000	13.9%	0.2%	1.0%	0.1%	0.0%	0.0%	0.4%	0.3%	0.0%	0.0%	0.4%	0.3%	2.3%	32.4%	48.8%
2001	1.7%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.1%	0.3%	3.6%	26.4%	67.2%
2002	2.4%	0.4%	0.1%	0.8%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	1.0%	17.0%	25.4%	52.0%
(80-02)	8.1%	0.6%	0.4%	4.3%	0.2%	0.3%	0.1%	1.9%	0.1%	0.0%	0.2%	1.0%	5.7%	25.9%	51.2%
(85-02)	7.6%	0.6%	0.4%	2.5%	0.2%	0.3%	0.1%	1.4%	0.0%	0.0%	0.3%	0.9%	6.1%	27.5%	52.2%

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Table G.53. Percent distribution of Lewis River Wild chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1981	6.4%	0.0%	0.0%	3.3%	1.4%	0.2%	2.1%	6.0%	0.0%	0.7%	0.0%	2.0%	4.2%	15.9%	57.8%
1982	6.0%	1.3%	0.2%	3.0%	1.4%	0.8%	0.0%	10.7%	0.4%	0.8%	0.0%	4.1%	6.2%	23.5%	41.7%
1986	4.9%	0.0%	0.0%	1.6%	2.2%	0.9%	0.0%	6.8%	0.0%	0.0%	2.5%	3.3%	26.6%	12.3%	39.0%
1987	4.1%	0.0%	0.0%	4.7%	1.3%	0.0%	0.0%	8.4%	0.0%	0.0%	0.9%	2.7%	25.7%	6.3%	46.0%
1988	4.4%	0.0%	0.0%	2.9%	0.0%	0.5%	0.0%	8.9%	0.0%	0.1%	0.0%	4.7%	23.1%	16.7%	38.7%
1989	1.8%	0.2%	0.2%	4.5%	0.2%	0.7%	0.5%	5.1%	0.0%	0.8%	0.5%	4.9%	9.5%	7.3%	63.9%
1990	5.4%	0.0%	0.0%	1.7%	0.4%	0.6%	0.6%	12.1%	0.0%	0.0%	0.8%	4.0%	3.3%	5.2%	65.8%
1991	6.0%	0.1%	0.0%	3.8%	0.5%	0.0%	1.1%	5.9%	0.0%	0.7%	0.0%	2.4%	15.8%	7.1%	56.6%
1992	1.6%	0.0%	0.0%	3.8%	1.8%	0.0%	0.7%	6.1%	0.0%	0.0%	0.0%	2.9%	4.5%	23.5%	55.0%
1993	3.6%	0.0%	1.0%	4.9%	0.0%	0.3%	0.0%	7.5%	0.0%	1.6%	0.0%	0.8%	6.8%	9.4%	64.2%
1994	6.4%	0.0%	0.0%	3.2%	0.0%	0.0%	0.0%	3.2%	0.0%	1.6%	0.0%	0.8%	1.6%	0.0%	83.2%
1995	6.6%	0.0%	2.3%	3.2%	0.0%	0.4%	0.0%	5.3%	0.0%	0.0%	0.0%	0.0%	0.0%	24.6%	57.6%
1996	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.8%	0.9%	4.6%	84.0%
1997	12.6%	0.0%	0.0%	3.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.6%	80.7%
1998	8.1%	0.0%	0.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	2.0%	84.8%
1999	11.8%	0.0%	0.0%	5.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	82.4%
2000	3.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.9%	0.0%	80.0%
2001	5.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	8.7%	0.0%	0.0%	2.3%	6.4%	2.3%	5.5%	68.5%
2002	11.7%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	6.3%	0.0%	0.0%	2.9%	5.2%	5.2%	5.2%	61.9%
(81-02)	6.2%	0.1%	0.4%	2.8%	0.5%	0.2%	0.3%	5.3%	0.0%	0.3%	0.5%	2.5%	8.1%	9.1%	63.8%
(85-02)	6.2%	0.0%	0.4%	2.7%	0.4%	0.2%	0.2%	5.0%	0.0%	0.3%	0.6%	2.4%	8.5%	7.8%	65.4%

Table G.54. Percent distribution of Lewis River Wild chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1981	7.4%	0.0%	0.0%	3.8%	1.6%	0.2%	2.1%	7.5%	0.0%	0.7%	0.0%	2.5%	4.2%	16.8%	53.1%
1982	7.4%	1.2%	0.2%	3.5%	1.6%	0.7%	0.0%	11.7%	0.4%	0.7%	0.0%	4.2%	6.0%	23.5%	38.8%
1986	6.4%	0.0%	0.0%	2.2%	2.2%	1.0%	0.0%	8.0%	0.0%	0.0%	2.6%	3.8%	25.5%	12.3%	36.0%
1987	5.7%	0.0%	0.0%	5.3%	1.4%	0.0%	0.0%	9.5%	0.0%	0.0%	0.9%	2.9%	24.9%	6.6%	42.7%
1988	5.2%	0.0%	0.0%	3.5%	0.0%	0.5%	0.0%	10.7%	0.0%	0.1%	0.0%	5.0%	21.9%	17.7%	35.4%
1989	2.4%	0.6%	0.3%	5.1%	0.2%	0.7%	0.4%	5.8%	0.0%	0.8%	0.5%	5.4%	9.3%	7.8%	60.5%
1990	7.7%	0.0%	0.0%	1.9%	0.5%	0.7%	0.6%	13.3%	0.0%	0.0%	0.8%	4.2%	3.2%	5.5%	61.6%
1991	7.0%	0.3%	0.0%	4.1%	0.4%	0.0%	1.2%	6.4%	0.0%	0.7%	0.0%	2.5%	15.4%	7.7%	54.2%
1992	1.7%	0.0%	0.0%	4.3%	1.9%	0.0%	0.7%	6.7%	0.0%	0.0%	0.0%	3.1%	4.5%	25.0%	52.1%
1993	4.4%	0.0%	1.2%	5.7%	0.0%	0.2%	0.0%	8.4%	0.0%	1.5%	0.0%	1.5%	6.6%	9.8%	60.7%
1994	9.1%	0.0%	0.0%	4.9%	0.0%	0.0%	0.0%	3.8%	0.0%	1.5%	0.0%	0.8%	1.5%	0.0%	78.5%
1995	7.8%	0.0%	2.3%	3.9%	0.0%	0.5%	0.0%	6.4%	0.0%	0.2%	0.0%	0.0%	0.0%	25.3%	53.7%
1996	9.1%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%	0.9%	4.8%	82.2%
1997	14.8%	0.0%	0.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.9%	78.3%
1998	9.0%	0.0%	0.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	2.0%	84.0%
1999	17.9%	0.0%	0.0%	7.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	75.0%
2000	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	18.2%	0.0%	78.8%
2001	6.1%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	8.7%	0.0%	0.0%	3.0%	7.0%	2.2%	6.5%	65.2%
2002	13.5%	0.0%	1.9%	0.0%	0.0%	0.0%	0.0%	6.5%	0.0%	0.0%	3.2%	6.2%	5.1%	5.4%	58.2%
(81-02)	7.7%	0.1%	0.4%	3.2%	0.5%	0.2%	0.3%	6.0%	0.0%	0.3%	0.6%	2.7%	8.0%	9.5%	60.5%
(85-02)	7.7%	0.1%	0.4%	3.2%	0.4%	0.2%	0.2%	5.5%	0.0%	0.3%	0.7%	2.6%	8.3%	8.3%	62.2%

Table G.55. Percent distribution of Columbia River Upriver Bright chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1979	18.0%	0.3%	0.6%	7.6%	4.0%	3.7%	0.1%	11.8%	0.5%	0.7%	0.0%	1.3%	23.0%	1.8%	26.7%
1980	20.2%	0.6%	0.5%	6.6%	1.6%	1.8%	0.1%	7.4%	1.0%	0.2%	0.0%	1.1%	6.4%	1.8%	50.7%
1981	16.1%	0.0%	0.4%	5.6%	1.1%	1.3%	0.0%	3.8%	0.4%	0.5%	0.2%	0.5%	3.6%	1.0%	65.8%
1982	6.4%	0.4%	0.2%	3.5%	0.2%	1.1%	0.1%	4.6%	0.0%	0.4%	0.0%	0.6%	2.5%	0.7%	79.2%
1983	15.5%	0.2%	0.0%	10.7%	1.8%	3.4%	0.2%	3.7%	0.2%	0.1%	0.0%	0.4%	8.1%	0.0%	55.6%
1984	14.5%	1.1%	0.1%	8.6%	2.0%	1.5%	0.2%	7.2%	0.2%	0.8%	0.2%	0.2%	15.3%	1.9%	46.3%
1985	9.2%	1.2%	0.2%	8.8%	0.8%	1.3%	0.0%	7.9%	0.1%	1.2%	0.1%	0.4%	32.8%	4.5%	31.5%
1986	10.3%	0.7%	0.1%	7.9%	1.2%	1.0%	0.0%	6.3%	0.1%	0.2%	0.1%	0.7%	33.1%	2.4%	35.8%
1987	14.6%	0.4%	0.4%	12.4%	1.8%	0.6%	0.1%	7.8%	0.0%	0.1%	0.3%	1.5%	35.2%	3.7%	21.2%
1988	10.2%	0.8%	0.5%	7.4%	0.6%	0.6%	0.0%	11.2%	0.0%	0.1%	0.0%	2.1%	47.0%	2.6%	16.9%
1989	11.9%	0.0%	0.2%	14.9%	0.2%	0.7%	0.6%	7.7%	0.0%	0.7%	0.0%	1.2%	42.5%	2.0%	17.3%
1990	13.6%	0.0%	1.0%	9.9%	0.7%	0.7%	0.0%	8.1%	0.0%	0.0%	0.0%	1.2%	33.8%	2.4%	28.6%
1991	6.3%	0.4%	2.6%	5.9%	0.0%	0.0%	0.0%	8.9%	0.0%	0.0%	0.0%	0.7%	19.6%	4.4%	51.1%
1992	2.9%	0.0%	0.0%	2.9%	0.0%	2.3%	0.0%	11.4%	0.0%	0.7%	1.0%	0.0%	17.0%	6.9%	54.9%
1993	10.9%	0.0%	0.0%	6.7%	0.0%	0.4%	0.6%	17.0%	0.0%	0.0%	0.0%	1.7%	15.7%	6.5%	40.4%
1994	9.8%	0.9%	0.0%	8.0%	0.2%	0.9%	1.7%	6.9%	0.0%	0.0%	0.7%	0.0%	14.2%	3.5%	53.1%
1995	8.1%	0.1%	1.7%	2.0%	0.0%	0.4%	0.0%	5.3%	0.0%	0.0%	0.0%	0.7%	9.9%	4.3%	67.3%
1996	2.9%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.8%	22.4%	5.4%	68.0%
1997	11.1%	0.3%	2.5%	4.5%	0.2%	0.0%	0.6%	0.5%	0.0%	0.0%	0.1%	1.0%	20.6%	11.3%	47.2%
1998	8.1%	1.5%	2.2%	2.6%	0.0%	0.0%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	13.7%	6.4%	64.9%
1999	10.4%	0.6%	2.6%	3.8%	0.0%	0.0%	0.8%	0.0%	0.4%	0.0%	0.3%	0.6%	13.5%	9.7%	57.4%
2000	16.8%	0.1%	2.4%	0.0%	0.0%	0.0%	0.4%	0.9%	0.0%	0.0%	2.7%	0.3%	21.1%	4.6%	50.7%
2001	3.8%	0.0%	0.7%	0.0%	0.0%	0.0%	0.7%	0.7%	0.0%	0.0%	0.4%	1.6%	12.7%	7.7%	71.7%
2002	14.3%	0.0%	2.3%	0.8%	0.0%	0.0%	1.0%	1.4%	0.3%	0.1%	0.3%	1.7%	18.2%	8.7%	51.0%
(79-02)	11.1%	0.4%	0.9%	5.9%	0.7%	0.9%	0.3%	5.9%	0.1%	0.2%	0.3%	0.8%	20.1%	4.3%	48.1%
(85-02)	9.7%	0.4%	1.1%	5.5%	0.3%	0.5%	0.4%	5.7%	0.0%	0.2%	0.3%	0.9%	23.5%	5.4%	46.1%

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Table G.56. Percent distribution of Columbia River Upriver Bright chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1979	18.4%	0.3%	0.6%	7.9%	4.1%	3.7%	0.1%	12.5%	0.5%	0.7%	0.0%	1.3%	22.3%	2.0%	25.5%
1980	21.1%	0.6%	0.6%	7.1%	1.7%	1.7%	0.1%	7.9%	1.1%	0.2%	0.0%	1.1%	6.3%	1.9%	48.6%
1981	17.1%	0.0%	0.4%	5.9%	1.1%	1.3%	0.0%	4.1%	0.3%	0.5%	0.2%	0.6%	3.6%	1.1%	63.9%
1982	8.9%	0.4%	0.3%	4.4%	0.3%	1.1%	0.2%	5.5%	0.0%	0.5%	0.0%	0.8%	2.5%	0.7%	74.5%
1983	22.1%	0.3%	0.0%	11.7%	2.0%	3.3%	0.2%	3.8%	0.2%	0.1%	0.0%	0.4%	7.4%	0.0%	48.5%
1984	17.6%	1.2%	0.2%	9.8%	2.3%	1.4%	0.2%	8.2%	0.2%	0.8%	0.2%	0.2%	14.4%	2.3%	41.0%
1985	12.8%	2.3%	0.3%	9.0%	0.8%	1.3%	0.0%	8.1%	0.1%	1.1%	0.1%	0.5%	30.9%	4.6%	28.2%
1986	12.2%	1.4%	0.1%	8.1%	1.3%	1.0%	0.0%	6.7%	0.1%	0.2%	0.1%	0.8%	31.9%	2.7%	33.4%
1987	19.4%	1.0%	0.4%	13.1%	2.0%	0.6%	0.1%	8.5%	0.0%	0.1%	0.3%	1.5%	31.4%	3.5%	18.3%
1988	11.5%	2.1%	0.5%	7.9%	0.6%	0.6%	0.0%	12.4%	0.0%	0.1%	0.0%	2.2%	44.0%	2.7%	15.5%
1989	14.3%	0.0%	0.2%	15.3%	0.2%	0.7%	0.5%	8.1%	0.0%	0.7%	0.0%	1.2%	40.5%	2.1%	16.2%
1990	14.2%	0.0%	1.1%	10.8%	0.8%	0.7%	0.0%	8.7%	0.0%	0.0%	0.0%	1.3%	32.6%	2.5%	27.2%
1991	7.7%	1.3%	3.4%	6.7%	0.0%	0.0%	0.0%	10.1%	0.0%	0.0%	0.0%	1.0%	18.5%	4.7%	46.5%
1992	3.6%	0.0%	0.0%	3.6%	0.0%	2.4%	0.0%	13.3%	0.0%	0.6%	1.2%	0.0%	16.7%	7.6%	50.9%
1993	16.3%	0.0%	0.0%	7.6%	0.0%	0.3%	0.5%	18.6%	0.0%	0.0%	0.0%	1.7%	14.0%	6.1%	34.8%
1994	11.7%	1.8%	0.0%	8.5%	0.2%	1.0%	1.7%	7.3%	0.0%	0.0%	0.6%	0.0%	13.6%	3.6%	49.9%
1995	10.0%	0.1%	2.4%	2.7%	0.0%	0.5%	0.0%	7.1%	0.0%	0.0%	0.0%	0.7%	9.6%	4.5%	62.3%
1996	4.5%	0.0%	0.0%	0.1%	0.0%	0.3%	0.5%	0.0%	0.0%	0.0%	0.0%	0.8%	22.6%	6.3%	65.0%
1997	12.8%	0.5%	3.2%	4.9%	0.2%	0.0%	0.9%	0.6%	0.0%	0.1%	0.1%	1.0%	19.7%	11.7%	44.4%
1998	10.2%	4.7%	2.8%	3.1%	0.0%	0.0%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	13.1%	6.9%	58.6%
1999	13.4%	1.5%	2.8%	4.0%	0.0%	0.0%	0.8%	0.0%	0.4%	0.0%	0.3%	0.6%	12.9%	10.1%	53.1%
2000	22.3%	0.1%	3.3%	0.0%	0.0%	0.0%	0.7%	1.1%	0.0%	0.0%	3.3%	0.3%	19.4%	4.5%	45.0%
2001	5.4%	0.0%	1.0%	0.0%	0.0%	0.0%	1.0%	0.7%	0.0%	0.0%	0.4%	1.9%	12.7%	8.6%	68.2%
2002	16.4%	0.0%	2.5%	0.9%	0.0%	0.0%	1.2%	1.3%	0.4%	1.1%	0.3%	1.9%	17.5%	9.1%	47.4%
(79-02)	13.5%	0.8%	1.1%	6.4%	0.7%	0.9%	0.4%	6.5%	0.1%	0.3%	0.3%	0.9%	19.1%	4.6%	44.5%
(85-02)	12.2%	0.9%	1.3%	5.9%	0.3%	0.5%	0.5%	6.3%	0.1%	0.2%	0.4%	1.0%	22.3%	5.6%	42.5%

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Table G.57. Percent distribution of Hanford Wild Bright chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1990	8.4%	0.5%	0.0%	4.3%	0.5%	0.5%	0.0%	8.4%	0.0%	0.2%	3.6%	0.5%	22.5%	7.0%	43.6%
1991	8.6%	0.0%	1.3%	9.4%	0.2%	0.0%	0.5%	4.7%	0.8%	0.0%	0.0%	1.0%	23.3%	4.4%	45.7%
1992	16.4%	1.7%	1.4%	5.9%	0.0%	0.0%	0.0%	16.0%	0.0%	0.0%	0.0%	1.0%	18.5%	2.8%	36.2%
1993	14.0%	0.0%	2.1%	2.9%	0.0%	0.5%	1.3%	5.3%	0.0%	1.9%	1.9%	3.7%	16.1%	8.2%	42.1%
1994	14.4%	0.8%	0.0%	4.8%	0.3%	1.1%	0.0%	4.4%	0.0%	0.3%	0.0%	0.7%	12.4%	5.4%	55.3%
1995	11.0%	0.0%	3.7%	4.3%	0.0%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%	0.0%	9.8%	7.0%	62.0%
1996	9.8%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.4%	7.8%	53.5%
1997	16.3%	0.6%	0.9%	3.6%	0.0%	0.0%	1.9%	0.8%	0.0%	0.0%	0.0%	0.9%	13.9%	7.4%	53.5%
1998	12.8%	0.0%	0.0%	8.5%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	17.3%	6.4%	53.5%
1999	10.5%	0.4%	2.1%	7.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.8%	6.7%	61.3%
2000	16.4%	0.5%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.6%	5.9%	46.8%
2001	4.4%	1.2%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	20.1%	14.0%	58.4%
2002	14.2%	0.0%	1.2%	1.1%	0.0%	0.0%	1.0%	3.0%	0.0%	0.0%	0.0%	1.5%	9.9%	11.1%	57.0%
(90-02)	12.1%	0.4%	1.2%	4.0%	0.1%	0.2%	0.5%	3.5%	0.1%	0.2%	0.4%	0.8%	17.9%	7.2%	51.5%
(90-02)	12.1%	0.4%	1.2%	4.0%	0.1%	0.2%	0.5%	3.5%	0.1%	0.2%	0.4%	0.8%	17.9%	7.2%	51.5%

Table G.58. Percent distribution of Hanford Wild Bright chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1990	9.3%	1.1%	0.4%	5.1%	0.4%	0.4%	0.0%	8.9%	0.0%	0.2%	3.6%	0.6%	21.7%	7.4%	40.8%
1991	10.5%	0.0%	1.4%	10.4%	0.2%	0.0%	0.5%	5.1%	1.0%	0.0%	0.0%	1.1%	22.2%	4.5%	43.2%
1992	17.9%	5.5%	1.5%	7.0%	0.0%	0.0%	0.0%	17.0%	0.0%	0.0%	0.0%	0.9%	16.4%	2.4%	31.5%
1993	20.5%	0.0%	2.1%	3.0%	0.0%	0.5%	1.2%	6.0%	0.0%	1.6%	1.9%	3.7%	14.4%	8.1%	37.0%
1994	17.3%	1.9%	0.0%	5.3%	0.3%	1.0%	0.0%	4.7%	0.0%	0.3%	0.0%	0.6%	11.7%	5.5%	51.3%
1995	13.0%	0.0%	4.1%	5.4%	0.0%	0.0%	0.0%	2.9%	0.0%	0.3%	0.0%	0.0%	9.3%	7.1%	57.9%
1996	12.9%	0.0%	0.0%	0.2%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.5%	8.0%	50.8%
1997	17.6%	1.2%	1.1%	3.6%	0.0%	0.0%	2.4%	0.9%	0.0%	0.2%	0.0%	0.9%	13.4%	7.7%	51.0%
1998	14.7%	0.0%	0.0%	9.5%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.7%	6.6%	50.6%
1999	13.9%	1.5%	2.3%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.2%	6.9%	56.4%
2000	19.5%	0.4%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.5%	6.4%	43.6%
2001	5.9%	2.7%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	19.5%	15.1%	54.3%
2002	17.4%	0.0%	1.5%	1.4%	0.0%	0.0%	1.1%	2.9%	0.0%	0.0%	0.0%	1.6%	9.5%	11.5%	53.2%
(90-02)	14.6%	1.1%	1.4%	4.5%	0.1%	0.2%	0.6%	3.7%	0.1%	0.2%	0.4%	0.8%	17.0%	7.5%	47.8%
(90-02)	14.6%	1.1%	1.4%	4.5%	0.1%	0.2%	0.6%	3.7%	0.1%	0.2%	0.4%	0.8%	17.0%	7.5%	47.8%

Table G.59. Percent distribution of Salmon River chinook reported catch among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1981	13.9%	0.0%	0.4%	28.2%	0.6%	1.8%	0.0%	3.7%	0.0%	0.0%	0.7%	1.3%	0.0%	17.1%	32.2%
1982	10.4%	1.5%	0.9%	14.4%	1.1%	0.8%	0.0%	7.0%	0.0%	0.0%	0.0%	2.6%	0.0%	21.4%	39.9%
1983	20.6%	0.6%	0.0%	21.5%	0.6%	0.0%	0.0%	10.4%	0.0%	0.0%	0.0%	0.0%	0.0%	15.6%	30.6%
1984	10.5%	0.0%	0.0%	16.9%	3.5%	0.4%	0.0%	3.4%	0.0%	0.8%	0.0%	0.3%	0.4%	21.5%	42.4%
1985	11.9%	6.5%	0.0%	19.1%	1.1%	0.3%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	19.9%	39.8%
1986	15.2%	0.0%	0.0%	9.0%	4.7%	0.6%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	16.2%	52.1%
1987	10.4%	0.0%	0.0%	15.3%	0.4%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	2.6%	0.0%	24.1%	44.8%
1988	9.6%	0.0%	0.0%	6.4%	0.6%	0.0%	0.0%	3.9%	0.0%	0.0%	0.0%	0.8%	0.0%	16.0%	62.7%
1989	8.4%	0.0%	0.0%	11.4%	0.0%	0.2%	0.0%	3.9%	0.0%	1.2%	0.0%	3.4%	0.0%	24.7%	46.8%
1990	11.9%	0.7%	0.0%	10.6%	0.3%	0.7%	1.3%	7.8%	0.0%	0.3%	0.0%	3.0%	0.0%	25.6%	37.9%
1991	18.4%	0.0%	0.5%	15.2%	0.1%	0.7%	0.8%	5.8%	0.0%	0.0%	0.0%	0.2%	0.0%	24.9%	33.4%
1992	2.6%	0.6%	0.0%	6.6%	0.8%	0.4%	1.8%	15.4%	0.0%	0.0%	0.0%	1.8%	0.0%	15.9%	54.1%
1993	7.7%	0.2%	0.2%	15.3%	0.2%	0.0%	1.1%	17.8%	0.0%	0.5%	0.0%	3.2%	0.0%	23.0%	30.8%
1994	8.8%	0.2%	1.0%	14.8%	0.2%	0.1%	2.1%	4.6%	0.0%	0.0%	0.0%	1.5%	0.0%	17.7%	49.0%
1995	6.8%	0.2%	0.3%	4.6%	0.1%	0.1%	0.6%	0.9%	0.0%	0.0%	0.2%	0.1%	0.0%	30.6%	55.5%
1996	11.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.7%	0.0%	52.6%	31.5%
1997	27.7%	0.0%	1.6%	3.3%	0.1%	0.0%	0.4%	0.2%	0.0%	0.0%	0.0%	1.4%	0.0%	19.2%	46.1%
1998	10.5%	0.4%	0.4%	11.1%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	32.5%	44.4%
1999	12.5%	0.4%	0.0%	2.7%	0.0%	0.0%	2.2%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	36.2%	45.6%
2000	12.8%	0.0%	0.5%	2.2%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	21.9%	61.9%
2001	8.4%	0.0%	0.5%	1.8%	0.0%	0.0%	0.2%	0.2%	0.0%	0.0%	0.2%	1.7%	0.1%	19.2%	67.9%
2002	17.2%	0.0%	0.9%	8.8%	0.0%	0.0%	1.8%	0.1%	0.0%	0.0%	0.0%	1.5%	0.0%	35.1%	34.7%
(81-02)	12.2%	0.5%	0.3%	10.9%	0.7%	0.3%	0.6%	4.1%	0.0%	0.1%	0.0%	1.4%	0.0%	24.1%	44.7%
(85-02)	11.8%	0.5%	0.3%	8.8%	0.5%	0.2%	0.7%	3.7%	0.0%	0.1%	0.0%	1.5%	0.0%	25.3%	46.6%

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Table G.60. Percent distribution of Salmon River chinook total fishing mortalities among fisheries and escapement.

Catch Year	Alaska Troll	Alaska Net	Alaska Sport	North Troll	Central Troll	N/CBC Net	N/CBC Sport	WCVI Troll	GeoSt Tr&Sp	Other Fisheries					Escapement
										Canada Net	Canada Sport	U.S. Troll	U.S. Net	U.S. Sport	
1981	15.8%	0.0%	0.4%	29.9%	1.0%	1.8%	0.0%	4.7%	0.0%	0.0%	0.6%	1.4%	0.0%	16.4%	27.9%
1982	14.2%	1.8%	0.9%	17.7%	1.4%	0.6%	0.0%	7.4%	0.0%	0.0%	0.0%	2.3%	0.0%	20.2%	33.4%
1983	26.3%	0.7%	0.0%	22.1%	0.7%	0.0%	0.0%	10.1%	0.0%	0.0%	0.0%	0.0%	0.0%	14.1%	26.0%
1984	11.8%	0.0%	0.0%	17.9%	3.4%	0.4%	0.0%	3.5%	0.0%	0.7%	0.0%	0.2%	0.4%	22.3%	39.4%
1985	14.5%	11.8%	0.0%	17.7%	1.1%	0.2%	0.0%	1.6%	0.0%	0.0%	0.0%	0.1%	0.0%	20.3%	32.5%
1986	22.0%	0.0%	0.0%	11.1%	4.3%	0.5%	0.0%	3.0%	0.0%	0.0%	0.0%	0.5%	0.0%	15.7%	42.9%
1987	17.7%	0.0%	0.0%	15.5%	0.5%	0.0%	0.0%	2.7%	0.0%	0.0%	0.0%	2.5%	0.0%	22.5%	38.6%
1988	15.0%	0.0%	0.0%	8.7%	0.9%	0.0%	0.0%	5.3%	0.0%	0.0%	0.0%	0.9%	0.0%	15.5%	53.6%
1989	18.8%	0.0%	0.0%	16.0%	0.0%	0.1%	0.0%	4.5%	0.0%	1.0%	0.0%	3.2%	0.0%	21.6%	34.7%
1990	18.6%	2.0%	0.0%	12.8%	0.3%	0.6%	1.2%	7.9%	0.0%	0.2%	0.0%	2.9%	0.0%	23.2%	30.3%
1991	23.9%	0.0%	0.5%	16.5%	0.1%	0.7%	0.8%	6.1%	0.0%	0.0%	0.0%	0.2%	0.0%	23.2%	28.1%
1992	4.9%	1.8%	0.0%	8.3%	0.9%	0.3%	2.1%	17.6%	0.0%	0.0%	0.0%	2.0%	0.0%	15.7%	46.3%
1993	11.1%	0.6%	0.2%	17.2%	0.2%	0.0%	1.0%	18.8%	0.0%	0.4%	0.0%	3.2%	0.0%	22.1%	25.1%
1994	15.8%	0.4%	1.0%	15.0%	0.2%	0.1%	2.1%	4.7%	0.0%	0.0%	0.0%	1.4%	0.0%	16.9%	42.4%
1995	10.2%	0.3%	0.4%	6.8%	0.2%	0.1%	0.8%	1.2%	0.0%	0.0%	0.2%	0.1%	0.0%	31.0%	48.7%
1996	20.1%	0.0%	0.0%	2.7%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	3.9%	0.0%	48.0%	24.7%
1997	32.0%	0.0%	1.7%	3.4%	0.1%	0.0%	0.4%	0.2%	0.0%	0.0%	0.0%	1.5%	0.0%	18.9%	41.7%
1998	11.9%	1.2%	0.5%	11.9%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	32.9%	40.7%
1999	18.0%	0.8%	0.0%	2.9%	0.0%	0.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	36.0%	38.7%
2000	17.5%	0.0%	0.7%	2.6%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	23.1%	55.1%
2001	12.1%	0.0%	0.7%	2.1%	0.0%	0.0%	0.3%	0.2%	0.0%	0.0%	0.2%	2.0%	0.1%	20.6%	61.7%
2002	21.2%	0.0%	1.0%	9.7%	0.0%	0.0%	2.0%	0.1%	0.0%	0.0%	0.0%	1.5%	0.0%	34.8%	29.7%
(81-02)	17.0%	1.0%	0.4%	12.2%	0.7%	0.2%	0.7%	4.6%	0.0%	0.1%	0.0%	1.4%	0.0%	23.4%	38.3%
(85-02)	17.0%	1.1%	0.4%	10.1%	0.5%	0.1%	0.8%	4.2%	0.0%	0.1%	0.0%	1.5%	0.0%	24.6%	39.8%

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Appendix H. Time series of Abundance Indices from 1979 to 2004 for SEAK, NBC, and WCVI AABM fisheries as estimated by CTC Chinook Model calibration CLB0404. This time series is NOT the first post-season AI and is for trend analysis only (Figure 3.1, 3.2, and 3.3, Appendix J). For evaluation of overage and underage (Tables 3.3 and 3.4), use the first post-season AI in table 3.2 instead.

Year	SEAK	NBC	WCVI
1979	0.96	1.04	1.10
1980	1.03	0.98	0.97
1981	0.92	0.94	0.93
1982	1.09	1.04	1.01
1983	1.26	1.19	0.93
1984	1.42	1.31	1.01
1985	1.29	1.27	0.98
1986	1.48	1.45	1.02
1987	1.75	1.74	1.17
1988	2.16	1.86	1.11
1989	1.86	1.68	0.96
1990	1.88	1.64	0.87
1991	1.80	1.51	0.73
1992	1.65	1.40	0.77
1993	1.67	1.40	0.68
1994	1.57	1.25	0.50
1995	1.04	0.93	0.39
1996	0.92	0.91	0.46
1997	1.22	1.11	0.57
1998	1.19	1.01	0.54
1999	1.08	0.95	0.48
2000	0.98	0.94	0.48
2001	1.19	1.26	0.77
2002	1.86	1.76	1.15
2003	2.17	1.90	1.10
2004	1.88	1.67	0.90

Appendix I. Model estimates of the stock composition of the AABM, and other troll and sport fisheries for 2003 and the average from 1985 to 2002.

“Catch as Percent of Fishery” represents the stock composition of a specific fishery; “Catch as Percent of All Fisheries” represents the proportion of the total catch of a stock that is caught in a specific fishery; “Percent of Total Return” represents the proportion of total return (catch + escapement) caught in a specific fishery.

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Table I.1. Southeast Alaska All Gear.

Model Stock	2003	Average ( 1985 - 2002 )		
	Catch as Percent of Fishery	Catch as Percent of Fishery	Catch as Percent of All Fisheries	Catch as Percent of Total Return
WCVI Hatchery	14.30%	16.84%	41.95%	15.57%
Upriver Brights	21.21%	16.12%	25.78%	12.50%
North/Central BC	9.62%	16.03%	28.60%	10.50%
Oregon Coast	16.75%	13.30%	35.10%	15.44%
Fraser Early	6.44%	5.93%	26.78%	6.69%
Mid-Columbia River Brights	9.94%	4.58%	31.75%	12.17%
Alaska South SE	2.50%	4.36%	96.72%	35.87%
Upper Strait of Georgia	4.38%	4.25%	36.22%	19.97%
WCVI Natural	1.61%	4.00%	42.04%	15.67%
Washington Coastal Wild	1.66%	3.64%	17.52%	9.93%
Washington Coastal Hatchery	1.35%	2.83%	19.79%	9.21%
Willamette River Hatchery	1.83%	2.20%	12.82%	4.69%
Columbia River Summer	4.65%	2.11%	34.44%	13.22%
Fall Cowlitz Hatchery	1.53%	1.29%	6.51%	2.38%
Lewis River Wild	0.86%	0.89%	17.52%	6.77%
Lower Strait of Georgia Hatchery	0.40%	0.44%	3.53%	1.79%
Lower Strait of Georgia	0.11%	0.29%	4.04%	2.01%
Fraser Late	0.25%	0.23%	0.45%	0.14%
Puget Sound Hatchery Fingerling	0.13%	0.17%	0.47%	0.25%
Skagit Wild	0.07%	0.11%	4.10%	1.10%
Cowlitz Spring Hatchery	0.08%	0.08%	1.66%	0.82%
Lyons Ferry	0.19%	0.07%	8.21%	5.13%
Stillaguamish Wild	0.05%	0.07%	14.62%	5.52%
Nooksack Fall	0.02%	0.05%	0.14%	0.11%
Puget Sound Natural Fingerling	0.03%	0.05%	0.46%	0.25%
Snohomish Wild	0.03%	0.04%	3.25%	0.90%
Puget Sound Hatchery Yearling	0.01%	0.02%	0.47%	0.32%
Spring Creek Hatchery	0.00%	0.00%	0.00%	0.00%
Lower Bonneville Hatchery	0.00%	0.00%	0.00%	0.00%
Nooksack Spring	0.00%	0.00%	0.00%	0.00%

Table I.2. North B.C. Troll and Sport.

Model Stock	2003	Average ( 1985 - 2002 )		
	Catch as Percent of Fishery	Catch as Percent of Fishery	Catch as Percent of All Fisheries	Catch as Percent of Total Return
North/Central BC	47.55%	45.02%	58.62%	22.71%
Oregon Coast	10.51%	12.15%	25.55%	12.37%
Upriver Brights	8.42%	7.58%	9.96%	5.13%
WCVI Hatchery	4.25%	6.92%	12.22%	5.20%
Upper Strait of Georgia	7.19%	4.20%	28.68%	16.23%
Fraser Early	3.06%	3.54%	13.14%	4.02%
Washington Coastal Wild	1.11%	3.43%	12.67%	7.86%
Willamette River Hatchery	2.37%	3.27%	13.61%	5.90%
Washington Coastal Hatchery	0.93%	2.65%	14.67%	7.32%
Mid-Columbia River Brights	3.93%	1.96%	11.82%	4.95%
WCVI Natural	0.44%	1.65%	12.10%	5.18%
Columbia River Summer	4.26%	1.58%	20.63%	8.38%
Lower Strait of Georgia Hatchery	1.02%	1.12%	7.26%	3.79%
Fall Cowlitz Hatchery	1.47%	1.06%	3.92%	1.58%
Fraser Late	0.67%	0.87%	1.23%	0.44%
Lower Strait of Georgia Natural	0.30%	0.65%	7.20%	3.81%
Nooksack Fall	0.33%	0.43%	1.09%	0.80%
Skagit Wild	0.42%	0.41%	12.48%	3.46%
Lewis River Wild	0.32%	0.37%	5.13%	2.35%
Puget Sound Hatchery Fingerling	0.37%	0.30%	0.71%	0.39%
Cowlitz Spring Hatchery	0.29%	0.24%	3.77%	2.03%
Snohomish Wild	0.28%	0.20%	11.67%	3.48%
Alaska South SE	0.07%	0.11%	2.19%	0.81%
Puget Sound Hatchery Yearling	0.11%	0.09%	1.55%	1.04%
Puget Sound Natural Fingerling	0.07%	0.08%	0.62%	0.35%
Stillaguamish Wild	0.06%	0.04%	7.36%	2.89%
Lyons Ferry	0.13%	0.04%	5.41%	3.69%
Spring Creek Hatchery	0.05%	0.01%	0.05%	0.04%
Nooksack Spring	0.00%	0.00%	1.02%	0.41%
Lower Bonneville Hatchery	0.00%	0.00%	0.00%	0.00%

Table I.3. Central B.C. Troll.

Model Stock	2003	Average ( 1985 – 2002 )		
	Catch as Percent of Fishery	Catch as Percent of Fishery	Catch as Percent of All Fisheries	Catch as Percent of Total Return
Fraser Late	18.91%	21.18%	2.36%	1.27%
WCVI Hatchery	16.42%	17.28%	3.55%	1.54%
Upriver Brights	11.58%	8.26%	1.04%	0.58%
North/Central BC	5.43%	6.77%	1.26%	0.45%
Upper Strait of Georgia	8.80%	5.90%	4.01%	2.48%
WCVI Natural	1.47%	4.01%	3.49%	1.53%
Fraser Early	4.25%	3.58%	1.17%	0.39%
Washington Coastal Wild	1.76%	3.45%	1.32%	0.86%
Columbia River Summer	8.50%	3.35%	3.99%	1.88%
Lower Strait of Georgia Hatchery	2.35%	2.98%	1.71%	1.12%
Washington Coastal Hatchery	1.47%	2.72%	1.54%	0.79%
Mid-Columbia River Brights	5.28%	2.31%	1.23%	0.59%
Lower Bonneville Hatchery	2.79%	2.00%	0.90%	0.47%
Oregon Coast	2.20%	1.80%	0.39%	0.20%
Nooksack Fall	1.03%	1.73%	0.42%	0.35%
Lower Strait of Georgia Natural	0.73%	1.70%	1.63%	1.11%
Puget Sound Hatchery Fingerling	1.61%	1.42%	0.29%	0.20%
Skagit Wild	1.03%	1.05%	2.38%	0.95%
Lewis River Wild	0.73%	0.62%	0.76%	0.40%
Snohomish Wild	0.73%	0.51%	1.89%	0.97%
Puget Sound Natural Fingerling	0.29%	0.44%	0.29%	0.20%
Spring Creek Hatchery	1.32%	0.33%	0.11%	0.09%
Puget Sound Hatchery Yearling	0.29%	0.30%	0.42%	0.33%
Willamette River Hatchery	0.29%	0.27%	0.10%	0.05%
Cowlitz Spring Hatchery	0.15%	0.15%	0.21%	0.15%
Fall Cowlitz Hatchery	0.15%	0.14%	0.05%	0.03%
Stillaguamish Wild	0.15%	0.12%	1.92%	0.95%
Lyons Ferry	0.29%	0.08%	0.74%	0.55%
Nooksack Spring	0.00%	0.02%	0.35%	0.18%
Alaska South SE	0.00%	0.00%	0.01%	0.00%

Table I.4. WCVI Troll and Outside Sport.

Model Stock	2003	Average ( 1985–2002 )		
	Catch as Percent of Fishery	Catch as Percent of Fishery	Catch as Percent of All Fisheries	Catch as Percent of Total Return
Fraser Late	16.26%	20.45%	19.59%	9.69%
Upriver Brights	10.75%	10.56%	11.39%	5.99%
Puget Sound Hatchery Fingerling	8.45%	9.01%	15.42%	9.69%
Fall Cowlitz Hatchery	7.88%	7.94%	26.03%	12.21%
Lower Bonneville Hatchery	6.28%	7.04%	30.94%	15.00%
WCVI Hatchery	3.80%	6.48%	10.43%	4.61%
Spring Creek Hatchery	17.06%	6.17%	15.26%	12.10%
Nooksack Fall	2.66%	5.44%	11.06%	8.76%
Oregon Coast	5.47%	5.08%	9.32%	4.40%
Mid-Columbia River Brights	4.48%	3.10%	13.75%	6.10%
Puget Sound Natural Fingerling	1.83%	2.72%	14.74%	9.82%
Columbia River Summers	4.66%	2.26%	24.60%	10.92%
Washington Coastal Wild	0.90%	2.07%	6.45%	4.04%
Willamette River Hatchery	1.88%	1.92%	6.20%	2.89%
Washington Coastal Hatchery	0.80%	1.67%	7.77%	3.87%
WCVI Natural	0.31%	1.54%	10.40%	4.61%
Fraser Early	1.02%	1.30%	3.59%	1.10%
Skagit Wild	0.94%	0.93%	19.32%	6.71%
Lewis River Wild	0.74%	0.86%	11.27%	5.25%
Puget Sound Hatchery Yearling	0.61%	0.78%	9.60%	7.31%
Cowlitz Spring Hatchery	0.83%	0.60%	7.15%	4.75%
Snohomish Wild	0.57%	0.46%	16.36%	6.78%
Lower Strait of Georgia Hatchery	0.28%	0.41%	1.98%	1.18%
North/Central BC	0.25%	0.37%	0.47%	0.17%
Lyons Ferry	0.91%	0.31%	23.95%	16.60%
Lower Strait of Georgia Natural	0.09%	0.26%	1.96%	1.20%
Stillaguamish Wild	0.13%	0.11%	14.01%	6.41%
Upper Georgia Strait	0.09%	0.09%	0.58%	0.35%
Nooksack Spring	0.07%	0.05%	8.22%	3.56%
Alaska South SE	0.00%	0.00%	0.00%	0.00%

Table I.5. Georgia Strait Sport and Troll.

Model Stock	2003	Average ( 1985–2002 )		
	Catch as Percent of Fishery	Catch as Percent of Fishery	Catch as Percent of All Fisheries	Catch as Percent of Total Return
Fraser Late	50.85%	48.91%	43.71%	21.57%
Nooksack Fall	7.47%	10.65%	19.84%	15.28%
Lower Strait of Georgia Hatchery	9.19%	10.43%	47.56%	28.27%
Lower Strait of Georgia Natural	2.80%	6.63%	48.37%	29.91%
Puget Sound Hatchery Fingerling	6.07%	4.92%	8.00%	4.88%
Fraser Early	4.83%	3.92%	9.89%	2.77%
Upper Strait of Georgia	4.41%	2.54%	12.95%	7.44%
Puget Sound Hatchery Yearling	1.92%	1.79%	19.74%	14.65%
Puget Sound Natural Fingerling	1.25%	1.44%	7.31%	4.65%
Skagit Wild	1.29%	1.14%	22.81%	7.63%
Upriver Brights	1.30%	1.13%	1.08%	0.56%
Washington Coastal Wild	0.44%	0.92%	2.72%	1.65%
Lower Bonneville Hatchery	1.00%	0.81%	3.29%	1.40%
WCVI Hatchery	0.77%	0.79%	1.34%	0.48%
Washington Coastal Hatchery	0.41%	0.74%	3.20%	1.59%
Spring Creek Hatchery	2.50%	0.68%	1.53%	1.20%
Snohomish Wild	0.94%	0.57%	20.63%	7.64%
North/Central BC	0.37%	0.41%	0.52%	0.19%
Nooksack Spring	0.47%	0.39%	56.85%	25.50%
Mid-Columbia River Brights	0.55%	0.33%	1.38%	0.59%
Columbia River Summer	0.56%	0.28%	2.89%	1.22%
Stillaguamish Wild	0.24%	0.19%	22.11%	9.79%
WCVI Natural	0.09%	0.18%	1.32%	0.47%
Willamette River Hatchery	0.19%	0.12%	0.38%	0.16%
Cowlitz Spring Hatchery	0.05%	0.04%	0.43%	0.25%
Lewis River Wild	0.00%	0.02%	0.22%	0.12%
Fall Cowlitz Hatchery	0.00%	0.02%	0.04%	0.02%
Lyons Ferry	0.01%	0.00%	0.09%	0.06%
Oregon Coast	0.00%	0.00%	0.00%	0.00%
Alaska South SE	0.00%	0.00%	0.00%	0.00%

Table I.6. Washington/Oregon Troll and Sport.

Model Stock	2003	Average ( 1985–2002 )		
	Catch as Percent of Fishery	Catch as Percent of Fishery	Catch as Percent of All Fisheries	Catch as Percent of Total Return
Fraser Late	10.50%	20.95%	12.08%	5.37%
Spring Creek Hatchery	42.04%	20.68%	29.18%	23.44%
Fall Cowlitz Hatchery	16.53%	20.00%	39.07%	17.02%
Lower Bonneville Hatchery	8.59%	13.33%	37.41%	16.12%
Upriver Brights	3.86%	3.95%	2.54%	1.31%
Cowlitz Spring Hatchery	4.62%	3.85%	30.10%	17.10%
Puget Sound Hatchery Fingerling	2.52%	3.74%	3.65%	2.16%
Nooksack Fall	0.79%	2.24%	2.45%	1.90%
Oregon Coast	2.02%	2.10%	2.20%	0.99%
Willamette River Hatchery	1.81%	1.91%	3.84%	1.61%
Lewis River Wild	1.19%	1.41%	12.03%	4.73%
Washington Coastal Wild	0.38%	1.17%	1.88%	1.12%
Mid-Columbia River Brights	1.66%	1.16%	3.04%	1.29%
Puget Sound Natural Fingerling	0.54%	1.12%	3.46%	2.13%
Washington Coastal Hatchery	0.35%	0.96%	2.30%	1.09%
Columbia River Summer	0.98%	0.50%	3.22%	1.34%
Lyons Ferry	1.21%	0.46%	19.92%	13.39%
Fraser Early	0.22%	0.17%	0.34%	0.09%
PS Yearling	0.08%	0.13%	0.91%	0.65%
Alaska South SE	0.04%	0.08%	0.70%	0.25%
Lower Strait of Georgia Hatchery	0.03%	0.03%	0.11%	0.06%
WCVI Hatchery	0.01%	0.02%	0.03%	0.01%
Lower Strait of Georgia Natural	0.01%	0.02%	0.11%	0.06%
WCVI Wild	0.00%	0.01%	0.03%	0.01%
Skagit Wild	0.00%	0.00%	0.03%	0.01%
Snohomish Wild	0.00%	0.00%	0.03%	0.01%
Upper Strait of Georgia	0.00%	0.00%	0.00%	0.00%
Stillaguamish Wild	0.00%	0.00%	0.00%	0.00%
North/Central BC	0.00%	0.00%	0.00%	0.00%
Nooksack Spring	0.00%	0.00%	0.00%	0.00%



Appendix J. Abundance indices in total and by model stock for AABM fisheries, from Calibration #0404.

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Table J.1. Abundance indices (AIs) for the Southeast Alaska troll fishery by model stock and year (stock groups 1-15), from CLB 0404.

Numbers represent the model stock contribution to the total AI: the summation across all 30 stocks and stock groups equals the AI total for each calendar year.

Year	Alaska South SE	North Central	Fraser Early	Fraser Late	WCVI Hatchery	WCVI Natural	Georg. St. Upper	Georg. St. Lwr. Nat.	Georg. St. Lwr. Hat.	Nooksack Fall	Pug. Snd. Fingerling	Pug. Snd. Nat. F.	Pug. Snd. Yearling	Nooksack Spring	Skagit Wild	AI Total
1979	0.03	0.13	0.06	0.00	0.05	0.07	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96
1980	0.04	0.13	0.05	0.00	0.11	0.15	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.03
1981	0.05	0.14	0.04	0.00	0.09	0.12	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92
1982	0.05	0.15	0.04	0.00	0.20	0.21	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09
1983	0.06	0.17	0.04	0.00	0.31	0.15	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.26
1984	0.06	0.19	0.05	0.00	0.29	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.42
1985	0.06	0.21	0.07	0.00	0.16	0.06	0.05	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.29
1986	0.07	0.23	0.08	0.00	0.12	0.04	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48
1987	0.08	0.24	0.07	0.00	0.10	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
1988	0.07	0.25	0.07	0.00	0.22	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.16
1989	0.05	0.27	0.07	0.00	0.33	0.07	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.86
1990	0.03	0.27	0.07	0.00	0.50	0.09	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.88
1991	0.04	0.28	0.06	0.00	0.61	0.12	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80
1992	0.04	0.27	0.06	0.00	0.57	0.13	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.65
1993	0.04	0.25	0.06	0.00	0.54	0.14	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67
1994	0.03	0.23	0.07	0.00	0.43	0.11	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.57
1995	0.03	0.23	0.07	0.00	0.16	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04
1996	0.03	0.23	0.08	0.00	0.06	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92
1997	0.03	0.24	0.10	0.00	0.18	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.22
1998	0.04	0.23	0.09	0.00	0.28	0.07	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.19
1999	0.05	0.25	0.07	0.00	0.14	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.08
2000	0.05	0.27	0.07	0.00	0.05	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98
2001	0.06	0.26	0.08	0.00	0.07	0.01	0.05	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.19
2002	0.05	0.26	0.10	0.00	0.21	0.04	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.86
2003	0.05	0.26	0.11	0.00	0.31	0.03	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.17
2004	0.04	0.25	0.12	0.00	0.28	0.02	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.88
Average	0.05	0.23	0.07	0.00	0.24	0.08	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.43

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Table J.1. Page 2 of 2 (stock groups 16-30).

Year	Stillaguamish Wild	Snohomish Wild	WA Co. Hat.	Upriver Brights	Spring Ck. Hat.	L. Bonn. Hatchery	Fall Cow. Hatchery	Lewis R. Wild	Willamette R. Hat	Spr. Cow. Hatchery	Col. R. Summer	Oregon Coast	WA Co. Wild	Lyons Ferry	Mid. Col. R. Brights	AI Total
1979	0.00	0.00	0.03	0.18	0.00	0.00	0.03	0.02	0.02	0.00	0.04	0.20	0.03	0.00	0.00	0.96
1980	0.00	0.00	0.03	0.14	0.00	0.00	0.04	0.02	0.03	0.00	0.04	0.15	0.04	0.00	0.00	1.03
1981	0.00	0.00	0.02	0.11	0.00	0.00	0.03	0.02	0.03	0.01	0.03	0.13	0.04	0.00	0.01	0.92
1982	0.00	0.00	0.02	0.06	0.00	0.00	0.03	0.01	0.03	0.00	0.03	0.14	0.04	0.00	0.01	1.09
1983	0.00	0.00	0.02	0.09	0.00	0.00	0.04	0.01	0.04	0.00	0.03	0.20	0.04	0.00	0.02	1.26
1984	0.00	0.00	0.02	0.21	0.00	0.00	0.03	0.01	0.04	0.00	0.03	0.27	0.04	0.00	0.02	1.42
1985	0.00	0.00	0.02	0.25	0.00	0.00	0.03	0.01	0.03	0.00	0.03	0.24	0.04	0.00	0.01	1.29
1986	0.00	0.00	0.03	0.36	0.00	0.00	0.03	0.01	0.04	0.00	0.03	0.29	0.05	0.00	0.03	1.48
1987	0.00	0.00	0.04	0.51	0.00	0.00	0.03	0.02	0.05	0.01	0.03	0.34	0.06	0.00	0.08	1.75
1988	0.00	0.00	0.05	0.55	0.00	0.00	0.15	0.04	0.07	0.00	0.03	0.31	0.07	0.00	0.14	2.16
1989	0.00	0.00	0.06	0.34	0.00	0.00	0.05	0.04	0.06	0.00	0.03	0.24	0.08	0.00	0.12	1.86
1990	0.00	0.00	0.06	0.26	0.00	0.00	0.02	0.02	0.07	0.00	0.03	0.25	0.08	0.00	0.08	1.88
1991	0.00	0.00	0.05	0.13	0.00	0.00	0.01	0.01	0.05	0.00	0.02	0.24	0.06	0.00	0.05	1.80
1992	0.00	0.00	0.05	0.10	0.00	0.00	0.02	0.01	0.03	0.00	0.02	0.20	0.05	0.00	0.04	1.65
1993	0.00	0.00	0.06	0.18	0.00	0.00	0.02	0.01	0.03	0.00	0.02	0.19	0.05	0.00	0.05	1.67
1994	0.00	0.00	0.05	0.22	0.00	0.00	0.01	0.01	0.03	0.00	0.02	0.24	0.05	0.00	0.05	1.57
1995	0.00	0.00	0.04	0.13	0.00	0.00	0.01	0.02	0.02	0.00	0.02	0.17	0.04	0.00	0.04	1.04
1996	0.00	0.00	0.04	0.14	0.00	0.00	0.02	0.01	0.02	0.00	0.02	0.13	0.04	0.00	0.06	0.92
1997	0.00	0.00	0.03	0.19	0.00	0.00	0.01	0.01	0.02	0.00	0.02	0.15	0.05	0.00	0.09	1.22
1998	0.00	0.00	0.02	0.12	0.00	0.00	0.00	0.01	0.02	0.00	0.02	0.14	0.04	0.00	0.06	1.19
1999	0.00	0.00	0.02	0.22	0.00	0.00	0.01	0.00	0.02	0.00	0.03	0.13	0.03	0.00	0.05	1.08
2000	0.00	0.00	0.02	0.18	0.00	0.00	0.01	0.01	0.03	0.00	0.04	0.12	0.03	0.00	0.05	0.98
2001	0.00	0.00	0.02	0.21	0.00	0.00	0.01	0.01	0.03	0.00	0.07	0.19	0.03	0.00	0.07	1.19
2002	0.00	0.00	0.02	0.35	0.00	0.00	0.03	0.02	0.08	0.00	0.11	0.32	0.03	0.00	0.16	1.86
2003	0.00	0.00	0.02	0.46	0.00	0.00	0.05	0.02	0.04	0.00	0.11	0.36	0.03	0.00	0.22	2.17
2004	0.00	0.00	0.03	0.31	0.00	0.00	0.02	0.02	0.06	0.00	0.11	0.33	0.03	0.00	0.13	1.88
Average	0.00	0.00	0.03	0.23	0.00	0.00	0.03	0.01	0.04	0.00	0.04	0.22	0.04	0.00	0.06	1.43

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Table J.2. Abundance indices (AIs) for the Northern BC troll fishery by stock and year (stock groups 1-15 ), from CLB 0404.

Numbers represent the model stock contribution to the total AI: the summation across all 30 stocks and stock groups equals the AI total for each calendar year.

Year	Alaska South SE	North Central	Fraser Early	Fraser Late	WCVI Hatchery	WCVI Natural	Georg. St. Upper	Georg. St. Lwr. Nat.	Georg. St. Lwr. Hat.	Nooksack Fall	Pug. Snd. Fingerling	Pug. Snd. Nat. F.	Pug. Snd. Yearling	Nooksack Spring	Skagit Wild	AI Total
1979	0.00	0.09	0.07	0.02	0.04	0.06	0.06	0.02	0.02	0.01	0.00	0.00	0.00	0.02	0.01	1.04
1980	0.00	0.09	0.06	0.01	0.06	0.08	0.06	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.98
1981	0.00	0.09	0.05	0.02	0.06	0.08	0.06	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.94
1982	0.00	0.10	0.05	0.02	0.13	0.11	0.05	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.01	1.04
1983	0.00	0.11	0.05	0.02	0.17	0.08	0.04	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	1.19
1984	0.00	0.13	0.06	0.02	0.15	0.05	0.05	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.01	1.31
1985	0.00	0.14	0.08	0.02	0.09	0.03	0.07	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.01	1.27
1986	0.00	0.15	0.09	0.01	0.06	0.02	0.06	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.01	1.45
1987	0.00	0.16	0.09	0.01	0.07	0.02	0.07	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	1.74
1988	0.00	0.17	0.09	0.01	0.13	0.03	0.06	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	1.86
1989	0.00	0.18	0.08	0.01	0.21	0.04	0.07	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	1.68
1990	0.00	0.18	0.08	0.01	0.29	0.06	0.05	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	1.64
1991	0.00	0.18	0.08	0.01	0.34	0.07	0.05	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.51
1992	0.00	0.18	0.08	0.01	0.33	0.08	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.40
1993	0.00	0.17	0.08	0.01	0.30	0.08	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.40
1994	0.00	0.16	0.08	0.00	0.21	0.05	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.25
1995	0.00	0.15	0.09	0.00	0.08	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.93
1996	0.00	0.15	0.10	0.01	0.05	0.01	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.91
1997	0.00	0.17	0.11	0.01	0.12	0.03	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.11
1998	0.00	0.16	0.11	0.01	0.14	0.03	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.01
1999	0.00	0.17	0.09	0.01	0.07	0.01	0.05	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.95
2000	0.00	0.17	0.09	0.01	0.03	0.00	0.06	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.94
2001	0.00	0.18	0.10	0.01	0.05	0.01	0.07	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	1.26
2002	0.00	0.18	0.12	0.01	0.13	0.02	0.08	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	1.76
2003	0.00	0.18	0.13	0.01	0.17	0.02	0.11	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	1.90
2004	0.00	0.18	0.14	0.01	0.17	0.01	0.12	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	1.67
Average	0.00	0.15	0.09	0.01	0.14	0.04	0.06	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	1.31

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Table J.2. Page 2 of 2 (stock groups 16-30).

Year	Stillaguamish Wild	Snohomish Wild	WA Co. Hatchery	Upriver Brights	Spring Ck. Hat.	L. Bonn. Hatchery	Fall Cow. Hatchery	Lewis R. Wild	Willamette R. Hat.	Spr. Cow. Hatchery	Col. R. Summer	Oregon Coast	WA Co. Wild	Lyons Ferry	Mid. Col. R. Brights	AI Total
1979	0.00	0.01	0.04	0.12	0.00	0.00	0.02	0.01	0.06	0.01	0.02	0.27	0.06	0.00	0.00	1.04
1980	0.00	0.01	0.04	0.09	0.00	0.00	0.02	0.02	0.07	0.01	0.02	0.21	0.06	0.00	0.00	0.98
1981	0.00	0.00	0.04	0.07	0.00	0.00	0.02	0.01	0.08	0.01	0.02	0.19	0.06	0.00	0.01	0.94
1982	0.00	0.00	0.03	0.05	0.00	0.00	0.02	0.01	0.09	0.01	0.02	0.23	0.06	0.00	0.01	1.04
1983	0.00	0.00	0.03	0.08	0.00	0.00	0.02	0.01	0.10	0.01	0.02	0.31	0.06	0.00	0.02	1.19
1984	0.00	0.00	0.03	0.15	0.00	0.00	0.02	0.01	0.09	0.01	0.02	0.37	0.06	0.00	0.01	1.31
1985	0.00	0.00	0.04	0.17	0.00	0.00	0.02	0.01	0.08	0.00	0.02	0.37	0.07	0.00	0.01	1.27
1986	0.00	0.00	0.05	0.26	0.00	0.00	0.02	0.01	0.11	0.01	0.02	0.41	0.09	0.00	0.02	1.45
1987	0.00	0.00	0.07	0.35	0.00	0.00	0.04	0.02	0.14	0.01	0.02	0.46	0.11	0.00	0.06	1.74
1988	0.00	0.00	0.09	0.35	0.00	0.00	0.09	0.02	0.14	0.01	0.02	0.39	0.13	0.00	0.10	1.86
1989	0.00	0.00	0.10	0.21	0.00	0.00	0.02	0.01	0.14	0.01	0.02	0.32	0.13	0.00	0.08	1.68
1990	0.00	0.00	0.09	0.16	0.00	0.00	0.01	0.01	0.14	0.01	0.02	0.33	0.12	0.00	0.05	1.64
1991	0.00	0.00	0.09	0.08	0.00	0.00	0.01	0.01	0.10	0.00	0.01	0.29	0.10	0.00	0.03	1.51
1992	0.00	0.00	0.09	0.08	0.00	0.00	0.01	0.01	0.07	0.01	0.01	0.27	0.09	0.00	0.03	1.40
1993	0.00	0.00	0.09	0.13	0.00	0.00	0.01	0.00	0.06	0.00	0.01	0.29	0.08	0.00	0.03	1.40
1994	0.00	0.00	0.08	0.14	0.00	0.00	0.01	0.01	0.05	0.00	0.01	0.29	0.08	0.00	0.03	1.25
1995	0.00	0.00	0.07	0.08	0.00	0.00	0.01	0.01	0.04	0.00	0.01	0.22	0.07	0.00	0.03	0.93
1996	0.00	0.00	0.06	0.10	0.00	0.00	0.01	0.01	0.04	0.00	0.01	0.19	0.07	0.00	0.04	0.91
1997	0.00	0.00	0.05	0.13	0.00	0.00	0.01	0.00	0.05	0.00	0.01	0.21	0.07	0.00	0.06	1.11
1998	0.00	0.00	0.03	0.09	0.00	0.00	0.00	0.00	0.05	0.00	0.02	0.19	0.06	0.00	0.04	1.01
1999	0.00	0.00	0.03	0.15	0.00	0.00	0.01	0.00	0.06	0.00	0.03	0.16	0.04	0.00	0.03	0.95
2000	0.00	0.00	0.03	0.12	0.00	0.00	0.00	0.00	0.07	0.00	0.04	0.20	0.04	0.00	0.03	0.94
2001	0.00	0.00	0.03	0.16	0.00	0.00	0.01	0.01	0.12	0.00	0.05	0.31	0.05	0.00	0.06	1.26
2002	0.00	0.00	0.04	0.26	0.00	0.00	0.02	0.01	0.15	0.00	0.07	0.46	0.05	0.00	0.12	1.76
2003	0.00	0.00	0.04	0.30	0.00	0.00	0.02	0.01	0.12	0.01	0.08	0.47	0.05	0.01	0.14	1.90
2004	0.00	0.01	0.04	0.20	0.00	0.00	0.01	0.01	0.13	0.01	0.07	0.42	0.04	0.01	0.08	1.67
Average	0.00	0.00	0.06	0.16	0.00	0.00	0.02	0.01	0.09	0.00	0.03	0.30	0.07	0.00	0.04	1.31

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Table J.3. Abundance indices (AIs) for the WCVI troll fishery by stock and year (stock groups 1-15 ), from CLB 0404.

Numbers represent the portion of the AI total estimated for each model stock; the summation across all 30 stock groups equals the AI total for each.

Year	Alaska South SE	North Central	Fraser Early	Fraser Late	WCVI Hatchery	WCVI Natural	Georg. St. Upper	Georg. St. Lwr. Nat.	Georg. St. Lwr. Hat.	Nooksack Fall	Pug. Snd. Fingerling	Pug. Snd. Nat. F.	Pug. Snd. Year.	Nooksack Spring	Skagit Wild	AI Total
1979	0.00	0.00	0.01	0.28	0.01	0.02	0.00	0.01	0.01	0.08	0.04	0.03	0.02	0.00	0.02	1.10
1980	0.00	0.00	0.01	0.21	0.02	0.02	0.00	0.01	0.01	0.09	0.05	0.02	0.03	0.00	0.02	0.97
1981	0.00	0.00	0.00	0.25	0.02	0.03	0.00	0.00	0.01	0.09	0.05	0.02	0.03	0.00	0.02	0.93
1982	0.00	0.00	0.00	0.26	0.04	0.03	0.00	0.00	0.01	0.09	0.05	0.02	0.02	0.00	0.01	1.01
1983	0.00	0.00	0.01	0.24	0.05	0.02	0.00	0.00	0.00	0.10	0.06	0.03	0.02	0.00	0.01	0.93
1984	0.00	0.00	0.01	0.27	0.04	0.01	0.00	0.00	0.01	0.13	0.06	0.03	0.02	0.00	0.02	1.01
1985	0.00	0.00	0.01	0.29	0.03	0.01	0.00	0.00	0.01	0.11	0.05	0.02	0.01	0.00	0.01	0.98
1986	0.00	0.00	0.01	0.24	0.02	0.01	0.00	0.00	0.00	0.09	0.06	0.02	0.01	0.00	0.01	1.02
1987	0.00	0.00	0.01	0.12	0.02	0.01	0.00	0.00	0.00	0.06	0.06	0.03	0.01	0.00	0.01	1.17
1988	0.00	0.00	0.01	0.08	0.04	0.01	0.00	0.00	0.00	0.06	0.07	0.03	0.01	0.00	0.01	1.11
1989	0.00	0.00	0.01	0.18	0.06	0.01	0.00	0.00	0.00	0.07	0.08	0.03	0.01	0.00	0.01	0.96
1990	0.00	0.00	0.01	0.22	0.09	0.02	0.00	0.00	0.00	0.07	0.07	0.03	0.01	0.00	0.01	0.87
1991	0.00	0.00	0.01	0.16	0.09	0.02	0.00	0.00	0.00	0.05	0.05	0.02	0.00	0.00	0.01	0.73
1992	0.00	0.00	0.01	0.22	0.09	0.02	0.00	0.00	0.00	0.03	0.04	0.02	0.00	0.00	0.00	0.77
1993	0.00	0.00	0.01	0.17	0.08	0.02	0.00	0.00	0.00	0.03	0.05	0.02	0.00	0.00	0.00	0.68
1994	0.00	0.00	0.01	0.10	0.05	0.01	0.00	0.00	0.00	0.02	0.06	0.02	0.00	0.00	0.00	0.50
1995	0.00	0.00	0.01	0.05	0.01	0.00	0.00	0.00	0.00	0.02	0.07	0.02	0.00	0.00	0.00	0.39
1996	0.00	0.00	0.01	0.06	0.02	0.00	0.00	0.00	0.00	0.02	0.06	0.01	0.00	0.00	0.01	0.46
1997	0.00	0.00	0.01	0.17	0.04	0.01	0.00	0.00	0.00	0.02	0.06	0.01	0.00	0.00	0.01	0.57
1998	0.00	0.00	0.01	0.18	0.04	0.01	0.00	0.00	0.00	0.02	0.06	0.01	0.00	0.00	0.00	0.54
1999	0.00	0.00	0.01	0.11	0.01	0.00	0.00	0.00	0.00	0.02	0.07	0.01	0.00	0.00	0.01	0.48
2000	0.00	0.00	0.01	0.11	0.01	0.00	0.00	0.00	0.00	0.02	0.07	0.01	0.00	0.00	0.01	0.48
2001	0.00	0.00	0.01	0.11	0.02	0.00	0.00	0.00	0.00	0.03	0.07	0.02	0.00	0.00	0.01	0.77
2002	0.00	0.00	0.01	0.18	0.04	0.01	0.00	0.00	0.00	0.03	0.08	0.02	0.01	0.00	0.01	1.15
2003	0.00	0.00	0.01	0.18	0.05	0.00	0.00	0.00	0.00	0.03	0.10	0.02	0.01	0.00	0.01	1.10
2004	0.00	0.00	0.01	0.09	0.05	0.00	0.00	0.00	0.00	0.03	0.11	0.02	0.01	0.00	0.01	0.90
Average	0.00	0.00	0.01	0.17	0.04	0.01	0.00	0.00	0.00	0.06	0.06	0.02	0.01	0.00	0.01	0.83

-continued-

Table J.3. Page 2 of 2 (stock groups 16-30).

Year	Stillaguamish Wild	Snohomish Wild	WA Co. Hatchery	Upriver Brights	Spring Ck. Hat.	L. Bonn. Hatchery	Fall Cow. Hatchery	Lewis R. Wild	Willamette R. Hat.	Spr. Cow. Hatchery	Col. R. Summer	Oregon Coastal	WA Co. Wild	Lyons Ferry	Mid. Col. R. Brights	AI Total
1979	0.00	0.01	0.01	0.05	0.16	0.13	0.08	0.01	0.01	0.01	0.02	0.04	0.01	0.00	0.00	1.10
1980	0.00	0.01	0.01	0.04	0.13	0.10	0.08	0.01	0.01	0.02	0.02	0.03	0.01	0.00	0.00	0.97
1981	0.00	0.01	0.01	0.03	0.12	0.09	0.07	0.01	0.01	0.01	0.02	0.03	0.01	0.00	0.00	0.93
1982	0.00	0.01	0.01	0.03	0.13	0.10	0.09	0.01	0.02	0.01	0.01	0.03	0.01	0.00	0.01	1.01
1983	0.00	0.01	0.01	0.05	0.04	0.08	0.08	0.01	0.02	0.01	0.02	0.05	0.01	0.00	0.01	0.93
1984	0.00	0.01	0.01	0.08	0.05	0.08	0.07	0.01	0.02	0.01	0.02	0.05	0.01	0.00	0.00	1.01
1985	0.00	0.01	0.01	0.10	0.03	0.08	0.08	0.01	0.02	0.01	0.01	0.05	0.01	0.00	0.00	0.98
1986	0.00	0.00	0.01	0.15	0.02	0.12	0.09	0.01	0.02	0.01	0.02	0.06	0.02	0.00	0.02	1.02
1987	0.00	0.00	0.02	0.18	0.01	0.25	0.18	0.02	0.03	0.01	0.02	0.06	0.02	0.00	0.04	1.17
1988	0.00	0.00	0.02	0.14	0.03	0.13	0.27	0.02	0.03	0.01	0.02	0.05	0.03	0.00	0.04	1.11
1989	0.00	0.00	0.02	0.09	0.04	0.05	0.13	0.01	0.03	0.01	0.02	0.04	0.03	0.00	0.03	0.96
1990	0.00	0.00	0.02	0.06	0.04	0.03	0.06	0.01	0.03	0.01	0.01	0.04	0.02	0.00	0.02	0.87
1991	0.00	0.00	0.02	0.04	0.05	0.04	0.04	0.01	0.02	0.01	0.01	0.04	0.02	0.00	0.01	0.73
1992	0.00	0.00	0.02	0.05	0.04	0.06	0.05	0.01	0.01	0.01	0.01	0.04	0.02	0.00	0.01	0.77
1993	0.00	0.00	0.02	0.06	0.02	0.03	0.04	0.00	0.01	0.00	0.01	0.04	0.02	0.00	0.02	0.68
1994	0.00	0.00	0.01	0.05	0.02	0.02	0.02	0.01	0.01	0.00	0.01	0.04	0.01	0.00	0.01	0.50
1995	0.00	0.00	0.01	0.04	0.02	0.02	0.03	0.00	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.39
1996	0.00	0.00	0.01	0.06	0.03	0.02	0.04	0.00	0.01	0.00	0.01	0.03	0.01	0.00	0.02	0.46
1997	0.00	0.00	0.01	0.05	0.02	0.02	0.03	0.00	0.01	0.00	0.01	0.03	0.01	0.00	0.03	0.57
1998	0.00	0.00	0.01	0.05	0.02	0.01	0.02	0.00	0.01	0.00	0.01	0.03	0.01	0.00	0.02	0.54
1999	0.00	0.00	0.01	0.07	0.03	0.01	0.02	0.00	0.01	0.00	0.02	0.02	0.01	0.00	0.02	0.48
2000	0.00	0.00	0.01	0.06	0.02	0.02	0.02	0.01	0.01	0.00	0.03	0.03	0.01	0.00	0.02	0.48
2001	0.00	0.00	0.01	0.09	0.11	0.07	0.04	0.01	0.03	0.00	0.05	0.05	0.01	0.01	0.04	0.77
2002	0.00	0.00	0.01	0.14	0.19	0.08	0.08	0.01	0.03	0.01	0.06	0.06	0.01	0.01	0.06	1.15
2003	0.00	0.01	0.01	0.13	0.15	0.06	0.10	0.01	0.02	0.01	0.06	0.06	0.01	0.01	0.06	1.10
2004	0.00	0.01	0.01	0.08	0.17	0.02	0.06	0.01	0.02	0.01	0.06	0.05	0.01	0.01	0.03	0.90
Average	0.00	0.00	0.01	0.08	0.07	0.06	0.07	0.01	0.02	0.01	0.02	0.04	0.01	0.00	0.02	0.83

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Appendix K. Fishery indices by stock, age and fishery, 1975–2002.

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Table K.1. Alaska troll Stratified Proportion Fishery Index (SPFI) values as landed catch.

YEAR	SPFI	WIN/SPR	JUNE IN	JUNE OUT	JULY IN	JULY OUT	FALL
1979	0.92	1.17	0.65	1.14	0.56	0.86	0.86
1980	1.10	0.63	1.18	0.86	0.98	1.33	1.33
1981	1.12	1.23	0.67	1.07	1.30	1.18	1.18
1982	0.85	0.97	1.51	0.93	1.15	0.63	0.63
1983	0.96	0.92	0.91	0.69	1.01	1.23	1.23
1984	0.66	0.34	1.49	1.05	0.35	0.50	0.50
1985	0.68	0.41	1.02	0.65	0.76	0.78	0.78
1986	0.50	0.38	0.58	0.18	0.68	1.27	1.27
1987	0.50	0.53	0.82	0.20	1.51	0.65	0.65
1988	0.43	1.26	0.16	0.00	1.43	0.66	0.66
1989	0.52	0.77	0.84	0.13	0.67	0.56	0.56
1990	0.77	0.61	1.31	0.12	1.56	1.17	1.17
1991	0.64	1.35	1.39	0.23	0.71	0.73	0.73
1992	0.43	0.95	0.84	0.08	0.29	0.38	0.38
1993	0.47	0.69	0.35	0.02	0.38	0.86	0.86
1994	0.49	0.63	0.14	0.04	0.38	0.69	0.69
1995	0.52	0.45	0.40	0.06	1.17	0.84	0.84
1996	0.45	0.53	0.82	0.10	0.61	0.57	0.57
1997	0.89	0.60	0.71	0.18	0.21	1.57	1.57
1998	0.50	0.77	0.19	0.06	0.72	0.98	0.98
1999	0.69	0.78	0.34	0.14	0.17	1.05	1.05
2000	0.52	0.86	0.11	0.08	0.15	1.46	1.46
2001	0.33	0.53	0.14	0.07	0.17	0.55	0.55
2002	0.43	0.36	0.10	0.06	0.13	1.01	1.01
ER Stock Identifiers:							
Alaska Southeast	Age 4	Age 5	Age 6				
Quinsam	Age 4	Age 5					
Robertson Creek	Age 3	Age 4	Age 5				
Salmon River Hatchery	Age 4	Age 5					
Columbia Upriver Brights	Age 4	Age 5					
Willamette Spring Hatchery	Age 4	Age 5					

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Table K.2. Alaska troll Stratified Proportion Fishery Index (SPFI) values as total mortality.

YEAR	SPFI	WIN/SPR	JUNE IN	JUNE OUT	JULY IN	JULY OUT	FALL
1979	0.90	1.13	0.64	1.14	0.54	0.83	0.83
1980	1.01	0.60	1.08	0.82	0.81	1.19	1.19
1981	1.13	1.24	0.68	1.10	1.17	1.20	1.20
1982	0.96	1.03	1.60	0.95	1.48	0.77	0.77
1983	1.09	0.90	0.97	0.70	0.88	1.66	1.66
1984	0.65	0.35	1.47	1.05	0.34	0.49	0.49
1985	0.80	0.43	0.99	0.64	0.72	1.07	1.07
1986	0.59	0.43	0.60	0.18	0.76	1.60	1.60
1987	0.59	0.55	0.76	0.19	2.32	0.78	0.78
1988	0.45	1.20	0.19	0.01	1.65	0.67	0.67
1989	0.56	0.74	0.80	0.13	0.92	0.60	0.60
1990	1.05	0.76	1.41	0.14	1.50	1.72	1.72
1991	0.68	1.28	1.29	0.22	0.99	0.77	0.77
1992	0.51	0.91	0.78	0.07	0.32	0.57	0.57
1993	0.54	0.66	0.32	0.02	0.41	1.06	1.06
1994	0.60	0.61	0.18	0.04	0.52	0.92	0.92
1995	0.63	0.46	0.42	0.06	1.21	1.04	1.04
1996	0.54	0.54	0.78	0.11	0.66	0.71	0.71
1997	0.89	0.59	0.66	0.17	0.24	1.54	1.54
1998	0.48	0.75	0.19	0.06	0.62	0.94	0.94
1999	0.73	0.77	0.32	0.14	0.21	1.12	1.12
2000	0.54	0.87	0.12	0.09	0.20	1.54	1.54
2001	0.35	0.51	0.13	0.06	0.24	0.60	0.60
2002	0.41	0.33	0.09	0.05	0.13	0.96	0.96
ER Stock Identifiers:							
Alaska Southeast	Age 4	Age 5	Age 6				
Quinsam	Age 4	Age 5					
Robertson Creek	Age 3	Age 4	Age 5				
Salmon River Hatchery	Age 4	Age 5					
Columbia Upriver Brights	Age 4	Age 5					
Willamette Spring Hatchery	Age 4	Age 5					

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Table K.3. Landed catch exploitation rate indices by stock and age in the NBC troll fishery. Base period is 1979-1982.

Year	REPORTED CATCH EXPLOITATION RATE													Fishery
	AKS Age 4	QUI Age 3	QUI Age 4	RBT Age 3	RBT Age 4	RBT Age 5	SRH Age 3	SRH Age 4	SRH Age 5	URB Age 3	URB Age 4	URB Age 5	WSH Age 4	
1979	NA	0.533	NA	1.214	0.825	0.685	NA	NA	NA	0.46	1.181	NA	0.777	0.823
1980	NA	0.742	1.004	1.118	0.848	0.718	0.979	NA	NA	1.118	0.987	1.276	1.429	0.968
1981	NA	1.941	1.423	0.753	1.043	1.596	1.587	1.113	NA	NA	1.133	1.308	1.388	1.314
1982	1	0.784	0.573	0.915	1.284	NA	0.433	0.887	1	1.422	0.699	0.416	0.406	0.808
1983	1.797	1.124	1.476	1.037	0.708	0.546	0.424	0.62	1.232	1.957	1.32	NA	0.808	0.879
1984	1.202	0.225	0.461	0.406	1.357	1.861	NA	0.605	2.523	1.032	2.005	NA	0.303	1.197
1985	0.772	0.215	0.521	0.887	1.906	NA	0.433	NA	2.733	1.406	1.748	1.67	0.132	1.295
1986	0.746	0.832	0.76	NA	1.043	NA	0.091	0.439	NA	1.128	1.363	1.651	NA	0.792
1987	0.63	0.311	0.564	0.487	NA	NA	0.162	0.372	2.28	1.215	1.954	2.878	0.34	1.001
1988	2.057	0.166	0.628	0.331	0.618	NA	NA	0.299	0.748	0.373	1.061	1.941	0.475	0.652
1989	0.971	0.41	0.411	0.361	0.88	0.955	0.107	0.258	2.139	NA	1.017	4.208	0.223	0.942
1990	2.013	0.313	0.931	0.313	0.711	0.512	0.139	0.233	1.985	NA	1.221	2.374	0.184	0.775
1991	0.676	0.351	0.578	0.385	0.75	1.042	0.108	0.386	2.053	NA	NA	NA	0.167	0.722
1992	0.145	NA	1.637	0.303	0.586	0.633	0.105	0.242	0.961	NA	NA	NA	0.061	0.565
1993	0.3	NA	NA	0.178	0.615	0.763	0.106	0.569	2.36	0	1.131	NA	0.125	0.767
1994	0.062	NA	NA	0.332	0.744	0.821	0.172	0.51	2.15	NA	0.961	2.025	0.071	0.862
1995	0	NA	NA	NA	0.413	0.241	0.099	0	0.856	NA	NA	0.562	0.11	0.295
1996	0	NA	NA	0	NA	NA	0	0	0	0	0	NA	0	0
1997	NA	0.354	0.347	0.221	0.415	NA	0.118	0.111	0.447	NA	0.656	NA	0.163	0.295
1998	0	0	0	NA	0.58	NA	0.071	0.527	1.304	0	NA	1.619	0	0.54
1999	0	0.097	0.098	NA	0.213	0.309	0.051	0.111	0.244	NA	0.684	NA	0	0.198
2000	0	0	0.038	NA	NA	NA	0.022	0.186	0.28	NA	0	0	0.005	0.1
2001	0	0	0.013	0	NA	NA	0.024	0.097	0.532	0	0	NA	0.011	0.112
2002	0.041	0	0.079	0	0.402	NA	0.131	0.275	1.403	0.023	0.151	NA	0.085	0.342

Stock Identifiers

AKS = ALASKA SPRING, QUI = QUINSAM, RBT = ROBERTSON CREEK, SRH = SALMON RIVER HATCHERY  
 URB = COLUMBIA UPRIVER BRIGHT, WSH = WILLAMETTE SPRING

Table K.4. Total mortality exploitation rate indices by stock and age in the NBC troll fishery. Base period is 1979-1982.

TOTAL MORTALITY EXPLOITATION RATE INDEX														
Year	AKS Age 4	QUI Age 3	QUI Age 4	RBT Age 3	RBT Age 4	RBT Age 5	SRH Age 3	SRH Age 4	SRH Age 5	URB Age 3	URB Age 4	URB Age 5	WSH Age 4	Fishery
1979	NA	0.564	NA	1.244	0.838	0.703	NA	NA	NA	0.576	1.191	NA	0.752	0.84
1980	NA	0.777	0.989	1.031	0.844	0.707	0.967	NA	NA	1.09	0.991	1.272	1.369	0.961
1981	NA	1.89	1.43	0.759	1.037	1.591	1.513	1.11	NA	NA	1.138	1.32	1.399	1.307
1982	1	0.768	0.581	0.965	1.281	NA	0.521	0.89	1	1.334	0.68	0.408	0.48	0.814
1983	1.586	1.001	1.429	0.911	0.694	0.554	0.489	0.626	1.232	1.653	1.284	NA	0.705	0.852
1984	1.019	0.212	0.453	0.452	1.324	1.866	NA	0.61	2.567	0.925	1.986	NA	0.265	1.147
1985	0.676	0.212	0.503	0.93	1.865	NA	0.407	NA	2.802	1.198	1.73	1.637	0.112	1.21
1986	0.636	0.758	0.722	NA	1.027	NA	0.116	0.436	NA	0.99	1.356	1.619	NA	0.757
1987	0.574	0.383	0.582	0.475	NA	NA	0.18	0.371	2.364	1.633	2.002	2.904	0.386	0.986
1988	1.909	0.242	0.637	0.332	0.621	NA	NA	0.306	0.748	0.827	1.102	1.982	0.485	0.663
1989	0.85	0.427	0.418	0.389	0.871	0.956	0.208	0.273	2.195	NA	1.082	4.215	0.207	0.921
1990	2.048	0.421	0.94	0.386	0.724	0.52	0.236	0.247	2.056	NA	1.296	2.43	0.179	0.782
1991	0.672	0.436	0.574	0.469	0.754	1.051	0.23	0.394	2.114	NA	NA	NA	0.168	0.721
1992	0.194	NA	1.669	0.406	0.603	0.649	0.144	0.249	1.001	NA	NA	NA	0.066	0.569
1993	0.23	NA	NA	0.324	0.629	0.777	0.217	0.579	2.434	0.294	1.182	NA	0.124	0.771
1994	0.119	NA	NA	0.515	0.756	0.831	0.29	0.518	2.208	NA	0.99	2.085	0.074	0.864
1995	0.074	NA	NA	NA	0.422	0.26	0.167	0.016	0.928	NA	NA	0.601	0.136	0.317
1996	0.119	NA	NA	0.066	NA	NA	0.058	0.013	0.06	0	0	NA	0.006	0.032
1997	NA	0.343	0.33	0.251	0.409	NA	0.124	0.114	0.447	NA	0.657	NA	0.136	0.286
1998	0	0	0	NA	0.579	NA	0.155	0.525	1.33	0.085	NA	1.587	0	0.516
1999	0	0.094	0.093	NA	0.204	0.315	0.052	0.114	0.244	NA	0.69	NA	0	0.19
2000	0	0	0.036	NA	NA	NA	0.03	0.185	0.28	NA	0	0	0.005	0.094
2001	0.039	0	0.012	0	NA	NA	0.028	0.096	0.532	0	0	NA	0.01	0.102
2002	0.127	0	0.075	0.046	0.398	NA	0.168	0.278	1.44	0.051	0.156	NA	0.08	0.331

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Stock Identifiers

AKS = ALASKA SPRING, QUI = QUINSAM, RBT = ROBERTSON CREEK, SRH = SALMON RIVER HATCHERY, URB = COLUMBIA UPRIVER BRIGHT  
WSH = WILLAMETTE SPRING

Table K.5. Landed catch exploitation rates and exploitation rate indices by stock and age in the WCVI troll fishery. Base period is 1979-1982. (stocks 1 to 7)

Year	REPORTED CATCH EXPLOITATION RATE												
	CWF Age 4	GAD Age 3	GAD Age 4	LRH Age 3	LRH Age 4	LRW Age 4	RBT Age 3	RBT Age 4	RBT Age 5	SAM Age 3	SAM Age 4	SPR Age 3	SPR Age 4
1979	NA	NA	NA	1.065	NA	NA	1.151	1.266	NA	NA	1	0.968	0.819
1980	NA	NA	NA	0.592	0.818	NA	1.377	1.416	NA	NA	NA	1.175	1.364
1981	0.782	0.714	NA	1.162	0.834	0.842	0.705	0.583	1	NA	NA	0.947	0.657
1982	1.218	1.286	1	1.182	1.348	1.158	0.767	0.735	NA	1	NA	0.909	1.16
1983	1.41	NA	1.395	1.768	1.767	0.972	0.35	0.682	2.506	NA	0.95	1.498	0.973
1984	1.353	2.079	NA	2.228	2.934	NA	1.299	1.01	1.713	NA	NA	1.371	1.457
1985	0.937	NA	0.837	1.285	1.184	NA	0.628	0	NA	NA	NA	0.566	1.097
1986	1.318	NA	NA	1.303	1.189	0.466	NA	0.566	NA	NA	NA	1.213	0.919
1987	0.878	NA	NA	0.967	NA	1.446	0.273	NA	NA	NA	NA	0.465	NA
1988	0.863	0.431	NA	1.155	1.426	1.049	0.452	0.571	NA	0.557	NA	1.005	NA
1989	0.54	0.254	0.493	0.295	0.592	0.562	0.169	0.341	0	0.191	0.617	0.593	0.409
1990	0.736	1.099	0.946	1.189	0.437	1.204	0.675	0.556	1.538	0.374	0.867	0.937	0.75
1991	NA	NA	0.947	0.829	NA	0.74	0.61	0.547	0.737	0.23	0.587	0.605	0.66
1992	1.179	NA	0.457	0.677	NA	0.317	1.703	2.472	5.236	0.974	0.273	0.437	0.767
1993	NA	NA	NA	1.124	0.709	NA	1.177	2.252	2.45	1.055	0.434	0.548	1.034
1994	0.12	NA	NA	NA	NA	0.222	0.619	0.737	1.398	0.079	0.71	0.848	0.664
1995	NA	0.222	NA	NA	NA	0.428	NA	0.44	0.37	0.146	0.398	0.361	0.361
1996	0	0	0	0	NA	NA	0	NA	NA	0	0	0	NA
1997	0.348	NA	0.2	0.741	NA	NA	0	0.065	NA	0.021	0.241	0.508	0.48
1998	NA	NA	NA	NA	NA	NA	NA	0	NA	NA	0.088	0.046	0
1999	NA	0.05	NA	0.099	NA	NA	NA	NA	0	NA	0.077	0.016	NA
2000	NA	NA	1.197	0.092	1.953	NA	NA	NA	NA	NA	NA	0.041	0.712
2001	NA	0.687	1.221	0.307	NA	0.747	0	NA	NA	0.329	0.37	0.175	0.629
2002	0.576	0.192	0.651	0.417	0.504	NA	0.029	0	NA	0.268	0.432	0.466	0.845

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Table K.5. Landed catch exploitation rates and exploitation rate indices by stock and age in the WCVI troll fishery. Base period is 1979-1982. (stocks 8-14)

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Year	REPORTED CATCH EXPLOITATION RATE														Fishery
	SPS Age 3	SPS Age 4	SRH Age 3	SRH Age 4	SRH Age 5	SUM Age 4	URB Age 3	URB Age 4	UWA Age 3	UWA Age 4	WSH Age 4	CHI Age 3	CHI Age 4		
1979	NA	1.107	NA	NA	NA	NA	1.389	1.691	0.63	0.961	1.305	NA	NA	1.009	
1980	NA	NA	1	NA	NA	0.682	1.355	0.964	1.261	0.699	1.258	NA	NA	0.988	
1981	0.717	NA	NA	1	NA	1.318	0.199	0.906	0.903	1.085	0.605	NA	NA	0.894	
1982	1.283	0.893	NA	NA	NA	NA	1.058	0.44	1.206	1.256	0.833	NA	NA	1.092	
1983	1.516	0.865	0.612	0.734	NA	NA	0.386	0.455	0.747	1.162	0.194	NA	NA	1.192	
1984	1.428	0.993	NA	0.817	NA	NA	0.857	1.365	1.846	0.895	0.435	NA	NA	1.547	
1985	0.717	0.725	NA	NA	NA	NA	0.755	1.078	0.96	1.286	0.311	NA	NA	0.929	
1986	0.787	1.175	NA	0.423	NA	NA	1.515	0.753	0.909	1.371	NA	NA	NA	1.1	
1987	0.661	0.559	0.118	0.49	NA	0	0.992	0.99	0.399	0.498	NA	NA	NA	0.611	
1988	0.265	0.751	NA	1.416	NA	1.083	0.086	1.967	NA	0.948	0.554	NA	NA	0.948	
1989	0.306	0.415	0.15	NA	NA	0.718	NA	0.93	NA	NA	0.35	NA	NA	0.478	
1990	0.651	0.894	0.315	0.958	NA	1.279	NA	1.678	NA	NA	0.536	NA	NA	0.877	
1991	0.364	0.572	0.412	0.787	NA	0.417	NA	NA	NA	NA	0.05	NA	NA	0.628	
1992	0.651	0.782	0.595	5.99	NA	0.729	NA	NA	NA	NA	0.123	NA	NA	0.833	
1993	0.919	0.598	0.545	2.669	NA	NA	0.642	2.026	NA	NA	0.278	NA	NA	0.89	
1994	0.194	0.504	NA	0.833	NA	NA	NA	1.025	NA	NA	0.163	NA	NA	0.559	
1995	0.245	0.281	0.016	NA	NA	NA	NA	NA	NA	NA	0.091	NA	NA	0.321	
1996	0	0	0	0	NA	0	0	0	NA	NA	0	NA	NA	0	
1997	0.025	0.302	0	0.081	NA	0.069	NA	0.094	NA	NA	0	NA	NA	0.304	
1998	0	0.033	0	0	NA	0	0.016	NA	NA	NA	0.024	NA	NA	0.029	
1999	0.018	0.061	0	0	NA	0.026	0	0	NA	NA	0	NA	NA	0.046	
2000	0.023	0.722	0	0	NA	0.196	0.08	0.332	NA	NA	0.042	NA	NA	0.647	
2001	0.37	0.497	0	0.061	NA	0.422	0.062	0.179	NA	NA	0.105	NA	NA	0.489	
2002	0.316	0.52	0	0	NA	1.077	0.098	0.209	NA	NA	0.222	NA	NA	0.514	

Stock Identifiers

CWF = COWLITZ FALL TULE  
 URB = COLUMBIA UPRIVER BRIGHT  
 LRH = LOWER RIVER TULE 'Oregon Lower River Tule  
 RBT = ROBERTSON CREEK  
 CHI = CHILLAWACK  
 SAM = SAMISH FALL FING  
 SRH = SALMON RIVER HATCHERY

SUM = COL RIVER SUMMERS  
 GAD = G ADAMS FALL FING  
 LRW = LEWIS RIVER WILD  
 UWA = U OF W FALL ACCEL  
 WSH = WILLAMETTE SPRING  
 SPS = SO SOUND FALL FING  
 SPR = SPRING CREEK TULE

Table K.6. Total mortality exploitation rates and exploitation rate indices by stock and age in the WCVI troll fishery. Base period is 1979-1982 (stocks 1-7).

Year	TOTAL MORTALITY EXPLOITATION RATE INDEX												
	CWF Age 4	GAD Age 3	GAD Age 4	LRH Age 3	LRH Age 4	LRW Age 4	RBT Age 3	RBT Age 4	RBT Age 5	SAM Age 3	SAM Age 4	SPR Age 3	SPR Age 4
1979	NA	NA	NA	1.035	NA	NA	1.225	1.283	NA	NA	1	0.954	0.827
1980	NA	NA	NA	0.592	0.823	NA	1.317	1.4	NA	NA	NA	1.126	1.338
1981	0.79	0.728	NA	1.152	0.818	0.852	0.678	0.58	1	NA	NA	0.904	0.656
1982	1.21	1.272	1	1.222	1.359	1.148	0.78	0.738	NA	1	NA	1.016	1.179
1983	1.35	NA	1.383	1.615	1.697	0.973	0.352	0.659	2.396	NA	0.954	1.325	0.925
1984	1.299	1.711	NA	2.019	2.799	NA	1.164	0.989	1.658	NA	NA	1.191	1.387
1985	0.895	NA	0.838	1.222	1.138	NA	0.539	0	NA	NA	NA	0.548	1.051
1986	1.255	NA	NA	1.111	1.132	0.441	NA	0.531	NA	NA	NA	1.106	0.877
1987	0.868	NA	NA	1.185	NA	1.432	0.269	NA	NA	NA	NA	0.427	NA
1988	0.9	0.481	NA	1.314	1.503	1.079	0.443	0.57	NA	0.625	NA	0.941	NA
1989	0.54	0.358	0.499	0.319	0.61	0.575	0.171	0.329	0	0.308	0.621	0.591	0.4
1990	0.748	1.061	0.94	1.146	0.473	1.217	0.652	0.56	1.491	0.422	0.865	0.883	0.74
1991	NA	NA	0.973	0.73	NA	0.749	0.606	0.553	0.709	0.376	0.597	0.583	0.65
1992	1.143	NA	0.471	0.748	NA	0.325	1.857	2.489	5.051	0.845	0.278	0.48	0.762
1993	NA	NA	NA	1.182	0.758	NA	1.402	2.272	2.397	1.028	0.449	0.57	1.018
1994	0.113	NA	NA	NA	NA	0.236	0.676	0.76	1.358	0.221	0.71	0.823	0.661
1995	NA	0.291	NA	NA	NA	0.467	NA	0.459	0.384	0.223	0.43	0.402	0.38
1996	0	0.066	0.025	0	NA	NA	0.033	NA	NA	0.056	0.016	0	NA
1997	0.326	NA	0.204	0.829	NA	NA	0.005	0.061	NA	0.074	0.241	0.554	0.501
1998	NA	NA	NA	NA	NA	NA	NA	0	NA	NA	0.084	0.038	0
1999	NA	0.046	NA	0.082	NA	NA	NA	NA	0	NA	0.074	0.013	NA
2000	NA	NA	1.17	0.077	1.865	NA	NA	NA	NA	NA	NA	0.034	0.661
2001	NA	0.524	1.17	0.262	NA	0.706	0	NA	NA	0.255	0.354	0.149	0.584
2002	0.557	0.158	0.637	0.355	0.468	NA	0.023	0	NA	0.219	0.42	0.395	0.798

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Table K.6. Total mortality exploitation rates and exploitation rate indices by stock and age in the WCVI troll fishery. Base period is 1979-1982 (stocks 8-14).

Year	TOTAL MORTALITY EXPLOITATION RATE INDEX												
	SPS Age 3	SPS Age 4	SRH Age 3	SRH Age 4	SRH Age 5	SUM Age 4	URB Age 3	URB Age 4	UWA Age 3	UWA Age 4	WSH Age 4	CHI Age 3	CHI Age 4
1979	NA	1.111	NA	NA	NA	NA	1.368	1.68	0.615	0.958	1.251	NA	NA
1980	NA	NA	1	NA	NA	0.679	1.341	0.965	1.221	0.695	1.276	NA	NA
1981	0.746	NA	NA	1	NA	1.321	0.246	0.899	0.867	1.065	0.616	NA	NA
1982	1.254	0.889	NA	NA	NA	NA	1.044	0.456	1.297	1.282	0.857	NA	NA
1983	1.452	0.868	0.609	0.708	NA	NA	0.355	0.428	0.699	1.128	0.185	NA	NA
1984	1.273	0.972	NA	0.75	NA	NA	0.792	1.318	1.648	0.866	0.404	NA	NA
1985	0.654	0.709	NA	NA	NA	NA	0.711	1.043	0.871	1.264	0.276	NA	NA
1986	0.736	1.133	NA	0.363	NA	NA	1.367	0.738	0.844	1.342	NA	NA	NA
1987	0.755	0.562	0.129	0.49	NA	0	1.128	1.029	0.398	0.486	NA	NA	NA
1988	0.333	0.771	NA	1.318	NA	1.059	0.52	2.049	NA	0.94	0.556	NA	NA
1989	0.339	0.415	0.176	NA	NA	0.713	NA	0.965	NA	NA	0.333	NA	NA
1990	0.797	0.904	0.358	0.877	NA	1.251	NA	1.684	NA	NA	0.53	NA	NA
1991	0.459	0.575	0.43	0.739	NA	0.407	NA	NA	NA	NA	0.051	NA	NA
1992	0.646	0.772	0.686	5.361	NA	0.735	NA	NA	NA	NA	0.146	NA	NA
1993	0.941	0.611	0.691	2.478	NA	NA	0.884	2.026	NA	NA	0.274	NA	NA
1994	0.208	0.492	NA	0.78	NA	NA	NA	1.036	NA	NA	0.154	NA	NA
1995	0.281	0.295	0.043	NA	NA	NA	NA	NA	NA	NA	0.104	NA	NA
1996	0.056	0.023	0.026	0.024	NA	0	0	0	NA	NA	0.01	NA	NA
1997	0.108	0.311	0.008	0.069	NA	0.072	NA	0.089	NA	NA	0	NA	NA
1998	0	0.032	0	0	NA	0	0.013	NA	NA	NA	0.02	NA	NA
1999	0.014	0.058	0	0	NA	0.024	0	0	NA	NA	0	NA	NA
2000	0.024	0.698	0	0	NA	0.188	0.066	0.312	NA	NA	0.035	NA	NA
2001	0.299	0.475	0	0.052	NA	0.405	0.06	0.168	NA	NA	0.088	NA	NA
2002	0.257	0.501	0	0	NA	1.034	0.081	0.196	NA	NA	0.185	NA	NA

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Stock Identifiers

CWF = COWLITZ FALL TULE

GAD = G ADAMS FALL FING

LRH = LOWER RIVER TULE 'Oregon Lower River Tule

LRW = LEWIS RIVER WILD

RBT = ROBERTSON CREEK

SAM = SAMISH FALL FING

SPR = SPRING CREEK TULE

SPS = SO SOUND FALL FING

SRH = SALMON RIVER HATCHERY

SUM = COL RIVER SUMMERS

URB = COLUMBIA UPRIVER BRIGHT

UWA = U OF W FALL ACCEL

WSH = WILLAMETTE SPRING

CHI = CHILLAWACK



Appendix L. Coded wire tag codes used in the Exploitation Rate Analysis.

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Table L.1 Tag Codes for Alaska Spring (AKS) 1971-86.

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
								031661	031716	031753	031761	031655	031826	031901	031957	032027
								031703	031717	031754	031762	031807	031827	031902	031958	032028
								031704	041917	041944	031763	031808	031828	031903	031959	032029
								031705	041943	042121	031801	031809	031829	031904	031960	032030
								031706	041945	042202	031802	031810	031830	031905	031961	032031
								031707	042039	044005	031803	031811	031831	031906	031962	032032
								031708	042040		031804	031812	031832	031907	031963	032033
								031709	042042		036303	031813	031833	031908	032001	032034
								031710	042043		036304	031814	031834	031909	032002	032113
								031711	042045		036305	031815	031835	031910	032003	032114
								031712			042222	031816	031836	031911	032004	032116
								031713			042223	031817	031837	031912	032005	032119
								031714			042227	031818	031838	031913	032006	032121
								031715			042229	031819	031839	031914	032007	032122
								041932			042230	036306	031843	031915	032008	036213
								041938			B40907	036307	031844	031916	032009	036214
								041939			B40908	036308	031845	031917	032010	036216
								041940				036309	031846	031918	032011	036219
												042255	031847	031919	032012	036221
												042354	031848	031920	032013	036222
												042355	031849	031921	032014	036225
												042356	031850	031922	032015	036310
												042430	031851	031923	032016	036311
												042431	031852	031924	032017	036312
													031853	031925	032018	036313
													031854	031926	032019	036314
													031855	031927	032101	036315
													031856	031928	032102	036316
													031857	031929	032103	036317
													031858	031930	032104	042754
													031859	031931	042626	042908
													031860	031932	042628	042909
													031861	031933	042631	042960
													031862	031934	042632	043101
													031863	031935	042633	043102

Table L.1 Tag Codes for Alaska Spring (AKS) 1971-86 continued.

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
													040321	031936	042634	043104
													042463	031937	042713	043107
													042503	031938	042731	043108
													042511	031939	042732	
													042512	031940	042733	
													042513	031941	042825	
														031943		
														031944		
														031945		
														031946		
														031948		
														040329		
														040330		
														040331		
														040332		
														040333		
														040336		
														040342		
														040343		
														040344		
														040345		
														040346		
														040347		
														040348		
														040349		
														040350		
														042321		
														042530		
														042531		
														042534		
														042535		
														042536		
														042537		
														042538		
														042539		
														042540		

Table L.1 Tag Codes for Alaska Spring (AKS) 1987-2000.

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	032037	030116	030218	030227	030233	030234	030130	030138	030142	032128	030126	030151	032310	0401040609
	032038	030119	030219	030228	032233	030235	030131	030139	030143	032301	030136	030152	032311	0401040701
	032039	030121	030220	030229	032234	030236	030132	030140	030144	036212	030148	030153	032312	0401040702
	032040	030122	030221	030230	032235	030237	030133	030141	032051	036215	030149	030154	036245	040490
	032041	030125	030222	030231	036332	030238	030134	032247	032245	036234	030150	036241	036246	040495
	032042	030216	030223	030332	036335	032236	030135	032248	032246	036235	032302	036242	036247	040496
	032043	030217	030224	031618	036337	032237	032137	032249	032257	036236	032303	036243	036248	040497
	032044	031947	030225	032216	036338	032238	032242	032250	032258	036239	032304	036244	036249	040498
	032045	032138	030226	032217	036339	032239	032243	032251	032259	036240	036230	0401031506	0401040209	040499
	032131	032141	032052	032218	036340	032240	032244	032252	032260	036336	036233	0401031507	0401040401	040516
	032132	032201	032203	032219	036341	032241	036201	032253	032305	044624	0401031313	0401031508	040171	040517
	032135	032202	032204	032220	036342	036350	036209	032254	032306	044625	040147	040420	040176	040518
	036226	036237	032205	032221	036343	036351	036301	032255	032307	044626	040148	040422	040177	040519
	036228	036238	032206	032222	036344	036352	036357	032256	032308	044662	040150	040423	040178	040520
	036231	036329	032207	032223	036345	036353	036358	036217	032309	044942	040152	040426	040179	040655
	036232	036330	032208	032224	036346	036354	036359	036218	036224	044958	040233	040427	040183	040656
	036319	036331	032209	032225	036347	036355	036360	036220	036227	044959	040234	040428	040184	040657
	036321	043247	032210	032226	036348	036356	036361	036223	036229	044960	040235	040429	040185	040658
	036322	043249	032211	032227	036349	044049	036362	044502	044242	044961	040236	040430	040186	040659
	036323	043250	032212	032228	043857	044050	036363	044504	044243	044962	040237	040431	040187	040660
	036324	043252	032213	032229	043858	044142	044314	044543	044525	045001	040238	040432	040188	040661
	036325	043255	032214	032230	043859	044143	044315	044544	044526	045002	040239		040197	
	036326	043303	032215	032231	043904	044148	044407	044561	044619	045003	040240		040198	
	036327	043304	043232	032232	043905	044149	044416	044562	044717		040241		040199	
	036328	043305	043449	036333	043906	044157	044417	044563	044718				040264	
	042737	043306	043450	036334	043907	044223	044418	044601	044737				040265	
	042738	043319	043501	042945	043933	044224	044419	044602	044738				040266	
	043027	043320	043502	043701	043934	044238	044420	044603	044745				040267	
	043028	043323	043504	043702	043936	044239	044421	044604	044746					
	043029	043324	043507	043704	043937		044430	044610	044747					
	043030	043406	043530	043705	043938		044431	044611	044754					

Table L.1 Tag Codes for Alaska Spring (AKS) 1987-2000 continued.

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	043031	043407	043531	043706	043939				044755					
	043032		043532	043707	044028				044756					
	043058		043533	043708	044029				044757					
	043059		043606	043745	044101				044758					
	043141		043607	043746	044102				044759					
	043142		043608	043747	044104				044760					
	043144			043748										
	043147			043749										
	043149			043750										
				043821										
				043822										
				043823										

Table L.2 Tag Codes for Big Qualicum (BQR) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
			021102	021002	020206	021716	021726	021612	021824	021810	022223	022543	022661	023217	023742	024260
			BLRD				021727	021613	021825	021944	022306		022747	023320	023743	024261
			BLRDGD*2					021656	021826				022748	023321	023744	024262
			BLRDGN										022824	023333	023745	024263
													022825	023334	024047	024357
													022826	023335	024048	024358
														023336	024049	024359
														023337	024050	024360
														023338		
														023345		

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	024416	026047	020660	021312	021332	180406	180636	181059	181516	182757	183057	183143	183832	184402
	024742	026048	020661	021313	021333	180407	180637	181060	181517	182758	183058	183144	183833	184403
	024761	026049	020662	021314	021334	180408	180638	181061	181519	182759	183059	183145	183834	184404
	024762	026050	020663	021315	021335	180409	180639	181062	181653	183418	183422	183818	183835	184405
	024957	026051	020727	180253	180861	180410	181055	182014	182347	183419	183423	183819	184131	184406
	024962	026052	020952	180254	180862	180411	181056	182015	182348	183420	183424	183820	184132	184407
	024963	026053	020953	180255	180863	181103	181057	182121	182349	183421	183425	183821	184133	184408
	025001	026054	020954	180256		181104	181058	182122	182350					184409
		026323												
		026324												

Table L.3 Tag Codes for Elwha Fall Fingerling (ELW) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
												051363	211616	211658	211919	212208
												632721	633038	633419	211920	
												632722	633039	633420	211921	
															633543	
															633544	
															633547	
															633548	

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
		213132	211827	212015	212215	212324	212451	212617						
			211828					212618						
								635332						

Table L.4 Tag Codes for George Adams Fall Fingerling (GAD) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
		150812		130303	130913			631752	632041	632146	632235				633501	634119
		151013						631915	632109	632161	632331				633502	
										632262					633503	
															633504	

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	635208	635237	630450	630862	634023	634946	635545	635023	636045	630148	630304	630632	630633	630683
					634620	635057		635801						630684

Table L.5 Tag Codes for Hanford Wild (HAN) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
																634152
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	635232	635252	630755	634115	634527	635017	635704	635759	636116	630133	630603	630635	630178	630792		
									636117					630798		
									636118					630799		
														630864		

Table L.6 Tag Codes for Hoko Fall Fingerling (HOK) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
															211935	212216
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	211907		211829	212018	212218	212327	212453	212609	212949	212953	212959	213004	212951	210283		

Table L.7 Tag Codes for Issaquah Fall Fingerling (ISS) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
								631940	631943	632233	632256				634104	634121
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	635222															



Table L.8 Tag codes for Kitsumkalum (KLM) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
									021852	021951	022312		022758	023346	023704	024410
											022313			023347	023705	024411
														023348	023706	024412
														023349	023707	024413
														023350		024414
														023351		
														023352		
														023353		
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	024941	026039	020940	021133	021010	181046	021104	180608	182339	182749	182806	183063	182959	184308		
	024942	026040	020941	021134	021011	181047	181423	180609	182340	182750	182807	183516	184560	184622		
	024943	026041	020942	021135	023116	181048	181424	180640	182341	182751	182808	184212	184561	184623		
	024944	026042	020943	021136		181049		180641	182342	182752	182809	184213	184563	184624		
	025060	026043	020944	021137		181050		180642	182343	182753	182810	184214	184601	184625		
	025061	026044	020945	021138		181051		182155	182344	182754	183307		184602	184626		
		026045	020946	021139		181052		182156	182345	182755	183308		184603	184627		
			026137	021140				182157					184604			
			026138													

Table L.9 Tag codes for Columbia Lower River Hatchery (LRH) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
						091605	071656	071841	072055	072156	072407	072328	073120	073322	073818	074050
								071842	072157	072329	072408	072729	073121	073323	073819	074051
									072163	072335	072411	072730	073144	073352	073820	074052
										072341	072662	072830	073145	073353	073821	074053
										072342		072831	073146	073354	073822	074054
												072832	073147	073355		
												072833	073148	073356		
												072834				
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	074526	075012	075218	075227	071601	070221	070234	070432	070544	071251	092121	071253	093005	093250		
	074527	075015	075219	075228	071602	070222	070235	070852	070545		092448					
	074528	075017	075220	075229	071603	070223	070516	075812	071144							
	074529	075018	075221	075230	071604	070224	070517									
	074530	075020	075222	075231	075905	075657	070518									
						075658	070519									
						075942	070520									
						076020	076143									
						076321										

Table L.10 Tag codes for Lewis River Wild (LRW) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
							631611	631813	632123			632737	633126	633411	633821	634151
							631618	631858	632124			632738	633127	633412	633822	634153
							631619	631859	632125							
								631902	632207							
								631920	632208							
								632002	632213							
									632214							

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	635061	630456	631350	634217	634206	634940	635157	635627		630334	630506	631058	630265	630870
	635062										630507		630266	630871

Table L.11 Tag codes for Lyons Ferry (LYF) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
														633226	633638	634259
														633227	633639	634261
														633228	633640	
															633641	
															633642	

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	635214	630226	635544	634143		635012		232712				631025	630167	630270
	635216	630228	635547	634160				232713				631026	630168	630271
													630169	630272

Table L.12 Tag codes for Nisqually Fall Fingerling 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
									050722	050839	051048	051344	211628	211706	211759	211962
										050840	051049	051345	211629	211707	211761	
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	212541	213138	211836	211833	212206	212323	212450	212606	212946	212957	212956	210150	210166	630189		
														630687		

Table L.13 Tag codes for Nooksack Spring Yearling (NKS) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
											632411	632546		633452		633247
														633453		633248
																633336
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	634962	634422	635261	634123		634529	635018	635815	636048	635533						
	635059							635830								
								635835								

Table L.14 Tag codes for Nooksack Spring Fingerling (NSF) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
		635241	051952			634605	635142	635351	636026	636326	630604	631028	630175	630675		
			630225			634606	635143	635829								
						634951	635144	635834								

Table L.15 Tag codes for Puntledge (PPS) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
				021402	020308	021816	021634	021731	021854	021947	022302	022556	022710	023357	023727	024701
												022557	022711	023358		024702
														023359		
														023360		

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	023701	026034	020809	180315	180814	181403	181410	182138	182449	182841	182843	183828	183842	184843
			020810	180316	180815	181404	181411	182139	182450	182842	182844		183843	184844
					180816								183844	
					180817								183845	

Table L.16 Tag codes for Queets Fall Fingerling (QUE) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
							050361	050520	050661	050830	050962	051425	211621		211908	212101
								050521		050833	051016					
								050522								
								050525								

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	212835	213144	211835	212010	212260	212328	212452	212425	212948	212961	213003	213001	210167	210281
								212624						

Table L.17 Tag codes for Quinsam (QUI) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
				020403	020108	021916	021736	021759	021757	021657	022303	022518	022631	023322	023522	024152
							021737		021758	021943	022304	022519	022632	023323	023523	024153
							021738			021950				023324	023524	024154
														023325	023525	024155
														023326	023526	024156
														023327	023527	024157
														023328	023528	024158
														023329	023529	024159
														023330	023530	024160

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	024419	025814	020357	020956	021331	181150	180629	181644	181658	181830	183035	183739	183251	184456
	024420	025815	020358	020957	180415	181151	180630	181645	181659	182512	183036	183740	183252	184457
	024421	025816	020359	020958	180416	181152	180631	181646	181660	182513	183037	183741	183253	184458
	024956	025817	020360	020959	180417	181153	181357	181647	181661	182514	183038	183742	183254	184459
	025358	025818	020361	021448	180418	181154	181358	181648	182016	182515	183039	183743	183255	184460
	025359	025819	026062	021449	180419	181155	181359	181649	182017	182516	183040	183744	183256	184461
	025360	025820	026063	021450	180420	181156	181360	181650	182018	182517	183041	183745	183257	184462
	025361	025821	026101	021451	180421	181157	181361	181651	182020	182518	183042		183258	184463
	025362	025822	026102	026019	180422	181158	181362	181652	182021					

Table L.18 Tag codes for Robertson Creek (RBT) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
			020203	020606	020408	021629	022217	021615	021827	021661	022202	022541	022662	023131	023734	024256
			020406	020906	020409	021630	022218	021635	021829		022405	082225	022663	023132	023735	024257
			020506	021206	021305	021631							022708	023133	023736	024361
			020602	021406									022753	023134	023737	024362
													082247	023135	023738	024363
													082248	023136	023739	024401
														023142	023740	
														023143	023741	
														023144		
														023145		
														023151		
														023203		
														023204		
														023206		
														023208		
														023304		

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	024311	025014	020151	021208	180620	180259	181539	181455	182226	182232	182814	180362	182160	184631
	024802	025836	020152	021209	180621	180260	181540	181456	182227	182233	182815	180363	182161	184632
	024809	025837	020153	021549	180622	180261	181541	181457	182228	182234	182816	183432	182162	184633
	024810	025838	020645	021550	180623	180262	181542	181458	182229	182235	182817	183433	182163	184634
	024951	025839	020646	021551	180802	180624	181543	181459	182230	182236	183153	183434	184541	184635
	024952	026055	020647	021552	180803	180625	181544	181460	182231	182237	183154	183831	184605	184636
	024958	026056	020648	021553	180804	180626	181545	182220	182502	182541	183155		184606	184637
	024959	026057	020948		180805	180627	181546	182221	182503	182542	183156			184638
	024960		020949					182222	182504	182543	183157			
	024961		020950					182223	182505	182544	183158			
	025326							182224	182506	182545				
	025327							182225	182507	182546				
	025328								182508	182547				
	025329													

Table L.19 Tag codes for Samish Fall Fingerling (SAM) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
				011305	130302				632042						633804	634122
				130104	130602				632101						633805	
				130215	130603				632102						633806	
															633807	
															634111	
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	634732	635242	630731	634025	634340	635009	635543	635758	636004	630129	630407	631021	630173	630676		
											630410					

Table L.20 Tag codes for Skagit Spring Fingerling (SAM) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
															633123	
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
							635701	635449	636047	635323	630215	630609	630164	630666		
								635837			636131			630768		

Table L.21 Tag codes for Skagit Spring Yearling (SKS) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
											632606	632607	632608	633353	633323	633314
														633354		
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	634744			633114			635027	635842	636021	635325	630346	631017	630197			
	634902								636055		630402					
	635026															



Table L.22 Tag codes for Snootli (SNO) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
					020110	022016	022020	021732			022154	022139	022739	023257	023641	024349
						022017	022021				022155	022501	022740	023258	023642	024350
						022018	022022					022559	022741	023259	023643	024351
													022755	023260	023644	024352
													022756		023750	024353
															023751	024354
															023752	024355
															023753	024356

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	025446	025956	020246	021428	180354	181222	181236	181229	183147	182528	183137	183801	181838	
	025447	025957	020247	021429	180826	181223	181237	181230	183148	182529	183138	183802	184354	
	025448	025958	020248	021430	180827	181224				182530	183139	183803	184355	
	025552	025959	020249	021521						182531	183140	183804	184356	
		025960	020250	021522						182532	183141	183805	184357	
		025961	020251	021523						182533	183142	183806	184358	
													184359	
													184548	

Table L.22 Tag codes for Sooes Fall Fingerling (SOO) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
															051744	051907
															051745	
															051746	
															051747	

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	051950		051955	052353	052822	053131	053133	053753	054048	054052	054054	051561	050182	050493
				052354	052823	053132	053134	053754	054049	054053	054055	051562	050183	050494
				052355	052824		053519	053755	054050		055034	051563	050184	050495
				052356	052825		053520	053756	054051		055035		050185	050496

Table L.22 Tag codes for Spring Creek Tule (SPR) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
		050101	050109	050901	050202	054101	055501	050433	050639	050740	051050	051142	051151	051534	B50109	051855
		050201	050401	051001	050302	054201	055601	050434	050640	050741	051051	051143	051152	051535	B50110	051856
		050301	050501	051101	050402	054401	055701	050444	050641	050742	051052			051536	B50111	051857
			050601	051201	050502	054501	056001	050446		050748				051537	B50112	051858
				051301	050602	054601	056201			050749				051538	B50113	051859
				051401	050702					050750				051539	B50114	051860
					050802					050751					B50115	051861
															B50208	051862
															B50209	051863
																051905
																051906
																051909

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	051445	052013	052207	052106	052127	052133	053356	053757	053831	054341	054347	054360	054418	054523
	051449	052015	052208	052109	052129	052134	053357	053758	053832	054342	054348	054361	054419	054525
	051450	052016	052209	052110	052130	052146	053430	053759	053833	054343	054349	054362	054420	
	051451	052017	052210	052112	052544	052149	053431	053760	053834	054344	054350	054363	054421	
	051659	052018	052211	052115	052545	052732	053432	053761	053835	054345	054351	054404	054422	
	051660	052019	052212	052117	052553	052733	053433	053762	053836	054346	054352	054405	054423	
	051661	052020	052213	052118	052554	052735	053434							
	051662	052021	052214	052123	052557	052736	053435							
	051910	052023	052215	052124	052558	052840								
	051912	052024	052216		052559	053045								
	051913	052025	052217		052560									
	051914	052032	052218		052561									
	051923	052033	052335		052562									
	051924		052336		052563									
	051925				052605									
					052606									

Table L.23 Tag codes for South Puget Sound Fall Fingerling (SPS) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
	150010	151010	151312	011403	130604			631935	631944	632145	051047	051346	211622	211657	211901	211961
	150109	151012	151313	011404				631936		632253	632158				633643	634116
	150111	151202						631945							633644	
	150114														633645	
	150200														633646	
	150203															
	150806															

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	212542	213137	211831	212014	212217	212326	212329	212639	212947	212963	213157	213154	210153	210279
	635221	635238	630261	634024	634339	634953	635318	212640	636102	630127	630308	631010	630171	630669
		635262						212643	636103					
								212645						
								212646						
								212648						
								212651						
								212653						
								212654						
								212657						
								212658						
								212660						
								212663						
								212701						
								212702						
								212703						
								212705						
								212707						
								212708						
								212709						
								212710						
								212711						
								212712						
								212713						
								212714						

Table L.23 Tag codes for South Puget Sound Fall Fingerling (SPS) 1971-2000 continued

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
								212715						
								212716						
								212717						
								212718						
								212719						
								212720						
								212721						
								212722						
								212723						
								212724						
								212725						
								212726						
								212727						
								212728						
								212729						
								212730						
								212731						
								212732						
								212733						
								212734						
								212735						
								212736						
								212737						
								212738						
								212739						
								212740						
								212741						
								212742						
								212743						
								212744						
								212745						
								212746						
								212747						
								212748						
								212749						
								212750						

Table L.23 Tag codes for South Puget Sound Fall Fingerling (SPS) 1971-2000 continued

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
								212751						
								212752						
								212753						
								212754						
								212755						
								212756						
								212758						
								212759						
								212760						
								212761						
								212762						
								212763						
								212803						
								212805						
								212806						
								212809						
								212810						
								212812						
								212815						
								212817						
								212818						
								212820						
								212823						
								212824						
								212829						
								212830						
								212833						
								212834						
								212836						
								212840						
								635826						
								635831						

Table L.24 Tag codes for South Puget Sound Fall Yearling (SPY) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
								632004	632015	632248	632147					634959
									632019	632302	632360					
									632054	632308	632416					
									632055							
									632056							
									H10204							
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	635502	630138	633926	634257	634528	635217	635721	635856	635961	630146	630630		630290			

Table L.25 Tag codes for Squaxin Pens Fall Yearling (SQP) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
																634162
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	634202	635244	630455	633955		635218	635719	635855	635962		630615					
				634008												

Table L.26 Tag codes for Salmon River (SRH) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
							071643	071849	072239	072504		072647	072726	073051	073329	073342
							071644	071850	072240	072505				073052	073330	074321
																074322
																074323
																074324
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	074629	075131	075458	075705	071559	070417	070459	070962	071252	092149	092447	092817	093053	093315		
	074635	075132	075459	075706	071560	070418	070460									
	074636	075133	075460	075707	071561	070419	070461									
	074637	075134	075461	075708	071562	070420	070462									
	074638	075135	075462	075709	071563	070421	070463									
		075136														

Table L.27 Tag codes for Skagit Summer Fingerling (SSF) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
								212612	635151	630322	213002	210151	630166	210168		
										634329		630757				

Table L.28 Tag codes for Stillaguamish Fall Fingerling (STL) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
										050843	051063	051427	211618			212221
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	212555	213147	211826	212026	212205	212251	212330	212610	212954	212960	213203	210152				
											213223					

Table L.29 Tag codes for Columbia Summers (SUM) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
					130910	631607	631749						632326	633224	B10308	633113
						631642	631762						632845	633225	B10309	634255
															B10310	634256
																634402
																634404
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	635037	630262	631149	634133	634609	635005	634610	635324	634129	630134	630602	631018	630267	630775		
	635038		631347	635913			635145	635546	634130	630217	630611	631061	630468	630995		
	635202		631352				635702	635703	635841	636054						
								635838	636044	636323						

Table L.30 Tag codes for Upriver Bright (URB) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
					130713	631662	631741	631821	631948	632155	632252	632611	632859	633221	634102	634128
					131101		631745			632261	632456	632612	632860	633222		
					131202											
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		
	635226	635249	630732	634057	634341	635010	635540	635711	636001	636328	630408	631011	630165	630269		
											630409	631030	630187	630277		
											630517	631046	630188	630279		
											630521	631047	631333	630672		

L-202



Table L.31 Tag codes for Squaxin Pens Fall Yearling (SQP) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
					110211	110116	111601	111603	111627	110634	111644	111655	633025	111718		
					110212	110117	111602	111604	111628	110635	111645	111656		111719		
					110213	110118		111605	111629	110636	111646	111657		111720		
					110214	110119		111606	111630	110637	111647	111658		111721		
					110301			111618	111631	110638	111648	111659		111722		
					110302			111624	111632	110639	111649	111660		111723		
										110640	111650					
										110641	111651					
										110642	111652					

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
--------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

Table L.32 Tag codes for White River Spring Yearling (WRY) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
				130208	131010			631834	632047	632136	632341	632853	633049	632508	633131	633246
											632604	633009	633050	633060	633648	634145
														633108		

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	634702	630161	635542	635908	634224	634619	635046	635827	635633	636009	630351			
	634704	630162						635832			636344			

Table L.33 Tag codes for Willamette Spring (WSH) 1971-2000

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
					090503	091621	071730	071925	072217	072237	072521	072863	072902	073651	073428	074962
					090504	091622	071731	071945	072218	072418	072720	072905	073024	073652	073429	075002
					090505	091626	071732	071946	072224	072422		072930		073653	073902	075004
					090506	091627	071737	072020	072225	072517				073654	073903	075013
					090507	091628	071743	072021	072226	072518				073655	073944	
					090509	091629	071919	072022	072252	072528				073656	073945	
						091701	071920	072044	072253	072529				073663	073948	
						091702	071921	072050	072254	072530				073701	073949	
						091703	071926	072051						073702	073950	
							071927							073729	073951	
							071928							073730	073952	
														073731	073953	
														073732		
														073733		
														073734		
														073735		
														073736		

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
075028	073721	075347	075021	071457	070133	070233	070445	070741	092120	092352	071261	092950		
075038	075158	075348	075626	071458	070134	070442	070450	071254	092155	092446	071262	093019		
075041	075159	075501	075627	071459	070240	070443	070855	071255	092156	092509	091752	093020		
075047	075160	075502	075628	073722	070253	070444	070856	071256	092157	092511	092653	093021		
075049	075161	075504	075630	075732	070254	070563	070857	071257	092158	092512	092654	093023		
075050	075162	075506	075643	075734	070428	070616	070858	071259	092160	092513	092738	093024		
	075163	075514	075644	075904	070430	070850	070860	071260	092240	092514	092739	093026		
	075206	075515	075656	075921	070431	070851	070861	071317	092241	092520	092811	093028		
	075207	075516	075710	075922	071535	076125	070862	076140	092242	092521	092812	093038		
	075208	075522	075711	075933	071536	076338	071153	091803	092243	092522	092813	093147		
	075210	075523		075934	076121			091804	092244	092523	092814	093148		
	075211	075524		076114	076122				092245	092524	092907			
		075525		076115	076123				092248	092550	092908			
		075526		076116					092250	092627				
		075527		076117					092251	092628				

Table L.34 Tag codes for Willamette Spring (WSH) 1978-2000

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
			075528		076118					092319	092629			
					076119					092320	092630			
											092632			
											092633			