



Washington Department of Fish and Wildlife

Point No Point Treaty Council

To: NOAA-Fisheries Service Sustainable Fisheries Division, Salmon Recovery Division,  
Northwest Fisheries Science Center, and Puget Sound Technical Review Team

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Subject: 2004 progress report on Hood Canal summer chum salmon

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This memorandum report is intended to provide information on management activities pertaining to stock assessment and harvest of Hood Canal summer chum for the year 2004. This interim report is relatively brief, providing information currently available. A more detailed and complete presentation, including artificial production, will be made available as part of the Summer Chum Salmon Conservation Initiative (SCSCI) 5-year review report to be distributed in 2005.

### Stock Assessment

*Escapement:* Spawning ground surveys were conducted throughout the summer chum return period to estimate the abundance of summer chum spawners for all known stocks in the Hood Canal and Strait of Juan de Fuca summer chum regions during 2004. Results of the surveys are summarized in Table 1 and regional escapement estimates for the period 1974 through 2004 are described in Table 2.

The escapements of summer chum in 2004 were exceptional. A total of 79,336 summer chum escaped to the region's streams (including fish collected for hatchery broodstock); 69,995 spawners to Hood Canal streams and 9,341 spawners to Strait of Juan de Fuca streams (Table 2). The 2004 escapements were the highest recorded during the period that total spawner numbers have been estimated (1974-2004), including the years prior to the decline in summer chum abundance.

**Table 1.** Preliminary estimates of summer chum salmon spawner escapement for Hood Canal and Strait of Juan de Fuca streams, 2004.

Stream	Natural spawner escapement	Brood- stock	Total escapement	Comments
<b>Hood Canal</b>				
Anderson Cr.	1		1	Peak count
Big Beef Cr.	1,852	64	1,916	Trap + AUC downstream of trap
Dewatto R.	23		23	AUC
Tahuya R.	8		8	Peak count
Union R.	5,876	100	5,976	Trap
Skokomish R.	24		24	AUC; probably minimum estimate
Lilliwaup R.	922	95	1,017	AUC adjusted for broodstock (includes 5 broodstock morts)
Hamma Hamma R.	2,493	63	2,556	AUC adjusted for broodstock
John Cr.	135		135	AUC
Fulton Cr.	6		6	Peak count
Duckabush R.	8,631		8,631	AUC
Dosewallips R.	11,549		11,549	AUC
Big Quilcene R.	35,000	108	35,108	AUC; broodstock for NMFS research study in Big Beef Cr.
Little Quilcene R.	3,045		3,045	AUC
<b>Strait of Juan de Fuca</b>				
Chimacum Cr.	1,139		1,139	AUC
Snow Cr.	396		396	Trap + AUC downstream of trap
Salmon Cr.	6,021		6,021	Trap + redds downstream of trap; includes 52 morts in trap
JCL Cr.	1,601	61	1,662	Trap + dead ds of trap; incl. 1 brdstock mort; not incl. 36 pre-esc. loss
Dungeness R.	123		123	AUC
Hood Canal total	69,565	430	69,995	
SJF total	9,280	61	9,341	
<b>HC/SJF total</b>	<b>78,845</b>	<b>491</b>	<b>79,336</b>	

**Table 2.** Escapement (including hatchery broodstock) for Hood Canal and the Strait of Juan de Fuca summer chum salmon stocks, 1974-2004.

<b>Return year</b>	<b>Hood Canal escapement</b>	<b>Strait of Juan de Fuca escapement</b>	<b>HC/SJF combined</b>
1974	12,281	1,768	14,049
1975	18,248	1,448	19,696
1976	27,715	1,494	29,209
1977	10,711	1,644	12,355
1978	19,710	3,080	22,790
1979	6,554	761	7,315
1980	3,777	5,109	8,886
1981	2,374	884	3,258
1982	2,623	2,751	5,374
1983	899	1,139	2,038
1984	1,414	1,579	2,993
1985	1,109	232	1,341
1986	2,552	1,087	3,639
1987	757	1,991	2,748
1988	2,967	3,690	6,657
1989	598	388	986
1990	429	341	770
1991	747	309	1,056
1992	2,377	1,070	3,447
1993	756	573	1,329
1994	2,429	178	2,607
1995	9,462	839	10,300
1996	20,490	1,084	21,574
1997	8,972	962	9,934
1998	4,001	1,269	5,270
1999	4,114	573	4,687
2000	8,649	983	9,612
2001	12,044	3,955	15,999
2002	11,454	6,955	18,409
2003	35,696	6,959	42,655
2004	69,995	9,341	79,336

*Run Size:* To determine the total numbers of salmon returning to specific production areas, fish that are harvested in mixed stock and terminal fisheries must be allocated to the streams from which they originated. This allocation is done through a post-season process called "run re-construction," which splits the harvests in each catch area into the numbers of fish that likely were contributed by the individual stocks or management unit thought to be transiting the area. All estimated harvests for each stock or management unit are added to the escapement for that grouping to derive the estimated total return or run size for each year. A discussion of the run re-construction methodology can be found in the SCSCI Appendix Report 1.3 (WDFW and PNPTT 2000). Run size estimates for 2004 along with an updated run size estimate for 2003 are provided in an appendix to this report. Table 3 summarizes the estimates of run sizes with escapements by region for 2004. Table 4 and Figures 1 and 2 show Hood Canal and Strait of Juan de Fuca total run sizes from 1974 through 2004.

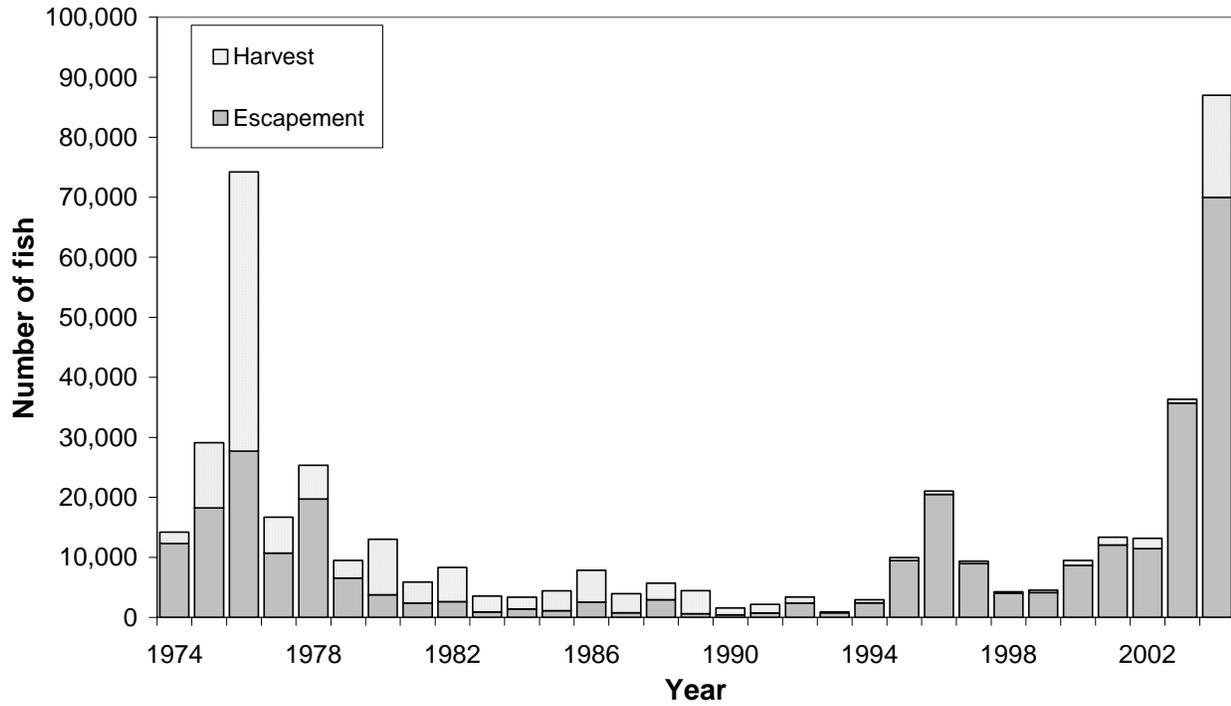
This year's large return was anticipated, since 2004 is the peak return year in a strong 4-year production cycle, and 2003 also had a remarkable total return of 43,400 summer chum salmon to the region. We expect production levels to fall next year as the run cycles down from the high year. For example, pre-season forecasts for 2005 are about 18,000 total recruits for Hood Canal and about 6,800 total recruits for Strait of Juan de Fuca.

<b>Table 3.</b> Regional summer chum run sizes for 2004.	
Hood Canal Region	
Escapement	69,995
Terminal runsize	86,814
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Hood Canal total runsize	86,995
Strait of Juan de Fuca Region	
Escapement	9,341
Terminal runsize	9,341
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Strait of Juan de Fuca total runsize	9,360

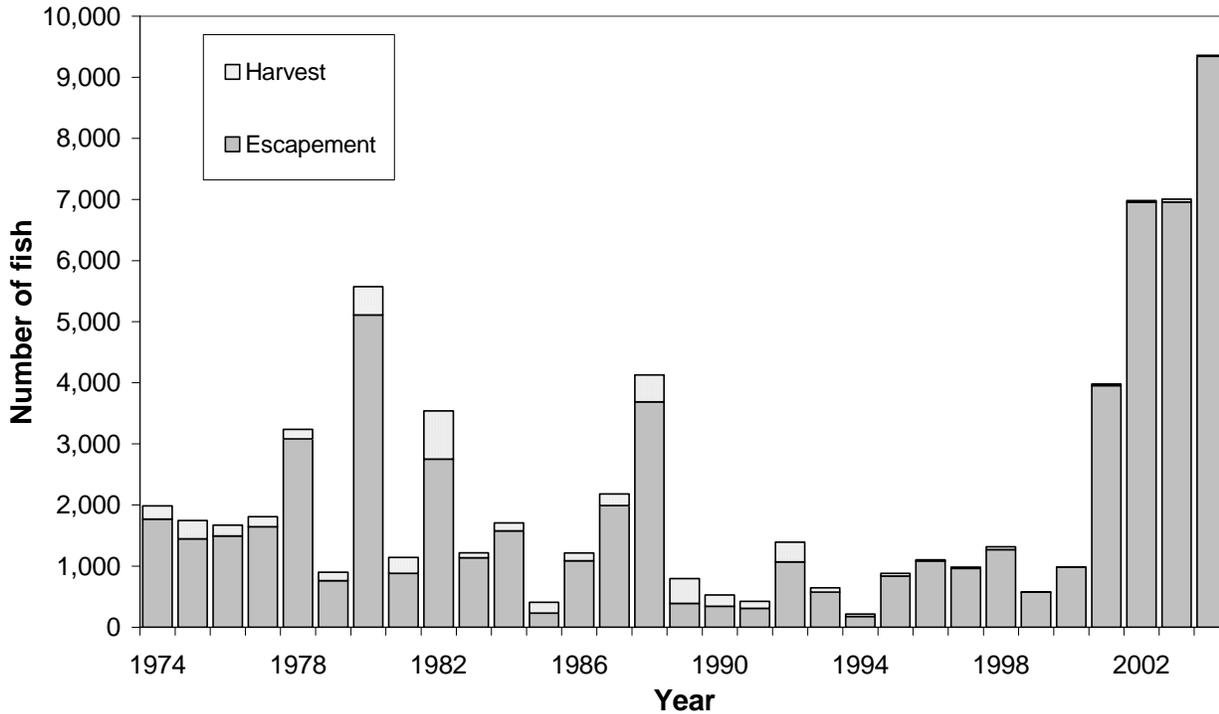
**Table 4.** Total runsizes for Hood Canal and the Strait of Juan de Fuca summer chum salmon stocks, 1974-2004.

Return year	Hood Canal Run size	Strait of Juan de Fuca Run size	HC/SJF combined
1974	14,222	1,985	16,207
1975	29,113	1,747	30,860
1976	74,220	1,673	75,893
1977	16,688	1,810	18,498
1978	25,344	3,240	28,584
1979	9,513	900	10,413
1980	13,026	5,574	18,600
1981	5,875	1,139	7,014
1982	8,331	3,540	11,871
1983	3,545	1,217	4,762
1984	3,372	1,707	5,079
1985	4,424	411	4,835
1986	7,832	1,217	9,049
1987	3,971	2,181	6,152
1988	5,680	4,129	9,809
1989	4,473	795	5,268
1990	1,564	528	2,092
1991	2,199	424	2,623
1992	3,376	1,394	4,770
1993	871	643	1,514
1994	2,959	214	3,173
1995	9,984	882	10,866
1996	21,056	1,106	22,162
1997	9,373	985	10,358
1998	4,274	1,316	5,590
1999	4,527	577	5,104
2000	9,506	987	10,493
2001	13,375	3,982	17,357
2002	13,170	6,981	20,151
2003	36,328	7,015	43,343
2004	86,995	9,360	96,335

**Figure 1.** Hood Canal summer chum salmon escapement and harvest, 1974-2004.



**Figure 2.** Strait of Juan de Fuca summer chum escapement and harvest, 1974-2004.



*Genetic Stock Identification:* During 2004, the Co-managers continued DNA collections for summer chum spawners throughout the region. Table 5 shows the number of DNA samples collected in 2004 as well as the number of samples collected for otoliths and scales. The sampling locations and collection methods are also shown in the table. No funding is currently identified for the processing and analysis of these or other archived DNA samples.

<b>Table 5.</b> Genetic, otolith, and scale collections made from adult summer chum salmon in Hood Canal and eastern Strait of Juan de Fuca streams, 2004.							
<b>Stream</b>	<b>WRIA</b>	<b>GSI code</b>	<b>Sample size</b>			<b>Collection method</b>	
			<b>Allozyme</b>	<b>DNA</b>	<b>Otolith</b>		<b>Scales</b>
Dungeness River	18.0018	04GR	0	4	8	8	Foot survey
Jimmycomelately Cr. <sup>1</sup>	17.0825	04GS	0	61	299	283	Trap, foot survey
Salmon Cr. <sup>1</sup>	17.0245	04GT	0	46	400	400	Trap, foot survey
Snow Cr.	17.0219	04GU	0	11	100	97	Foot survey
Chimacum Cr. <sup>1</sup>	17.0203	04HM	0	0	228	229	Foot survey
Thorndyke Cr.	17.017	--	0	0	0	0	Foot survey
Little Quilcene R.	17.0076	04GV	0	47	157	298	Foot survey
Big Quilcene R. <sup>1</sup>	17.0012	--	0	123	77	357	Foot survey, seine (Quil. Bay)
Dosewallips R.	16.0442	04GW	0	0	487	550	Foot survey
Duckabush R.	16.0351	04GX	0	0	556	625	Foot survey
Fulton Cr.	16.0332	--	0	0	0	0	Foot survey
Hamma Hamma R. <sup>1</sup>	16.0251	04GY	0	64	409	445	Seine, foot survey
Lilliwaup R. <sup>1</sup>	16.023	04GZ	0	95	321	305	Trap, foot survey
Little Lilliwaup	16.0228	--	0	0	0	0	Foot survey
Union R. <sup>1</sup>	15.0503	04HA	0	359	336	341	Trap, foot survey
Stavis Cr.	15.0404	--	0	0	0	0	Foot survey
Dewatto R.	15.042	--	0	0	8	8	Foot survey
Big Beef Cr. <sup>1</sup>	15.0389	04HD	0	64	230	233	Trap, foot survey
Little Anderson	15.0377	--	0	0	0	0	Foot survey
<b>Totals</b>			<b>0</b>	<b>874</b>	<b>3,616</b>	<b>4,179</b>	

<sup>1</sup> Stream has supplementation or reintroduction program.

*Biological Data (Age):* Age composition determined from scale collections for summer chum salmon in eastern Strait of Juan de Fuca and Hood Canal streams during 2004 are presented in Tables 6a, 6b, and 6c. Of particular interest is the high proportion of age-4 fish from the 2000 brood in the 2004 return; estimated to be about 75% overall (Table 6c). The strong 2000 brood also contributed a high proportion (about 77%) to the 2003 return as age-3 fish.

**Table 6a-c.** Preliminary 2004 Summer chum age composition data (based on scale data only).

**Table 6a.** Scale samples (numbers)

	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Total</b>
Big Beef Cr.	0	174	58	1	233
Dewatto Cr.	0	5	3	0	8
Union River	1	138	201	1	341
Lilliwaup	0	230	75	0	305
Hamma Hamma R.	0	95	350	0	445
Duckabush R.	0	51	574	0	625
Dosewallips R.	0	40	508	2	550
B. Quilcene R.	0	82	273	2	357
L. Quilcene R.	0	13	284	1	298
Chimacum Cr.	0	140	88	1	229
Snow Cr.	0	32	64	1	97
Salmon Cr.	1	143	250	6	400
Jimmycomelately Cr.	0	243	40	0	283
Dungeness R.	0	1	5	1	7
<b>Total</b>	<b>2</b>	<b>1,387</b>	<b>2,773</b>	<b>16</b>	<b>4,178</b>

**Table 6b.** Scale samples (%'s)

	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Big Beef Cr.	0.0%	74.7%	24.9%	0.4%
Dewatto Cr.	0.0%	62.5%	37.5%	0.0%
Union River	0.3%	40.5%	58.9%	0.3%
Lilliwaup	0.0%	75.4%	24.6%	0.0%
Hamma Hamma R.	0.0%	21.3%	78.7%	0.0%
Duckabush R.	0.0%	8.2%	91.8%	0.0%
Dosewallips R.	0.0%	7.3%	92.4%	0.4%
B. Quilcene R.	0.0%	23.0%	76.5%	0.6%
L. Quilcene R.	0.0%	4.4%	95.3%	0.3%
Chimacum Cr.	0.0%	61.1%	38.4%	0.4%
Snow Cr.	0.0%	33.0%	66.0%	1.0%
Salmon Cr.	0.3%	35.8%	62.5%	1.5%
Jimmycomelately Cr.	0.0%	85.9%	14.1%	0.0%
Dungeness R.	0.0%	14.3%	71.4%	14.3%

**Table 6c.** Escapement estimates by age class

	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Total</b>
Big Beef Cr.	0	1,431	477	8	1,916
Dewatto Cr.	0	14	9	0	23
Union River	18	2,418	3,523	18	5,976
Lilliwaup	0	767	250	0	1,017
Hamma Hamma R.	0	574	2,117	0	2,691
Duckabush R.	0	704	7,927	0	8,631
Dosewallips R.	0	840	10,667	42	11,549
B. Quilcene R.	0	8,064	26,847	197	35,108
L. Quilcene R.	0	133	2,902	10	3,045
Chimacum Cr.	0	696	438	5	1,139
Snow Cr.	0	131	261	4	396
Salmon Cr.	15	2,153	3,763	90	6,021
Jimmycomelately Cr.	0	1,427	235	0	1,662
Dungeness R.	0	18	88	18	123
<b>Total</b>	<b>33</b>	<b>19,370</b>	<b>59,503</b>	<b>392</b>	<b>79,297<sup>1</sup></b>
1. Total escapement = 79,336; no scales for Anderson Cr., Tahuya R., Skokomish R., or Fulton Cr.					

*Mark Recovery:* As noted in the SCSCI and the SCSCI Supplemental Reports, hatchery supplementation techniques are being applied as a strategy to reduce the short-term extinction risk of summer chum salmon in the Hood Canal and Strait of Juan de Fuca regions and to aid in their recovery. Appropriate indigenous broodstocks are also being used to reintroduce summer chum to watersheds where they have recently been extirpated. The summer chum juveniles produced by each supplementation program are uniquely mass-marked prior to release. The supplementation fish were 100% fin-clipped at Quilcene and fish from all other programs are otolith marked. Examination of otoliths or fin clip ratios from spawned adults provides a method to estimate the number of hatchery-origin and natural-origin recruits. This analysis assists in determining 1) the contribution of fry released from each rearing strategy within each supplementation program to the target population and 2) the level of straying of supplementation program-origin fish to other (non-target) drainages.

As has been typical in recent years (WDFW and PNPTT 2003, WDFW and PNPTC 2004), the supplemented Quilcene summer chum stock experienced another strong escapement during 2004, with a total of 35,108 spawners. In 2004, 93.6% of Big Quilcene summer chum were unmarked indicating that over 32,000 of the returning fish were natural-origin recruits (pers. comm. T. Kane, U. S. Fish and Wildlife Service, Nov. 2004).

In 2004, summer chum adults were examined for adipose-clips in 14 streams surveyed by WDFW. Adipose-clipped summer chum were only observed in 5 of the 14 streams surveyed: the Big Quilcene, Little Quilcene, Dosewallips, Duckabush, and Hamma Hamma rivers. In these 5 streams, more than 2,200 summer chum adults were sampled for fin-clips and preliminary analysis indicates that 87% of fin-clipped recoveries occurred in the Big and Little Quilcene rivers, the streams of origin for the Quilcene supplementation program.

In addition, otolith samples were collected from about 3,600 summer chum adults returning to these and other streams during 2004 (Table 5) and examination of these otolith samples is currently in progress at the WDFW Otolith Lab. Since the 2003 return was comprised of ~75% wild fish, it is expected that this year's return will also have a high proportion of natural origin recruits (wild fish).

### Harvest Management

The SCSCI established annual fishing regimes beginning in 2000 for Canadian, Washington pre-terminal, and Washington terminal area fisheries designed to minimize incidental impacts to summer chum salmon. The intent of the Base Conservation Regime (BCR) is to initiate rebuilding by providing incremental increases in escapement over time while providing a limited opportunity for fisheries conducted for the harvest of other species. The BCR has been constructed using a conservative approach that would pass through to spawning escapement, on average, in excess of 95% of the Hood Canal-Strait of Juan de Fuca summer chum recruitment in U.S. waters, and nearly 90% of the total recruitment of the run of each management unit.

The SCSCI established that annual abundance evaluations will be performed for both management units and stocks. Management units (MUs) are made up of one or more stocks that are aggregated in recognition of practical and biological limitations to available data and how fisheries can be effectively managed. In the case of Hood Canal-Strait of Juan de Fuca summer chum, all of the MUs contain only one stock except the Mainstem Hood Canal MU (which is comprised of the Dosewallips, Duckabush, Hamma Hamma, and Lilliwaup stocks). Critical status thresholds are defined for MUs, for both total

run size and spawning escapement, and minimum escapement flags are defined for the stocks within the Mainstem MU. An MU is considered to be in critical status when its abundance or escapement in the most recent past return year is less, or its forecast run size for the coming return year is projected to be less than the appropriate threshold value. Minimum escapement flags are useful benchmarks to check for poor performance of any one stock's escapement and is necessary for years when the overall MU abundance is sufficiently high that the critical abundance threshold would not be triggered but escapement of one or more individual stocks may be extremely low. Minimum escapement flags within the Mainstem MU are 736, 700, 1042, and 182 summer chum for the Dosewallips, Duckabush, Hamma Hamma, and Lilliwaup stocks, respectively (see SCSCI Section 1.7.3).

Harvest management results again can be described as very good during 2004, the fifth year in which the BCR was implemented. Table 7 provides a preliminary overview for 2004 of the pre-season estimates that triggered the various management responses, as well as the post-season estimates of results. Table 8 shows the estimated annual harvest of summer chum salmon during 2004, by management unit and fishery. Table 9 provides an overview of exploitation rates, relative to BCR targets, for 2004. As indicated, the information for 2004 is preliminary and subject to revision, once commercial catch data are verified and recreational catch data are included.

The 2004 pre-season forecasts indicated that only the Sequim MU abundance would fall short of its critical threshold. Within the Mainstem Hood Canal MU, only the Hamma Hamma stock's 2003 escapement fell below its minimum escapement flag (2003 escapement of 854 compared to minimum escapement flag of 1042).

Estimated exploitation rates for fisheries in Canadian and U.S. mixed stock areas during 2004 were well below the target exploitation rates of the Base Conservation Regime. In terminal areas, exploitation rates were also well below the BCR target levels, except for the Quilcene management unit. However, the expected escapements for all management units, including the Quilcene MU, were exceeded in 2004 (Table 7).

In 2004, post-season estimates of recruitment were higher than the pre-season forecasts for all MUs (Table 7). The higher than predicted abundance resulted in the critical threshold being exceeded for all MUs; and the minimum escapement flag was exceeded for the Hamma Hamma stock (2004 escapement of 2691 compared to minimum escapement flag of 1042).

During the 2004 season, no changes were made from the initially adopted plans. Using provisions of the BCR, an in-season projection of escapement to the Quilcene MU was made. The projections indicated that escapement would be significantly above the thresholds provided in the SCSCI for fishery modification. Coho fishery regulations were somewhat relaxed, permitting the continued use of gillnets by the Treaty Indian fishery, and gillnet effort was substantial. Provisions were also made for coho harvest in the Quilcene River, immediately downstream of the hatchery.

With the exception of the Quilcene MU, where separate management provisions apply, the escapement rate was 99.8% for each MU in 2004 (incomplete results). In the Quilcene MU, the escapement rate was 69.3%.

**Table 7.** Post-season assessment of forecasts, recruitment, and escapement by summer chum salmon harvest management unit in the year 2004.

<b>Management category</b>	<b>Sequim</b>	<b>Discovery</b>	<b>Chimacum</b>	<b>Quilcene</b>	<b>Mainstem H. Canal</b>	<b>SE Hood Canal</b>
Critical Runsize Threshold <sup>1</sup>	220	930	na	1,260	3,980	340
Preseason Runsize Forecast	202	3,939	598	8,346	5,907	2,074
Postseason Runsize Estimate <sup>2</sup>	1,665	6,430	1,141	55,079	25,894	5,998
Forecast Error	-87.9%	-38.7%	-47.6%	-84.8%	-77.2%	-65.4%
Expected Escapements <sup>3</sup>	1,518	5,864	1,041	16,630	23,072	5,242
Est. Escapement	1,662	6,417	1,139	38,153	25,834	5,984
BCR Escapement Target Exceedance	9.5%	9.4%	9.5%	129.4%	12.0%	14.1%
Estimated Exploitation Rate <sup>2</sup>	0.2%	0.2%	0.2%	30.7%	0.2%	0.2%

<sup>1</sup> See SCSCI Section 1.7.3, Table 1.9

<sup>2</sup> Post-season recruit estimates are preliminary and will be revised upwards when recreational harvest estimates are added. Estimates are rounded to nearest 1/10th of 1%.

<sup>3</sup> Expected escapements are generally those that would result from application of BCR expected exploitation rates. In the case of Quilcene, it was assumed that up to 50% of the entry after mid-September could have been considered “harvestable”.

**Table 8.** Summer chum salmon harvest, in 2004, by management unit and fishery. <sup>1</sup>

<b>Fishery</b>	<b>Sequim</b>	<b>Discovery</b>	<b>Chimacum</b>	<b>Quilcene</b>	<b>Mainstem Hood Canal</b>	<b>SE Hood Canal</b>
Canada	1	5	1	44	21	5
U.S. Mixed	2	8	1	70	33	8
Terminal	0	0	0	13	6	1
Extreme Terminal	0	0	0	16,799	0	0

<sup>1</sup> Post-season harvest estimates are preliminary and will be revised upwards when recreational harvest estimates are added.

**Table 9.** Post-season assessment of exploitation rates for 2004, relative to Base Conservation Regime (BCR) target levels.

Management Unit	Exploitation Rates	
	BCR Target	2004 Est. <sup>1</sup>
Sequim	8.8%	0.2%
Discovery	8.8%	0.2%
Chimacum	na	0.2%
Quilcene	15.2%	30.7%
Mainstem HC	10.9%	0.2%
Southeast HC	12.6%	0.2%

1. Based on preliminary harvest data; recreational catch not included. Rates rounded to nearest 1/10th of 1%

### Artificial Production

Summer chum supplementation programs continued at Lilliwaup, Hamma Hamma, and Jimmycomelately creeks. Summer chum salmon have been successfully re-introduced into two streams that were previously occupied by summer chum, Big Beef and Chimacum creeks; a third re-introduction program is underway on the Tahuya River. Supplementation or reintroduction programs have been terminated on several streams, because they have met the individual projects' production level goals specified in the SCSCI. Projects that have been terminated include Big Quilcene, Salmon Creek, Chimacum Creek, and Union River; the last fry releases from these programs occurred in 2004 (BY 2003).

A more detailed and complete presentation of artificial production programs will be made as part of the SCSCI 5-year review report.

### Summary

The improved summer chum salmon returns and escapements to Hood Canal and Strait of Juan de Fuca streams, enhanced by strong returns to various supplementation programs, and combined with the high percentage of natural origin recruits in recent years suggest a substantial reduction of the extinction risk for this Evolutionarily Significant Unit. While all of the above events are very positive results for the summer chum salmon recovery effort, they do not yet constitute full recovery. The co-managers have developed interim recovery goals for summer chum salmon (PNPTT and WDFW 2003), that require strong production performance of natural origin recruits over three generations (12 years), and the recent years of large returns do not at this time meet the recovery goals. The co-managers are just now beginning the development of a 5-year review of the Summer Chum Salmon Conservation Initiative results, and that document (due in the summer of 2005) will contain a detailed discussion of progress towards full recovery.

## References

- Point No Point Treaty (PNPT) Tribes and Washington Department of Fish and Wildlife (WDFW). 2003. Interim summer chum salmon recovery goals. Supplemental Report No. 5, Summer Chum Salmon Conservation Initiative – An Implementation Plan to Recover Summer Chum in the Hood Canal and Strait of Juan de Fuca. October 2003. Wash. Dept. Fish and Wildlife. Olympia, WA. 36 p.
- Washington Department of Fish and Wildlife (WDFW) and Point No Point Treaty (PNPT) Tribes. 2000. Summer Chum Salmon Conservation Initiative - An Implementation Plan to Recover Summer Chum in the Hood Canal and Strait of Juan de Fuca Region. Wash. Dept. Fish and Wildlife. Olympia, WA. 800 p.
- Washington Department of Fish and Wildlife (WDFW) and Point No Point Treaty (PNPT) Tribes. 2001. Annual report for the 2000 summer chum salmon return to the Hood Canal and Strait of Juan de Fuca region. Supplemental Report No. 3, Summer Chum Salmon Conservation Initiative - An Implementation Plan to Recover Summer Chum in the Hood Canal and Strait of Juan de Fuca Region. December 2001. Wash. Dept. Fish and Wildlife. Olympia, WA. 123 p.
- Washington Department of Fish and Wildlife (WDFW) and Point No Point Treaty (PNPT) Tribes. 2003. Report on summer chum salmon stock assessment and management activities for 2001 and 2002. Supplemental Report No. 4, Summer Chum Salmon Conservation Initiative – An Implementation Plan to Recover Summer Chum in the Hood Canal and Strait of Juan de Fuca. October 2003. Wash. Dept. Fish and Wildlife. Olympia, WA. 219 p.
- Washington Department of Fish and Wildlife (WDFW) and Point No Point Treaty Council (PNPTC). 2004. 2003 Progress report on Hood Canal summer chum salmon. Memorandum dated September 9, 2004. 22 p.

Appendix

Run Reconstruction Tables, 2003 - 2004

2003		Harvest	101	0	0	20	211	0	0	13	0	0	0	53	258	33		
		***** Run Abundance by Location *****											Seattle	Admiralty	U.S.	CDN		
Mgmt	Prod. Unit	Escape	Brood	82G/J	12D	12C	82F	12A	12B	12	9A	Discov.	Sequim	Term.	(Area 10)	(Area 9)	Conv	Area 20
Skok	Skokomish	0		101		101			101	101	101			101	101	101	102	102
12D	Tahuya	0			0	0			0	0	0			11,920	11,920	11,935	12,006	12,015
	Union	11,780	136		11,916	11,916			11,916	11,916	11,920							
12A	L. Quilcene	890						905	905	905	905			12,969	12,969	12,985	13,062	13,072
	B. Quilcene	11,745	98				11,863	12,059	12,059	12,059	12,064							
12-12B-	Big Beef	824	72						896	896	896			11,051	11,051	11,064	11,131	11,139
12C	Anderson	0							0	0	0							
	Dosewallips	7,066							7,066	7,066	7,069							
	Duckabush	1,869							1,869	1,869	1,870							
	Hamma	796	58						854	854	854							
	Lilliwaup	194	159			353			353	353	353							
	Dewatto	9				9			9	9	9							
Chim.	Chimacum	558												558		559	562	562
Discov.	Snow	304										304		5,955		5,962	5,998	6,002
	Salmon	5,521	130									5,651						
Sequim	JCL	369	77										446	446		447	449	450
<b>Totals</b>		41,925	730	101	11,916	12,379	11,863	12,964	36,028	36,028	36,041	5,955	446	43,000	36,041	43,053	43,310	43,343
	Hood Canal Portion	35,173	523											36,041	36,041	36,085	36,301	36,328
	E. Strait Portion	6,752	207											6,959		6,967	7,009	7,015

2004		Harvest	0	0	0	0	16,799	0	16	4	0	0	0	0	124	76		
		***** Run Abundance by Location *****											Seattle	Admiralty	U.S.	CDN		
Mgmt	Prod. Unit	Escape	Brood	82G/J	12D	12C	82F	12A	12B	12	9A	Discov.	Sequim	Term.	(Area 10)	(Area 9)	Conv	Area 20
Skok	Skokomish	24		24		24			24	24	24			24	24	24	24	24
12D	Tahuya	8			8	8			8	8	8			5,985	5,985	5,985	5,993	5,998
	Union	5,876	100		5,976	5,976			5,976	5,977	5,977							
12A	L. Quilcene	3,045						4,386	4,386	4,387	4,387			54,965	54,965	54,965	55,035	55,079
	B. Quilcene	35,000	108				35,108	50,566	50,566	50,576	50,578							
12-12B-	Big Beef	1,852	64						1,916	1,916	1,916			25,840	25,840	25,840	25,873	25,894
12C	Anderson	1							1	1	1							
	Dosewallips	11,549							11,549	11,551	11,552							
	Duckabush	8,637							8,637	8,639	8,639							
	Hamma	2,628	63						2,691	2,691	2,692							
	Lilliwaup	922	95			1,017			1,017	1,017	1,017							
	Dewatto	23				23			23	23	23							
Chim.	Chimacum	1,139												1,139		1,139	1,140	1,141
Discov.	Snow	396										396		6,417		6,417	6,425	6,430
	Salmon	6,021	0									6,021						
Sequim	JCL	1,601	61										1,662	1,662		1,662	1,664	1,665
Dung.	Dungeness	123												123		123	123	123
<b>Totals</b>		78,845	491	24	5,984	7,048	35,108	54,952	86,794	86,810	86,814	6,417	1,662	96,155	86,814	96,155	96,279	96,355
	Hood Canal Portion	69,565	430											86,814	86,814	86,814	86,926	86,995
	E. Strait Portion	9,280	61											9,341		9,341	9,353	9,360