

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

**ANNUAL EXPLOITATION RATE ANALYSIS
AND
MODEL CALIBRATION**

REPORT TCCHINOOK (05)-3

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

EXECUTIVE SUMMARY

This report contains the results of the Chinook Technical Committee (CTC) annual exploitation rate assessment and the final preseason Chinook model calibration for 2005 (CLB 0506). Results include the Abundance Indices (AIs) for the Aggregate Abundance Based Management (AABM) fisheries and Individual Stock Based Management (ISBM) Indices for each party (country) and a summary of preseason 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. Preseason AIs are used to set allowable catch limits for management in the upcoming fishing season. Subsequently, postseason AIs (from the following year's calibration) are used to track overage and underage provisions. Each calibration provides the first postseason AIs for the previous year and the preseason AIs for the current year. The first 2004 postseason AIs and the 2005 preseason AIs have now been finalized.

Table 1. Abundance Indices for 1999 to 2005 for the SEAK, NBC, and WCVI AABM fisheries.

Year	SEAK		NBC		WCVI	
	Preseason	Postseason	Preseason	Postseason	Preseason	Postseason
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	2.06	1.67	1.83	0.90	0.98
2005	2.05		1.69		0.88	

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 postseason allowable catches for 1999 to 2004, and preseason allowable catches for 1999 to 2005, for AABM fisheries.

Year	Pacific Salmon Treaty Allowable and Observed Catches								
	SEAK			NBC			WCVI		
	Preseason Allowable Catch	Postseason Allowable Catch	Observed Catch	Preseason Allowable Catch	Postseason Allowable Catch	Observed Catch	Preseason Allowable Catch	Postseason Allowable Catch	Observed Catch
1999	192,800	184,200	198,842	145,600	126,100	86,726	128,300	107,000	36,413
2000	189,900	178,500	186,493	130,000	123,500	31,900	115,500	86,200	101,438
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	150,137	203,200	196,800	165,036
2003	366,100	439,600	380,152	197,100	277,200	191,657	181,800	268,900	175,821
2004	383,500	418,300	428,773 ¹ 433,446	243,600	267,000	241,508	192,500	209,600	216,166
2005	416,400	-	-	246,600	-	-	188,200	-	-

¹ The lower value results from subtracting a terminal exclusion catch for the Stikine River in 2004, which is in dispute.

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 preseason 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 preseason estimates of allowable catch. Harvest managers have no prior knowledge of the postseason estimate of allowable catch, which can be quite different from the preseason 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 postseason allowable catch and the observed catch in AABM fisheries for 1999–2004, 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 three of the six years; the cumulative differential is –5.7% or –5.4%, depending on how the terminal exclusion for the Stikine River in 2004 is treated. In NBC, observed catches have been below the final allowable catches in all six years; the cumulative differential is –37.4%. In WCVI, observed catches have been below allowable catches in four of the six years; the cumulative differential is –19.9%.

Table 3. Differences between observed Treaty catch and the postseason Treaty allowances as number of fish and percentages of allowable catch for AABM fisheries in 1999 to 2004.

Year	SEAK		NBC		WCVI	
	Number of Fish	Percent Difference	Number of Fish	Percent Difference	Number of Fish	Percent Difference
1999	+14,642	+7.9%	-39,374	-31.2%	-70,587	-66.0%
2000	+7,993	+4.5%	-91,600	-74.2%	+15,238	+17.7%
2001	-63,381	-25.3%	-115,400	-72.6%	-27,830	-19.1%
2002	-14,767	-4.0%	-87,663	-36.9%	-31,764	-16.1%
2003	-59,448	-13.5%	-85,543	-30.9%	-93,079	-34.6%
2004	+10,473 +15,146	+2.5% +3.6%	-25,492	-9.5%	+6,566	+3.1%
Cum.	-104,488 -99,815 ¹	-5.7% -5.4%	-445,072	-37.4%	-201,456	-19.9%

¹ The lower value results from subtracting a terminal exclusion catch for the Stikine River in 2004, which is in dispute.

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 2003, and Chinook model-based indices for 2005. The agreement specifies that the ISBM indices be forecasted preseason and evaluated postseason for each escapement indicator stock listed in Attachments I to V of the Chinook Chapter.

CWT-based Indices in 2003

All Canadian ISBM indices from the CWT-based estimates for 2003 show that exploitation rates were reduced more than required under the agreement for all stocks or stock groups for which the indices could be calculated. Two of the 15 U.S. ISBM indices for the CWT-based estimates for 2003 were reduced more than required under the agreement. Of the 13 U.S. CWT-based ISBM indices that exceeded 0.60, ten (Upriver Brights, Quillayute, Queets, Hoh, Lewis, Harrison, Mid-Columbia Summers, Nehalem, Siletz, and Siuslaw) have agreed escapement goals and all ten exceeded their goals in 2003.

Predicted ISBM Indices for 2005

Seven of the 19 ISBM indices for Canada in 2005 based on outputs from calibration 0506 are above the allowable value of 0.635 for Canadian ISBM fisheries. Of the seven, only far north migrating Oregon Coast and Upriver Brights have CTC agreed escapement goals. Ten of the 24 U.S. ISBM indices for 2004 based on calibration 0506 are above the allowable limit of 0.60 for U.S. ISBM fisheries. Nine of the 10 have CTC agreed escapement goals: Queets, Hoh, Quillayute, Upriver Brights, Lewis, Harrison, Nehalem, Siletz, and Siuslaw.

Table 4. Canadian 2003 ISBM indices based on CWT and the 2005 indices predicted from the PSC Chinook Model.

Stock Group	Escapement Indicator Stock	Canadian ISBM Indices	
		CWT Indices for 2003	Model Indices for 2005
Lower Strait of Georgia	Cowichan	0.363 ⁴	0.381 ⁶
	Nanaimo	NA ^{1,5}	
Fraser Late	Harrison River ²	0.055 ⁷	0.332
North Puget Sound Natural Springs	Nooksack	0.046	0.314
	Skagit	NA	0.314
Upper Strait of Georgia	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	0.006	0.649
Fraser Early (spring and summers)	Upper Fraser, Mid Fraser, Thompson	NA	0.654
West Coast Vancouver Island Falls	WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble)	0.496 ⁸	0.728
Puget Sound Natural Summer / Falls	Skagit	NA	0.465
	Stillaguamish	NA	0.587
	Snohomish	NA	0.457
	Lake Washington	NA	0.497 ⁹
	Green River	0.328	0.497 ⁹
North / Central B. C.	Yakoun, Nass, Skeena, Area 8	NA	0.680
Washington Coastal Fall Naturals ³	Hoko, Grays Harbor, Queets ² , Hoh ² , Quillayute ²	NA	0.457
Columbia River Falls ³	Upriver Brights ²	NA	0.640
	Deschutes	NA	0.640
	Lewis ²	NA	0.546
Columbia R Summers ³	Mid-Columbia Summers ²	NA	0.406
Far North Migrating OR Coastal Falls ³	Nehalem ² , Siletz ² , Siuslaw ²	NA	0.674

¹ Not available (NA) because of insufficient data (lack of stock specific tag codes, base period CWT recoveries, etc).

² Stock or stock group with a CTC agreed escapement goal.

³ Stock group listed in Annex 4, Chapter 3, Attachment V.

⁴ An inconsistency was discovered between the approaches used to calculate the model-based and CWT-based indices. The former included harvest rates for terminal sport while the latter did not. Terminal sport harvest rates are now included in the calculation of both indices. Further review is yet required to determine whether the base period terminal sport harvest rates obtained from analyses of Big Qualicum CWT recoveries adequately represent impacts that would have occurred on Cowichan Chinook.

⁵ Several problems have been identified in the approach previously used to calculate the CWT-based indices for Nanaimo Chinook. Until these problems are resolved, indices for this stock will not be reported.

⁶ Although model-based indices were previously calculated separately for Cowichan and Nanaimo, these did not adequately represent impacts on either LGS stock because the model-based data represent an aggregate of the two stocks and methods do not currently exist to correctly disaggregate these data for calculation of the ISBM values. Until such methods are developed, a single index value only will be reported representing the aggregate.

⁷ The terminal sport harvest rates for Chilliwack Hatchery Chinook, the indicator stock, were removed from the calculation for the Harrison River naturals because sport harvest has been essentially zero on the natural population.

⁸ An inconsistency was discovered between the approaches used to calculate the model-based and CWT-based indices. The former included harvest rates for terminal sport while the latter did not. Terminal sport harvest rates are now included in the calculation of both indices. A more extended review of the indices for WCVI Chinook will be carried out to determine whether they adequately represent impacts on the WCVI wild aggregate.

⁹ For Canadian ISBM fisheries, Lake Washington and Green the same distribution and Index value are assumed.

Table 5. U.S. 2003 ISBM indices based on CWT and the 2005 indices predicted from the PSC Chinook Model. Order of the stock groups corresponds 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 2003	Model Indices for 2005
Washington Coastal Fall Naturals	Hoko	NA ¹	0.444
	Grays Harbor	0.150	0.222
	Queets ⁴	0.850	1.023
	Hoh ⁴	1.340	1.499
	Quillayute ⁴	0.990	1.133
Columbia River Falls	Upriver Brights ⁴	1.430	0.734
	Deschutes	0.490	0.483
	Lewis ⁴	1.030	1.058
Puget Sound Natural Summer / Falls	Skagit	NA	0.195
	Stillaguamish	NA	0.185
	Snohomish	NA	0.891
	Lake Washington	NA	0.373
	Green R	1.030	0.202
Fraser Late	Harrison River ⁴	0.640	0.670
Columbia R Summers	Mid-Columbia Summers ⁴	10.040	0.545
Far North Migrating OR Coastal Falls	Nehalem ⁴	3.110	2.090
	Siletz ⁴	1.590	1.233
	Siuslaw ⁴	3.820	2.643
North Puget Sound Natural Springs	Nooksack	NA	0.222
	Skagit	NA	0.213
Lower Strait of Georgia ³	Cowichan,	4.990	0.407
	Nanaimo	4.990	0.407
Upper Strait of Georgia ³	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	NA	NC ²
Fraser Early (spring and summers) ³	Upper Fraser, Mid Fraser, Thompson	NA	0.257
West Coast Vancouver Island Falls ³	WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble)	NA	0.290
North / Central B. C. ³	Yakoun, Nass, Skeena, Area 8	NA	NC

¹ Not available (NA) because of insufficient data (lack of stock specific tag codes, base period CWT recoveries, etc).

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

³ Stock group listed in Annex 4, Chapter 3, Attachment IV.

⁴ Stock with a CTC agreed escapement goal.

Stock Forecasts

In general, the model does a very good job of matching the agency-supplied forecasts (average error = -0.7%, standard deviation = 13%, median error = -0.9%). Agency forecasts are, on average, also good predictors of observed returns (average error = -10%, standard deviation = 40%, median error = -11%). The model's prediction of observed returns, including stocks for which there are agency forecasts, is also good (average error = -6%, standard deviation = 36%, median error = -9%).

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. Preseason 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 preseason 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 postseason 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 CTC agreed to biologically based escapement goal. Preseason and postseason 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 PSC Chinook model calibration. The results of the 2005 preseason calibration (CLB 0506) are based on completion of the CWT exploitation rate analysis for indicator stocks through 2003 fisheries, coast-wide data on catch, spawning escapements and age structure through 2004, and forecasts of Chinook returns expected in 2005. This report includes:

- 1) estimates of the abundance indices for the years 1979 through 2004 and a projection for 2005 for the AABM fisheries,
- 2) estimates of the non-ceiling indices, referred to as the ISBM indices in this report, for 1999 to 2003 and projections for the 2005 ISBM fisheries,
- 3) estimates for 1979 through 2004 and a projection for 2005 of stock composition in the AABM and other fisheries,
- 4) the distribution of landed and total fishing mortality in all fisheries for the indicator stocks,
- 5) estimates of harvest rates (fishery indices) in the AABM fisheries,
- 6) forecast methods and results for selected stocks, and
- 7) 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 preseason calibration of the Chinook model are used to calculate: 1) AIs for the three AABM fisheries to determine the allowable 2005 catch of Treaty Chinook; 2) the postseason AIs for the previous year; and 3) preseason and postseason ISBM indices.

Projected AIs for 2005 are used to determine preseason allowable catches for AABM fisheries. The postseason 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. Postseason ISBM indices for 2003 are computed using results of the exploitation rate analysis. Forecasts of the 2005 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 postseason assessment.

2.1. EXPLOITATION RATE ASSESSMENT (THROUGH CALENDAR YEAR 2003)

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 adult equivalents (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 salmon, prior to any fishing-related mortality. These re-constructions 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 limited¹ or there is no quantitative estimate of tags in the spawning escapement (see footnotes in Table 2.2). Those used

¹ 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. Incidental mortality rates used for the 2005 calibration (CLB 0506) are listed in Appendix M. 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 the stocks groups they are intended to represent in the fisheries.

Table 2.1. The 39 exploitation rate indicator stocks monitored by the CTC, 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> ¹	<i>North/Central BC</i>	<i>Spring/Summer</i>	<i>Age 0</i>
	<i>Kitimat River</i> ¹	<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> ¹	<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 Summer 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
	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 ²	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 reliable quantitative CWT escapement data and CWT data presented for these stocks is useful for distribution of harvest and mortalities 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 Indicator Stocks	Fishery Index	ISBM Index	Brood ¹ Exp	Survival Index			Base Tagging
					Dist	Esc	
Alaska Spring	yes	—	Total	yes	yes	yes	yes
Kitsumkalum	—	—	Total	yes	yes	yes	—
Robertson Creek	yes	yes	Ocean ¹	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	—	—	⁴	—	yes	yes	—
Nooksack Spring Yearling	—	yes	⁴	yes	yes	yes ³	—
Skagit Spring Fingerling	—	—	Ocean	—	yes	yes	—
Skagit Spring Yearling	—	—	Ocean	yes	yes	yes ³	—
Samish Fall Fingerling	yes	—	Ocean	yes	yes	yes ³	yes
Skagit Summer Fingerling	—	—	Ocean	—	yes	yes	—
Stillaguamish Summer Fingerling	—	yes	⁴	—	yes	—	—
Nisqually Fall Fingerling	—	—	⁴	—	yes	—	yes
University of Washington Accelerated	yes	²	²	—	yes	yes ³	yes
George Adams Fall Fingerling	yes	²	²	yes	yes	yes ³	yes
South Puget Sound Fall Fingerling	yes	yes	Ocean	yes	yes	yes ³	yes
South Puget Sound Fall Yearling	yes	²	²	yes	yes	yes ³	yes
Squaxin Pens Fall Yearling	—	²	²	yes	yes	yes ³	—
White River Spring Yearling	—	—	⁴	yes	yes	yes ³	yes
Elwha Fall Fingerling	—	—	⁴	yes	yes	—	—
Hoko Fall Fingerling	—	—	Ocean	yes	yes	yes	—
Sooes Fall Fingerling	—	—	Ocean	yes	yes	yes	—
Queets Fall Fingerling	—	yes	⁴	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	—	²	yes	yes	yes	—
Columbia Lower River Hatchery	yes	—	²	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 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 before 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 sublegal) and fishery and are those published by the CTC (1997) for troll and sport fisheries. The rates used in CLB 0506 are listed in Appendix M.
- 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 (age 5 for spring stocks) 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. In a related method, direct estimates of CNR encounters provided by the agencies are related to the size of the landed catch. 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 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 (age 5 for spring stocks), 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 variable” (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
$ISBMIdx_{CY}$	= 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
$TotCWTRelase_{BY}$	=	number of CWT fish released in the indicator group in brood year BY

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

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:

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

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) as follows:

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

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 NBC fisheries), the indices may not represent the harvest impact of all gear types.

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 to compute the yearly harvest rates for each strata and the overall fishery.

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

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

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

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

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:

- 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;*
- 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;*
- 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;*
- 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 sub-paragraph shall be referred to as the “general obligation”.*”

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

Fisheries Included in ISBM Index	
United States	Canada
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 Strait Net
Puget Sound Southern Sport	Fraser Net
Freshwater Terminal Sport	Freshwater BC Net
	Strait of Georgia Sport
	Strait of Juan de Fuca Sport
	Freshwater BC Sport

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

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

$$BPISBMER_{f,a} = \frac{\sum_{BP=79}^{82} \frac{(TotMorts_{BP,f,a} * AEQ_{BY=BP-a,a,f})}{Cohort_{BY=BP-a,a}}}{4}$$

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 2005, 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 2005, 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 2004 harvest rates, or a repeat of 2003 rates if estimates of 2004 were also unavailable, was assumed.

- 3) In 1999-2005 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 a 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 2.8 shows changes made to fishery mappings used in the exploitation rate analysis.

Table 2.6. Methods for computing FP scalars input to the CTC Chinook Model to produce ISBM indices. See Section 2.1.6 for stock specific methods.

Stock Group	Escapement Indicator Stock	Model Stock	Stock Specific Method 2004
Lower Strait of Georgia	Cowichan ¹ Nanaimo ¹	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

¹ Separate indices were computed for these stocks prior to 2005. The CTC identified inconsistencies with this method and chose to keep these two stocks aggregated in this analysis.

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.

Stock Group	Escapement Indicator Stock	Exploitation Rate Indicator Stock	Stock Specific Method
Lower Strait of Georgia	Cowichan Nanaimo	Cowichan NC	4 NC
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 Nimkish	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

Table 2.8. Changes to exploitation rate analysis fishery mappings in 2005.

Stock	Gear number	Gear	PSC Location Code	Old Mapping		New Mapping	
				Fish number	Fishery	Fish number	Fishery
RBT	10	Ocean Troll	5M2220204O0204 10	3030	OR OCEAN AREA 3 TROLL	3031	OR OCEAN AREA 4 TROLL
	40	Ocean Sport	2MS2723B	2017	TERMINAL SPORT(FRESH WATER)	2018	TERMINAL WCVI SPORT
	40	Ocean Sport	2MS28	2017	TERMINAL SPORT(FRESH WATER)	2018	TERMINAL WCVI SPORT
RBT	10	Ocean Troll	5M2223403O3403 10			3030	OR OCEAN AREA 3 TROLL
	10	Ocean Troll	5M2224006O4006 10			3033	OR OCEAN AREA 6 TROLL
	22	Coastal Gillnet	3F21802 220004 R			3038	TERMINAL (OUTSIDE COL R) NET
	40	Ocean Sport	1M103			1070	ALASKA SW QUADRANT SPORT
	40	Ocean Sport	1M106			1069	ALASKA SE QUADRANT SPORT
	40	Ocean Sport	3M42001 A			3049	TERMINAL CR BUOY 10 SPORT
CWF	40	Ocean Sport	5F33201			3049	TERMINAL CR BUOY 10 SPORT
CWF	41	Sport (Charter)	3M42001 A			3049	TERMINAL CR BUOY 10 SPORT
CWF	41	Sport (Charter)	5F33201			3049	TERMINAL CR BUOY 10 SPORT
CWF	42	Sport (Charter)	3M42001 A			3049	TERMINAL CR BUOY 10 SPORT
CWF	42	Sport (Charter)	5F33201			3049	TERMINAL CR BUOY 10 SPORT
CWF	43	Sport (Charter)	3M42001 A			3049	TERMINAL CR BUOY 10 SPORT
CWF	45	Sport (Charter)	5F33201 R1 32			3049	TERMINAL CR BUOY 10 SPORT
NKF	50	Hatchery	2F			1079	ESCAPEMENT
CWS	50	Hatchery	3F			1079	ESCAPEMENT
NKF	50	Hatchery	3F			1079	ESCAPEMENT
SAM	50	Hatchery	3F			1079	ESCAPEMENT
CWS	50	Hatchery	5F			1079	ESCAPEMENT
NKF	51	Fish Screen	3F			1079	ESCAPEMENT
CWS	52	Fish Trap (Freshwater)	3F			1079	ESCAPEMENT
NKF	52	Fish Trap (Freshwater)	3F			1079	ESCAPEMENT
CWS	52	Fish Trap (Freshwater)	5F			1079	ESCAPEMENT
NKF	53	Wild Broodstock	3F			1079	ESCAPEMENT
WCN	53	Wild Broodstock	3F			1079	ESCAPEMENT
NKF	54	Spawning Ground	2F			1079	ESCAPEMENT
CWS	54	Spawning Ground	3F			1079	ESCAPEMENT
NKF	54	Spawning Ground	3F			1079	ESCAPEMENT
CWS	54	Spawning Ground	5F			1079	ESCAPEMENT
NKF	55	Treaty Ceremonial	3F			1079	ESCAPEMENT
NKF	56	Treaty Subsistence	3F			1079	ESCAPEMENT
NKF	57	Broodstock & Hatchery	3F			1079	ESCAPEMENT
WCN	57	Broodstock & Hatchery	3F			1079	ESCAPEMENT
NKF	59	Other Return	3F			1079	ESCAPEMENT
CWS	65	Dead Fish Survey	3F			1079	ESCAPEMENT
CWS	65	Dead Fish Survey	5F			1079	ESCAPEMENT
CWS	65	Dead Fish Survey	5F			1079	ESCAPEMENT

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 2005, 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 2004 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 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 preseason forecasts and postseason estimates become available since model predictions are sensitive to preseason forecasts and postseason 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 2.9.

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 2.9. Months when final return estimates are available for the previous year and preseason forecasts of abundance are available for the next fishing year from agencies.

Model Stock	Month Final Return Estimate Available	Month(s) Forecast Available
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 ¹
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

¹ 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.

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 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 preseason forecasts (Table 2.10) 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 scalars that are specific to year, fishery, stock and age that are 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 of the 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 (AKS, BON, CWF, FRL, GSH, LRW, ORC, RBH, RBT, SPR, URB, and WSH). 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 codes are used to represent distribution patterns of existing model stocks, or a re-

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 with an OP7 extension.

Table 2.10. Methods used to forecast the abundance of stocks in the 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	Preseason Age-specific	Postseason 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 observed 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:

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

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

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). This value could be changed to a finer or larger resolution if required.

$$\left| \frac{EV_{n,BY} - EV_{n-1,BY}}{EV_{n-1}} \right| < 0.05$$

Several options for the calibration are provided in the OP7 control file. The options include the ability to control the brood years for which the stock productivity scalars are estimated in each iteration and also the type of convergence criteria. For the 2005 calibration, stock productivity scalars were estimated for all brood years 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 2005 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 2004 using updated catch and escapement data through 2004. Average exploitation rate scalars were then computed and used as input values for 2004 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 2005; 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. Changes in the Model

No changes were made to the model for 2005.

2.2.3.2. Data Changes Involved in the Exploitation Rate Analysis

1. In 2003, the catch sample expansion had an error in weeks 38 and 39 that was over expanding recoveries of Chinook in the Columbia River net fisheries (expansions of 81 and 37 (rounded) fish respectively). We contacted Doug Case (ODFW, Clackamas office) to get the actual catches and samples in that week. Expansions were recalculated as 2.92 and 5.53 for weeks 38 and 39 respectively to estimate the overall catches in the Columbia River gillnet fisheries.
2. Oregon Salmon River escapement recoveries were missing in 2003. John Leppink (ODFW) sent us the recoveries externally and we incorporated these numbers. It appears

that the numbers reported are underestimates (as the expansion factors of fish sampled from the spawning grounds seems to be extremely low, <2). In addition, an analysis of the distribution files indicates that the percentages are about a third of what is normally observed in the escapement.

3. Missing data for the 2001 and 2002 Columbia River net recoveries were not rectified as the data were not available in RMIS.

2.2.3.3. Changes to the Input Data for the Chinook Model

1. Upper Georgia Strait, Northern British Columbia, Lower Georgia and Georgia Strait Hatchery postseason runs were updated to match the DFO external FPA files.
2. Upper Columbia Summer stocks were changed to match TAC database on Upriver Summers (the Upriver Summer component on the Columbia has been separated from the Snake River component).
3. Stillaguamish forecast was not used in the run.
4. Escapements for RBT in 2004 were corrected in the FCS file and the 2005 RBT forecast and historical time series of escapements by age were corrected.
5. The time series of Washington Coastal hatchery escapements was corrected as well as the Washington Coastal terminal FPs.
6. The entire time series of escapement data for the Northern Oregon Coastal stock was changed.

2.3. GENERAL FORECAST METHODS

For those stocks with externally provided forecasts of abundance in 2005, 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 2005 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 2005 (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 because the terminal fishery is directed at harvesting only surplus hatchery production, 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 18 stocks ranged from 0.46 to 0.82.

Table 3.1. Correlation coefficient (r) between total brood year survivals 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	20	0.37	0.113
Kitsumkalum	17	0.41	0.100
Robertson Creek	25	0.73	0.000
Quinsam	24	0.73	0.000
Puntledge	25	0.57	0.003
Big Qualicum	25	0.61	0.001
Cowichan	13	0.55	0.051
Chilliwack	18	0.68	0.002
Nooksack Spring Yearling	10	0.79	0.007
Skagit Spring Yearling	13	0.07	0.823
Samish Fall Fingerling	16	0.72	0.002
George Adams Fall Fingerlings	20	0.57	0.008
South Puget Sound Fall Fingerling	23	0.46	0.027
South Puget Sound Fall Yearling	16	-0.03	0.898
Squaxin Pens Fall Yearling	8	0.07	0.877
White River Spring Yearling	19	-0.18	0.461
Elwha Fall Fingerling	9	0.52	0.154
Hoko Fall Fingerling	12	-0.03	0.921
Sooes Fall Fingerling	12	-0.09	0.787
Queets Fall Fingerling	20	0.43	0.058
Willamette Spring	23	0.67	0.000
Columbia River Summers	19	0.79	0.000
Cowlitz Tule	22	0.82	0.000
Spring Creek Tule	25	0.71	0.000
Columbia Lower River Hatchery	23	0.52	0.012
Columbia Upriver Brights	24	0.53	0.008
Hanford Wild	13	0.82	0.001
Lyons Ferry	10	0.21	0.564
Lewis River Wild	19	0.53	0.021
Salmon River	20	0.54	0.014

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 are to be managed through the use of the preseason AIs, where specific allowable harvest corresponds to a given AI for each fishery. The preseason AIs 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 AI of 1.10 for SEAK. The 2005 AI for the SEAK troll fishery is 2.05, for the NBC troll fishery it is 1.69, and for the WCVI troll fishery is 0.88.

Table 3.2. Abundance indices for 1999 to 2005 for the SEAK, NBC, and WCVI troll fisheries.

Year	SEAK		NBC		WCVI	
	Preseason	Postseason	Preseason	Postseason	Preseason	Postseason
1999	1.15 ¹	1.12 ³	1.12 ¹	0.97 ³	0.60 ¹	0.50 ³
2000	1.14 ²	1.10 ³	1.00 ²	0.95 ³	0.54 ²	0.47 ³
2001	1.14 ³	1.29 ⁴	1.02 ³	1.22 ⁴	0.66 ³	0.68 ⁴
2002	1.74 ⁴	1.82 ⁵	1.45 ⁴	1.63 ⁵	0.95 ⁴	0.92 ⁵
2003	1.79 ⁵	2.17 ⁶	1.48 ⁵	1.90 ⁶	0.85 ⁵	1.10 ⁶
2004	1.88 ⁶	2.06 ⁷	1.67 ⁶	1.83 ⁷	0.90 ⁶	0.98 ⁷
2005	2.05 ⁷		1.69 ⁷		0.88 ⁷	

¹ From CTC Chinook Model Calibration #9902.

² From CTC Chinook Model Calibration #0021.

³ From CTC Chinook Model Calibration #0107.

⁴ From CTC Chinook Model Calibration #0206.

⁵ From CTC Chinook Model Calibration #0308.

⁶ From CTC Chinook Model Calibration #0404.

⁷ From CTC Chinook Model Calibration #0506.

The Agreement specifies the allowable catch for various values of the AI for each fishery. The allowable treaty catch by fishery and year based on pre- and postseason AIs and the actual (observed) catches are given in Table 3.3 and shown in Figures 3.1 through 3.3.

Table 3.3. Observed catches and postseason allowable catches for 1999 to 2004, and preseason allowable catches for 1999 to 2005, for AABM fisheries.

PST Treaty Allowable and Observed Catches									
Year	SEAK (T, N, S) ¹			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	86,726	128,300	107,000	36,413
2000	189,900	178,500	186,493	130,000	123,500	31,900	115,500	86,200	101,438
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	150,137	203,200	196,800	165,036
2003	366,100	439,600	380,152	197,100	277,200	191,657	181,800	268,900	175,821
2004	383,500	418,300	428,773 433,446 ²	243,600	267,000	241,508	192,500	209,600	216,166
2005	416,400			246,600			188,200		

¹ Nomenclature is T for troll, S for sport and N for net.

² The lower value results from subtracting a terminal exclusion catch for the Stikine River in 2004, which is in dispute.

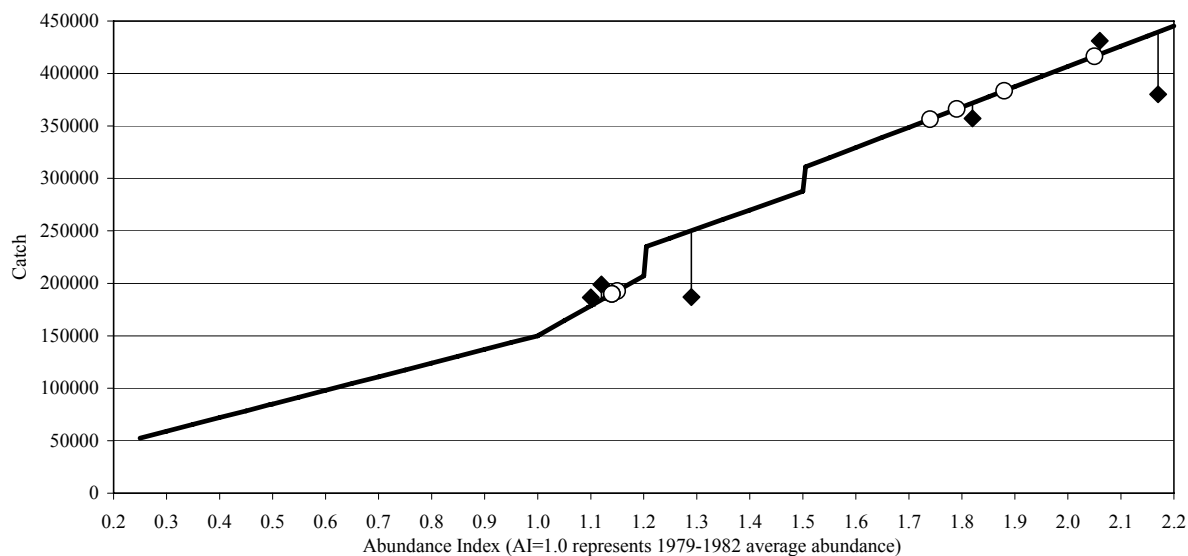


Figure 3.1. Preseason allowable catches (open circles) and postseason catches (diamonds) in Southeast Alaska AABM fisheries, 1999-2004.

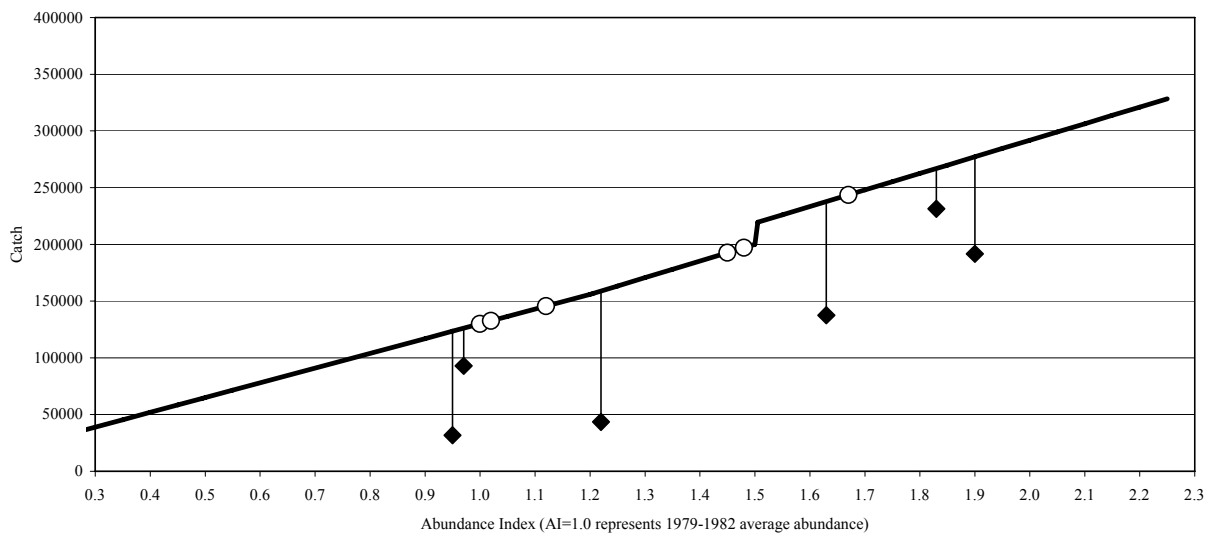


Figure 3.2. Preseason allowable catches (open circles) and postseason catches (diamonds) in Northern British Columbia troll and Queen Charlotte Islands recreational AABM fisheries, 1999-2004.

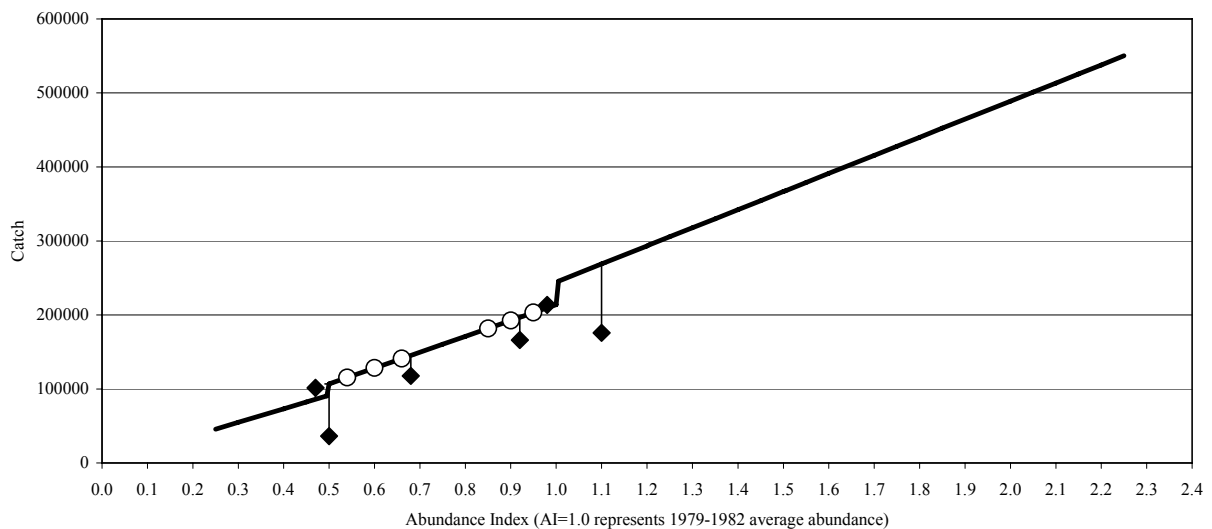


Figure 3.3. Preseason allowable catches (open circles) and postseason catches (diamonds) in West Coast Vancouver Island AABM fisheries, 1999-2004.

3.2.1.1. Stock composition of AABM fisheries, 1979-2005

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 3.4 through 3.6). The relative abundance for each major stock is shown in the following graphs (see Appendix I for tabular results). A time series of abundance estimates for each of the 30 model stocks in each AABM fishery based on the 2005 CTC calibration (CLB 0506) are shown in Appendix J and H, respectively. In general, AIs had a peak during the late 1980s and another in 2003.

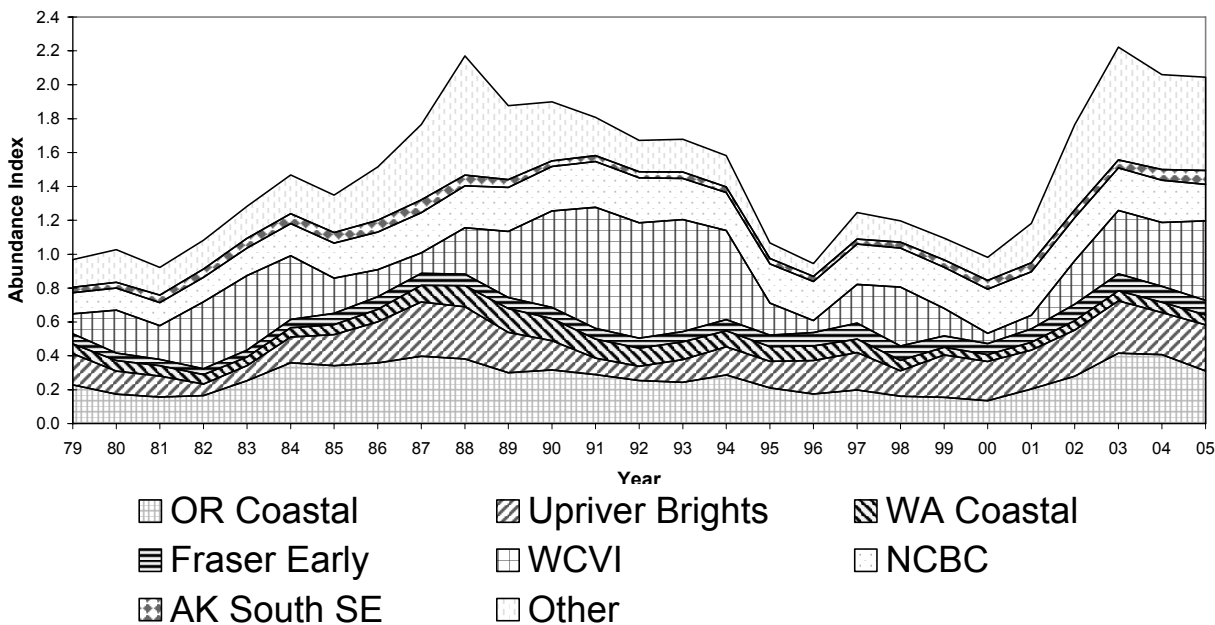


Figure 3.4. Total abundance indices for the Southeast Alaska troll fishery with annual stock composition indicated by abundance indices for major model stocks from CLB 0506.

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 3.4). The 2005 forecast for the Columbia Upriver Bright stock is slightly lower compared to the 2004 postseason assessment. The “other” category is primarily Upper Georgia Strait, Columbia River Summers and Mid Columbia River Brights.

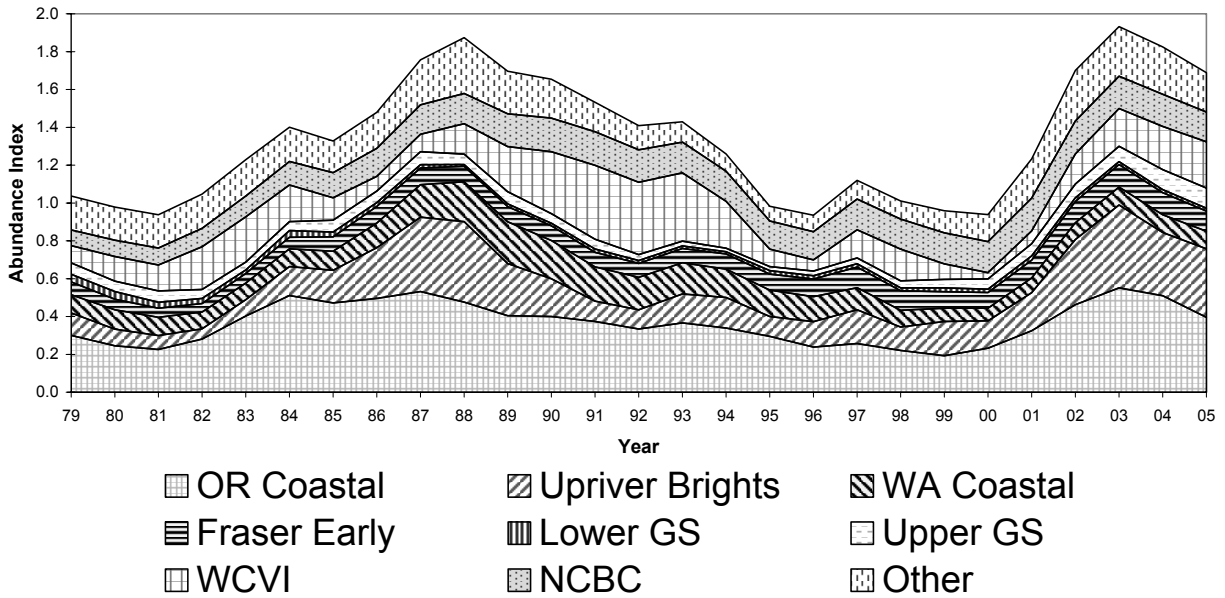


Figure 3.5. Total abundance indices for the Northern BC troll fishery with annual stock composition indicated by abundance indices for major model stocks from CLB 0506.

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 3.5). The 2005 preseason AI is noticeably lower compared to the 2004 postseason AI.

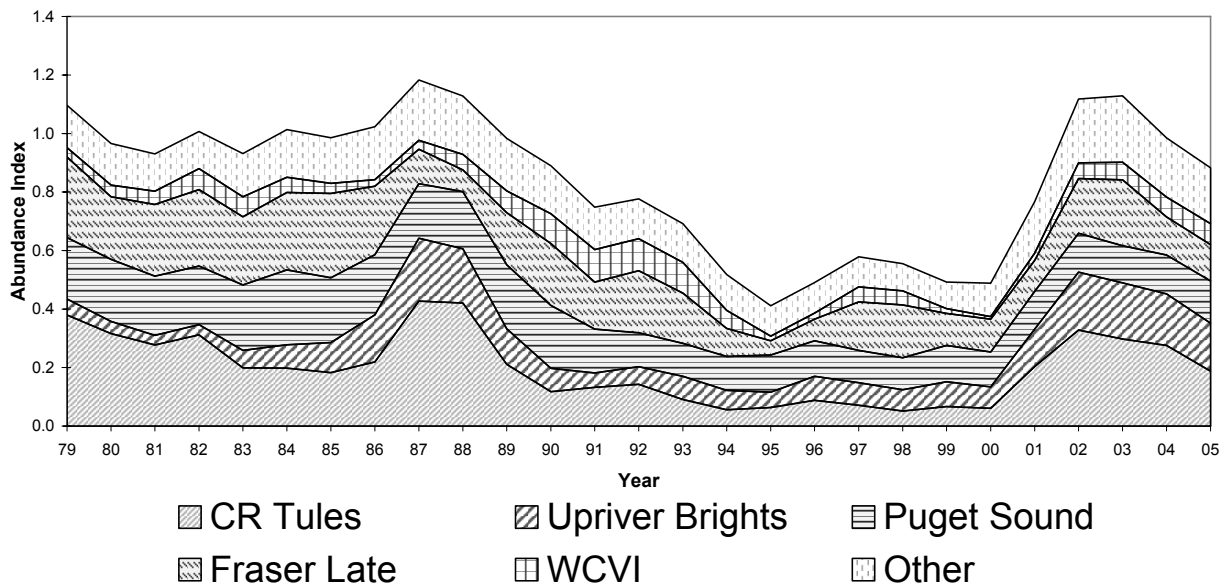


Figure 3.6. Total abundance indices for the WCVI troll fishery with annual stock composition indicated by abundance indices for major model stocks from CLB 0506.

The major model stock groups in the WCVI fishery are: Fraser Late, Puget Sound, Upriver Brights, and Columbia River Tules (Figure 3.6). The 2005 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 postseason calibration is 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. The first postseason AIs used to evaluate overage and underage are summarized in Table 3.2.

The 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 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 preseason AIs (Table 3.2) that is used to determine the preseason estimate of allowable catch. Management error is related to the harvest manager’s ability to attain the preseason estimates of allowable catch. Harvest managers have no prior knowledge of the postseason estimate of allowable catch, which can be quite different from the preseason estimate (Table 3.3).

Evaluation of overage/underage in ISBM fisheries is even more problematic than in the 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. Preseason 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 differences between the postseason allowable catches and the observed catches in AABM fisheries for 1999–2004, 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 three of the six years; the cumulative differential is –5.7% or -5.4%. In NBC, observed catches have been below the final allowable catches in all six years; the cumulative differential is –37.4%. In WCVI, observed catches have been below allowable catches in four of the six years; the cumulative differential is –19.9%.

Table 3.4. Deviations in numbers of Chinook salmon and percentages from catch targets derived from the first postseason 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%	-39,374	-31.2%	-70,587	-66.0%
2000	+7,993	+4.5%	-91,600	-74.2%	+15,238	+17.7%
2001	-63,381	-25.3%	-115,400	-72.6%	-27,830	-19.1%
2002	-14,767	-4.0%	-87,663	-36.9%	-31,764	-16.1%
2003	-59,448	-13.5%	-85,543	-30.9%	-93,097	-34.6%
2004	+10,488 +15,146	+2.5% +3.6%	-25,492	-9.5%	+6,566	+3.1%
Cum.	-104,488 -99,815 ¹	-5.7% -5.4%	-445,072	-37.4%	-201,456	-19.9%

¹ The lower value results from subtracting a terminal exclusion catch for the Stikine River in 2004, which is in dispute.

3.2.4. ISBM Indices by Stock

For ISBM fisheries, the Agreement specifies that Canada and the United States will 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 2003, and Chinook model-based predicted indices for 2005. The agreement specifies that the indices for postseason assessment be assessed using the CWT-based estimates, 2003 is the most recent analysis available. CWT-based indices for 1999-2003 and model-based indices for 1999-2005 are presented in Appendix B.

3.2.5. CWT-based Indices in 2003

Canadian ISBM indices from the CWT-based estimates for 2003 were reduced more than required under the agreement for all stocks or stock groups (Table 3.5).

For the Canadian ISBM indices (Table 3.5) several inconsistencies were identified in the way indices had been computed in the past (footnotes 4-9 in Table 3.5). Most of them were inconsistencies between the way indices had been calculated by the model and in the CWT analysis. However, in the case of Lower Georgia Strait, Nanaimo was dropped from the CWT-based index because of concern about the adequacy of base-period data. In addition, Nanaimo and Cowichan stocks are no longer reported separately in the model-based index because there is no way to split the two stocks in the base period.

Thirteen of the 15 U.S. ISBM indices for the CWT-based estimates for 2003 exceeded the limit of 0.60 (60%) established under the agreement (Table 3.6). However, of the 13 U.S. CWT-based ISBM indices that exceeded 0.60, only 3 (Cowichan, Nanaimo, and Green River) do not have agreed escapement goals, and all stocks with agreed escapement goals met their goals in 2003 (Table 3.10).

3.2.6. Predicted ISBM Indices for 2005

Model projected indices (Table 3.5 and Table 3.6) show that the Canadian ISBM fisheries are expected to increase harvest in response to overall abundance with projected indices being slightly over 0.635 for Canadian stocks other than Lower Strait of Georgia, and Fraser Late (Table 3.5). Canadian indices for most U.S. stocks are projected to be below 0.635; two of the three stocks projected to be above 0.635 have an agreed escapement goal. In the southern US fisheries (Table 3.6) some stocks are projected to have ISBM index values over 0.60, but with the exception of Snohomish, the stocks with projected ISBM indices greater than 0.60 have agreed escapement goals and have been meeting these goals. Figures 3.7 and 3.8 show the historical ISBM indices based on CWT recoveries.

Table 3.5. Canadian 2003 ISBM indices based on CWT and the 2005 indices predicted from the PSC Chinook Model.

Stock Group	Escapement Indicator Stock	Canadian ISBM Indices	
		CWT Indices for 2003	Model Indices for 2005
Lower Strait of Georgia	Cowichan	0.363 ^{1,4}	
	Nanaimo	NA ⁵	0.381 ⁶
Fraser Late	Harrison River ²	0.055 ⁷	0.332
North Puget Sound Natural Springs	Nooksack	0.046	0.314
	Skagit	NA	0.314
Upper Strait of Georgia	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	0.006	0.649
Fraser Early (spring and summers)	Upper Fraser, Mid Fraser, Thompson	NA	0.654
West Coast Vancouver Island Falls	WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble)	0.496 ⁸	0.728
Puget Sound Natural Summer / Falls	Skagit	NA	0.465
	Stillaguamish	NA	0.587
	Snohomish	NA	0.457
	Lake Washington	NA	0.497 ⁹
	Green River	0.328	0.497 ⁹
North / Central B. C.	Yakoun, Nass, Skeena, Area 8	NA	0.680
Washington Coastal Fall Naturals ³	Hoko, Grays Harbor, Queets ² , Hoh ² , Quillayute ²	NA	0.457
Columbia River Falls ³	Upriver Brights ²	NA	0.640
	Deschutes	NA	0.640
	Lewis ²	NA	0.546
Columbia R Summers ³	Mid-Columbia Summers ²	NA	0.406
Far North Migrating OR Coastal Falls ³	Nehalem ² , Siletz ² , Siuslaw ²	NA	0.674

¹ Not available (NA) because of insufficient data (lack of stock specific tag codes, base period CWT recoveries, etc).

² Stock or stock group with an agreed CTC escapement goal.

³ Stock group listed in Annex 4, Chapter 3, Attachment V.

⁴ An inconsistency was discovered between the approaches used to calculate the model-based and CWT-based indices. The former included harvest rates for terminal sport while the latter did not. Terminal sport harvest rates are now included in the calculation of both indices. Further review is yet required to determine whether the base period terminal sport harvest rates obtained from analyses of Big Qualicum CWT recoveries adequately represent impacts that would have occurred on Cowichan Chinook.

⁵ Several problems have been identified in the approach previously used to calculate the CWT-based indices for Nanaimo Chinook. Until these problems are resolved, indices for this stock will not be reported.

⁶ Although model-based indices were previously calculated separately for Cowichan and Nanaimo, these did not adequately represent impacts on either LGS stock because the model-based data represent an aggregate of the two stocks and methods do not currently exist to correctly disaggregate these data for calculation of the ISBM values. Until such methods are developed, a single index value only will be reported representing the aggregate.

⁷ The terminal sport harvest rates for Chilliwack Hatchery Chinook, the indicator stock, were removed from the calculation for the Harrison River naturals because sport harvest has been essentially zero on the natural population.

⁸ An inconsistency was discovered between the approaches used to calculate the model-based and CWT-based indices. The former included harvest rates for terminal sport while the latter did not. Terminal sport harvest rates are now included in the calculation of both indices. A more extended review of the indices for WCVI Chinook will be carried out to determine whether they adequately represent impacts on the WCVI wild aggregate.

⁹ For Canadian ISBM fisheries, the Lake Washington and Green stocks are assumed to have the same distribution and index value.

Table 3.6. U.S. 2003 ISBM indices based on CWT and the 2005 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 2003	Model Indices for 2005
Washington Coastal Fall Naturals	Hoko	NA ¹	0.444
	Grays Harbor	0.150	0.222
	Queets ⁴	0.850	1.023
	Hoh ⁴	1.340	1.499
	Quillayute ⁴	0.990	1.133
Columbia River Falls	Upriver Brights ⁴	1.430	0.734
	Deschutes	0.490	0.483
	Lewis ⁴	1.030	1.058
Puget Sound Natural Summer / Falls	Skagit	NA	0.195
	Stillaguamish	NA	0.185
	Snohomish	NA	0.891
	Lake Washington	NA	0.373
	Green R	1.030	0.202
Fraser Late	Harrison River ⁴	0.640	0.670
Columbia R Summers	Mid-Columbia Summers ⁴	10.040	0.545
Far North Migrating OR Coastal Falls	Nehalem ⁴	3.110	2.090
	Siletz ⁴	1.590	1.233
	Siuslaw ⁴	3.820	2.643
North Puget Sound Natural Springs	Nooksack	NA	0.222
	Skagit	NA	0.213
Lower Strait of Georgia ³	Cowichan,	4.990	0.407
	Nanaimo	4.990	0.407
Upper Strait of Georgia ³	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	NA	NC ²
Fraser Early (spring and summers) ³	Upper Fraser, Mid Fraser, Thompson	NA	0.257
West Coast Vancouver Island Falls ³	WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble)	NA	0.290
North / Central B. C. ³	Yakoun, Nass, Skeena, Area 8	NA	NC

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

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

³ Stock group listed in Annex 4, Chapter 3, Attachment IV.

⁴ Stock with an agreed CTC escapement goal.

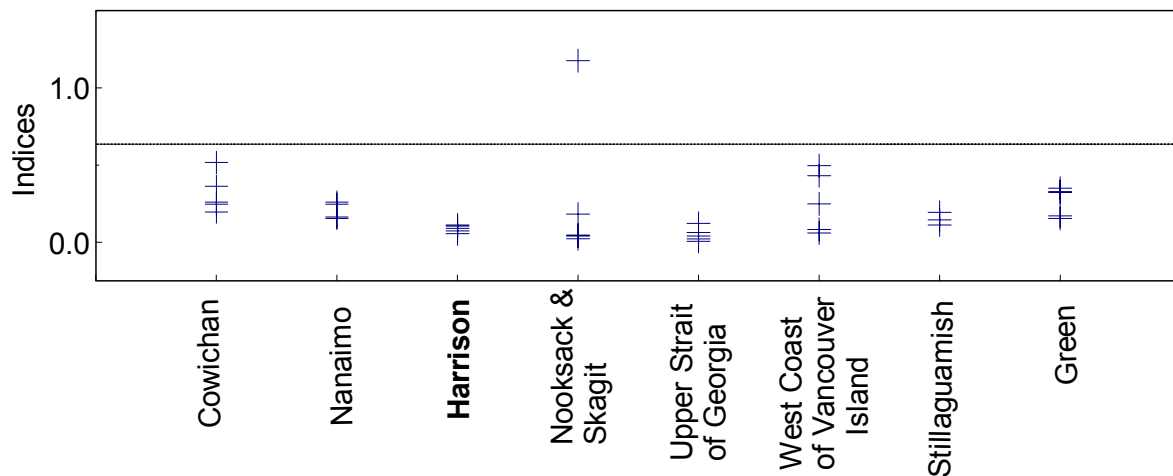


Figure 3.7. ISBM indices for Canadian fisheries for 1999-2003. Stocks in bold have CTC agreed escapement goals. The solid horizontal line is an index value of 0.635.

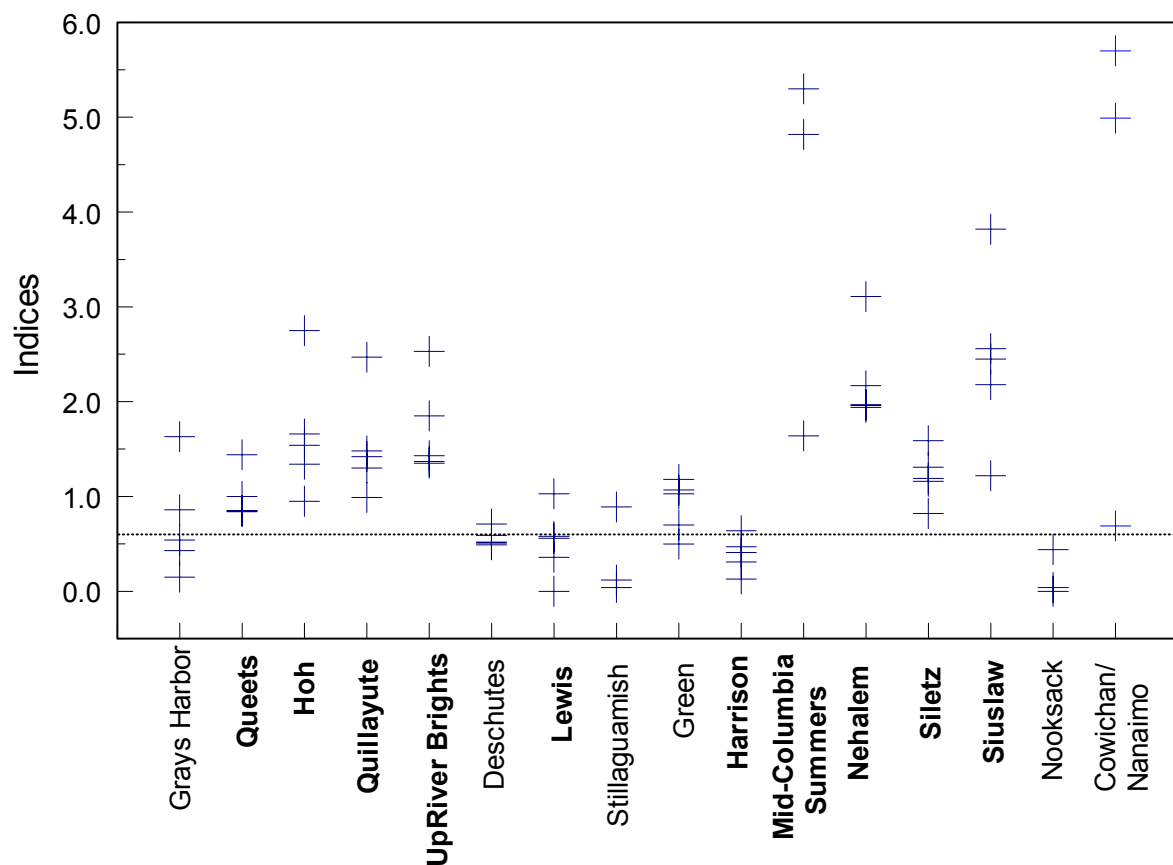


Figure 3.8. ISBM indices for U.S. fisheries for 1999-2003. Stocks in bold have CTC agreed escapement goals. Note that three index values are not shown on the graph above: Mid-Columbia Summers for 2002 (7.250) and 2003 (10.040) and Cowichan/Nanaimo for 2001 (11.350). The dashed horizontal line is an index value of 0.60.

3.3. MODEL CALIBRATION EVALUATION

The model catches and stock escapements or terminal run sizes estimated by CLB 0506 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 and 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 the proportion of the total catch in the fishery that can be explained by stocks in the model. This proportion is calculated by the model and only applies to the fisheries that are present in the ceiling file.

Table 3.7. Average proportion of observed catch by CLB 0506 for PST fisheries.

Model Fishery	Model Catch as Proportion of Observed Catch
Southeast Alaska Troll	0.841
Northern BC Troll	0.954
Central BC Troll	1.022
WCVI Troll	0.857
Washington/Oregon North of Falcon Ocean Troll	1.152
Strait of Georgia Troll	0.875
Southeast Alaska Net	0.600
Northern BC Net	0.662
Central BC Net	1.086
Puget Sound North Net	0.773
Southeast Alaska Sport	0.758
QCI Sport	2.902
WCVI Sport	0.468
Washington/Oregon North of Falcon Ocean Sport	0.896
Puget Sound North Sport	0.894
Puget Sound South Sport	0.595
Strait of Georgia Sport	1.346

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 0506. The column entitled “Average” represents the 1979–2004 average ratios 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. Comparison of model calibration results with estimated terminal run sizes or escapements from 1979 to 2004. For most stocks (or stock groups) included in the model calibration, n = 26 years, except for Nooksack Springs, (n = 9, years 1980–1987) and the Mid-Columbia River Bright Hatchery group (n = 24, years 1981–2004).

Model Stock	Ratio of:	Average	SD	Min.	Max.
Alaska South SE	Escapement	1.033	0.208	0.749	1.522
North/Central BC	Term. Run	1.013	0.096	0.805	1.261
WCVI Hatchery & Natural	Term. Run	1.023	0.171	0.705	1.640
Upper Strait of Georgia	Escapement	1.073	0.295	0.745	2.144
Lower Strait of Georgia Hatchery	Term. Run	1.007	0.160	0.665	1.373
Lower Strait of Georgia Natural	Escapement	1.045	0.214	0.726	1.534
Fraser Early	Term. Run	1.015	0.092	0.856	1.169
Fraser Late	Escapement	1.000	0.137	0.756	1.222
Nooksack Spring	Escapement	1.059	0.216	0.860	1.537
Nooksack Fall (Samish)	Term. Run	1.036	0.154	0.777	1.286
Snohomish Wild	Term. Run	1.022	0.135	0.816	1.324
Skagit Wild	Term. Run	1.058	0.265	0.717	1.822
Puget Sound Natural Fingerling	Term. Run	1.032	0.164	0.812	1.371
Stillaguamish Wild	Escapement	1.054	0.218	0.740	1.684
Puget Sound Hatchery Fingerling & Yearling	Term. Run	1.023	0.113	0.822	1.220
Washington Coastal Wild	Term. Run	1.030	0.150	0.809	1.403
Washington Coastal Hatchery	Term. Run	1.043	0.174	0.817	1.453
Cowlitz Spring Hatchery	Term. Run	1.041	0.197	0.633	1.547
Willamette River Hatchery	Term. Run	1.008	0.125	0.783	1.317
Columbia River Summer	Term. Run	1.020	0.118	0.851	1.383
Lower Bonneville Hatchery	Term. Run	1.044	0.281	0.656	2.082
Cowlitz Fall Hatchery	Term. Run	1.005	0.191	0.660	1.408
Spring Creek Hatchery	Term. Run	1.010	0.092	0.850	1.224
Upriver Brights	Term. Run	1.014	0.122	0.796	1.246
Lyons Ferry	Escapement	1.141	0.537	0.522	2.974
Mid-Columbia River Bright	Term. Run	1.032	0.171	0.765	1.474
Lewis River Wild	Term. Run	1.010	0.148	0.830	1.358
Oregon Coast	Escapement	1.048	0.221	0.681	1.563

There is variability in the annual ratios of model predictions to observed estimates, as can be judged by the standard deviations and ranges. 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 2004 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 0506 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 ($P < 0.01$; $n = 25$ years). The model results are closely associated with the CWT-based indices and changes in fishery exploitation rates as indicated in Figures 3.9 through 3.14.

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

	AABM Troll Fishery		
	SEAK	NBC	WCVI
Landed Catch			
Mortality	0.896	0.870	0.924
Total Mortality	0.806	0.868	0.927

The SEAK fishery mortality index from the model closely follows the trend of the CWT derived estimate from 1979 through 1987 for both landed catch and total mortality (Figures 3.9 and 3.10). Between 1989 and 2000, the model estimate of both landed catch and total mortality indices is less than the CWT-derived estimate for most years but since 2001, the model estimate is noticeably higher. Since 1990, the model estimates also show less variability compared to the CWT-derived indices.

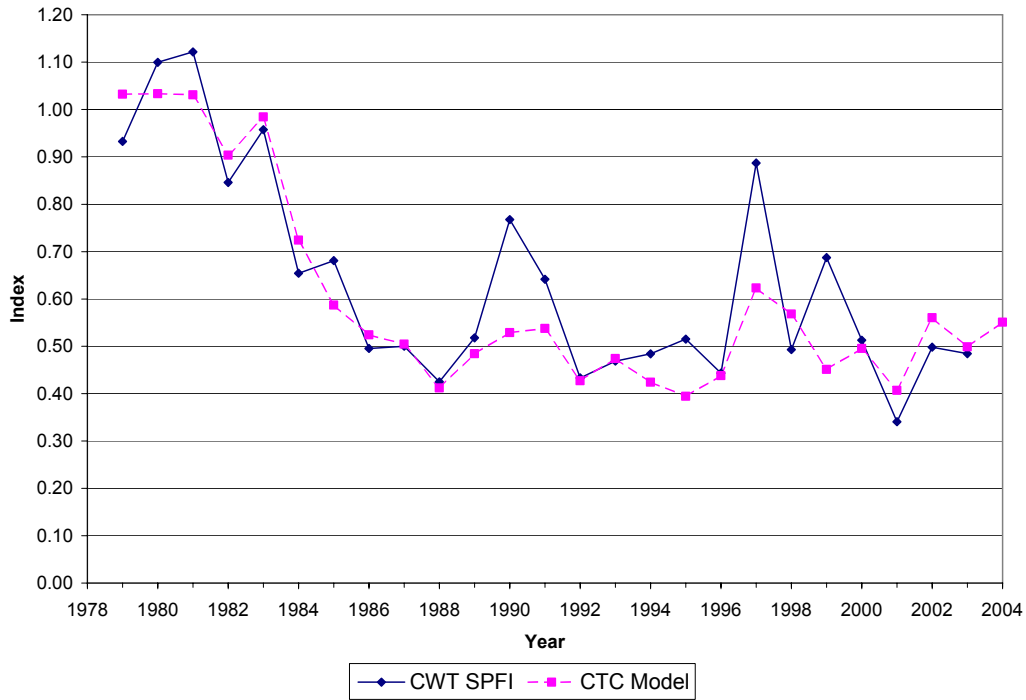


Figure 3.9. Estimated CWT (through 2003) and model landed catch fishery indices (through 2004) for the SEAK troll fishery.

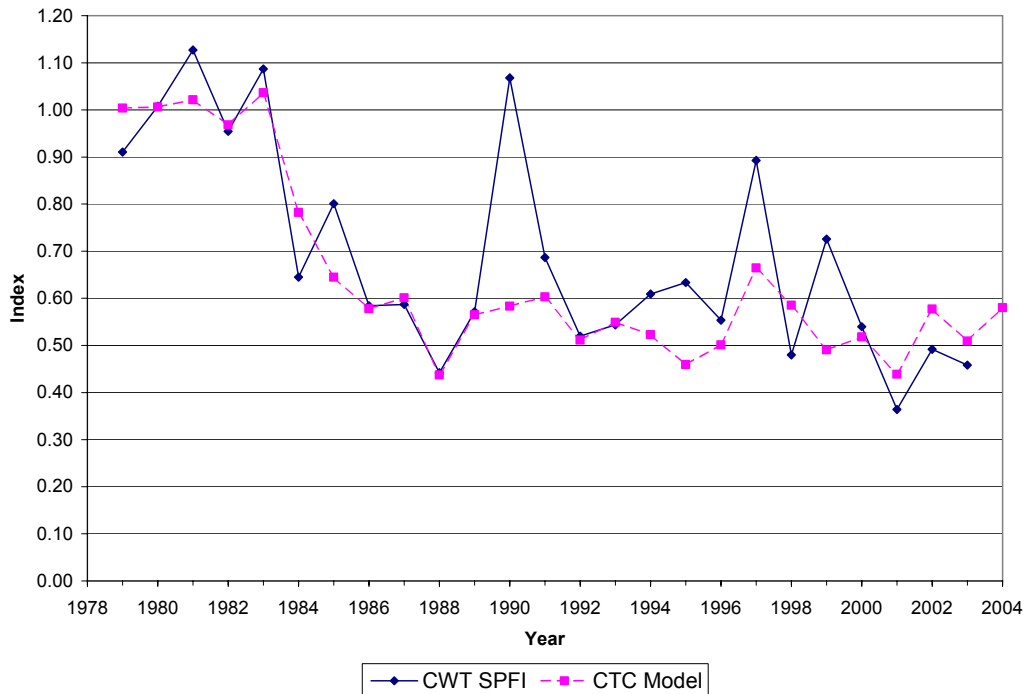


Figure 3.10. Estimated CWT (through 2003) and model total mortality fishery indices (through 2004) for the SEAK troll fishery.

The model-derived fishery mortality indices for NBC generally follow the same trend as CWT-derived indices (Figures 3.11 and 3.12). However, since 1991, the model-based estimates have exceeded the CWT-derived estimates in all but four years for both landed catch and total mortality indices.

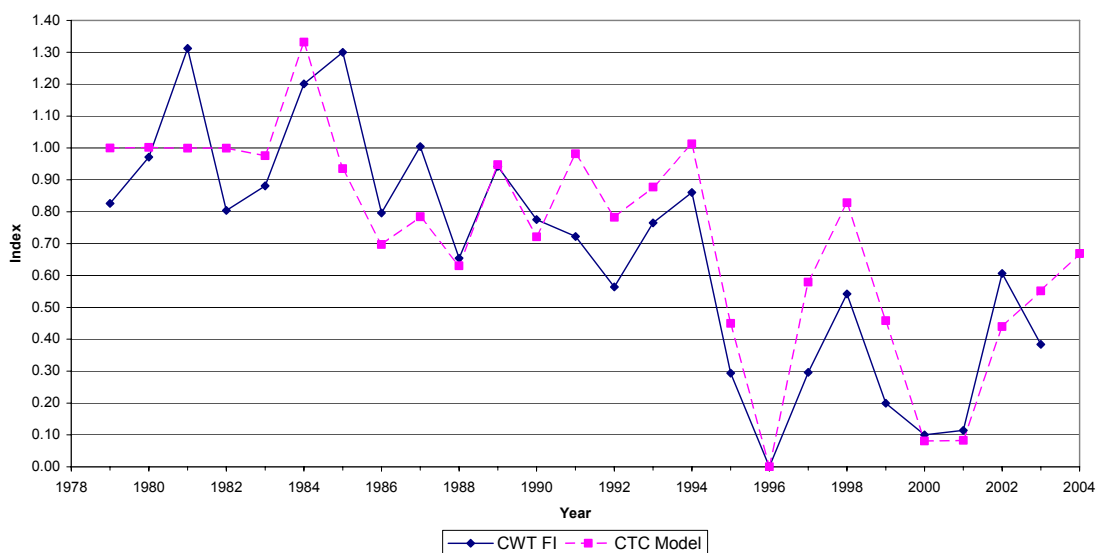


Figure 3.11. Estimated CWT (through 2003) and model landed catch fishery indices (through 2004) for the NBC troll fishery.

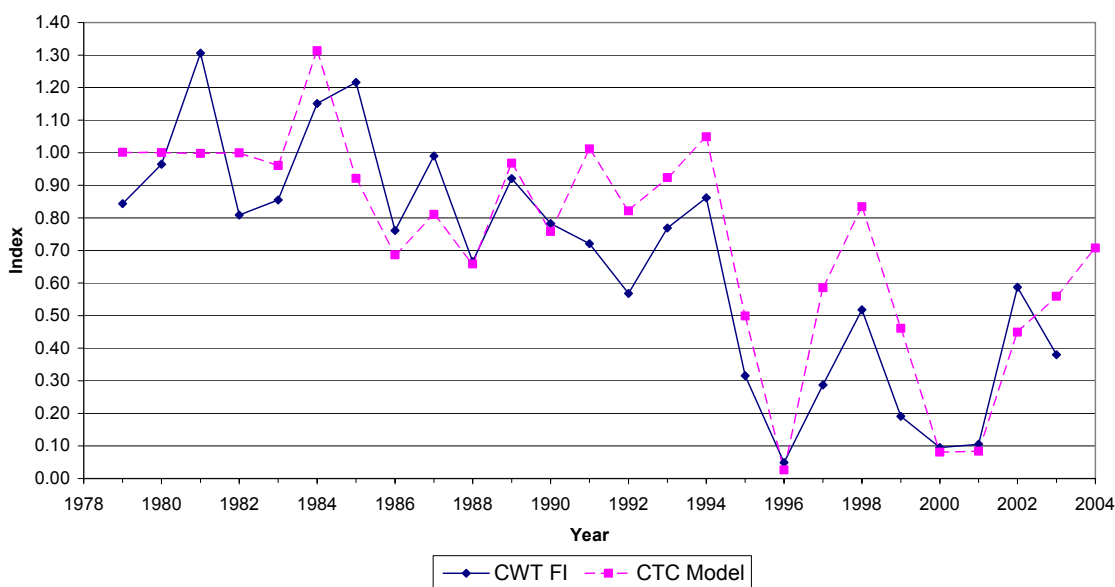


Figure 3.12. Estimated CWT (through 2003) and model total mortality fishery indices (through 2004) for the NBC troll fishery.

Since the base period, the model-derived landed 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 (Figures 3.13

and 3.14). Starting in 2000, model and CWT estimates have diverged significantly for both landed catch and total mortality.

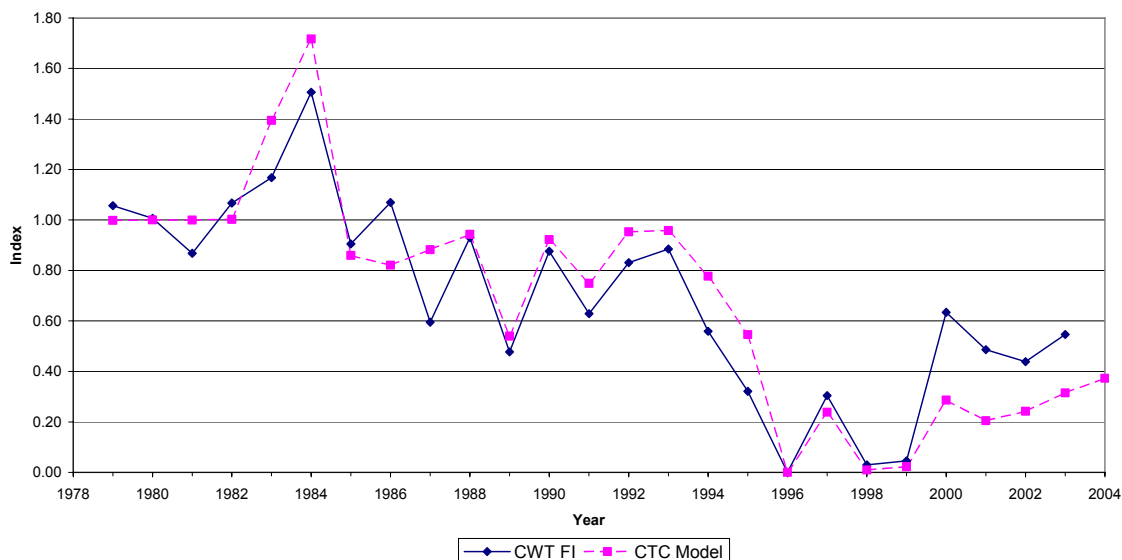


Figure 3.13. Estimated CWT (through 2003) and model landed catch fishery indices (through 2004) for the WCVI troll fishery.

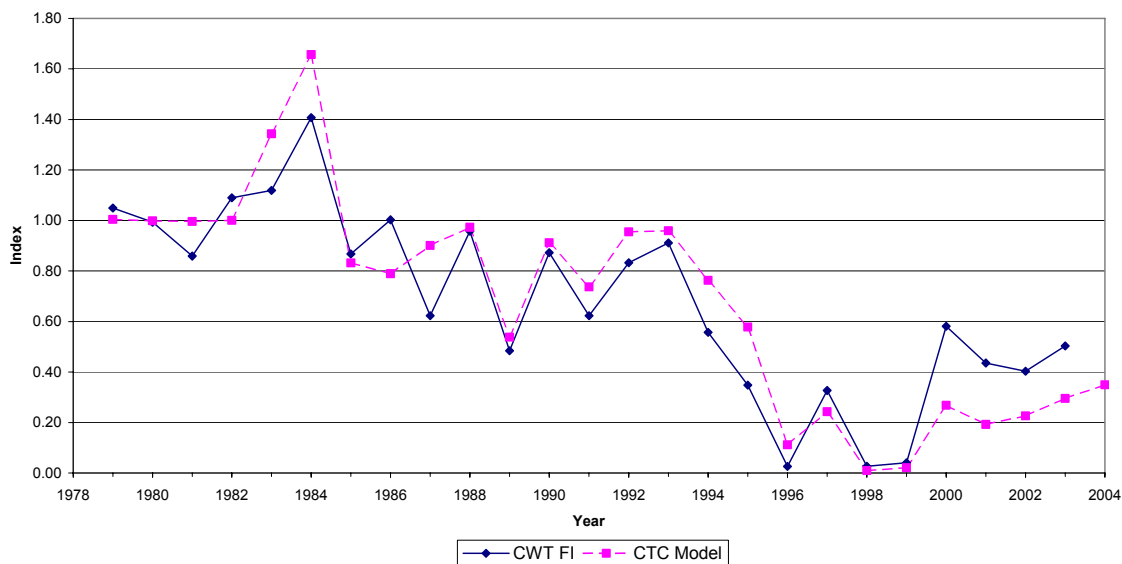


Figure 3.14. Estimated CWT (through 2003) and model total mortality fishery indices (through 2004) for the WCVI troll fishery.

3.4. SUMMARY OF AGENCY STOCK FORECASTS USED IN THE MODEL

A summary of model produced and agency provided forecasts from 1999-2005 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 = -0.7%, standard deviation = 13%, median error = -0.9%). Agency forecasts are, on average, also good predictors of observed returns (average error = -10%, standard deviation = 40%, median error = -11%). The model’s prediction of observed returns, including stocks for which there is no agency forecast, is also good (average error = -6%, standard deviation = 36%, median error = -9%).

The effect of the error in predicting terminal returns or escapement on the AABM abundance indices varies between fisheries and stocks. There is no clear directional bias of this 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 fishery’s abundance index. Errors in predicting a large stock may or may not affect a fishery’s 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. Preseason forecasts and postseason estimates for PSC model stocks, 1999-2005.

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	16,420	n/a	n/a	-28%
	2005	25,204	-	-	-	-	-
NTH (North/ Central BC)	1999	149,387	n/a	154,294	n/a	n/a	-3%
	2000	159,769	n/a	188,482	n/a	n/a	-15%
	2001	189,088	n/a	223,236	n/a	n/a	-15%
	2002	228,073	n/a	147,157	n/a	n/a	55%
	2003	154,103	n/a	164,579	n/a	n/a	-6%
	2004	171,070	n/a	152,207	n/a	n/a	12%
	2005	154,542	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	247,500	16%	-42%	-33%
	2005	244,768	218,840	-	12%	-	-
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	28,359	n/a	n/a	40%
	2005	38,798	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	22,119	n/a	n/a	-25%
	2005	21,046	n/a	-	-	-	-
GST (Lower Georgia Strait Natural)	1999	14,236	n/a	8,763	n/a	n/a	62%
	2000	11,012	n/a	8,524	n/a	n/a	29%
	2001	7,955	n/a	8,569	n/a	n/a	-7%
	2002	8,833	n/a	8,072	n/a	n/a	9%
	2003	8,088	n/a	5,360	n/a	n/a	51%
	2004	5,157	n/a	3,700	n/a	n/a	39%
	2005	4,459	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	141,029	n/a	n/a	31%
	2005	151,591	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	196,396	8%	-50%	-47%
	2005	121,315	108,061	-	12%	-	-

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	n/a	n/a	n/a	n/a
	2005	1,549	-	-	-	-	-
NKF (Nooksack/ Samish Fall Fingerling)	1999	27,206	27,000	41,186	1%	-34%	-34%
	2000	21,378	19,000	33,498	13%	-43%	-36%
	2001	33,974	36,450	36,450	-7%	0%	-7%
	2002	50,361	54,420	53,428	-7%	2%	-6%
	2003	48,259	45,750	30,573	5%	50%	58%
	2004	37,980	34,200	17,803	11%	92%	113%
	2005	19,808	19,523	-	1%	-	-
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	5,622	11%	-3%	7%
	2004	12,845	15,700	10,830	-18%	45%	19%
	2005	10,161	-	-	-	-	-
SKG (Skagit Summer/ Fall Wild)	1999	8,967	7,600	4,924	18%	54%	82%
	2000	6,994	7,300	16,126	-4%	-55%	-57%
	2001	9,064	9,184	14,193	-1%	-35%	-36%
	2002	12,635	13,455	18,124	-6%	-26%	-30%
	2003	11,906	11,348	10,503	5%	8%	13%
	2004	18,761	20,359	21,757	-8%	-6%	-14%
	2005	16,220	19,493	-	-17%	-	-

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	31,014	0%	-8%	-8%
	2000	15,410	10,000	16,561	54%	-40%	-7%
	2001	19,938	18,900	18,900	5%	0%	5%
	2002	20,008	19,801	25,853	1%	-23%	-23%
	2003	25,743	26,600	17,961	-3%	48%	43%
	2004	24,616	23,200	33,333	6%	-30%	-26%
	2005	22,208	17,715		25%	-	-
STL (Stillaguamish Summer/Fall Wild)	1999	1,303	n/a	1,098	n/a	n/a	19%
	2000	1,373	1,500	1,645	-8%	-9%	-17%
	2001	1,328	1,360	1,386	-2%	-2%	-4%
	2002	1,372	1,449	1,588	-5%	-9%	-14%
	2003	1,860	2,050	988	-9%	107%	88%
	2004	1,795	n/a	1506	n/a	n/a	19%
	2005	1,377	n/a	-	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	87,337	-15%	53%	31%
	2004	127,902	132,300	97,589	-3%	36%	31%
	2005	104,084	110,542	-	-6%	-	-
WCN (Washington Coastal Natural)	1999	42,107	43,780	24,951	-4%	75%	69%
	2000	34,788	n/a	22,978	n/a	n/a	51%
	2001	34,563	35,306	35,783	-2%	-1%	-3%
	2002	33,902	33,489	35,378	1%	-5%	-4%
	2003	32,785	n/a	41,285	n/a	n/a	-21%
	2004	28,185	n/a	29,715	n/a	n/a	-5%
	2005	34,857	n/a	-	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	31,101	14%	-41%	-33%
	2004	28,900	n/a	24,406	n/a	n/a	18%
	2005	28,626	n/a	-	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	32,344	-24%	-15%	-36%
	2005	18,349	24,850	-	-26%	-	-
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	112,701	1%	0%	1%
	2005	105,111	122,280	-	-14%	-	-
SUM (Columbia River Summer)	1999	21,653	20,900	22,349	4%	-6%	-3%
	2000	27,180	28,038	23,169	-3%	21%	17%
	2001	27,029	24,500	54,935	10%	-55%	-51%
	2002	70,290	77,700	92,820	-10%	-16%	-24%
	2003	97,280	87,600	83,120	11%	5%	17%
	2004	83,246	78,589	65,446	6%	20%	27%
	2005	66,190	62,400	-	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	108,300	-16%	-29%	-40%
	2005	65,971	74,100	-	-11%	-	-
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	160,800	6%	-10%	-5%
	2003	89,116	96,900	180,600	-8%	-46%	-51%
	2004	124,820	138,000	175,300	-10%	-21%	-29%
	2005	92,021	114,100	-	-19%	-	-
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	367,900	-15%	-21%	-33%
	2005	318,535	352,200	-	-10%	-	-
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	3,856	14%	-43%	-35%
	2004	4,323	3,725	4,000	16%	-7%	8%
	2005	4,453	4,000	-	11%	-	-

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	108,400	6%	-11%	-6%
	2003	126,698	104,800	150,200	21%	-30%	-16%
	2004	94,895	90,400	117,600	5%	-23%	-19%
	2005	93,837	89,400	-	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	26,000	5%	-5%	-1%
	2004	24,590	24,100	21,200	2%	14%	16%
	2005	21,937	20,200	-	9%	-	-
ORC (Oregon Coastal)	1999	65,249	72,084	84,293	-9%	-14%	-23%
	2000	61,250	63,259	69,074	-3%	-8%	-11%
	2001	58,062	66,412	132,732	-13%	-50%	-56%
	2002	73,055	73,914	176,929	-1%	-58%	-59%
	2003	101,310	85,483	174,091	19%	-51%	-42%
	2004	135,716	131,904	129,579	3%	2%	5%
	2005	135,716	167,213	-	-19%	-	-

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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.

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

Area	Annex Stock Group ¹	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 (Little Port Walter, Neets Bay Hatchery, Whitman Lake Hatchery, Carroll Inlet Releases, Deer Mountain Hatchery, Crystal Lake Hatchery)	
SEAK Central Inside				Andrew Creek	650–1,500				
SEAK Southern Inside				Unuk	650–1,400				
				Chickamin	450–900				
				Blossom	250–500				
				Keta	250–500				

¹ 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	Fall	Harrison River	75,100-98,500	Fraser Late	75,100	Chilliwack	CHI

Table A.3. Indicator stocks for Puget Sound.

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	NIS
								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
								South Puget Sound Fall Yearling	SPY
						Puget Sound Hatchery Yearling	9,136	Squaxin Pens Fall Yearling	SQP
			Spring					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				Elwha Fall Fingerling	ELW
								Hoko Fall Fingerling	HOK
		Grays Harbor		Grays Harbor Fall	Escapement goal range by stock	Washington Coastal Wild	21,500	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 ¹	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

¹ 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 ¹					Model Indices						
		1999	2000	2001	2002	2003	1999 CLB0107	2000 CLB0107	2001 CLB0107	2002 CLB0206	2003 CLB0308	2004 CLB0404	2005 CLB0506
Lower Strait of Georgia	Cowichan Nanaimo ⁵	0.517 0.163	0.196 0.154	0.260 0.260	0.247 0.247	0.363 ⁶ NA ⁷	0.304 0.209	0.232 0.113	0.325 0.246	0.541 0.190	0.490 0.498	0.593 0.695	0.381 ⁸
Fraser Late	Harrison River ³	0.112	0.073	0.090	0.105	0.055 ⁹	0.309	0.198	0.336	0.302	0.352	0.719	0.332
North Puget Sound Natural Springs	Nooksack Skagit	0.183 NA ²	1.176 NA	0.040 NA	0.023 NA	0.046 NA	0.233 NA	0.156 NA	0.241 NA	0.195 NA	0.251 0.251	0.273 0.273	0.314 0.314
Upper Strait of Georgia	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	0.021	0.123	0.040	0.063	0.006	0.174	0.118	0.314	0.272	0.649	0.971	0.649
Fraser Early (spring and summers)	Upper Fraser, Mid Fraser, Thompson	NA	NA	NA	NA	NA	0.125	0.124	0.210	0.145	0.661	0.718	0.654
West Coast Vancouver Island Falls	WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble)	0.431	0.083	0.060	0.248	0.496 ¹⁰	0.365	0.327	0.244	0.342	0.744	0.927	0.728
Puget Sound Natural Summer / Falls	Skagit	NA	NA	NA	NA	NA	0.197	0.119	0.217	0.172	0.436	0.438	0.465
	Stillaguamish	0.194	0.111	0.145	NA	NA	0.355	0.234	0.469	0.375	0.513	0.567	0.587
	Snohomish	NA	NA	NA	NA	NA	0.185	0.116	0.222	0.176	0.435	0.445	0.457
	Lake Washington	NA	NA	NA	NA	NA	0.332	0.202	0.355	0.275	0.508	0.446	0.497 ¹¹
	Green River	0.171	0.154	0.350	0.323	0.328	0.333	0.202	0.356	0.275	0.508	0.466	0.497 ¹¹
North / Central B. C.	Yakoun, Nass, Skeena, Area 8	NA	NA	NA	NA	NA	0.237	0.254	0.613	0.584	0.689	0.804	0.680
Washington Coastal Fall Naturals ⁴	Hoko, Grays Harbor, Queets, Hoh, Quillayute	NA	NA	NA	NA	NA	0.201	0.161	0.354	0.292	0.292	0.435	0.457
Columbia River Falls ⁴	Upriver Brights	NA	NA	NA	NA	NA	0.124	0.104	0.377	0.429	0.686	0.663	0.640
	Deschutes	NA	NA	NA	NA	NA	0.124	0.104	0.377	0.429	0.686	0.663	0.640
	Lewis ³	NA	NA	NA	NA	NA	0.056	0.180	0.180	0.171	0.515	0.480	0.546
Columbia R Summers ⁴	Mid-Columbia Summers ³	NA	NA	NA	NA	NA	0.109	0.085	0.144	0.198	0.352	0.333	0.406
Far North Migrating OR Coastal Falls ⁴	Nehalem ³ , Siletz ³ , Siuslaw ³	NA	NA	NA	NA	NA	0.094	0.110	0.505	0.514	0.689	0.672	0.674

¹ The CWT-based estimates, not the model estimates, are to be used in postseason assessments.

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

³ Stock or stock group with an agreed CTC escapement goal.

⁴ Stock group not in Annex Attachment IV.

⁵ 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.

⁶ An inconsistency was discovered between the approaches used to calculate the model-based and CWT-based indices. The former included harvest rates for terminal sport while the latter did not. Terminal sport harvest rates are now included in the calculation of both indices. Further review is yet required to determine whether the base period terminal sport harvest rates obtained from analyses of Big Qualicum CWT recoveries adequately represent impacts that would have occurred on Cowichan Chinook.

⁷ Several problems have been identified in the approach previously used to calculate the CWT-based indices for Nanaimo Chinook; indices for this stock will not be reported as their utility is questionable.

⁸ Although model-based indices were previously calculated separately for Cowichan and Nanaimo Chinook, these did not adequately represent impacts on either LGS stock. This is because the model-based data represent an aggregate of the two stocks and methods do not currently exist to correctly disaggregate these data for calculation of the ISBM values. Until such methods are developed, a single index value only will be reported representing the aggregate.

⁹ The terminal sport harvest rates for Chilliwack Hatchery Chinook, the indicator stock, were removed from the calculation for the Harrison River naturals this year because sport harvest has been essentially zero on the natural population.

¹⁰ An inconsistency was discovered between the approaches used to calculate the model-based and CWT-based indices. The former included harvest rates for terminal sport while the latter did not. Terminal sport harvest rates are now included in the calculation of both indices. A further review of the indices for WCVI Chinook will be done to determine whether they represent impacts on the WCVI wild aggregate.

¹¹ For the Canadian ISBM fisheries, both Lake Washington and Green are assumed to have the same distribution and thus the same index value.

Appendix B.2. ISBM Indices for U.S. fisheries, from both the CWT-based exploitation rate analysis (1999-2003) and the Chinook model (1999-2005) 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 ¹					Model Indices						
		1999	2000	2001	2002	2003	1999 CLB0107	2000 CLB0107	2001 CLB0107	2002 CLB0206	2003 CLB0308	2004 CLB0404	2005 CLB0506
Washington Coastal Fall Naturals	Hoko	NA ²	NA	NA	NA ¹	NA ¹	0.39	0.34	0.56	0.48	0.682	0.966	0.444
	Grays Harbor	0.430	1.630	0.860	0.540	0.150	0.440	0.430	0.450	0.840	0.494	0.573	0.222
	Queets	1.000	0.850	1.440	0.840	0.850	0.880	0.420	0.440	1.050	1.063	0.932	1.023
	Hoh	1.540	2.750	1.660	0.950	1.340	1.390	0.730	0.760	1.260	1.208	1.214	1.499
	Quillayute	1.300	2.470	1.480	1.420	0.990	1.140	0.720	0.750	1.310	1.292	1.139	1.133
Columbia River Falls	Upriver Brights	1.370	2.530	1.350	1.850	1.430	1.020	1.090	0.990	0.910	1.022	0.906	0.734
	Deschutes	0.510	0.710	0.520	0.590	0.490	1.020	0.880	0.740	0.550	0.561	0.475	0.483
	Lewis ⁵	0.000	0.360	0.580	0.560	1.030	0.110	0.160	1.700	0.930	0.851	1.008	1.058
Puget Sound Natural Summer / Falls	Skagit	NA	NA	NA	NA	NA	0.170	0.210	0.780	0.270	0.406	0.157	0.195
	Stillaguamish	0.120	0.040	0.890	NA	NA	0.140	0.140	0.400	0.200	0.184	0.224	0.185
	Snohomish	NA	NA	NA	NA	NA	0.040	0.050	0.600	0.150	0.072	0.110	0.891
	Lake Washington	NA	NA	NA	NA	NA	0.500	0.480	0.590	1.250	0.768	0.411	0.373
	Green R	0.500	0.700	1.180	1.070	1.030	0.500	0.480	0.600	0.350	0.263	0.260	0.202
Fraser Late	Harrison River ⁵	0.470	0.130	0.310	0.410	0.640	0.660	0.390	0.620	0.720	0.981	1.058	0.670
Columbia R Summers	Mid-Columbia Summers ⁵	1.64 ⁷	4.820	5.320	7.250	10.040	0.110	0.090	0.140	0.820	0.794	0.715	0.545
Far North Migrating OR Coastal Falls	Nehalem ⁵	1.96 ⁷	1.970	1.940	2.170	3.110	2.670	2.660	2.750	2.610	2.346	2.230	2.090
	Siletz ⁵	0.82 ⁷	1.160	1.190	1.310	1.590	1.810	1.790	1.870	1.330	1.302	1.288	1.233
	Siuslaw ⁵	1.22 ⁷	2.450	2.180	2.560	3.820	0.940	0.930	0.950	3.340	2.856	2.816	2.643
North Puget Sound Natural Springs	Nooksack	0.440	0.000	0.040	NA	NA	0.150	0.200	0.010	0.000	0.121	0.974	0.222
	Skagit	NA	NA	NA	1.120	NA	ID ⁶	ID	0.070	0.060	0.119	0.663	0.213
Lower Strait of Georgia ⁴	Cowichan,	NA	0.690	11.350	5.780	4.990	0.170	0.210	0.480	0.220	0.452	0.915	0.407 ⁸
	Nanaimo	NA	0.690	11.350	5.780	4.990	0.170	0.210	0.480	0.220	0.452	0.915	
Upper Strait of Georgia ⁴	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	NA	NA	NA	NA	NA	NC ³	NC	NC	NC	NC	NC	NC
Fraser Early (spring and summers) ⁴	Upper Fraser, Mid Fraser, Thompson	NA	NA	NA	NA	NA	0.080	0.150	0.700	0.150	0.277	0.839	0.257
West Coast Vancouver Island Falls ⁴	WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble)	NA	NA	NA	NA	NA	0.260	0.380	0.730	0.270	0.658	0.540	0.290
North / Central B. C.	Yakoun, Nass, Skeena, Area 8	NA	NA	NA	NA	NA	NC	NC	NC	NC	NC	NC	NC

⁸. See the footnote for the corresponding value in the table of indices for the Canadian ISBM fisheries.

Appendix C. Stocks and fisheries.

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

Stock Acronym	Stock Name	Jurisdiction
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 ¹	Columbia Lower River Hatchery	OR
LRW	Lewis River Wild	OR
LYF	Lyons Ferry	OR
NIS	Nisqually Fall Fingerling	WA
NSF	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
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

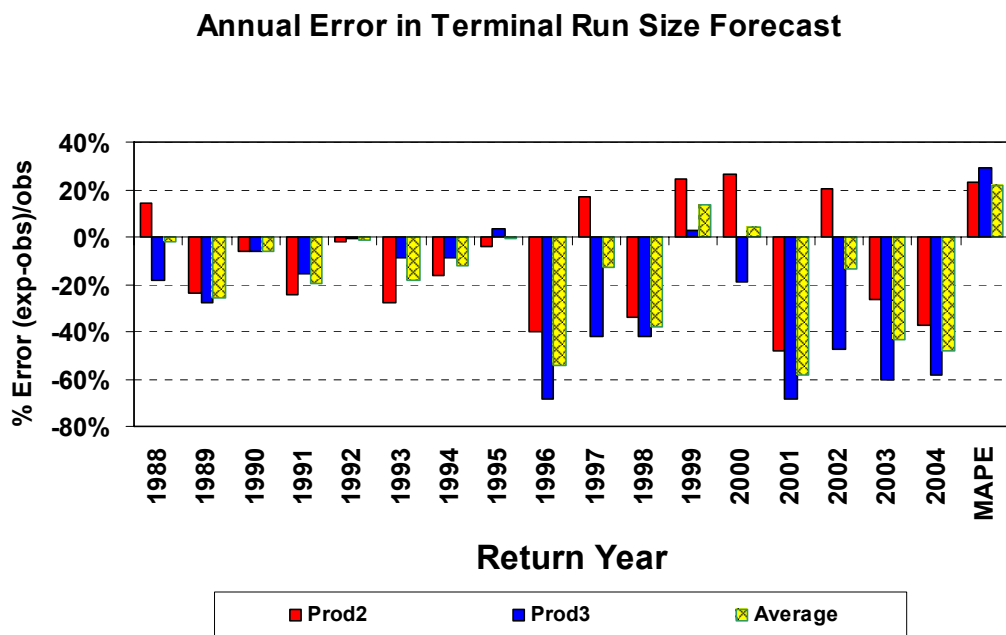
The abundance forecast for the West Coast Vancouver Island (WCVI) model stock is based on the Robertson Hatchery (RBH)/Somass River forecast and the relative run size of other WCVI Chinook populations in the past year. The method used to forecast the terminal run of RBH/Somass Chinook is documented annually in the Canadian Stock Assessment Secretariat (CSAC) Research Documents (www.dfo-mpo.gc.ca/sci/csac/) 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 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 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 brood years.

To account for the total production of RBH 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 2005 would be expanded by the ratio of age-3 Chinook salmon observed in 2004 and the age-2 Chinook salmon observed in 2003. 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 nine 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 32% (Figure D1). 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 D1. 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 – 2004, 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 2005 forecast of RBH/Somass was expanded as follows:

Age Class	RBH/Somass Forecast ¹	WCVI Expansion Factor	Total WCVI Forecast	Comments
Age 3	20,825	2.2	45,261	Average expansion of past age-3 returns
Age 4	85,255	1.6	135,425	Age-4 expansion based on observed expansion for age-3 returns in the brood year
Age 5	16,246	2.4	38,154	Expansion based on average value of age-3 and age-4 returns within brood year
Total	122,326		218,840	RBH/Somass = 56% of Total

¹The 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 Coastwide Model) consists of age-structured forecasts for two separate systems, the Harrison and Chilliwack Rivers, which 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 (averaging approximately 110,000 age 3+ spawners from 1984-2004) and is essentially natural. The Chehalis River Hatchery, located near the confluence of the Chehalis and Harrison Rivers, has released coded-wire tagged (CWT) juveniles originating from adults captured from the Harrison River each year since 1982. Recoveries of adults with CWTs in the Harrison River are so few, however, that this component in the fall white spawning population of Chinook salmon is neither estimated nor considered in the Harrison River forecast. The Chilliwack River spawning population was originally founded from Harrison River brood stock. It has increased substantially since adults began returning to the Chilliwack River and Hatchery in 1983 and now includes a component returning directly to the hatchery as well as a large number of natural spawners (averaging approximately 64,000 age 3+ spawners from 1997-2004). Both components are enumerated annually and included in the Chilliwack River forecast. Juveniles with CWTs have been released from Chilliwack Hatchery into the Chilliwack River (entering on the south side of the Fraser River, the opposite side of entry 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.

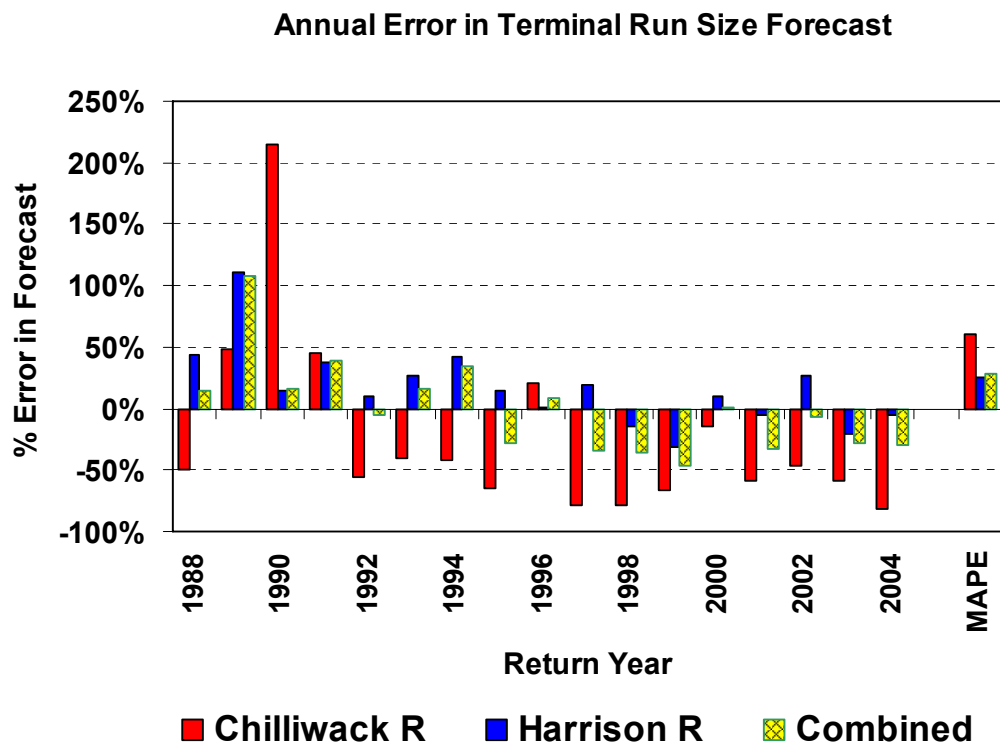
The foundation for the two forecasts is an estimate of the terminal run to each river system. The combination of two distinguishing characters of Fraser Late Chinook (late return timing and white flesh color) make it possible to estimate a total terminal catch from the Area 29 Fraser River commercial 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. Recovery data even from the most recent fishing year are included. Output data from the cohort analysis 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 Chilliwack River Chinook, the strongest sibling regression models result from the ocean cohort abundance at one age regressed against that of the following one or more ages. 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 D2). The recent 5-year average percent error in the forecast for Chilliwack River (e.g., -52% for years 2000-04) is used to adjust the estimated annual ocean abundance in order to derive the terminal run forecast.

Figure D2. 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, which are available for Puget Sound management units since 1993.

Hoko River

The forecast for the natural summer-fall Chinook is based on a four-year average of past terminal returns. For 2005, the prediction is 955 Chinook salmon, based on an average of the 2001-2004 returns.

Elwha River

The hatchery and natural summer-fall Chinook run is forecast using a four-year average of the hatchery and natural terminal returns. The terminal run is defined as the hatchery and natural escapement plus the harvest in the river fishery. In 2005, the forecast based on the average of 2001-2004 is 2,603 fish, which includes hatchery origin and natural origin adults.

Dungeness River

The spring and summer natural Chinook are aggregated in the forecast as information are inadequate to separate the two stocks. The forecast is based on a four-year average of the terminal (WA Area 6D) runs and is estimated at 685 Chinook salmon for 2005. Recent returns are influenced by the Chinook supplementation program, which, in 2003 comprised of about 81% of the total return. The spawning success of the hatchery-origin fish is unknown, so its influence on natural production potential is also uncertain and caution is urged when using this forecast,

Nooksack River

North Fork Spring Chinook.

For the returns of wild natural origin the forecast is based on the average cohort return rates of the 1995-2004 escapements and is 570 fish for 2005. For the returns from supplementation releases, the average cohort return rates of the 1995-2004 escapements is applied to the acclimation pond release numbers and the prediction for 2005 is 2,063 Chinook. For hatchery releases the average of 1995-2002 age class return rates is applied to the appropriate brood year releases and for 2005 the prediction is 5,054 hatchery fish.

South Fork spring Chinook.

The number of age four recruits per spawner averaged over the years 1988 to 2003. For the 2005 return the prediction is 289 fish.

Nooksack/Samish

The average of the recruit per spawner for the last two brood years is used for the forecast of hatchery summer-fall Chinook. This average is applied to both fingerling and yearling releases from all release sites (Samish Hatchery, Slater Slough, Lummi Sea Ponds and Maritime Heritage Center). For 2005, the prediction is 19,523 fish.

Glenwood Springs

The average of the adult returns from 1998-2004 is used for the forecast of hatchery summer-fall Chinook. For 2005, the Washington Area 4B prediction is 380 fish.

Skagit River

Spring Chinook (wild).

A single estimate is made for all three populations of spring Chinook returning to the Skagit River. The forecast is based on age-specific return rates per spawner averaged over the return years from 1990-2004. For each age the return rate estimate is applied to the appropriate brood year escapement. This provides a 2005 prediction of 1,905 fish.

Spring Chinook (hatchery).

Yearling and fingerling forecasts were calculated from the BYs 1985-1999 average brood year return rate by age multiplied by the BY releases of yearlings and fingerlings. The 2005 forecast for hatchery Chinook is 1,804 total adults (1,180 fish from fingerling releases and 624 fish from yearling releases).

Summer/Fall Chinook (Wild).

Natural summer/fall Chinook are forecasted as a management unit using brood-specific data from 1987-2002. Scale data were used to determine age composition from each return year and to calculate the average return rates for each age class. This provided a forecast of 22,989 fish for 2005, which was expanded to an Washington Area 4B estimate using the average ratio of the Washington 4B/terminal run sizes (1.0188) to give a total forecast of 23,421 Chinook salmon.

Summer Chinook Indicator Stock.

The forecast is generated by multiplying the return/smolt (averaged over brood years 1994-1999) by the appropriate summer Chinook wild indicator stock smolt releases. For 2005 this gives an estimated terminal run size of 547 fish. Using the average ratio of the Area 4B/terminal run sizes (1.0188) the Area 4B forecast is 557 fish.

Fall Chinook Indicator Stock.

The fall Chinook salmon program obtains brood stock from the river and transports them to Marblemount Hatchery for spawning, incubating and rearing. Since this program is relatively new, specific return data are still incomplete. The first complete BY was in 2004. Forecasting is done by using the 2003 and 2004 return age composition (considered preliminary) and the average return per smolt from BY 1999 and 2000 to forecast the 2005 return, which is estimated at 94 fish for the Washington Area 4B run size.

Stillaguamish River

The natural summer and fall Chinook are estimated as a single unit. The natural production forecast uses recruits per spawner estimated from the brood year 1986 through 1993 using the Stillaguamish North Fork tag data. Since there is evidence of density-dependence in the North Fork population, only those years with escapements of greater than 800 were included in the average recruit per spawner. The average return per spawner is applied to brood years 2000

through 2003 natural escapement for each age cohort adjusted by the geometric mean of estimated marine survival and freshwater indices, assuming zero fishing within all waters. For 2005 the prediction for natural fish is 2,013 Chinook. For the hatchery origin releases, the release numbers are multiplied by the 1993-1997 average survival rate for tagged fish from this program, giving a total of 1,540 hatchery fish predicted for 2005.

Tulalip Hatchery

For these summer-fall hatchery releases the cohort specific release numbers for brood years 1999 through 2003 are multiplied by survival rates from CWTs released in brood years 1986-1991, adjusted by the estimated AEQ rates. The prediction for 2005 is 9,172 fish.

Snohomish River

For the Wallace River Hatchery yearling releases the average survival rate of BY 1996 and 1997 yearling tag groups is estimated to be 1.0%, which was applied to the annual releases to estimate brood year forecasts. For the subyearling forecast, there are no recent useable CWT groups to provide direct survival estimates, so the Tulalip Hatchery survival estimates of 0.52% were used as a surrogate. Total forecast for both yearlings and fingerlings is estimated to be 9,934 fish.

The Snohomish wild summer-fall Chinook forecasts use an average recruit per spawner from the Puget Sound Technical Recovery Team's (TRT) Abundance and Productivity tables. This information is available for each of the two component populations (Skykomish and Snoqualmie). But the high average return per spawner (R/S) of 3.21 for the Snoqualmie is suspect, given the variation of visibility conditions during escapement surveys, so the average Skykomish R/S value of 1.81 is used to forecast both the Skykomish and Snoqualmie populations. The natural spawners do include some hatchery-origin fish, so the effective number of spawners is estimated based on both natural-origin and hatchery-origin fish.

Lake Washington

Cedar River Summer/fall Chinook (natural).

The forecast was generated by applying the four-year average Washington Area 4B run size for a prediction of 593 fish. No attempt was made to breakout HORs versus NORs. There are now three years of smolt data for the Cedar River. The average return is about 0.03, which would provide an estimate of 1,167 fish, using the 2002 smolt estimate of 39,100. This may be an alternative forecast method in the future.

North Tributary Summer/fall Chinook (natural).

The forecast was generated by applying the same method as for Cedar River, using a four-year average Washington Area 4B run size for a prediction of 274.

Issaquah Hatchery Chinook.

The forecast was made using the 2001 brood hatchery pounds released (31,084) multiplied by the 2000-2003 average (UW + Issaquah) return/pound (0.2862). The prediction for 2005 is 6,904 fish.

University of Washington Hatchery (Portage Bay).

The 2001 brood hatchery pounds released (5,712) were multiplied by the 1999-02 average (UW + Issaquah) return/pound (0.2862) for a 2005 prediction of 1,634 Chinook salmon.

Green River

Summer/Fall Chinook (natural spawners).

The 2001 brood year escapement (7,975) was multiplied by average R/S (1.43) from years with escapements (1983, 1984, 1992, 1994, 1999, 2000, 2001, 2002) falling within the range of 5,975 to 9,975. For 2005 the Washington Area 4B prediction is 11,404 fish.

Soos Creek Hatchery Chinook (fingerlings).

The forecast is based on the average cohort return rate (since 1985) for age 3's (0.0914), age 4's (0.1635) and age 5's (0.0150) multiplied by the pounds released for the appropriate brood years. These releases were 38,117, 46,586, 44,001; respectively. The Washington Area 4B prediction for 2005 is 11,767 Chinook, with 82.2 percent of the return marked.

Icy Creek Hatchery Chinook (yearlings).

The forecast is based on the average cohort return rate (since 1985) for age 3's (0.0031), age 4's (0.0218) and age 5's (0.0042) multiplied by the pounds of smolts released, which was 28,888, 32,079, 34,333; respectively. The 4B prediction for 2005 is 932 fish, with 98% of the fish marked.

Kitsap Tributaries

Grovers Creek Fall Chinook (hatchery fingerlings).

The recent 15-year average (1982-1997) return per number released for contributing brood years (age 3—0.0031637, age 4—0.0023411, age 5—0.0000898), was used to provide 2005 forecasts of 1,286, 1572 and 41 Chinook, respectively. The total 2005 return is predicted at 2,899 fish with a marked component of 1,735, or 60% marked.

Gorst Creek Fall Chinook (hatchery fingerlings).

The forecast for Gorst Creek fall Chinook is made using survival estimates by age from Grovers Creek hatchery Chinook tagged groups multiplied times the appropriate brood release. The prediction for 2005 is 9,370 fish.

Dogfish Creek Chinook (hatchery fingerlings).

The average cohort return rate from Grovers Creek hatchery tag groups was applied to the appropriate brood year releases. The prediction for 2005 is 384 fish.

Clear Creek Fall Chinook (hatchery fingerlings).

The average cohort return rate from Grovers Creek hatchery tag groups was applied to the appropriate brood year releases. The prediction for 2005 is 127 fish.

Gorst Creek Fall Chinook (hatchery yearlings).

The average cohort return rate from Grovers Creek hatchery tag groups was applied to the appropriate brood year releases. The prediction for 2005 is 887 fish.

The above stocks combined provide the total Washington Area 10E (Kitsap) forecast for 2005 of 10,769 Chinook salmon.

White River

The forecast for the natural spring Chinook return to the White River Buckley Trap and for the number of adult Chinook (ages 3 – 5 years) expected to be passed above White River Mud Mountain Dam in 2005 was 2,379 Chinook salmon. The forecast method uses average sibling ratios (e.g. the mean 2-yr-old/3-yr-old return/spawner ratios for several broods) applied to the appropriate brood return (e.g., age 2-year to age 3-year ratio applied to the 2002 brood 2 return to predict the age 3 return). Note that this is a total of naturally produced fish, including acclimation pond origin fish and suspected fall-type fish. There are no tools currently available to separate these run components. The spring Chinook return from White River Hatchery and from Minter Creek releases is estimated using average cohort return rates based on CWT information for brood years 1989-2001, multiplied by the number of released fish for each brood year. The prediction for White River hatchery for 2005 is 673 fish and 506 Chinook salmon are expected from Minter Creek releases.

Puyallup River

The natural forecast for summer-fall Chinook salmon for 2005 is estimated using the predicted mean return at age calculated for return years 1992-2004. However, given that past forecasts have overestimated actual returns, the 2005 prediction was adjusted by the average difference between forecasts and actual returns from 1999 to 2004. The prediction, based on the traditional method (no adjustment), provides an estimate of 3,445 fish. The average of over-forecasting (143.19%) was applied, giving a lower estimate of 2,406 fish, which is the 2005 estimate.

The basic information was generated from escapement estimates derived by expanding South Prairie Creek Chinook escapements to the entire basin. Total fall Chinook escapements (1994-1998) were estimated by expanding South Prairie Creek escapement by the mean 1999-2002 South Prairie Creek/Puyallup escapement ratio (mean of 0.62 with range of 0.57 to 0.72). Once the age composition was applied to each brood year, the predicted return at age could be estimated to provide total run size. Historic run sizes had to be scaled since the new method, which was initiated in 2001, cannot be compared to run reconstruction. The Puyallup hatchery fall Chinook forecast used the method developed for the last two years, applying mean return rates by age (based on both number and pounds releases) to appropriate brood releases. Return rates were update with age sampling data acquired through the 2004 return. The prediction for 2005 is 4,361 fish.

Chambers Creek

The forecast for the summer-fall Chinook hatchery fingerlings was derived by multiplying the release in pounds of fingerlings for the 2001 brood year multiplied by the 1994-2003 mean return/pound released. The forecast for hatchery fingerlings 2005 was 2,059 Chinook salmon.

Basin-specific data for Chamber Creek yearlings are not available so the forecast was made by applying age specific mean return /number and pounds derived from Deschutes yearling CWT

releases (1986-93 brood years) to Chambers Creek yearling release numbers and pounds for the appropriate contributing brood years. Separate forecasts made for pounds and numbers, and the two were averaged to provide a yearling forecast of 1,337 fish.

Nisqually River

The summer-fall natural Chinook salmon return is forecast using the 2001 escapement (1,079 Chinook salmon) multiplied by the 1997-2003 mean return per/spawner of 2.82. The prediction for 2005 is 3,038 fish. For the hatchery production, age specific return rates per fish released were applied to the contributing releases data (numbers of fish released) for return years 1992-2003. The 2005 forecast is 18,432 fish, including 2-year-old fish. Without age 2 fish, the expected run size is 15,541 hatchery Chinook.

McAllister Creek

Releases of summer-fall fingerlings from this facility were discontinued after 2001, so no 3-year-olds are expected. Thus, the estimated returns include only 4 and 5-year olds, decreasing the traditional forecast by 41%. Estimated returns are based on Deschutes River information from 1986-1993. The forecast is based on the mean return per pound and per number of fingerlings released multiplied by the number released. The two means (return per pound and per number released) are used and the results averaged for the final prediction of 2,169 fish for 2005. Yearling hatchery returns were forecast by applying age specific mean return /number released and pounds derived from Deschutes yearling CWT releases (1986-93 brood years) to McAllister Creek yearling release numbers and pounds for the appropriate contributing brood years. The yearling prediction for 2005 is 154 Chinook salmon.

Deschutes River

For summer-fall hatchery Chinook, yearling and fingerling releases, age specific mean return per pounds released derived from brood years 1986-93 CWT data was used. These were multiplied times the pounds released from Tumwater Falls for the appropriate contributing broods (2000, 2001 and 2002).

Coulter Creek (Washington Areas 13 D-K)

The summer-fall Chinook salmon forecast is simply the mean of 1998-03 run size (4,482 fish). However, since there were no releases for 2001 through 2003 brood year at Coulter Creek, age 3 and age 4 fish are not expected back to the hatchery. Therefore the forecast was downgraded by excluding these age groups, resulting in a prediction for 2005 of 583 fish.

Carr Inlet

The forecast for summer-fall hatchery Chinook is the average of two methods, multiplying brood releases by mean return per pound and mean return per number released. The average of the two methods provides the forecast, which is 6,511 fish for 2005.

Hood Canal

The forecast for Hood Canal summer-fall Chinook salmon (hatchery and natural) is the product of brood 2001 fingerling released (in pounds) from WDFW facilities in 2002, multiplied by the average of post-season estimated terminal return rates (terminal run/fingerling pounds released three years previous) for the last four return years (2001-2004), as these are believed to represent the current survival rates. The resulting terminal area forecast is 30,551 Chinook salmon. The forecast is then apportioned at 27,490 hatchery fish (43.7% George Adams and 56.3% Hoodsport Hatchery), 3,061 (10.0%) natural fish based on Puget Sound run reconstruction-based relative contribution of the individual Hood Canal management units in the 2001-2004 return years. These estimates will be used as inputs to generate ocean recruit forecasts during preseason simulation modeling

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 2005 ocean escapement is 24,800, compared to the 2004 return of 32,400.

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 returns, respectively. The preliminary forecast for 2005 ocean escapement is 116,900, compared to the 2004 return of 143,700 Chinook salmon.

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 2005 ocean escapement is 62,400, compared to the 2004 return of 65,200².

² Starting in 2005, the Columbia summer Chinook forecast are for those Chinook passing Bonneville Dam starting on June 15, instead of June 1. Thus in last year's report, the 2004 forecast with the June 1 start date was 102,800. The same forecast with the June 15 start date would have been 69,100.

Cowlitz Fall and Bonneville Tule

The Bonneville Tule and Cowlitz fall stocks comprise the LRH stock. The LRH forecast was from brood cohort regressions by age group. Ocean escapement in 2005 is forecast to be 74,100 LRH adults, less than the 2004 actual return of 108,900 and less than the recent 10-year average of 80,620. The recent 10-year LRH forecasts were about 71% of observed returns with a range between 34% and 94%. The Bonneville Tule and Cowlitz fall individual forecasts are based on an estimate of their proportion of the forecasted total LRH return and 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 2005 is projected to be 114,100 adults, lower than the 2004 actual return of 175,300 adults but higher than the recent 10-year average of 82,690. The recent 10-year forecasts were about 79% of observed returns with a range of 45% to 131%.

Upriver Brights

The current year forecast was the sum of 22 individual forecasts, 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 ages 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 2005 ocean escapement is 353,200 adults, compared to the 2004 run of 367,900, and the recent 10-year average of 212,610. The recent 10-year forecasts were about 88% of observed returns with a range of 62% and 110%.

Mid-Columbia Brights

The current year forecast for Mid-Columbia Brights (MCB) is the sum of the Bonneville Upriver Bright (BUB) and Pool Upriver Bright (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 2005 is forecast to be 89,400 MCB adults, less than the 2004 actual return of 117,600 adults but more than the recent 10-year average of 73,100. The recent 10-year forecasts were about 90% of observed returns with a range of 57% to 128%.

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 2005 is forecast at 20,200 adults, which is slightly less than the 2004 actual return of 22,300, both an improvement over the recent 10-year average of 15,260. The recent 10-year average forecasts were about 81% of observed returns with a range of 34% to 110%.

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 2005 forecast is 67,213 Chinook salmon.

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 2003) for exploitation rate indicator stocks. Indices are survival indices relative to base period.

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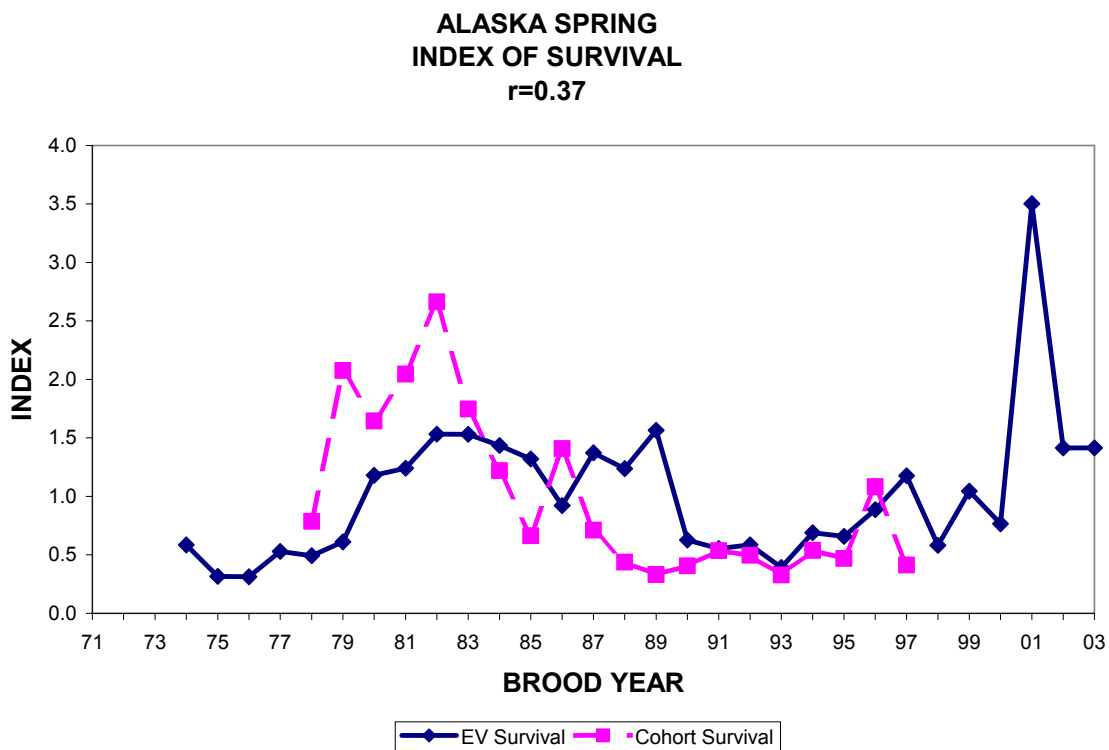


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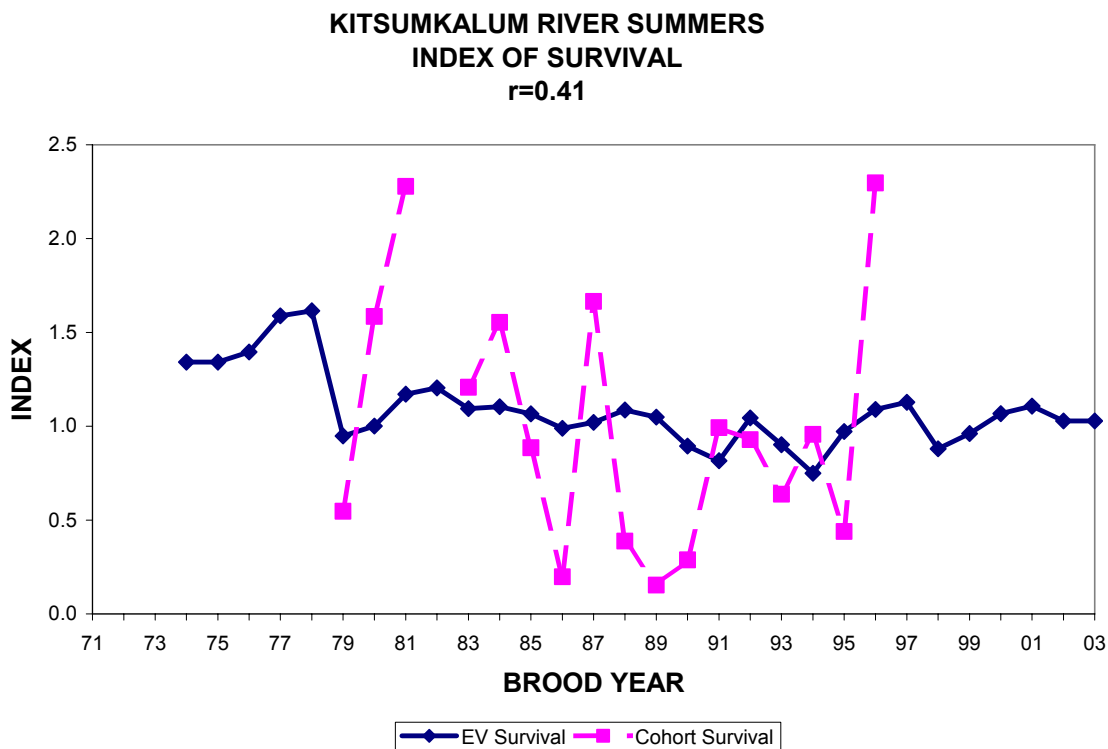


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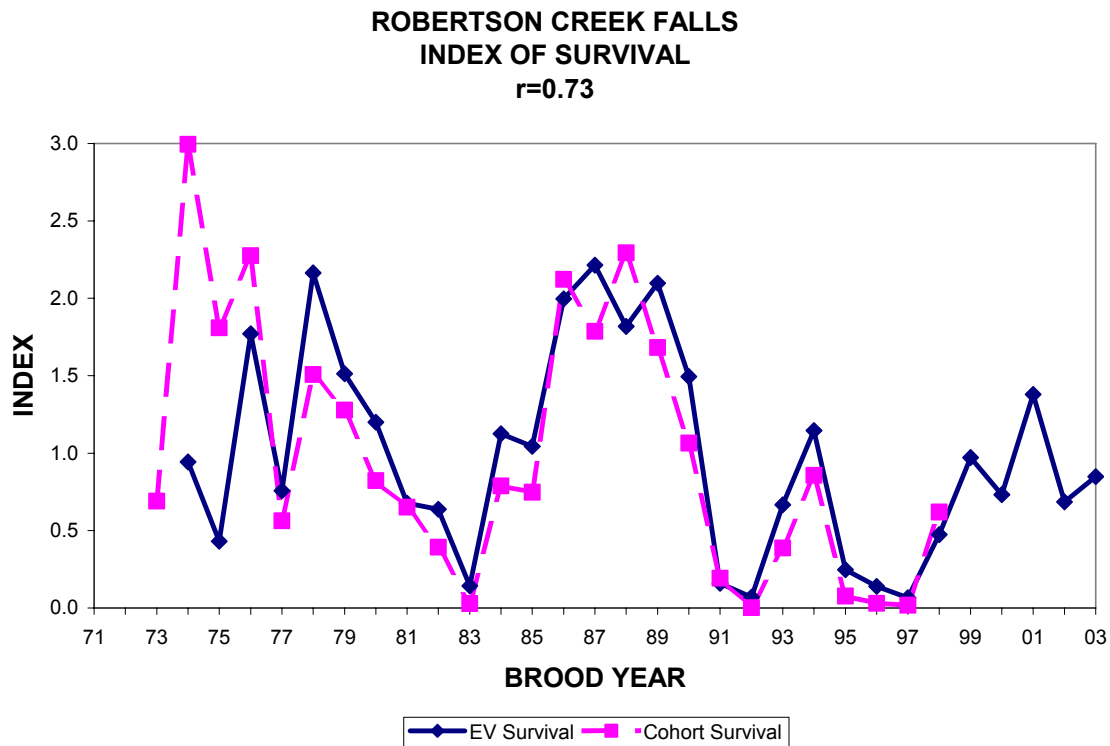


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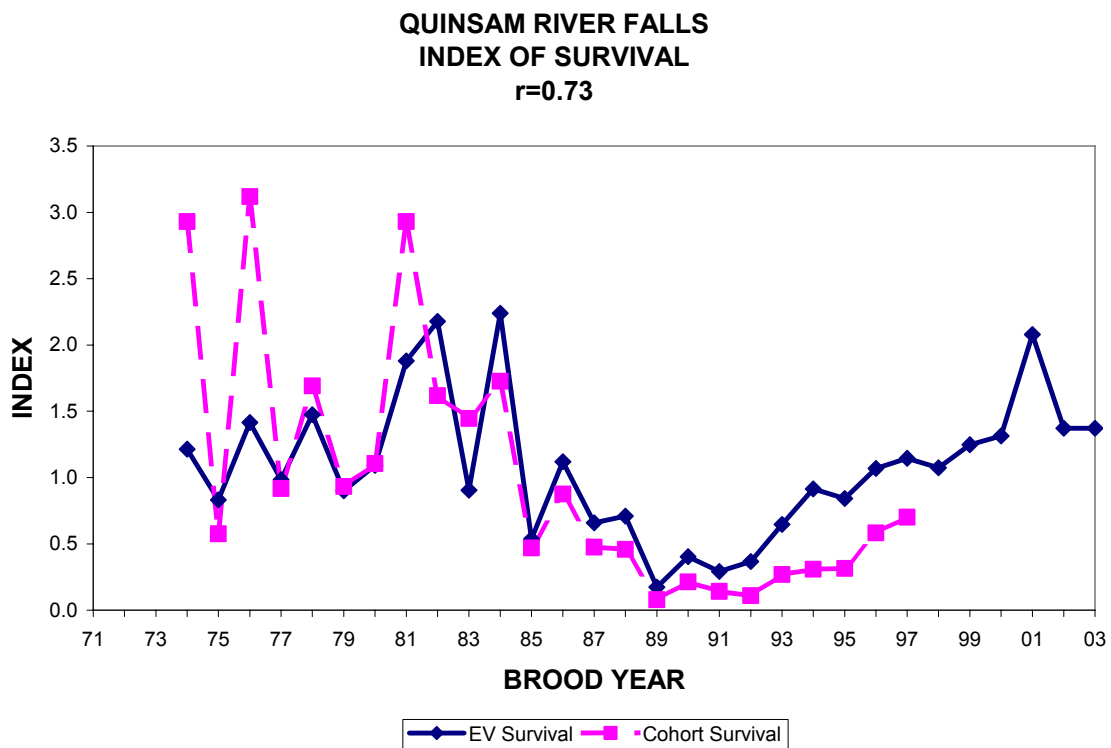


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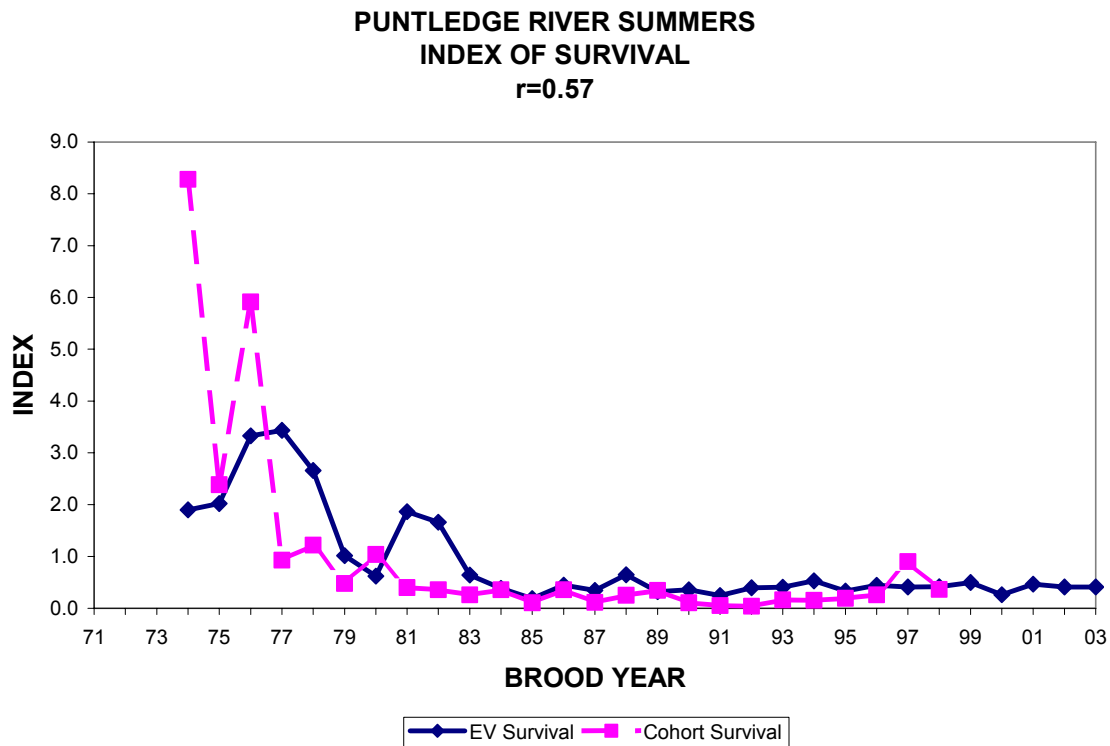


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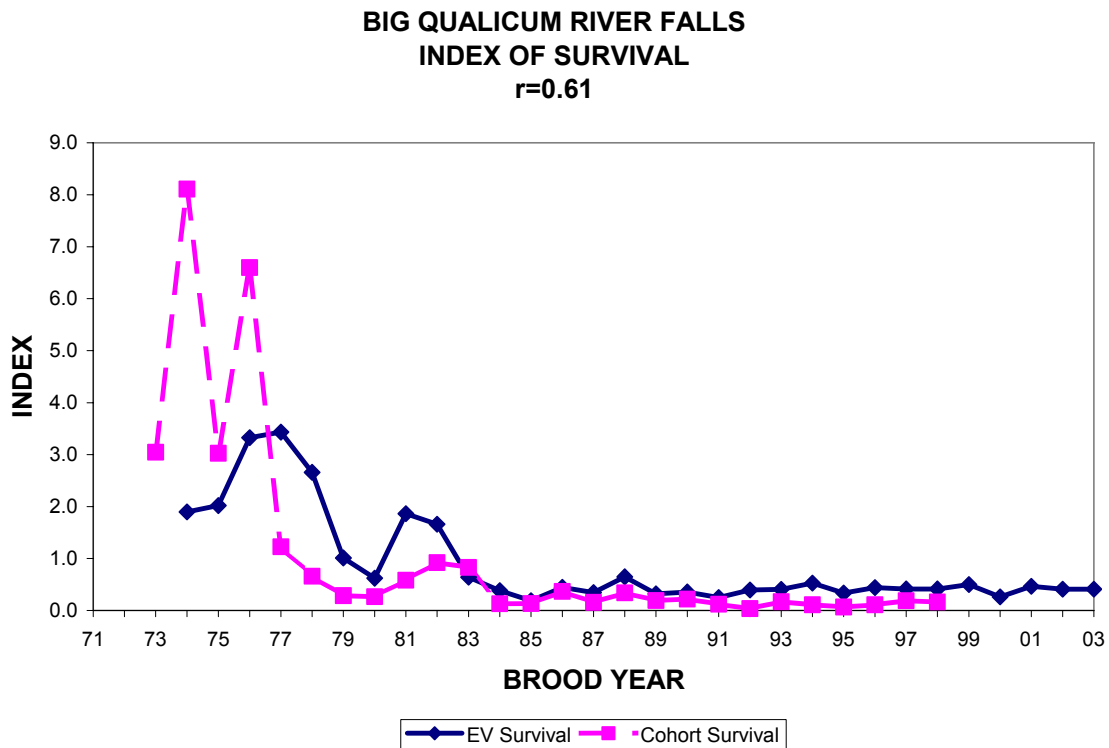


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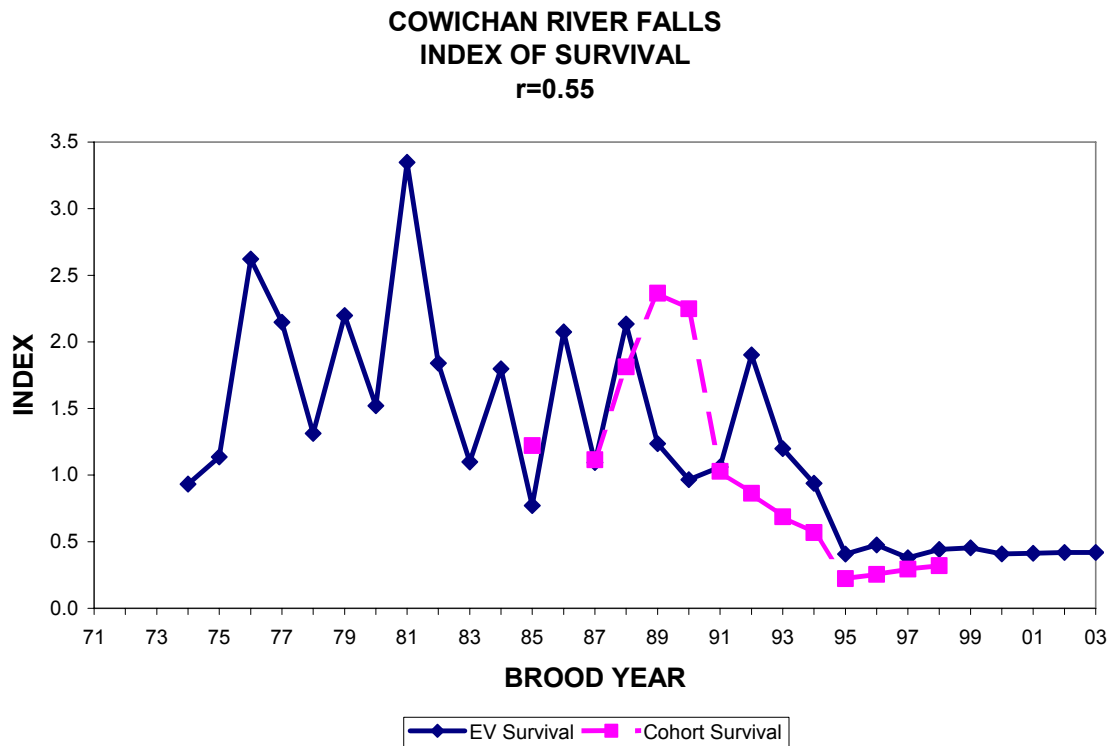


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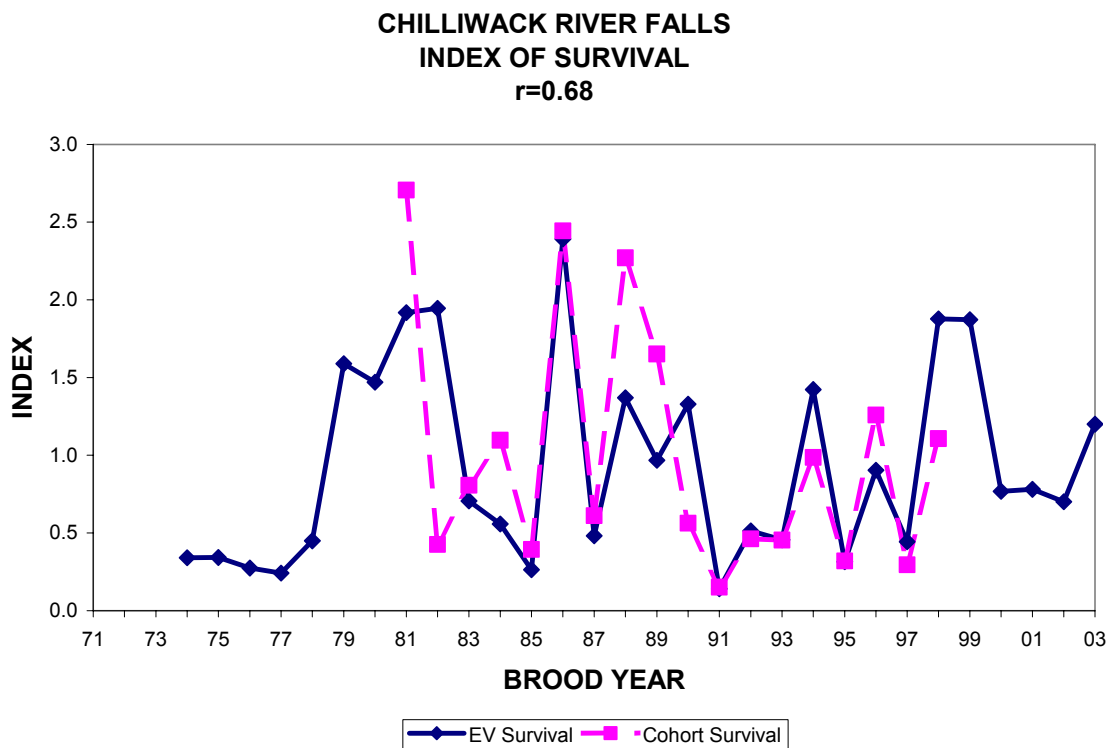


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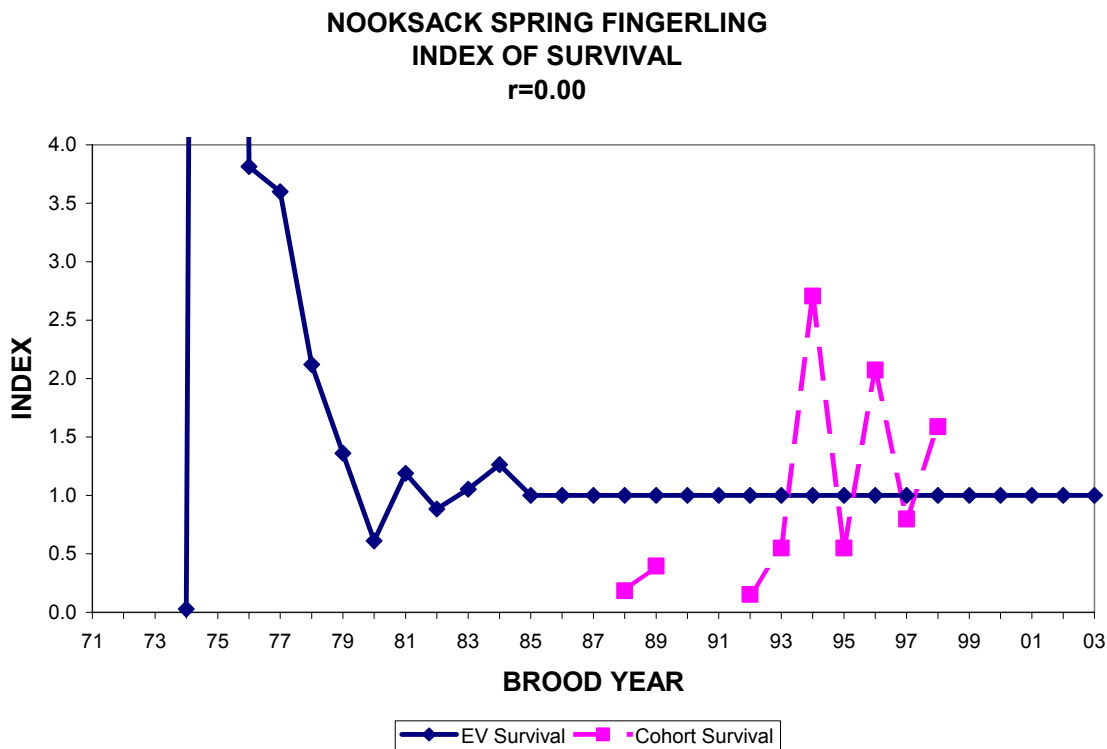


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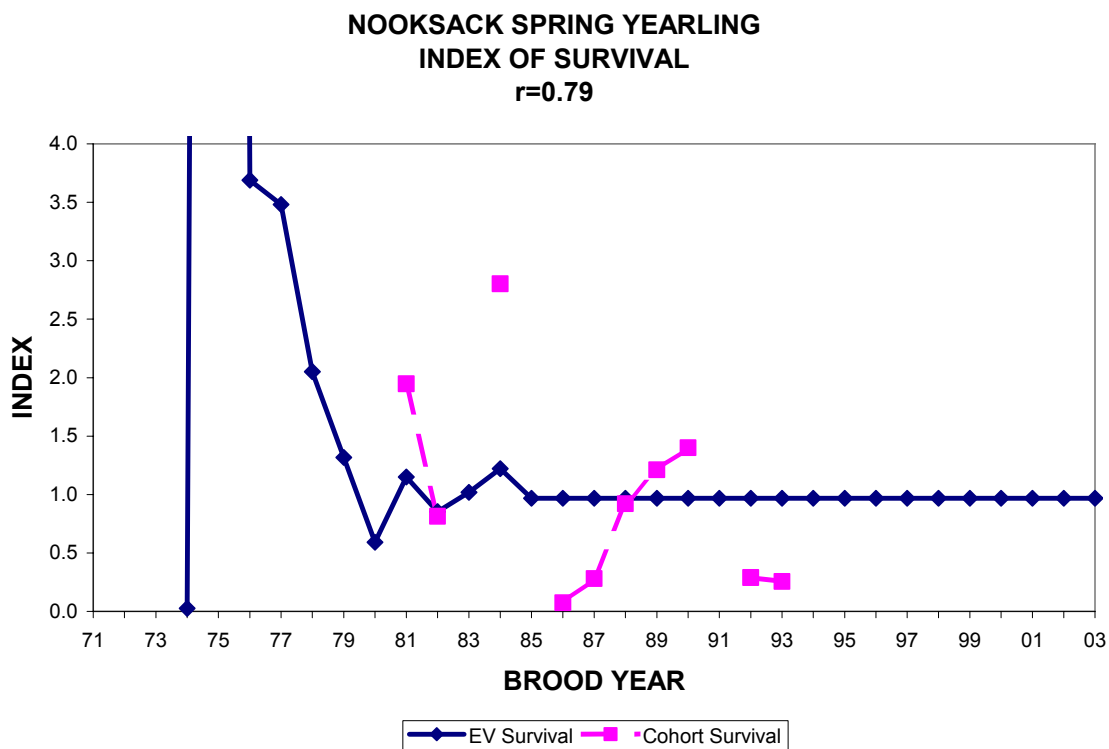


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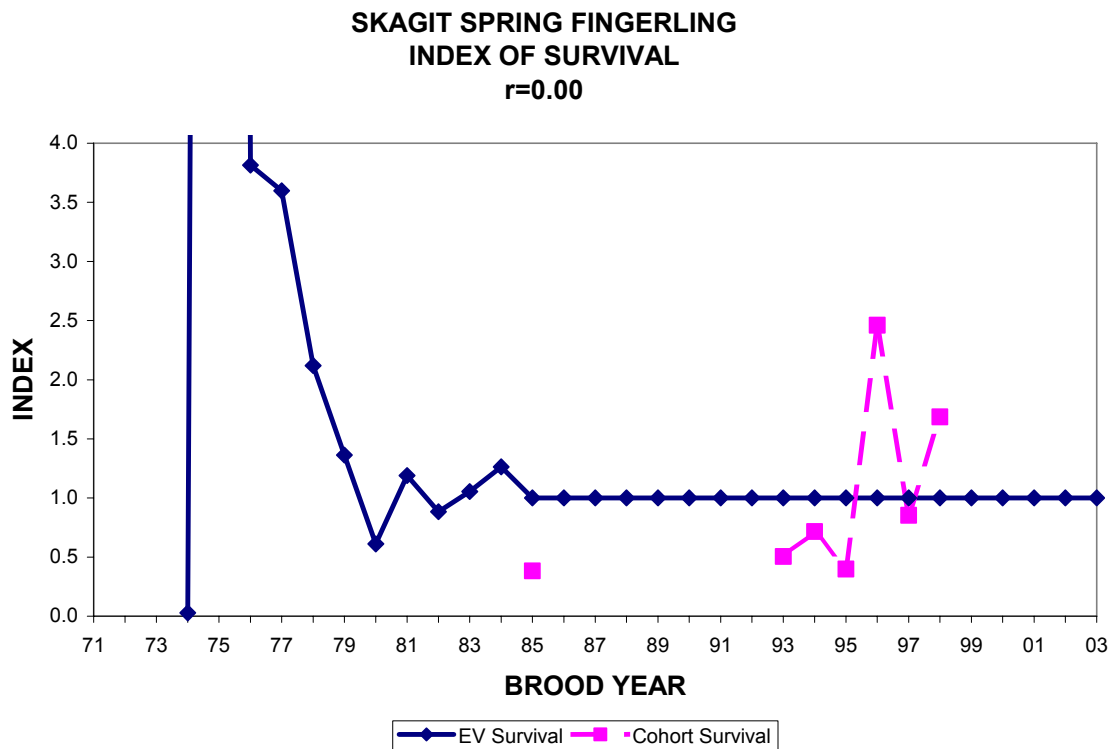


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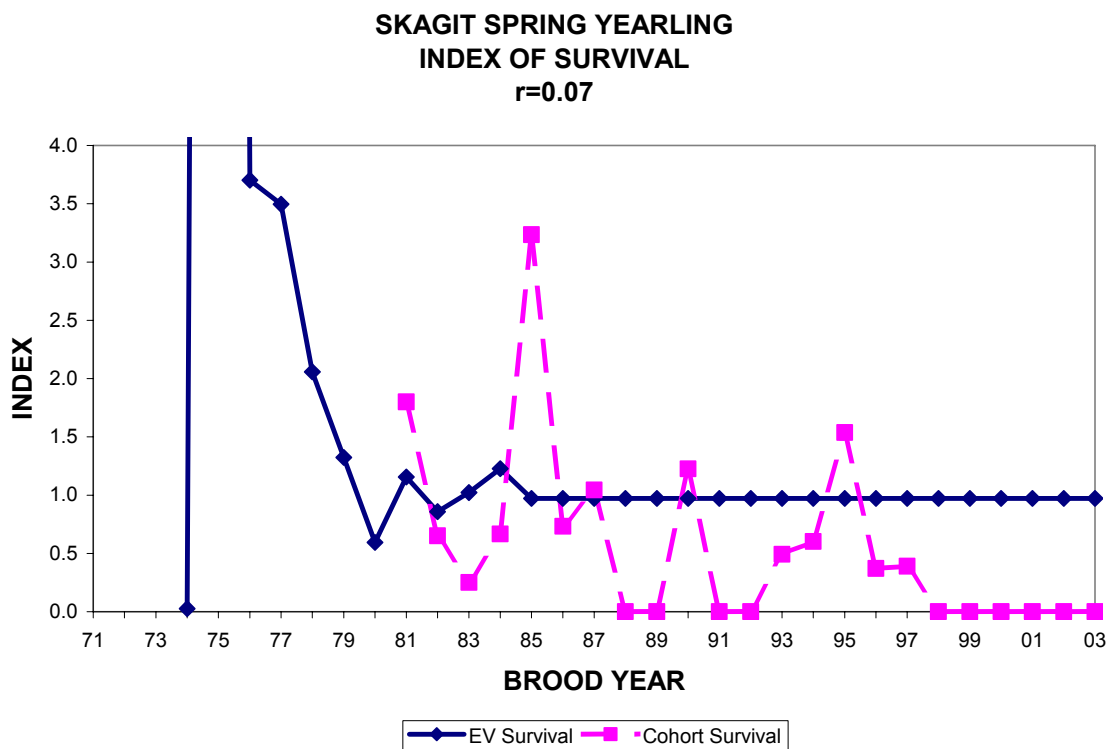


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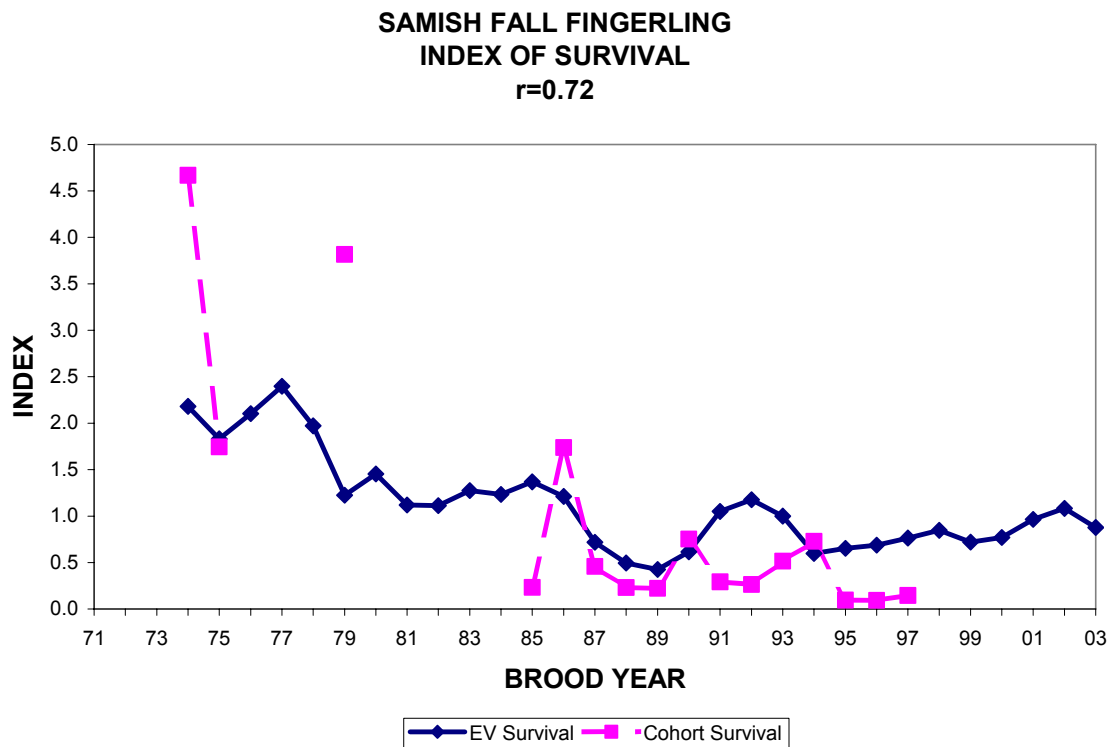


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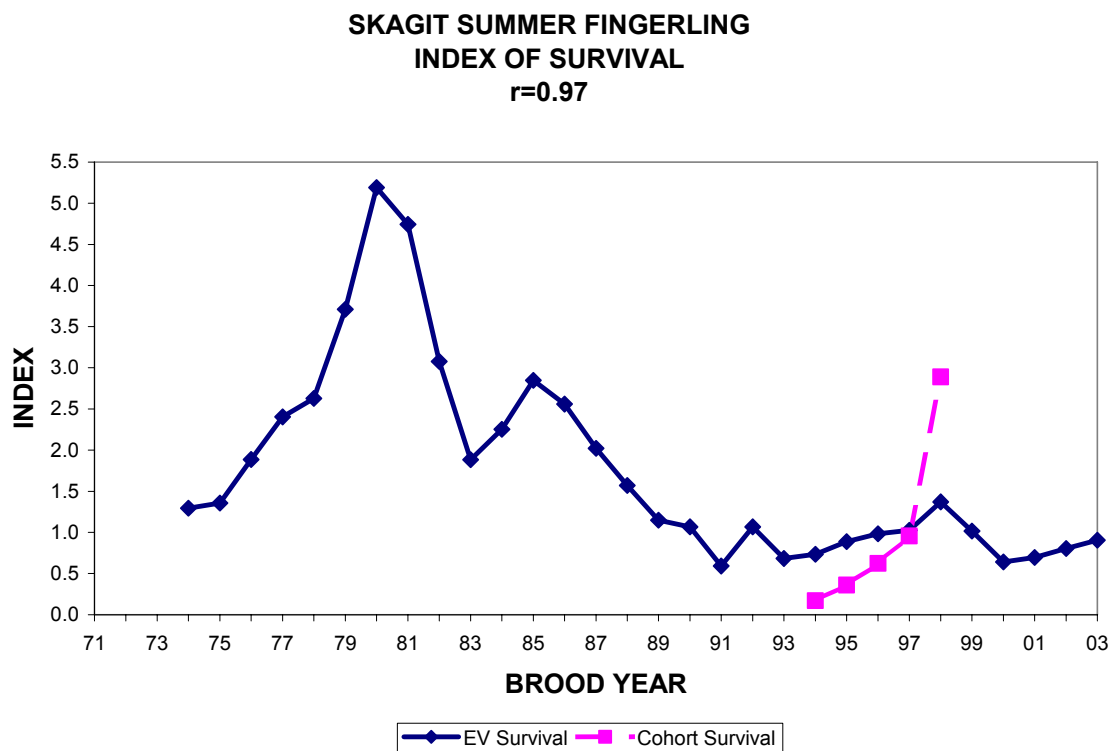


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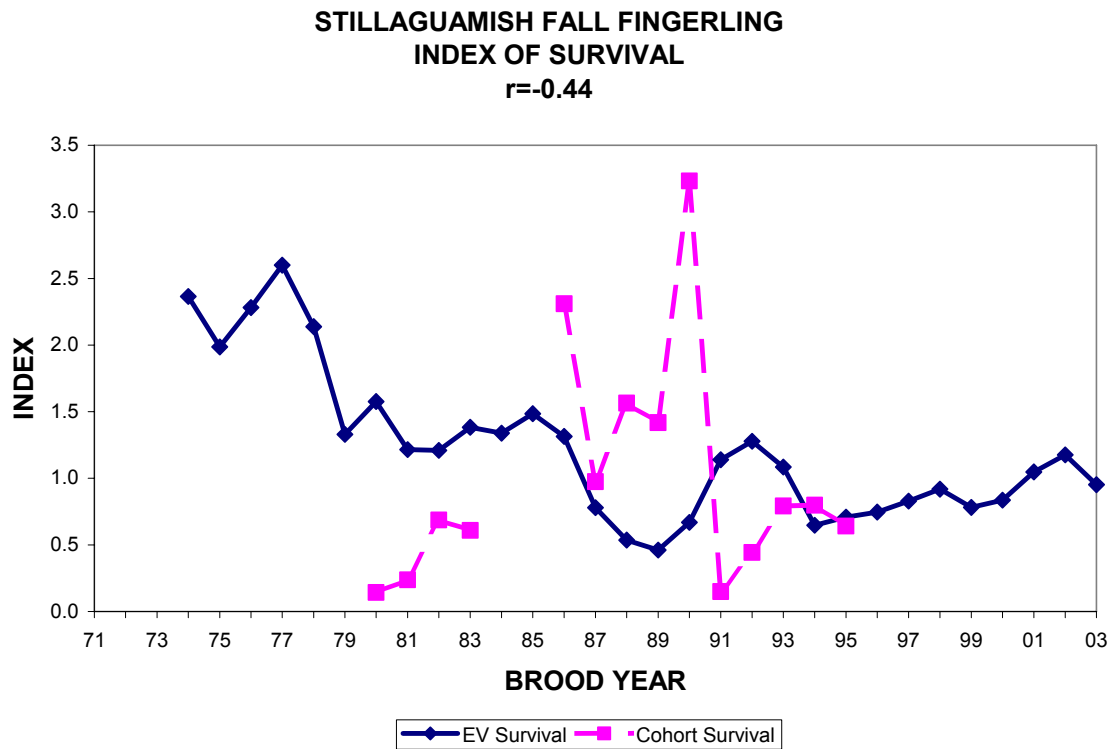


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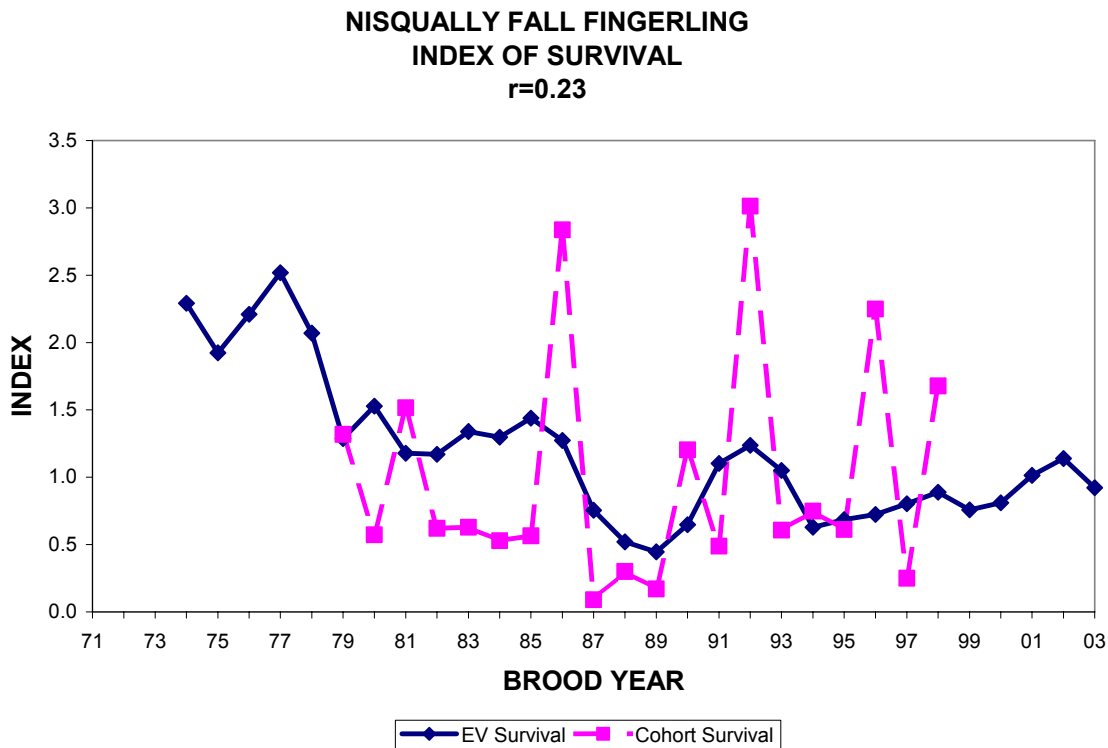


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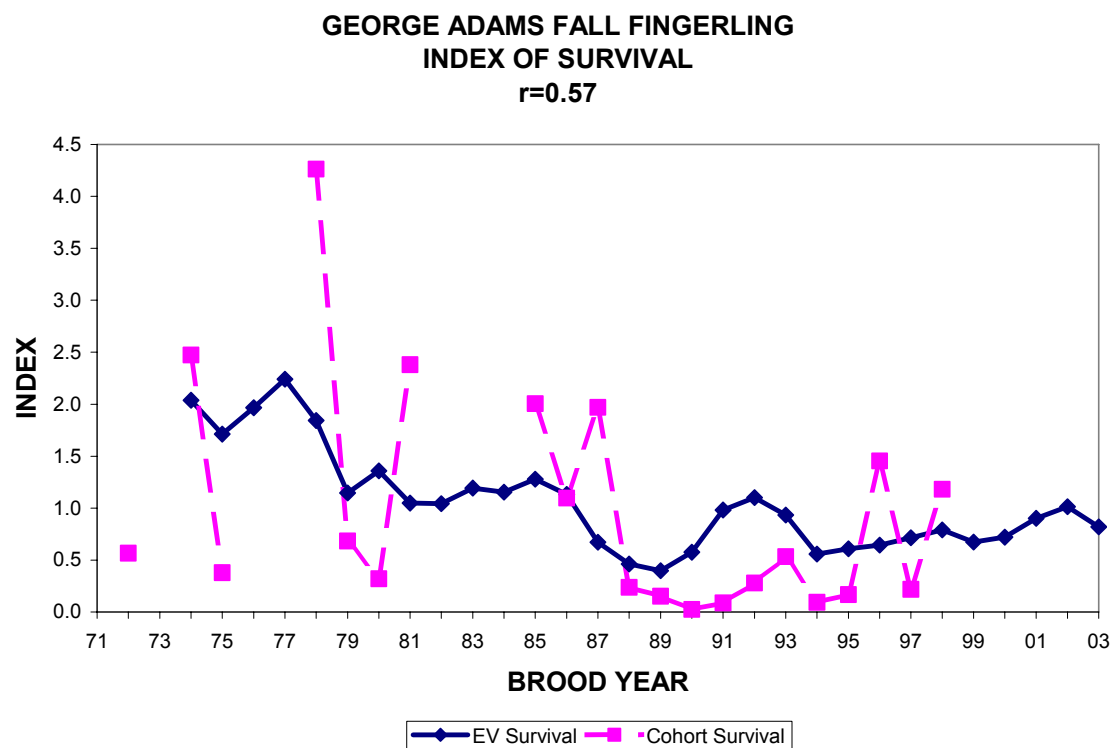


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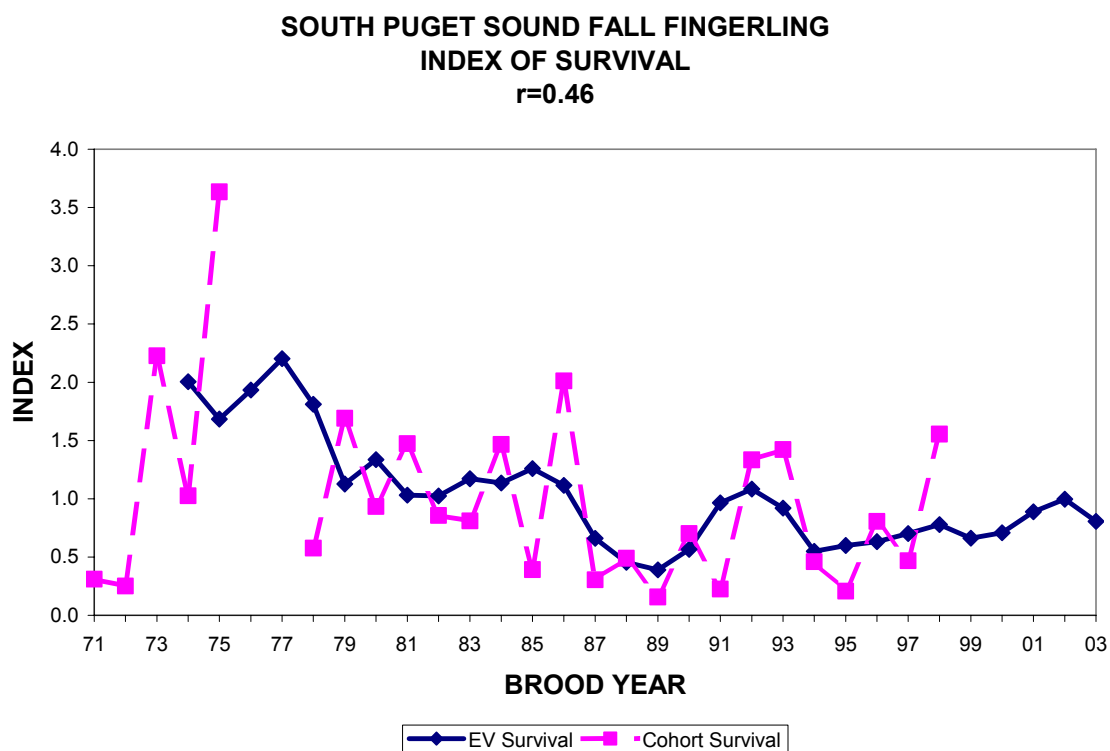


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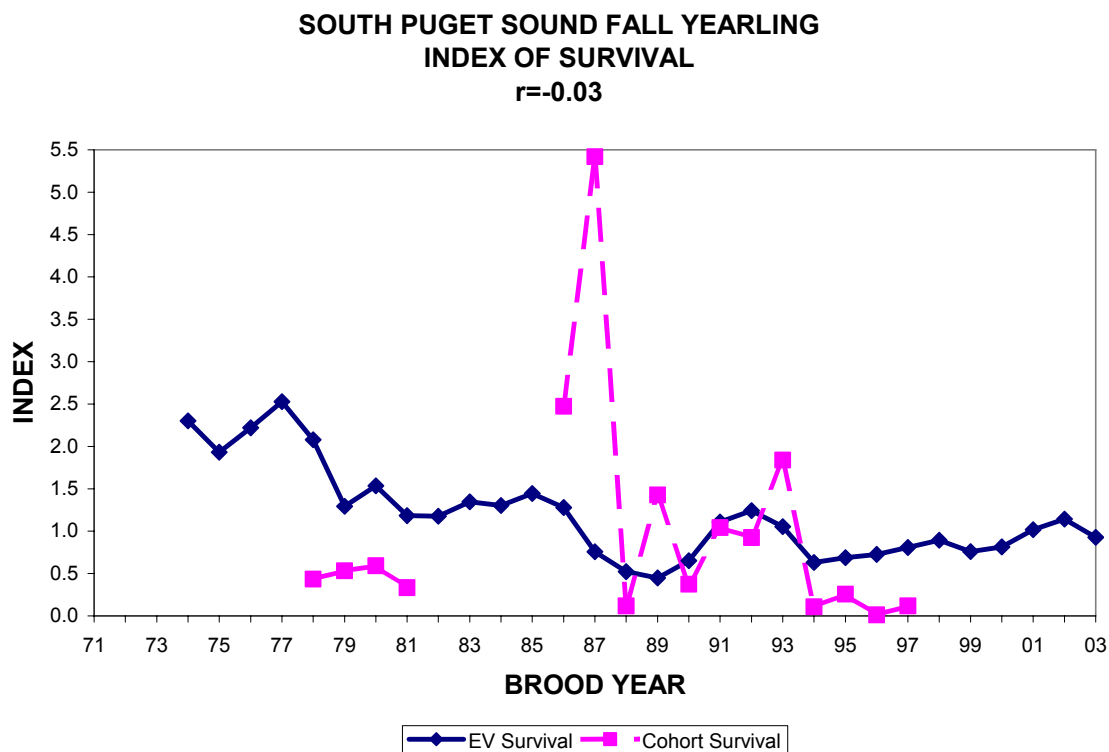


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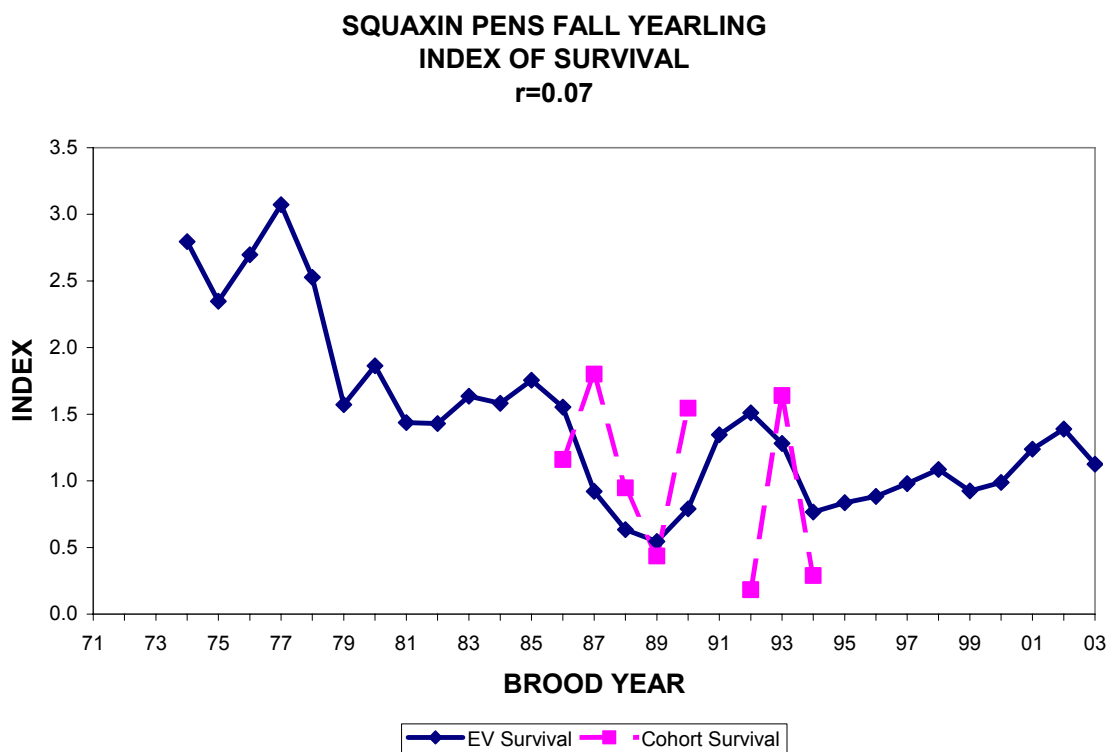


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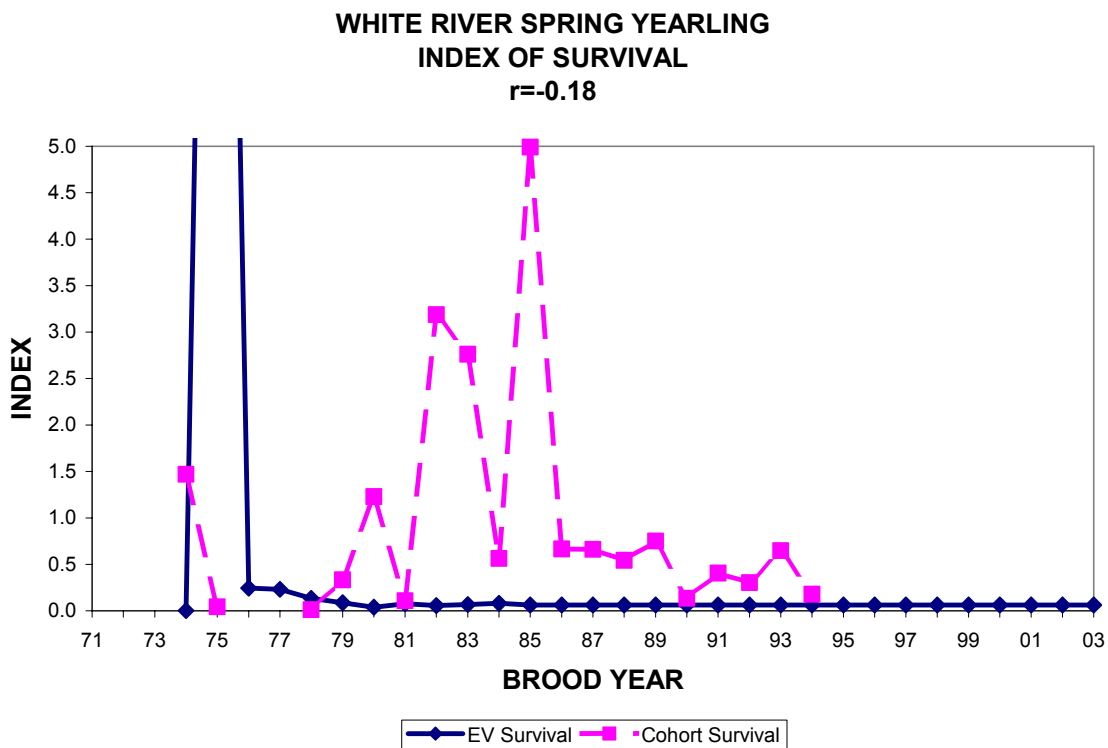


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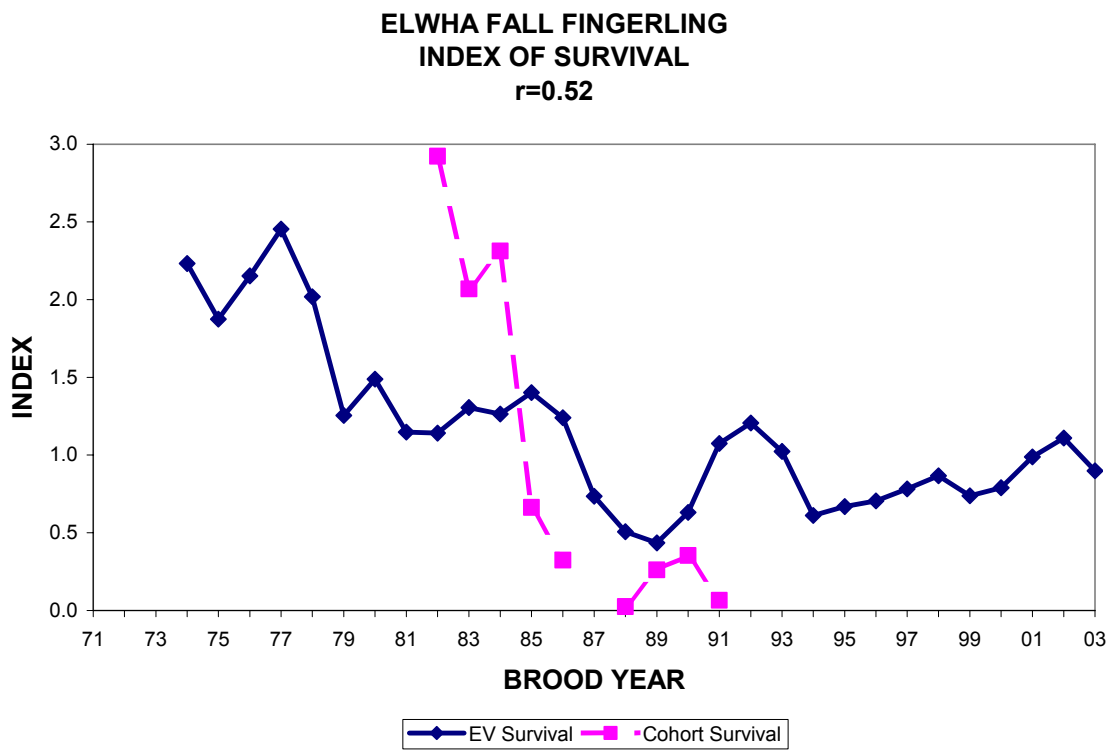


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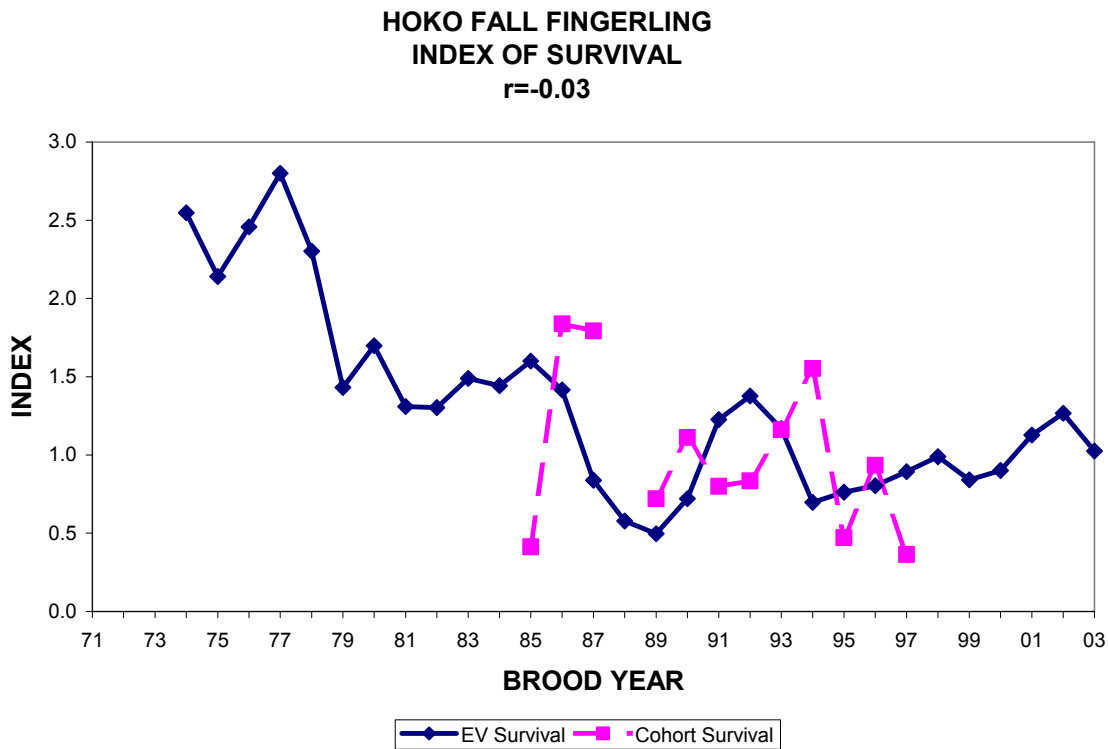


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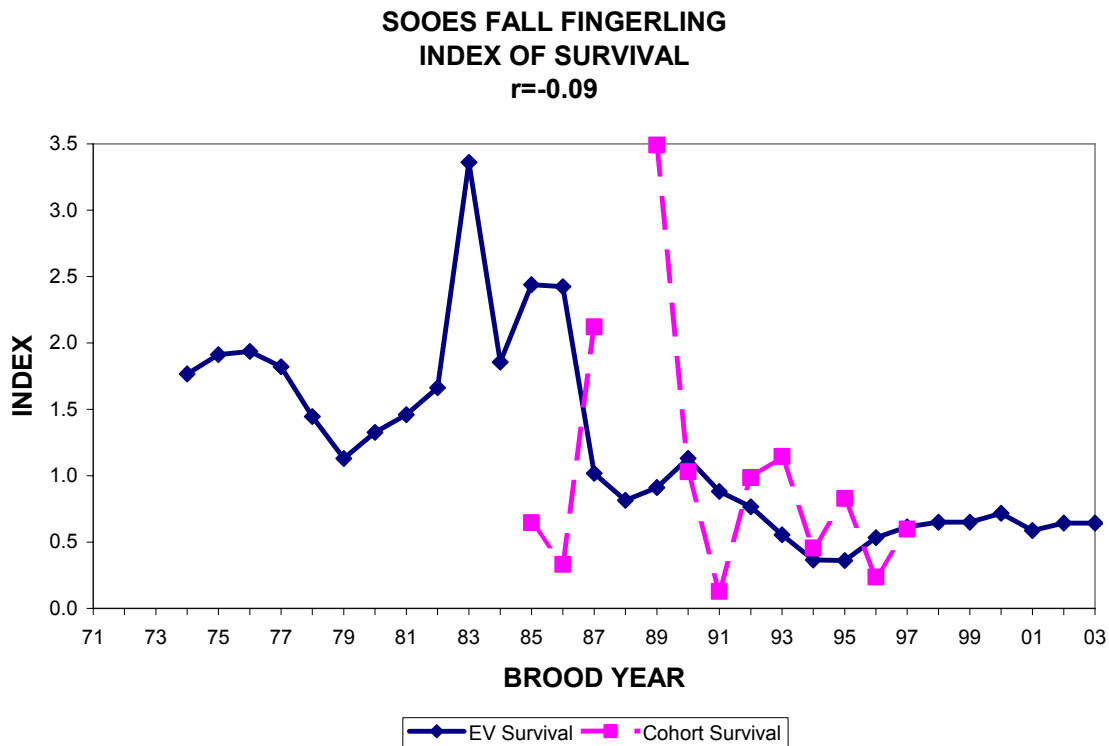


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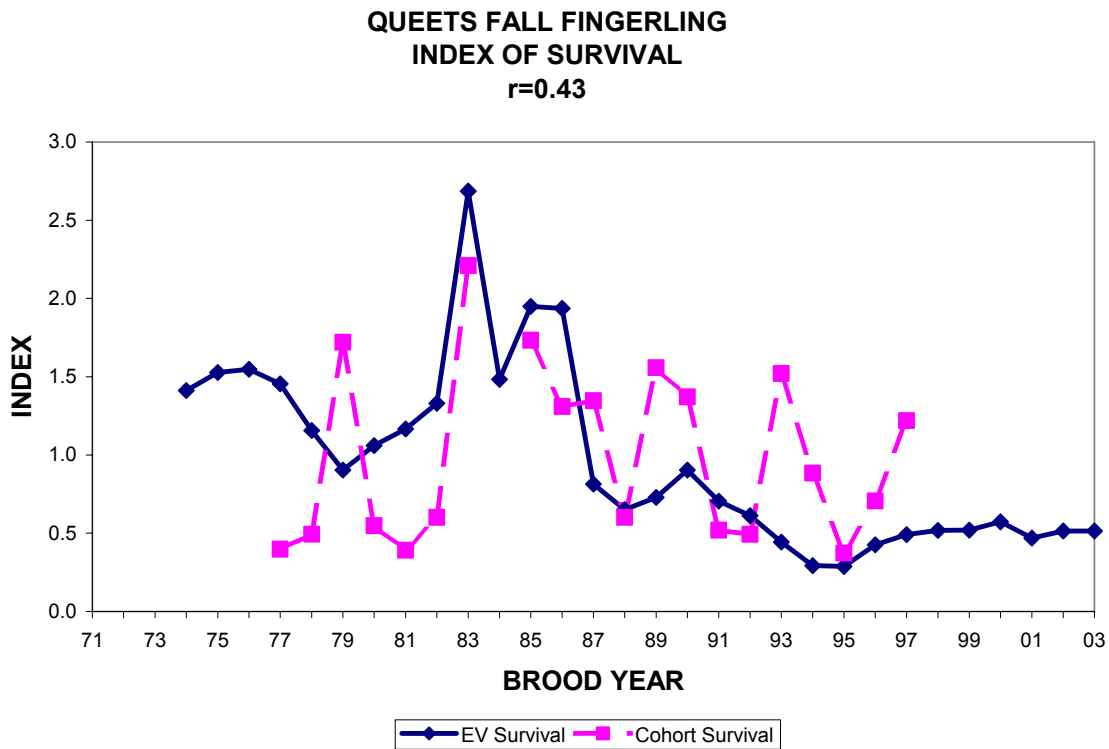


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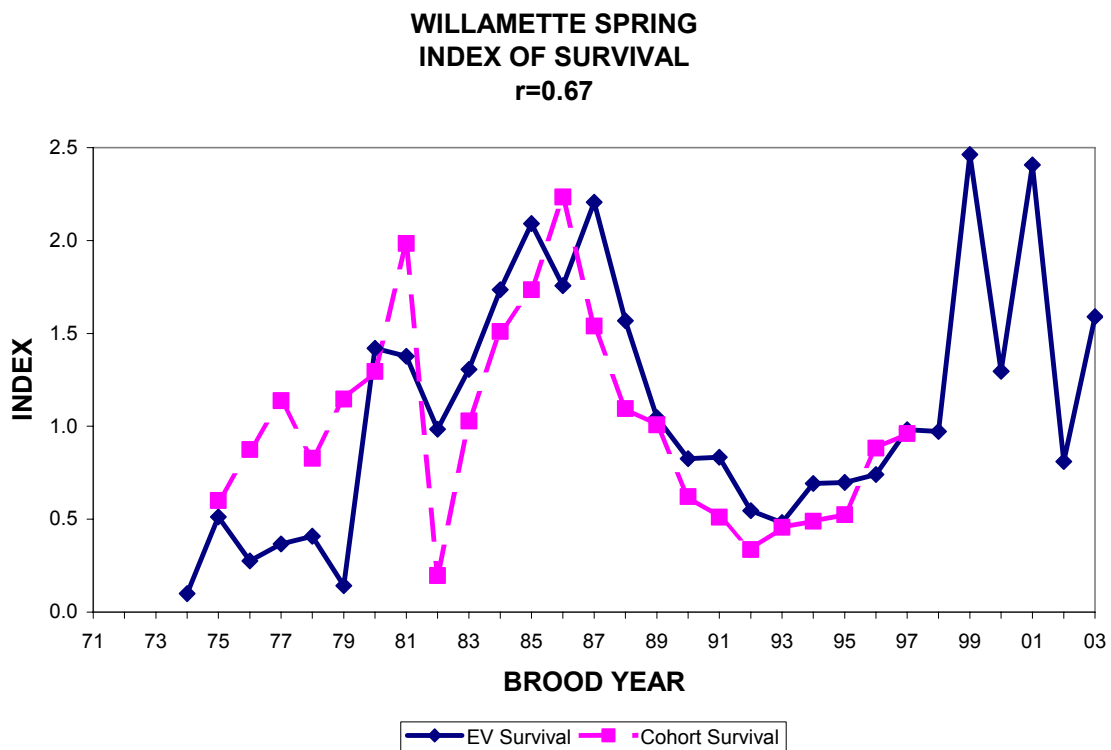


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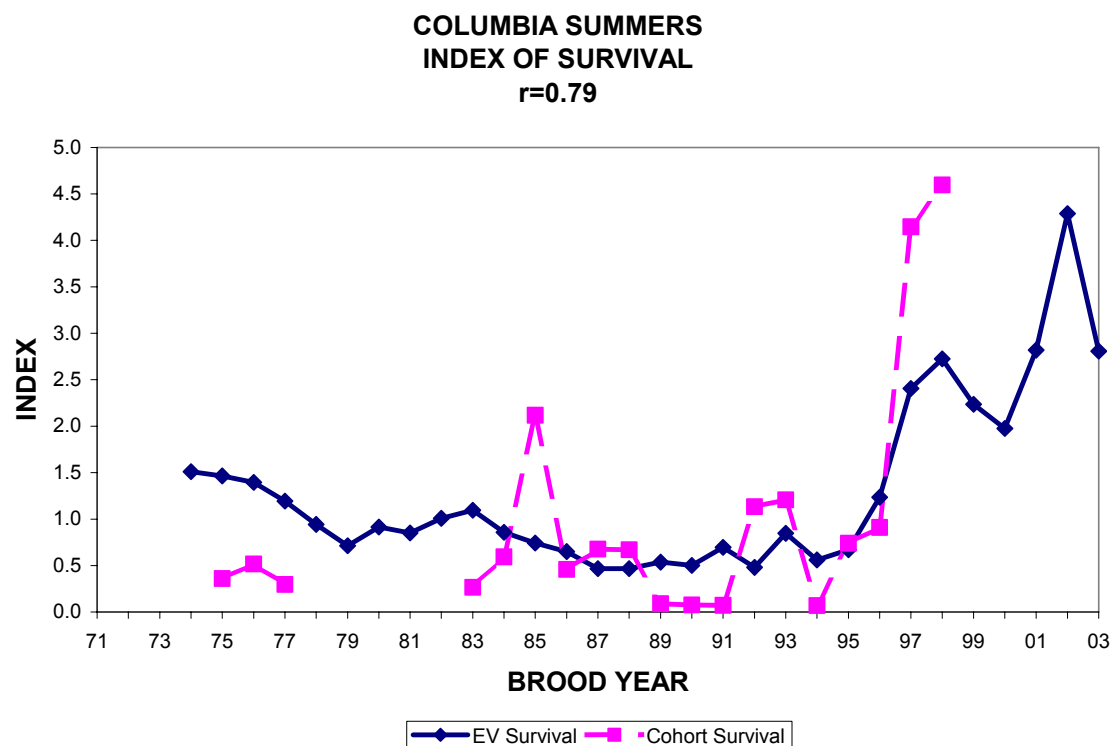


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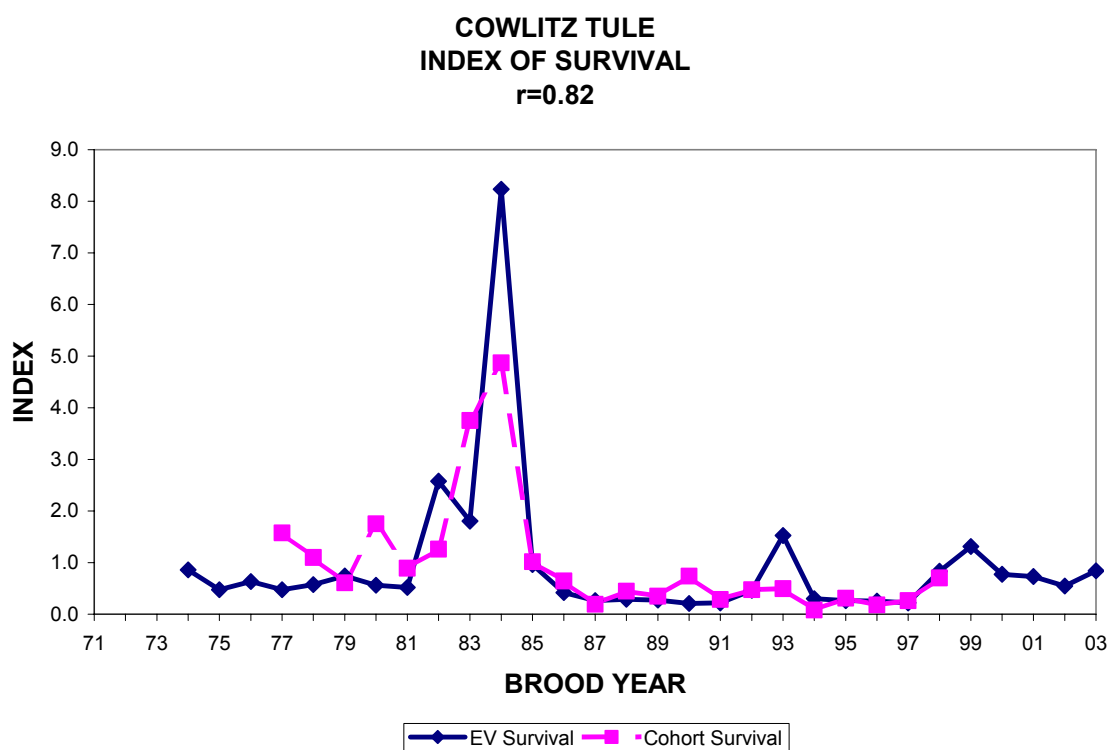


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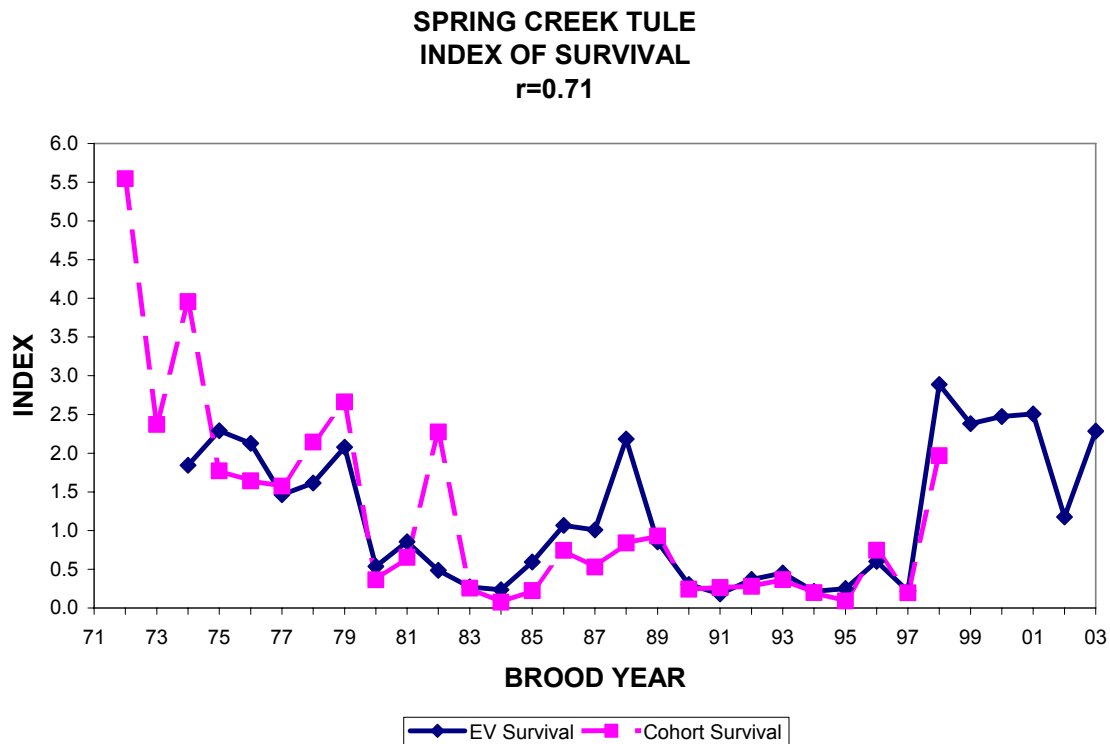


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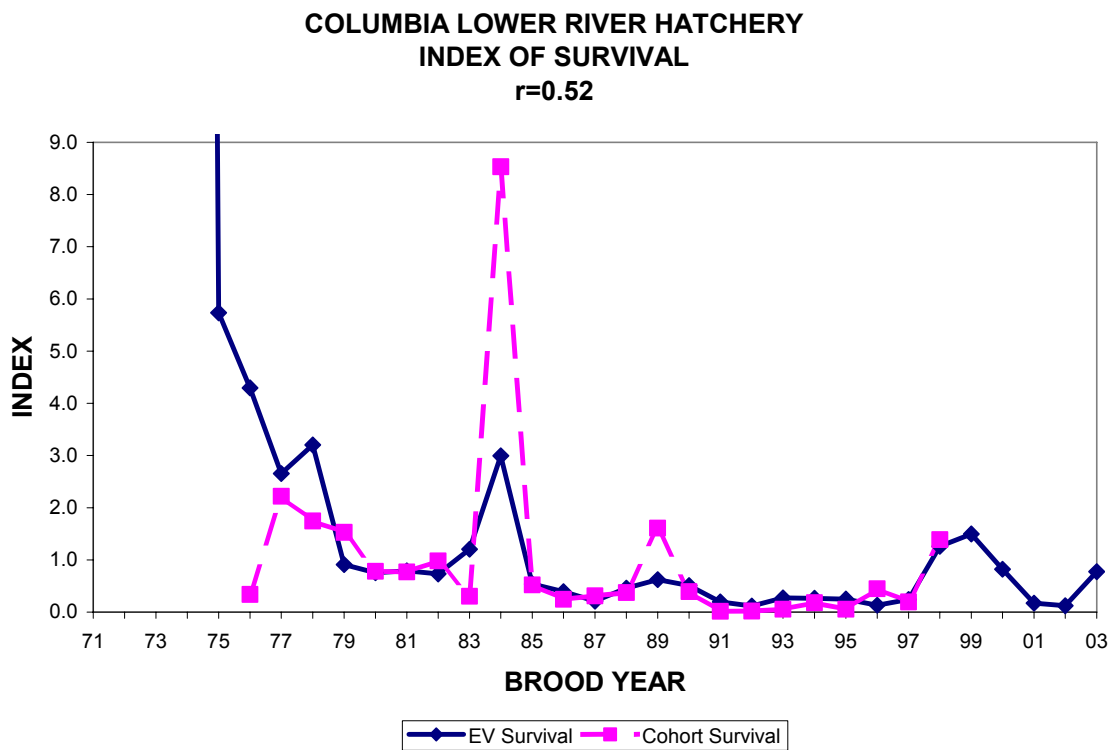


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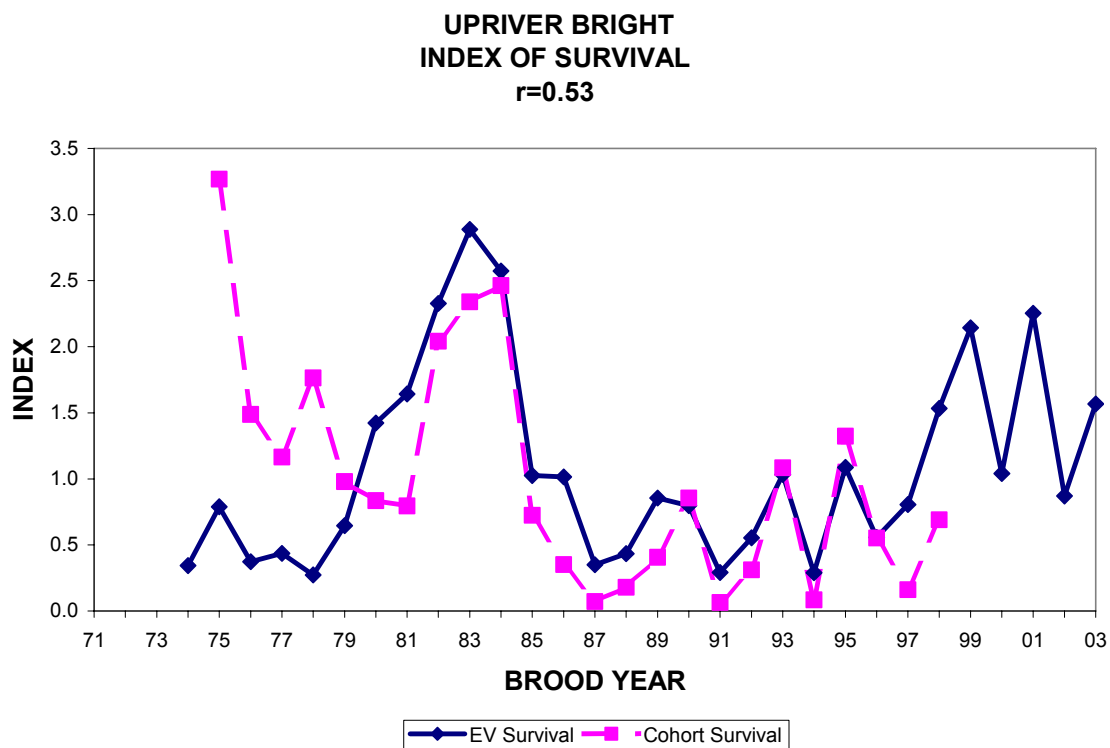


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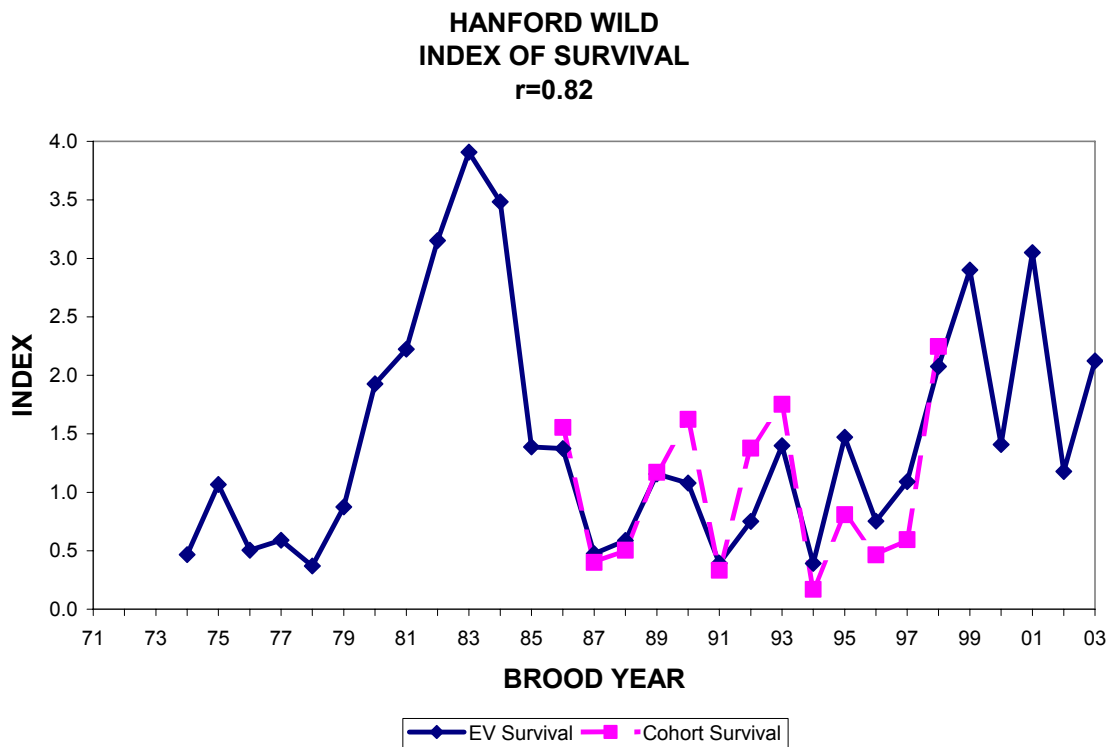


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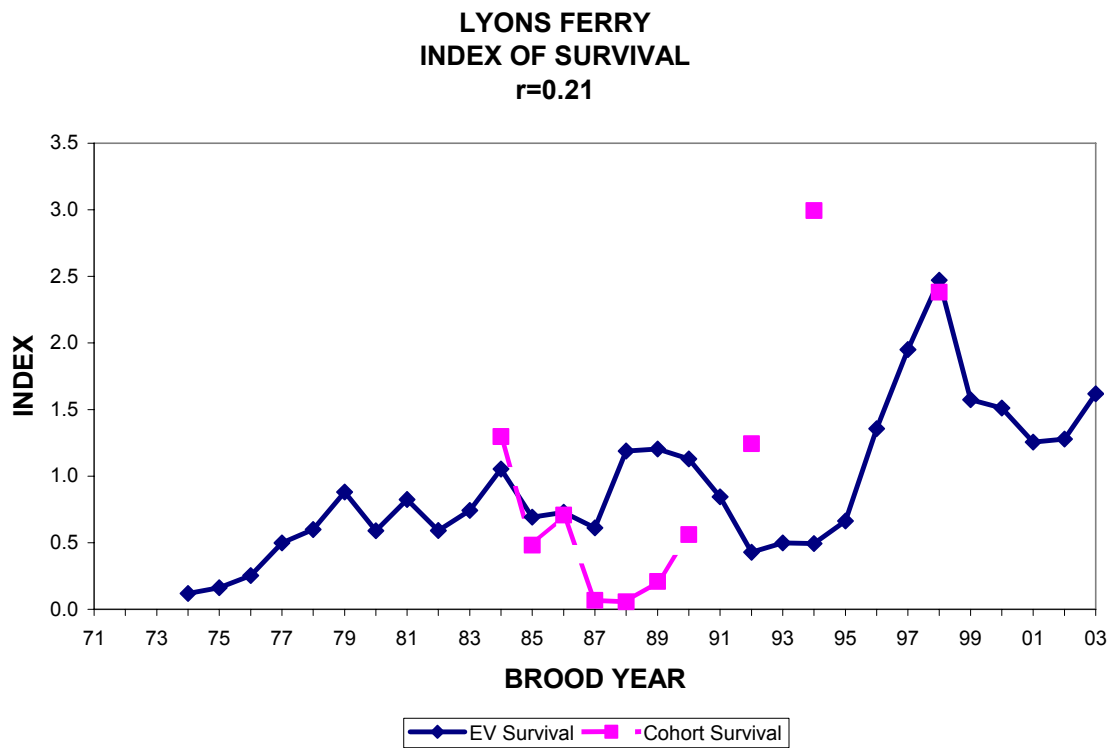


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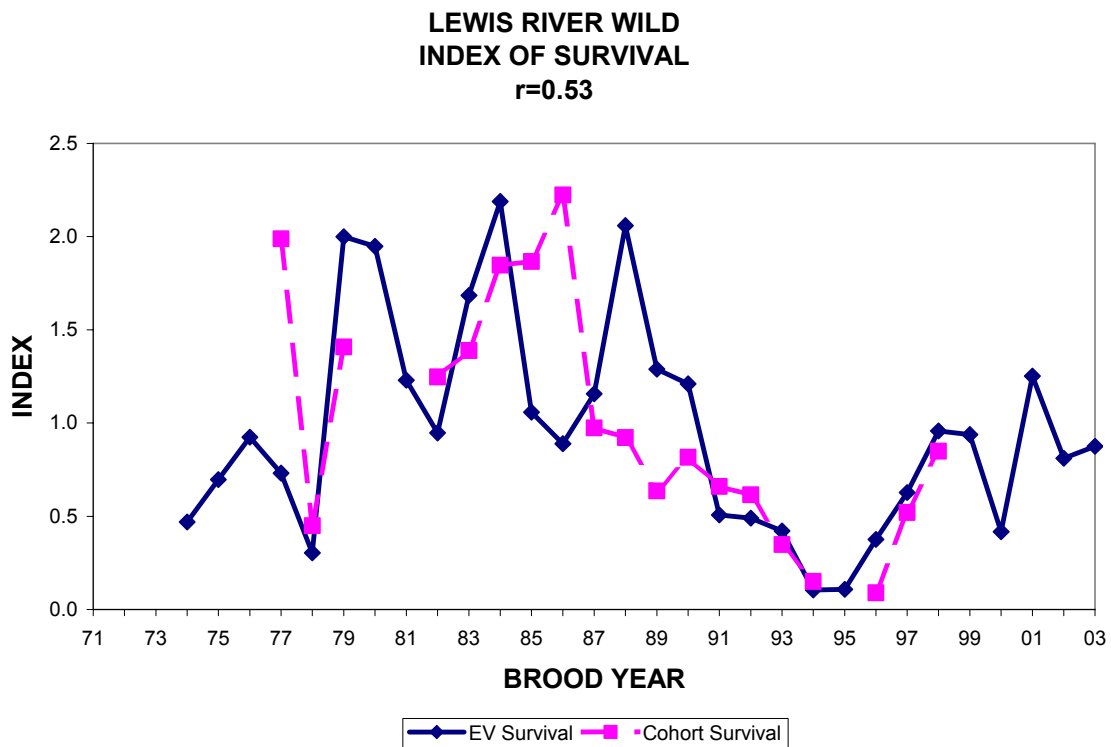


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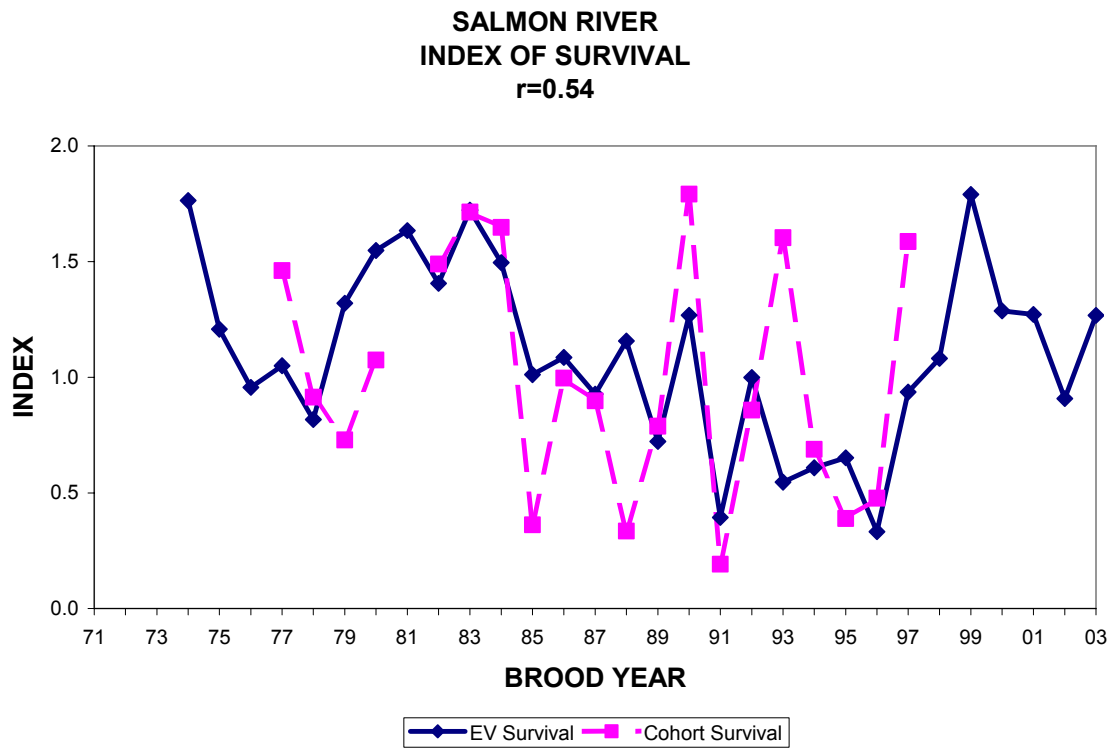


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¹ Ocean exploitation rates based only on ocean fisheries are shown for stocks in which terminal fisheries differentially impact the coded-wire tagged indicator compared to the associated wild stock. Total exploitation rates based on ocean plus terminal 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, South Puget Sound Fall Yearling, Squaxin Pens Fall Yearling. Exploitation rates cannot be calculated for the following stocks without sufficient escapement data: Nisqually Fall Fingerling, White River Spring Yearling, Elwha Fall Fingerling.

² The corresponding stocks used in the Chinook model calibration are indicated in brackets.

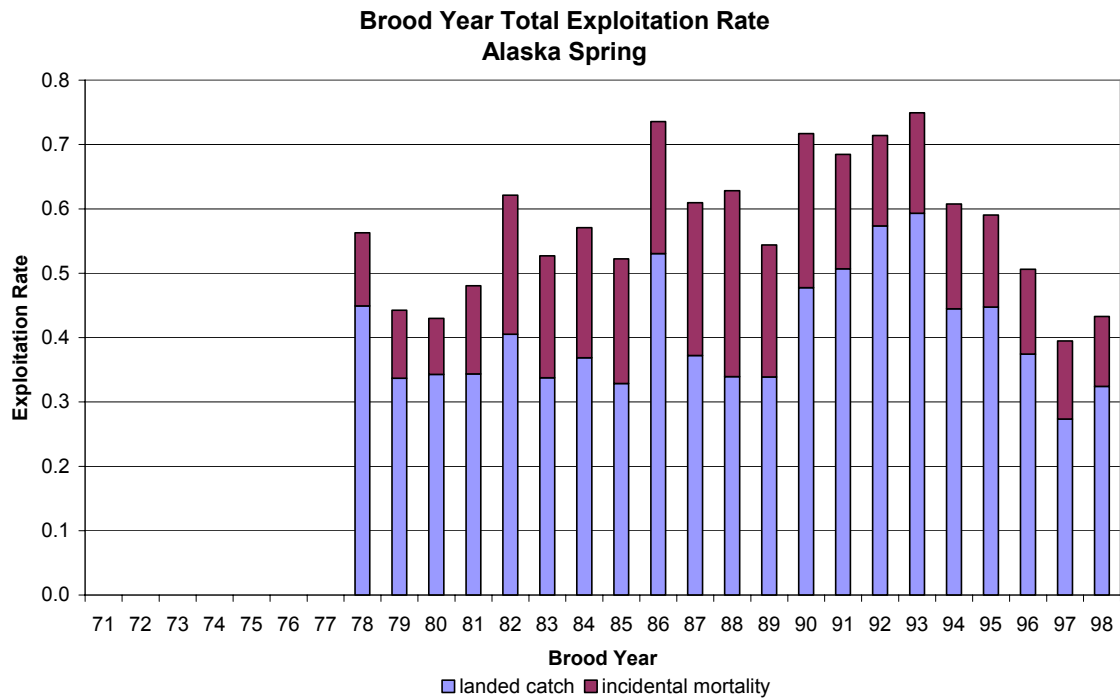


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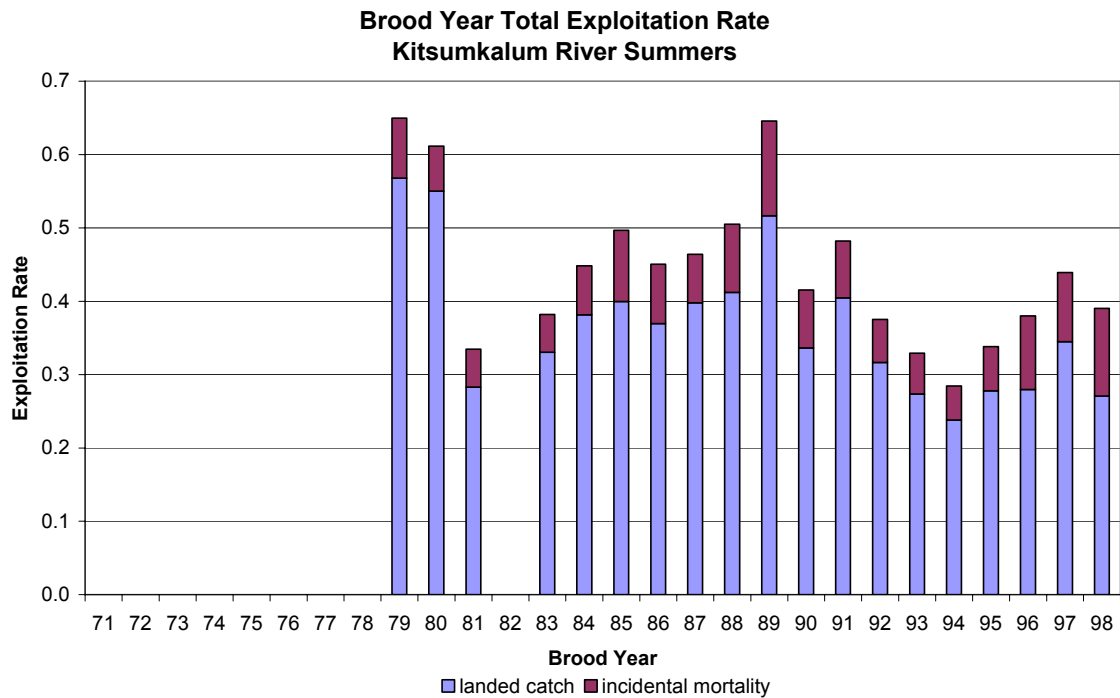


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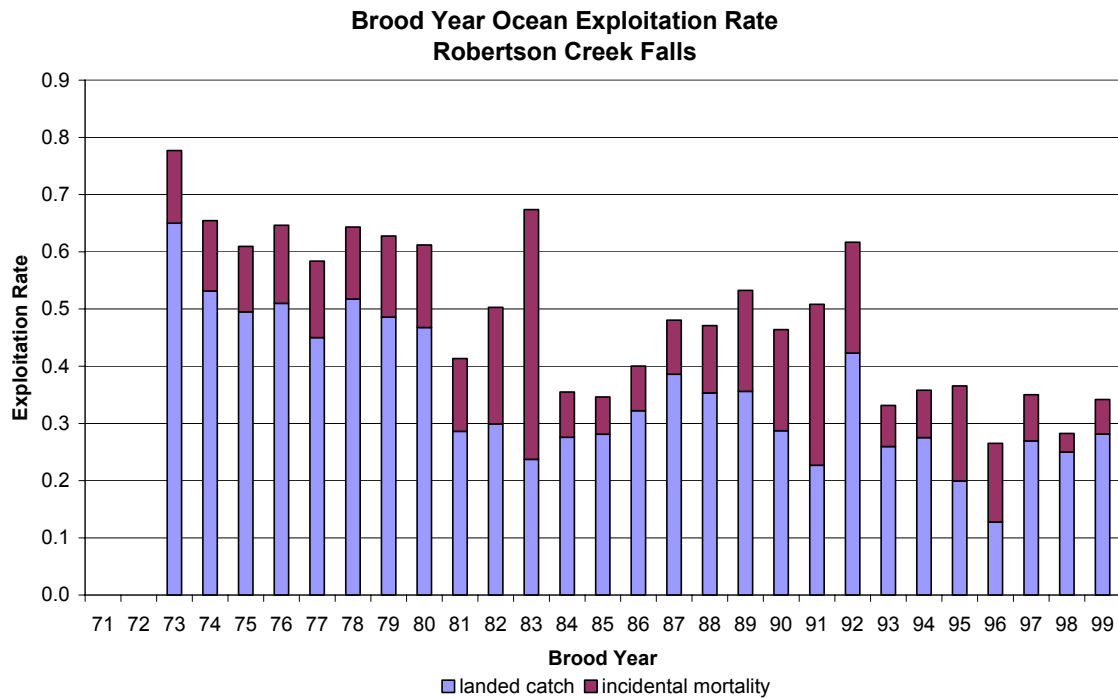


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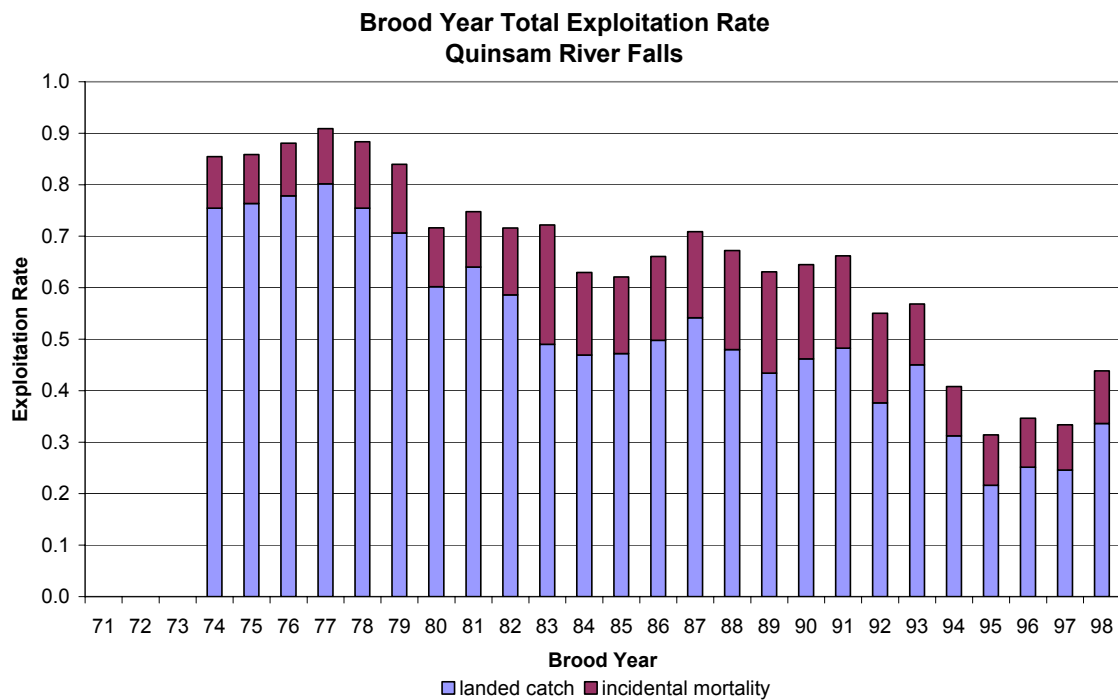


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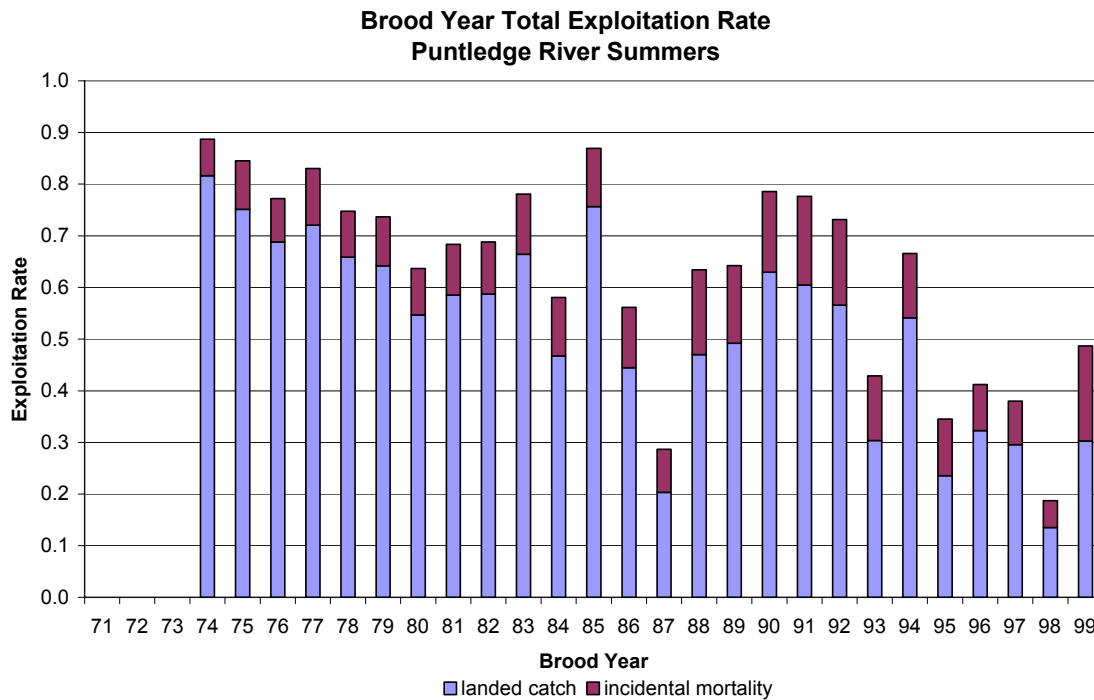


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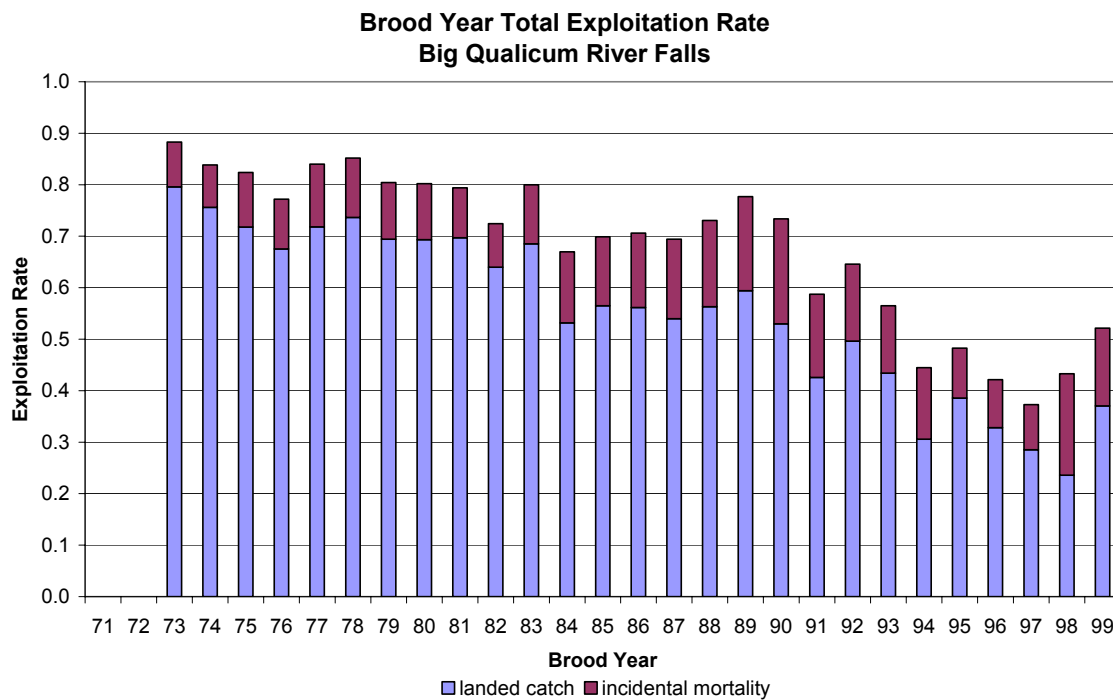


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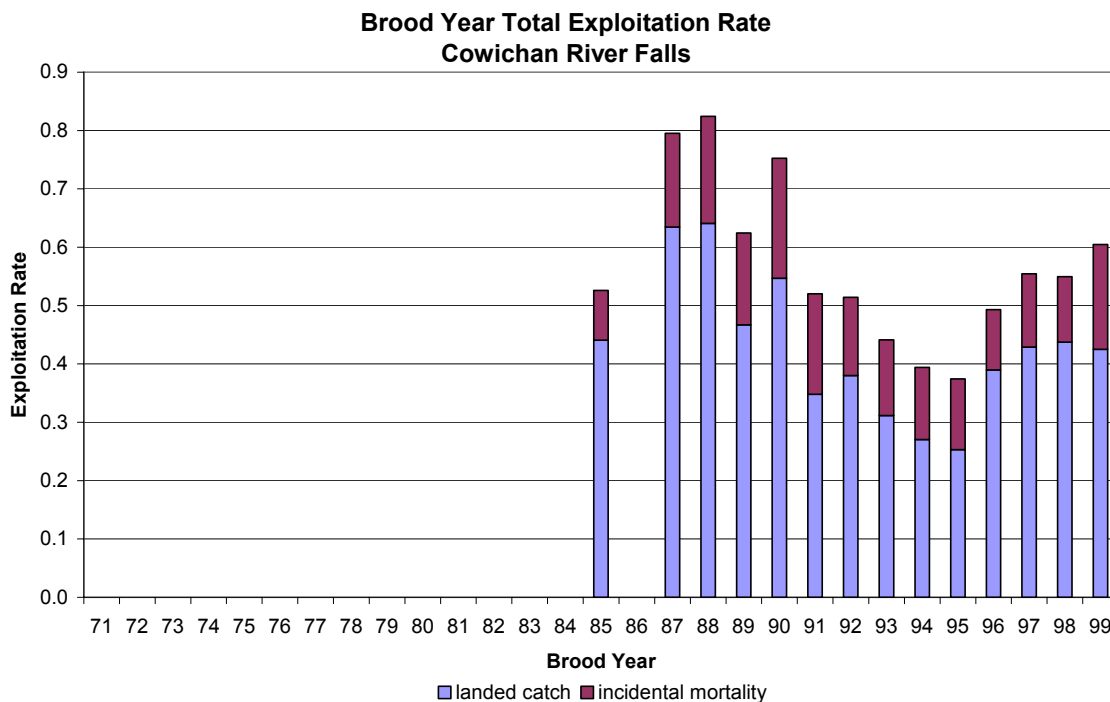


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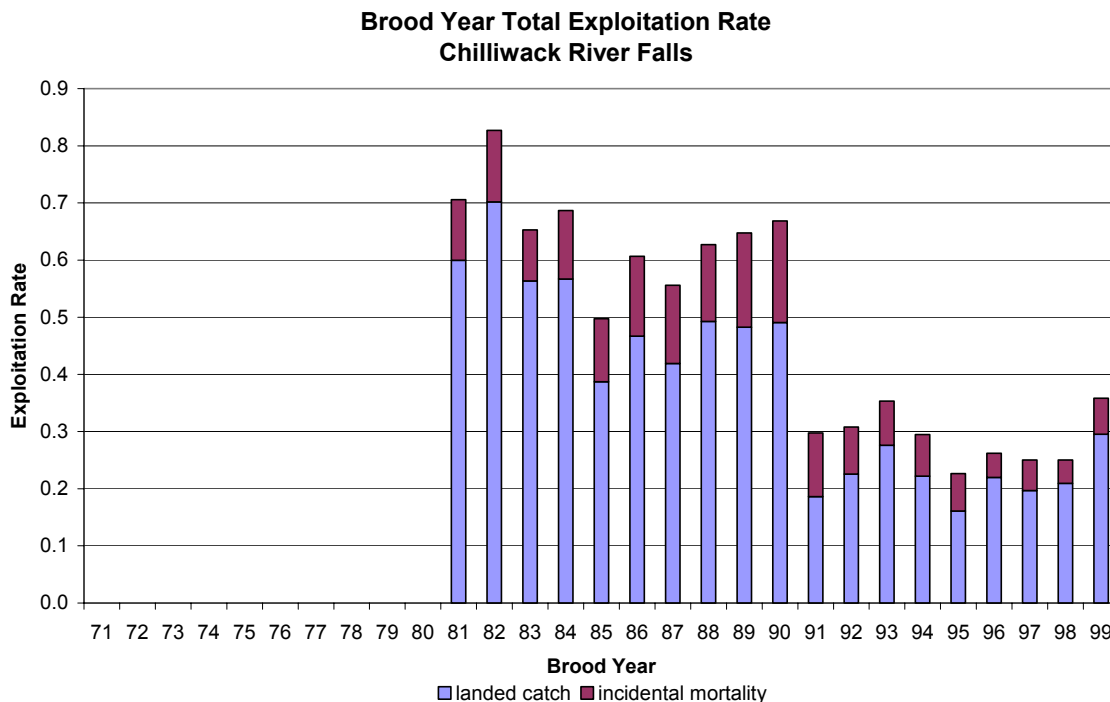


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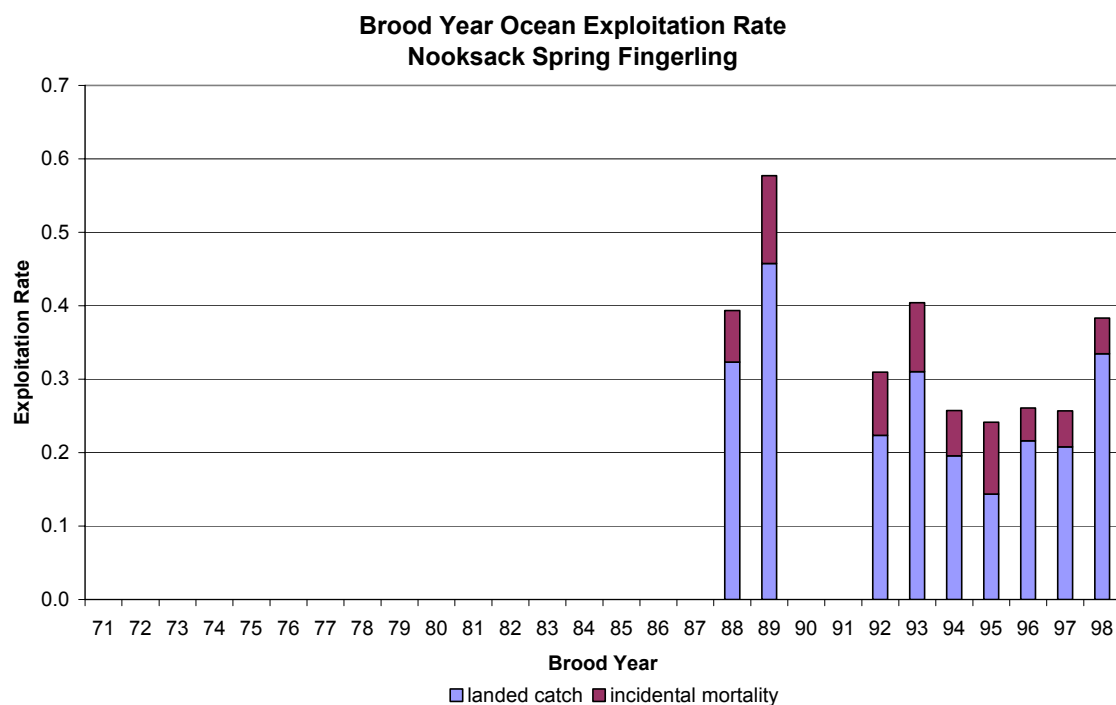


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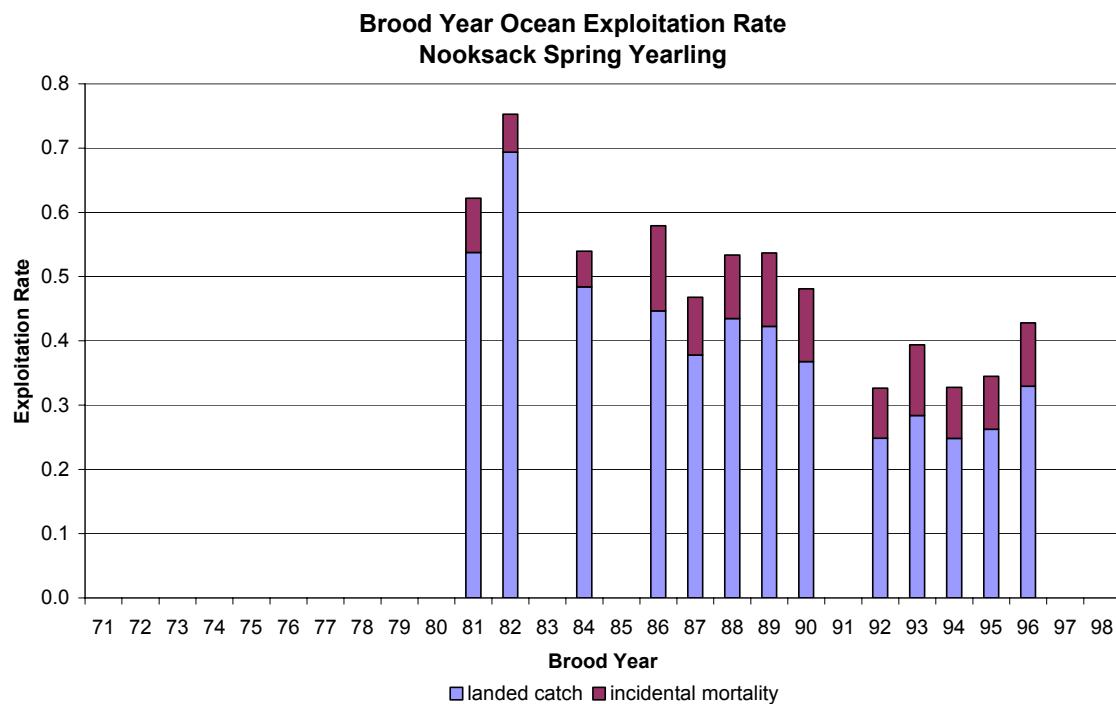


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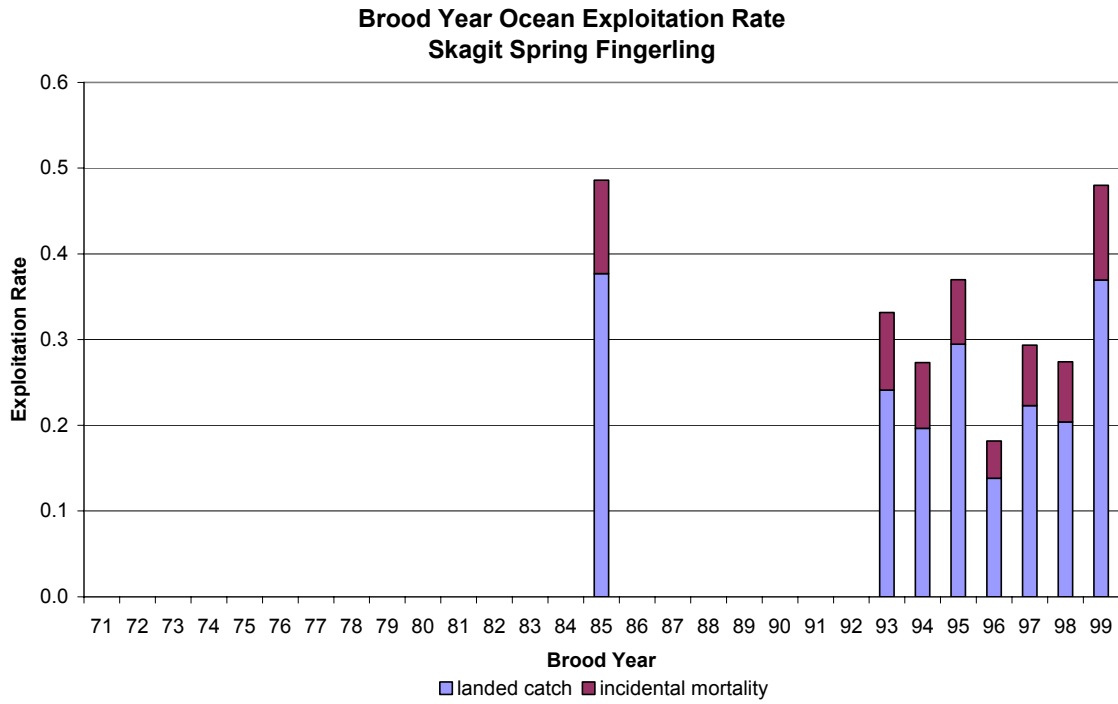


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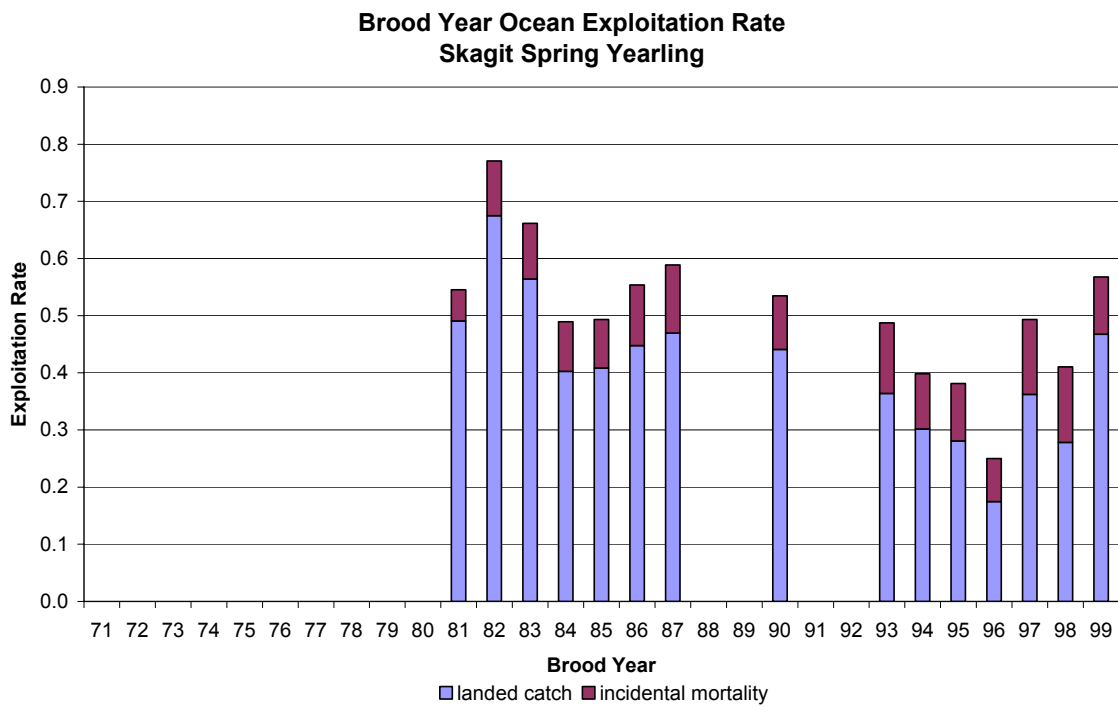


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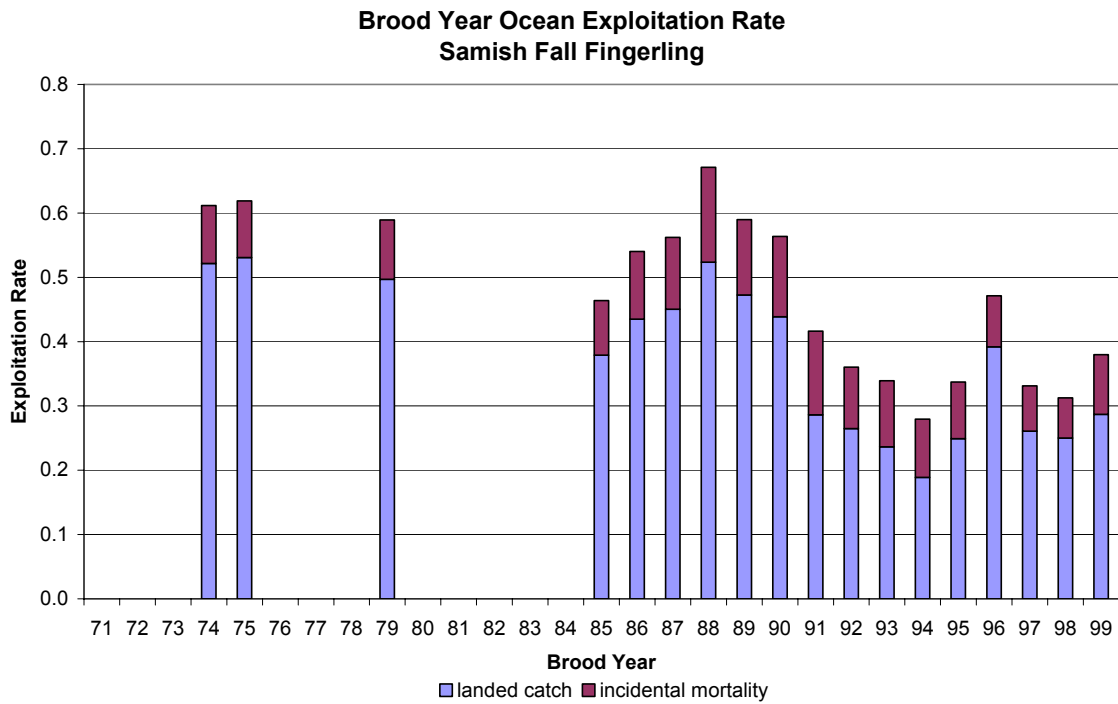


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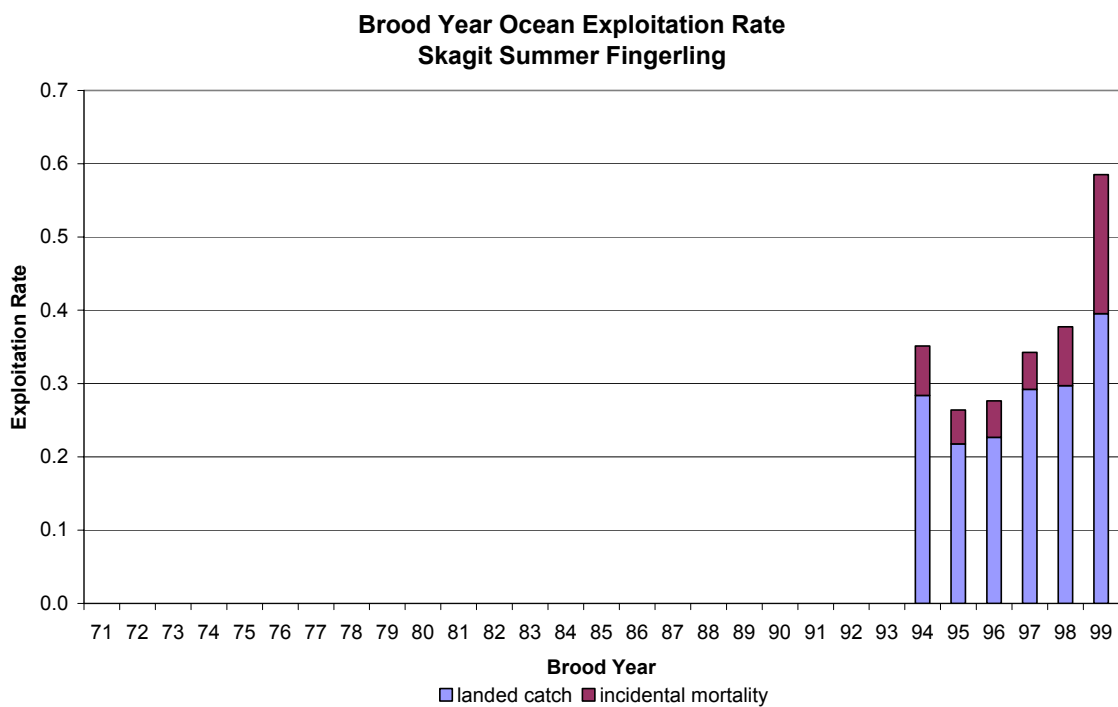


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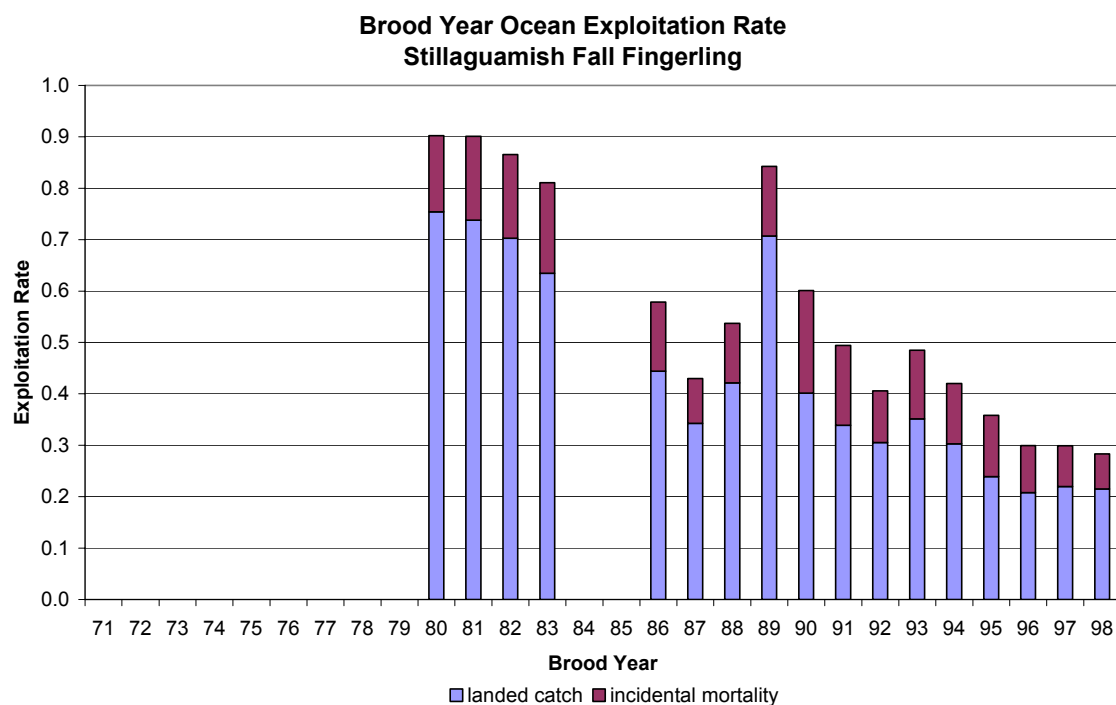


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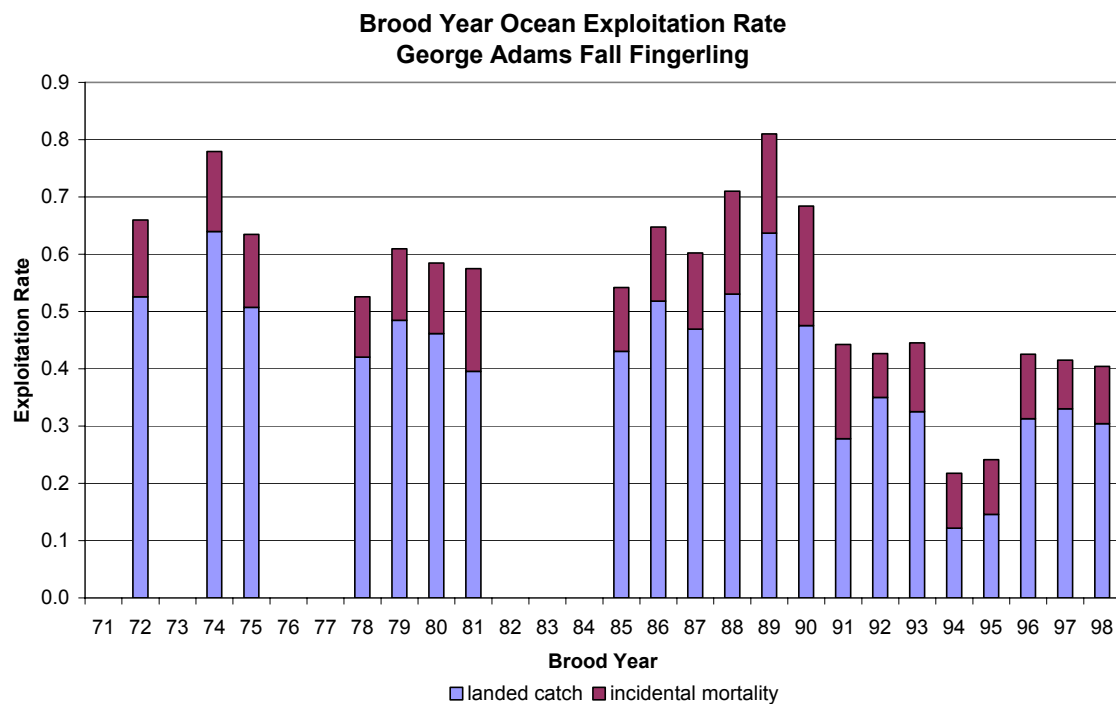


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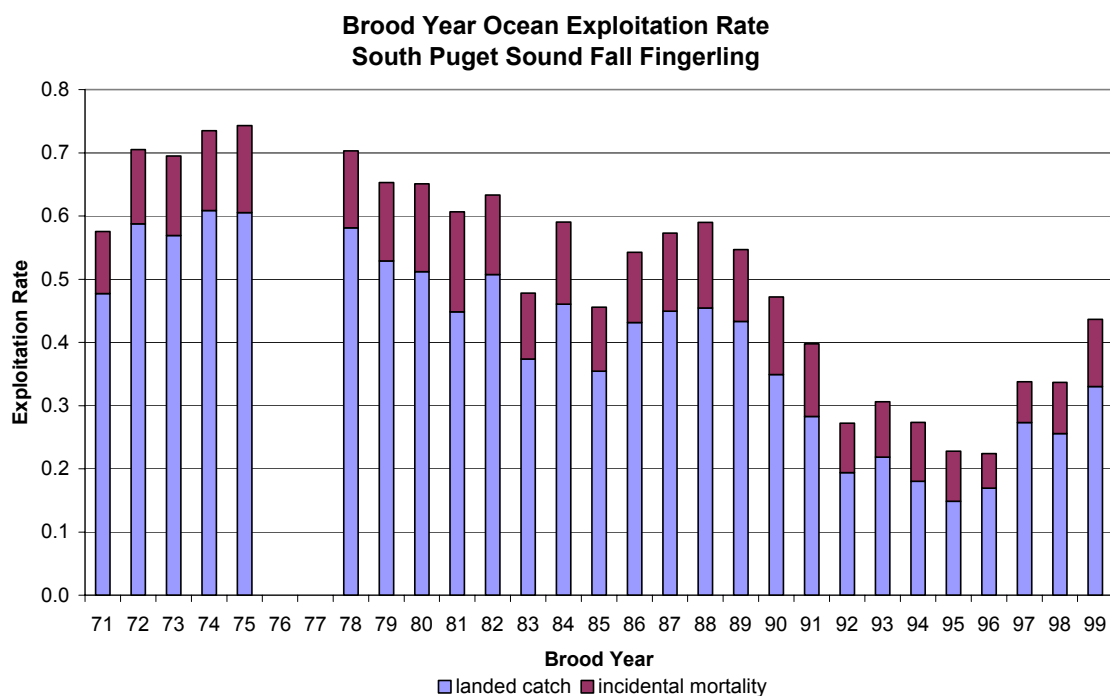


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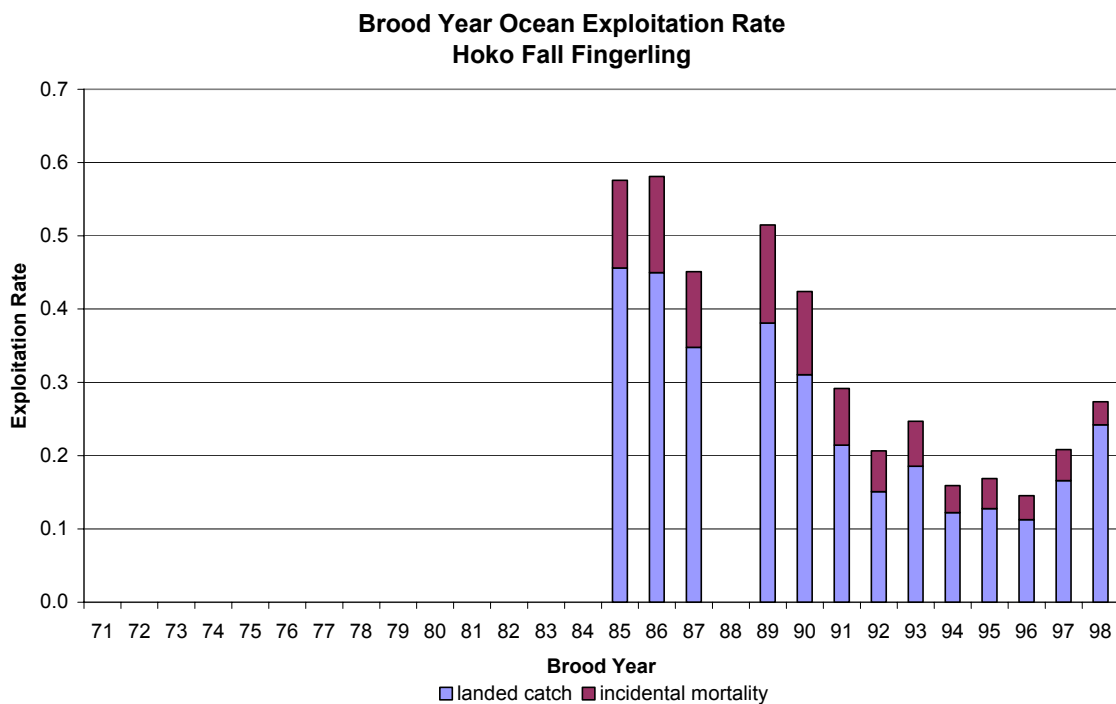


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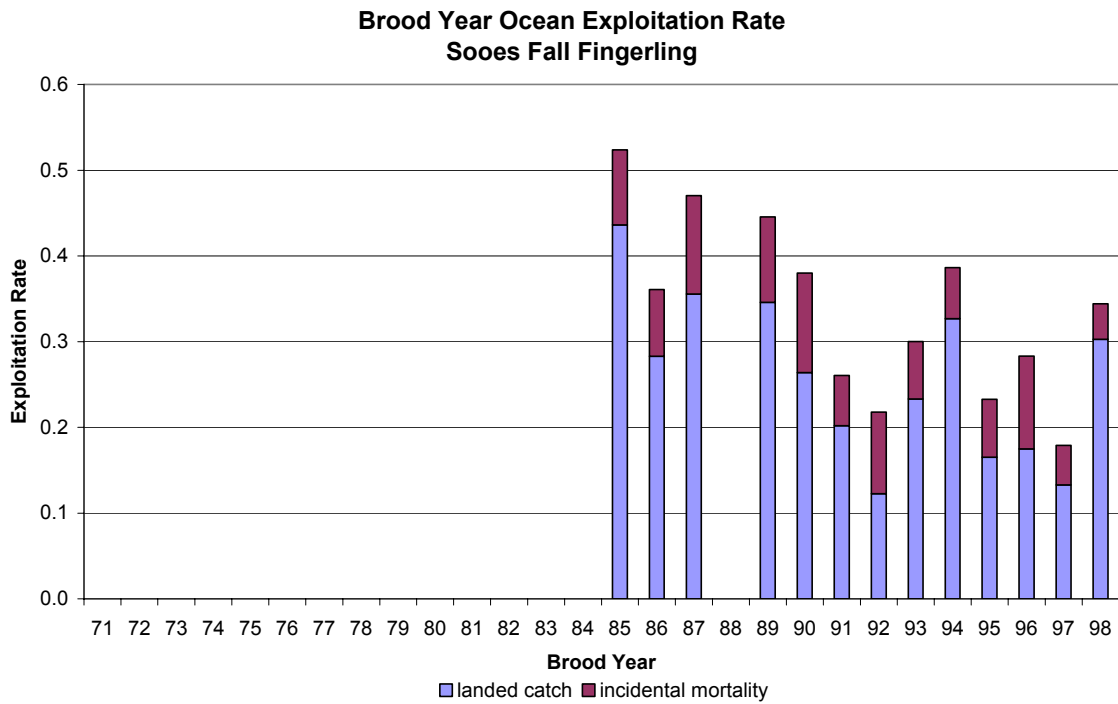


Figure F.19. Sooes Fall Fingerling (Washington Coastal Wild) ocean exploitation rates by brood year.

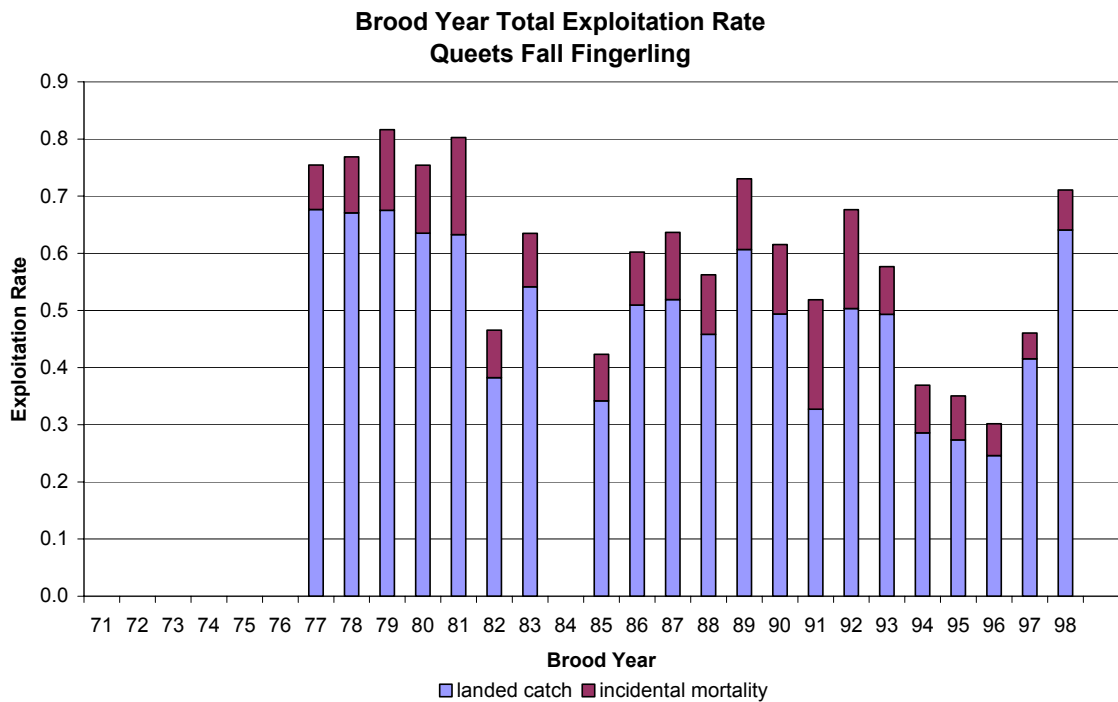


Figure F.20. Queets Fall Fingerling (Washington Coastal Wild) total exploitation rates by brood year.

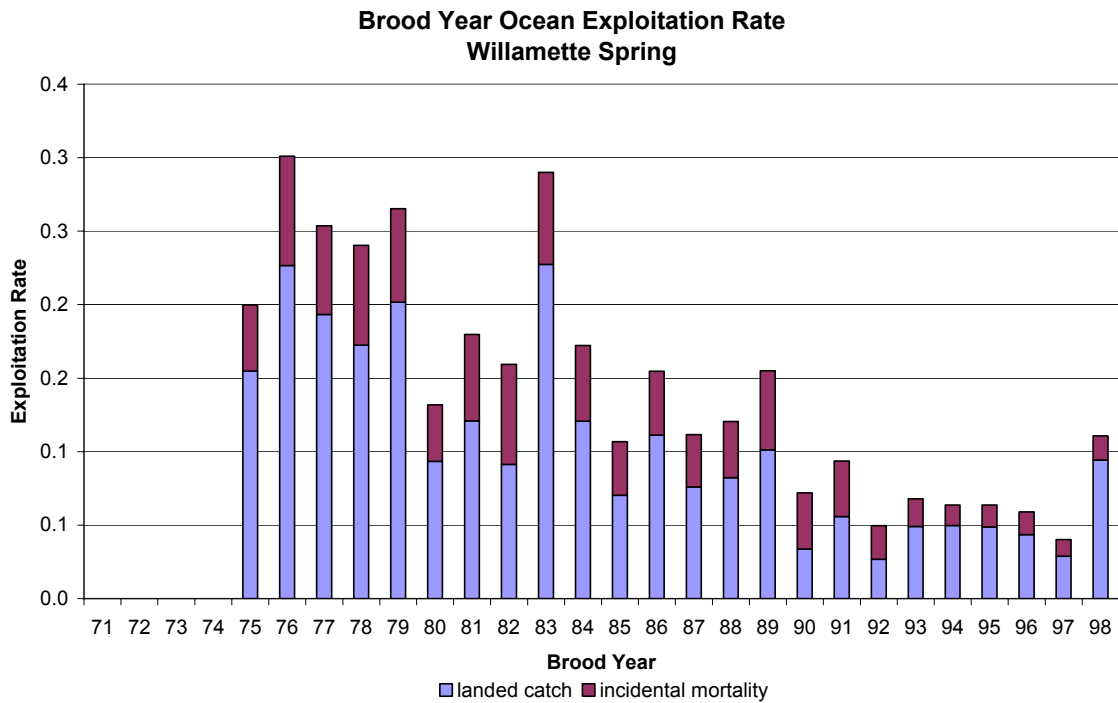


Figure F.21. Willamette Spring (Willamette River Hatchery) ocean exploitation rates by brood year.

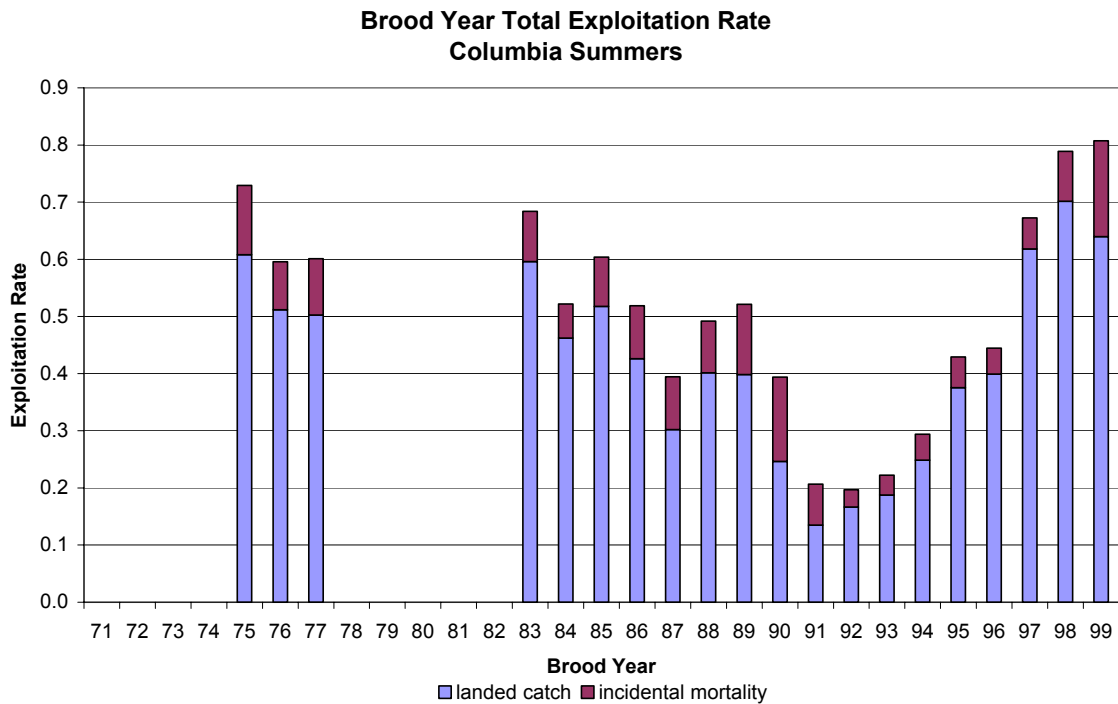


Figure F.22. Columbia Summers (Columbia River Summer) total exploitation rates by brood year.

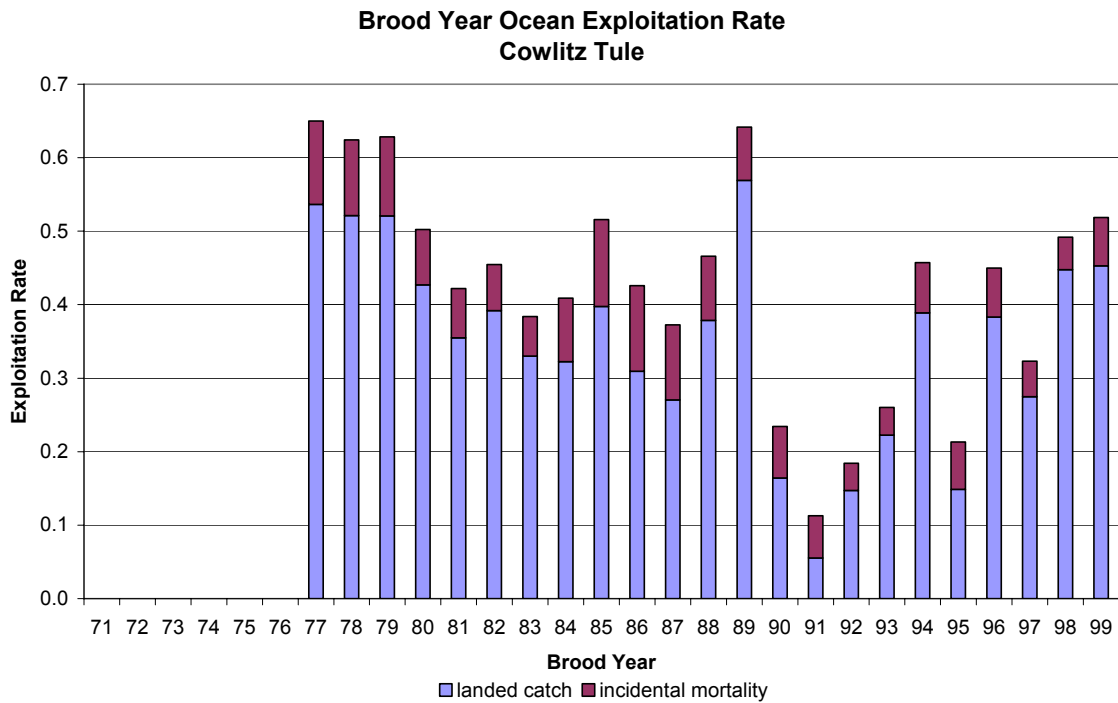


Figure F.23. Cowlitz Tule (Fall Cowlitz Hatchery) ocean exploitation rates by brood year.

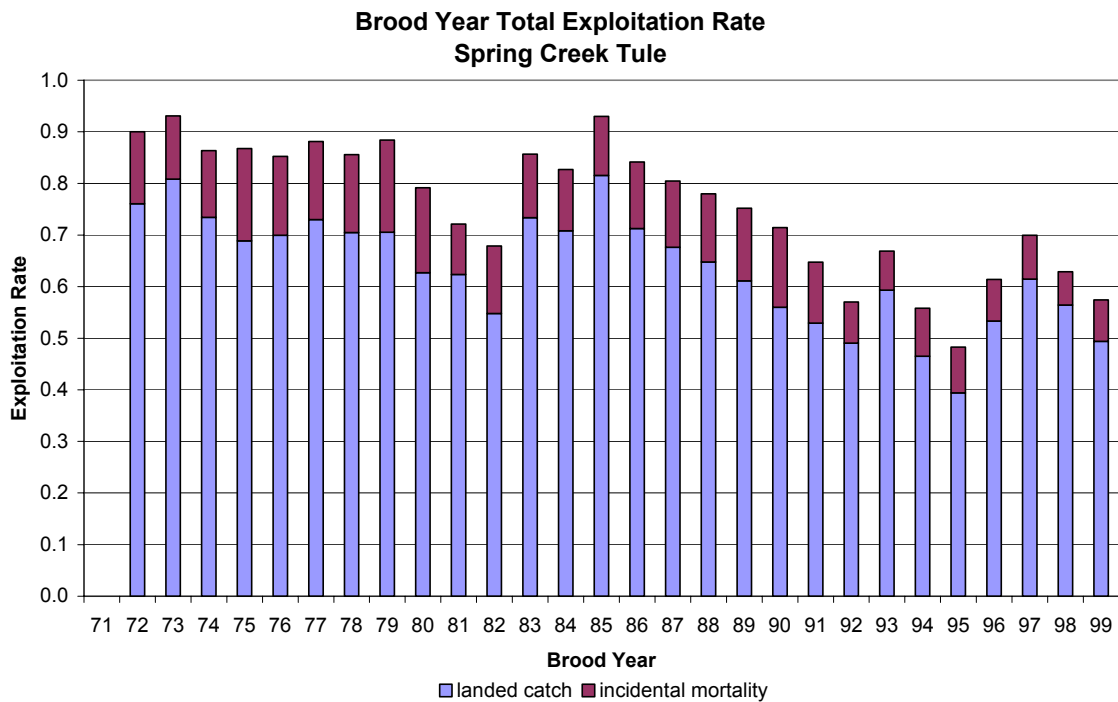


Figure F.24. Spring Creek Tule (Spring Creek Hatchery) total exploitation rates by brood year.

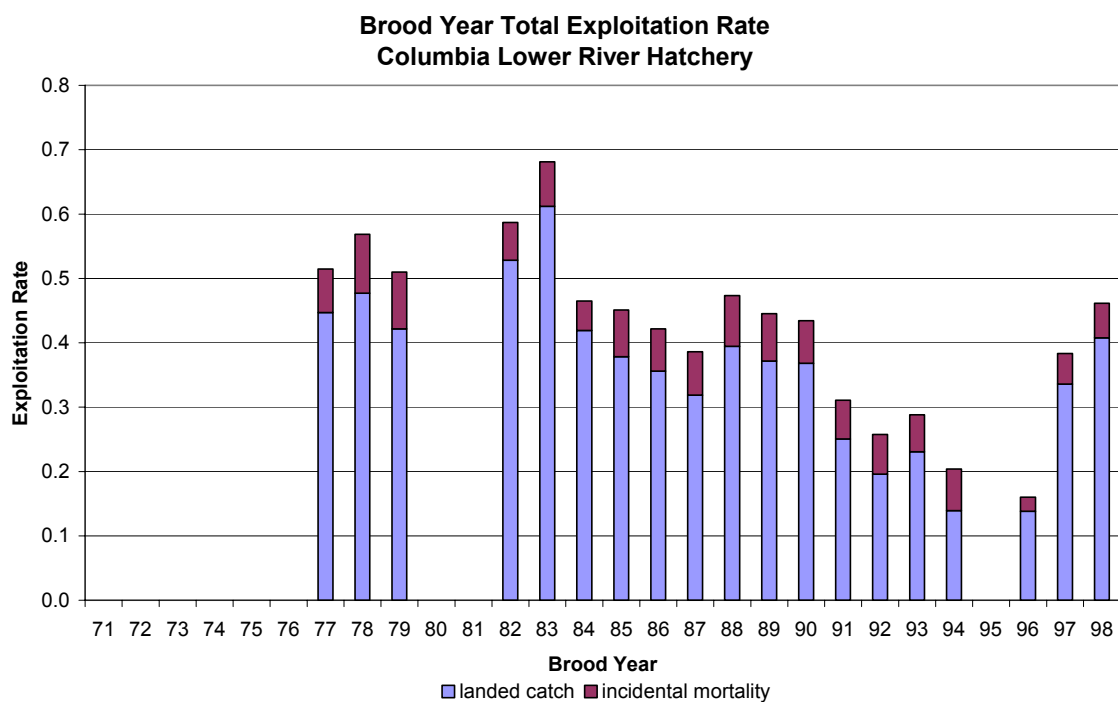


Figure F.25. Columbia Lower River Hatchery (Lower Bonneville Hatchery) total exploitation rates by brood year.

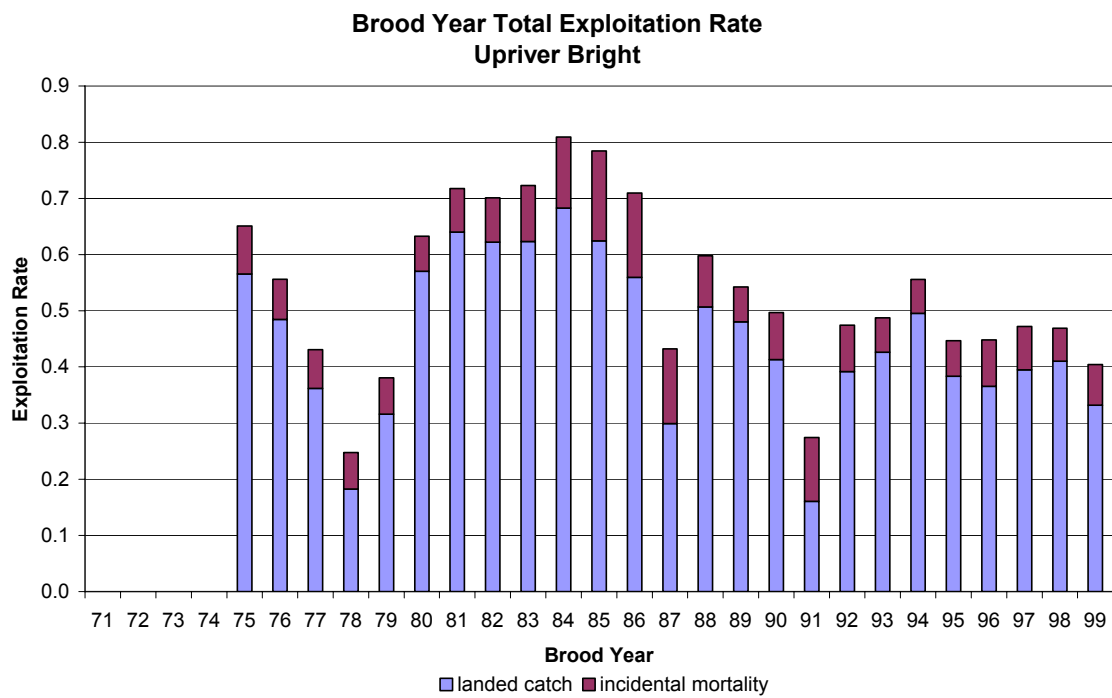


Figure F.26. Upriver Bright (Columbia River Upriver Brights) total exploitation rates by brood year.

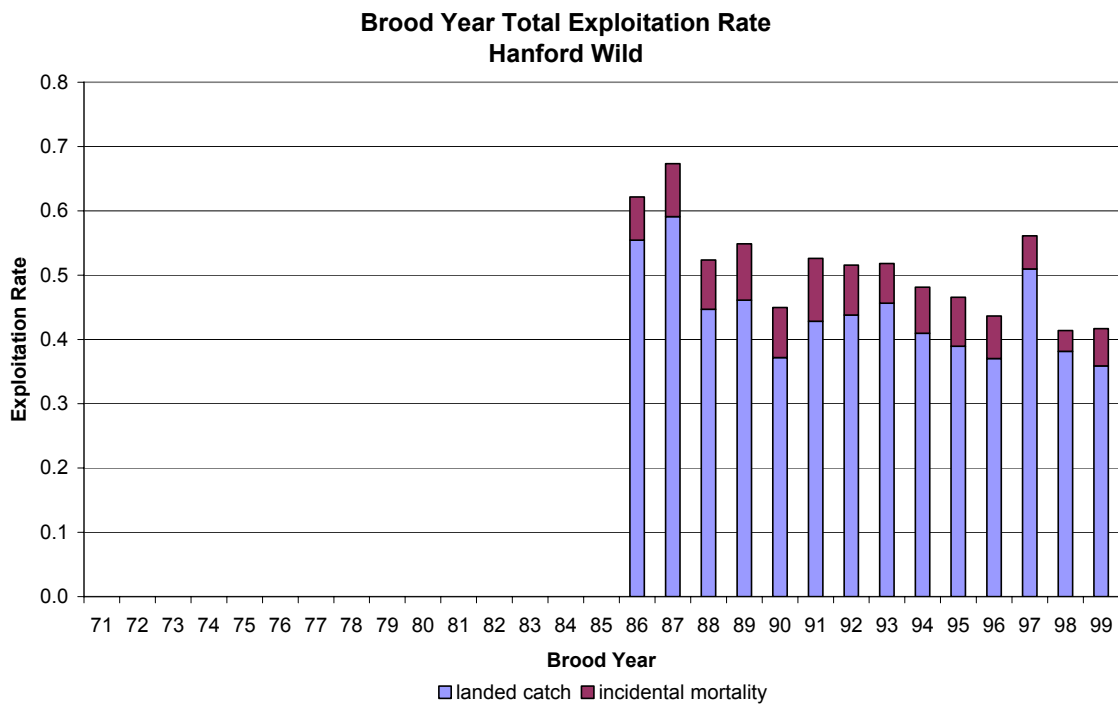


Figure F.27. Hanford Wild total exploitation rates by brood year.

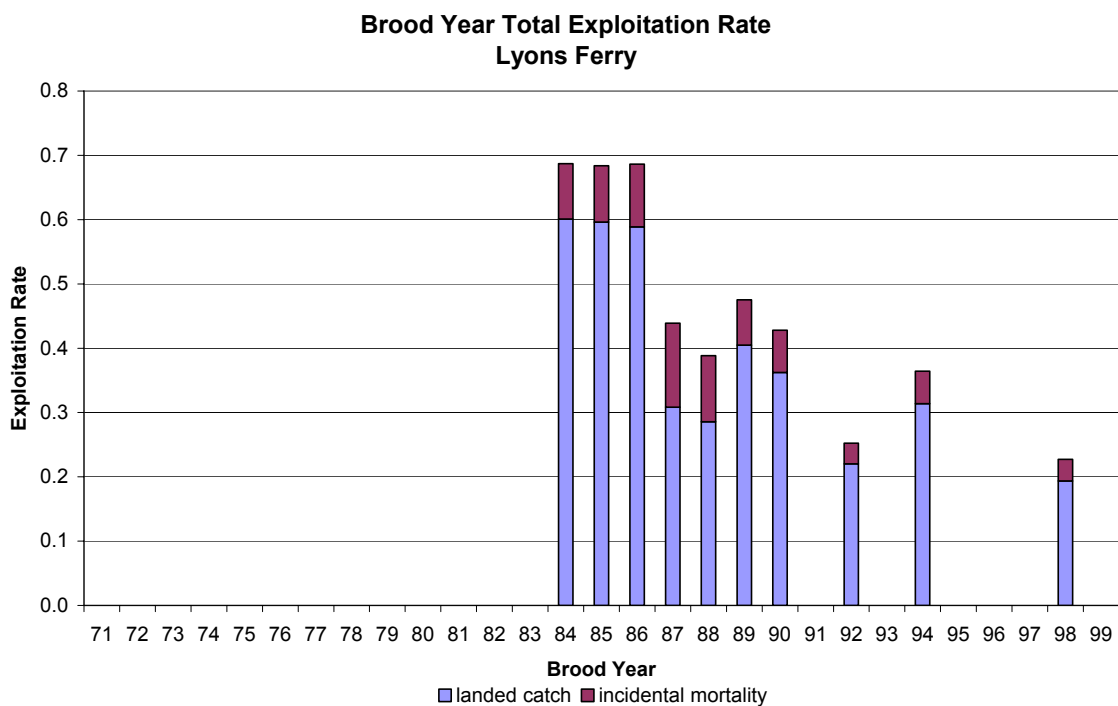


Figure F.28. Lyons Ferry (Lyons Ferry Hatchery) total exploitation rates by brood year.

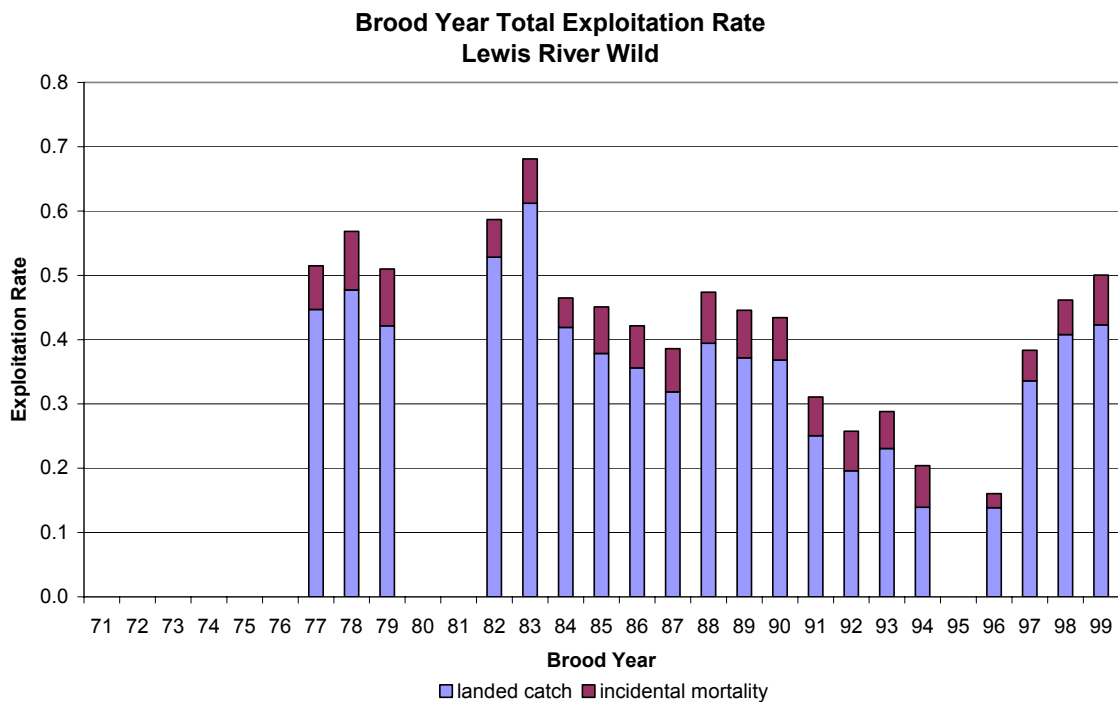


Figure F.29. Lewis River Wild (Lewis River Wild) total exploitation rates by brood year.

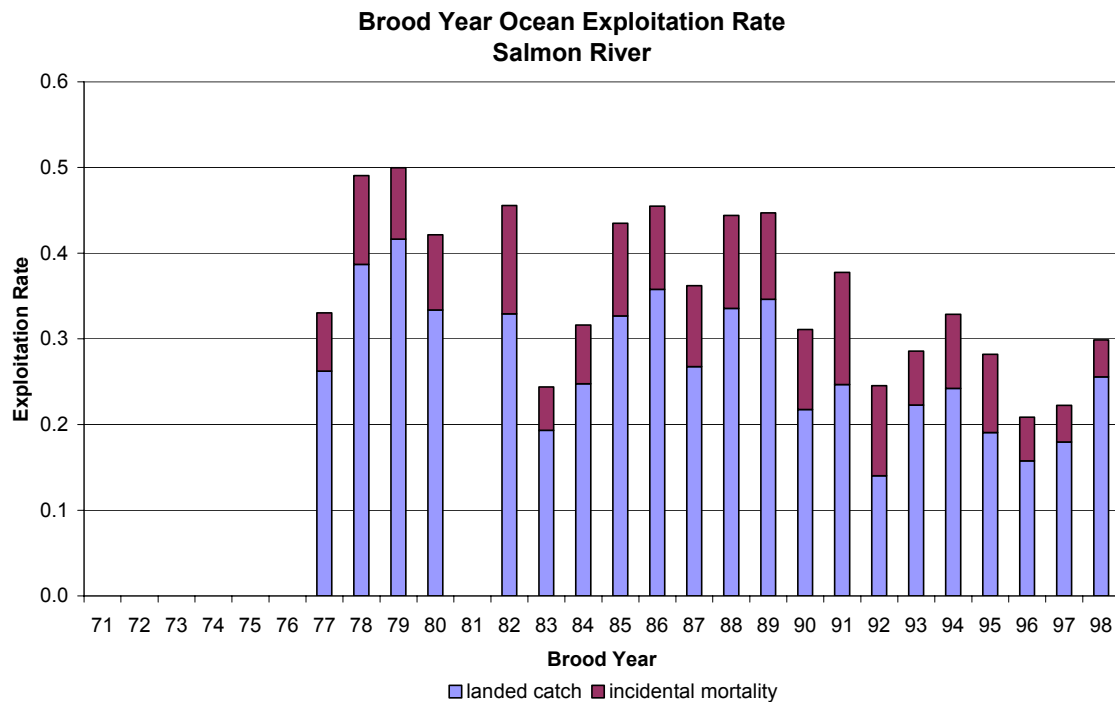


Figure F.30. Salmon River (Oregon Coast) ocean exploitation rates by brood year.

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%. Some 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, in the case of some Columbia River stocks. Also, a computational rule used in producing the stock-specific distribution tables determines whether data are reported 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 releases in recent years for some of the indicators has resulted in no distribution data for 2000-2003. Missing broods are noted in the appropriated 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%	18.1%	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%	15.9%	1.3%	0.0%	0.0%	0.8%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	66.8%
2003	16.7%	1.6%	15.9%	1.1%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	64.3%
(83-84)	25.5%	2.0%	10.2%	1.3%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	60.8%
(85-98)	27.2%	7.3%	17.6%	0.5%	0.0%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	47.0%
(99-03)	17.3%	4.1%	20.7%	0.5%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	56.9%

Table G.2. Percent distribution of Alaska 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	
1983	34.5%	1.5%	11.3%	1.8%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.7%
1984	27.5%	2.6%	17.9%	1.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	50.7%
1985	27.8%	10.8%	15.3%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	45.2%
1986	29.1%	11.0%	12.4%	0.5%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	46.9%
1987	40.4%	5.3%	9.9%	0.4%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	43.5%
1988	34.4%	5.8%	14.2%	1.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	44.2%
1989	29.6%	16.4%	10.8%	0.6%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	42.3%
1990	43.3%	6.5%	13.0%	1.8%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	35.2%
1991	42.0%	8.6%	16.1%	0.6%	0.0%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	32.2%
1992	25.5%	20.3%	17.7%	0.4%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	35.9%
1993	23.7%	9.4%	19.5%	0.2%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	46.9%
1994	20.3%	29.1%	12.4%	0.4%	0.0%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	37.4%
1995	32.4%	14.8%	17.8%	0.3%	0.0%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	34.2%
1996	27.4%	11.5%	30.2%	0.1%	0.0%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	30.4%
1997	26.9%	10.9%	29.5%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	32.4%
1998	28.3%	19.5%	23.6%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.0%
1999	22.2%	8.2%	31.3%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	37.8%
2000	26.6%	8.0%	24.8%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	40.3%
2001	18.7%	6.6%	19.0%	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	55.4%
2002	13.0%	6.7%	17.7%	1.4%	0.0%	0.0%	1.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	59.9%
2003	18.3%	5.1%	16.8%	1.2%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	58.1%
(83-84)	31.0%	2.1%	14.6%	1.4%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	50.7%
(85-98)	30.8%	12.9%	17.3%	0.5%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	38.2%
(99-03)	19.8%	6.9%	21.9%	0.6%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.3%

Table G.3. Percent distribution of Kitsumkalum River Summer 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 ¹
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	8.8%	0.0%	0.0%	13.9%	0.0%	10.2%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	64.8%
1987	7.2%	0.0%	0.0%	8.9%	0.0%	9.4%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	70.2%
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	10.6%	0.0%	2.8%	6.5%	0.3%	8.5%	7.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	64.0%
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%	69.3%
2002	12.0%	0.2%	5.1%	2.7%	0.0%	2.3%	14.4%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	62.9%
2003	12.9%	0.0%	1.8%	9.0%	0.0%	0.0%	9.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	66.5%
(85-98)	12.2%	0.1%	2.9%	5.9%	0.1%	14.1%	6.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	58.5%
(99-03)	10.9%	0.0%	5.7%	2.4%	0.0%	4.0%	9.3%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	67.5%

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

Table G.4. Percent distribution of Kitsumkalum River Summer 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 ¹
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	10.0%	0.0%	0.0%	13.7%	0.0%	10.0%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	63.9%
1987	12.6%	0.0%	2.6%	9.7%	0.0%	8.6%	5.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	61.3%
1988	23.3%	2.4%	4.9%	7.3%	0.0%	18.4%	7.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	36.4%
1989	14.3%	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%	55.5%
1990	11.7%	0.0%	3.3%	7.6%	0.3%	8.2%	7.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	61.1%
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	15.4%	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%	58.3%
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	8.6%	0.0%	8.9%	0.0%	0.0%	9.9%	7.2%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	65.1%
2001	8.9%	0.0%	5.5%	0.4%	0.0%	13.5%	10.9%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	60.5%
2002	12.8%	0.6%	5.4%	2.8%	0.0%	4.3%	16.5%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	57.1%
2003	13.0%	0.1%	1.9%	9.1%	0.0%	0.0%	11.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	64.3%
(85-98)	14.8%	0.4%	3.5%	7.0%	0.1%	13.6%	6.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	54.1%
(99-03)	11.9%	0.1%	6.8%	2.5%	0.0%	5.7%	10.9%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	61.9%

¹ Values represent estimates of fishing mortality distribution only for this year.

Table G.5. Percent distribution of Robertson Creek Fall 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%	2.2%	5.2%	0.0%	0.1%	0.0%	32.3%
1980	26.9%	7.0%	0.9%	8.1%	8.3%	4.5%	0.1%	7.0%	0.1%	11.2%	3.4%	0.0%	0.2%	0.0%	22.5%
1981	29.7%	1.6%	0.8%	12.2%	8.2%	4.9%	0.5%	5.3%	0.6%	13.5%	5.7%	0.0%	0.4%	0.0%	16.5%
1982	25.0%	3.4%	1.5%	13.5%	7.5%	5.0%	0.1%	5.8%	0.9%	14.8%	6.4%	0.1%	0.5%	0.2%	15.3%
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	26.6%	4.0%	0.2%	14.7%	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%	2.2%	0.0%	0.0%	0.0%	0.4%	0.0%	2.0%	0.0%	3.2%	0.0%	0.0%	0.0%	88.9%
2002	12.0%	0.3%	1.7%	6.1%	0.2%	0.0%	4.1%	0.4%	0.6%	8.3%	8.6%	0.0%	0.0%	0.0%	57.7%
2003	11.6%	1.7%	2.8%	1.1%	0.0%	0.0%	8.8%	0.0%	0.4%	2.7%	22.4%	0.0%	0.0%	0.0%	48.5%
(79-84)	27.1%	3.4%	0.8%	11.8%	7.6%	4.5%	0.2%	6.4%	0.7%	12.9%	6.9%	0.0%	0.3%	0.0%	17.4%
(85-98)	12.6%	2.1%	2.1%	7.2%	1.4%	1.3%	1.3%	4.6%	0.6%	7.2%	16.0%	0.0%	0.2%	0.1%	43.3%
(99-03)	8.9%	0.5%	2.9%	2.1%	0.1%	0.0%	3.9%	0.1%	1.3%	3.6%	11.3%	0.0%	0.0%	0.0%	65.3%

Table G.6. Percent distribution of Robertson Creek Fall 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%	10.6%	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%	13.7%
1982	28.6%	3.1%	1.6%	14.2%	7.9%	4.6%	0.1%	6.1%	0.8%	13.2%	5.9%	0.1%	0.6%	0.1%	13.0%
1983	40.6%	3.0%	0.6%	10.1%	7.7%	2.2%	0.3%	5.1%	0.3%	16.5%	4.4%	0.0%	0.2%	0.0%	9.1%
1984	27.9%	3.8%	0.2%	14.7%	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%	2.9%	15.5%	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%	19.8%	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%	7.5%	18.3%	0.0%	0.4%	0.2%	39.7%
1989	11.0%	6.9%	0.5%	9.0%	1.0%	1.1%	1.0%	1.9%	0.8%	18.3%	17.2%	0.0%	0.1%	0.1%	31.0%
1990	19.5%	2.9%	1.5%	8.8%	2.3%	1.6%	0.9%	6.7%	0.3%	9.4%	10.0%	0.0%	0.0%	0.1%	35.9%
1991	20.0%	2.4%	3.3%	9.8%	2.9%	0.6%	0.8%	4.8%	0.3%	13.6%	13.0%	0.0%	0.0%	0.1%	28.5%
1992	16.8%	8.3%	1.7%	7.4%	3.0%	0.8%	1.4%	18.6%	0.1%	0.6%	7.1%	0.0%	0.1%	0.0%	34.0%
1993	16.0%	2.3%	2.5%	7.6%	2.1%	0.4%	1.4%	14.4%	0.5%	7.7%	15.1%	0.0%	0.0%	0.1%	29.9%
1994	18.1%	4.9%	3.6%	9.2%	1.0%	1.0%	1.1%	5.2%	0.4%	11.7%	20.6%	0.0%	0.0%	0.1%	23.1%
1995	17.5%	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%	48.6%
1996	9.2%	0.1%	4.5%	2.7%	0.7%	0.0%	5.8%	0.7%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	74.4%
1997	13.8%	8.2%	4.4%	5.0%	2.0%	0.4%	3.1%	0.2%	0.6%	6.0%	18.1%	0.1%	0.0%	0.0%	38.1%
1998	17.0%	3.1%	5.1%	6.2%	0.0%	0.0%	2.3%	0.0%	0.6%	4.0%	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%	6.7%	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%	3.7%	0.0%	0.0%	0.0%	0.7%	0.0%	2.6%	0.0%	4.0%	0.0%	0.0%	0.0%	84.4%
2002	14.0%	0.7%	2.1%	6.7%	0.2%	0.0%	5.4%	0.4%	0.8%	8.0%	9.2%	0.0%	0.0%	0.0%	52.6%
2003	12.5%	5.1%	3.0%	1.2%	0.0%	0.0%	10.3%	0.0%	0.5%	2.4%	22.8%	0.0%	0.0%	0.0%	42.2%
(79-84)	29.8%	3.2%	0.9%	12.3%	8.0%	4.2%	0.2%	6.7%	0.7%	11.8%	6.6%	0.0%	0.3%	0.0%	15.2%
(85-98)	15.2%	5.5%	2.4%	7.8%	1.6%	1.2%	1.6%	4.9%	0.6%	6.5%	15.0%	0.0%	0.2%	0.1%	37.5%
(99-03)	10.1%	1.3%	3.4%	2.2%	0.1%	0.0%	5.1%	0.1%	1.6%	3.4%	11.8%	0.0%	0.0%	0.0%	60.8%

Table G.7. Percent distribution of Quinsam River Fall 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	17.9%	7.8%	5.5%	8.1%	7.0%	21.1%	2.5%	0.4%	4.2%	8.2%	0.0%	0.0%	0.0%	0.0%	17.4%
1983	22.0%	1.6%	2.1%	15.4%	12.1%	17.8%	2.8%	0.7%	4.9%	8.8%	0.0%	0.0%	0.0%	0.0%	11.7%
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%	5.6%	0.0%	2.7%	0.5%	0.0%	0.0%	0.0%	0.0%	70.6%
2001	9.5%	1.4%	1.8%	0.1%	0.0%	0.0%	5.8%	0.0%	1.6%	0.1%	0.0%	0.0%	0.0%	0.0%	79.9%
2002	14.5%	3.1%	0.9%	0.9%	0.1%	0.0%	11.6%	0.0%	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	66.1%
2003	16.1%	1.6%	0.6%	0.0%	0.0%	0.0%	27.3%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	54.1%
(79-84)	14.8%	5.0%	3.0%	10.5%	11.5%	17.6%	4.4%	0.4%	7.9%	7.7%	0.0%	0.0%	0.0%	0.0%	17.1%
(85-98)	12.3%	3.2%	2.0%	5.7%	3.9%	11.1%	6.3%	0.4%	5.8%	4.2%	0.5%	0.0%	0.0%	0.0%	44.7%
(99-03)	12.4%	2.3%	2.5%	0.5%	0.1%	0.3%	12.0%	0.0%	1.8%	0.1%	0.0%	0.0%	0.0%	0.0%	68.0%

Table G.8. Percent distribution of Quinsam River Fall 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%	2.0%	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	21.7%	7.5%	5.9%	8.4%	7.3%	20.2%	2.4%	0.4%	3.9%	7.5%	0.0%	0.0%	0.0%	0.0%	14.9%
1983	25.9%	1.5%	2.6%	15.2%	11.9%	17.0%	2.9%	0.7%	4.5%	8.0%	0.0%	0.0%	0.0%	0.0%	9.9%
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	14.2%	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%	41.2%
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	11.4%	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%	34.6%
1992	15.7%	1.1%	2.5%	10.6%	9.6%	7.2%	6.3%	0.3%	3.7%	2.4%	0.0%	0.0%	0.0%	0.0%	40.6%
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	6.8%	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%	38.4%
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	10.1%	5.8%	2.9%	4.3%	3.5%	2.3%	10.9%	0.8%	8.9%	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%	7.2%	5.2%	1.4%	0.2%	1.7%	11.2%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	61.1%
2000	14.5%	3.8%	5.6%	0.2%	0.0%	0.0%	7.0%	0.0%	3.1%	1.7%	0.0%	0.0%	0.0%	0.0%	64.1%
2001	10.6%	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	15.2%	7.0%	0.9%	0.9%	0.1%	0.0%	14.2%	0.0%	3.1%	0.0%	0.0%	0.0%	0.0%	0.0%	58.7%
2003	16.9%	5.4%	0.5%	0.0%	0.0%	0.0%	30.2%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	46.7%
(79-84)	16.9%	4.9%	3.5%	11.1%	12.1%	16.9%	4.4%	0.5%	7.5%	7.2%	0.0%	0.0%	0.0%	0.0%	15.2%
(85-98)	13.9%	7.1%	2.1%	6.2%	4.1%	10.7%	6.8%	0.4%	5.8%	3.9%	0.5%	0.0%	0.0%	0.0%	38.4%
(99-03)	13.5%	5.2%	2.8%	0.5%	0.1%	0.3%	14.0%	0.0%	2.0%	0.5%	0.0%	0.0%	0.0%	0.0%	61.1%

Table G.9. Percent distribution of Puntledge 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	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%	1.5%	7.3%	0.0%	0.0%	0.0%	0.0%	0.0%	77.4%
2002	5.7%	0.6%	0.0%	0.6%	0.0%	0.0%	11.4%	0.0%	5.7%	1.3%	7.6%	0.0%	0.0%	0.0%	67.1%
2003	3.9%	0.0%	0.0%	0.0%	0.0%	0.5%	38.2%	0.0%	11.6%	0.0%	0.0%	0.0%	0.0%	0.0%	45.9%
(79-84)	1.1%	0.3%	0.1%	3.7%	9.4%	4.9%	1.8%	2.0%	35.0%	6.3%	0.0%	0.0%	0.0%	0.0%	35.4%
(85-98)	5.9%	1.1%	0.5%	2.2%	0.8%	6.6%	6.6%	0.2%	28.5%	2.9%	0.3%	0.0%	0.0%	0.0%	44.3%
(99-03)	5.7%	0.4%	0.0%	0.4%	0.0%	0.5%	12.7%	0.3%	12.3%	0.3%	1.5%	0.0%	0.0%	0.0%	65.9%

Table G.10. Percent distribution of Puntledge 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	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%
2003	3.5%	0.0%	0.0%	0.0%	0.0%	0.4%	46.7%	0.0%	12.7%	0.0%	0.0%	0.0%	0.0%	0.0%	36.7%
(79-84)	1.4%	0.4%	0.1%	4.4%	10.7%	4.9%	1.9%	2.3%	34.7%	6.3%	0.0%	0.0%	0.0%	0.0%	32.7%
(85-98)	6.3%	2.6%	0.6%	2.5%	0.9%	6.6%	7.7%	0.2%	30.7%	3.0%	0.3%	0.0%	0.0%	0.0%	38.7%
(99-03)	6.4%	0.7%	0.0%	0.4%	0.0%	0.5%	15.7%	0.3%	14.1%	2.8%	1.5%	0.0%	0.0%	0.0%	57.7%

Table G.11. Percent distribution of Big Qualicum River Fall 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	10.1%	0.0%	3.0%	5.4%	0.0%	0.0%	7.4%	2.4%	9.5%	0.3%	1.7%	0.0%	2.0%	1.0%	57.1%
2003	8.0%	0.4%	1.7%	0.0%	0.0%	0.0%	21.1%	3.4%	7.2%	0.0%	0.0%	0.0%	0.0%	0.0%	58.2%
(79-84)	3.0%	0.7%	0.4%	3.0%	7.8%	4.8%	1.6%	2.5%	41.3%	10.0%	0.1%	0.0%	0.3%	0.4%	24.2%
(85-98)	4.1%	0.6%	0.3%	2.5%	2.6%	4.0%	2.8%	2.0%	35.1%	4.9%	0.5%	0.1%	0.6%	0.4%	39.6%
(99-03)	8.5%	2.1%	0.9%	1.5%	0.5%	0.1%	7.8%	1.3%	10.1%	0.1%	1.1%	0.0%	1.5%	0.2%	64.2%

Table G.12. Percent distribution of Big Qualicum Fall 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	3.2%	3.6%	0.0%	2.4%	1.3%	2.7%	1.9%	2.1%	47.7%	5.0%	0.0%	0.5%	0.4%	0.0%	29.1%
1992	4.0%	0.0%	2.7%	6.1%	6.2%	1.5%	7.5%	3.5%	43.7%	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%	6.4%	0.0%	2.6%	3.0%	0.0%	2.6%	0.0%	13.6%	0.0%	4.2%	0.0%	0.8%	0.0%	60.0%
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%	16.8%	0.0%	0.0%	0.0%	0.0%	5.9%	0.5%	10.4%	0.0%	0.0%	0.0%	1.4%	0.0%	60.4%
2002	11.0%	0.0%	3.2%	5.5%	0.0%	0.0%	9.0%	2.0%	10.5%	4.9%	1.7%	0.0%	2.0%	0.9%	49.1%
2003	8.8%	1.8%	1.8%	0.0%	0.0%	0.0%	25.5%	3.3%	8.4%	0.0%	0.0%	0.0%	0.0%	0.0%	50.4%
(79-84)	3.6%	0.7%	0.6%	3.4%	8.9%	4.8%	1.8%	2.9%	40.7%	9.8%	0.1%	0.0%	0.3%	0.4%	22.1%
(85-98)	5.0%	1.5%	0.4%	2.9%	2.9%	4.0%	3.2%	2.1%	37.1%	5.0%	0.5%	0.1%	0.7%	0.4%	34.3%
(99-03)	9.5%	5.4%	1.0%	1.6%	0.6%	0.1%	9.4%	1.2%	11.2%	1.0%	1.2%	0.0%	1.6%	0.2%	56.0%

Table G.13. Percent distribution of Cowichan River Fall 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%	25.8%	0.2%	1.1%	0.0%	3.6%	3.0%	61.6%
1998	4.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.5%	28.6%	0.3%	1.6%	0.0%	3.2%	0.0%	60.8%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	37.8%	1.2%	4.0%	0.9%	6.6%	0.7%	47.9%
2000	1.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	26.8%	0.0%	7.1%	0.0%	5.7%	1.6%	55.2%
2001	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	12.2%	25.0%	0.3%	0.0%	0.2%	14.5%	1.0%	45.8%
2002	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	3.9%	26.6%	0.1%	1.5%	0.7%	2.9%	3.5%	57.0%
2003	1.7%	0.2%	0.0%	2.9%	2.7%	0.0%	5.9%	8.0%	21.7%	0.0%	10.0%	0.5%	4.9%	2.2%	39.3%
(90-98)	0.7%	0.0%	0.0%	0.1%	0.3%	1.2%	0.5%	3.2%	39.1%	3.4%	0.9%	0.3%	2.3%	1.2%	46.6%
(99-03)	0.9%	0.1%	0.0%	0.6%	0.5%	0.0%	2.0%	5.2%	27.6%	0.3%	4.5%	0.5%	6.9%	1.8%	49.0%

Table G.14. Percent distribution of Cowichan River Fall 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%	29.8%	1.1%	1.1%	0.0%	4.3%	3.4%	54.3%
1998	4.6%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.5%	32.8%	0.5%	1.7%	0.0%	4.1%	0.0%	54.7%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	42.6%	1.0%	4.0%	1.0%	8.5%	0.6%	41.2%
2000	2.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	30.4%	0.0%	7.5%	0.0%	7.0%	3.1%	47.6%
2001	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	11.4%	27.5%	0.3%	0.0%	0.1%	17.3%	3.1%	38.8%
2002	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	3.6%	31.8%	0.1%	1.6%	0.7%	3.0%	4.9%	49.9%
2003	1.8%	0.6%	0.0%	3.0%	3.6%	0.0%	7.4%	7.2%	24.1%	0.0%	10.4%	0.4%	6.2%	2.8%	32.3%
(90-98)	0.8%	0.0%	0.0%	0.1%	0.4%	1.1%	0.6%	4.0%	44.1%	3.2%	0.9%	0.3%	2.8%	1.5%	40.2%
(99-03)	1.1%	0.2%	0.0%	0.6%	0.7%	0.0%	2.5%	4.8%	31.3%	0.3%	4.7%	0.4%	8.4%	2.9%	42.0%

Table G.15. Percent distribution of Chilliwack River Fall 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%	8.5%	0.1%	1.5%	5.6%	0.9%	2.6%	77.1%
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%
2003	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	5.3%	11.5%	0.2%	5.8%	7.0%	0.3%	1.3%	68.3%
(85-98)	0.3%	0.0%	0.0%	0.2%	0.5%	0.7%	0.2%	13.6%	17.9%	3.2%	0.7%	5.1%	3.1%	2.9%	51.5%
(99-03)	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	4.4%	8.7%	0.2%	2.8%	7.0%	0.5%	1.5%	74.5%

Table G.16. Percent distribution of Chilliwack River Fall 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%	1.1%	79.3%
2001	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.4%	3.4%	9.8%	0.1%	1.7%	6.5%	1.2%	5.3%	71.2%
2002	0.3%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	8.6%	9.0%	0.2%	3.3%	8.3%	0.3%	3.0%	66.6%
2003	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	5.4%	12.3%	0.2%	6.9%	7.7%	0.3%	1.5%	65.3%
(85-98)	0.4%	0.1%	0.0%	0.3%	0.5%	0.7%	0.2%	15.5%	19.4%	3.1%	0.7%	5.4%	3.9%	3.7%	46.1%
(99-03)	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	4.6%	9.9%	0.2%	3.2%	8.0%	0.6%	2.4%	70.4%

Table G.17. Percent distribution of Nooksack Spring Fingerling Chinook reported catch among fisheries and escapement.

Catch ¹ 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	
1996	1.4%	0.0%	0.0%	0.0%	0.0%	5.1%	1.3%	0.0%	16.8%	0.2%	4.2%	0.7%	0.3%	6.4%	63.6%
1997	3.5%	0.2%	0.7%	0.2%	0.1%	0.4%	0.2%	1.6%	10.3%	0.1%	2.9%	0.5%	1.3%	5.2%	73.0%
1998	8.1%	0.2%	0.0%	0.0%	0.0%	0.1%	0.0%	1.7%	2.9%	0.0%	2.3%	0.2%	0.1%	0.6%	83.6%
1999	1.6%	0.9%	0.0%	0.0%	0.0%	0.0%	1.1%	1.1%	3.6%	0.0%	5.5%	1.3%	0.0%	0.7%	84.2%
2000	4.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	19.5%	12.6%	0.0%	4.6%	0.2%	0.2%	0.4%	57.6%
2001	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.9%	4.5%	0.0%	7.4%	1.0%	0.8%	0.7%	75.3%
2002	5.7%	0.0%	0.5%	1.3%	0.0%	0.0%	1.0%	17.4%	1.4%	0.0%	1.5%	0.3%	0.2%	0.9%	69.8%
2003	2.9%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	14.1%	5.7%	0.0%	4.4%	0.0%	1.3%	1.9%	68.7%
(96-98)	4.3%	0.1%	0.2%	0.1%	0.0%	1.9%	0.5%	1.1%	10.0%	0.1%	3.1%	0.5%	0.6%	4.1%	73.4%
(99-03)	3.2%	0.2%	0.1%	0.3%	0.0%	0.0%	0.6%	12.2%	5.6%	0.0%	4.7%	0.6%	0.5%	0.9%	71.1%

Table G.18. Percent distribution of Nooksack Spring Fingerling Chinook total fishing mortalities among fisheries and escapement.

Catch ¹ 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	
1996	3.3%	0.0%	0.2%	0.0%	0.0%	5.8%	1.7%	0.7%	18.5%	0.5%	4.1%	0.7%	0.3%	9.4%	54.9%
1997	4.0%	0.4%	0.8%	0.3%	0.0%	0.4%	0.2%	2.0%	11.4%	0.9%	2.9%	0.6%	1.3%	6.4%	68.4%
1998	8.8%	0.5%	0.0%	0.0%	0.0%	0.2%	0.0%	1.8%	3.3%	0.0%	2.5%	0.2%	0.1%	1.1%	81.4%
1999	2.0%	2.3%	0.0%	0.0%	0.0%	0.0%	1.3%	1.1%	4.3%	0.0%	5.9%	1.5%	0.0%	1.1%	80.5%
2000	5.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	19.9%	14.3%	0.0%	5.3%	0.2%	0.2%	0.7%	53.8%
2001	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.0%	5.3%	0.0%	8.3%	1.2%	0.7%	1.6%	71.9%
2002	6.5%	0.0%	0.6%	1.5%	0.0%	0.0%	1.3%	17.6%	1.9%	0.0%	1.7%	0.2%	0.2%	1.2%	67.3%
2003	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	14.5%	7.1%	0.0%	5.2%	0.0%	1.2%	4.0%	63.0%
(96-98)	5.4%	0.3%	0.3%	0.1%	0.0%	2.1%	0.6%	1.5%	11.1%	0.5%	3.2%	0.5%	0.6%	5.6%	68.2%
(99-03)	3.8%	0.5%	0.1%	0.3%	0.0%	0.0%	0.9%	12.4%	6.6%	0.0%	5.3%	0.6%	0.5%	1.7%	67.3%

Table G.19. Percent distribution of Nooksack Spring Yearling Chinook reported catch among fisheries and escapement.

Catch ¹ 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%	84.8%
1989	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.0%	0.0%	0.0%	0.0%	13.8%	6.9%	73.3%
1990	0.0%	0.0%	0.0%	0.0%	0.0%	4.9%	0.0%	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%	32.6%	5.6%	7.0%	2.1%	8.4%	5.3%	36.1%
1992	0.4%	0.4%	0.0%	0.0%	0.9%	0.6%	0.4%	17.4%	12.3%	1.1%	2.3%	0.9%	0.4%	7.8%	55.3%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	4.4%	14.7%	6.0%	7.6%	0.8%	5.3%	11.5%	49.2%
1994	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.1%	34.2%	1.0%	0.0%	0.2%	6.3%	3.3%	49.3%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.8%	0.0%	0.0%	0.0%	2.9%	7.0%	67.3%
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%	79.6%
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%	3.5%	3.5%	0.0%	15.9%	0.9%	6.2%	0.0%	4.4%	5.3%	60.2%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.8%	25.4%	0.0%	1.1%	2.8%	5.0%	1.1%	61.9%
(86-98)	0.1%	0.0%	0.0%	0.0%	0.1%	0.9%	0.5%	2.6%	17.1%	2.9%	2.9%	0.6%	4.5%	9.3%	58.4%
(1999)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.8%	25.4%	0.0%	1.1%	2.8%	5.0%	1.1%	61.9%

¹ No data are shown for 2000-2003 because of lack of coded-wire tagging of broods from 1997-2000.

Table G.20. Percent distribution of Nooksack Spring Yearling Chinook total fishing mortalities among fisheries and escapement.

Catch ¹ 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%	68.1%
1989	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.1%	0.0%	0.0%	0.0%	14.5%	8.9%	68.5%
1990	0.0%	0.0%	0.0%	0.0%	1.4%	4.2%	0.0%	8.5%	26.8%	8.5%	1.4%	1.4%	2.8%	28.2%	16.9%
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	2.0%	0.9%	0.0%	0.0%	1.0%	0.6%	0.4%	19.5%	13.7%	1.0%	2.3%	1.0%	0.4%	9.7%	47.4%
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	4.8%	17.6%	5.7%	7.7%	0.8%	5.1%	12.3%	45.6%
1994	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.1%	35.8%	0.9%	0.0%	0.2%	6.0%	3.8%	47.5%
1995	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	24.5%	0.5%	0.0%	0.0%	3.1%	12.0%	59.9%
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%	5.5%	74.4%
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%	3.9%	4.7%	0.0%	17.3%	1.6%	5.5%	0.0%	3.9%	9.4%	53.5%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	28.0%	0.0%	1.6%	3.1%	4.7%	2.1%	58.0%
(86-98)	0.2%	0.1%	0.0%	0.0%	0.3%	0.9%	0.6%	3.9%	20.2%	2.8%	3.0%	0.6%	5.0%	11.1%	51.3%
(1999)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	28.0%	0.0%	1.6%	3.1%	4.7%	2.1%	58.0%

¹ No data are shown for 2000-2003 because of lack of coded-wire tagging of broods from 1997-2000.

Table G.21. Percent distribution of Skagit Spring 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	
1997	1.0%	0.0%	0.0%	0.4%	0.6%	1.5%	0.9%	1.4%	8.7%	0.2%	4.0%	0.0%	1.4%	7.3%	72.5%
1998	2.0%	0.0%	0.0%	0.0%	0.0%	0.6%	1.1%	0.0%	9.4%	0.3%	3.0%	0.0%	1.7%	2.6%	79.4%
1999	0.5%	0.6%	0.0%	0.2%	0.0%	0.1%	0.4%	0.5%	4.7%	0.0%	5.8%	0.3%	1.3%	1.7%	83.9%
2000	1.5%	0.0%	0.4%	0.0%	0.0%	0.0%	0.5%	5.5%	10.0%	0.1%	6.3%	0.0%	0.2%	2.4%	73.1%
2001	1.3%	0.2%	0.3%	0.2%	0.0%	0.0%	1.4%	4.8%	6.1%	0.0%	6.0%	0.2%	0.6%	4.1%	74.8%
2002	2.7%	0.0%	0.5%	0.2%	0.0%	0.1%	0.6%	4.8%	5.7%	0.0%	3.3%	0.3%	0.6%	2.7%	78.4%
2003	2.0%	0.0%	0.8%	1.6%	0.0%	0.1%	4.0%	21.7%	4.5%	0.0%	2.4%	1.2%	0.8%	1.2%	59.7%
(97-98)	1.5%	0.0%	0.0%	0.2%	0.3%	1.1%	1.0%	0.7%	9.1%	0.3%	3.5%	0.0%	1.6%	5.0%	76.0%
(99-03)	1.6%	0.2%	0.4%	0.4%	0.0%	0.1%	1.4%	7.5%	6.2%	0.0%	4.8%	0.4%	0.7%	2.4%	74.0%

Table G.22. Percent distribution of Skagit Spring 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	
1997	1.2%	0.0%	0.0%	0.4%	0.5%	1.8%	1.2%	1.6%	9.9%	1.1%	4.3%	0.0%	1.3%	8.9%	67.5%
1998	2.2%	0.0%	0.0%	0.0%	0.0%	0.7%	1.8%	0.0%	10.8%	0.3%	3.4%	0.0%	1.5%	6.3%	73.0%
1999	0.9%	1.4%	0.0%	0.2%	0.0%	0.1%	0.6%	0.6%	5.9%	0.0%	6.3%	0.4%	1.3%	2.8%	79.6%
2000	2.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.7%	5.9%	11.7%	0.2%	7.0%	0.0%	0.2%	5.0%	66.8%
2001	1.7%	0.3%	0.3%	0.2%	0.0%	0.0%	1.7%	4.6%	6.9%	0.0%	6.4%	0.1%	0.6%	8.8%	68.1%
2002	2.9%	0.0%	0.6%	0.3%	0.0%	0.1%	0.8%	4.7%	7.3%	0.0%	3.8%	0.3%	0.6%	3.7%	74.9%
2003	2.1%	0.0%	0.9%	1.6%	0.0%	0.6%	4.9%	21.5%	5.4%	0.0%	2.8%	1.3%	0.8%	1.5%	56.7%
(97-98)	1.7%	0.0%	0.0%	0.2%	0.3%	1.3%	1.5%	0.8%	10.4%	0.7%	3.9%	0.0%	1.4%	7.6%	70.3%
(99-03)	1.9%	0.3%	0.5%	0.5%	0.0%	0.2%	1.7%	7.5%	7.4%	0.0%	5.3%	0.4%	0.7%	4.4%	69.2%

Table G.23. 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%	75.4%
2000	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	6.4%	16.1%	0.0%	3.6%	0.0%	1.5%	15.3%	55.8%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	11.6%	0.0%	2.8%	3.2%	2.0%	10.8%	66.4%
2002	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	12.9%	0.0%	10.1%	0.0%	1.6%	8.9%	64.5%
2003	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.5%	22.9%	9.0%	0.0%	13.1%	0.1%	0.6%	6.4%	46.2%
(85-98)	0.3%	0.0%	0.0%	0.6%	0.7%	2.8%	0.6%	3.8%	19.5%	6.5%	5.4%	1.4%	13.7%	16.0%	29.0%
(99-03)	0.5%	0.0%	0.0%	0.2%	0.0%	0.0%	0.3%	6.9%	11.5%	0.0%	6.8%	0.7%	1.4%	10.1%	61.7%

Table G.24. Percent 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%	31.1%	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%	4.6%	0.2%	1.0%	12.7%	71.3%
2000	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	6.0%	17.1%	0.0%	3.8%	0.0%	1.4%	19.5%	50.9%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.9%	11.3%	0.0%	2.9%	2.9%	1.6%	24.8%	53.5%
2002	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	16.3%	0.0%	11.0%	0.0%	1.4%	13.1%	56.5%
2003	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.6%	21.8%	10.3%	0.0%	14.9%	0.1%	0.6%	7.6%	43.1%
(85-98)	0.4%	0.0%	0.0%	0.6%	0.7%	2.6%	0.8%	3.9%	19.9%	6.1%	5.2%	1.5%	12.3%	21.4%	24.7%
(99-03)	0.5%	0.0%	0.0%	0.2%	0.0%	0.0%	0.3%	6.5%	12.6%	0.0%	7.4%	0.6%	1.2%	15.5%	55.1%

Table G.25. 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%	13.5%	11.4%	2.7%	3.2%	8.9%	23.2%	10.9%	25.8%
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%	6.5%	0.0%	9.5%	0.4%	37.6%	1.5%	33.1%
2001	0.0%	0.3%	0.0%	0.0%	0.0%	0.1%	0.3%	4.7%	8.2%	0.0%	6.8%	2.4%	38.7%	4.0%	34.5%
2002	0.9%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	8.8%	7.5%	0.0%	4.2%	2.9%	37.7%	5.2%	32.3%
2003	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.1%	5.8%	0.3%	4.4%	5.9%	37.6%	2.4%	28.7%
(89-98)	0.6%	0.0%	0.0%	0.2%	0.1%	0.4%	0.1%	8.4%	12.4%	1.4%	3.0%	4.9%	30.0%	11.5%	27.0%
(99-03)	1.1%	0.1%	0.0%	0.4%	0.0%	0.0%	0.7%	8.1%	7.8%	0.1%	7.0%	2.6%	38.0%	3.4%	30.8%

Table G.26. 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%	12.4%	2.5%	3.2%	9.4%	21.7%	12.1%	23.6%
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.6%	11.6%	15.3%	1.8%	0.8%	9.9%	14.2%	23.8%	21.8%
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%	10.5%	6.6%	0.0%	9.6%	0.3%	40.1%	6.9%	26.0%
2001	0.0%	0.7%	0.0%	0.0%	0.0%	0.2%	0.3%	4.3%	9.5%	0.0%	7.0%	2.6%	37.1%	7.7%	30.5%
2002	0.9%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	8.5%	9.3%	0.0%	4.6%	3.0%	36.2%	6.7%	30.2%
2003	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	13.9%	6.7%	0.6%	5.1%	5.9%	36.8%	2.7%	27.6%
(89-98)	0.7%	0.1%	0.0%	0.2%	0.1%	0.4%	0.2%	9.5%	13.4%	1.4%	2.9%	4.9%	28.4%	14.2%	23.7%
(99-03)	1.1%	0.1%	0.0%	0.4%	0.0%	0.0%	0.8%	7.7%	8.9%	0.1%	7.4%	2.7%	37.3%	6.0%	27.4%

Table G.27. Percent distribution of Skagit Summer 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	
1998	3.5%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	1.7%	1.7%	0.0%	2.3%	0.0%	0.0%	1.2%	87.8%
1999	7.1%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.1%	0.0%	20.2%	0.0%	1.2%	0.0%	61.9%
2000	5.8%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	8.0%	0.0%	8.9%	0.0%	2.2%	5.3%	66.7%
2001	6.3%	6.2%	0.8%	0.0%	0.0%	0.0%	1.7%	6.7%	9.7%	0.0%	8.3%	0.1%	0.7%	1.2%	58.3%
2002	12.8%	0.0%	0.8%	1.4%	0.0%	0.1%	1.6%	6.4%	3.2%	0.2%	1.1%	0.1%	0.9%	0.0%	71.3%
2003	5.5%	0.1%	0.0%	5.5%	0.0%	0.0%	10.3%	10.8%	4.4%	0.1%	6.8%	0.3%	0.5%	0.6%	55.0%
(1998)	3.5%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	1.7%	1.7%	0.0%	2.3%	0.0%	0.0%	1.2%	87.8%
(99-03)	7.5%	1.9%	0.3%	1.4%	0.0%	0.0%	2.7%	5.2%	6.5%	0.1%	9.1%	0.1%	1.1%	1.4%	62.6%

Table G.28. Percent distribution of Skagit Summer 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	
1998	4.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	1.7%	2.8%	0.0%	2.3%	0.0%	0.0%	1.7%	85.3%
1999	10.1%	5.1%	0.5%	0.0%	0.0%	0.0%	0.0%	1.5%	8.1%	0.0%	19.2%	0.0%	1.0%	2.0%	52.5%
2000	10.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	9.0%	0.0%	9.3%	0.0%	1.8%	11.8%	53.8%
2001	8.4%	14.3%	0.9%	0.0%	0.0%	0.0%	1.9%	5.8%	10.0%	0.0%	8.0%	0.1%	0.6%	2.2%	47.9%
2002	13.1%	0.0%	0.8%	1.5%	0.0%	0.1%	1.9%	6.2%	4.0%	2.9%	1.2%	0.1%	0.9%	0.0%	67.3%
2003	5.5%	0.5%	0.0%	5.5%	0.0%	0.0%	12.0%	10.3%	5.0%	0.2%	7.8%	0.3%	0.5%	0.7%	51.7%
(1998)	4.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	1.7%	2.8%	0.0%	2.3%	0.0%	0.0%	1.7%	85.3%
(99-03)	9.4%	4.2%	0.4%	1.4%	0.0%	0.0%	3.2%	5.4%	7.2%	0.6%	9.1%	0.1%	1.0%	3.3%	54.6%

Table G.29. Percent distribution of Stillaguamish Fall Fingerling Chinook reported catch among fisheries and escapement (NA=not available).

Catch ¹ 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 ²
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 ²
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%	10.6%	0.0%	0.4%	3.5%	71.7%
2000	4.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.6%	2.0%	0.0%	1.5%	0.5%	0.1%	1.6%	83.0%
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%
(90-98)	3.0%	0.1%	0.0%	0.4%	0.7%	3.1%	0.6%	7.5%	5.6%	1.3%	5.7%	2.4%	4.1%	13.8%	51.6%
(99-01)	2.5%	0.7%	0.0%	0.0%	0.0%	0.2%	0.1%	4.4%	5.2%	0.0%	5.7%	0.3%	0.6%	5.2%	74.9%

Table G.30. Percent distribution of Stillaguamish Fall Fingerling Chinook total fishing mortalities among fisheries and escapement.

Catch ¹ 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 ²
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 ²
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%	8.6%	0.0%	10.3%	0.0%	0.4%	4.9%	63.2%
2000	5.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.8%	2.3%	0.0%	1.7%	0.5%	0.1%	2.6%	80.7%
2001	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.1%	5.5%	0.0%	5.1%	0.3%	1.3%	16.4%	64.3%
(90-98)	3.4%	0.2%	0.1%	0.6%	0.7%	3.3%	0.7%	8.3%	6.1%	1.3%	5.5%	2.6%	3.9%	18.2%	45.2%
(99-01)	2.7%	3.1%	0.0%	0.0%	0.0%	0.2%	0.1%	4.4%	5.5%	0.0%	5.7%	0.3%	0.6%	8.0%	69.4%

¹ No data are shown for 2002 and 2003 because of lack of coded-wire tagging of broods from 1999-2000.

² Values represent estimates of catch or total fishing mortality distribution only for this year.

Table G.31. 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%	16.6%	12.6%	6.1%	0.0%	4.6%	11.1%	46.5%	NA ¹
1984	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	30.7%	1.6%	2.7%	0.0%	1.6%	40.4%	23.1%	NA ¹
1985	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	31.7%	0.0%	6.4%	3.1%	8.0%	33.3%	17.5%	NA ¹
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%	43.9%	19.6%	27.7%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	13.4%	3.2%	0.0%	5.6%	1.7%	44.9%	17.5%	13.7%
2001	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%	2.0%	0.0%	3.8%	4.2%	29.4%	15.0%	42.3%
2002	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	1.0%	0.0%	2.1%	3.5%	42.7%	11.0%	32.7%
2003	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	5.7%	1.3%	0.0%	5.3%	4.1%	42.1%	12.4%	28.5%
(83-84)	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	22.6%	7.0%	4.3%	0.0%	3.0%	24.4%	33.8%	3.8%
(85-98)	0.0%	0.0%	0.0%	0.2%	0.3%	0.4%	0.3%	9.3%	4.9%	1.9%	2.4%	5.6%	29.7%	18.2%	26.7%
(99-03)	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	5.9%	2.1%	0.0%	3.9%	3.3%	40.6%	15.1%	29.0%

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

Table G.32. 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%	15.1%	8.9%	4.8%	0.0%	3.1%	9.3%	57.0%	NA ¹
1984	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	30.3%	1.4%	2.6%	0.0%	1.8%	37.1%	26.8%	NA ¹
1985	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	29.6%	0.0%	5.0%	3.7%	7.4%	32.1%	22.2%	NA ¹
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%	31.5%	26.4%	38.3%
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%	41.9%	24.1%	24.7%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.9%	3.1%	0.0%	5.5%	1.6%	36.8%	30.1%	10.9%
2001	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.8%	2.1%	0.0%	3.8%	4.4%	26.3%	25.5%	34.8%
2002	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.8%	1.2%	0.0%	2.4%	3.8%	40.7%	15.6%	29.5%
2003	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	5.4%	1.5%	0.0%	6.0%	4.3%	40.2%	15.8%	26.0%
(83-84)	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	21.9%	5.1%	3.7%	0.0%	2.4%	22.2%	41.0%	3.1%
(85-98)	0.0%	0.0%	0.0%	0.2%	0.4%	0.4%	0.4%	10.1%	5.0%	1.6%	2.3%	5.7%	27.3%	24.7%	21.8%
(99-03)	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	5.5%	2.2%	0.0%	4.1%	3.4%	37.2%	22.2%	25.2%

¹ Values represent estimates of fishing mortality distribution only for this year.

Table G.33. 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%	7.2%	86.4%
1999	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	2.5%	0.0%	9.0%	4.9%	2.9%	10.9%	68.5%
2000	0.4%	0.0%	0.0%	0.2%	0.0%	0.1%	0.0%	19.0%	3.4%	0.0%	10.6%	3.4%	0.4%	17.5%	45.1%
2001	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	12.4%	3.1%	0.0%	2.8%	6.6%	4.9%	10.7%	58.1%
2002	1.5%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	11.3%	1.8%	0.0%	6.9%	4.2%	11.4%	15.3%	45.7%
2003	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	11.5%	2.4%	0.0%	3.4%	6.3%	10.2%	18.0%	47.6%
(82-84)	0.0%	0.0%	0.0%	0.2%	1.8%	0.9%	0.1%	18.2%	4.5%	1.9%	0.2%	1.8%	33.1%	19.0%	18.3%
(89-98)	0.3%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	10.8%	4.4%	1.2%	3.0%	7.7%	13.5%	18.1%	40.2%
(99-03)	0.7%	0.0%	0.0%	0.4%	0.0%	0.0%	0.1%	11.0%	2.6%	0.0%	6.5%	5.1%	6.0%	14.5%	53.0%

Table G.34. 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%	4.6%	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%	8.3%	0.0%	0.0%	0.0%	16.7%	10.4%	64.6%
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	2.0%	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%	60.5%
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%	2.0%	27.0%	65.6%
1999	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	3.1%	0.0%	9.1%	5.8%	2.8%	14.3%	63.5%
2000	0.4%	0.0%	0.0%	0.2%	0.0%	0.2%	0.0%	18.3%	3.6%	0.0%	11.3%	3.4%	0.3%	23.1%	39.1%
2001	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	11.7%	3.5%	0.0%	2.9%	7.1%	4.7%	18.2%	50.2%
2002	1.8%	0.0%	0.0%	1.9%	0.0%	0.0%	0.0%	11.0%	2.3%	0.0%	7.7%	4.5%	11.2%	18.1%	41.6%
2003	0.6%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	11.2%	2.9%	0.0%	3.8%	6.8%	9.8%	20.9%	43.5%
(82-84)	0.0%	0.0%	0.0%	0.2%	1.7%	0.7%	0.2%	17.5%	4.1%	1.6%	0.1%	1.8%	31.0%	25.9%	15.3%
(89-98)	0.4%	0.1%	0.0%	0.1%	0.1%	0.6%	0.0%	11.7%	4.9%	1.2%	2.9%	7.7%	13.0%	23.2%	34.3%
(99-03)	0.8%	0.1%	0.0%	0.4%	0.0%	0.0%	0.1%	10.6%	3.1%	0.0%	7.0%	5.5%	5.8%	18.9%	47.6%

Table G.35. 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%	5.5%	7.5%	3.8%	4.2%	7.1%	26.4%	14.7%	28.7%
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%	9.1%	1.9%	0.0%	4.1%	0.3%	12.2%	6.7%	65.3%
2001	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.3%	7.5%	3.4%	0.0%	4.5%	4.2%	10.8%	9.1%	60.1%
2002	0.8%	0.0%	0.0%	1.1%	0.0%	0.1%	0.2%	11.4%	3.7%	0.0%	2.1%	4.1%	18.6%	6.9%	51.1%
2003	0.6%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	13.2%	3.5%	0.0%	12.0%	4.4%	12.8%	9.4%	43.1%
(82-84)	0.1%	0.1%	0.0%	0.5%	1.3%	0.4%	0.1%	20.3%	9.0%	1.7%	0.2%	1.9%	25.6%	24.1%	14.6%
(85-98)	0.3%	0.0%	0.0%	0.2%	0.2%	0.4%	0.1%	10.8%	4.6%	1.9%	2.0%	5.3%	16.5%	14.5%	43.4%
(99-03)	0.5%	0.0%	0.0%	0.4%	0.0%	0.0%	0.1%	8.4%	3.0%	0.0%	5.3%	3.2%	12.7%	7.5%	58.9%

Table G.36. 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%	35.6%	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%	24.8%	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%	10.2%	9.3%	3.0%	3.3%	7.6%	22.1%	22.6%	19.3%
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%	17.9%
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%	9.0%	2.2%	0.0%	4.6%	0.3%	11.8%	13.9%	57.5%
2001	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.4%	7.2%	4.0%	0.0%	4.8%	4.6%	10.5%	14.3%	54.1%
2002	0.9%	0.0%	0.0%	1.2%	0.0%	0.2%	0.3%	11.2%	4.7%	0.0%	2.3%	4.4%	17.8%	9.6%	47.3%
2003	0.6%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	12.5%	4.1%	0.0%	13.6%	4.7%	12.2%	11.5%	39.7%
(82-84)	0.1%	0.1%	0.0%	0.5%	1.4%	0.3%	0.1%	20.7%	8.2%	1.6%	0.2%	1.9%	24.1%	28.2%	12.5%
(85-98)	0.4%	0.0%	0.0%	0.2%	0.2%	0.4%	0.1%	12.6%	4.7%	1.8%	1.9%	5.6%	15.3%	18.6%	38.2%
(99-03)	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.1%	8.1%	3.6%	0.0%	5.9%	3.5%	12.3%	11.4%	53.8%

Table G.37. Percent distribution of South Puget Sound Fall Yearling Chinook reported catch among fisheries and escapement.

Catch ¹ 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%	28.5%	49.1%	11.2%
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%	8.9%	6.3%	11.4%	67.1%	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%
2002	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	84.6%	15.4%
(82-84)	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%	0.0%	5.3%	1.8%	0.0%	0.0%	0.4%	19.3%	62.4%	9.5%
(90-98)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	0.9%	0.3%	0.6%	1.7%	13.6%	65.4%	15.0%
(99-02)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	3.8%	0.0%	2.2%	4.2%	3.5%	74.1%	11.2%

Table G.38. Percent distribution of South Puget Sound Fall Yearling Chinook for total fishing mortalities among fisheries and escapement.

Catch ¹ 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%	5.0%	0.9%	0.0%	1.2%	4.8%	27.0%	51.5%	9.6%
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%	8.6%	0.0%	0.0%	3.8%	1.0%	84.8%	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%	6.2%	9.3%	71.1%	5.2%
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%	81.5%	13.0%
2002	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	87.5%	12.5%
(82-84)	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	5.4%	1.6%	0.0%	0.0%	0.3%	17.7%	65.6%	8.0%
(90-98)	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	0.9%	0.3%	0.5%	1.7%	12.1%	70.6%	11.4%
(99-02)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	2.2%	0.0%	2.1%	3.1%	2.6%	81.2%	8.2%

¹ No data are shown for 2003 because of lack of coded-wire tagging of broods from 1998 and 2000, for both landed catch and total mortality.

Table G.39. Percent distribution of Squaxin Pens Fall Yearling Chinook reported catch among fisheries and escapement.

Catch ¹ 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 ²
										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%	3.4%	0.7%	1.2%	0.6%	4.1%	33.5%	56.3%	NA ²
1991	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.4%	1.6%	0.6%	0.0%	9.1%	34.0%	50.3%	NA ²
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.5%	2.4%	3.6%	1.3%	0.8%	7.4%	23.5%	60.1%	NA ²
1993	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	11.2%	6.2%	1.6%	2.7%	15.6%	3.9%	57.7%	NA ²
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	31.5%	7.5%	4.5%	6.0%	8.3%	28.6%	13.5%	NA ²
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%	60.9%	39.1%	NA ²
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%	4.8%	92.1%	NA ²
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%	85.7%	NA ²
1998	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	3.0%	94.0%	NA ²
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.7%	0.0%	0.0%	0.0%	0.0%	0.0%	83.3%	NA ²
(90-98)	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	6.3%	2.4%	1.0%	1.1%	5.7%	22.3%	61.0%	NA ²
(1999)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.7%	0.0%	0.0%	0.0%	0.0%	0.0%	83.3%	NA ²

¹ No data are shown for 2000-2003 because of lack of coded-wire tagging of broods from 1998-2000.² Values represent estimates of catch distribution only because escapement is of insufficient quality.

Table G.40. Percent distribution of Squaxin Pens Fall Yearling Chinook total fishing mortalities among fisheries and escapement.

Catch ¹ 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 ²
										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%	0.8%	1.0%	0.6%	4.2%	32.2%	57.8%	NA ²
1991	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.4%	1.7%	0.5%	0.0%	9.2%	31.8%	52.4%	NA ²
1992	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.4%	2.1%	3.1%	0.9%	0.6%	6.2%	22.9%	63.5%	NA ²
1993	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	12.1%	6.7%	1.5%	2.3%	14.7%	4.1%	57.7%	NA ²
1994	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	29.0%	7.2%	5.2%	6.0%	7.8%	25.7%	19.1%	NA ²
1995 ³	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.4%	0.0%	0.0%	0.0%	23.8%	75.4%	NA ²
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%	5.3%	91.9%	NA ²
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%	88.4%	NA ²
1998	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	2.4%	95.3%	NA ²
1999 ³	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%	95.4%	NA ²
(90-98)	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	6.0%	2.4%	1.0%	1.1%	5.3%	17.2%	66.8%	NA ²
(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%	95.4%	NA ²

¹ No data are shown for 2000-2003 because of lack of coded-wire tagging of broods from 1998-2000.² Values represent estimates of catch distribution only because escapement is of insufficient quality.³ Relatively high age-2 survival, combined with relatively few total catch recoveries of CWTs, result in large estimates of sublegal CNR mortality in 1995 and 1999.

Table G.41. Percent distribution of White River Spring Yearling Chinook reported catch among fisheries and escapement.

Catch ¹ 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%	74.1%	23.5%	NA ¹
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%	30.6%	62.2%
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%	2.4%	37.6%	55.3%
(83-84)	0.0%	0.0%	0.0%	0.0%	2.9%	0.8%	0.0%	4.4%	2.6%	0.0%	0.0%	2.1%	10.2%	42.5%	34.6%
(85-98)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	1.1%	0.7%	0.4%	1.9%	9.2%	41.3%	44.7%
(99-00)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.6%	1.2%	0.0%	0.0%	0.0%	1.2%	34.1%	60.0%

¹ No data are shown for 2001 to 2003 because of lack of coded-wire tagging of broods from 1998-2000.² Values represent estimates of catch distribution only for this year because escapement data is of insufficient quality.

Table G.42. Percent distribution of White River Spring Yearling Chinook total fishing mortalities among fisheries and escapement.

Catch ¹ 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%	60.4%	33.9%	NA ¹
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%	39.6%	53.9%
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%	44.2%	49.5%
(83-84)	0.0%	0.0%	0.0%	0.0%	1.9%	0.5%	0.0%	3.4%	2.1%	0.0%	0.0%	1.4%	25.7%	47.6%	25.8%
(85-98)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	1.1%	0.7%	0.3%	1.9%	8.2%	49.1%	38.0%
(99-00)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%	1.0%	0.0%	0.0%	0.0%	1.1%	44.7%	50.3%

¹ No data are shown for 2001 to 2003 because of lack of coded-wire tagging of broods from 1998-2000.

² Values represent estimates of total fishing mortality distribution only for this year because escapement data is of insufficient quality.

Table G.43. 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%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.4%	90.1%
2002	16.8%	0.0%	0.9%	6.3%	0.3%	0.0%	4.6%	1.4%	1.9%	0.0%	0.0%	0.0%	0.0%	1.0%	66.9%
2003	13.3%	0.1%	2.6%	4.8%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	1.8%	0.0%	0.0%	0.0%	75.3%
(89-98)	11.0%	0.7%	1.4%	6.0%	0.4%	1.5%	0.2%	7.5%	0.7%	2.1%	0.6%	0.2%	0.4%	5.3%	62.1%
(99-03)	9.4%	0.1%	1.5%	3.1%	0.1%	0.0%	1.0%	0.3%	1.4%	0.0%	0.6%	0.1%	0.0%	0.3%	82.0%

Table G.44. 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	18.5%	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	18.8%	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%	55.5%
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	12.3%	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%	51.4%
1994	20.8%	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%	40.4%
1995	16.4%	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%	64.6%
1996	14.1%	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%	79.1%
1997	16.5%	0.0%	0.0%	1.8%	0.2%	0.0%	0.7%	1.1%	0.0%	0.1%	0.5%	0.0%	0.0%	0.4%	78.6%
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%	4.7%	0.0%	0.0%	0.7%	0.0%	0.3%	0.0%	1.5%	0.0%	0.1%	0.0%	84.1%
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%	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.6%	85.8%
2002	18.7%	0.0%	0.9%	6.9%	0.3%	0.0%	5.5%	1.3%	2.4%	0.0%	0.0%	0.0%	0.0%	1.1%	62.9%
2003	14.5%	0.2%	2.7%	5.2%	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	2.1%	0.0%	0.0%	0.0%	72.8%
(89-98)	14.8%	1.9%	1.7%	6.6%	0.5%	1.3%	0.2%	8.0%	0.7%	1.7%	0.5%	0.1%	0.3%	5.4%	56.4%
(99-03)	11.2%	0.1%	2.0%	3.4%	0.1%	0.0%	1.2%	0.3%	1.7%	0.0%	0.7%	0.2%	0.0%	0.3%	78.9%

Table G.45. 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	10.8%	0.2%	1.3%	3.0%	0.0%	0.0%	1.9%	0.6%	0.9%	0.0%	0.0%	0.0%	0.0%	0.8%	80.6%
2003	11.4%	0.1%	0.0%	6.9%	0.0%	0.0%	6.0%	0.0%	0.9%	0.0%	0.0%	0.0%	23.7%	1.2%	49.8%
(89-98)	9.5%	0.7%	1.5%	7.9%	0.7%	1.0%	0.3%	7.8%	1.0%	0.9%	1.3%	0.3%	2.6%	1.2%	63.1%
(99-03)	8.1%	0.1%	3.6%	2.8%	0.0%	0.0%	1.6%	0.1%	0.6%	0.0%	2.5%	0.0%	4.9%	0.4%	75.3%

Table G.46. 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	11.0%	3.7%	0.5%	3.1%	0.0%	3.7%	0.0%	4.7%	0.0%	2.1%	7.3%	0.0%	0.0%	1.6%	62.3%
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	14.1%	0.0%	0.3%	10.6%	0.3%	1.6%	0.0%	7.2%	0.0%	1.9%	0.0%	0.0%	0.0%	5.1%	59.0%
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	21.0%	7.4%	3.5%	9.6%	0.9%	0.0%	0.9%	7.4%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	48.5%
1995	14.9%	0.0%	0.0%	6.1%	0.0%	1.1%	0.0%	12.7%	0.0%	0.6%	0.0%	0.0%	2.2%	0.0%	62.4%
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	13.5%	0.0%	13.5%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	67.4%
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	9.9%	0.0%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	0.0%	2.2%	0.0%	0.0%	0.0%	83.7%
2002	13.1%	0.4%	1.8%	3.6%	0.0%	0.0%	2.7%	0.7%	1.2%	0.0%	0.0%	0.0%	0.0%	0.7%	75.8%
2003	13.4%	0.3%	0.0%	8.0%	0.0%	0.0%	7.2%	0.0%	1.0%	0.0%	0.0%	0.0%	22.8%	1.3%	46.0%
(89-98)	12.9%	1.9%	1.6%	9.0%	0.8%	1.0%	0.3%	8.7%	0.9%	1.0%	1.1%	0.3%	2.7%	1.4%	56.5%
(99-03)	10.0%	0.1%	4.7%	3.2%	0.0%	0.0%	2.0%	0.1%	0.8%	0.0%	3.1%	0.0%	4.8%	0.4%	70.8%

Table G.47. 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%	5.1%	3.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	36.9%	0.6%	32.7%
2002	24.6%	0.0%	3.2%	8.2%	0.0%	0.0%	2.4%	0.0%	0.2%	0.0%	0.0%	0.0%	24.0%	0.2%	37.2%
2003	18.2%	0.1%	3.1%	16.8%	0.0%	0.0%	8.9%	0.0%	0.0%	0.0%	1.1%	0.0%	18.6%	0.6%	32.7%
(81-84)	17.7%	0.8%	0.0%	15.8%	0.5%	0.9%	0.8%	9.8%	0.0%	0.9%	0.0%	1.0%	28.0%	0.8%	23.2%
(85-98)	17.1%	0.2%	0.9%	11.5%	0.5%	0.2%	0.9%	4.8%	0.0%	0.2%	0.2%	0.1%	18.6%	1.2%	43.6%
(99-03)	16.2%	0.0%	3.3%	6.8%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%	0.2%	0.2%	18.0%	0.3%	52.7%

Table G.48. 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	17.0%	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	15.5%	0.1%	0.1%	6.4%	0.3%	0.3%	1.9%	7.1%	0.0%	0.0%	0.0%	0.0%	13.3%	0.0%	54.9%
1991	24.5%	0.3%	1.2%	10.1%	0.0%	0.0%	1.4%	5.0%	0.0%	0.0%	0.0%	0.0%	14.6%	0.5%	42.5%
1992	15.4%	2.2%	2.4%	8.6%	0.0%	0.1%	1.8%	17.9%	0.0%	0.0%	0.0%	0.0%	16.2%	0.8%	34.4%
1993	20.0%	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%	31.1%
1994	24.1%	0.6%	0.4%	20.3%	0.2%	0.3%	1.4%	3.8%	0.2%	0.0%	0.9%	0.0%	17.8%	0.0%	29.9%
1995	22.2%	0.0%	1.8%	7.4%	0.0%	0.2%	2.5%	0.8%	0.2%	0.0%	0.4%	0.7%	30.2%	0.0%	33.5%
1996	18.9%	0.0%	1.5%	1.1%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	15.8%	0.5%	61.8%
1997	38.6%	0.5%	0.0%	6.0%	0.7%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	19.4%	0.0%	34.5%
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	13.6%	0.0%	1.9%	2.0%	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%	4.5%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	79.0%
2001	26.2%	0.0%	5.6%	3.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	33.9%	0.5%	29.2%
2002	27.6%	0.0%	3.4%	8.6%	0.0%	0.0%	3.0%	0.0%	0.3%	0.0%	0.0%	0.0%	22.5%	0.3%	34.4%
2003	19.7%	0.2%	3.2%	17.5%	0.0%	0.0%	10.1%	0.0%	0.0%	0.0%	1.2%	0.0%	17.4%	0.6%	30.0%
(81-84)	24.6%	0.7%	0.0%	17.0%	0.4%	0.7%	0.9%	9.5%	0.0%	0.6%	0.0%	1.2%	24.1%	0.9%	19.4%
(85-98)	22.5%	0.5%	1.0%	12.3%	0.5%	0.2%	0.9%	5.2%	0.0%	0.2%	0.2%	0.1%	16.7%	1.2%	38.5%
(99-03)	19.6%	0.0%	3.7%	7.2%	0.0%	0.0%	2.6%	0.0%	0.1%	0.0%	0.2%	0.2%	16.7%	0.3%	49.3%

Table G.49. 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	4.5%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.9%	15.3%	78.5%
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	2.0%	0.1%	0.1%	1.3%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.9%	17.5%	22.4%	54.8%
2003	7.9%	0.0%	0.1%	1.0%	0.0%	0.0%	0.5%	3.9%	0.0%	0.0%	1.0%	0.5%	2.4%	25.2%	57.6%
(80-84)	7.2%	0.7%	0.2%	8.7%	0.3%	0.3%	0.1%	3.1%	0.2%	0.0%	0.0%	1.1%	4.7%	20.8%	52.5%
(85-98)	4.9%	0.3%	0.3%	2.6%	0.2%	0.4%	0.0%	1.4%	0.1%	0.0%	0.3%	0.9%	6.5%	27.2%	55.0%
(99-03)	4.7%	0.0%	0.2%	0.5%	0.0%	0.0%	0.2%	1.1%	0.0%	0.0%	0.4%	0.4%	5.4%	23.3%	63.8%

Table G.50. 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%	0.3%	17.7%	20.8%	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	10.3%	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	7.7%	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	13.4%	0.0%	0.0%	1.5%	0.0%	0.0%	0.1%	1.6%	0.0%	0.0%	0.2%	1.6%	0.7%	43.9%	36.9%
1994	5.8%	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	5.3%	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%	45.5%
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%	85.9%
1997	4.5%	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%	76.4%
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	9.5%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.8%	16.6%	71.2%
2000	14.0%	0.2%	1.0%	0.1%	0.0%	0.0%	0.4%	0.3%	0.0%	0.0%	0.4%	0.3%	2.3%	32.3%	48.9%
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%	27.0%	66.6%
2002	2.4%	0.4%	0.1%	1.5%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	1.0%	17.0%	24.6%	52.3%
2003	9.7%	0.0%	0.1%	1.2%	0.0%	0.0%	0.7%	4.2%	0.0%	0.0%	1.2%	0.5%	2.3%	26.6%	53.5%
(80-84)	9.7%	0.7%	0.2%	10.6%	0.4%	0.3%	0.1%	3.7%	0.2%	0.0%	0.0%	1.3%	4.6%	20.5%	47.7%
(85-98)	7.8%	0.7%	0.3%	3.2%	0.2%	0.4%	0.0%	1.6%	0.1%	0.0%	0.3%	1.1%	6.1%	28.0%	50.2%
(99-03)	7.5%	0.1%	0.5%	0.6%	0.0%	0.0%	0.2%	1.1%	0.0%	0.0%	0.5%	0.4%	5.2%	25.4%	58.5%

Table G.51. Percent distribution of Columbia 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	11.4%	0.0%	1.2%	7.2%	2.4%	9.6%	0.0%	16.3%	7.8%	1.8%	0.0%	0.0%	4.8%	4.8%	32.5%
1980	33.1%	0.0%	0.9%	8.8%	4.0%	1.2%	0.0%	16.7%	0.0%	0.0%	0.0%	1.5%	0.6%	0.0%	33.1%
1987	13.6%	0.0%	0.0%	5.6%	4.8%	4.0%	3.2%	0.0%	0.0%	0.0%	0.0%	20.0%	15.2%	0.0%	33.6%
1988	1.1%	0.8%	0.0%	7.6%	0.0%	7.6%	1.9%	15.9%	0.0%	1.5%	4.2%	3.4%	15.2%	3.0%	37.9%
1989	4.8%	0.5%	0.6%	5.1%	0.6%	0.3%	0.6%	14.8%	1.4%	2.2%	2.4%	14.4%	8.5%	2.6%	41.1%
1990	9.7%	0.0%	0.0%	6.6%	1.1%	1.3%	0.0%	19.5%	0.6%	0.4%	0.0%	5.7%	10.8%	2.5%	41.8%
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%	74.8%
1992	14.1%	0.0%	0.0%	3.4%	2.1%	1.0%	0.0%	14.8%	0.7%	0.0%	0.0%	6.5%	1.4%	1.4%	54.6%
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	13.5%	0.0%	0.0%	0.0%	0.0%	0.0%	13.5%	0.0%	0.0%	0.0%	0.0%	0.0%	10.8%	0.0%	62.2%
1995	2.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.1%	0.0%	0.0%	0.0%	2.2%	1.4%	0.0%	88.4%
1996	13.3%	0.6%	0.0%	0.0%	0.0%	3.0%	0.0%	0.0%	2.2%	0.0%	0.0%	2.8%	3.9%	4.1%	70.2%
1997	7.8%	0.1%	3.2%	0.2%	0.0%	0.4%	0.9%	1.6%	0.0%	0.0%	0.0%	2.9%	1.2%	0.8%	80.9%
1998	8.6%	0.1%	0.9%	0.5%	0.0%	0.1%	0.5%	0.0%	0.0%	0.0%	0.6%	1.9%	5.0%	1.0%	80.9%
1999	10.1%	2.6%	1.8%	0.4%	0.0%	0.6%	2.7%	0.6%	4.0%	0.0%	5.0%	8.5%	1.2%	3.4%	63.2%
2000	21.6%	1.4%	2.6%	0.4%	0.0%	0.0%	1.4%	4.4%	0.6%	0.0%	5.0%	3.0%	1.1%	4.0%	54.4%
2001	14.1%	2.8%	1.4%	0.5%	0.0%	0.0%	1.4%	12.3%	0.2%	0.0%	4.4%	17.6%	0.8%	6.3%	38.2%
2002	20.8%	0.0%	1.3%	17.9%	0.0%	0.0%	1.9%	14.4%	0.1%	0.0%	0.8%	8.1%	0.6%	5.5%	28.5%
2003	24.8%	0.4%	1.0%	17.3%	0.0%	0.0%	5.0%	11.7%	0.0%	0.0%	0.8%	6.2%	2.7%	4.9%	25.0%
(79-80)	22.3%	0.0%	1.1%	8.0%	3.2%	5.4%	0.0%	16.5%	3.9%	0.9%	0.0%	0.8%	2.7%	2.4%	32.8%
(87-98)	8.4%	0.2%	0.4%	2.7%	0.8%	1.8%	1.7%	7.6%	0.4%	0.4%	0.8%	5.7%	6.7%	1.6%	60.8%
(99-03)	18.3%	1.4%	1.6%	7.3%	0.0%	0.1%	2.5%	8.7%	0.2%	0.0%	3.2%	8.7%	1.3%	4.8%	41.9%

Table G.52. Percent distribution of Columbia 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	14.4%	0.0%	1.0%	9.0%	4.0%	8.5%	0.0%	18.9%	7.0%	1.5%	0.0%	0.5%	4.0%	4.5%	26.9%
1980	32.8%	0.0%	0.9%	9.2%	4.3%	1.1%	0.0%	18.1%	0.0%	0.0%	0.0%	1.7%	0.6%	0.0%	31.3%
1987	16.0%	0.0%	0.0%	8.0%	3.7%	4.3%	2.5%	7.4%	0.0%	0.0%	0.0%	19.8%	11.7%	0.6%	25.9%
1988	1.9%	2.2%	0.0%	10.0%	0.0%	7.5%	1.9%	20.9%	0.0%	1.2%	4.0%	3.4%	13.1%	2.8%	31.2%
1989	7.1%	2.1%	0.7%	5.6%	0.7%	0.3%	0.6%	16.4%	1.4%	1.9%	2.4%	14.9%	7.5%	2.5%	35.9%
1990	10.6%	0.0%	0.0%	7.6%	1.1%	1.3%	0.0%	20.3%	0.6%	0.3%	0.0%	5.7%	10.3%	2.6%	39.5%
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%	73.5%
1992	18.5%	0.0%	0.0%	3.4%	1.9%	0.9%	0.0%	15.4%	0.6%	0.0%	0.0%	6.6%	1.3%	1.6%	49.8%
1993	7.8%	0.0%	0.0%	1.4%	0.0%	2.8%	0.0%	15.6%	4.0%	0.0%	1.8%	5.5%	3.2%	1.4%	60.6%
1994	17.5%	0.0%	0.0%	0.0%	0.0%	0.0%	15.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%	0.0%	57.5%
1995	4.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.4%	0.0%	1.4%	0.0%	2.0%	2.7%	0.0%	82.4%
1996	21.3%	0.7%	0.0%	1.8%	0.0%	3.0%	0.0%	2.5%	2.5%	0.2%	0.0%	2.5%	3.2%	3.9%	58.3%
1997	8.9%	0.1%	3.7%	0.2%	0.0%	0.4%	1.2%	1.8%	0.0%	0.0%	0.0%	3.3%	1.1%	0.9%	78.4%
1998	10.2%	0.5%	1.2%	0.5%	0.0%	0.1%	0.7%	0.0%	0.0%	0.0%	0.6%	2.1%	4.9%	1.0%	78.3%
1999	13.9%	5.0%	3.0%	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	25.8%	2.3%	3.5%	0.4%	0.0%	0.0%	1.9%	4.2%	0.7%	0.1%	5.3%	3.3%	1.0%	4.0%	47.6%
2001	16.3%	6.1%	1.4%	0.5%	0.0%	0.0%	1.6%	11.1%	0.2%	0.0%	4.4%	17.5%	0.7%	6.5%	33.6%
2002	21.5%	0.1%	1.3%	18.1%	0.0%	0.0%	2.3%	14.1%	0.1%	0.0%	0.8%	8.3%	0.6%	5.6%	27.1%
2003	24.3%	1.9%	1.0%	17.1%	0.0%	0.0%	5.9%	11.3%	0.1%	0.0%	1.0%	6.2%	2.6%	5.0%	23.7%
(79-80)	23.6%	0.0%	1.0%	9.1%	4.2%	4.8%	0.0%	18.5%	3.5%	0.8%	0.0%	1.1%	2.3%	2.3%	29.1%
(87-98)	10.7%	0.5%	0.5%	3.4%	0.7%	1.9%	1.8%	9.5%	0.4%	0.5%	0.8%	5.8%	6.1%	1.6%	55.9%
(99-03)	20.4%	3.1%	2.0%	7.3%	0.0%	0.1%	3.1%	8.2%	0.2%	0.0%	3.3%	8.9%	1.2%	4.9%	37.2%

Table G.53. Percent distribution of Cowlitz 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%	31.0%	12.4%	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%	17.9%	7.1%	10.6%	47.7%
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	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	2.9%	10.5%	1.5%	11.9%	71.0%
2002	6.3%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	7.2%	0.0%	0.0%	1.9%	26.1%	3.4%	25.7%	27.8%
2003	4.9%	0.0%	0.0%	2.2%	0.0%	0.0%	0.0%	9.5%	0.7%	0.0%	6.6%	16.4%	8.7%	10.7%	40.3%
(81-84)	4.4%	0.0%	0.1%	4.4%	1.6%	1.0%	1.8%	18.2%	0.1%	1.5%	0.2%	9.9%	11.2%	11.9%	33.8%
(85-98)	3.6%	0.1%	0.8%	2.6%	0.6%	0.7%	0.1%	7.8%	0.4%	0.4%	0.5%	9.7%	8.2%	8.8%	55.8%
(99-03)	3.9%	0.0%	0.8%	0.7%	0.0%	0.0%	0.5%	5.8%	0.1%	0.0%	4.8%	15.1%	3.8%	14.7%	49.8%

Table G.54. Percent distribution of Cowlitz 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%	7.2%	3.9%	0.5%	0.0%	18.9%	0.3%	0.5%	0.0%	7.8%	4.7%	18.7%	33.2%
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	4.0%	1.1%	0.0%	4.4%	0.0%	4.4%	0.0%	12.6%	0.4%	1.2%	0.0%	5.1%	6.3%	14.9%	45.4%
1986	0.5%	0.2%	0.0%	0.2%	0.7%	0.8%	0.0%	14.0%	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	4.6%	0.0%	0.7%	4.7%	0.0%	0.3%	0.0%	7.2%	0.0%	1.0%	0.0%	18.8%	6.9%	11.0%	44.8%
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%	20.2%	0.0%	0.0%	0.0%	7.9%	5.4%	5.4%	54.2%
1993	4.3%	0.0%	0.0%	3.0%	0.0%	1.1%	0.0%	7.6%	0.0%	0.0%	0.0%	18.7%	3.0%	23.8%	38.5%
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%	3.4%	12.0%	1.5%	13.0%	67.9%
2002	6.9%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	6.8%	0.0%	0.0%	2.1%	27.8%	3.3%	26.2%	25.3%
2003	5.0%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%	9.2%	0.9%	0.0%	7.5%	17.0%	8.5%	11.1%	38.4%
(81-84)	4.8%	0.0%	0.1%	4.7%	1.7%	1.0%	1.8%	20.0%	0.1%	1.4%	0.3%	11.0%	10.8%	11.9%	30.6%
(85-98)	4.5%	0.2%	0.8%	3.0%	0.7%	0.8%	0.1%	8.8%	0.4%	0.6%	0.4%	10.4%	7.9%	9.1%	52.4%
(99-03)	4.7%	0.0%	0.8%	0.8%	0.0%	0.0%	0.6%	5.6%	0.2%	0.0%	5.4%	16.6%	3.6%	15.4%	46.3%

Table G.55. 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%	0.7%	0.3%	0.0%	24.0%	1.5%	2.4%	0.1%	16.6%	23.5%	12.8%	18.3%
1980	0.1%	0.0%	0.0%	0.1%	0.5%	0.1%	0.0%	25.4%	2.8%	1.0%	0.1%	23.6%	23.7%	10.1%	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%	24.8%	34.5%	8.3%	13.8%
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%	14.7%	11.8%	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%	12.8%	68.5%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%	0.0%	3.8%	16.9%	36.5%	9.2%	33.0%
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%	21.6%	10.0%	53.2%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.3%	0.4%	0.0%	1.1%	18.7%	30.8%	7.4%	37.4%
2002	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.5%	0.2%	0.0%	0.7%	14.3%	21.4%	9.3%	44.6%
2003	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.8%	0.0%	0.0%	7.0%	10.2%	21.0%	5.4%	46.6%
(79-84)	0.0%	0.0%	0.0%	0.1%	0.8%	0.1%	0.0%	25.0%	1.3%	1.1%	0.2%	16.3%	24.9%	10.2%	20.1%
(85-98)	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%	0.0%	12.7%	0.3%	0.5%	2.4%	12.0%	30.3%	9.0%	32.3%
(99-03)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.5%	0.2%	0.0%	3.8%	13.1%	26.3%	8.3%	43.0%

Table G.56. 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%	0.8%	0.2%	0.0%	27.3%	1.3%	2.2%	0.1%	18.0%	21.5%	13.3%	15.2%
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%	21.9%	10.7%	10.6%
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%	10.1%	0.0%	0.4%	2.8%	1.8%	37.8%	0.0%	47.1%
1996	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%	0.0%	3.2%	6.0%	57.9%	3.9%	27.7%
1997	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.7%	0.0%	0.0%	2.6%	5.8%	23.5%	13.2%	40.2%
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%	16.8%	63.7%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%	0.0%	3.8%	19.2%	35.8%	10.7%	29.9%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.9%	0.0%	0.0%	7.3%	6.1%	20.5%	15.4%	46.7%
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%	0.5%	0.0%	1.2%	20.9%	29.8%	9.9%	33.4%
2002	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.5%	0.3%	0.0%	0.8%	16.6%	21.2%	10.3%	41.3%
2003	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%	0.0%	0.0%	8.2%	11.3%	20.8%	5.9%	43.7%
(79-84)	0.0%	0.0%	0.0%	0.1%	0.8%	0.1%	0.0%	27.0%	1.2%	1.1%	0.2%	17.3%	23.3%	11.6%	17.5%
(85-98)	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%	0.0%	14.8%	0.4%	0.5%	2.5%	13.0%	29.4%	10.0%	29.0%
(99-03)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.6%	0.2%	0.0%	4.3%	14.8%	25.6%	10.4%	39.0%

Table G.57. 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%	3.6%	9.4%	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%	8.2%	0.2%	0.0%	3.4%	19.2%	1.5%	8.6%	58.9%
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%
2003	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.9%	0.3%	0.0%	13.4%	14.5%	6.5%	9.4%	41.0%
(80-84)	0.2%	0.0%	0.0%	0.1%	1.7%	0.3%	0.0%	31.5%	1.7%	2.3%	0.6%	15.3%	9.2%	11.0%	26.1%
(85-98)	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%	0.3%	15.6%	1.4%	1.2%	1.8%	11.7%	6.0%	9.1%	52.4%
(99-03)	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.4%	0.5%	0.0%	8.9%	12.8%	4.5%	8.6%	54.2%

Table G.58. 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%	3.7%	11.1%	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%	8.4%	0.2%	0.0%	3.8%	22.0%	1.5%	10.7%	53.5%
2002	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.6%	0.0%	0.0%	2.4%	24.2%	8.3%	11.8%	42.2%
2003	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.2%	0.4%	0.0%	15.3%	16.0%	6.3%	9.7%	38.1%
(80-84)	0.1%	0.0%	0.0%	0.1%	1.8%	0.2%	0.0%	36.7%	1.4%	1.8%	0.4%	17.3%	8.3%	10.4%	21.4%
(85-98)	0.0%	0.0%	0.0%	0.0%	0.4%	0.1%	0.5%	17.7%	1.5%	1.3%	1.8%	12.6%	5.6%	11.2%	47.3%
(99-03)	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.3%	0.7%	0.0%	10.0%	14.5%	4.4%	10.2%	49.8%

Table G.59. Percent distribution of 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	19.9%	0.6%	0.5%	6.5%	1.6%	1.7%	0.1%	7.3%	1.0%	0.2%	0.0%	1.1%	6.3%	1.8%	51.4%
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	3.0%	0.0%	0.0%	3.0%	0.0%	2.3%	0.0%	11.5%	0.0%	0.7%	1.0%	0.0%	17.0%	6.6%	55.1%
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%	11.4%	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	14.2%	0.0%	2.3%	1.5%	0.0%	0.0%	1.0%	1.4%	0.3%	0.1%	0.3%	1.7%	18.1%	8.5%	50.8%
2003	11.0%	0.8%	0.4%	5.9%	0.0%	0.0%	2.6%	0.8%	0.0%	0.0%	1.1%	0.6%	11.5%	5.9%	59.3%
(79-84)	15.1%	0.4%	0.3%	7.1%	1.8%	2.1%	0.1%	6.4%	0.4%	0.5%	0.1%	0.7%	9.8%	1.2%	54.2%
(85-98)	9.3%	0.5%	0.8%	6.7%	0.4%	0.7%	0.3%	7.1%	0.0%	0.2%	0.2%	0.9%	25.5%	4.7%	42.7%
(99-03)	11.2%	0.3%	1.7%	2.2%	0.0%	0.0%	1.1%	0.8%	0.1%	0.0%	1.0%	1.0%	15.4%	7.3%	58.0%

Table G.60. Percent distribution of 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	20.8%	0.6%	0.6%	7.0%	1.7%	1.7%	0.1%	7.8%	1.0%	0.2%	0.0%	1.1%	6.2%	1.9%	49.2%
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%	2.2%	1.4%	0.2%	8.2%	0.2%	0.8%	0.2%	0.2%	14.4%	2.3%	41.0%
1985	12.9%	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%	1.5%	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	14.5%	0.0%	0.2%	15.2%	0.2%	0.7%	0.5%	8.1%	0.0%	0.7%	0.0%	1.2%	40.4%	2.0%	16.1%
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	8.1%	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%	46.3%
1992	3.6%	0.0%	0.0%	3.6%	0.0%	2.4%	0.0%	13.4%	0.0%	0.6%	1.2%	0.0%	16.7%	7.3%	51.1%
1993	16.6%	0.0%	0.0%	7.6%	0.0%	0.3%	0.5%	18.6%	0.0%	0.0%	0.0%	1.6%	14.0%	6.1%	34.7%
1994	11.8%	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	10.2%	0.1%	2.4%	2.7%	0.0%	0.5%	0.0%	7.0%	0.0%	0.1%	0.0%	0.7%	9.6%	4.5%	62.1%
1996	4.4%	0.0%	0.0%	1.4%	0.0%	0.2%	0.5%	0.7%	0.0%	0.0%	0.0%	0.7%	22.1%	6.2%	63.7%
1997	12.8%	0.5%	3.2%	4.9%	0.2%	0.0%	0.9%	0.6%	0.0%	0.0%	0.1%	1.0%	19.7%	11.8%	44.4%
1998	10.0%	4.6%	2.8%	3.0%	0.0%	0.0%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	13.2%	7.0%	58.8%
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	22.4%	0.1%	3.4%	0.0%	0.0%	0.0%	0.7%	1.1%	0.0%	0.0%	3.3%	0.3%	19.2%	4.5%	45.2%
2001	5.4%	0.0%	1.1%	0.0%	0.0%	0.0%	1.1%	0.8%	0.0%	0.0%	0.4%	1.9%	12.8%	8.7%	67.9%
2002	16.4%	0.0%	2.5%	1.6%	0.0%	0.0%	1.2%	1.3%	0.4%	1.1%	0.3%	1.9%	17.4%	9.0%	46.9%
2003	11.8%	2.8%	0.5%	6.3%	0.0%	0.0%	3.3%	0.8%	0.0%	0.0%	1.2%	0.6%	11.0%	6.1%	55.6%
(79-84)	17.5%	0.5%	0.4%	7.8%	1.9%	2.1%	0.1%	7.0%	0.4%	0.5%	0.1%	0.7%	9.4%	1.3%	50.4%
(85-98)	11.6%	1.1%	1.0%	7.3%	0.4%	0.7%	0.3%	7.9%	0.0%	0.2%	0.2%	0.9%	24.2%	4.9%	39.3%
(99-03)	13.9%	0.9%	2.1%	2.4%	0.0%	0.0%	1.4%	0.8%	0.2%	0.2%	1.1%	1.1%	14.7%	7.7%	53.7%

Table G.61. Percent distribution of Hanford 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	
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%	1.0%	3.6%	0.0%	0.0%	1.9%	0.8%	0.0%	0.0%	0.0%	1.0%	13.9%	7.4%	53.4%
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	10.4%	0.4%	2.1%	7.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.9%	6.6%	60.6%
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	14.1%	0.0%	1.3%	1.6%	0.0%	0.0%	1.0%	3.0%	0.0%	0.0%	0.0%	1.4%	9.9%	11.1%	56.7%
2003	10.5%	0.0%	0.7%	5.2%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.9%	0.5%	12.3%	7.7%	61.5%
(90-98)	12.4%	0.4%	1.1%	4.9%	0.1%	0.3%	0.6%	4.7%	0.1%	0.3%	0.6%	0.9%	18.0%	6.3%	49.5%
(99-03)	11.2%	0.4%	1.4%	2.8%	0.0%	0.0%	0.3%	0.6%	0.0%	0.0%	0.2%	0.6%	16.8%	9.1%	56.8%

Table G.62. Percent distribution of Hanford 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	
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	10.7%	0.0%	1.4%	10.4%	0.2%	0.0%	0.5%	5.1%	1.0%	0.0%	0.0%	1.1%	22.1%	4.5%	43.2%
1992	18.1%	5.4%	1.5%	6.9%	0.0%	0.0%	0.0%	16.9%	0.0%	0.0%	0.0%	0.9%	16.3%	2.4%	31.4%
1993	20.6%	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%	36.9%
1994	17.5%	1.9%	0.0%	5.2%	0.3%	1.0%	0.0%	4.7%	0.0%	0.3%	0.0%	0.6%	11.7%	5.5%	51.2%
1995	13.1%	0.0%	4.1%	5.4%	0.0%	0.0%	0.0%	2.8%	0.0%	0.3%	0.0%	0.0%	9.2%	7.1%	57.9%
1996	13.0%	0.0%	0.0%	0.2%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.4%	8.0%	50.7%
1997	17.9%	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%	50.8%
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	13.7%	1.5%	2.3%	7.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.2%	6.9%	55.7%
2000	19.7%	0.4%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.4%	6.0%	44.0%
2001	5.9%	2.7%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	19.4%	15.1%	54.2%
2002	17.9%	0.0%	1.4%	2.0%	0.0%	0.0%	1.1%	2.9%	0.0%	0.0%	0.0%	1.6%	9.4%	11.4%	52.3%
2003	11.3%	0.0%	0.8%	5.5%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	1.1%	0.5%	12.2%	8.1%	60.0%
(90-98)	15.0%	1.1%	1.2%	5.5%	0.1%	0.3%	0.7%	5.0%	0.1%	0.3%	0.6%	0.9%	17.0%	6.4%	45.9%
(99-03)	13.7%	0.9%	1.7%	3.0%	0.0%	0.0%	0.3%	0.6%	0.0%	0.0%	0.2%	0.7%	16.1%	9.5%	53.2%

Table G.63. Percent distribution of Lyons Ferry 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	
1988	3.8%	0.0%	0.0%	4.6%	0.9%	1.0%	0.0%	26.4%	0.0%	0.3%	0.0%	15.2%	42.2%	5.6%	29.5%
1989	3.8%	0.0%	0.0%	8.4%	0.0%	0.6%	0.0%	21.6%	0.0%	1.6%	1.3%	16.6%	37.0%	9.0%	26.2%
1990	7.8%	0.0%	0.0%	5.2%	0.0%	0.6%	0.0%	24.0%	0.0%	0.0%	0.0%	14.4%	39.3%	8.6%	32.8%
1991	6.8%	0.0%	4.5%	12.4%	0.0%	1.4%	0.0%	22.6%	0.0%	2.1%	0.0%	10.2%	32.8%	7.3%	60.9%
1992	3.1%	3.7%	0.0%	9.3%	0.0%	3.7%	0.0%	27.9%	0.0%	2.7%	7.7%	15.4%	21.9%	4.7%	62.2%
1993	7.6%	0.0%	0.0%	10.1%	2.1%	2.1%	0.0%	23.2%	0.0%	2.6%	0.0%	17.8%	30.8%	3.6%	55.2%
1994	18.5%	1.6%	4.1%	18.3%	2.1%	1.7%	0.0%	21.5%	2.0%	6.8%	0.0%	0.0%	22.0%	1.6%	67.0%
2003	20.9%	0.0%	0.0%	9.2%	0.0%	0.0%	0.0%	3.2%	0.0%	0.0%	0.0%	15.4%	34.5%	16.9%	77.3%
(88-94)	7.3%	0.8%	1.2%	9.8%	0.7%	1.6%	0.0%	23.9%	0.3%	2.3%	1.3%	12.8%	32.3%	5.8%	47.7%
(2003)	20.9%	0.0%	0.0%	9.2%	0.0%	0.0%	0.0%	3.2%	0.0%	0.0%	0.0%	15.4%	34.5%	16.9%	77.3%

Table G.64. Percent distribution of Lyons Ferry 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	
1988	4.4%	0.0%	0.1%	5.4%	0.8%	1.0%	0.0%	28.8%	0.0%	0.3%	0.1%	15.9%	37.8%	5.5%	26.8%
1989	5.5%	0.0%	0.0%	9.1%	0.0%	0.6%	0.0%	23.4%	0.0%	1.4%	1.2%	16.9%	33.2%	8.6%	23.5%
1990	7.9%	0.0%	0.0%	5.4%	0.0%	0.6%	0.0%	25.0%	0.0%	0.0%	0.0%	14.6%	37.5%	8.9%	31.4%
1991	8.2%	0.0%	5.2%	12.9%	0.0%	1.4%	0.0%	23.3%	0.0%	2.0%	0.0%	10.2%	29.5%	7.3%	57.4%
1992	3.6%	11.1%	0.0%	9.6%	0.0%	3.2%	0.0%	27.1%	0.0%	2.3%	6.7%	14.3%	17.5%	4.5%	55.0%
1993	11.2%	1.3%	0.5%	11.7%	2.3%	1.8%	0.0%	23.3%	0.2%	2.2%	0.0%	15.9%	26.4%	3.2%	50.4%
1994	19.5%	3.3%	3.6%	16.2%	1.8%	1.9%	0.0%	20.1%	2.0%	7.7%	0.2%	1.3%	20.1%	2.2%	63.5%
2003	20.5%	0.0%	0.0%	9.0%	0.0%	0.0%	0.0%	3.1%	0.0%	0.0%	0.0%	15.7%	33.5%	18.2%	76.5%
(88-94)	8.6%	2.2%	1.3%	10.0%	0.7%	1.5%	0.0%	24.4%	0.3%	2.3%	1.2%	12.7%	28.9%	5.7%	44.0%
(2003)	20.5%	0.0%	0.0%	9.0%	0.0%	0.0%	0.0%	3.1%	0.0%	0.0%	0.0%	15.7%	33.5%	18.2%	76.5%

Table G.65. 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%	6.2%	0.0%	0.0%	0.0%	2.9%	4.5%	23.4%	55.1%
1993	3.6%	0.0%	1.0%	4.9%	0.0%	0.3%	0.0%	7.6%	0.0%	1.6%	0.0%	0.8%	6.8%	9.1%	64.3%
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	11.2%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	6.0%	0.0%	0.0%	6.3%	5.2%	4.9%	4.9%	59.9%
2003	9.4%	0.0%	0.0%	2.4%	0.0%	0.0%	2.2%	5.2%	0.0%	0.0%	3.7%	9.6%	6.6%	6.8%	54.1%
(81-82)	6.2%	0.7%	0.1%	3.2%	1.4%	0.5%	1.1%	8.4%	0.2%	0.8%	0.0%	3.1%	5.2%	19.7%	49.8%
(86-98)	5.6%	0.0%	0.3%	3.1%	0.5%	0.3%	0.2%	5.3%	0.0%	0.4%	0.4%	2.3%	9.2%	9.4%	63.1%
(99-03)	8.1%	0.0%	0.6%	1.7%	0.0%	0.0%	0.4%	4.0%	0.0%	0.0%	2.5%	4.2%	6.1%	3.4%	69.0%

Table G.66. 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	7.8%	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%	61.5%
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%	24.9%	52.2%
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%	6.7%	9.4%	61.0%
1994	9.4%	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%	78.2%
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	14.0%	0.0%	0.0%	3.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.9%	78.9%
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	18.3%	0.0%	1.7%	5.0%	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	1.7%	1.7%	0.0%	0.0%	70.0%
2000	6.9%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	2.8%	15.3%	0.0%	72.2%
2001	6.1%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	8.7%	0.0%	0.0%	3.0%	6.9%	2.2%	6.5%	64.9%
2002	13.7%	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%	5.8%	0.0%	0.0%	6.8%	6.3%	4.8%	5.1%	55.7%
2003	10.2%	0.0%	0.0%	2.5%	0.0%	0.0%	2.7%	5.0%	0.0%	0.0%	4.4%	10.2%	6.5%	6.9%	51.7%
(81-82)	7.4%	0.6%	0.1%	3.7%	1.6%	0.5%	1.1%	9.6%	0.2%	0.7%	0.0%	3.4%	5.1%	20.2%	46.0%
(86-98)	6.8%	0.1%	0.3%	3.6%	0.5%	0.3%	0.2%	6.1%	0.0%	0.4%	0.4%	2.5%	8.9%	9.8%	60.1%
(99-03)	11.0%	0.0%	1.3%	1.5%	0.0%	0.0%	0.5%	4.5%	0.0%	0.0%	3.2%	5.6%	5.8%	3.7%	62.9%

Table G.67. 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	16.4%	0.0%	0.8%	12.5%	0.0%	0.0%	1.7%	0.1%	0.0%	0.0%	0.0%	1.4%	0.0%	33.7%	33.3%
2003	16.8%	0.8%	0.8%	13.5%	0.0%	0.0%	5.8%	0.0%	0.0%	0.0%	0.5%	1.9%	0.0%	45.7%	14.3%
(81-84)	13.9%	0.5%	0.3%	20.3%	1.5%	0.8%	0.0%	6.1%	0.0%	0.2%	0.2%	1.1%	0.1%	18.9%	36.3%
(85-98)	11.5%	0.6%	0.3%	10.2%	0.6%	0.2%	0.6%	4.7%	0.0%	0.1%	0.0%	1.6%	0.0%	24.5%	44.9%
(99-03)	13.4%	0.2%	0.5%	6.5%	0.0%	0.0%	2.1%	0.1%	0.0%	0.0%	0.1%	1.2%	0.0%	31.3%	44.6%

Table G.68. 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	18.9%	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%	34.6%
1990	18.8%	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%	30.2%
1991	24.1%	0.0%	0.5%	16.4%	0.1%	0.7%	0.8%	6.1%	0.0%	0.0%	0.0%	0.2%	0.0%	23.1%	28.0%
1992	5.0%	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	11.2%	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	16.3%	0.4%	1.0%	15.0%	0.2%	0.1%	2.1%	4.7%	0.0%	0.0%	0.0%	1.3%	0.0%	16.8%	42.2%
1995	10.4%	0.3%	0.4%	6.7%	0.2%	0.1%	0.8%	1.2%	0.0%	0.0%	0.2%	0.1%	0.0%	31.0%	48.6%
1996	20.6%	0.0%	0.0%	2.7%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	3.9%	0.0%	47.7%	24.6%
1997	32.2%	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%	41.5%
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	18.2%	0.8%	0.0%	3.0%	0.0%	0.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	35.2%	39.2%
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%	23.2%	55.1%
2001	11.9%	0.0%	0.6%	2.1%	0.0%	0.0%	0.3%	0.2%	0.0%	0.0%	0.2%	1.9%	0.1%	20.0%	62.8%
2002	20.0%	0.0%	1.0%	13.7%	0.0%	0.0%	2.1%	0.1%	0.0%	0.0%	0.0%	1.5%	0.0%	33.2%	28.5%
2003	17.9%	3.1%	0.7%	13.7%	0.0%	0.0%	6.3%	0.0%	0.0%	0.0%	0.5%	1.8%	0.0%	43.7%	12.3%
(81-84)	17.0%	0.6%	0.3%	21.9%	1.6%	0.7%	0.0%	6.4%	0.0%	0.2%	0.2%	1.0%	0.1%	18.3%	31.7%
(85-98)	17.0%	1.3%	0.3%	11.7%	0.6%	0.2%	0.6%	5.3%	0.0%	0.1%	0.0%	1.6%	0.0%	23.4%	37.8%
(99-03)	17.1%	0.8%	0.6%	7.0%	0.0%	0.0%	2.5%	0.1%	0.0%	0.0%	0.1%	1.2%	0.0%	31.1%	39.6%

Appendix H. Time series of abundance indices from 1979 to 2005 for SEAK, NBC, and WCVI AABM fisheries as estimated by CTC Chinook Model calibration CLB0506. This time series is NOT the first postseason 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 postseason AI in Table 3.2 instead.

Year	SEAK	NBC	WCVI
1979	0.97	1.04	1.10
1980	1.03	0.98	0.97
1981	0.92	0.94	0.93
1982	1.08	1.05	1.01
1983	1.28	1.23	0.93
1984	1.47	1.40	1.01
1985	1.35	1.33	0.99
1986	1.52	1.48	1.02
1987	1.77	1.76	1.18
1988	2.17	1.87	1.13
1989	1.88	1.70	0.98
1990	1.90	1.65	0.89
1991	1.81	1.53	0.75
1992	1.67	1.41	0.78
1993	1.68	1.43	0.69
1994	1.58	1.26	0.52
1995	1.07	0.98	0.41
1996	0.94	0.93	0.49
1997	1.25	1.12	0.58
1998	1.20	1.01	0.55
1999	1.09	0.96	0.49
2000	0.98	0.94	0.49
2001	1.18	1.23	0.77
2002	1.76	1.70	1.12
2003	2.22	1.93	1.13
2004	2.06	1.83	0.98
2005	2.05	1.69	0.88

Appendix I. Model estimates of the stock composition of the AABM, and other troll and sport fisheries for 2004 and the average from 1985 to 2003.

“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	2004 Catch as Percent of Fishery	Average (1985 - 2003)		
		Catch as Percent of Fishery	Catch as Percent of All Fisheries	Catch as Percent of Total Return
WCVI Hatchery	17.95%	16.36%	41.90%	15.43%
Oregon Coast	19.29%	16.26%	34.83%	15.15%
Columbia Upriver Bright	17.37%	15.74%	26.23%	12.56%
North/Central BC	10.01%	15.22%	27.77%	10.23%
Fraser Early	5.64%	5.72%	27.25%	6.71%
Mid Columbia River Brights	6.86%	4.82%	32.16%	12.17%
Upper Strait of Georgia	5.28%	4.04%	36.09%	19.59%
Alaska South SE	3.21%	4.04%	96.63%	34.92%
WCVI Natural	1.12%	3.70%	42.03%	15.61%
Washington Coastal Wild	2.03%	3.51%	18.85%	9.88%
Washington Coastal Hatchery	1.47%	2.65%	15.83%	9.23%
Columbia River Summer	3.95%	2.15%	34.65%	13.43%
Willamette River Hatchery	2.99%	2.10%	12.99%	4.58%
Fall Cowlitz Hatchery	0.93%	1.23%	6.49%	2.34%
Lewis River Wild	0.67%	0.87%	17.27%	6.83%
Lower Strait of Georgia Hatchery	0.31%	0.43%	3.68%	1.80%
Lower Strait of Georgia Natural	0.11%	0.27%	4.20%	2.02%
Fraser Late	0.14%	0.23%	0.48%	0.15%
Puget Sound Hatchery Fingerling	0.11%	0.16%	0.46%	0.25%
Skagit Wild	0.10%	0.11%	4.15%	1.09%
Cowlitz Spring Hatchery	0.10%	0.08%	1.64%	0.80%
Lyons Ferry	0.20%	0.07%	8.32%	5.04%
Puget Sound Natural Fingerling	0.03%	0.07%	0.48%	0.25%
Stillaguamish Wild	0.04%	0.06%	14.74%	5.41%
Nooksack Fall Fingerling	0.01%	0.05%	0.14%	0.10%
Snohomish Wild	0.04%	0.04%	3.24%	0.88%
Puget Sound Hatchery Yearling	0.01%	0.02%	0.46%	0.32%
Lower Bonneville Hatchery	0.00%	0.00%	0.00%	0.00%
Spring Creek Hatchery	0.00%	0.00%	0.00%	0.00%
Nooksack Spring Yearling	0.00%	0.00%	0.00%	0.00%

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

Model Stock	2004 Catch as Percent of Fishery	Average (1985 - 2003)		
		Catch as Percent of Fishery	Catch as Percent of All Fisheries	Catch as Percent of Total Return
North/Central BC	50.14%	43.96%	59.97%	23.52%
Oregon Coast	11.37%	14.69%	25.90%	12.36%
Columbia Upriver Bright	6.32%	7.34%	10.39%	5.27%
WCVI Hatchery	5.42%	6.63%	12.57%	5.29%
Upper Strait of Georgia	7.71%	4.11%	30.21%	16.79%
Fraser Early	2.70%	3.39%	13.65%	4.08%
Washington Coastal Wild	1.25%	3.26%	13.64%	7.96%
Willamette River Hatchery	2.70%	3.12%	14.26%	5.93%
Washington Coastal Hatchery	0.90%	2.47%	12.16%	7.47%
Mid Columbia River Brights	2.37%	2.04%	12.29%	5.06%
Columbia River Summer	3.72%	1.64%	21.54%	8.79%
WCVI Natural	0.35%	1.53%	12.41%	5.27%
Lower Strait of Georgia Hatchery	1.00%	1.10%	7.88%	3.95%
Fall Cowlitz Hatchery	0.89%	1.02%	4.15%	1.63%
Fraser Late	0.65%	0.85%	1.34%	0.47%
Lower Strait of Georgia Natural	0.27%	0.60%	7.84%	3.98%
Skagit Wild	0.53%	0.40%	13.35%	3.60%
Nooksack Fall Fingerling	0.19%	0.38%	1.09%	0.79%
Lewis River Wild	0.20%	0.36%	5.22%	2.42%
Puget Sound Hatchery Fingerling	0.30%	0.28%	0.73%	0.40%
Cowlitz Spring Hatchery	0.31%	0.24%	3.92%	2.08%
Snohomish Wild	0.28%	0.19%	12.48%	3.62%
Puget Sound Natural Fingerling	0.08%	0.11%	0.69%	0.36%
Alaska South SE	0.07%	0.10%	2.27%	0.82%
Puget Sound Hatchery Yearling	0.09%	0.09%	1.60%	1.09%
Lyons Ferry	0.13%	0.04%	5.63%	3.70%
Stillaguamish Wild	0.05%	0.04%	7.84%	2.97%
Spring Creek Hatchery	0.03%	0.01%	0.05%	0.04%
Nooksack Spring Yearling	0.00%	0.00%	1.12%	0.43%
Lower Bonneville Hatchery	0.00%	0.00%	0.00%	0.00%

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

Model Stock	2004 Catch as Percent of Fishery	Average (1985 – 2003)		
		Catch as Percent of Fishery	Catch as Percent of All Fisheries	Catch as Percent of Total Return
Fraser Late	15.57%	20.97%	2.27%	1.21%
WCVI Hatchery	23.65%	17.47%	3.38%	1.46%
Columbia Upriver Bright	10.18%	8.30%	0.99%	0.55%
North/Central BC	5.69%	6.69%	1.20%	0.43%
Upper Strait of Georgia	9.88%	5.89%	3.82%	2.35%
WCVI Natural	1.50%	3.81%	3.32%	1.44%
Fraser Early	3.89%	3.54%	1.11%	0.37%
Columbia River Summer	7.78%	3.50%	3.81%	1.79%
Washington Coastal Wild	2.40%	3.43%	1.28%	0.81%
Lower Strait of Georgia Hatchery	2.69%	2.97%	1.63%	1.06%
Washington Coastal Hatchery	1.50%	2.64%	1.19%	0.75%
Mid Columbia River Brights	3.59%	2.48%	1.17%	0.56%
Oregon Coast	2.40%	2.25%	0.37%	0.18%
Lower Bonneville Hatchery	1.50%	1.98%	0.87%	0.45%
Nooksack Fall Fingerling	0.60%	1.64%	0.40%	0.33%
Lower Strait of Georgia Natural	0.60%	1.60%	1.55%	1.05%
Puget Sound Hatchery Fingerling	1.50%	1.35%	0.28%	0.19%
Skagit Wild	1.20%	1.05%	2.30%	0.90%
Lewis River Wild	0.60%	0.63%	0.72%	0.38%
Puget Sound Natural Fingerling	0.30%	0.61%	0.28%	0.19%
Snohomish Wild	0.60%	0.49%	1.78%	0.91%
Spring Creek Hatchery	1.20%	0.36%	0.11%	0.09%
Puget Sound Hatchery Yearling	0.30%	0.29%	0.41%	0.32%
Willamette River Hatchery	0.30%	0.27%	0.10%	0.05%
Cowlitz Spring Hatchery	0.30%	0.16%	0.20%	0.14%
Fall Cowlitz Hatchery	0.00%	0.14%	0.05%	0.03%
Stillaguamish Wild	0.00%	0.12%	1.86%	0.90%
Lyons Ferry	0.30%	0.08%	0.70%	0.51%
Nooksack Spring Yearling	0.00%	0.01%	0.34%	0.17%
Alaska South SE	0.00%	0.00%	0.01%	0.00%

Table I.4. WCVI Troll and Outside Sport.

Model Stock	2004 Catch as Percent of Fishery	Average (1985–2003)		
		Catch as Percent of Fishery	Catch as Percent of All Fisheries	Catch as Percent of Total Return
Fraser Late	13.24%	20.04%	19.95%	9.51%
Columbia Upriver Bright	13.51%	10.33%	11.06%	5.75%
Puget Sound Hatchery Fingerling	6.95%	8.44%	14.96%	9.35%
Fall Cowlitz Hatchery	6.87%	7.72%	25.34%	11.61%
Lower Bonneville Hatchery	2.60%	6.78%	30.69%	14.45%
Spring Creek Hatchery	22.58%	6.52%	14.99%	11.70%
WCVI Hatchery	5.72%	6.29%	10.08%	4.38%
Oregon Coast	5.93%	6.27%	8.86%	4.12%
Nooksack Fall Fingerling	1.36%	5.05%	10.76%	8.39%
Puget Sound Natural Fingerling	1.90%	3.80%	15.17%	9.44%
Mid Columbia River Brights	4.15%	3.19%	13.21%	5.80%
Columbia River Summer	4.05%	2.30%	23.81%	10.50%
Washington Coastal Wild	1.11%	2.03%	6.59%	3.91%
Willamette River Hatchery	2.34%	1.88%	6.17%	2.76%
Washington Coastal Hatchery	0.81%	1.57%	6.09%	3.75%
WCVI Natural	0.38%	1.44%	9.92%	4.35%
Fraser Early	0.94%	1.25%	3.48%	1.05%
Skagit Wild	0.93%	0.91%	19.68%	6.53%
Lewis River Wild	0.66%	0.83%	10.76%	5.02%
Puget Sound Hatchery Yearling	0.54%	0.76%	9.43%	7.11%
Cowlitz Spring Hatchery	0.94%	0.61%	7.05%	4.59%
Snohomish Wild	0.55%	0.43%	16.47%	6.57%
Lower Strait of Georgia Hatchery	0.34%	0.41%	1.97%	1.14%
North/Central BC	0.25%	0.36%	0.45%	0.17%
Lyons Ferry	0.98%	0.32%	23.35%	15.95%
Lower Strait of Georgia Natural	0.08%	0.24%	1.97%	1.16%
Stillaguamish Wild	0.10%	0.11%	14.08%	6.18%
Upper Strait of Georgia	0.10%	0.09%	0.56%	0.33%
Nooksack Spring Yearling	0.08%	0.05%	8.60%	3.51%
Alaska South SE	0.00%	0.00%	0.00%	0.00%

Table I.5. Georgia Strait Sport and Troll.

Model Stock	2004 Catch as Percent of Fishery	Average (1985–2003)		
		Catch as Percent of Fishery	Catch as Percent of All Fisheries	Catch as Percent of Total Return
Fraser Late	46.82%	49.49%	43.82%	21.03%
Lower Strait of Georgia Hatchery	11.38%	10.47%	46.47%	27.04%
Nooksack Fall Fingerling	4.69%	10.11%	19.15%	14.58%
Lower Strait of Georgia Natural	3.05%	6.23%	47.33%	28.63%
Puget Sound Hatchery Fingerling	6.20%	4.68%	7.61%	4.65%
Fraser Early	5.43%	3.87%	9.49%	2.63%
Upper Strait of Georgia	6.03%	2.57%	12.54%	7.12%
Puget Sound Natural Fingerling	1.54%	2.04%	7.42%	4.49%
Puget Sound Hatchery Yearling	2.16%	1.77%	19.06%	14.11%
Skagit Wild	1.61%	1.13%	22.43%	7.31%
Columbia Upriver Bright	1.69%	1.13%	1.04%	0.53%
Washington Coastal Wild	0.67%	0.93%	2.76%	1.58%
WCVI Hatchery	1.47%	0.80%	1.28%	0.45%
Lower Bonneville Hatchery	0.61%	0.80%	3.23%	1.35%
Spring Creek Hatchery	2.49%	0.75%	1.48%	1.15%
Washington Coastal Hatchery	0.50%	0.72%	2.47%	1.53%
Snohomish Wild	0.92%	0.55%	19.91%	7.29%
North/Central BC	0.47%	0.41%	0.49%	0.18%
Nooksack Spring Yearling	0.64%	0.38%	56.41%	24.47%
Mid Columbia River Brights	0.50%	0.35%	1.32%	0.56%
Columbia River Summer	0.57%	0.28%	2.75%	1.15%
Stillaguamish Wild	0.23%	0.18%	21.82%	9.37%
WCVI Natural	0.11%	0.18%	1.25%	0.45%
Willamette River Hatchery	0.13%	0.12%	0.37%	0.16%
Cowlitz Spring Hatchery	0.06%	0.04%	0.41%	0.24%
Lewis River Wild	0.00%	0.02%	0.21%	0.11%
Fall Cowlitz Hatchery	0.00%	0.02%	0.04%	0.02%
Lyons Ferry	0.00%	0.00%	0.07%	0.05%
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	2004 Catch as Percent of Fishery	Average (1985–2003)		
		Catch as Percent of Fishery	Catch as Percent of All Fisheries	Catch as Percent of Total Return
Spring Creek Hatchery	54.43%	21.42%	29.90%	23.52%
Fraser Late	9.41%	20.36%	12.64%	5.44%
Fall Cowlitz Hatchery	13.27%	19.66%	39.58%	16.83%
Lower Bonneville Hatchery	3.04%	12.86%	38.13%	16.06%
Cowlitz Spring Hatchery	4.48%	3.91%	31.05%	17.30%
Columbia Upriver Bright	3.91%	3.91%	2.58%	1.31%
Puget Sound Hatchery Fingerling	1.84%	3.56%	3.66%	2.17%
Oregon Coast	1.97%	2.61%	2.18%	0.98%
Nooksack Fall Fingerling	0.36%	2.11%	2.51%	1.90%
Willamette River Hatchery	1.45%	1.89%	4.00%	1.60%
Puget Sound Natural Fingerling	0.52%	1.63%	3.72%	2.13%
Lewis River Wild	1.07%	1.38%	11.81%	4.73%
Mid Columbia River Brights	1.23%	1.20%	3.06%	1.28%
Washington Coastal Wild	0.43%	1.17%	2.08%	1.14%
Washington Coastal Hatchery	0.32%	0.92%	1.89%	1.11%
Columbia River Summer	0.78%	0.51%	3.25%	1.37%
Lyons Ferry	1.11%	0.46%	20.39%	13.45%
Fraser Early	0.18%	0.17%	0.35%	0.09%
Puget Sound Hatchery Yearling	0.07%	0.12%	0.92%	0.66%
Alaska South SE	0.06%	0.08%	0.72%	0.25%
Lower Strait of Georgia Hatchery	0.02%	0.03%	0.11%	0.06%
WCVI Hatchery	0.03%	0.02%	0.03%	0.01%
Lower Strait of Georgia Natural	0.01%	0.02%	0.12%	0.06%
WCVI Natural	0.00%	0.01%	0.03%	0.01%
Skagit Wild	0.00%	0.00%	0.03%	0.01%
Snohomish Wild	0.00%	0.00%	0.04%	0.01%
Stillaguamish Wild	0.00%	0.00%	0.00%	0.00%
North/Central BC	0.00%	0.00%	0.00%	0.00%
Upper Strait of Georgia	0.00%	0.00%	0.00%	0.00%
Nooksack Spring Yearling	0.00%	0.00%	0.00%	0.00%

Appendix J. Abundance indices in total and by model stock for AABM fisheries, from Calibration #0506.

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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 0506.

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	0.12	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	0.97
1980	0.03	0.13	0.05	0.00	0.10	0.15	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.03
1981	0.04	0.14	0.04	0.00	0.08	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	0.14	0.04	0.00	0.19	0.20	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.08
1983	0.06	0.16	0.04	0.00	0.30	0.14	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28
1984	0.06	0.19	0.05	0.00	0.28	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47
1985	0.06	0.21	0.07	0.00	0.15	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.35
1986	0.07	0.22	0.07	0.00	0.12	0.04	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52
1987	0.08	0.24	0.07	0.00	0.09	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.77
1988	0.06	0.25	0.07	0.00	0.22	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.17
1989	0.04	0.26	0.07	0.00	0.32	0.07	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.88
1990	0.03	0.26	0.07	0.00	0.48	0.09	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.90
1991	0.03	0.27	0.06	0.00	0.59	0.12	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.81
1992	0.04	0.27	0.06	0.00	0.55	0.13	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67
1993	0.04	0.24	0.06	0.00	0.53	0.13	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.68
1994	0.03	0.22	0.07	0.00	0.42	0.10	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.58
1995	0.03	0.23	0.07	0.00	0.15	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.07
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	0.94
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	1.25
1998	0.04	0.23	0.08	0.00	0.28	0.07	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20
1999	0.04	0.24	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	1.09
2000	0.05	0.26	0.06	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	0.05	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	1.18
2002	0.05	0.25	0.10	0.00	0.23	0.03	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.76
2003	0.05	0.25	0.10	0.00	0.34	0.03	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22
2004	0.06	0.25	0.09	0.00	0.36	0.02	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.06
2005	0.08	0.21	0.09	0.00	0.44	0.03	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.05
Average	0.05	0.22	0.07	0.00	0.25	0.07	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48

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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	0.23	0.03	0.00	0.00	0.97
1980	0.00	0.00	0.03	0.14	0.00	0.00	0.03	0.02	0.03	0.00	0.04	0.17	0.04	0.00	0.00	1.03
1981	0.00	0.00	0.02	0.10	0.00	0.00	0.03	0.02	0.03	0.01	0.03	0.16	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	0.02	0.17	0.04	0.00	0.01	1.08
1983	0.00	0.00	0.02	0.09	0.00	0.00	0.03	0.01	0.04	0.00	0.03	0.25	0.03	0.00	0.02	1.28
1984	0.00	0.00	0.02	0.20	0.00	0.00	0.03	0.01	0.04	0.00	0.03	0.36	0.04	0.00	0.02	1.47
1985	0.00	0.00	0.02	0.24	0.00	0.00	0.03	0.01	0.03	0.00	0.03	0.34	0.04	0.00	0.01	1.35
1986	0.00	0.00	0.03	0.34	0.00	0.00	0.03	0.01	0.04	0.00	0.03	0.36	0.05	0.00	0.02	1.52
1987	0.00	0.00	0.04	0.49	0.00	0.00	0.03	0.02	0.05	0.01	0.03	0.40	0.06	0.00	0.07	1.77
1988	0.00	0.00	0.05	0.53	0.00	0.00	0.14	0.04	0.06	0.00	0.03	0.38	0.07	0.00	0.14	2.17
1989	0.00	0.00	0.06	0.33	0.00	0.00	0.05	0.04	0.05	0.00	0.03	0.30	0.08	0.00	0.12	1.88
1990	0.00	0.00	0.06	0.25	0.00	0.00	0.02	0.02	0.07	0.00	0.03	0.32	0.08	0.00	0.08	1.90
1991	0.00	0.00	0.05	0.13	0.00	0.00	0.01	0.01	0.05	0.00	0.02	0.29	0.06	0.00	0.05	1.81
1992	0.00	0.00	0.05	0.10	0.00	0.00	0.02	0.01	0.03	0.00	0.02	0.25	0.05	0.00	0.04	1.67
1993	0.00	0.00	0.05	0.18	0.00	0.00	0.01	0.01	0.03	0.00	0.02	0.24	0.05	0.00	0.05	1.68
1994	0.00	0.00	0.05	0.21	0.00	0.00	0.01	0.01	0.02	0.00	0.02	0.29	0.05	0.00	0.05	1.58
1995	0.00	0.00	0.04	0.13	0.00	0.00	0.01	0.01	0.02	0.00	0.02	0.21	0.05	0.00	0.04	1.07
1996	0.00	0.00	0.04	0.13	0.00	0.00	0.02	0.01	0.01	0.00	0.02	0.17	0.05	0.00	0.05	0.94
1997	0.00	0.00	0.03	0.18	0.00	0.00	0.01	0.01	0.02	0.00	0.02	0.20	0.05	0.00	0.09	1.25
1998	0.00	0.00	0.02	0.12	0.00	0.00	0.00	0.01	0.02	0.00	0.02	0.16	0.04	0.00	0.06	1.20
1999	0.00	0.00	0.02	0.21	0.00	0.00	0.01	0.00	0.02	0.00	0.03	0.16	0.03	0.00	0.06	1.09
2000	0.00	0.00	0.02	0.17	0.00	0.00	0.01	0.00	0.03	0.00	0.04	0.14	0.03	0.00	0.05	0.98
2001	0.00	0.00	0.02	0.20	0.00	0.00	0.01	0.01	0.03	0.00	0.07	0.20	0.03	0.00	0.07	1.18
2002	0.00	0.00	0.02	0.32	0.00	0.00	0.02	0.02	0.08	0.00	0.10	0.28	0.03	0.00	0.16	1.76
2003	0.00	0.00	0.02	0.47	0.00	0.00	0.04	0.02	0.04	0.00	0.10	0.42	0.03	0.00	0.22	2.22
2004	0.00	0.00	0.03	0.36	0.00	0.00	0.03	0.01	0.07	0.00	0.09	0.41	0.04	0.00	0.15	2.06
2005	0.00	0.00	0.02	0.42	0.00	0.00	0.03	0.02	0.03	0.00	0.09	0.31	0.03	0.00	0.13	2.05
Average	0.00	0.00	0.03	0.23	0.00	0.00	0.03	0.01	0.04	0.00	0.04	0.27	0.04	0.00	0.07	1.48

Table J.2. Abundance indices (AIs) for the Northern BC troll fishery by stock and year (stock groups 1-15), from CLB 0506.

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	0.08	0.07	0.02	0.04	0.05	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	0.05	0.08	0.05	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	0.01	0.12	0.10	0.05	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.01	1.05
1983	0.00	0.11	0.05	0.01	0.16	0.08	0.04	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	1.23
1984	0.00	0.12	0.06	0.02	0.14	0.05	0.05	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.01	1.40
1985	0.00	0.13	0.08	0.02	0.09	0.03	0.06	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.01	1.33
1986	0.00	0.15	0.09	0.01	0.06	0.02	0.06	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	1.48
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	1.76
1988	0.00	0.16	0.08	0.01	0.13	0.03	0.06	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	1.87
1989	0.00	0.17	0.08	0.01	0.20	0.04	0.06	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	1.70
1990	0.00	0.18	0.08	0.01	0.27	0.05	0.05	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	1.65
1991	0.00	0.18	0.08	0.01	0.32	0.07	0.05	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.53
1992	0.00	0.17	0.07	0.01	0.31	0.07	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.41
1993	0.00	0.16	0.07	0.01	0.29	0.07	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.43
1994	0.00	0.16	0.08	0.00	0.20	0.05	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	1.26
1995	0.00	0.15	0.09	0.00	0.07	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.98
1996	0.00	0.15	0.09	0.01	0.05	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.93
1997	0.00	0.16	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	1.12
1998	0.00	0.16	0.10	0.01	0.14	0.03	0.04	0.00	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	0.96
2000	0.00	0.16	0.08	0.01	0.03	0.00	0.05	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.94
2001	0.00	0.17	0.09	0.01	0.06	0.01	0.06	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	1.23
2002	0.00	0.17	0.11	0.01	0.14	0.02	0.07	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	1.70
2003	0.00	0.17	0.12	0.01	0.18	0.01	0.08	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	1.93
2004	0.00	0.17	0.12	0.01	0.22	0.01	0.11	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	1.83
2005	0.00	0.16	0.11	0.01	0.23	0.02	0.11	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	1.69
Average	0.00	0.15	0.08	0.01	0.14	0.04	0.05	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	1.35

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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	0.05	0.01	0.02	0.30	0.05	0.00	0.00	1.04
1980	0.00	0.01	0.04	0.09	0.00	0.00	0.02	0.01	0.06	0.01	0.02	0.24	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	0.07	0.01	0.02	0.23	0.06	0.00	0.01	0.94
1982	0.00	0.00	0.03	0.04	0.00	0.00	0.02	0.01	0.09	0.01	0.02	0.28	0.06	0.00	0.01	1.05
1983	0.00	0.00	0.03	0.07	0.00	0.00	0.02	0.01	0.09	0.01	0.02	0.40	0.06	0.00	0.02	1.23
1984	0.00	0.00	0.03	0.14	0.00	0.00	0.02	0.01	0.09	0.01	0.02	0.51	0.06	0.00	0.01	1.40
1985	0.00	0.00	0.03	0.16	0.00	0.00	0.02	0.00	0.08	0.00	0.02	0.47	0.07	0.00	0.01	1.33
1986	0.00	0.00	0.05	0.25	0.00	0.00	0.02	0.01	0.10	0.01	0.02	0.50	0.08	0.00	0.02	1.48
1987	0.00	0.00	0.07	0.34	0.00	0.00	0.03	0.02	0.13	0.01	0.02	0.53	0.10	0.00	0.06	1.76
1988	0.00	0.00	0.09	0.33	0.00	0.00	0.08	0.02	0.14	0.01	0.02	0.48	0.12	0.00	0.09	1.87
1989	0.00	0.00	0.09	0.20	0.00	0.00	0.02	0.01	0.14	0.01	0.02	0.40	0.13	0.00	0.07	1.70
1990	0.00	0.00	0.09	0.15	0.00	0.00	0.01	0.01	0.14	0.00	0.01	0.40	0.12	0.00	0.05	1.65
1991	0.00	0.00	0.08	0.08	0.00	0.00	0.01	0.01	0.10	0.00	0.01	0.37	0.10	0.00	0.03	1.53
1992	0.00	0.00	0.09	0.07	0.00	0.00	0.01	0.01	0.07	0.01	0.01	0.33	0.09	0.00	0.03	1.41
1993	0.00	0.00	0.08	0.12	0.00	0.00	0.01	0.00	0.06	0.00	0.01	0.37	0.08	0.00	0.03	1.43
1994	0.00	0.00	0.07	0.13	0.00	0.00	0.00	0.01	0.05	0.00	0.01	0.34	0.08	0.00	0.03	1.26
1995	0.00	0.00	0.07	0.08	0.00	0.00	0.01	0.01	0.04	0.00	0.01	0.29	0.07	0.00	0.03	0.98
1996	0.00	0.00	0.06	0.09	0.00	0.00	0.01	0.01	0.04	0.00	0.01	0.24	0.07	0.00	0.04	0.93
1997	0.00	0.00	0.05	0.12	0.00	0.00	0.01	0.00	0.05	0.00	0.01	0.26	0.07	0.00	0.06	1.12
1998	0.00	0.00	0.03	0.08	0.00	0.00	0.00	0.00	0.05	0.00	0.02	0.22	0.06	0.00	0.04	1.01
1999	0.00	0.00	0.03	0.14	0.00	0.00	0.01	0.00	0.06	0.00	0.03	0.19	0.04	0.00	0.04	0.96
2000	0.00	0.00	0.03	0.11	0.00	0.00	0.00	0.00	0.07	0.00	0.04	0.23	0.04	0.00	0.03	0.94
2001	0.00	0.00	0.03	0.15	0.00	0.00	0.01	0.01	0.11	0.00	0.05	0.32	0.05	0.00	0.05	1.23
2002	0.00	0.00	0.04	0.23	0.00	0.00	0.02	0.01	0.14	0.00	0.06	0.46	0.05	0.00	0.11	1.70
2003	0.00	0.00	0.04	0.30	0.00	0.00	0.02	0.01	0.13	0.01	0.06	0.55	0.05	0.00	0.14	1.93
2004	0.00	0.00	0.04	0.24	0.00	0.00	0.02	0.01	0.13	0.01	0.06	0.51	0.06	0.01	0.09	1.83
2005	0.00	0.00	0.04	0.28	0.00	0.00	0.01	0.01	0.08	0.00	0.06	0.40	0.05	0.01	0.09	1.69
Average	0.00	0.00	0.05	0.15	0.00	0.00	0.02	0.01	0.09	0.00	0.03	0.36	0.07	0.00	0.04	1.35

Table J.3. Abundance indices (AIs) for the WCVI troll fishery by stock and year (stock groups 1-15), from CLB 0506.

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.

	Alaska	North	Fraser	Fraser	WCVI	WCVI	Georg. St.	Georg. St.	Georg. St.	Nooksack	Pug. Snd.	Pug. Snd.	Pug. Snd.	Nooksack	Skagit	AI
Year	South SE	Central	Early	Late	Hatchery	Natural	Upper	Lwr. Nat.	Lwr. Hat.	Fall	Fingerling	Nat. F.	Year.	Spring	Wild	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	0.24	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	0.00	0.09	0.05	0.02	0.02	0.00	0.01	1.01
1983	0.00	0.00	0.01	0.23	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	0.12	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	0.03	0.01	0.00	0.01	0.99
1986	0.00	0.00	0.01	0.23	0.02	0.01	0.00	0.00	0.00	0.09	0.06	0.03	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	0.04	0.01	0.00	0.01	1.18
1988	0.00	0.00	0.01	0.07	0.04	0.01	0.00	0.00	0.00	0.05	0.07	0.05	0.01	0.00	0.01	1.13
1989	0.00	0.00	0.01	0.18	0.06	0.01	0.00	0.00	0.00	0.07	0.08	0.05	0.01	0.00	0.01	0.98
1990	0.00	0.00	0.01	0.21	0.09	0.02	0.00	0.00	0.00	0.07	0.07	0.05	0.01	0.00	0.01	0.89
1991	0.00	0.00	0.01	0.16	0.09	0.02	0.00	0.00	0.00	0.05	0.05	0.04	0.00	0.00	0.01	0.75
1992	0.00	0.00	0.01	0.21	0.09	0.02	0.00	0.00	0.00	0.03	0.04	0.03	0.00	0.00	0.00	0.78
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	0.69
1994	0.00	0.00	0.01	0.10	0.05	0.01	0.00	0.00	0.00	0.02	0.06	0.03	0.00	0.00	0.00	0.52
1995	0.00	0.00	0.01	0.05	0.01	0.00	0.00	0.00	0.00	0.02	0.07	0.03	0.00	0.00	0.00	0.41
1996	0.00	0.00	0.01	0.07	0.02	0.00	0.00	0.00	0.00	0.02	0.06	0.03	0.00	0.00	0.01	0.49
1997	0.00	0.00	0.01	0.17	0.04	0.01	0.00	0.00	0.00	0.02	0.06	0.02	0.00	0.00	0.01	0.58
1998	0.00	0.00	0.01	0.18	0.04	0.01	0.00	0.00	0.00	0.02	0.06	0.02	0.00	0.00	0.00	0.55
1999	0.00	0.00	0.01	0.11	0.01	0.00	0.00	0.00	0.00	0.02	0.07	0.02	0.00	0.00	0.01	0.49
2000	0.00	0.00	0.01	0.11	0.01	0.00	0.00	0.00	0.00	0.02	0.07	0.02	0.00	0.00	0.01	0.49
2001	0.00	0.00	0.01	0.11	0.02	0.00	0.00	0.00	0.00	0.02	0.07	0.02	0.00	0.00	0.01	0.77
2002	0.00	0.00	0.01	0.19	0.05	0.00	0.00	0.00	0.00	0.03	0.07	0.02	0.01	0.00	0.01	1.12
2003	0.00	0.00	0.01	0.23	0.06	0.00	0.00	0.00	0.00	0.02	0.07	0.02	0.01	0.00	0.01	1.13
2004	0.00	0.00	0.01	0.13	0.06	0.00	0.00	0.00	0.00	0.01	0.07	0.02	0.01	0.00	0.01	0.98
2005	0.00	0.00	0.01	0.12	0.07	0.01	0.00	0.00	0.00	0.02	0.09	0.02	0.01	0.00	0.01	0.88
Average	0.00	0.00	0.01	0.17	0.04	0.01	0.00	0.00	0.00	0.05	0.06	0.03	0.01	0.00	0.01	0.84

-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	0.01	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	0.04	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	0.06	0.01	0.00	0.01	0.93
1984	0.00	0.01	0.01	0.07	0.05	0.07	0.07	0.01	0.02	0.01	0.02	0.07	0.01	0.00	0.00	1.01
1985	0.00	0.01	0.01	0.10	0.03	0.07	0.08	0.01	0.02	0.01	0.01	0.07	0.01	0.00	0.00	0.99
1986	0.00	0.00	0.01	0.15	0.02	0.11	0.09	0.01	0.02	0.01	0.02	0.07	0.02	0.00	0.01	1.02
1987	0.00	0.00	0.02	0.18	0.01	0.24	0.18	0.02	0.03	0.01	0.02	0.07	0.02	0.00	0.04	1.18
1988	0.00	0.00	0.02	0.14	0.03	0.12	0.27	0.02	0.03	0.01	0.02	0.07	0.03	0.00	0.04	1.13
1989	0.00	0.00	0.02	0.09	0.04	0.05	0.13	0.01	0.03	0.01	0.01	0.06	0.03	0.00	0.03	0.98
1990	0.00	0.00	0.02	0.06	0.04	0.02	0.06	0.01	0.03	0.01	0.01	0.05	0.02	0.00	0.02	0.89
1991	0.00	0.00	0.02	0.04	0.05	0.04	0.04	0.01	0.02	0.01	0.01	0.05	0.02	0.00	0.01	0.75
1992	0.00	0.00	0.02	0.05	0.04	0.05	0.05	0.01	0.01	0.01	0.01	0.05	0.02	0.00	0.01	0.78
1993	0.00	0.00	0.02	0.06	0.02	0.03	0.04	0.00	0.01	0.00	0.01	0.05	0.02	0.00	0.02	0.69
1994	0.00	0.00	0.01	0.05	0.02	0.02	0.02	0.01	0.01	0.00	0.01	0.05	0.02	0.00	0.01	0.52
1995	0.00	0.00	0.01	0.04	0.02	0.02	0.03	0.00	0.01	0.00	0.01	0.04	0.01	0.00	0.01	0.41
1996	0.00	0.00	0.01	0.06	0.03	0.02	0.04	0.00	0.01	0.00	0.01	0.04	0.01	0.00	0.02	0.49
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	0.02	0.58
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	0.55
1999	0.00	0.00	0.00	0.07	0.03	0.01	0.02	0.00	0.01	0.00	0.02	0.03	0.01	0.00	0.02	0.49
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	0.49
2001	0.00	0.00	0.01	0.09	0.10	0.06	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	0.13	0.18	0.08	0.07	0.01	0.03	0.01	0.06	0.07	0.01	0.01	0.06	1.12
2003	0.00	0.00	0.01	0.13	0.15	0.05	0.10	0.01	0.03	0.01	0.05	0.08	0.01	0.01	0.06	1.13
2004	0.00	0.01	0.01	0.13	0.17	0.02	0.08	0.01	0.02	0.01	0.05	0.07	0.01	0.01	0.04	0.98
2005	0.00	0.00	0.01	0.12	0.11	0.01	0.06	0.01	0.02	0.01	0.05	0.05	0.01	0.01	0.04	0.88
Average	0.00	0.00	0.01	0.08	0.07	0.06	0.07	0.01	0.02	0.01	0.02	0.05	0.01	0.00	0.02	0.84

Appendix K. Fishery indices by stock, age and fishery, 1975–2003.

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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	0.93	1.21	0.65	1.15	0.56	0.87	0.87
1980	1.10	0.63	1.19	0.86	0.99	1.32	1.32
1981	1.12	1.23	0.67	1.07	1.30	1.18	1.18
1982	0.85	0.93	1.50	0.92	1.15	0.63	0.63
1983	0.96	0.91	0.91	0.68	1.02	1.23	1.23
1984	0.65	0.34	1.51	1.03	0.35	0.50	0.50
1985	0.68	0.41	1.03	0.64	0.77	0.78	0.78
1986	0.50	0.38	0.58	0.18	0.69	1.28	1.28
1987	0.50	0.53	0.83	0.19	1.53	0.65	0.65
1988	0.43	1.26	0.16	0.00	1.44	0.66	0.66
1989	0.52	0.77	0.84	0.13	0.68	0.56	0.56
1990	0.77	0.60	1.32	0.12	1.57	1.17	1.17
1991	0.64	1.35	1.39	0.23	0.72	0.73	0.73
1992	0.43	0.95	0.84	0.08	0.29	0.38	0.38
1993	0.47	0.68	0.35	0.02	0.38	0.86	0.86
1994	0.48	0.62	0.14	0.04	0.38	0.68	0.68
1995	0.52	0.45	0.40	0.05	1.17	0.83	0.83
1996	0.44	0.53	0.82	0.10	0.61	0.56	0.56
1997	0.89	0.59	0.72	0.17	0.21	1.56	1.56
1998	0.49	0.76	0.19	0.06	0.72	0.97	0.97
1999	0.69	0.77	0.34	0.14	0.17	1.05	1.05
2000	0.51	0.85	0.11	0.08	0.15	1.45	1.45
2001	0.34	0.52	0.14	0.07	0.18	0.57	0.57
2002	0.50	0.38	0.12	0.06	0.16	1.17	1.17
2003	0.48	0.64	0.13	0.07	0.41	0.91	0.91

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	

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	0.91	1.17	0.63	1.14	0.54	0.84	0.84
1980	1.01	0.61	1.09	0.82	0.82	1.19	1.19
1981	1.13	1.23	0.68	1.10	1.16	1.20	1.20
1982	0.95	0.99	1.60	0.94	1.47	0.77	0.77
1983	1.09	0.89	0.98	0.69	0.89	1.66	1.66
1984	0.65	0.35	1.48	1.04	0.34	0.49	0.49
1985	0.80	0.43	1.00	0.62	0.73	1.08	1.08
1986	0.58	0.43	0.60	0.18	0.77	1.61	1.61
1987	0.59	0.55	0.77	0.18	2.35	0.79	0.79
1988	0.44	1.20	0.19	0.01	1.66	0.67	0.67
1989	0.57	0.74	0.80	0.12	0.97	0.61	0.61
1990	1.07	0.76	1.41	0.14	1.51	1.77	1.77
1991	0.69	1.27	1.29	0.22	1.04	0.78	0.78
1992	0.52	0.90	0.78	0.07	0.33	0.59	0.59
1993	0.54	0.66	0.32	0.02	0.42	1.08	1.08
1994	0.61	0.60	0.18	0.04	0.54	0.95	0.95
1995	0.63	0.46	0.43	0.06	1.24	1.07	1.07
1996	0.55	0.53	0.78	0.11	0.68	0.74	0.74
1997	0.89	0.58	0.66	0.17	0.25	1.55	1.55
1998	0.48	0.74	0.19	0.06	0.62	0.94	0.94
1999	0.73	0.76	0.32	0.13	0.22	1.12	1.12
2000	0.54	0.86	0.12	0.09	0.20	1.52	1.52
2001	0.36	0.51	0.14	0.07	0.24	0.62	0.62
2002	0.49	0.39	0.12	0.07	0.18	1.12	1.12
2003	0.46	0.59	0.12	0.07	0.35	0.86	0.86

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	

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

REPORTED CATCH 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	0.546	NA	1.216	0.829	0.685	NA	NA	NA	0.463	1.181	NA	0.777	0.826
1980	NA	0.762	1.020	1.118	0.851	0.718	0.979	NA	NA	1.106	0.987	1.276	1.429	0.971
1981	NA	1.886	1.445	0.753	1.045	1.596	1.587	1.113	NA	NA	1.133	1.308	1.388	1.312
1982	1.000	0.805	0.535	0.914	1.275	NA	0.433	0.887	1.000	1.431	0.699	0.416	0.406	0.804
1983	1.798	1.153	1.499	1.036	0.710	0.546	0.424	0.620	1.232	1.969	1.320	NA	0.808	0.881
1984	1.203	0.231	0.468	0.406	1.361	1.861	NA	0.605	2.523	1.039	2.005	NA	0.303	1.201
1985	0.772	0.220	0.530	0.888	1.914	NA	0.433	NA	2.733	1.415	1.748	1.670	0.132	1.300
1986	0.747	0.853	0.772	NA	1.047	NA	0.091	0.439	NA	1.135	1.363	1.651	NA	0.796
1987	0.630	0.319	0.572	0.487	NA	NA	0.162	0.372	2.280	1.222	1.954	2.878	0.340	1.004
1988	2.053	0.170	0.638	0.331	0.620	NA	NA	0.298	0.748	0.375	1.060	1.941	0.475	0.654
1989	0.969	0.420	0.416	0.360	0.881	0.954	0.107	0.257	2.130	NA	1.017	4.196	0.223	0.942
1990	2.003	0.321	0.944	0.313	0.712	0.512	0.139	0.232	1.974	NA	1.221	2.374	0.184	0.775
1991	0.675	0.359	0.587	0.387	0.750	1.040	0.107	0.385	2.045	NA	NA	NA	0.167	0.722
1992	0.145	NA	1.653	0.303	0.587	0.632	0.105	0.241	0.960	NA	NA	NA	0.061	0.564
1993	0.299	NA	NA	0.177	0.616	0.762	0.106	0.567	2.353	0.000	1.127	NA	0.124	0.765
1994	0.062	NA	NA	0.330	0.745	0.819	0.171	0.508	2.142	NA	0.959	2.025	0.071	0.860
1995	0.000	NA	NA	NA	0.412	0.241	0.099	0.000	0.853	NA	NA	0.561	0.110	0.294
1996	0.000	NA	NA	0.000	NA	NA	0.000	0.000	0.000	0.000	0.000	NA	0.000	0.000
1997	NA	0.363	0.352	0.221	0.416	NA	0.117	0.111	0.446	NA	0.656	NA	0.163	0.296
1998	0.000	0.000	0.000	NA	0.583	NA	0.071	0.527	1.304	0.000	NA	1.619	0.000	0.542
1999	0.000	0.100	0.099	NA	0.214	0.309	0.051	0.111	0.244	NA	0.684	NA	0.000	0.199
2000	0.000	0.000	0.038	NA	NA	NA	0.024	0.186	0.280	NA	0.000	0.000	0.005	0.100
2001	0.000	0.000	0.013	0.000	NA	NA	0.030	0.100	0.532	0.000	0.000	NA	0.012	0.114
2002	0.062	0.000	0.186	0.000	0.764	NA	0.416	0.557	2.153	0.018	0.266	NA	0.209	0.615
2003	0.000	0.000	0.000	0.058	0.102	0.000	0.161	0.732	1.203	NA	1.014	0.971	0.090	0.421

Stock Identifiers

AKS = ALASKA SPRING

RBT = ROBERTSON CREEK

URB = COLUMBIA UPRIVER BRIGHT

QUI = QUINSAM

SRH = SALMON RIVER HATCHERY

WSH = WILLAMETTE SPRING

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

Year	TOTAL MORTALITY EXPLOITATION RATE INDEX													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	0.580	NA	1.248	0.842	0.703	NA	NA	NA	0.580	1.191	NA	0.752	0.844
1980	NA	0.800	1.005	1.032	0.847	0.707	0.967	NA	NA	1.078	0.991	1.272	1.369	0.965
1981	NA	1.852	1.453	0.755	1.039	1.591	1.513	1.110	NA	NA	1.138	1.320	1.399	1.306
1982	1.000	0.768	0.542	0.965	1.272	NA	0.521	0.890	1.000	1.342	0.680	0.408	0.480	0.809
1983	1.586	1.030	1.452	0.912	0.696	0.554	0.489	0.626	1.232	1.663	1.284	NA	0.705	0.855
1984	1.007	0.218	0.460	0.452	1.328	1.866	NA	0.610	2.567	0.930	1.986	NA	0.265	1.151
1985	0.676	0.218	0.511	0.934	1.872	NA	0.407	NA	2.802	1.205	1.730	1.637	0.112	1.216
1986	0.636	0.779	0.734	NA	1.031	NA	0.116	0.436	NA	0.996	1.356	1.619	NA	0.761
1987	0.574	0.393	0.592	0.476	NA	NA	0.180	0.371	2.364	1.642	2.002	2.904	0.386	0.990
1988	1.906	0.248	0.647	0.332	0.623	NA	NA	0.306	0.748	0.831	1.102	1.982	0.485	0.666
1989	0.849	0.439	0.424	0.388	0.871	0.955	0.208	0.272	2.186	NA	1.082	4.203	0.207	0.921
1990	2.038	0.433	0.954	0.386	0.725	0.520	0.235	0.246	2.045	NA	1.296	2.430	0.179	0.783
1991	0.671	0.447	0.583	0.468	0.754	1.048	0.229	0.394	2.105	NA	NA	NA	0.168	0.721
1992	0.194	NA	1.686	0.407	0.603	0.648	0.143	0.248	0.999	NA	NA	NA	0.066	0.568
1993	0.229	NA	NA	0.323	0.630	0.776	0.216	0.576	2.427	0.296	1.178	NA	0.124	0.769
1994	0.118	NA	NA	0.512	0.757	0.830	0.289	0.515	2.200	NA	0.988	2.085	0.074	0.862
1995	0.074	NA	NA	NA	0.421	0.260	0.166	0.015	0.925	NA	NA	0.600	0.136	0.316
1996	0.119	NA	NA	0.066	NA	NA	0.058	0.012	0.059	0.285	0.063	NA	0.006	0.049
1997	NA	0.352	0.335	0.251	0.410	NA	0.124	0.113	0.446	NA	0.656	NA	0.136	0.287
1998	0.000	0.000	0.000	NA	0.582	NA	0.155	0.525	1.330	0.064	NA	1.587	0.000	0.518
1999	0.000	0.097	0.095	NA	0.205	0.315	0.052	0.114	0.244	NA	0.690	NA	0.000	0.191
2000	0.000	0.000	0.036	NA	NA	NA	0.032	0.185	0.280	NA	0.000	0.000	0.005	0.095
2001	0.046	0.000	0.013	0.000	NA	NA	0.037	0.101	0.532	0.000	0.000	NA	0.010	0.105
2002	0.215	0.024	0.177	0.052	0.753	NA	0.464	0.564	2.214	0.066	0.268	NA	0.204	0.596
2003	0.130	0.000	0.000	0.059	0.102	0.000	0.290	0.738	1.237	NA	1.031	0.977	0.081	0.419

Stock Identifiers

AKS = ALASKA SPRING
RBT = ROBERTSON CREEK
URB = COLUMBIA UPRIVER BRIGHT

QUI = QUINSAM
SRH = SALMON RIVER HATCHERY
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.

REPORTED CATCH EXPLOITATION RATE INDEX																											
	CWF	GAD	GAD	LRH	LRH	LRW	RBT	RBT	RBT	SAM	SAM	SPR	SPR	SPS	SPS	SRH	SRH	SRH	SUM	URB	URB	UWA	UWA	WSH	CHI	CHI	
Year	Age 4	Age 3	Age 4	Age 3	Age 4	Age 4	Age 3	Age 4	Age 5	Age 3	Age 4	Age 3	Age 4	Age 3	Age 4	Age 3	Age 4	Age 5	Age 4	Age 3	Age 4	Age 3	Age 4	Age 4	Age 3	Age 4	Fisher y
1979	NA	NA	NA	1.176	NA	NA	1.154	1.270	NA	NA	1.000	0.979	0.818	NA	1.107	NA	NA	NA	NA	1.397	1.691	0.709	1.185	1.305	NA	NA	1.057
1980	NA	NA	NA	0.570	0.818	NA	1.379	1.418	NA	NA	NA	1.172	1.366	NA	NA	1.000	NA	NA	0.690	1.340	0.964	1.344	0.837	1.258	NA	NA	1.007
1981	0.782	0.714	NA	1.118	0.834	0.842	0.701	0.583	1.000	NA	NA	0.944	0.657	0.717	NA	NA	1.000	NA	1.310	0.200	0.906	0.834	0.917	0.605	NA	NA	0.868
1982	1.218	1.286	1.000	1.137	1.348	1.158	0.766	0.728	NA	1.000	NA	0.906	1.159	1.283	0.893	NA	NA	NA	NA	1.064	0.440	1.114	1.061	0.833	NA	NA	1.067
1983	1.410	NA	1.395	1.701	1.767	0.972	0.350	0.683	2.506	NA	0.950	1.491	0.972	1.516	0.865	0.612	0.734	NA	NA	0.388	0.455	0.690	0.982	0.194	NA	NA	1.167
1984	1.353	2.079	NA	2.144	2.934	NA	1.300	1.011	1.713	NA	NA	1.366	1.455	1.428	0.993	NA	0.817	NA	NA	0.862	1.365	1.704	0.756	0.435	NA	NA	1.506
1985	0.937	NA	0.837	1.236	1.184	NA	0.630	0.000	NA	NA	NA	0.563	1.096	0.717	0.725	NA	NA	NA	NA	0.760	1.078	0.886	1.086	0.311	NA	NA	0.905
1986	1.318	NA	NA	1.254	1.189	0.466	NA	0.567	NA	NA	NA	1.208	0.918	0.787	1.175	NA	0.423	NA	NA	1.524	0.753	0.839	1.158	NA	NA	NA	1.069
1987	0.878	NA	NA	0.931	NA	1.446	0.273	NA	NA	NA	NA	0.464	NA	0.661	0.559	0.118	0.490	NA	0.000	0.997	0.990	0.368	0.421	NA	NA	NA	0.595
1988	0.863	0.431	NA	1.111	1.426	1.047	0.451	0.571	NA	0.557	NA	1.001	NA	0.264	0.751	NA	1.414	NA	1.147	0.086	1.966	NA	0.801	0.554	NA	NA	0.930
1989	0.543	0.254	0.493	0.284	0.592	0.561	0.169	0.340	0.000	0.191	0.617	0.590	0.409	0.306	0.415	0.150	NA	NA	0.750	NA	0.930	NA	NA	0.350	NA	NA	0.477
1990	0.733	1.099	0.946	1.144	0.437	1.203	0.674	0.556	1.538	0.376	0.867	0.933	0.749	0.651	0.894	0.314	0.954	NA	1.338	NA	1.678	NA	NA	0.536	NA	NA	0.876
1991	NA	NA	0.946	0.797	NA	0.738	0.609	0.546	0.735	0.231	0.591	0.603	0.659	0.364	0.572	0.411	0.785	NA	0.447	NA	NA	NA	NA	0.050	NA	NA	0.629
1992	1.179	NA	0.457	0.651	NA	0.318	1.704	2.470	5.226	0.974	0.273	0.435	0.767	0.651	0.782	0.593	5.976	NA	0.747	NA	NA	NA	NA	0.123	NA	NA	0.831
1993	NA	NA	NA	1.082	0.709	NA	1.184	2.252	2.447	1.055	0.434	0.546	1.034	0.918	0.598	0.543	2.659	NA	NA	0.644	2.018	NA	NA	0.277	NA	NA	0.885
1994	0.120	NA	NA	NA	NA	0.222	0.616	0.736	1.395	0.079	0.710	0.844	0.664	0.194	0.504	NA	0.829	NA	NA	NA	1.023	NA	NA	0.162	NA	NA	0.559
1995	NA	0.222	NA	NA	NA	0.427	NA	0.438	0.370	0.146	0.398	0.361	0.361	0.245	0.281	0.016	NA	NA	NA	NA	NA	NA	NA	0.091	NA	NA	0.321
1996	0.000	0.000	0.000	0.000	NA	NA	0.000	NA	NA	0.000	0.000	0.000	NA	0.000	0.000	0.000	0.000	NA	0.000	0.000	0.000	NA	NA	0.000	NA	NA	0.000
1997	0.348	NA	0.200	0.713	NA	NA	0.000	0.065	NA	0.021	0.241	0.506	0.479	0.025	0.302	0.000	0.081	NA	0.073	NA	0.094	NA	NA	0.000	NA	NA	0.304
1998	NA	NA	NA	NA	NA	NA	NA	0.000	NA	NA	0.088	0.046	0.000	0.000	0.033	0.000	0.000	NA	0.000	0.016	NA	NA	NA	0.023	NA	NA	0.030
1999	NA	0.048	NA	0.095	NA	NA	NA	NA	0.000	NA	0.077	0.016	NA	0.018	0.060	0.000	0.000	NA	0.028	0.000	0.000	NA	NA	0.000	NA	NA	0.046
2000	NA	NA	1.107	0.089	1.953	NA	NA	NA	NA	NA	NA	0.041	0.711	0.023	0.714	0.000	0.000	NA	0.210	0.080	0.331	NA	NA	0.042	NA	NA	0.634
2001	NA	0.713	1.221	0.304	NA	0.705	0.000	NA	NA	0.338	0.370	0.171	0.634	0.390	0.497	0.000	0.060	NA	0.388	0.068	0.179	NA	NA	0.109	NA	NA	0.486
2002	0.558	0.165	0.681	0.339	0.530	NA	0.020	0.000	NA	0.228	0.423	0.275	0.655	0.358	0.530	0.000	0.000	NA	0.516	0.077	0.191	NA	NA	0.283	NA	NA	0.439
2003	0.570	0.124	0.680	0.534	0.813	0.410	0.000	0.000	NA	NA	0.635	0.360	0.570	0.361	0.594	0.000	0.000	NA	1.045	0.194	0.092	NA	NA	0.684	NA	NA	0.546

Stock Identifiers

CWF = COWLITZ FALL TULE
GAD = G ADAMS FALL FING
LRH = 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

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.

TOTAL MORTALITY EXPLOITATION RATE INDEX																											
	CWF	GAD	GAD	LRH	LRH	LRW	RBT	RBT	RBT	SAM	SAM	SPR	SPR	SPS	SPS	SRH	SRH	SRH	SUM	URB	URB	UWA	UWA	WSH	CHI	CHI	
Year	Age 4	Age 3	Age 4	Age 3	Age 4	Age 4	Age 3	Age 4	Age 5	Age 3	Age 4	Age 3	Age 4	Age 3	Age 4	Age 3	Age 4	Age 5	Age 4	Age 3	Age 4	Age 3	Age 4	Age 4	Age 3	Age 4	Fisher y
1979	NA	NA	NA	1.144	NA	NA	1.226	1.286	NA	NA	1.000	0.964	0.827	NA	1.111	NA	NA	NA	NA	1.376	1.685	0.692	1.179	1.251	NA	NA	1.049
1980	NA	NA	NA	0.570	0.823	NA	1.316	1.402	NA	NA	NA	1.123	1.340	NA	NA	1.000	NA	NA	0.687	1.326	0.968	1.304	0.828	1.276	NA	NA	0.993
1981	0.790	0.728	NA	1.109	0.818	0.852	0.679	0.580	1.000	NA	NA	0.900	0.655	0.746	NA	NA	1.000	NA	1.313	0.248	0.890	0.803	0.904	0.616	NA	NA	0.859
1982	1.210	1.272	1.000	1.177	1.359	1.148	0.778	0.731	NA	1.000	NA	1.012	1.178	1.254	0.889	NA	NA	NA	NA	1.050	0.457	1.201	1.089	0.857	NA	NA	1.09
1983	1.350	NA	1.383	1.556	1.697	0.973	0.352	0.660	2.396	NA	0.954	1.320	0.925	1.452	0.868	0.609	0.708	NA	NA	0.357	0.429	0.647	0.957	0.185	NA	NA	1.119
1984	1.299	1.711	NA	1.945	2.799	NA	1.164	0.990	1.658	NA	NA	1.186	1.385	1.270	0.972	NA	0.750	NA	NA	0.796	1.322	1.526	0.735	0.404	NA	NA	1.407
1985	0.895	NA	0.838	1.177	1.138	NA	0.540	0.000	NA	NA	NA	0.545	1.050	0.654	0.709	NA	NA	NA	NA	0.715	1.046	0.807	1.073	0.276	NA	NA	0.868
1986	1.255	NA	NA	1.070	1.132	0.441	NA	0.533	NA	NA	NA	1.102	0.877	0.736	1.133	NA	0.363	NA	NA	1.375	0.740	0.781	1.140	NA	NA	NA	1.003
1987	0.868	NA	NA	1.141	NA	1.432	0.269	NA	NA	NA	NA	0.426	NA	0.755	0.562	0.129	0.490	NA	0.000	1.134	1.032	0.369	0.413	NA	NA	NA	0.623
1988	0.900	0.481	NA	1.266	1.503	1.077	0.442	0.570	NA	0.625	NA	0.938	NA	0.333	0.771	NA	1.316	NA	1.122	0.523	2.054	NA	0.798	0.556	NA	NA	0.958
1989	0.543	0.358	0.499	0.307	0.610	0.573	0.170	0.329	0.000	0.308	0.621	0.589	0.400	0.339	0.415	0.175	NA	NA	0.753	NA	0.968	NA	NA	0.333	NA	NA	0.484
1990	0.744	1.060	0.940	1.104	0.473	1.216	0.652	0.560	1.491	0.436	0.865	0.880	0.740	0.797	0.904	0.358	0.873	NA	1.308	NA	1.689	NA	NA	0.530	NA	NA	0.873
1991	NA	NA	0.972	0.703	NA	0.748	0.604	0.552	0.708	0.378	0.601	0.581	0.649	0.453	0.575	0.429	0.737	NA	0.437	NA	NA	NA	NA	0.051	NA	NA	0.623
1992	1.143	NA	0.471	0.721	NA	0.326	1.856	2.486	5.041	0.845	0.278	0.478	0.761	0.646	0.772	0.683	5.349	NA	0.780	NA	NA	NA	NA	0.145	NA	NA	0.833
1993	NA	NA	NA	1.139	0.758	NA	1.399	2.271	2.393	1.028	0.449	0.568	1.017	0.941	0.611	0.688	2.469	NA	NA	0.887	2.024	NA	NA	0.274	NA	NA	0.911
1994	0.113	NA	NA	NA	NA	0.236	0.672	0.759	1.355	0.221	0.710	0.819	0.660	0.208	0.492	NA	0.776	NA	NA	NA	1.037	NA	NA	0.154	NA	NA	0.557
1995	NA	0.291	NA	NA	NA	0.466	NA	0.457	0.383	0.223	0.430	0.402	0.380	0.281	0.295	0.043	NA	NA	NA	NA	NA	NA	NA	0.104	NA	NA	0.348
1996	0.000	0.066	0.025	0.000	NA	NA	0.033	NA	NA	0.056	0.016	0.040	NA	0.056	0.023	0.026	0.023	NA	0.027	0.086	0.062	NA	NA	0.010	NA	NA	0.026
1997	0.326	NA	0.204	0.798	NA	NA	0.005	0.061	NA	0.074	0.241	0.552	0.501	0.108	0.311	0.008	0.069	NA	0.072	NA	0.089	NA	NA	0.000	NA	NA	0.327
1998	NA	NA	NA	NA	NA	NA	NA	0.000	NA	NA	0.084	0.038	0.000	0.000	0.032	0.000	0.000	NA	0.000	0.013	NA	NA	NA	0.019	NA	NA	0.027
1999	NA	0.036	NA	0.079	NA	NA	NA	NA	0.000	NA	0.074	0.013	NA	0.014	0.057	0.000	0.000	NA	0.026	0.000	0.000	NA	NA	0.000	NA	NA	0.041
2000	NA	NA	1.082	0.074	1.865	NA	NA	NA	NA	NA	NA	0.034	0.660	0.024	0.690	0.000	0.000	NA	0.201	0.066	0.313	NA	NA	0.035	NA	NA	0.581
2001	NA	0.543	1.170	0.257	NA	0.666	0.000	NA	NA	0.262	0.354	0.144	0.589	0.315	0.475	0.000	0.052	NA	0.372	0.057	0.169	NA	NA	0.092	NA	NA	0.436
2002	0.540	0.136	0.659	0.288	0.506	NA	0.016	0.000	NA	0.186	0.411	0.233	0.619	0.292	0.510	0.000	0.000	NA	0.495	0.064	0.180	NA	NA	0.240	NA	NA	0.403
2003	0.545	0.093	0.664	0.456	0.767	0.388	0.000	0.000	NA	NA	0.621	0.302	0.539	0.294	0.572	0.000	0.000	NA	1.001	0.161	0.087	NA	NA	0.582	NA	NA	0.503

Stock Identifiers

CWF = COWLITZ FALL TULE
 GAD = G ADAMS FALL FING
 LRH = LOWER RIVER TULE

RBT = ROBERTSON CREEK
 SAM = SAMISH FALL FING
 SPR = SPRING CREEK TULE

SRH = SALMON RIVER HATCHERY
 SUM = COL RIVER SUMMERS
 URB = COLUMBIA UPRIVER BRIGHT

WSH = WILLAMETTE SPRING
 CHI = CHILLAWACK
 LRW = LEWIS RIVER WILD

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Table L.1. Tag Codes for Alaska Spring (AKS) 1971-1986.

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

[illegible]

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.

[illegible]

Table L.2. Tag Codes for Big Qualicum (BQR) 1971-2001.

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		

[illegible]

Table L.3. Tag codes for Chilliwack Falls (CHI) 1971-2001.

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
											022163	022422	022658	023414	024101	024547
													022659	023415		
													022660	023416		
														023417		
														023418		
														023419		
1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001		
025542	025747	020242	180330	180334	181211	181420	180211	182261	182856	183353	184046	184124	184610	184914		
	025748	020243		180332	181212	181421	180212	182262	182857	183354	184048	184126	184612	184916		
							182123					184128	184614			
							182124					184130	184616			

Table L.4. Tag Codes for Cowichan Falls (COW) 1971-2001.

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
															023803	
															023804	
															023911	
1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001		
024334	024860	020352	020336	180515	180210	181320	181436	182026	182740	182761	183109	183119	183216	184639		
024729	025012	020522	020337	180516	180550	181321	181437	182027	182741	182762	183110	183120	183217	184640		
024730	025013	020622	020338	180517	181042	181322	181438	182028	182742	182763	183111	183121	184539	184641		
024735	025015	020623	020339	180518	181044			182029	182743	182801	183112	183122	184546	184642		
024945	025016	020624	020340					182030	182744	182802	183730	183123	184547	184643		
024946	025017	020938	020341					182031	182745	182803	183731	183124		184644		
	025523	020939								182804	183732	183125		184645		
	025524	026103								182805	183733	183126		184646		

Table L.5. Tag Codes for Cowlitz Falls (CWF) 1971-2001.

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
							631802	631942	632154	632156 632255	632462	632503	633019 633020 633124 633125	633235 633236 633237 633238	634108	634126
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
	635231	635250	630452	634056	634526	635015	635539	635523 635620	636005 635851	630224 630227	630311	631031	631330	630673	631379	

Table L.6. Tag Codes for Elwha Fall Fingerling (ELW) 1971-2001.

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
												051363 632721 632722	211616 633038 633039	211658 633419 633420	211919 211920 211921 633543 633544 633547 633548	212208
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
		213132	211827 211828	212015	212215	212324	212451	212617 212618 635332								

Table L.7. Tag Codes for George Adams Fall Fingerling (GAD) 1971-2001.

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
		150812 151013		130303	130913			631752 631915	632041 632109	632146 632161 632262	632235 632331				633501 633502 633503 633504	634119
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
	635208	635237	630450	630862	634023 634620	634946 635057	635545	635023 635801	636045	630148	630304	630632	630633	630683 630684	636322	

Table L.8. Tag Codes for Hanford Wild (HAN) 1971-2001.

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	2001	
	635232	635252	630755	634115	634527	635017	635704	635759	636116	630133	630603	630635	630178	630792	630991	
									636117					630798	631439	
									636118					630799		
														630864		

Table L.9. Tag Codes for Hoko Fall Fingerling (HOK) 1971-2001.

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	2001	
	211907		211829	212018	212218	212327	212453	212609	212949	212953	212959	213004	212951	210283	210389	

Table L.10. Tag Codes for Kitsumkalum (KLM) 1971-2001.

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
									021852	021951	022312		022758	023346	023704	024414
											022313			023347	023705	024413
														023348	023706	024412
														023349	023707	024411
														023350		024410
														023351		
														023352		
														023353		
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
	024944	026039	020940	021133	023116	181046	021104	180608	182339	182749	182806	183063	182959	184308		
	024941	026040	020941	021134	021010	181047	181423	180609	182340	182750	182807	183516	184560	184622		
	024942	026041	020942	021135	021011	181048	181424	180640	182341	182751	182808	184212	184561	184623		
	024943	026042	020943	021136		181049		180641	182342	182752	182809	184213	184562	184624		
	025060	026043	020944	021137		181050		180642	182343	182753	182810	184214	184563	184625		
	025061	026044	020945	021138		181051		182155	182344	182754	183307		184601	184626		
		026045	020946	021139		181052		182156	182345	182755	183308		184602	184627		
			026137	021140				182157					184603			
			026138										184604			

Table L.11. Tag codes for Columbia Lower River Hatchery (LRH) 1971-2001.

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	2001	
	074526	075012	075218	075227	071601	070221	070234	070432	070544	071251	092121	071253	093005	093250	093452	
	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.12. Tag codes for Lewis River Wild (LRW) 1971-2001.

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	2001	
	635061	630456	631350	634217	634206	634940	635157	635627		630334	630506	631058	630265	630870	631418	
	635062										630507		630266	630871	631420	

Table L.13. Tag codes for Lyons Ferry (LYF) 1971-2001.

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	2001	
	635214	630226	635544	634143		635012		232712				631025		630270	630890	
	635216	630228	635547	634160				232713				631026				

Table L.14. Tag codes for Nisqually Fall Fingerling 1971-2001.

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	2001	
	212541	213138	211836	211833	212206	212323	212450	212606	212946	212957	212956	210150	210166	630189	210284	
														630687	210295	

Table L.15. Tag codes for Nooksack Spring Yearling (NKS) 1971-2001.

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	2001	
	634962	634422	635261	634123		634529	635018	635815	636048	635533						
	635059							635830								
								635835								

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	2001	
		635241	051952			634605	635142	635351	636026	636326	630604	631028	630175	630675	631433	
			630225			634606	635143	635829							631402	
						634951	635144	635834								

Table L.17. Tag codes for Puntledge (PPS) 1971-2001.

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 022557	022710 022711	023357 023358 023359 023360	023727	024701 024702
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
	023701	026034	020809 020810	180315 180316	180814 180815 180816 180817	181403 181404	181410 181411	182138 182139	182449 182450	182841 182842	182843 182844	183828	183842 183843 183844 183845	184843 184844	184850 184852 184853 184854 184855	

Table L.18. Tag codes for Queets Fall Fingerling (QUE) 1971-2001.

Brd Yr	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
							050361	050520 050521 050522 050525	050661	050830 050833	050962 051016	051425	211621		211908	212101
Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
	212835	213144	211835	212010	212260	212328	212452	212425 212624	212948	212961	213003	213001	210167	210281	210002 210393	

Table L.19. Tag codes for Quinsam (QUI) 1971-2001.

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	023554	024156
														023327	023555	024157
														023328	023556	024158
														023329	023557	024159
														023330	023558	024160

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	024419	025814	020357	020956	021331	181150	180629	181644	181658	181830	183035	183739	183251	184456	184736
	024420	025815	020358	020957	180415	181151	180630	181645	181659	182512	183036	183740	183252	184457	184737
	024421	025816	020359	020958	180416	181152	180631	181646	181660	182513	183037	183741	183253	184458	184738
	024956	025817	020360	020959	180417	181153	181357	181647	181661	182514	183038	183742	183254	184459	184739
	025358	025818	020361	021448	180418	181154	181358	181648	182016	182515	183039	183743	183255	184460	184740
	025359	025819	026062	021449	180419	181155	181359	181649	182017	182516	183040	183744	183256	184461	184741
	025360	025820	026063	021450	180420	181156	181360	181650	182018	182517	183041	183745	183257	184462	184742
	025361	025821	026101	021451	180421	181157	181361	181651	182020	182518	183042		183258	184463	184743
	025362	025822	026102	026019	180422	181158	181362	181652	182021						

[illegible]

Table L.21. Tag codes for Samish Fall Fingerling (SAM) 1971-2001.

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.22. Tag codes for Skagit Spring Fingerling (SAM) 1971-2001.

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	2001	
							635701	635449	636047	635323	630215	630609	630164	630666		
								635837			636131			630768		

Table L.23. Tag codes for Skagit Spring Yearling (SKS) 1971-2001.

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.24. Tag codes for Skagit Spring Fingerling (SKF) 1971-2001.

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	2001	
							635701	635837	636047	635323	630215	630609	630164	630666	630896	
								635449			636131			630768		

Table L.25. Tag codes for Skagit Summer Fingerling (SKF) 1971-2001.

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	2001	
								212612	635151	630322	213002	210151	630166	210168	210391	
										634329		630757				

Table L.26. Tag codes for Sooes Fall Fingerling (SOO) 1971-2001.

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	2001	
	051950		051955	052353	052822	053131	053133	053753	054048	054052	054054	051561	050182	050493	050781	
				052354	052823	053132	053134	053754	054049	054053	054055	051562	050183	050494	050782	
				052355	052824		053519	053755	054050		055034	051563	050184	050495	050783	
				052356	052825		053520	053756	054051		055035		050185	050496	050784	

Table L.27. Tag codes for Spring Creek Tule (SPR) 1971-2001.

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	2001	
	051445	052013	052207	052106	052127	052133	053356	053757	053831	054341	054347	054360	054418	054523	050777	
	051449	052015	052208	052109	052129	052134	053357	053758	053832	054342	054348	054361	054419	054525	050778	
	051450	052016	052209	052110	052130	052146	053430	053759	053833	054343	054349	054362	054420		050779	
	051451	052017	052210	052112	052544	052149	053431	053760	053834	054344	054350	054363	054421		050780	
	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.28. Tag codes for South Puget Sound Fall Fingerling (SPS) 1971-2001.

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	2001	
	212542	213137	211831	212014	212217	212326	212329	212639	212947	212963	213157	213154	210153	210279	210390	
	635221	635238	630261	634024	634339	634953	635318	212640	636102	630127	630308	631010	630171	630669	631375	
		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.29. Tag codes for South Puget Sound Fall Fingerling (SPS) 1971-2001.

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
								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.29. Tag codes for South Puget Sound Fall Fingerling (SPS) 1971-2001 continued.

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
								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							

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							

[illegible]

Table L.31. Tag codes for Squaxin Pens Fall Yearling (SQP) 1971-2001.

[illegible]

Brd Yr	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	634202	635244	630455	633955 634008		635218	635719	635855	635962		630615				

Table L.32. Tag codes for Salmon River (SRH) 1971-2001.

[illegible][illegible]

Table L.33. Tag codes for Stillaguamish Fall Fingerling (STL) 1971-2001.

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	2001	
	212555	213147	211826	212026	212205	212251	212330	212610	212954	212960	213203	210152				
											213223					

Table L.34. Tag codes for Columbia Summers (SUM) 1971-2001.

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	2001	
	635037	630262	631149	634133	634609	635005	634610	635324	634129	630134	630602	631018	630267	630775	631423	
	635038		631347	635913			635145	635546	634130	630217	630611	631061	630468	630995		
	635202		631352				635702	635703	635841	636054						
							635838	636044	636323							

Table L.35. Tag codes for Upriver Bright (URB) 1971-2001.

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	2001	
	635226	635249	630732	634057	634341	635010	635540	635711	636001	636328	630408	631011	630165	630269	630885	
											630409	631030	630187	630277	630886	
											630517	631046	630188	630279	630892	
											630521	631047	631333	630672	631382	

Table L.36. Tag codes for University of Washington Accelerated (UWA) 1971-2001.

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	2001
--------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

Table L.37. Tag codes for White River Spring Yearling (WRY) 1971-2001.

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.38. Tag codes for Willamette Spring (WSH) 1971-2001.

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	093323		
	075038	075158	075348	075626	071458	070134	070442	070450	071254	092155	092446	071262	093019	093249		
	075041	075159	075501	075627	071459	070240	070443	070855	071255	092156	092509	091752	093020	093244		
	075047	075160	075502	075628	073722	070253	070444	070856	071256	092157	092511	092653	093021	093309		
	075049	075161	075504	075630	075732	070254	070563	070857	071257	092158	092512	092654	093023	093310		
	075050	075162	075506	075643	075734	070428	070616	070858	071259	092160	092513	092738	093024	093335		
		075163	075514	075644	075904	070430	070850	070860	071260	092240	092514	092739	093026	093337		
		075206	075515	075656	075921	070431	070851	070861	071317	092241	092520	092811	093028	093336		
		075207	075516	075710	075922	071535	076125	070862	076140	092242	092521	092812	093038	093248		
		075208	075522	075711	075933	071536	076338	071153	091803	092243	092522	092813	093147	093307		
		075210	075523		075934	076121			091804	092244	092523	092814	093148	093308		
		075211	075524		076114	076122				092245	092524	092907				
			075525		076115	076123				092248	092550	092908				
			075526		076116					092250	092627					
			075527		076117					092251	092628					
			075528		076118					092319	092629					
					076119					092320	092630					
											092632					
											092633					

Appendix M. Incidental mortality rates applied in the CTC model. Rates in original model were applied to all years. In the current model, rates in some fisheries vary in accordance to changes in management regulations.

Fishery Number	Fishery	Rates in original Model			Rates applied in Model CLB0506			
		Sublegal Rate	Legal Rate	Dropoff	Sublegal Rate	Legal Rate	Dropoff	Applicable Years
1	Alaska T	0.3	0.3	0	0.255	0.211	0.008	All
2	North T	0.3	0.3	0	0.255	0.211	0.017	1979-1995
2	North T				0.220	0.185	0.016	1996-2004
3	Centr T	0.3	0.3	0	0.255	0.211	0.017	1979-1995
3	Centr T				0.220	0.185	0.016	1996-2004
4	WCVI T	0.3	0.3	0	0.255	0.211	0.017	1979-1997
4	WCVI T				0.220	0.185	0.016	1998-2004
5	WA/OR T	0.3	0.3	0	0.255	0.211	0.017	1979-1983
5	WA/OR T				0.220	0.185	0.016	1984-2004
6	Geo St T	0.3	0.3	0	0.255	0.211	0.017	1979-1985,1987
6	Geo St T				0.220	0.185	0.016	1986,1988-2004
7	Alaska N	0.9	0.9	0	0.9	0.9	0	All
8	North N	0.9	0.9	0	0.9	0.9	0	All
9	Centr N	0.9	0.9	0	0.9	0.9	0	All
10	WCVI N	0.9	0.9	0	0.9	0.9	0	All
11	J De F N	0.9	0.9	0	0.9	0.9	0	All
12	PgtNth N	0.9	0.9	0	0.9	0.9	0	All
13	PgtSth N	0.9	0.9	0	0.9	0.9	0	All
14	WashCst N	0.9	0.9	0	0.9	0.9	0	All
15	Col R N	0.9	0.9	0	0.9	0.9	0	All
16	JohnSt N	0.9	0.9	0	0.9	0.9	0	All
17	Fraser N	0.9	0.9	0	0.9	0.9	0	All
18	Alaska S	0.3	0.3	0	0.123	0.123	0.036	All
19	Nor/Cen S	0.3	0.3	0	0.123	0.123	0.036	All
20	WCVI S	0.3	0.3	0	0.123	0.123	0.069	All
21	WashOcn S	0.3	0.3	0	0.123	0.123	0.069	All
22	PgtNth S	0.3	0.3	0	0.123	0.123	0.145	All
23	PgtSth S	0.3	0.3	0	0.123	0.123	0.145	All
24	Geo St S	0.3	0.3	0	0.322	0.322	0.069	1979-1981
24	Geo St S				0.123	0.123	0.069	1982-2004
25	Col R S	0.3	0.3	0	0.123	0.123	0.069	All