Washington Department of Fish and Wildlife
Puget Sound Treaty Indian Tribes

Puget Sound Chinook Comprehensive Harvest Management Plan

Annual Report
The 2015-2016 Fishing Season

November 2016

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Executive Summary

This annual report on the Puget Sound Chinook Comprehensive Harvest Management Plan summarizes harvest information about commercial salmon fisheries occurring between May 1, 2015 and April 30, 2016, and Chinook spawning escapement in 2015. It also includes harvest information relevant to the 2014-2015 non-treaty sport fishing season and a review of the coded wire tag sampling rates in fisheries during calendar year (January-December) 2014.

Commercial Chinook catch in Puget Sound pre-terminal fisheries was similar to the pre-season projection for the Strait of Juan de Fuca net fishery and substantially lower than projected in the Strait of Juan de Fuca troll fishery and San Juan Islands net fisheries. Commercial catches in all terminal areas were below expectations, with the exception of the Stillaguamish-Snohomish net fishery, which exceeded preseason catch projections.

Marine and freshwater landed recreational Chinook catch in the 2014-2015 season was estimated at 42,057 and was lower than the pre-season projection of 57,698. Creel survey-based estimates of catch in 2015-2016 mark-selective recreational fisheries in Areas 5, 9-10, and 11 are included in this report. Total encounter estimates for the 2015-16 marine area selective fisheries are presented and compared to pre-season projections for these areas.

Escapement for Skagit River spring, Skokomish River, Mid-Hood Canal, Dungeness River and Hoko River Chinook stocks were lower than projected by preseason modeling. However, Skagit River summer/fall, Stillaguamish River, Snohomish River, Cedar River, Green River, Puyallup River, White River, Nisqually River, and Elwha River stock escapements were higher than preseason projections.

Coded-wire tag sampling rates for calendar year 2014 commercial fisheries exceeded 20% in some areas although some extreme terminal areas were below the target 20%. Sampling rates for marine recreational fisheries achieved the 10% objectives.

1 Introduction

The Puget Sound Chinook Harvest Management Plan mandates annual reporting of the performance of Chinook harvest management relative to the standards and guidelines of the plan (PSIT and WDFW 2010). This report partially fulfills that requirement and that of the Terms and Conditions in the 2015 Harvest Biological Opinion (F/WCR-2015-2433) by assessing the performance and effectiveness of treaty and non-treaty commercial fishery management actions adopted for the most recent management year. Included in this report are:

- Management objectives for the 2015-2016 management year (May 1, 2015 through April 30, 2016)
- Projected and actual commercial landed catch in Puget Sound and descriptions of fisheries for the 2015-2016 management year

- Projected and actual landed catch for 2015 Puget Sound recreational fisheries where creel surveys were conducted and for all 2014 Puget Sound recreational sport fisheries

- Estimates of total encounters for mark-selective fisheries and non-landed mortality for commercial fisheries with Chinook non-retention where data are available

- Projected and actual spawning escapement for all Puget Sound Chinook populations in 2015 with details on estimation methods and surveys.

- Summaries of biological sampling of spawning escapement, and estimates of contributions of hatchery- and natural-origin spawners where available

- Coded–wire tag sampling rates for commercial and recreational fisheries in 2014.

1.1 Management Objectives

General management objectives for Puget Sound Chinook populations, including Exploitation Rate Ceilings (ERCs), Critical Exploitation Rate Ceilings (CERC's), Upper Management Thresholds (UMTs), and Low Abundance Thresholds (LATs) were implemented in 2015 (Table 1-1). The final pre-season FRAM model run (2115) highlighted the rates that were used as the ceilings for each Management Unit (MU) in 2015, and the projected exploitation rates and escapements for each unit (Table 1-2).

Pre-season fishery planning for 2015-2016 fisheries projected that natural spawning escapement would fall below the Low Abundance Thresholds (LAT) for the Nooksack early, Stillaguamish, and Mid-Hood Canal MUs, so CERC's were implemented for those units. Escapement projections for other MUs exceeded their LAT's.

Table 1-1. 2015 Puget Sound Chinook Harvest Management Objectives.

Management Unit	ER Ceiling	Critical ER Ceiling	Upper Management Threshold	Low Abundance Threshold
Nooksack		7.0% SUS (9% allowed 1 of 5 years)	4,000	
North Fork			2,000	1,000
South Fork			2,000	1,000
Skagit summer / fall	50%	15% SUS	14,500	4,800
Upper Skagit summer				2,200
Sauk summer				400
Lower Skagit fall				900
Skagit spring	38%	18% SUS	2,000	576
Upper Sauk				130
Cascade				170
Suiattle				170
Stillaguamish	25%	15% SUS	900	700
North Fork summer			600	500
South Fork & MS fall			300	200
Snohomish	21%	15% SUS	4,600	2,800
Skykomish			3,600	1,745
Snoqualmie			1,000	521
Lake Washington	20% SUS	10% PTSUS		
Cedar River			1,680	200
Green	15% PTSUS	12% PTSUS	5,800	1,800
White River spring	20%	15% SUS	1,000	200
Puyallup fall	50%	12% PTSUS		500
South Prairie Creek			500	
Nisqually	52%	50% Reduction of SUS ER		700
Skokomish	50%	12% PTSUS	3,650 aggregate; 1,650 natural	1,300 aggregate; 800 natural
Mid-Hood Canal	15% PTSUS	12% PTSUS	750	400
Dungeness	10% SUS	6% SUS	925	500
Elwha	10% SUS	6% SUS	2,900	1,000
Western SJDF	10% SUS	6% SUS	850	500

Table 1-2. Management guidelines implemented and projected exploitation rates and escapements for Puget Sound Chinook Management Units from 2015 – 2016 pre-season planning (FRAM 2115).

Management Unit	ERC or CERC implemented	Projected ER	Projected Escapement	UMT	LAT
Nooksack	7% SUS	7% SUS	250	4,000	2,000
Skagit summer fall	50%	46%	10,466	14,500	4,800
Skagit spring	38%	33%	1,683	2,000	576
Stillaguamish	15% SUS	12%	453	900	700
Snohomish[1]	21% Total/15% SUS	27.8% Total/10.8% SUS	3,451	4,600	2,800
L. Washington (Cedar)	20% SUS	20% SUS	475	1,680	200
Green	15% PT SUS	9.8% PTSUS	3,243	5,800	1,800
White	20%	19.6%	663	1,000	200
Puyallup	50%	50%	896	500 South Prairie	500
Nisqually	52%	51.9%	1,942		700
Skokomish[2]	50%	49.8%	1,601	3,650 aggregate, 1,650 natural	1,300 aggregate, 800 natural
Mid Hood Canal	12% PT SUS	11.5% PT SUS	304	750	400
Dungeness	10% SUS	6.2% SUS	502	925	500
Elwha	10% SUS	6% SUS	3,909	2,900	1,000
Western SJDF	10% SUS	4.1% SUS	3,038	850	500

[1] Snohomish MU managed to CERC (15% SUS ER) in SUS fisheries because Northern fisheries were greater than the difference of the ERC and CERC.

[2] Skokomish UMT and LAT aggregate is the combined total returns to spawning grounds and George Adams Hatchery. The UMT and LAT natural abundance is the total return to spawning grounds regardless of origin (hatchery and natural origin).

2 Commercial Harvest

This chapter provides post-season estimates of Chinook catch for Puget Sound commercial fisheries, catch from tribal ceremonial and subsistence (C&S) fisheries, and test or research fisheries. Catch is projected pre-season through modeling of the fishery regime, which is developed and agreed upon in the Pacific Fisheries Management Council (PFMC) and North of Cape Falcon (NOF) forums, using the Fishery Regulation Assessment Model (FRAM). The 2015–16 List of Agreed Fisheries (Appendix A), describes all salmon fisheries for all areas of Puget Sound and ocean fisheries off the Washington coast. The final pre-season projections of catch under this regime were made in FRAM run number 2115.

Commercial, ceremonial and subsistence, and test fishery catch is accounted for on fish tickets, i.e., receipts from transactions between fishers and buyers. Fish ticket data are stored in a database maintained jointly by WDFW and the Puget Sound Tribes. In some fisheries, particularly non-treaty purse seine fisheries, estimates of non-landed mortality are also available, for comparison to pre-season expectations (Table 2-8 and Table 2-9. Total pre-season projected and post-season estimated Chinook mortality (landed + released) in Puget Sound non-treaty commercial salmon fisheries in 2015.

). WDFW conducts on-the-water observations of by-catch in commercial fisheries, concentrating on areas and gears where Chinook retention is not allowed.

Non-treaty troll, treaty troll, and recreational catches in Washington coastal fisheries north of Cape Falcon were less than their expected quotas (Table 2-1). Comparisons of

projected and actual Puget Sound catch are provided for two pre-terminal areas (Strait of Juan de Fuca and San Juan Islands), and six regional terminal fisheries (Nooksack/Samish, Skagit, Stillaguamish/Snohomish, South Puget Sound, Hood Canal, and Strait of Juan de Fuca). General information is presented for the 2015–16 fisheries, including in-season management actions that deviated from the pre-season plan, and explanations for differences in projected and actual catch.

Table 2-1. Projected and actual Chinook catch in Washington ocean and Puget Sound fisheries in 2015.

Fishery	Projected	Actual
Washington ocean non-treaty troll	67,000	55,313
Washington ocean recreational	64,000	39,431
Washington ocean treaty troll	60,000	56,137
Puget Sound pre-terminal net & troll total		
Strait of Juan de Fuca troll	5,050	1,843
Strait of Juan de Fuca net	904	820[a]
San Juan Islands net [b]	8,508	6,989
Nooksack-Samish terminal net	21,431	12,366
Skagit terminal net	2,686	2,295
Stillaguamish-Snohomish net	1,494	2,361
South Puget Sound terminal net	16,224	14,279
Hood Canal terminal net	32,221	23,545
Strait Tributaries terminal net	12	7

[a] Includes catch from PSC Sockeye Test Fishery.
[b] includes non-retention mortality in NT purse seine fishery.

2.1 Strait of Juan de Fuca and San Juan Islands

Treaty net fisheries in the Strait of Juan de Fuca and the San Juan Islands caught 748 and 4,716 Chinook, respectively, primarily during the fisheries directed at Fraser River sockeye. Sockeye test fishing in Area 5 caught 72 Chinook.

Non-treaty fisheries targeting Fraser sockeye in Areas 7 and 7A landed 45 Chinook. Because purse seines are required to release all Chinook, release mortality estimates are calculated using available data from on-water by-catch monitoring. Post-season analysis estimated 2,254 Chinook mortalities in the sockeye fishery and 19 in the chum fishery for a total of 2,273.

The Treaty troll fishery in the Strait of Juan de Fuca, exclusive of catch in Area 4B when it was managed under PFMC quotas, caught 1,843 Chinook.

2.2 Nooksack/Samish Terminal Area

Treaty Spring Chinook Ceremonial and Subsistence Fishery

The Lummi Nation conducted fishing with tangle-net gear on 18 days from April 13 to June 11, 2015. Total landed catch was 79 hatchery origin Chinook with an additional 15 natural-origin Chinook released. Genetic results indicated that of the 15 NORs, 14 were assigned North Fork origin and one was assigned South Fork origin. The South Fork origin NOR was caught and released on April 23, 2015. Applying the expected release mortality rate of 40% to the NOR encounters results in six estimated mortalities. The encounter rate of NORs was lower than the pre-season projection of 30 fish. An analysis of the 22 DNA samples collected from the 26 NORs caught and released in the 2014 tangle-net C&S fishery, indicated one NOR was South Fork origin, caught and released on May 30, 2014, one NOR was fall origin caught and released on April 10, 2014, and the other 20 NORs were North Fork origin.

In 2015, the Nooksack Tribe conducted a limited traditional Ceremonial fishery May 13th with a single Chinook caught by that fisher. A permit only, 13-hour subsistence fishery was opened from May 19th, 20:00 to May 20th 09:00 with 66 Chinook caught. A total of 67 Chinook were caught in the combined fisheries and all were sampled. The subsistence fishery was brief, with higher catch totals than anticipated, especially given lower catches in the Lummi Nation tangle-net fishery. Of the 67 chinook, 61 were Kendall hatchery origin, five were NORs, and one was Skookum Hatchery origin. Of the five NORs, DNA was successfully read on three, and all were assigned to the North/Middle Fork population. Further otolith analysis of the 2014 Nooksack Tribe C&S catch reduced the number of wild chinook caught from six to three, and correspondingly increased the HOR catch number by three. Of the three NORs caught in 2014, DNA was successfully read on two and both were assigned North/Middle Fork population chinook by DNA.

In total, the Tribes 2015 total NOR mortality is estimated to be 11 NORs.

Table 2-2. Expected and observed Chinook catches in the Nooksack/Samish terminal area, 2015.

Area	Management Period	Projected	Actual
7B, 7C, 7D Treaty net	Chinook, coho, chum	10,784	6,419
7B, 7C Non-treaty net	Chinook, coho, chum	9,408	3,321
Nooksack River Treaty net	Early Chinook, May-Jun	370	152
	Fall Chinook, Aug-Oct	866	2,176

Fall Chinook, Coho, and Chum Fisheries

The tribal fall Chinook fishery in Bellingham Bay (Area 7B), and Lummi Bay (7D) operated as planned from August 2 through September 4 (management weeks 32 – 36) and in Samish Bay (7C) from August 2 through September 18, with a catch of 5,024 Chinook. The coho fishery operated as planned from September 6 through October 24, with an incidental harvest of 1,395 Chinook. No Chinook were harvested incidentally during the chum fishery, which took place from October 25 to December 9. The total fall Chinook catch of 6,419 for Areas 7B, 7C and 7D was lower than the preseason projection of 10,784 (Table 2-2).

The non-treaty fishery in Area 7B and 7C landed 3,318 Chinook from July through September, lower than the pre-season projection of 9,373. Three Chinook were landed after September, compared to the projection of 35.

Fisheries for fall Chinook, coho, and chum in the Nooksack River occurred as planned in weeks 32 – 37, 38 - 44, and 44 - 51, respectively. The total Chinook catch was 2,176, exceeding the projected 866; 1,206 were caught during the Chinook period and 970 during the coho fishery. No Chinook were harvested during the chum period.

2.3 Skagit Bay/Skagit River Terminal Areas

Skagit Terminal Area Treaty Fisheries – 2015

Spring Chinook Fisheries: Treaty commercial fisheries in the Skagit terminal area directed at hatchery spring Chinook were conducted in 2015 as scheduled preseason. Incidental catch of spring Chinook also occurred during week 27 of the directed sockeye fishery, as Skagit River sub-area 78D-4 was still in the spring management period at that time. A total of 84 wild spring Chinook and 376 hatchery spring Chinook were caught in these fisheries, compared to 149 wild and 572 hatchery spring Chinook expected pre-season based on Chinook FRAM 2115. An additional 3 wild springs and 21 hatchery springs were harvested for ceremonial purposes.

Summer/Fall Chinook Fisheries: No treaty commercial fisheries directed at summer/fall Chinook were scheduled in the Skagit terminal area for 2015. However, as anticipated, incidental catch of summer/fall Chinook occurred in the sockeye, pink, and coho fisheries. The sockeye, pink, and coho fisheries were adjusted from the preseason schedule as noted in Table 2-3 due to in-season management needs, response to greater than expected chinook encounters, and intertribal sharing agreements. The Upper Skagit Tribe's sockeye, pink, and coho fisheries were all chinook non-retention fisheries as was planned pre-season. The Swinomish and Sauk-Suiattle Tribes switched to chinook non-retention during the second week of the pink fishery because of greater than expected Chinook encounters, and remained chinook non-retention through the coho fishery. An estimated 52.4% release mortality rate was applied to total encounters during the non-retention periods. The Swinomish and Sauk-Suiattle Tribes closed Area 78C for the final week of the pink fishery and restructured the coho fishery to reduce Chinook encounters. Total summer/fall Chinook mortality in these fisheries was 1,335 fish, compared to the pre-season expectation of 1,203 based on Chinook FRAM 2115. An additional 11 summer/fall Chinook were harvested for ceremonial purposes, which was less than the pre-season modeled value of 275.

Terminal Area Test Fisheries: A suite of Skagit terminal area test fisheries targeting Chinook, sockeye, coho, and chum was conducted by the Skagit tribes in 2015. Some weeks of these fisheries were adjusted or cancelled, as noted in Table 2-3, in response to weather, flow concerns, or staffing issues. A total of 11 wild spring Chinook, 10 hatchery spring Chinook, and 444 summer/fall Chinook were caught in these fisheries. The pre-season expectation of mortalities in the test fisheries was 51 wild spring Chinook, 39 hatchery spring Chinook, and 372 summer/fall Chinook.

Summary: Overall, a total of 98 wild spring Chinook, 407 hatchery spring Chinook, and 1,790 summer/fall Chinook were killed in treaty commercial, C&S, and test fisheries. The preseason expectation based on FRAM Chin2115 was 200 wild springs, 635 hatchery springs, and 1,850 summer/falls. The *preliminary* post-season estimate of 1,488 wild spring terminal run size was less than the FRAM forecast of 1,901. The *preliminary* post-season estimate of 2,546 hatchery spring terminal run size was slightly less than the FRAM forecast of 2,721. The *preliminary* post-season estimate of 14,661 summer/fall terminal run size was greater than the FRAM forecast of 12,360.

Table 2-3. Skagit terminal area projected and actual Chinook catches for treaty fisheries in 2015. Weekly projections were made by plugging the FRAM Chin2115 run sizes into the Skagit weekly harvest rate model, so totals may differ slightly from FRAM.

	Preseason Projected			Post-season Observed/Estimated			Difference	
Fishery	Schedule	Encounters	Mortality	Schedule	Encounters	Mortality	Encounters	Mortality
Test:								
Chinook	1 site, wks 19-35	168	168	No week 27 or 35	61	61	-107	-107
Sockeye	2 sites: A3 wks 23-30, Blakes wks 24-29	88	88	Same	36	36	-52	-52
Coho	3 sites: Blakes wks 34-45, A3 wks 35-44, Spudhouse wks 35-44	207	207	No Area 3 wk 43-45, Spudhouse began wk 34, no week 36	368	368	161	161
Chum	3 sites, wks 44-45	0	0	No Bay test, no Spudhouse wk 45	0	0	0	0
Area 8/78C Spring Chinook Fishery Swinomish and Sauk-Suiattle Tribes:								
Week 19	2 days	88	88	Same	23	23	-65	-65
Week 20	2 days	128	128	Same	28	28	-100	-100
Week 21	2 days	90	90	Same	34	34	-56	-56
Area 78C/78D Spring Chinook Fishery Upper Skagit Tribe:								
Week 20	1 day	209	209	Same	185	185	-24	-24
Week 21	1 day	206	206	Same	185	185	-21	-21
Area 8/78C/78D Chinook C&S Fishery Swinomish, Sauk-Suiattle, Upper Skagit Tribes:								
Sum/Fall-Spring Chin.	As needed	299	299	As needed	35	35	-264	-264
Areas 8/78C Sockeye Fishery Swinomish and Sauk-Suiattle Tribes:								
Week 25	3 days	15	15	same	2	2	-13	-13
Week 26	5 days	62	62	same	13	13	-49	-49
Week 27	5 days	41	41	same	48	48	8	8
Week 28	3 days	48	48	5 days	127	127	79	79
Area 78D/78O Sockeye Fishery Swinomish Tribe:								
Week 28	0.75 day	2	2	none	0	0	-2	-2
Week 29	0.75 day	2	2	1 day	3	3	1	1
Areas 78C/78D/78O Sockeye Fishery Upper Skagit Tribe (wks 27-30 Chinook non-retention):								
Week 27	0.667 days	7	4	0.667 days	20	10	13	7
Week 28	0.667 days	25	13	0.667 days	25	13	0	0
Week 29	0.458 days	30	16	0.458 days	41	21	11	6
Week 30	0 days	0	0	0.667 days	44	23	44	23

Areas 8/78C Pink Fishery Swinomish and Sauk-Suiattle Tribes:								
Week 35	1 day	130	130	same	266	266	136	136
Week 36	4 days	241	241	same but CK non-retention for 2.9 days	736	538	494	297
Week 37	3.333 days	184	184	Area 8: same but CK non-retention, Area 78C: none	4	2	-180	-182
Areas 78C/78D Pink Fishery Upper Skagit Tribe (wks 37-38 Chinook non-retention):								
Week 37	2 days	218	114	0.479 days	109	57	-109	-57
Week 38	2 days	188	98	none	0	0	-188	-98
Areas 8/78C Coho Fishery Swinomish and Sauk-Suiattle Tribes:								
Week 38	1 day	56	56	none	0	0	-56	-56
Week 39	2 days	30	30	same but CK non-retention	44	23	14	-7
Week 40	2 days	7	7	3 days, CK non-retention	84	44	77	37
Week 41	2 days	4	4	same, but CK non-retention	0	0	-4	-4
Areas 78C/78D Coho Fishery Upper Skagit Tribe: (wks 40-43 Chinook non-retention)								
Week 40	1 days	111	58	None	0	0	-111	-58
Week 41	1 days	48	25	None	0	0	-48	-25
Week 42	1 day	69	36	1.333 days	106	56	37	19
Week 43	0.75 days	30	16	2 days	178	93	148	77
Areas 8/78C Chum Fishery Swinomish and Sauk-Suiattle Tribes:								
Week 46	1 day	0	0	None	0	0	0	0
Total Skagit Terminal Area:		**3,032**	**2,686**		**2,804**	**2,295**	**-228**	**-391**

2.4 Stillaguamish/Snohomish Terminal Area

The tribal net fishery in Area 8A caught no Chinook during the coho fishery, however 48 Chinook were taken during the Pink salmon fishery (Table 2-4) prior to the coho fishery. Tribal Chinook catch in Area 8D occurred from May through mid-September, with most of the catch occurring during mid-July. Total 8D catch was 2,332, including 930 for ceremonial or subsistence purposes (Table 2-4). Chinook catch was greater than projected in area 8D, however this terminal fishery primarily harvests hatchery fish.

Non-treaty Chinook catch in Area 8A was zero Chinook during the coho fishery.

The Stillaguamish Tribes harvested no Chinook for ceremonial and subsistence purposes from the Stillaguamish River (Table 2-4).

Table 2-4. Projected (FRAM 2115) and actual Chinook net fishery harvest in the Stillaguamish - Snohomish terminal area in 2015.

Area		Projected	Actual
8A Commercial	Trty	495	48
	Trty C&S	Up to 100	0
	Ntrty	12	45[a]
8A Test		4	0
8D Commercial	Trty	959	1,402
	Trty C&S		930
	Ntrty	1	0
Stillaguamish R. Net	Treaty	45	0

[a] NT fisheries were non-retention for Chinook and values are reported as release mortalities.

2.5 South Puget Sound Terminal Areas

Table 2-5. Projected and actual Chinook catch in 2015 South Puget Sound net fisheries.

Area	Management Period	Projected	Actual
Area 9/10/11	Coho (A10 - Test)	21	0
	Chum (A9 - Test)	33	485
	A9 (Trty. C&S + chum)	659	0
	Trty pink/coho/chum (A10/11)	146	1
	NT chum	317	586[c]
Area 10E	Treaty Chinook/coho/chum	3,003	3,683
Area 10A	Chinook (test)	177	0
	Chinook C&S	165	0
	Pink/coho/chum	215	4
Duwamish River	Pink/coho	580	276
L Washington/Ship Canal	Sockeye/coho/C&S	412	22
	Test/Research	-	1
Lake Sammamish	Chinook	0	0
Puyallup River	Spring C&S	228	212
	Fall C&S	71	4[a]
	Chinook/Coho	1,502	1,511
Areas 13, 13D-K	Chinook/Coho/Chum	2,722	3,407
Area 13A	Chinook/Coho/Chum	815	93
Areas 13C/Chambers	Chinook	1,557	242
Nisqually River	Chinook/coho	6,232	4,461[b]

[b] Four ad-clipped fall Chinook, based on fisheries sampling data, were incidentally harvested during the White River spring Chinook C&S fisheries in weeks 21-26 on the Puyallup River. No directed Puyallup fall Chinook C&S fishery was implemented in 2015.
[a] Nisqually River projected and observed catch also includes estimated release mortalities from the tangle net selective fishery as well as non-selective commercial and C&S fisheries.
[c] NT fisheries were non-retention for Chinook and values are reported as release mortalities.

Marine Areas 9, 10 & 11

The coho test fishery in area 10 was not implemented in 2015. The chum test fishery in Apple Cove Point (Area 9) incidentally caught a total of 485 Chinook (Table 2-5), well above the anticipated 33. This was a significant departure from Chinook by-catch in this Test Fishery from previous years. Almost 70% of these fish were caught during the second to last week of the test fishery. These were all immature, black-mouth Chinook and much smaller than Chinook caught in previous years (B. Patton, personal communication).

The non-treaty chum-directed fishery in Area 10 and 11 incidentally harvested one Chinook, with a total estimated mortality of 586. The treaty chum fishery harvested one Chinook. Fisheries directed at Chinook and coho in Area 10E harvested 3,683 Chinook (Table 2-5). No Chinook were harvested during the chum fishery in area 10E.

Lake Washington

There were no Chinook directed fisheries in Lake Washington, the Ship Canal, or North Lake Washington. Sockeye returns to Lake Washington were insufficient to allow any directed fisheries. The Muckleshoot tribe conducted C&S fisheries in the Lake Ship Canal targeting sockeye, with total by-catch of 9 Chinook. The Muckleshoot Tribe and Suquamish Tribe did not conduct any C&S fisheries on Chinook. Incidental Chinook catch during the coho fishery in Lake Union, and the upper and lower Ship Canal harvested 13 Chinook, which was well less than expected. There were no Chinook or coho directed fisheries in Lake Sammamish nor any coho directed fisheries in North Lake Washington.

Elliott Bay/Duwamish River

The Chinook test fishery in Area 10A did not occur in 2015. There were no Chinook-directed or C&S fisheries in 10A or the Duwamish River. In 10A, there were two Chinook harvested in late August by Muckleshoot Tribe incidentally during the pink directed fishery and two more Chinook during the coho directed fishery. In the Duwamish River, 276 Chinook were caught incidentally during the pink and coho directed fisheries, which is well below the pre-season projected catch of 580.

Puyallup River and White Rivers

Ceremonial and subsistence fisheries for White River spring Chinook caught 107 fish in the Puyallup River during management weeks 21 – 26. Based on fisheries sampling data (~50% sampling rate), 103 were determined to be spring run Chinook while four are assumed fall run based on ad-clip marks. The Muckleshoot Tribe had an additional C&S fishery in the White River starting in week 36 which caught 109 Chinook of which zero were ad-clipped. The pre-season projected White River spring Chinook C&S catch was 228.

Except for the assumed four fall Chinook captured in the White River during the spring Chinook C&S fishery, no directed fall Chinook C&S fisheries occurred (Table 2-5). Fall Chinook catch was 1,511 combined during the half-day Chinook period and the subsequent coho fishery.

Marine area 13 & sub areas (Deep South Sound)

The Chinook fishery in Carr Inlet (13A) caught 93 Chinook (Table 2-5), in August and early September (weeks 32 – 37). Pre-season projected catch was 815.

The Chinook fishery at Chambers Bay (13C) occurred in weeks 34 – 36, and caught 242 fish (Table 2-5). The preseason catch projection was 1,557.

Chinook directed fisheries in 13D and Budd Inlet (13F) occurred from late-July through September (weeks 30 – 40); total catch was 3,272. Chinook caught incidentally during the coho fishery in (Week 37-42) 13D totaled 132. Three Chinook were caught during the Fox Island (Area 13) coho fishery. The total preseason catch projection for both areas was 2,722.

Nisqually River

The treaty commercial fishery in the Nisqually River killed and estimated 4,167 Chinook plus 294 additional fish for Ceremonial and Subsistence purposes, with a pre-season projected commercial catch of 6,232 (Table 2-5). Additional fishery season information for Nisqually was provided in a previous post-season harvest report to NOAA.

2.6 Hood Canal

Treaty Chinook directed fishing in 12C occurred as planned from July 15 thru August 31 (weeks 30 – 36) with a catch of 4,488. During the coho fisheries in 12C, eight Chinook were landed in

early-October and in 12A five Chinook were landed in mid-September. Catch was 50% lower than pre-season expectations due to the lower than predicted run size.

Chinook harvest in the Hoodsport Hatchery Zone (12H) was 12,750 and occurred as planned from July 13 through September 20. Catch was less than the expected 16,510 due to poor hatchery returns and a lower than predicted run size.

Chinook harvest in the Skokomish River occurred as planned from July 14 through August 22 landing 6,286 fish. Chinook harvest also occurred in Purdy Creek (tributary of Skokomish River that feeds the George Adams Hatchery) to access Chinook returning to George Adams Hatchery each Saturday from July 5 through September 6 landing 4,470 fish. The Purdy Creek Chinook fishery was successful by reducing over-escapement to the hatchery, which in some years exceeded 20,000 fish beyond broodstock goals.

In Port Gamble (Area 9A), 8 Chinook were harvested, primarily in mid-August to mid-September during coho fisheries.

There were no Chinook landed in non-treaty fisheries in Hood Canal in 2015, although there was an estimated 19 total mortalities based on observer data (Tables 2-6 and 2-9).

Table 2-6. Pre-season projected and observed catch of Chinook in Hood Canal terminal area net fisheries in 2015.

Area	Target Species	Projected	Actual
(12, 12B-12D, 9A) (T)	Chin, coho, chum	7,536	4,504
(12-12C, 9A) (NT)	chum, coho	69	19[a]
12A Net (T)	Coho	70	5
12H Net (T)	Chinook, chum	16,510	12,750
Skokomish River (82G) (T)	Chin, coho, chum	8,040	6,286
(82J) (T)	*Chinook*		*4,470*
	Total	32,221	23,545[b]

[a] NT fisheries were non-retention for Chinook and values are reported as release mortalities.
[b]Total does not include catch from area 82J.

2.7 Strait of Juan de Fuca

Due to the continued depressed status of Chinook populations, terminal fisheries in the Dungeness River and Elwha River were closed or provided very limited fishing opportunity. Chinook retention in the Dungeness Bay (6D) coho fishery was limited and three Chinook were retained during the late October portion of the fishery. Four Chinook were harvested for ceremonial purposes in the Elwha River (Table 2-7).

Table 2-7. Projected and actual catches of Chinook in Strait of Juan de Fuca terminal net fisheries in 2015.

Terminal Area	Projected	Actual
Area 6D & Dungeness River Treaty	5	3
Area 6D Non-Treaty	7	0[a]
Elwha River Treaty (C&S)	4	4
Hoko River Treaty	0	0

[a] NT fisheries were non-retention for Chinook and values are reported as release mortalities.

2.8 Non-Treaty Commercial Monitoring and Total Mortality

Because non-treaty vessels are required to release non-target species in many fisheries, WDFW conducts on-water monitoring to provide data on encounters of non-target species. Summaries of observer data for 2015 are presented in Table 2-8. Expanded estimates of total mortality, where available, were presented above in the summaries for individual fisheries, and are summarized and compared to pre-season expectations below in Table 2-9. Total pre-season projected and post-season estimated Chinook mortality (landed + released) in Puget Sound non-treaty commercial salmon fisheries in 2015.

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Table 2-8. Commercial fishery observation data for 2015 Puget Sound non-treaty salmon net fisheries.

Area	Gear type	# sets observed	Chinook	Coho	Sockeye	Pink	Chum	Steelhead
8*	PS	4	0	7	0	691	4	0
8A*	PS	28	13	33	2	6,196	8	1
10*	PS	74	170	384	11	21,351	71	3
10	PS	37	55	17	0	0	5,710	0
11	PS	31	2	8	0	0	2,429	0
7	PS	42	393	108	3,365	19,580	785	0
7A	PS	11	8	8	5	20	165	0
12	PS	18	0	3	0	0	733	0
12B	PS	38	2	12	0	0	2,779	0
10*	GN	12	2	8	0	279	1	0

* pink directed fishery only

Table 2-9. Total pre-season projected and post-season estimated Chinook mortality (landed + released) in Puget Sound non-treaty commercial salmon fisheries in 2015.

	Total Mortality	
Area	Projected	Actual
6D	7	N/A (0 landed)
7/7A	3,686	2,273
8	25	0
8A	12	45
10/11	317	586
12/12B	61	19
9A/12A	8	N/A (0 landed)

3 Recreational Harvest

This chapter summarizes expected recreational catch in Puget Sound marine waters and freshwater tributaries for the 2015-2016 management year, and presents catch estimates available from creel studies for that period. Due to the cycle of recovery and analysis of Catch Record Cards (CRCs) used by recreational anglers, complete catch estimates for all areas are not yet available. Since complete catch estimates were not available for all areas in the annual report covering the previous management cycle, projected and actual recreational catches for the 2014-2015 management year are also included here.

3.1 2014-2015 Recreational Catch

Total Recreational Chinook harvest in 2014-2015, estimated from preliminary Catch Record Card (CRC) data and creel estimates where available, was 42,057, compared to a preseason projection of 57,698. The CRC estimates are preliminary and subject to revision. Projected and actual catches for individual fisheries are shown in Table 3-1. Updated estimates of total mortality in mark-selective fisheries, for those fisheries where estimates are available, are presented in final reports available at http://wdfw.wa.gov/publications/search.php?Cat=Fishing / Shellfishing.

Table 3-1. Projected (FRAM 2814) and actual (preliminary, where available) Chinook catches in Puget Sound recreational fisheries during the 2014-2015 season.

Area/Fishery	Projected	Actual
Area 5-6		
Area 5 Summer MSF	6,296	5,134
Area 5 Winter MSF	503	216*
Area 6 Summer MSF	4,283	3,224
Area 6 Winter MSF	1,547	2,258
Other	162	256*
Strait Tributaries	0	0
Area 7		
Non MSF	3,687	5,464
MSF (December-April)	4,403	2,925
Nooksack/Samish FW	6,554	6,877
Area 8-1 & 8-2		
MSF	1,204	339
Skagit River		
Spring MSF	369	141
Area 8D SAF	163	161
Stillaguamish River	0	0
Snohomish River		
Skyokomish MSF	663	207
Area 9		
Summer MSF	3,218	2,875
Winter MSF	1,333	1,542
Area 10		
Summer MSF	1,112	1,071
Winter MSF	300	215
Area 11		
Summer MSF	3,828	2,943
Winter MSF	510	204*
Area 10E SAF	91	126
Lake Sammamish	186	36
Area 10A SAF	0	0
Green River	0	0
Puyallup River		
Carbon R MSF	323	228
Puyallup R MSF	752	616
Area 13		
Summer MSF	1,169	596
Winter MSF	96	14*
Chambers Cr	71	9
Nisqually	3,114	1,628
Deschutes	77	0
Area 12		
Summer MSF	927	630
Winter MSF	1,002	51*
Skokomish River	10,143	2,071

*Estimate through 3/31/2015

3.2 2015-2016 Recreational Catch

Projected Chinook catches for 2015-2016 recreational fisheries are listed in Table 3-2 The recreational fishing regime included mark selective fisheries (MSF) for portions of the year in Marine Areas 5 through 13 and in a number of rivers. WDFW conducted intensive sampling and monitoring of MSFs in Marine Areas 5, 9, 10 and 11, which provided the estimates in Table 3-2. Brief summaries of Chinook catch and encounters resulting from these sampling programs are included below. The analysis of 2015 summer fisheries is still in draft. When complete, this analysis will be made available on the WDFW website:

http://wdfw.wa.gov/publications/search.php?Cat=Fishing / Shellfishing.

For fisheries without intensive sampling and/or creel data available, catch will be estimated using CRC data and data from baseline dockside sampling of marine fisheries. Baseline sampling provides data on catch per unit effort (CPUE), species composition, as well as CWT and biological sampling data. For freshwater fisheries, catch estimates are made using CRC data, unless creel studies were conducted and harvest estimates are available. For marine fisheries, species-specific catch estimates are made using CRC estimates of total catch, combined with species composition data obtained from the baseline sampling program. These estimates will be included in the 2016 annual report.

Table 3-2. Projected (FRAM 2115) and actual (preliminary, where available) Chinook catches in Puget Sound recreational fisheries during the 2015-2016 season.

Area/Fishery	Projected	Actual
Area 5-6		
Area 5 Summer MSF	6,465	4,802
Area 5 Winter MSF	346	
Area 6 Summer MSF	4,311	
Area 6 Winter MSF	1,434	
Other		
Strait Tributaries		
Area 7		
Non MSF	2,709	
MSF (December-April)	6,152	
Nooksack/Samish FW	6,829	
Area 8-1 & 8-2		
MSF	761	
Skagit River		
Spring MSF	335	
Area 8D SAF	178	
Stillaguamish River	0	
Snohomish River		
Skyokomish MSF	239	
Area 9		
Summer MSF	2,483	2,331
Winter MSF	977	
Area 10		
Summer MSF	0	0
Winter MSF	192	
Area 11		
Summer MSF	3,105	1,502
Winter MSF	368	
Area 10E SAF	87	
Lake Sammamish	0	
Area 10A SAF	0	
Green River	0	
Puyallup River		
Carbon R MSF	323	
Puyallup R MSF	1,574	
Area 13		
Summer MSF	1,134	
Winter MSF	82	
Chambers Cr	72	
Nisqually	2,311	
Deschutes	42	
Area 12		
Summer MSF	699	
Winter MSF	480	
Skokomish River	3,487	

3.2.1 Marine Area 5 Summer MSF

2015 was the 13th year of summer mark-selective Chinook fishing in Marine Area 5. The 2015 fishery was opened for a set season, from July 1 through August 15.

WDFW conducted comprehensive fishery monitoring activities during the Area 5 MSF. Sampling activities included dockside creel sampling and intensive efforts to distribute and collect voluntary trip reports (VTRs) from the angling public. An enhanced Voluntary Trip Report (VTR) program was used to obtain estimates of Chinook encounter rates by size class (legal or sub-legal) and mark status (ad-marked or unmarked), similar to the approach used successfully during summer 2009. Detailed descriptions of the sampling program and results are available in WDFW (2016).

For Area 5, WDFW estimates that 4,802 Chinook were landed (4,750 marked and 52 unmarked; Table 3-3). Total encounters were higher than pre-season estimates for both unmarked and marked fish.

Table 3-3. Comparison of modeled (FRAM 2115) and estimated total Chinook encounters for the 2015 Area 5 summer Chinook MSF.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	9,436	6,001	3,435	60
	AD	14,937	7,362	7,575	6,405
	Total	24,373	13,363	11,010	6,465
	% Marked	61	55	69	99
Estimated (Creel) Encounters	UM	16,060	7,597	8,463	52
	AD	19,714	5,097	14,617	4,750
	Total	35,774	12,694	23,080	4,802
	% Marked	55	40	63	99

3.2.2 Marine Area 9 Summer MSF

In 2015, a recreational MSF occurred for the ninth consecutive summer in Marine Area 9. This fishery was open from July 16 through July 26. As in previous years, WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program in Area 9 during the summer season to collect the data needed to provide in-season catch estimates and to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Detailed descriptions of the sampling program and results are available in WDFW (2016).

An estimated 2,331 Chinook were landed in Area 9, compared to preseason projections of 2,483 (Table 3-4).

Table 3-4. Comparison of modeled (FRAM 2115) and estimated Chinook encounters for the 2015 Area 9 summer Chinook MSF.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	1,070	529	541	11
	AD	5,199	2,842	2,357	2,472
	Total	6,269	3,371	2,898	2,483
	% Marked	83	84	81	100
Estimated (Creel) Encounters	UM	1,653	1515	138	20
	AD	4,133	2,617	1,515	2,312
	Total	5,786	4,133	1,653	2,331
	% Marked	71	63	92	99

3.2.3 Marine Area 11 Summer MSF

In 2015, a summer recreational MSF was implemented in Area 11 for the ninth consecutive year, running from June 1 through September 30. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program in Area 11 to collect the data needed to provide in-season catch estimates and to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. An estimated total of 1,502 Chinook were landed during this fishery, compared to the pre-season projection of 3,104 (Table 3-5). Unmarked legal and sublegal encounters were greater than pre-season projections.

Table 3-5. Comparison of modeled (FRAM 2115) and estimated Chinook encounters for the 2015 Area 11 summer Chinook MSF.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	1,117	614	503	18
	AD	5,496	3,547	1,949	3,086
	Total	6,613	4,161	2,452	3,104
	% Marked	83	85	79	99
Estimated (Creel) Encounters	UM	2,361	758	1602	14
	AD	4,195	1,663	2,532	1,488
	Total	6,556	2,422	4,134	1,502
	% Marked	64	69	61	99

4 Spawning escapement

This section compares natural Chinook escapement estimates for 2015 with pre-season escapement projections, and management thresholds.

In general, FRAM projects natural escapement of unmarked Chinook. For some MUs where hatchery-origin adults contribute to natural spawning, the FRAM projections of escapement include natural-origin recruits (NOR) and hatchery-origin recruits (HOR) that spawn naturally.

This includes projections for the Skagit, Cedar, Green, Puyallup, Skokomish, Mid-Hood Canal, Dungeness, and Elwha. For the White MU, the projection includes fish of natural origin and fish originating from the acclimation pond program. Natural-origin adults that are used for hatchery broodstock may be included in the projections of natural escapement.

FRAM projects natural-origin escapement for the Nooksack, Skagit spring, Stillaguamish, and Snohomish populations, so hatchery-origin fish must be subtracted from total escapement, and the number of natural-origin fish used for broodstock added, to obtain an estimate comparable to the FRAM projections.

Spring Chinook escapements were below predictions for the Skagit population, but above the LAT. Escapement to the Dungeness was lower than projected and below the LAT.

For summer/fall populations, escapement was greater than projected for most management units. However, Skokomish and as Mid-Hood Canal escapements were below forecasted abundance and their respective LATs.

Table 4-1. Preseason projections and estimates of Puget Sound Chinook natural spawning escapement in 2015.

Management Unit		NOR	HOR	Total	Projected (FRAM 2115)
Nooksack	NF			N/A	101[1]
	SF			N/A	149[1]
Skagit spring	Suiattle			478	409[1]
	Cascade			188	348[1]
	Sauk			743	926[1]
	Total spring			1,409	1,683[1]
Skagit summer/fall	Sauk summer			406	436[1]
	Upper Skagit summer			10,705	7,900[1]
	Lower Skagit fall			2,203	1,657[1]
	Total summer/fall			13,076	10,466[2]
Stillaguamish	NF	242	128	370	375[1]
	SF	78	11	89	78[1]
	Total	320	139	588[3]	453[1]
Snohomish	Skykomish	1,585	1,449	3,034	2,678[1]
	Snoqualmie	694	135	829	773[1]
	Total	2,279	1,584	3,863[4]	3,451[1]
Lake Washington	Cedar	1,199	609	1,808	475
	Sammamish	92	896	988	N/A: Sammamish not in FRAM
Green		864	3,223[5]	4,087	3,243
Puyallup		936	1,139	2,075	895
White		607[6]	4,074	4,681	663[5]
Nisqually		715	1,295[7]	2,010[8]	1,942
Skokomish		138	294	432	1,601
Mid Hood Canal	Dosewallips			3	
	Duckabush	4	16	20	
	Hamma Hamma	22	214[9]	236	
	Total			259	304
Dungeness				407[10]	502
Elwha				4,112[11]	3,909
Hoko				2,888[12]	3,038

1. Natural-origin only.
2. Skagit Su/Fa projection total includes NOR and HOR escapement to the spawning grounds.
3. Includes additional 61 NORs and 68 HORs collected for broodstock, which are part of the FRAM Projection.
4. Includes additional 81 NORs collected for broodstock.
5. Includes contribution of supplemental program fish out-planted to mainstem from Soos Creek Hatchery.
6. Includes NORs and vent-clipped acclimation pond fish trucked and released upstream of Mud Mountain.
7. Includes additional estimated effective spawners of 505 HORs from Kalama Cr. Hatchery trucked and released upstream to spawn naturally (742 total trucked upstream with 68% spawn success).
8. Change-in-ratio (CIR) estimate will be revised with actual sport-catch data when available.
9. Supplementation fish from the Hamma Chinook Supplementation Program.
10. Includes 115 fish removed from the river for use as broodstock.
11. Includes 2,701 natural spawning fish and 1,411 fish as broodstock. Estimate does not include jacks.
12. Includes 236 fish for broodstock.

4.1 Nooksack River Early Chinook

Nooksack River 2015 Chinook escapement estimates are not available at this time, pending additional data and genetic laboratory analysis. In the absence of this data, we are providing a descriptive summary of surveys and carcasses for the 2015 season. We intend to provide an update on escapements when the data are available at a future date.

The co-managers surveyed the North Fork and Middle Fork sub-basins for North/Middle Fork early-timed Chinook. Surveys in the North Fork sub-basin commenced June 25 and continued through October 23. A total of 118 carcasses were enumerated in Kendall Creek (downstream of the hatchery rack) and Kendall Slough. An additional 395 Chinook carcasses were enumerated in the remainder of the North Fork sub-basin. In the Middle Fork sub-basin, 200 carcasses were enumerated between July 28 and October 27. Additionally, 2,908 adult Chinook and 86 jacks recruited to Kendall Hatchery.

Co-manager surveys in the South Fork Nooksack River, recovered a total of 78 carcasses through October 7. A total of 54 redds were enumerated through September 30th, however until more data is analyzed an escapement estimate is not available at this time.

4.2 Skagit River

Background

Six recognized Chinook populations spawn in the tributaries and mainstems of the Skagit River watershed. The Sauk River, Suiattle River, Baker River, and the Cascade River are major tributaries to the Skagit River, but there are also numerous smaller, anadromous fish bearing tributaries flowing both into the major tributaries and also into the Skagit River directly. Five hydroelectric projects are in the basin; two on the Baker River at river miles (RM) 1.6 and 9.3, and three on the Skagit River at RM 96.6, 100.9, and 105.1.

Escapements were calculated using various methodologies dependent on population and based on either new redd counts, total visible redd counts, linear regression predictions, or a combination of methods. Chinook carcasses were sampled for fork length, sex, scales, and presence or absence of a hatchery mark. We also electronically sampled Chinook carcasses for coded wire tags (CWT) and collected CWT present snouts. Estimates of spawner abundance by natural and hatchery origin were not available at the time of this report.

Surveys were performed on foot, by pontoon, jet boat, or by helicopter. Calculation of escapements for Skagit summer and Skagit fall Chinook, Sauk River spring (one 0.9 mile mainstem index), and Sauk River summer Chinook spawning escapement estimates have relied heavily on aerial redd surveys of extensive mainstem sections. However, due to poor water viewing conditions in 2015 aerial based total visible redd counts were unable to be performed for any of the Skagit fall Chinook indexes and for part of the Sauk summer Chinook indexes. Escapement estimates for those two populations relied entirely on regression prediction for the Skagit fall Chinook and partially on regression prediction for the Sauk summer Chinook.

Additional personnel from the Skagit Fisheries Enhancement Group (SFEG), Skagit River System Cooperative (SRSC, the management body for the Sauk-Suiattle and Swinomish Indian tribes), the Upper Skagit Indian Tribe (USIT), Seattle City Light, and Puget Sound

Energy, also performed work necessary to complete the escapement estimates and predictions for the Skagit River Basin Chinook salmon runs.

Methods and Results

Suiattle River Spring Chinook

Suiattle River spring Chinook spawn in the clear, large tributaries draining into the turbid mainstem of the Suiattle River. Some redds are found at tributary confluences with the mainstem and within the tributary's clear water lens in the mainstem created by unmixed tributary and mainstem water. Redds found within the tributary lenses are included in the tributary counts. Historically, limited spawning activity has been documented in the glacially influenced, highly turbidity mainstem with the exception of spawning in the tributary clear water lenses. The only recorded exception to date was in 2011, when an unusual combination of environmental variables reduced turbidity in the mainstem and resulted in conditions apparently suitable for observing and enumerating mainstem and off channel Suiattle River spring Chinook spawning.

Suiattle spring Chinook spawning Surveys were conducted from 3 August 2015 through 28 September 2015 by WDFW and Upper Skagit Indian Tribe (USIT) surveyors. Tributary indexes were surveyed for new redds every seven to fourteen days depending on access and spawning densities to ensure all redds were enumerated. The indexes included all known spawning habitat for each tributary. Tributary spawning surveys were conducted on foot. Encountered Chinook carcasses were sampled for scales, measured for fork length, and checked for presence of coded wire tags. Redds were marked with survey flagging to prevent double counting during subsequent surveys. The total redd count was multiplied by 2.5 fish per redd to estimate escapement.

The logjam that had been a passage barrier on Buck Creek in previous years (approximately river mile 1.2) remained in 2015 and appeared about the same size as observed in 2014. The pool habitat behind the jam had further filled with cobble and smaller substrate and forced the creek through a couple interstitial spaces on the left bank side of the jam. The logjam was a total fish passage barrier and was also preventing spawning substrates from moving downstream.

A total of 65 Suiattle spring Chinook carcasses were located in 2015 and 56 were able to be sampled. One sampled carcass was adipose clipped only and three carcasses were coded wire tagged and not clipped. Two of the coded wire tagged only carcasses were female pre-spawn mortalities. The remaining 52 carcasses were unmarked (no ad-clip and no coded wire tag) wild spring Chinook. The season total redd count was 191 redds (Table 4-2).

Table 4-2. Suiattle River spring Chinook 2015 spawning ground survey redd counts.

Stream	WRIA	Survey method	Reach (RM)	Location[*1]	Redds
Big Creek	3.0723	Foot	0.0-0.6	7.8	7
Tenas Creek	3.0761	Foot	0.0-0.5	9.6	0
Straight Creek	3.0797	Foot	0.0-0.1	15.1	2
Buck Creek	3.0813	Foot	0.0-1.7	18.1	11
Circle Creek	3.0892	Foot	0.0-0.2	18.4	0
Lime Creek	3.0897	Foot	0.0-0.5	20.8	11
Downey Creek	3.0919	Foot	0.0-2.1	24.4	117
Sulfur Creek	3.0973	Foot	0.0-0.9	26.3	38
Milk Creek	3.1022	Foot	0.0-0.1	28.6	5
				Total redds	191

[*1]Location refers to river mile location of tributary mouth on a mainstem, or lower river mile terminus of a mainstem index.

The preliminary 2015 Suiattle River Spring Chinook escapement estimate is 478 fish (rounded) (Table 4-1). All data and estimates of escapement are preliminary at the time of reporting and remain subject to further review and agreement by the Skagit comanagers before finalization.

Upper Cascade River Spring Chinook

Cascade River spring Chinook spawn in the mainstem Cascade River and accessible tributaries from river mile 8.1 (just upstream of a high gradient canyon) up to and including the forks at RM 18.6. Spawning has also been documented in the North and South Fork Cascade Rivers, from the mouth of each fork upstream at varying distances (less than one river mile) dependent upon annual variations in available spawning habitat.

Cascade spring Chinook surveys occurred from 3 August 2015 through 5 October 2015. The surveys included all known spawning habitat. Mainstem surveys were conducted by foot or pontoon boat depending on the stream features of the index by WDFW and USIT personnel. Indexes with numerous log jams, side channels, or crossings that could not be waded were floated. The survey protocol was to survey each index every ten to fourteen days. All new redds were marked with survey flagging to ensure they were only counted once. The total redd count was multiplied by 2.5 fish per redd to estimate escapement. All recoverable carcasses were sampled for scales, measured for fork length, and electronically checked for coded wire tags.

Three upper Cascade spring Chinook carcasses were observed in 2015. Of the located carcasses, one was not able to be collected and two were collected and sampled. Of the two sampled carcasses, one was adipose clipped and coded wire tagged, and the other was unmarked. Scavengers' getting to carcasses before surveyors have has always been a problem in the upper Cascade spring Chinook area. The competition for carcasses was likely exacerbated in 2015 due to lower than average flows from drought and seemingly more black bears patrolling the stream banks.

We identified and marked 75 redds in 2015 (Table 4-3). The 2015 upper Cascade River spring Chinook spawning escapement estimate was 188 fish (Table 4-1). All data and estimates of escapement are preliminary at the time of reporting and remain subject to further review and agreement by the Skagit comanagers before finalization.

Table 4-3. 2015 Cascade River spring Chinook redd counts.

Stream	WRIA	Survey method	Reach (RM)	Location[*1]	Redds
Cascade River	3.1411	Foot	8.1-9.0	8.1	1
Marble Creek	3.1451	Foot	0.0-0.3	8.6	0
Cascade River	3.1411	Foot/Raft	9.0-12.4	9.0	35
Cascade River	3.1411	Foot	12.4-15.8	12.4	27
Cascade River	3.1411	Foot	15.8-18.6	15.8	12
Kindy Creek	3.1528	Foot	0.0-0.5	16.2	0
North Fork Cascade River	3.1605	Foot	0.0-0.1	18.6	0
South Fork Cascade River	3.1411	Foot	0.0-0.5	18.6	0
				Total redds:	**75**

[*1]Location refers to river mile location of tributary mouth on mainstem, or lower river mile terminus of a mainstem index.

Upper Sauk River Spring Chinook

Upper Sauk River spring Chinook spawn in the mainstem Sauk River and in the North and South Fork Sauk Rivers. Mainstem spawning has been documented between RM 31.0 to the forks at RM 31.9. A high gradient section of the Sauk River beginning 0.9 river miles downstream of the White Chuck River acts as an assumed barrier to Sauk summer Chinook and the beginning and lowest point of spawning of upper Sauk River spring Chinook. Spawning in the North Fork Sauk occurs from the mouth to an impassable falls 1.6 RM upstream. Spawning in the South Fork Sauk has been documented from the forks upstream to approximately river mile 5.0, upstream of the area known as Monte Cristo Lake.

WDFW and USIT surveyed the upper Sauk River spring Chinook spawning areas from 18 August 2015 through 7 October 2015. Surveys were conducted by foot or pontoon boat on indexes above the White Chuck River every 10 to 14 days. The index below the White Chuck River was surveyed by helicopter every two weeks because it was too treacherous to raft or walk. Recovered carcasses were sampled for scales, fork length, and presence of coded wire tags. Redds located during foot or pontoon boat surveys were counted and marked with survey flagging.

A total of 43 Sauk spring Chinook carcasses were observed in 2015 and 35 of the carcasses were able to be recovered and sampled. Of the sampled carcasses 33 were wild unmarked and untagged fish, one fish was adipose clipped with no CWT present, and one carcass was not clipped but the head had been partially consumed by a scavenger so the presence or absence of a coded wire tag was not able to be determined.

There were 295 redds located upstream of the White Chuck River by ground based surveys and two redds observed downstream of the White Chuck River in the section surveyed by helicopter (Table 4-4). Total redds from ground based counts and the flown section were summed and multiplied by 2.5 fish per redd to estimate escapement. The 2015 upper Sauk River spring Chinook escapement estimate was 743 fish (Table 4-1). All data and estimates of escapement were preliminary at the time of reporting and remained subject to further review and agreement by the Skagit comanagers before finalization.

Table 4-4. Upper Sauk River spring Chinook redd counts from 2015 spawning ground surveys.

Stream	WRIA	Survey method	Reach (RM)	Location[*1]	Redds
Sauk River	3.0673	Flight	31.0-31.9	31.0	2
Sauk River	3.0673	Foot/Float	31.9-34.5	31.9	123
Sauk River	3.0673	Foot/Float	34.5-37.8	34.5	132
Falls Creek	3.1182	Foot	0.0-0.2	34.9	7
Sauk River	3.0673	Foot/Float	37.8-39.7	37.8	6
South Fork Sauk River	3.1204	Foot	0.0-3.5	0.0	15
South Fork Sauk River	3.1204	Foot	4.4-5.0	4.4	0
North Fork Sauk River	3.0673	Foot	39.7-40.1	39.7	1
North Fork Sauk River	3.0673	Foot	40.1-41.3	40.1	11
				Total redds (rounded):	297

[*1]Location refers to river mile location of tributary mouth on mainstem, or lower river mile terminus of a mainstem index.

Skagit Summer Chinook

Skagit River summer Chinook spawn in the mainstem of the Skagit River from the mouth of the Sauk River at RM 67.2 to the Seattle City Light Powerhouse at RM 94.3. Documented spawning has also occurred in several tributary streams. Tributaries were surveyed by foot or pontoon boat at an interval of every seven to fourteen days to ensure all redds were enumerated before redd life expired. The mainstem of the Skagit River was surveyed by helicopter and all visible redds were counted. Tributary surveys covered most of the known spawning area with the exception of some limited spawning known to occur above the tributary index areas in years of high abundance, and in some other tributaries which have infrequent spawning activity. Time constraints due to limited personnel resources prevented us from surveying all known spawning habitat.

Recovered carcasses were sampled for scales, measured for fork length, and checked for presence of tags and marks. Not all carcasses encountered could be sampled; carcasses were often observed in deep pools or were so badly decomposed they disintegrated upon disturbance. All redds located during tributary surveys were counted and marked with survey flagging.

Skagit summer Chinook tributary spawning surveys occurred regularly from 3 September 2015 through 27 October Table 4-52015 (Table 4-5). A total of 387 Skagit summer Chinook carcasses were found in 2015 and 369 carcasses were recovered and sampled. A total of 345 carcasses were unmarked and untagged wild Chinook, two carcasses were adipose clipped with no coded wire tag present, 19 carcasses were adipose clipped and coded wire tagged, two carcasses were coded wire tagged only, and one carcass was highly decomposed and was unknown adipose clip and unknown coded wire tag.

Table 4-5. Skagit summer Chinook redd counts from 2015 spawning ground surveys.

Stream	WRIA	Survey method	Reach (RM)	Location[*1]	Redds
Illabot Creek	3.1346	Foot	0.0-2.6	71.6	43
Cascade River	3.1411	Foot/Float	0.0-4.2	78.1	164
Diobsud Creek	3.1750	Foot	0.0-1.3	80.7	32
Bacon Creek	3.1774	Foot	0.0-4.2	82.9	111
Falls Creek[*2]	3.1780	Foot	0.0-0.4	4.0	2
Goodell Creek	3.1867	Foot	0.0-1.3	92.9	3
				Total redds:	**355**

[*1]Location refers to river mile location of tributary mouth on mainstem, or lower river mile terminus of a mainstem index.
[*2]Falls Creek WRIA 03.1780 is a tributary of Bacon Creek. The mouth is located at river mile 4.0 of Bacon Creek on the right bank.

We observed 355 summer Chinook redds in the tributaries (Table 4-5) and using area under the curve estimated 3,927 redds were built in the mainstem Skagit River above the Sauk River. The tributary redd count and estimated mainstem redds were summed and multiplied by 2.5 fish per redd to estimate escapement. The 2015 expected escapement of Skagit summer Chinook is 10,705 fish (Table 4-1). All data and estimates of escapement are preliminary at the time of reporting and remain subject to further review and agreement by the Skagit comanagers before finalization.

Lower Sauk River Summer Chinook

Lower Sauk River summer Chinook spawn from the mouth of the Sauk River to approximately RM 31.0 (0.9 RM downstream of the White Chuck River). The only documented tributary spawning has occurred in Dan Creek (WRIA 3.1079) but due to frequent low flows during spawning, summer Chinook use of Dan Creek has been

intermittent. Any carcasses located in Dan Creek were sampled for scales, measured for fork length, and checked for presence of tags and marks. The lower Sauk River is too wide, braided, and spawning too sparsely distributed to be effectively surveyed by foot or pontoon boat, so mainstem Sauk River summer Chinook spawning was surveyed by helicopter.

Zero Sauk summer Chinook carcasses were located in 2015.

Dan Creek had intermittent passable stream flows in 2015. Surveys of Dan Creek began 9 September and continued through 21 October 2015 and no Chinook redds were found.

Three flights were conducted on the Lower Sauk River summer Chinook mainstem reaches but the section of the Sauk River below the Suiattle River was never able to be surveyed due to high turbidity from the Suiattle River (**Error! Not a valid bookmark self-reference.**). The total number of redds in the mainstem were estimated using the area under the curve method for the sections above the Suiattle river and added to the redd count from Dan Creek. The number of redds downstream of the Suiattle river was predicted by linear regression of the number of redds downstream of the Suiattle compared to upstream of the Suiattle River mouth from spawn years with complete or nearly complete sets of flights in 2008, 2009, 2010, and 2012. 2011 was not used because the Suiattle River ran clear during much of spawning in 2011 and conditions and observed data were not considered comparable. The summed estimated number of redds were multiplied by 2.5 fish per redd to estimate escapement.

Table 4-6. Lower Sauk River summer Chinook redd counts from 2015.

Stream	WRIA	Survey method	Reach (RM)	Location* [1]	Redds by method		
					Foot surveys	AUC	Linear regression
					Actual	Estimated	Predicted
Sauk River	3.0673	Flight	0.0-13.2	0.0			47
Sauk River	3.0673	Flight	13.2-21.1	13.2		104	
Dan Creek	3.1079	Foot	0.0-0.8	16.8	0		
Sauk River	3.0673	Flight	21.1-31.0	21.1		12	
Grand total redds from all methods:						163	

[1]Location refers to river mile location of tributary mouth on mainstem, or lower river mile terminus of a mainstem index.

The 2015 escapement estimate of lower Sauk River summer Chinook was 406 fish (rounded; Table 4-1) and 28.8% of the estimate was the result of prediction by regression. All data and estimates of escapement are preliminary at the time of reporting and remain subject to further review and agreement by the Skagit comanagers before finalization.

Lower Skagit River Fall Chinook

Skagit fall Chinook spawn in the mainstem Skagit River from the vicinity of RM 24.5 to the mouth of the Sauk River (RM 67.2). They have also been documented spawning in a variable number of large and small tributary streams depending on flow conditions. Tributary surveys were conducted by foot every seven to fourteen days. Encountered carcasses were sampled for scales, measured for fork length, and checked for coded wire tags. Tributary redds were counted and marked with flagging to prevent repeated counting.

As with 2014, we were unable to conduct a usable series of aerial surveys on the mainstem Skagit River fall Chinook spawning zone in 2015 due to poor weather and water visibility. The 2015 fall Chinook escapement was predicted by regression based on the

relationship bewteen estimated escapements of Skagit summer and Skagit fall Chinook from 2004-2012. River conditions in the mainstem Skagit have been poor for fall Chinook flight surveys the past several seasons and escapements have had to be predicted by regression since 2013. The regression used for the 2015 this estimate did not consider tributary redds observed in 2015. Instead, the regression was formulated entirely on total escapements of Skagit summers and falls from 2004-2012 (i.e. the summed totals of AUC estimates from the mainstems and tributary redd counts and multiplied by 2.5 fish per red). Using the regression, the 2015 Sakgit summer Chinook estimate was used to preduct the 2015 Skagit fall estimate. The Chinook populations employed in this regression were selected on the basis of "best population relationships" and the selection was biased. Considering that this estimate/prediction is based solely on regression, it would be prudent to use it with discretion and caution. It is also recommended that this escapement be re-examined should new and/or better methods become available.

The 2015 Skagit fall Chinook escapement prediction was 2,203 fish (Table 4-1), is preliminary, and is awaiting co-manager review and agreement which had not yet occurred at the time of publication.

Despite not using the Skagit fall Chinook tributary indexes in the 2015 estimate, the indexes had still been surveyed every 10-14 days in 2015 from 14 September 2015 through 11 November 2015 (Table 4-7). In general weather and stream flow conditions in the Skagit River tributaries were mostly favorable for conducting surveys and 72 tributary index redds were observed. A total of 26 Skagit fall Chinook carcasses were observed in 2015 and 23 were able to be collected and sampled. Unmarked, untagged wild Chinook accounted for 21 of the carcass recoveries, one carcass was an adipose clipped only fish, and one carcass was adipose clipped and coded wire tagged.

Table 4-7. Lower Skagit River fall Chinook redd counts from 2015 spawning ground surveys. Redd counts were provided from Grandy Creek and part of Finney Creek by the Upper Skagit Tribe. The Skagit Fisheries Enhancement group surveyed Hansen Creek and Alder Creek.

Stream	WRIA	Survey method	Reach (RM)	Redds
Skagit River	3.0176	Flight	24.5-56.5	Did not survey (DNS)
Skagit River	3.0176	Flight	56.5-67.2	DNS
Hansen Creek	3.0265	Foot	3.0-4.3	0
Day Creek	3.0299	Foot	0.0-2.2	16
Jones Creek	3.0332	Foot	0.0-1.3	0
Grandy Creek	3.0337	Foot	0.0-1.1	0
Alder Creek	3.0359	Foot	0.0-1.6	0
O'Toole Creek	3.0365	Foot	0.0-0.2	0
Pressentin Creek	3.0385	Foot	0.0-0.4	5
Finney Creek	3.0392	Foot	0.0-6.0	47
Jackman Creek	3.0626	Foot	0.0-0.7	4
EF Nookachamps	3.0230	Foot	3.5-5.1	0
			Total redds:	**72**

4.3 Stillaguamish River

The Stillaguamish River basin has two populations of Chinook distinguished by genetic characteristics: summers and falls. These two populations overlap in spawn timing and distribution with both populations spawning in both forks of the Stillaguamish River. The summer stock is a composite of natural and hatchery-origin supplemental production with the majority of spawning occurring in the North Fork Stillaguamish and its major tributaries, including Boulder River and Deer, Grant, French, and Squire Creeks. The fall stock is a composite of natural and hatchery-origin supplemental production with the majority of spawning primarily in the mainstem and South Fork Stillaguamish Rivers, in Pilchuck, Jim, and Canyon Creeks, and in the North Fork Stillaguamish River. Escapement is currently estimated for North Fork and South Fork Stillaguamish Rivers rather than summer and fall populations of Chinook.

Escapement estimates for Stillaguamish Chinook were calculated by multiplying the cumulative redd count by 2.5. Since 2008, Chinook redds found in the North and South Forks have been individually counted during periodic foot or raft surveys using the marked redd census method. Previous to 2008, redd counts in the North and South Forks were estimated using area under the curve methodology based on aerial surveys of North and South Fork mainstem reaches as well as ground-based surveys of tributary streams. Aerial surveys continue to provide redd count data for the Lower Mainstem and upper South Fork. Since 2008, the Stillaguamish Tribe Department of Natural Resources has provided ground coverage of the North Fork Stillaguamish River from its mouth to river mile (RM) 30.0. WDFW staff surveyed the remaining known Chinook spawning areas in the Stillaguamish basin.

Surveys were conducted from mid-August to mid-November to encompass the spawn timing of both stocks. All known spawning habitat was surveyed either by foot or raft on a seven to fourteen day cycle, or by helicopter every fourteen to twenty-one days. All ground-counted

redds were flagged, enumerated and recorded with a GPS waypoint. Helicopter surveys counted total visible redds during each flight and total redds were estimated using area-under-the-curve methods. Carcasses encountered were sampled for scales, DNA, CWT, and adipose fin mark status.

North Fork Stillaguamish summer and fall Chinook

North Fork Stillaguamish Chinook spawning surveys covered the entire known distribution. Surveyed areas were the North Fork from RM 0.0 to 34.4 and North Fork tributaries including Squire, Segelson, French, Brooks, and Grant creeks, and Boulder River. Escapement was estimated using expansion of cumulative redd counts (2.5 fish per redd) from raft and foot surveys. Survey conditions for counting Chinook in the North Fork Stillaguamish were generally good throughout the spawning period. The first redds were detected August 25th in the upper North Fork, and last one was detected October 28th in Boulder River. Severe drought conditions led to record low flows and high water temperatures throughout the summer months. Water temperatures were consistently greater than 20 degrees Celsius from June through August and several tributaries where spawning normally occurs did not have sufficient flows to allow for fish passage. A total of 147 Chinook redds were counted on the North Fork of the Stillaguamish in 2015 (Table 4-8). The escapement estimate was 370 fish (243 NOR, 127 HOR) (Table 4-8 and Table 4-10). An additional 129 fish (61 NOR, 68 HOR) were taken for hatchery brood stock and were not included in the escapement estimate. Total NOR North Fork Stillaguamish River escapement (natural spawning + broodstock collection) was 304 Chinook.

Table 4-8. North Fork Stillaguamish summer summer and fall Chinook redd counts in 2015.

Stream	WRIA	Method	Reach (RM)	Redds	Escapement
North Fork	5.0135	Foot/Float	0.0-14.3	43	108
North Fork	5.0135	Foot/Float	14.3-30.0	82	205
North Fork	5.0135	Foot/Float	30.0-34.4	5	13
Grant Creek	5.0156	Foot	0.0-0.4	1	3
Deer Creek	5.0173	Foot	0.0-6.0	0	0
Brooks Creek	5.0215	Foot	0.0-0.1	0	0
Boulder River	5.0229	Foot	0.0-2.9	11	28
French Creek	5.0246	Foot	0.0-3.0	0	0
Squire Creek	5.026	Foot	0.0-4.0	5	13
Brown Creek	5.0265	Foot	0.0-1.0	0	0
			Total Redds	**147**	
			Escapement Estimate		**370**

South Fork and Mainstem Stillaguamish summer and fall Chinook

South Fork and Mainstem Stillaguamish summer and fall Chinook escapement in 2015 was estimated using expansion of cumulative redd counts (2.5 fish per redd) from aerial, foot, and raft surveys. Areas surveyed were the Mainstem between Sylvana and the confluence at Arlington (river miles 6.0 to 17.8), the South Fork from the confluence to Granite Falls (river miles 17.8 to 34.7), and Canyon, Jim, Siberia, and Pilchuck Creeks. River mile 34.7 to 55.1 include Granite Falls and Robe Canyon and are neither surveyable nor good Chinook spawning habitat.

Drought conditions caused record low flows and high water temperatures and many reaches were inaccessible to fish until late October. Rain generated flow pulses in late October and November reduced visibility and precluded further survey efforts. The mainstem aerial index reach, from the juvenile trap (RM 6.0) to the forks (RM 17.8) was flown three times, September 11, 24, and October 8.

A total of 35 Chinook redds were found in the Mainstem Stillaguamish and South Fork Stillaguamish River in 2015 (Table 4-9). The escapement estimate was 89 adult fish (82 NOR and 17 HOR; Table 4-10).

Table 4-9. South Fork and Mainstem Stillaguamish summer and fall Chinook redd counts in 2015.

Stream Reach	WRIA	Method	Reach (RM)	Redds	Escapement
Mainstem	5.0001	Flight	6.0-17.8	7	18
South Fork	5.0001	Foot/Float	17.8-34.7	16	40
South Fork (upper)	5.0001	Foot	34.7-65.0	0	0
Pilchuck Creek	5.0062	Foot/Float	0.0-6.2	5	13
Jim Creek	5.0322	Foot/Float	0.0-4.1	7	18
Siberia Creek	5.0324	Foot	0.0-0.4	0	0
Canyon Creek	5.0359	Foot	0.0-0.5	0	0
		Total Redds		**35**	
		Escapement Estimate			**89**

Carcass sampling and escapement composition

WDFW and Stillaguamish Tribe Natural Resources staff conducted spawning ground survey work and carcass sampling in the North and South Forks of the Stillaguamish River and their tributaries. Tribal staff focused their Chinook carcass recovery efforts in the North Fork between the mouth and Swede Heaven Bridge (RM 0.0 to 30.0) and WDFW staff focused on the remaining spawning grounds. In total, 77 complete carcasses (status of both adipose fin and CWT was determined) were sampled in the Stillaguamish River; 69 in the North Fork reaches and eight in the South Fork reaches. An additional 17 sampled carcasses were categorized as "unknown" because either the adipose status or the CWT status was undetermined. The sampling rates of Chinook carcasses, not including those with unknown mark dispositions, were 18.6% for North Fork reaches, and 9.0% for South Fork reaches. These rates were calculated by dividing the number of carcasses sampled by the escapement estimate for each population.

Escapement of Chinook by origin (hatchery or natural) was determined by applying ratios of hatchery marked carcasses and unmarked carcasses to the escapement estimate by reach groupings. Grouping reaches into subsets of the populations allows the calculation of hatchery origin recruits (HOR) and natural origin recruits (NOR) for escapement reaches where sample sizes were small or no carcasses were sampled.

Table 4-10. Stillaguamish Chinook carcass sampling and escapement composition in 2015.

	Escapement	No. Hatchery	No. Natural	% Hatchery	% Natural	No. Sample	% sampled
North Fork Stillaguamish							
NF Confluence to Deer Creek[1]	109	41	68	37.5%	67.5%	16	14.8%
NF above Deer Creek	218	72	146	33.3%	66.7%	48	22.0%
NF Tributaries	43	14	29	33.3%	66.7%	3	6.8%
NF Totals	370	127	243	34.5%	65.5%	67	18.1%
South Fork Stillaguamish[2]	89	17	82	12.5%	87.5%	8	9.0%
Stillaguamish Totals	**459**	**134**	**325**	**30.3%**	**69.7%**	**75**	**16.3%**

Key for Grouped Stratum and Populations:
NF Confluence to Deer Creek: North Fork Stillaguamish from RM0.0 to RM14.3
NF above Deer Creek - Deer Cr.: North Fork Stillaguamish from RM14.3 to RM34.4
NF Tributaries: Grant, Brooks, French Segelson, Squire, and Ashton creeks, and Boulder River
All "SF" reaches: Mainstem RM 0-17.8, South Fork Stillaguamish RM 17.8-70.0 and, Pilchuck, Jim, Siberia, and Canyon (RM 0.0-0.3) creeks.
[1]Due to low sample size, rates from the NF above Deer Cr. Reach were used for HOR/NOR breakout in this reach.
[2]Due to low sample size, the average of rates from the previous two years were used for HOR/NOR breakouts.

4.4 Snohomish River

There are two populations of Chinook in the Snohomish River basin: Skykomish summer/fall Chinook and Snoqualmie fall Chinook. The Skykomish stock spawns in the mainstem of the Skykomish River and its tributaries, including the Wallace and Sultan Rivers, Bridal Veil Creek, the South Fork Skykomish River (between RM 49.6 and RM 51.1 and above Sunset Falls) and the North Fork Skykomish River (occasionally above Bear Falls at RM 13.1). The Snoqualmie stock spawns in the Snoqualmie River and its tributaries, including the Tolt and Raging Rivers, and Tokul Creek.

Escapement estimates of naturally spawning Chinook salmon returning to the Snohomish watershed are calculated from cumulative redd counts made from physical surveys of their spawning grounds, and from counts of adult fish passed at Sunset Falls. Additionally, redd

estimates for unsurveyed reaches on Raging River, North Fork Tolt River and Cherry Creek were expanded based on redds per mile of adjacent surveyed reaches. Survey methods included ground based walking, float, and jet sled surveys, as well as aerial surveys conducted from a helicopter. Ground counted redds were monitored using marked-redd-census methodology. Ground surveys were done at a frequency of seven to ten days so as to not miss new redds. Redds in ground-surveyed reaches were enumerated, marked with a GPS waypoint, and flagged to prevent re-counting on subsequent surveys. Aerial surveys were conducted on the Snohomish, Skykomish and North Fork Skykomish Rivers at target intervals of two weeks. Aerial surveys provided total visible redd counts per survey flight and were plotted against survey date for the area-under-curve (AUC) method yielding total redd days. Total redd days were then divided by the assumed standard 21-day redd life to yield the estimated cumulative redds from aerial surveyed reaches. The cumulative redd count was then expanded by 2.5 (fish per redd) to estimate escapement. Additionally, a count of Chinook passed above the trap at Sunset Falls on the South Fork of the Skykomish was made. Carcasses encountered were sampled for scales, DNA, CWT, adipose fin mark status, and otoliths.

Skykomish summer/fall Chinook

Spawning ground surveys were conducted throughout the known spawning distribution of Skykomish summer/fall Chinook. Survey reaches were the mainstem Snohomish and Skykomish Rivers, Pilchuck, Sultan, and Wallace Rivers, Woods, Elwell, Bridal Veil, Olney, and Proctor Creeks, and in the North and South forks of the Skykomish River.

Survey conditions were good for most of the spawning season. Extreme drought conditions led to record low flows and high water temperatures through late October. Record high flows late October made survey conditions difficult. Skykomish river flows ranged from below 300 cfs in late August to a peak of over 95,000 cfs on November 17 at Goldbar. Survey intervals were kept to seven to ten days except for when rain-fed flow pulses in late-October and November caused survey delays. Four aerial surveys were flown on the Mainstem Snohomish, Skykomish and North and South Fork Skykomish Rivers between September 17 and October 28.

A total of 973 Chinook redds were found in the Skykomish River and its tributaries, and Pilchuck River in 2015 (Table 4-11). The spawning escapement estimate (including Sunset Falls trap counts) was 3,034 adult fish (1,585 NOR, 1,449 HOR; Table 4-13). An additional 2,986 adult fish (including 81 NOR) recruited to Wallace Hatchery and were not included in this escapement estimate. Total NOR Skykomish escapement (natural spawning + broodstock collection) was 1,666 Chinook.

Table 4-11. Skykomish summer/fall Chinook redd counts and escapement, 2015.

Stream Reach	WRIA	Method	Reach (RM)	Redds	Escapement
Snoh-Sky (Mainstems)	7.0012	Float/Flight	20.5-51.5	432	1,080
NF Skykomish	7.0982	Foot/Flight	0.0-13.5	62	155
SF Sky (Sunset Falls)	7.0012	Trap/Haul	51.5-up		479
Pilchuck River	7.0125	Foot/Float	2.0-26.5	21	53
Woods Creek	7.0826	Foot/Float	0.0-3.5	1	3
Elwell Creek	7.0865	Foot	0.0-1.0	0	0
Sultan River	7.0881	Foot/Float	0.0-9.7	156	390
Wallace River (lower)	7.094	Foot/Float	0.0-4.4	151	378
Wallace River(upper)	7.094	Foot/Float	4.4-7.3	120	300
Olney Creek	7.0946	Foot	0.0-0.6	3	8
Proctor Creek	7.097	Foot	0.0-0.4	5	13
Bridal Veil Creek	7.1248	Foot	0.0-0.4	22	175
			Total Redds	973	
			Escapement		3,034

*In Olney and Bridal Veil Creeks, carcass counts were greater than redd-based escapement estimates, therefore carcass counts were used as minimum escapements in these creeks.

Snoqualmie summer/fall Chinook

The escapement estimates for Snoqualmie summer/fall Chinook were made using cumulative redd counts from boat, foot, and aerial surveys of known spawning habitat. Surveyed reaches were the Snoqualmie River and its tributaries, including the Tolt and Raging Rivers and Cherry and Tokul Creeks. Chinook redds were observed from early September to mid-November.

Survey conditions were good for most of the spawning season. Drought conditions led to record low flows and high water temperatures. Rainstorms in late October elevated stream flows and turbidity and caused some interruptions in survey coverage.

In 2015, 829 Chinook are estimated to have escaped to (694 NOR and 135 HOR) the Snoqualmie Basin, based on a total count of 323.5 redds (Table 4-12). Based on carcass sampling results, the escapement estimate is composed of 694 NORs and 135 HORs (Table 4-13).

Table 4-12. Snoqualmie fall Chinook redd counts and escapement by reach, 2015.

Stream Reach	WRIA	Method	Reach (RM)	Redds	Escapement
Snoqualmie River (Lower)	7.0219	Float	20.5-24.9	53	133
Snoqualmie River (Upper)	7.0219	Float	32.9-39.6	153	383
Cherry Creek	7.0240	Foot	1.8-3.5	2	5
Tolt River (Lower)	7.0291	Foot/Float	0.0-6.0	47	118
Tolt River (Upper)	7.0291	Foot/Float	6.0-8.9	9	23
NF Tolt River	7.0291	Foot	8.9-11.3	7	18
SF Tolt River	7.0302	Foot	0.0-2.3	18	45
Raging River	7.0384	Foot	0.0-4.6	16	40
Raging River (Upper)	7.0384	Foot	4.6-13.2	14.5	36
Tokul Creek (Lower)	7.044	Foot	0.0-0.3	4	28
Tokul Creek (Upper)	7.044	Foot	0.3-0.6	0	0
		Total Redds		**323.5**	
		Escapement Estimate			**829**

Sampling and HOR:NOR summary

Field staff sampled 147 complete Chinook carcasses (status of CWT, otolith mark, and adipose fin mark are known) within the Snohomish basin. Additionally, adipose fin and CWT status was determined for 116 live Chinook passed at Sunset Falls. In total, the Chinook carcass sampling rate on the spawning grounds and at Sunset Falls was 19.1% (Table 4-21). This was calculated by dividing the number of carcasses and live fish sampled by the escapement estimate.

Escapement of Chinook by origin (hatchery or natural) was determined by applying ratios of hatchery marked carcasses and unmarked carcasses (and live fish sampled at Sunset Falls) to the escapement estimate by reach groupings (Table 4-13). Grouping reaches into subsets of the populations allows the calculation of hatchery origin recruits (HOR) and natural origin recruits (NOR) for escapement reaches where sample sizes were small or no carcasses were sampled.

Table 4-13. Snohomish Chinook carcass sampling and escapement composition in 2015.

Stratum	Escapement	No. Hatchery	No. Natural	% Hatchery	% Natural	Number Sampled	Percent Sampled
Skykomish	1,104	370	734	33.5%	66.5%	161	14.6%
Bridal Veil	330	231	99	70.0%	30.0%	203	61.5%
SF Sky *	479	153	326	31.9%	68.1%	116	24.2%
Pilchuck River	53	15	38	28.6%	71.4%	21	39.6%
Sultan River	390	201	189	51.5%	48.5%	33	8.5%
Wallace River	678	479	199	70.7$	29.3%	58	8.6%
Skykomish Population	**3,034**	**1,449**	**1,585**	**47.8%**	**52.2%**	**592**	**19.5%**
Snoqualmie	801	120	681	15.0%	85.0%	120	15.0%
Tokul	28	15	13	51.9%	48.1%	27	96.4%
Snoqualmie Population	**829**	**135**	**694**	**16.2%**	**83.7%**	**147**	**17.7%**
Snohomish Total	**3,863**	**1,584**	**2,279**	**41.0%**	**59.0%**	**739**	**19.1%**

*Sunset Falls sample: A sub-sample of Chinook passed upstream were sampled for cwt wire and adipose mark

Key for Grouped Stratum and Populations:

Skykomish Population:

Bridal Veil: Bridal Veil Creek, NF Skykomish River, SF Sky (Sunset Falls)
Sultan: Sultan River
Skykomish: Snoh-Sky (Mainstems), Elwell Creek, Olney Creek, Woods Creek, Proctor Creek
Pilchuck: Pilchuck River
Wallace: Wallace River (Upper and Lower)

Snoqualmie Population:

Snoqalmie: Snoqualmie River (Lower and Upper), Raging River, Tolt River (Lower and Upper), SF
Tokul: Tokul Creek (Lower), Tokul Creek (Upper)

4.5 Cedar River

Prior to 1999, live counts and Area Under the Curve (AUC) methods were used to estimate Chinook spawning abundance in the Cedar River. Since 1999, Chinook redds have been enumerated and mapped in the Cedar River via floating surveys, and escapement estimated by expanding the redd count by 2.5. Cedar River redd surveys are considered to be a complete census of the mainstem river, where every Chinook redd in the Cedar system is counted. Redd surveys are conducted between RM 4.2 and RM 21.8 (Landsburg Dam) 2-3 times per week for the duration of the Chinook spawning period. The portion of the river upstream from the Landsburg Dam to the Cedar Falls powerhouse (RM 34.5), and the lower 4.2 miles of the Cedar mainstem are each surveyed once per week. Due to the overlap with sockeye spawning timing, Chinook redds are only included in the count if a female Chinook is present and actively attending to a redd.

In 2015, a total of 723 Chinook redds were observed in the Cedar River during the spawning season (including the surveyed area upstream from Landsburg Dam and including all small tributaries). Of the 723 Chinook redds, 719 were observed in the Cedar River mainstem (642 below Landsburg Dam and 77 above), and 4 were observed in Taylor Creek, a small tributary to the Cedar River. Expansion by 2.5 fish per redd resulted in the estimated escapement of 1,808 Chinook (Table 4-1). A total of 597 adult Cedar River Chinook were sampled for adipose fin clips in 2015. This sample indicated that 66% of the Cedar River Chinook were natural origin fish (unclipped) and 34% were hatchery origin (clipped) fish.

4.6 Sammamish River/North Lake Washington Tributaries

The Sammamish Chinook population is composed of naturally spawning Chinook in the Big Bear/Cottage Lake Creek watershed and in the Issaquah Creek watershed downstream. Chinook natural escapement to the Sammamish River/ North Lake Washington tributaries in 2015 was estimated at 988 fish (Table 4-1).

Big Bear/Cottage Lake Creeks

Escapement estimation to Big Bear Creek and Cottage Lake Creek involves weekly surveys of all known Chinook spawning areas to enumerate live Chinook. Total spawning escapement is estimated using the AUC method, where live fish counts and a 10-day stream life estimate are used to calculate escapement.

The Bear Creek/Cottage Creek index area was surveyed weekly during the 2015 spawning season. The escapement estimate was 271 fish. Of these, 139 fish were counted in the Bear Creek mainstem, and 132 fish were counted in the Upper and Lower Cottage Creek Indexes. A total of 130 Chinook were sampled for adipose fin clips in 2015. This sample indicated that 19% of all Chinook in the Bear/Cottage system were natural origin fish (unclipped) and 81% were hatchery origin fish.

Issaquah Creek System

Issaquah Creek is surveyed weekly from the Issaquah Hatchery (located at river mile 3.0), downstream to its confluence with Lake Sammamish to count Chinook carcasses. All Chinook carcasses are assumed to have spawned, and the cumulative carcass count is used as the escapement estimate for this reach of Issaquah Creek. East Fork Issaquah Creek is also surveyed weekly from its confluence with the Issaquah Creek mainstem, upstream to the High Point Trail crossing at approximately RM 3.0. Similar to the Issaquah Creek mainstem, the cumulative carcass count is used as the escapement estimate for the East Fork.

The Issaquah Creek system was surveyed weekly during the 2015 spawning season, and total escapement was estimated at 717. This estimate includes 709 fish in the mainstem below the hatchery, and 8 fish from the East Fork. A total of 338 adult Chinook from the Issaquah Creek system were sampled for adipose fin clips in 2015. This sample indicated that 4% of all Chinook in the Issaquah Creek system were natural origin fish (unclipped) and 96% were hatchery origin fish.

Chinook escapement to Issaquah Hatchery in 2015 was 3,435 (3373 adults and 62 jacks); of which 1,169 (1161 adults and 8 jacks) were intentionally released upstream to spawn in upper Issaquah Creek. 2015 was the second year with no Chinook returns to the University of Washington hatchery; the program has been discontinued.

4.7 Green River

Beginning in 2009, Muckleshoot (MIT) and WDFW Biologists agreed to attempt weekly counts of new Chinook redds in all surveyable reaches of the Green River and Newaukum Creek during Chinook spawning ground surveys, reasoning that so few redds were being dug, it was possible to count all redds in all reaches. This estimation methodology uses season total redd counts, without adjustment, in four of the six sections of the mainstem Green River. At the conclusion of the spawning season, the observed number of redds in these sections of the river is known with a variance of zero. There may be observational error in these sections or

spawning outside these sections. However these factors operate in all sampling programs and are not included in any variance estimates.

New Chinook redds were counted weekly over three days in the mainstem river between River Mile (RM) 33.8 to 48.5 (Middle River and Lower Gorge) and 59.2 to 61.0 (Headworks), and two aerial surveys were used to estimate redds in RM 25.4 to 33.8 (Lower River). Using 2 one-man pontoon boats or 2 two-man boats, crews worked in tandem to count redds left and right of the center of the river. Foot surveys of Chinook naturally spawning in Newaukum Creek were conducted weekly by WDFW crews from the creek mouth to river mile 3.9. Redds in the Metzler Side Channel (MSC) were counted opportunistically when adequate water filled the side channel, in a similar manner. Only those redds that could reasonably be presumed to be Chinook redds were counted, based on the presence of a female observed digging or guarding the redd, or when redd size and substrate size were unambiguous.

A rigorous surveying schedule began the week of September 6 and continued through the week of October 25. Surveys were suspended during the week of November 1 when high flows were prohibitive. A redd count from Metzler Side Channel was conducted on October 7 and October 21-23. These redds were added to the weekly count for the Middle River. The weekly number of redds counted in each section, was summed, without adjustment, to produce the season total redd count by section.

On October 5 and 20, a count of visible redds in each reach was made by helicopter in all 6 sections, encompassing the entire “spawnable area” of the mainstem river between RM 25.4 and approximately RM 60.4. Pending amenable weather conditions, flights were timed to coincide with the historical peak of natural Chinook spawning activity which typically occurs the first or second week in October. Flight scheduling was limited by availability of the helicopter and weather and river conditions.

Escapement was calculated for the sections of the river not surveyed by boat: “Gorge”, RM 48.5 to 56.2, the Lower River, RM 26.7 to 33.8; and “Hwy 167 to Transfer Shack”, RM 25.4 to 26.7. The season total redd count from the section just below the Gorge; Lower Gorge section: RM 44.3 to 48.5, was divided by the number of redds in the Lower Gorge section counted on the flight, resulting in the “Ground to Air Ratio” (G/A). The G/A was then applied to the number of redds observed in the Gorge on the day of the flight. For the Lower River, including the Hwy 167 to Transfer Shack section, the season total redd count was approximated using the sum of both aerial surveys.

Season total redd counts from boat and foot surveys of the mainstem Green River and Newaukum Creek and calculated values from the aerial sections of the Green River, were multiplied by 2.5 fish per redd to estimate total Chinook spawning naturally in the Green River basin. This multiplier is intended to account for the number of males and females and is derived from the sex ratio of 1.5 males for every female.

Post season analysis of the season totals indicates that spawning activity peaked during the week of October 4 in the mainstem and the week of September 27 in Newaukum Creek (Table 4-14 Table 4-15). By the end of surveys the week of October 18, 95.1% of the redds (1,250 of 1,315) observed during boat and foot spawning ground surveys were complete.

Table 4-14. Chinook redd counts from foot and boat surveys of the Green River in 2015.

	Week								
Section	6-Sep	13-Sep	20-Sep	27-Sep	4-Oct	11-Oct	18-Oct	25-Oct	Total
Headworks	-	9	54	95	99	90	74	21	442
Lower Gorge	-	2	5	11	34	18	5	14	89
Middle River	0	7	69	88	148	97	109	29	547
Lower River	-	-	-	-	-	-	-	-	-
Newaukum Creek	-	5	35	82	50	36	28	1	237
Total	0	23	163	276	331	241	216	65	1,315

Table 4-15. Aerial survey counts of Chinook redds in the Green River, 2015.

	Week[1]								
Section	6-Sep	13-Sep	20-Sep	27-Sep	4-Oct	11-Oct	18-Oct	25-Oct	Total
Headworks	-	-	-	-	124	-	82[2]	-	206
Gorge	-	-	-	-	92	-	47	-	139
Lower Gorge	-	-	-	-	30	-	25	-	55
Middle River	-	-	-	-	198	-	170	-	368
Lower River	-	-	-	-	24	-	16	-	40
Hwy 167-Transfer Shack	-	-	-	-	3	-	0	-	3
Total	-	-	-	-	471	-	340	-	811

[1]*Aerial counts can include redds still visible from prior weeks and thus exceed boat counts for the same week.*

[2]*Redd count uncertain in RM 60.4-60.6 due to data recording issue.*

The season total redd count from the Lower River was 43 including three from Highway 167-Transfer Shack (Table 4-15), 547 redds in the Middle River including 14 from MSC, 89 from the Lower Gorge, and 442 from the Headworks (Table 4-14). The G/A ratio for the Lower Gorge was 2.97 (89/30) resulting in a calculation of 273 redds for the "Gorge". A total of 1,398 redds were counted or calculated in the mainstem Green River, including MSC, by census. In Newaukum Creek the season total redds for the section "400th to Whitney Hill Bridge" was 185 and for the section "Whitney Hill Bridge" to mouth" was 52, totaling 237 redds in Newaukum Creek (Table 4-14).

Applying the constant 2.5 fish/redd (1.5 males:1.0 female), an estimate of 4,087 (3,223 HOR, 864 NOR) naturally spawning Chinook was generated for the Green River Basin (Table 4-1).

During the season, 1,965 adults and 100 jacks that returned to the Soos Creek and Keta Creek hatcheries were tagged by the Muckleshoot Indian Tribe, hauled upstream, and released in the mainstem. Although duration of survival and spawning success of these fish may be variable, any redds created by these fish would have been counted during surveys, meaning that they are included in the natural spawning escapement estimate.

River flows during the 2015 Chinook spawning season remained moderate until the first week in November in what would have been the final week of surveys when flows increased but spawning activity was nearly complete (Table 4-16).

Table 4-16. Average weekly[1] discharge (cfs) at three locations on the Green River (Palmer USGS Gage 12106700, Auburn USGS Gage 12113000, and Newaukum Creek USGS Gage 12108500) in 2015. Weekly discharges are averages for a 7-day period beginning with the day listed.

	Week							
USGS Gauge	6-Sep	13-Sep	20-Sep	27-Sep	4-Oct	11-Oct	18-Oct	25-Oct
Palmer	184	195	278	315	344	368	335	315
Auburn	308	322	408	453	497	550	503	471
Newaukum Creek	14	14	14	13	-	-	19	24

[1]*Data truncated to include September 9 through October 29.*

Carcass sampling

Naturally spawning Chinook carcasses (clipped and unclipped) were sampled opportunistically during spawning ground surveys in the mainstem and Newaukum Creek. Biological data were collected from these carcasses, and a "Percent Egg Retention" variable was determined. The "Percent Egg Retention" variable was determined by inspection of the gonads of all female carcasses. The proportion of eggs estimated to have been retained was noted for carcasses where eggs remained in the body cavity and a photograph was taken. A carcass noted as having 25% egg retention was estimated to have expelled 75% of her total eggs. Additionally, tagged fish from re-released hatchery returns were noted for all sampled carcasses.

A total of 1,327 carcasses were sampled for standard biological data by Green River crews in 2015 (Table 4-17); 1,116 (14 DIT+ 34 CWT&AD + 1,039 AD + 29 thermal marked with adipose fin and no CWT) or 84.2% were of hatchery origin as indicated by the presence of an adipose fin, CWT tag, or hatchery thermal mark (Table 4-18).

Table 4-17. Summary of Chinook biological sampling in the Green River, 2015.

Section	Biological Samples	Egg Retention Photos	MIT Tags[1]	Additional MIT Tags[2]	Acoustic MIT Tags[3]	CWT[4]	DIT[4]
Headworks	387	162	2	-	-	7	1
Lower Gorge	40	26	8	-	-	-	-
Middle River	278	133	108	-	6	13	5
Lower River	-	-	-	-	-	-	-
Metzler Side Channel	10	4	-	-	-	1	1
SubTotal: River	**715**	**325**	**118**	**0**	**6**	**21**	**7**
Newaukum: 400th to Whitney Hill Br	153	41	26	-	2	1	2
Newaukum: Whitney Hill Br to Mouth	459	165	158	33	12	12	5
SubTotal: Newaukum	**612**	**206**	**184**	**33**	**14**	**13**	**7**
Grand Total:	***1,327***	***531***	***302***	***33***	***20***	***34***	***14***

[1]"MIT tags"; the number of sampled fish with MIT tags, or those otherwise identified as hatchery re-release.

[2]Additional MIT Tags: the number of MIT tags retrieved from heavily decomposed carcasses that could not be sampled.

[3]Accoustic MIT Tags: the number of carcasses retrieved with MIT acoustic tags (MIT supplemental study)

[4] CWT: Coded wire tag present (unconfirmed) DIT = (Double Index Tag) Adipose fin present, coded wire tag present.

Table 4-18. Coded wire tag sampling and origin of natural Chinook spawners in the Green River, 2015.

	Sampled					Adipose present		Adipose Clip	
	Number[1]	NOS	HOS	CWT	No CWT	DIT[2]	no CWT[3]	CWT	no CWT
Green River	715	143	572	28	687	7	152	21	535
Newaukum Creek	612	67	544	20	592	7	87	13	504
Green River Basin Total	1,327	210	1,116	48	1,279	14	239	34	1,039

[1]Includes 1 carcass (Newaukum Creek) for which adipose fin presence was unknown.

[2]Includes 4 carcasses (1 Green River;and 3 Newaukum Creek) that were thermally marked hatchery fish released from the Palmer Hatchery.

[3]Includes 29 carcasses (9 Green River and 20 Newaukum Creek) that were thermally marked hatchery fish released from the Palmer Hatchery.

4.8 White River

By definition, the escapement estimate for White River Spring Chinook is derived from trap counts at the Army Corps of Engineers' Buckley Diversion Dam fish trap (Buckley Trap) and hatchery returns to the White River Hatchery (WRH). The WRH and Buckley Trap are on opposite sides of a diversion dam on the White River. Off-site propagation of White River Spring Chinook also occurs at the Minter Creek/Hupp Springs Hatchery, and returns to that facility are recorded separately. Under ideal conditions, the Buckley Trap allows sampling and enumeration of all fish transported to the upper White River watershed. During odd years when pink salmon return and during years of relatively high coho returns (2003-2012), sampling at the Buckley trap is limited, particularly during the latter part of the Chinook run. As a consequence, the proportions of hatchery and natural-origin spring and fall Chinook transported above the dam are uncertain. Records of trap and haul operations conducted in the absence of state or tribal fisheries managers are a subject of ongoing concern. In 2015, complete sampling occurred through August 7th, but 2,655 Chinook (1,082 adults and 1,573 jacks) of unknown origin were transported upstream after this date.

The number of adult fish sampled at the WRH and at the Buckley Trap prior to the termination of sampling was 1,672 adults. Of these, 562 were natural-origin (NOR) and acclimation pond (AP) recruits. NORs are assumed to be primarily spring Chinook although based on DNA analysis, fall run Chinook and potential hybrids have been passed. At the Buckley trap, NORs made up 22% and APs made up 36% of the sampled adult Chinook while NOR and AP jacks made up 5% and 89% of the jack return, respectively. At the Buckley Trap, the ratios of coded wire tagged to non-coded wire tagged fish among sampled adults and jacks, were applied to un-sampled adults and jacks passed upstream after August 7th. In addition, 28 of the adult NORs were collected at, or taken to, the White River Hatchery for use as broodstock (22 were later identified as NOR spring Chinook).

Table 4-19. Estimated number NOR and Acclimation Pond Chinook salmon hauled upstream of Mud Mountain Dam in 2015. Results are a combination of returns sampled White River Hatchery and sampled and un-sampled fish at Buckley Trap.

Origin	Adults	Jacks	Totals
Wild (NOR)	420	187	607
Acclimation Pond	736	3,338	4,074
Totals	**1,156**	**3,525**	**4,681**

There are two hatchery programs for White River spring Chinook: the Minter Creek/Hupp Springs program and the White River Hatchery. The Minter Creek/Hupp Springs program was initiated in the mid-1970's in response to steep declines in population abundance. The spring Chinook program was subsequently expanded following completion of the Muckleshoot Tribe's White River Hatchery in 1989. In 2015, escapement to the Minter Creek/Hupp Springs hatchery was 239 (i.e., 187 adults and 52 jacks). None of these fish nor their gametes were taken to the White River Hatchery. Escapement to the White River Hatchery in 2015 was 2,133 (1,138 adults and 995 jacks). These fish were either collected at the Buckley fish trap on the south side of the diversion dam, or volunteered to the WRH trap on the north side of the diversion dam.

4.9 Puyallup River

The Puyallup Tribal Fisheries (PTF) and Washington Department of Fish and Wildlife (WDFW) staffs agreed to use an adjusted AUC-based methodology to estimate escapement for Chinook in the Puyallup River basin during odd years.

South Prairie Creek

Odd-year estimates for SPC are based on live count AUC adjusted by the mean South Prairie redd-based estimate/AUC-based estimate ratio. This adjustment is necessary because pink returns in odd years often preclude objective Chinook redd accounting and historic live count-based estimates have been very conservative when compared to redd-based estimates in this system. The South Prairie Creek (SPC) sub-basin spawning escapement estimate for 2015 is 533 spawners. This escapement is made up of 310 NORs and 223 HORs. The 2015 SPC redd estimate/AUC estimate ratio was 2.24, based on even-year data from 1994 to 2014. The 2015 AUC spawner curve yielded an escapement estimate of 238 spawners for SPC. Expanding the SPC AUC-based escapement (238 X 2.24) yielded a South Prairie escapement of 533. Wilkeson Creek contributed 0 Chinook to the escapement estimate.

Carbon River

Because conditions in the Carbon River seldom allow accurate Chinook escapement surveys, estimates are based on the relationship between SPC and Carbon River escapement in 1999, when there was an accurate redd count for the Carbon River. Carbon River reaches with complete data tracked the SPC spawn timing remarkably well. Therefore, reaches with incomplete data were expanded using the SPC spawn timing curve with a high degree of confidence.

Survey conditions were not suitable on the Carbon River during the 2015 spawning period. Consistent with the last eleven years, the 2015/1999 SPC escapement ratio (533 / 1422 = 0.3749) was applied to the 1999 Carbon River escapement (250) to estimate the 2015 value. This method estimated 94 Chinook spawning in the Carbon during 2015 (250 * 0.3749 = 94). Based on mark sampling ratios observed in South Prairie Creek, the escapement was made up of 55 NORs and 39 HORs.

Puyallup River Tributaries

Tributary escapement estimates are based on AUC counts due to the number of Pink salmon returning to the Puyallup system in odd years. Aggregate escapement to Puyallup River tributaries in 2015 was estimated at 585 (Table 4-20). Based on mark sampling in these tributaries, excluding Clark's Creek, 174 of these fish are NORs and 411 HORs. Mark sampling data collected in Clark's Creek are not used for the tributary mark rate estimate

because many of the Chinook produced and released from Clark's Creek Hatchery are not marked, so the origin of natural spawners cannot be estimated.

Table 4-20. Chinook escapement estimates for Puyallup River tributaries, 2015.

Tributary	Escapement
Fennel Creek (WRIA 10.0406)	177
Canyon Falls Creek (10.0410)	0
Kapowsin Creek (10.0600)	55
Clear Creek (10.0022)	281
Clarks Creek (10.0027)	72
Tributary total	585

Mainstem Puyallup River

Chinook spawning escapement to the mainstem Puyallup River was estimated to be 231. This escapement comprised 154 NOR and 77 HOR Chinook, based on mark sampling ratios observed in mainstem tributaries.

As with the Carbon River, surveys of Puyallup River were not possible in 2015. WDFW and PTF staff believes that mainstem spawning escapement is closely related to the tributaries (Fennel, Canyon Falls, Clear, Kapowsin, and Clarks Creeks). Therefore, the 2015/1999 Puyallup tributary ratio (134/113 = 1.1854) was applied to the estimated 1999 Puyallup mainstem escapement (195) to estimate 2015 escapement of 231 Chinook (195 * 1.1854 = 231).

The 2015 Chinook natural spawning escapement into Clark's Creek was not included in the tributary to Puyallup River mainstem ratio. For brood years contributing to the 2015 return, many of the Chinook released from Clark's Creek hatchery were not marked, so the origin of natural spawners could not be determined. Since 1999 is used as the base year, the 1999 natural spawning escapement estimate for Clark's Creek is used instead. We assume the proportion of hatchery origin fish spawning in Clark's Creek is higher than in the mainstem and other tributaries.

Lower White River

The fall component of Chinook spawning in the lower White River and its tributaries, downstream of the Buckley trap, are included in the 2015 Puyallup River basin fall Chinook escapement estimate. Spawning ground surveys indicate that, in some years, a sizeable number of Chinook spawn in these areas.

Spring and fall Chinook spawn in the White River. The fall component in the lower White River and tributaries was identified by mark sampling during spawning ground surveys and the genetic analysis conducted by Ford et al. (2004). Carcass sampling during spawning ground surveys provides a ratio of hatchery-origin fall Chinook (i.e. fish with a clipped adipose fin), to unmarked fish. Based on previous genetic analysis of samples collected in Boise Creek (Ford et al 2004), 60% of the unmarked fish are assumed to be fall Chinook.

Fall Chinook spawning escapement into the lower mainstem White River and its tributaries in 2015 was estimated to be 632 fish. This escapement is made up of 243 NORs and 389 HORs based on mark sampling ratios observed during spawning ground surveys.

Total Puyallup Escapement

The estimated total number of naturally spawning fall Chinook in the Puyallup basin in 2015 was 2,075. Based on carcass sampling, we estimated that 936 were NORs, and 1,139 were HORs. The estimate of NORs assumes the proportions of hatchery and natural origin spawners are the same in Puyallup River tributaries (except Clark's Creek), the Puyallup River mainstem, South Prairie Creek, and the Carbon River.

4.10 Nisqually River

Escapement to the Nisqually River in 2015 was estimated using a change in ratio methodology (Seber 1982). This method uses (1) the proportion of marked fish entering the river (as estimated by sampling tribal gillnet catch), (2) the total removals below the weir (in all fisheries and hatchery returns) and proportion of those removals marked, and (3) the proportion of marked fish returning to the weir to estimate the total return to the river and escapement above the weir.

Escapement to the Nisqually River was estimated to be 1,505 Chinook salmon (790 HOR, 715 NOR) (Table 4-1). An additional 742 HOR from Kalama Cr. Hatchery were jaw-tagged, trucked above the weir, and released upstream. Of the 31 trucked females recovered from the spawning grounds five were unspawned, five were partially spawned, and 21 had completely spawned for a complete spawn rate of 68% (505 Chinook). Seventeen adult Chinook (3 HOR and 14 NOR) were removed at the weir for inclusion in the integrated hatchery program with an additional 79 recruits (11 HOR and 68 NOR) to the hatchery rack.

4.11 Hood Canal

Natural Chinook escapement to the Skokomish River and Mid-Hood Canal rivers in 2015 were 432 and 259, respectively (Table 4-21).

Mid-Hood Canal

The Mid-Hood Canal population is comprised of Chinook produced in the Dosewallips, Duckabush, and Hamma Hamma watersheds.

In the Dosewallips and Duckabush rivers, the lower reaches surveyed are spawning and transit areas. Upper reaches of the Dosewallips and Duckabush rivers have also been regularly surveyed since 1998, but few adults have been observed. Current escapement estimates are derived from combinations of live Chinook adult counts and Chinook redd expansions, depending on flow conditions and fish distributions.

In the Hamma Hamma River, most of the Chinook spawning area is currently being surveyed. A cooperative supplementation program was initiated in 1995 to rebuild Chinook abundance. Prior to 1998, escapement had been estimated from counts of cumulative new redds and/or from live Chinook using the area-under-the curve (AUC) method. However, since returns increased as the result of supplementation, the AUC method has been employed as the primary method of escapement estimation.

Summer chum salmon and pink salmon (in odd years) spawn at the same time as Chinook in the lower reaches of these three streams. Consequently, it can be difficult to distinguish Chinook redds from summer chum or pink redds unless Chinook are actively spawning and observed on redds. Pink salmon spawn predominately downstream of RM 6.7 on the Dosewallips, downstream of RM 2.6 on the Duckabush and throughout the reaches surveyed on the Hamma Hamma. Summer chum salmon spawn predominately downstream of RM 3.6 on the Dosewallips, downstream of RM 2.6 on the Duckabush and throughout the reaches surveyed on the Hamma Hamma. It has been possible to count Chinook redds in the upper Dosewallips and Duckabush River reaches (especially in years without pink salmon).

The WDFW conducted spawner surveys on the Dosewallips, Duckabush, and Hamma Hamma rivers every 7 to 10 days from late August or early September through October. The escapement estimate to all three systems combined was 259 adults: 3, 20, and 236 Chinook in Dosewallips, Duckabush, and Hamma Hamma rivers, respectively (Table 4-21). During 2015, it is possible that some Chinook redds were not identifiable on the Dosewallips and Duckabush rivers in areas with summer chum spawning. However, based on the number of Chinook redds and adults observed during surveys and carcasses recovered during intensive weekly surveys, few Chinook were present and the escapement estimates for Dosewallips and Duckabush rivers are considered accurate.

The Dosewallips River was surveyed from RM 0 to RM 2.3, RM 3.6 to RM 6.7, and RM 7 to RM 11; Rockybrook Creek, a tributary, was surveyed from RM 0 to RM 0.3. No Chinook redds were observed and the escapement estimate based on AUC with 3 live fish observations in the Dosewallips River during 2015. The Duckabush River was surveyed from RM 0 to RM 2.6, RM 4.8 to RM 6. Although only one Chinook redd was conclusively identified, a peak live count of 10 individual live adults was observed on October 5th and the escapement estimate is 20 Chinook in the Duckabush River during 2015 based on the AUC methodology. The Hamma Hamma River was surveyed from RM 0.3 to RM 1.8; John Creek, a tributary, was also accessible to Chinook and was surveyed from RM 0 to RM 1.6. The estimated total escapement to the Hamma Hamma is 236 which is the AUC estimate of natural spawners in the mainstem. Flows were low in John Creek so late into the season that the fish counted there had been previously accounted for in several Hamma Hamma mainstem surveys. No Chinook were collected for broodstock. The FRAM preseason escapement projection was 304 for the Mid-Hood Canal (FRAM 2115) while the estimated escapement is 236 Chinook. A late September freshet was responsible for the high number of Chinook in Johns Creek for this time of year. Escapements to the Dosewallips River and Duckabush River were low as anticipated.

Skokomish River

Chinook spawning takes place in the mainstem Skokomish River up to the confluence with the South and North Forks at RM 9, in the South Fork (primarily up to RM 5.5), and in the North Fork from RM 9 to 15.7 (where Little Falls blocks further access). Natural escapement estimates are based on counts of Chinook redds in the principal spawning habitat in the mainstem Skokomish (RM 2.2 to 9.0), North Fork (R.M. 9.0 to 15.6), and South Fork (R.M. 0 to 2.2). Since 2008, surveys have been conducted from RM 0 to RM 5.5 in the South Fork, and included in the total escapement estimate. In addition, escapement estimates are made for Vance Creek and Hunter Creek.

Live and dead adults, along with visible redds, were counted in Skokomish River index areas during foot and raft surveys (e.g., see Smith and Castle 1994). Surveys are conducted every seven to ten days from late August through October. A cumulative new redd count for each section of the river was tabulated at the end of the season and multiplied by 2.5 fish per redd to estimate total Chinook escapement. In addition, foot surveys are made in Hunter and Vance

creeks. Escapements to these tributaries are estimated based on redd counts and/or live Chinook observed.

In recent years, low flows at the mouth of the South Fork have prevented Chinook from accessing the lower South Fork early in the season. In 2015, however, Chinook had limited access the South Fork Skokomish after a brief period of increased flow in early September.

The total estimated spawner escapement to the Skokomish River is 432 (Table 4-21). This total includes 113 in the mainstem Skokomish, 22 Chinook in Hunter Creek, 71 in the Purdy Creek supplemental index,143 Chinook in the North Fork, and 83 Chinook in the lower (RM 0 to RM 5.5) South Fork Skokomish. The preseason escapement prediction was 1,601 (FRAM 2115).

Table 4-21. Summary of Chinook escapement to Hood Canal streams during 2015.

Marine Area	Stream		Spawner Escapement	Comments
- -	Skokomish R.		206	Redd counts + AUC in Hunter Cr. INDEX
	N.F. Skokomish R.		143	Redd counts + redds in McTaggart
	S.F. Skokomish R.		83	Redd counts + redds in Vance
		Total	432	
12A	Little Quilcene R.		0	No chinook observed
	Big Quilcene R.		0	No chinook observed
		Total	0	
12B	Dosewallips R.		3	Redd counts + Rockybrook live/dead
	Duckabush R.		20	AUC
	Hamma Hamma R.[1]		236	Hamma AUC + John Creek AUC
		Total	259	
12C	Dewatto R.		57	AUC
	Lilliwaup Cr.		136	AUC
		Total	193	
12D	Tahuya R.		21	AUC
	Union R.		4	Observed during summer chum trapping
		Total	25	
Hood Canal total			909	

[1] Hamma natural escapement = 236, broodstock = 0, John Ck = 18 (accounted for in the Hamma Hamma natural escapement)

Mark Sampling

Mass marking has been implemented for releases from George Adams Hatchery, Hoodsport Hatchery, and Endicott Ponds. Double index tag groups have been released from George Adams Hatchery since 1998. The proportion of all Hood Canal hatchery Chinook that were either tagged and/or marked has incrementally increased since brood year 2003. In addition, all of the Chinook released from the Hamma Hamma supplementation program were tagged and/or marked. Coded-wire tag (CWT), age, and sex composition data have been routinely collected from Chinook returning to George Adams Hatchery since 1988.

There has been more intensive sampling of Chinook on the spawning grounds since 1998. During 2015, the Skokomish, Dosewallips, Duckabush, and Hamma Hamma rivers were targeted for enhanced mark and CWT sampling and WDFW also sampled Chinook carcasses for marks and CWTs on the Dewatto and Lilliwaup rivers.

Of the 145 Chinook sampled in Hood Canal rivers during 2015, 90 Chinook were adipose-clipped and, of these, six had CWTs. Thirty-five unmarked Chinook were coded-wire tagged. We sampled 13% of the Chinook spawning escapement in the Skokomish River, 14.3% of the Mid-Hood Canal Chinook escapement (in the Hamma Hamma, Duckabush, and Dosewallips rivers), with an overall sampling rate of 16% in all Hood Canal rivers combined (Table 4-22).

Jacks are not included in Chinook spawner escapement estimates in Hood Canal, but few jacks were sampled during 2015.

The proportion of hatchery fish in the spawning escapement is estimated based on age composition in the escapement, carcass sampling rate, and the proportion of hatchery production releases that were marked and/or tagged from BY 2010 (age 5), BY 2011 (age 4), and BY 2012 (age 3). Preliminary estimates of hatchery fish in the spawning escapement are also made based only on the total number of tags and marks recovered corrected for clip error rates for the returning brood years.

In the Skokomish River system, 37 of 56 (66%) Chinook sampled were adipose-marked (Table 4-22). Spawning escapement in the Skokomish River was comprised of about 68% hatchery-origin Chinook and 32% natural-origin Chinook, with a striking contribution of NOR returns to the North Fork where they accounted for 67% (Table 4-22).

Hatchery releases into the Hamma Hamma River are 100% CWT and otolith marked. All Chinook carcasses were sampled for otoliths during 2015. In the Hamma Hamma River, 28 of 32 (87.5%) Chinook sampled had a CWT. Preliminary estimates are that spawning escapement comprised 91% supplementation-origin Chinook and 9% natural-origin Chinook in the Hamma Hamma River. Five Chinook carcasses were sampled in the Duckabush but none were sampled in the Dosewallips River in 2015. Of the five carcasses sampled in the Duckabush, three were CWT supplementation fish from the Hamma program and one was an ad-clipped fish, yielding an estimate of 80% hatchery-origin fish. Preliminary estimates based on CWT recoveries indicated that spawning escapement for Mid-Hood Canal Chinook was comprised of 11% natural-origin and 89% hatchery-origin Chinook.

Table 4-22. Chinook salmon spawner escapement origin based on carcasses sampled for marks and coded-wire tags (CWTs) in Hood Canal rivers, 2015.

Mgmt Unit	River	Spawner escapement	Chinook sampled Number	%	Tagged 1/ AD	NM	Unk	Untagged 1/ AD	NM	Unk	Unk. tagged 2/ AD	NM	Unk	Totals CWTs recovered	AD-clips observed	Rate	HOR	NOR
Skokomish	Mainstem Skokomish R.	206	28	13.6%	1	2	0	20	1	2	2	0	0	3	23	0.89	184	22
	N.F. Skokomish R.	143	12	8.4%	0	1	0	2	8	0	1	0	0	1	3	0.33	48	95
	S.F. Skokomish R.	83	16	19.3%	0	1	0	11	4	0	0	0	0	1	11	0.75	62	21
	Skokomish River total	**432**	**56**	**13.0%**	**1**	**4**	**0**	**33**	**13**	**2**	**3**	**0**	**0**	**5**	**37**	**0.68**	**294**	**138**
12A	Big Quilcene R.	0	0	0.0%	0	0	0	0	0	0	0	0	0	**0**	0	NA		
	Little Quilcene R.	0	0	0%	0	0	0	0	0	0	0	0	0	**0**	0	NA		
12B	Hamma Hamma R. 3/	236	32	13.6%	0	28	0	1	2	0	0	0	0	28	1	0.91	214	22
	Duckabush R.	20	5	25.0%	0	3	0	1	1	0	0	0	0	3	1	0.80	16	4
	Dosewallips R.	3	0	0.0%	0	0	0	0	1	0	0	0	0	0	0	NA		
	Mid-Hood Canal total	**259**	**37**	**14.3%**	**0**	**31**	**0**	**2**	**4**	**0**	**0**	**0**	**0**	**31**	**2**	**0.89**	**230**	**29**
12C	Dewatto R.	57	16	28.1%	1	0	0	14	1	0	0	0	0	1	15	0.94	53	4
	Lilliwaup R.	136	28	20.6%	1	0	0	27	0	0	0	0	0	1	28	1.00	136	0
12D	Tahuya R.	21	4	19.0%	0	0	0	4	0	0	0	0	0	0	4	1.00	21	0
	Union R. 2/	4	4	100.0%	0	0	0	4	0	0	0	0	0	0	4	1.00	4	0
	Hood Canal total	**909**	**145**	**16.0%**	**3**	**35**	**0**	**84**	**18**	**2**	**3**	**0**	**0**	**38**	**90**	**0.81**	**738**	**171**

1/ AD = adipose fin clipped; NM = no mark; Unk = unknown.
2/ Visual + Electronic detection only live fish at the trap.
3/ Supplementation Origin Fish calculated from otolith recoveries.

4.12 Dungeness

Since 1986, surveys by foot have been conducted throughout the spawning season from RM 0.0 to 18.8 in the mainstem Dungeness, and from RM 0 to 5.1 in the Gray Wolf mainstem, to generate a cumulative redd count for the season. The total redd count is multiplied by 2.5 to estimate the total number of adults. In 2015, 106 Chinook redds were counted in the Dungeness River and no redds were counted in the Gray Wolf (Table 4-23). The estimated number of natural spawners in the river was 265. There were an additional 142 adults removed from the river and used for broodstock (27 pre-spawn mortalities included in total). The total estimated return to the river was 407 (Table 4-1). The decreases in escapement of Dungeness spring Chinook relative to recent years and relative to forecast are partially due to the termination of the captive brood program after the 2002 brood, and resulting decrease in numbers of hatchery juveniles released. Because the forecasts for Strait of Juan de Fuca Chinook are based solely on average recent returns, they did not account for this reduction in production.

Table 4-23. The distribution of Chinook redds in the Dungeness Rivers system, 2009–2015.

Dungeness River	Lower River mile	Upper River mile	Total miles	2009	2010	2011	2012	2013	2014	2015
Mouth to Woodcock Bridge	0.5	3.3	2.8	12	17	18	68	2	18	19
Woodcock Bridge to HWY 101	3.3	6.4	3.1	4	17	46	40	13	1	50
Hwy 101 to May Rd.	6.4	9.2	2.8	14	37	63	44	6	5	20
May Rd. to Canyon Creek	9.2	10.8	1.6	12	38	34	26	5	6	13
Canyon Creek to Clink bridge	10.8	13.8	3.0	3	14	30	14	5	4	0
Clink Bridge to Forks Campground	13.8	15.8	2.0	3	8	12	3	0	4	1
Forks Campground to East Crossing	15.8	17.5	1.7	3	5	3	1	0	1	3
East Crossing to Gold Creek	17.5	18.7	1.2	0	0	1	0	0	0	0
Greywolf River										
Mouth to RM 1.0 Bridge	0.0	1.0	1.0	0	0	6	2	0	0	0
RM 1.0 Bridge to 2 Mile Camp	1.0	2.5	1.5	0	2	1	5	0	3	0
02 Mile Camp to Cliff Camp	2.5	4.0	1.5	0	0	0	0	0	0	0
Cliff Camp to Slab Camp	4.0	5.1	1.1	0	0	0	0	0	1	0
Slab Camp to 1.0 mile upstream	5.1	6.1	1.0	0	0	0	0	0	0	0
Grand total redds				**51**	**138**	**214**	**203**	**31***	**43**	**106**

Hatchery Release Strategies

Most hatchery Chinook salmon are released into the Dungeness and Gray Wolf Rivers in June as spring accelerated zeros (Table 4-24). Two release groups of yearlings, BY2010 and BY2011, were released from Hurd Creek. The spring accelerated zero and yearling release groups were 100% tagged but not adipose clipped. The purpose of not clipping and tagging 100% of the hatchery releases was to avoid adult fish being harvested in the mark selective fisheries and still be positively identified as hatchery. None of the release groups in the Dungeness Basin are otolith marked since all fish were tagged.

Table 4-24. Releases of hatchery Chinook in the Dungeness River Basin for brood years 2010-2013.

Brood year	Age at return	Tag code	Release site	Life stage at release	No. released	Type of mark/tagged applied
2013	2	210488	Upper Dungeness Acclimation Pond	Spring accelerated zeros	52,949	CWT only
2013	2	211062	Dungeness Hatchery	Spring accelerated zeros	55,888	CWT only
2013	2	211063	Gray Wolf Acclimation Pond	Spring accelerated zeros	52,865	CWT only
2012	3	211022	Upper Dungeness Acclimation Pond	Spring accelerated zeros	48,898	CWT only
2012	3	211023	Gray Wolf Acclimation Pond	Spring accelerated zeros	48,693	CWT only
2012	3	210489	Dungeness Hatchery	Spring accelerated zeros	51,340	CWT only
2011	4	210968	Gray Wolf Acclimation Pond	Spring accelerated zeros	56,080	CWT only
2011	4	210969	Dungeness Hatchery	Spring accelerated zeros	54,104	CWT only
2011	4	210970	Upper Dungeness Acclimation Pond	Spring accelerated zeros	53,786	CWT only
2011	4	210971	Hurd Creek Hatchery	Yearling	51,984	CWT only
2010	5	210894	Gray Wolf Acclimation Pond	Spring accelerated zeros	48,817	CWT only
2010	5	210895	Hurd Creek Hatchery	Yearling	39,931	CWT only
2010	5	210896	Dungeness Hatchery	Spring accelerated zeros	27,387	CWT only

CWT Recoveries

There were 249 (n=142 broodstock collection; n=107 spawning ground) carcasses sampled for scales and checked for marks and CWTs (Table 4-24). Of the total number of carcasses sampled, 175 of 249 were tagged. Seven CWT age 2 Chinook carcasses were collected during the season. Age 2 Chinook were not used for escapement expansion estimates.

Table 4-25. The number of CWT recoveries from Dungeness River Chinook salmon collected from broodstock collections and on spawning ground surveys (SGS) in the Dungeness and Gray Wolf rivers in 2015.

			Tags recovered		Total number of
BY	Age	Tag code	Broodstock samples	SGS samples	tags recovered
2013	2	210488	3	0	3
2013	2	211062	2	0	2
2013	2	211063	1	1	2
	Age 2	**Total**	**6**	**1**	**7**
2012	3	210489	16	7	23
2012	3	211022	6	3	9
2012	3	211023	10	2	12
	Age 3	**Total**	**32**	**12**	**44**
2011	4	210968	13	16	29
2011	4	210969	25	16	41
2011	4	210970	19	16	35
2011	4	210971	5	6	11
	Age 4	**Total**	**62**	**54**	**116**
2010	5	210894	5	0	5
2010	5	210895	1	1	2
2010	5	210986	0	1	1
	Age 5	**Total**	**6**	**2**	**8**
		Total CWT	**106**	**69**	**175**
		Sample size	**142**	**107**	**249**

Based on the CWT results and scale samples analyzed, the preliminary HOR/NOR composition for RY2015 was 75.7% HOR and 24.3% NOR in the total return of 407. For

RY2015, the ages and percentages of the HOR Chinook consisted of 87 (28.3%) age 3, 205 (66.6%) age 4, 16 (5.1%) age 5, and no age 6 for a total of 308 (Table 4-26). The age and percentages of the NOR Chinook salmon consisted of 14 (14.1%) age 3, 74 (74.8%) age 4, 11 (11.1%) age 5, and no age 6 for a total of 99 (Table 4-26). Total HOR and NOR combined returns was101 age-3, 279 age-4, 27 age-5, and zero age-6 (Table 4-26).

Table 4-26. The age and origin of Chinook salmon total returns to the Dungeness and Gray Wolf Rivers in 2015.

Age	Number HORs	Percentage of HORs	Number NORs	Percentage of NORs	Total HORs+NORs	Percentage of Total HORs+NORs
3	87	28.3%	14	14.1%	101	24.8%
4	205	66.6%	74	74.8%	279	68.6%
5	16	5.1%	11	11.1%	27	6.6%
6	0	0.0%	0	0.0%	0	0.0%
Total	**308**	**100.0%**	**99**	**100.0%**	**407**	**100.0%**

4.13 Elwha River

The Elwha Dam removal project began in September 2011 and was completed by March 2012. The natural river flow was restored through the former Lake Aldwell. Prior to September 2012, Chinook spawning in the Elwha River was limited to the 4.8 miles below the dam with most natural spawning concentrated between RM 2.8 and 4.4. In August 2014, the Glines Canyon Dam was removed. Before dam removal, Chinook surveys were conducted by raft and foot surveys. SONAR technology is being used in the Elwha River as a method to improve enumeration of Chinook passage during the entire run from June through September. This technology will improve Chinook escapement estimates due to the difficulty of observing redds and fish in turbid water conditions caused by the removal of the two dams. Denton et. al. (2016) used a DIDSON LR (long range) multi-beam sonar system to enumerate Chinook salmon in the Elwha River in 2015. For RY 2015, their best total return estimate for Chinook salmon was 4,112 fish with a calculated 95% CI 3,857 – 4,372.

Peak Spawning Ground Surveys and Redd Distribution

In September 2015, the National Park Service (NPS), Lower Elwha Klallam Tribe (LEKT), National Marine Fisheries Service (NMFS), and Washington Department of Fish and Wildlife (WDFW) staff conducted redd surveys in reaches between the Glines Powerhouse and the river mouth (McHenry et al. 2016). Two Elwha tributaries, Little River and Indian Creek, were also included with these surveys. A total of 937 Chinook salmon redds and 753 adults (366 live/387 dead) were observed downstream of the former Glines Powerhouse site (Table 4-27Table 4-28).

Table 4-27. 2015 Elwha River Chinook salmon spawners from Glines Canyon Dam to the mouth. (McHenry et al. 2016).

Survey Reach	RKM midpoint	Redds	Redds /km	Live Chinook	Dead Chinook	Jacks	Live Pinks	Dead Pinks
Above Glines	21.5	0	0	0	0	0	0	0
Glines Powerhouse	20.6	100	90.9	68	14	0	0	0
Altaire Canyon	19.8	35	70.0	12	2	0	0	0
Altaire Bridge	19.4	24	30.0	14	4	0	0	0
Griff Creek	18.5	34	34.0	13	5	0	0	0
Hughes Creek	17.7	3	4.3	1	4	0	16	13
Rabbit Hole	17.3	50	33.3	37	6	0	0	0
Fisherman's Corner	16.1	84	105.0	8	32	0	0	1
ONP Boundary	14.7	77	38.5	23	12	0	2	0
MacDonald Bridge	13.1	31	25.8	5	2	0	3	0
A-Frame	12.8	37	92.5	6	28	0	0	1
Little River	12.2	51	26.8	25	32	0	17	3
Indian Creek	12.1	18	9.5	24	5	0	5	2
Aldwell South	11.6	93	40.4	29	132	0	1	1
Aldwell North	8.7	82	35.6	34	87	0	5	3
Middle Elwha Subtotal		**719**	**45.5**	**299**	**365**	**0**	**49**	**24**

Table 4-28. 2015 Elwha River Chinook salmon spawners from Glines Canyon Dam to the mouth. (McHenry et al. 2016).

Survey Reach	RKM midpoint	Redds	Redds/km	Live Chinook	Dead Chinook	Jacks	Live Pinks	Dead Pinks
Dam outflow	7.1	8	10.0	0	2	0	0	0
HWY 112 Bridge	6.1	66	55.0	5	2	0	19	0
County Bridge	4.4	31	16.3	16	2	0	3	1
Sisson's Riffle	3.6	18	9.0	5	1	0	0	0
East Channel	2.0	40	25.0	18	9	0	3	2
Hunt Road Channel	2.0	55	34.4	26	6	0	6	0
Elwha Bluff	0.6	0	0.0	0	0	0	0	0
Lower Elwha Subtotal		**218**	**21.4**	**67**	**22**	**0**	**31**	**3**

In addition to SONAR enumeration and peak spawning ground surveys, adult Chinook were collected by various methods for broodstock purposes in the lower river. WDFW hatchery staff collected salmon for broodstock by net, seine, gaff, and trap methods. A total of 1,564 Chinook were removed from the river and used as broodstock for the hatchery program (Table 4-29). The terminal run size to the river was based on the SONAR estimate of 4,112 Chinook (Table 4-29). The total number of Chinook that spawned naturally in the Elwha River and its tributaries was estimated at 2,548 (Table 4-29). This number was calculated by subtracting the number of Chinook that were collected for broodstock from the SONAR estimate (Table 4-29).

Table 4-29. Chinook broodstock collection and total return to the Elwha River in 2015.

Method of capture	No. of males	No. of females	No. of jacks	Non-viable females	Total w/ jacks
Number of Chinook gaffed /netted downstream of weir and spawned	142	177	0	145	464
Number of Chinook netted in river downstream of weir and taken to hatchery	485	366	2	0	853
Number of Chinook transported from LEK Hatchery to WDFW Elwha Channel	60	58	2	0	120
Number of Chinook return to WDFW Channel Trap (Volunteers)	82	41	4	0	127
Totals	**769**	**642**	**8**	**145**	**1,564**
Estimated number of natural spawners in the river = (SONAR-broodstock collection)					**2,548**
Estimated total non-jack returns-SONAR					**4,112**

CWT and Otolith Mark Recoveries

The following information for Elwha River Chinook carcass sampling in 2015 is taken from the summary report by Weinheimer et. al. 2016.

We surveyed the mainstem Elwha and tributaries from the former Glines Dam Powerhouse site at river km 21.4 to the confluence of the river with the Strait of Juan de Fuca. Surveys were conducted by foot and inflatable raft. The Elwha River was broken up into 6 sections. Each reach was scheduled to be surveyed every 7 to 10 days. Based on redd survey numbers from previous spawning seasons, we felt this sampling structure would allow us to sample most of the available carcasses in each reach throughout the season.

Evaluating hatchery mark rates

The primary hatchery marking strategy for brood years of Elwha Chinook salmon expected to return in 2015 was a thermal otolith mark. Avoidance of the adipose clip was intended to reduce vulnerability to mark selective fisheries. Most hatchery Chinook salmon are released into the Elwha River as sub-yearlings, but there is also a smaller yearling release group. The yearling, but not sub-yearling release, receives a CWT mark in addition to the thermal otolith mark.

In some years, equipment malfunctions limited the capacity to induce thermal otolith marks. Inducing the thermal otolith mark requires sequentially altering the water temperature during embryonic development in a prescribed protocol over the course of approximately 1-3 weeks, and specialized chillers are required to accomplish this task. Any hatchery juveniles that were not otolith marked due to chiller malfunctions were selectively placed into the yearling program receiving the CWT mark (Table 4-30; brood year 2012). For brood year 2010, although all hatchery chinook salmon were otolith

marked, chiller malfunctions limited the number of cold water incubations for some fish, resulting in a mark that was less distinctive than desired.

Chinook salmon carcasses were sampled weekly at the WDFW Elwha Rearing Channel (hereafter WDFW Hatchery) throughout the spawning season. Chinook salmon broodstock spawned at the WDFW hatchery originated from a variety of sources. The primary collection method was by gill net from the Elwha River. Chinook salmon broodstock also included volunteers to the WDFW hatchery trap and volunteers to the LEKT hatchery trap that were subsequently transported to the WDFW adult holding pond. WDFW used PIT tags, inserted upon capture and transfer to the adult holding pond, to identify the original collection method of Chinook salmon spawned at the hatchery. Some broodstock were collected from the river and spawned on site rather than at the hatchery but these were not sampled in our study.

Table 4-30. Releases of hatchery Chinook in the Elwha River Basin, brood years 2010-2013.

Brood Year	Type	OT	OT + CWT	CWT	AD + CWT + OT	Total
2010	Sub-yearling	1,236,562	0	0	0	1,236,562
	Yearling	0	212,900	0	0	212,900
2011	Sub-yearling	1,524,769	0	0	0	1,524,769
	Yearling	0	196,575	0	0	196,575
2012	Sub-yearling	907,387	0	0	251,892	1,159,279
	Yearling	0	0	201,074	0	201,074
2013	Sub-yearling	2,388,947	0	0	251,024	2,639,971
	Yearling	0	177,269	0	0	177,269

We sampled a total of 854 carcasses throughout the sampling season (Table 4-31). A total of 367 samples (43%) originated from the Elwha River and tributaries (Table 4-33). Of the fish sampled outside the hatchery, 87.7% were sampled above the former Elwha dam site. The highest number of samples collected in one week occurred during week of Sept 14-18 (Table 4-32). The number of carcasses found dropped significantly after October 12 (Table 4-32). Length and sex data were recorded for each carcass. Otolith samples were taken from 846 (99.1%) carcasses, scale samples from 728 (85.2%) and DNA fin clips from 586 (68.6%). A total of 36 carcasses were sampled in Indian Creek (n=10) and Little River (n=26).

Table 4-31. Total number of Chinook carcasses sampled by survey reach in the Elwha River Watershed 2015.

Reach	Number of Carcasses Sampled	Percent of Total
Reach 1 – Former Elwha Dam Site to river mouth	45	5.27%
Reach 2 - Gooseneck to former Elwha Dam Site	26	3.04%
Reach 3 - Highway 101 Bridge to Gooseneck	49	5.74%
Reach 4 – Fisherman's Corner to Highway 101 Bridge	85	9.95%
Reach 5 - Altaire Bridge to Fisherman's Corner plus Hughes (left channel)	64	7.49%
Reach 6 - Glines Powerhouse to Rabbit Hole (right channel)	62	7.26%
Indian Creek	10	1.17%
Little River	26	3.04%
WDFW Hatchery	487	67.03%
Total	**854**	**100%**

Table 4-32. Number of Chinook carcasses sampled by week for individual reaches during the 2015 season. Zero indicates a survey was completed but no carcasses were sampled. A dash indicates no survey was conducted that week. No surveys were conducted during the week October 26-30 due to lack of visibility.

	Reach						Indian	Little	
Week	1	2	3	4	5	6	Creek	River	Hatchery
Aug 24-28	0	-	-	0	-	-	-	-	-
Aug 31-Sept 4	0	-	-	0	1	-	-	-	-
Sept 7-11	15	3	3	5	-	8	-	7	74
Sept 14-18	25	9	24	50	40	-	8	19	111
Sept 21-25	-	6	10	18	11	20	2	-	140
Sept 28 - Oct 2	5	5	8	9	8	23	-	-	120
Oct 5-9	-	3	4	2	4	11	-	-	42
Oct 12-16	-	0	0	1	0	0	-	-	-
Oct 19-23	-	0	0	0	-	-	-	-	-
Totals	45	26	49	85	64	62	10	26	487

Broodstock Collection Method Data

Most of the fish sampled at WDFW hatchery were net-collected fish rather than volunteers to either the WDFW or LEKT Hatchery (Table 4-33). We sampled over two-thirds of all the LEKT and volunteer fish that came to the hatchery in 2015 and just over 36% of all net fish to the WDFW Hatchery (Table 4-34). We sampled close to a third of all the net and LEKT fish that came to the hatchery in 2015 and just over 36% of all volunteer fish (Table 4-34).

Table 4-33. Adult Collection Method Summary for Elwha Chinook Carcass Sampling 2015.

Sample Location	Collection Method	Number of Carcasses Sampled	Percent of Total Carcasses Sampled
Mainstem and Tributaries	Natural Spawners (NS)	345	40.40%
	Gaffed (G)	22	2.58%
WDFW Hatchery	Gill Net (N)	309	36.18%
	Lower Elwha Klallam (LEKT)	93	10.89%
	Volunteers (V)	85	9.95%

Table 4-34. Elwha Chinook salmon broodstock collection summary. Numbers include non-viable females and pond mortalities.

Broodstock collection method	Total collected	Percent sampled
Gill net	853	36.11%
LEKT Hatchery volunteers	120	77.50%
WDFW Hatchery volunteers	127	66.93%
Gaffed	464	4.74%
Total	1,564	32.48%

Hatchery mark rates

We collected 846 otolith samples over the course of the season (Table 4-35). Seven hundred and forty-nine (88.5%) of the samples had an otolith mark present (Table 4-35). Of the remaining 98 samples, 40 had no otolith mark but did have a CWT present and three fish were ad marked but did not carry an otolith mark or CWT (Table 4-35). Thus, 55 fish (6.5%) had no internal (Otolith or CWT) or external hatchery marks. Overall, the proportion of hatchery-origin

Chinook salmon was 94%, including fish with hatchery marks and scale patterns indicative of hatchery rearing. We observed relatively little differences in the mark rates of the different survey reaches and hatchery broodstock sources (Table 4-35). Only a single reach, Reach 2, had mark rate <90% (Table 4-35).

Table 4-35. Hatchery mark rates of Chinook salmon sampled from the Elwha River 2015 based on thermal otolith, adipose and CWT marks.

	Location	Otolith Mark		All Hatchery Marks	
		N	Percent Marked	N	Percent Marked
Hatchery	Net	305	88.2%	306	95.4%
	LEKT	93	84.9%	93	90.3%
	Volunteer	84	79.8%	84	91.7%
Carcass Survey	Reach 1	45	91.1%	45	91.1%
	Reach 2	26	88.5%	26	88.5%
	Reach 3	49	95.9%	49	98.0%
	Reach 4	85	89.4%	85	90.6%
	Reach 5	63	92.1%	63	92.1%
	Reach 6	62	91.9%	62	91.9%
	Little River	24	91.7%	24	91.7%
	Indian Creek	10	100.0%	10	100.0%
	Total	846	88.5%	847	93.2%

CWT Data

We collected CWTs from 59 fish in the Elwha River watershed during fall 2015 (Table 4-36). All but three of the CWT samples were collected at the WDFW Hatchery. The three snouts from the river were recovered between the Fisherman's Corner and Gooseneck. The majority of the CWTs originated from releases into the Elwha River, but some were derived from releases into the neighboring Morse Creek (N = 1) or Dungeness (N= 7) watersheds (Table 4-36). Fish that were released from the yearling program (87.6%), except for 11 tags from the 2012 brood year when a portion of the sub-yearling releases were coded wire tagged. One tag recovered from a netted fish was a blank wire and could not be assigned to a given brood year (Table 4-36).

Table 4-36. Chinook Coded Wire Tag (CWT) data for snouts recovered during spawn year 2015.

	Sampling Location	# of Snouts	Brood Year	Release Location
River	Elwha Dam to Mouth	1	2011	Dungeness River
		1	2012	Dungeness River
		1	2013	Elwha River
Hatchery	Net	1	2010	Hurd Creek
		8	2010	Elwha River
		1	2011	Morse Creek
		1	2011	Hurd Creek
		3	2011	Dungeness River
		5	2011	Elwha River
		10	2012	Elwha River
		2	2013	Elwha River
		1	Unknown	Unknown
	LEKT	3	2010	Elwha River
		1	2011	Hurd Creek
		5	2012	Elwha River
	Volunteer	1	2009	Elwha River
		3	2010	Elwha River
		5	2011	Elwha River
		4	2012	Elwha River
		2	2013	Elwha River
	Total	59		

Scale Data

Of the 811 scale samples collected, 728 (89.8%) were successfully aged in the laboratory. Age 4 was the dominate age class in each sampling reach and all collection sources at the hatchery, as over 64% of the entire collection was composed of age-4 Chinook salmon (Table 4-37). The highest percentages of age-5 Chinook salmon were collected from Reach 3 which is just upstream of the former Elwha Dam site (Table 4-36). Age 6 fish were only found in Reach 1 and (Table 4-37) at the WDFW Hatchery. Thirty fish (4.2%) were identified as fish that migrated to the ocean as age 2 (Stream type Chinook, Table 4-38). All of these stream-type Chinook were hatchery origin. No scale samples were collected from Indian Creek or Little River.

Table 4-37. Chinook carcass age data from scale samples by reach for the Elwha River 2015.

Sample Location	Collection Method	Number of Samples	Total age				
			2	3	4	5	6
WDFW Hatchery	Net	290	0.69%	18.62%	62.07%	17.93%	0.69%
	LEKT	84	0.00%	32.93%	57.32%	10.98%	1.22%
	Volunteer	80	2.50%	52.50%	37.50%	6.25%	1.25%
Reach 1	Carcass Sample	38*	0.00%	15.79%	71.05%	10.53%	2.63%
Reach 2		22	0.00%	0.00%	86.36%	13.64%	0.00%
Reach 3		44	2.27%	4.55%	72.73%	20.45%	0.00%
Reach 4		69	1.45%	8.70%	76.81%	13.04%	0.00%
Reach 5		48	0.00%	6.25%	85.42%	8.33%	0.00%
Reach 6		53	0.00%	7.84%%	82.35%	13.73%	0.00%
Indian Creek		0	-	-	-	-	
Little Creek		0	-	-	-	-	
All Samples		728	0.82%	19.78%	64.7%	14.01%	0.69%

Table 4-38. Age at return of hatchery and unmarked subyearling and yearling releases 2015.

Origin	Age at Outmigration	N	Total Age				
			2	3	4	5	6
Unmarked[1]	Subyearling	40	0	11	21	7	6
Unmarked[1]	Yearling	0	NA	NA	NA	NA	1
WDFW Hatchery	Subyearling	646	3	131	430	79	NA
WDFW Hatchery	Yearling	30	3	2	12	12	3

[1] Excludes N = 7 unmarked fish with scales showing accelerated growth indicative of hatchery rearing.

4.14 Hoko

WDFW and Makah Fisheries Management staff conducted foot surveys to count live and dead Chinook and Chinook redds in the mainstem between river miles 3.4 to 21.7 and tributaries, which represents all Chinook spawning area in the Hoko basin. There are ten mainstem and 13 tributary reaches, which include the Little Hoko River, a tributary to the lower mainstem, and Browne's, Herman, North Fork Herman, Ellis, Bear, and Cub creeks, which are tributaries to the upper mainstem. WDFW conducted surveys from RM 3.4 to 10.1 during the 2015 return year (Table 4-39). Makah Fisheries Management (MFM) surveyed the mainstem Hoko upstream of RM 10.1 to RM 21.7, Hoko tributaries, and the Sekiu River (Table 4-40). Towards the end of the spawning season, survey conditions in the mainstem river were poor on the October 29th survey due to high water.

Table 4-39. Chinook redd surveys in mainstem Hoko River from RM 3.4- RM 10.1 by WDFW in 2015.

		Carcasses				
Date	**Survey reach**	**Live**	**Dead**	**Total**	**New redds**	**River conditions**
10/8/15	3.4 - 4.4	4	0	4	9	Excellent
10/8/15	4.4 - 5.6	37	0	37	42	Excellent
10/8/15	5.6 - 7.5	55	0	55	33	Excellent
10/8/15	7.5 - 8.4	72	0	72	58	Excellent
10/8/15	9.8 - 10.1	115	0	115	83	Excellent
10/15/15	3.4 - 4.4	5	0	5	3	Good
10/15/15	4.4 - 5.6	15	0	15	16	Good
10/15/15	5.6 - 7.5	36	1	37	14	Good
10/15/15	7.5 - 8.4	55	3	58	16	Good
10/15/15	9.8 - 10.1	117	3	120	31	Good
10/22/15	3.4 - 4.4	0	2	2	1	Very good
10/22/15	4.4 - 5.6	2	6	8	4	Very good
10/22/15	5.6 - 7.5	4	23	27	10	Very good
10/22/15	7.5 - 8.4	18	18	36	20	Very good
10/22/15	9.8 - 10.1	134	109	243	49	Very good
10/29/15	3.4 - 4.4					High flows-no survey
10/29/15	4.4 - 5.6					High flows-no survey
10/29/15	5.6 - 7.5					High flows-no survey
10/29/15	7.5 - 8.4					High flows-no survey
10/29/15	9.8 - 10.1					High flows-no survey
Total					**389**	

Table 4-40. Summary of Hoko and Sekiu Chinook surveys by Makah Fisheries Management staff in 2015.

Date	Stream Name	Trib To	WRIA	RM Lower	RM Upper	Stream Flow	Visibility	Live Chinook	Dead Chinook	New Redds
10/12	Bear	Hoko	19.0196	0.60	1.30	Low Moderate	Very Good	3	0	0
10/9	Brown's	Hoko	19.0170	0.00	0.97	Low	Excellent	29	0	3
10/19	Brown's	Hoko	19.0170	0.00	0.59	Low	Excellent	45	14	11
10/22	Brown's	Hoko	19.0170	0.00	0.59	Low Moderate	Very Good	60	211	45
11/4	Brown's	Hoko	19.0170	0.00	0.59	Moderate	Good	35	1	15
11/4	Brown's	Hoko	19.0170	0.59	0.97	Moderate	Good	0	0	1
10/12	Cub	Hoko	19.0197	0.00	0.83	Low Moderate	Very Good	0	0	0
10/19	Herman	Hoko	19.0183	0.00	2.00	Low Moderate	Very Good	50	0	10
10/8	Hoko	Straits	19.0148	13.00	15.00	Low Moderate	Very Good	0	0	3
10/19	Hoko	Straits	19.0148	13.00	15.30	Low	Excellent	103	0	12
10/27	Hoko	Straits	19.0148	13.00	15.50	Moderate	Good	50	0	15
11/6	Hoko	Straits	19.0148	13.00	15.50	Moderate	Good	0	4	0
10/21	Hoko	Straits	19.0148	15.00	18.00	Low	Excellent	0	0	1
10/8	Hoko	Straits	19.0148	15.50	18.30	Low	Excellent	1	0	1
10/27	Hoko	Straits	19.0148	15.50	18.30	Low	Excellent	14	0	22
11/6	Hoko	Straits	19.0148	15.80	18.30	Low	Excellent	0	0	6
10/21	Hoko	Straits	19.0148	18.30	20.40	Low	Excellent	16	0	6
10/14	Little Hoko	Hoko	19.0149			Low	Excellent	0	1	6
10/5	Sekiu	Straits	19.0203			Low	Excellent	0	0	0
10/28	Sekiu	Straits	19.0203			Low Moderate	Very Good	0	0	0
10/22	Sekiu	Straits	19.0203			Low	Excellent	0	0	0
10/22	Sekiu	Straits	19.0203			Low	Excellent	12	0	6
10/28	Sekiu	Straits	19.0203			Low Moderate	Very Good	0	0	0
10/20	Sekiu	Straits	19.0203			Low Moderate	Very Good	0	0	0
10/28	Sekiu	Straits	19.0203			Low	Excellent	0	0	4
10/22	Sekiu	Straits	19.0203			Low	Excellent	10	0	6
10/22	Sekiu	Straits	19.0203			Low	Excellent	0	0	0

Redd counts are multiplied by 2.5 adults per redd to estimate natural escapement. We estimated the number of redds in sections that were not surveyed by applying the nearest redds per mile value. A total of 547 redds were observed by Makah and WDFW fisheries staff during their surveys (Table 4-41). An additional 74 redds were added for sections not surveyed using the redds per mile expansion value (Table 4-41). The total number of redds was estimated at 621 for a total adult estimate of 1,552 (Table 4-41).

The Hoko Falls Hatchery collected 1,620 Chinook in 2015 (Table 4-42). Of this total, 236 were spawned at the hatchery, 1,157 were returned to the river to spawn, 1 was culled, 213 were surplused, and 13 were mortalities. In addition, 16 redds or 40 adults spawned in the Sekiu River drainage.

To avoid the possibility of double-counting redds in the river from the hatchery broodstock released back to the river, the number of females and males from the hatchery were documented by release date (Table 4-43). A portion of the redds counted during spawning ground surveys was assumed to have been made by females released by the hatchery. Between October 12 and October 19, 422 females and 659 males were released back to the Hoko River in the vicinity of the hatchery.

Table 4-41. Summary of Hoko and Sekiu Chinook surveys by Makah Fisheries Management staff in 2015.

Stream	Lower End	Upper End	Total Length	Unsurveyed Length	Surveyed Length	% Surveyed	Observed Redds	Expanded Redds (1)	Total Redds	Redds/Mile	Total Adults	Notes
Mainstem	2.80	3.40	0.60	0.60	0.00	0.0%		8	8	13.0	20	
Mainstem	3.40	4.40	1.00	0.00	1.00	100%	13		13	13.0	33	
Mainstem	4.40	5.60	1.20	0.00	1.20	100%	62		62	51.7	155	
Mainstem	5.60	7.50	1.90	0.00	1.90	100%	57		57	30.0	143	
Mainstem	7.50	8.40	0.90	0.00	0.90	100%	94		94	104.4	235	
Mainstem	8.40	8.70	0.30	0.30	0.00	0.0%		31	31		78	
Mainstem	9.80	10.10	0.30	0.00	0.30	100%	163		163	543.3	408	
Mainstem	10.10	11.00	0.90	0.00	0.90	100%		11	11	12.0	27	
Mainstem	11.00	13.00	2.00	2.00	0.00	0.0%		24	24	12.0	60	
Mainstem	13.00	15.50	2.50	0.00	2.50	100%	30		30	12.0	75	
Mainstem	15.50	18.30	2.80	0.00	2.80	100%	30		30	10.7	75	
Mainstem	18.30	20.40	2.10	0.00	2.10	100%	6		6	2.9	15	
Mainstem	20.40	21.70	1.30	1.30	1.30	100%						
Brownes Cr.	0.00	0.97	0.97	0.00	0.97	100%	75		75	77.3	188	
Ellis Cr.	0.00	1.00	1.00	0.00	1.00	100%						
Herman Cr.	0.00	2.00	2.00	0.00	2.00	0.0%	10		10	5.0	25	
NF Herman Cr.	0.00	0.37	0.37	0.00	0.37	0.0%						
Bear Creek	0.00	0.66	0.66	0.00	0.66	100%	1		1	3.2	3	
Johnson Cr.	0.00	0.35	0.35	0.00	0.35	0.0%						
Little Hoko river	0.00	1.00	1.00	2.50	1.00	0.0%	6		6	6.0	15	
Total Redds							**547**	**74**	**621**			
Adults (Redds * 2.5 Adults/Redd)							**1,368**	**185**	**152**		**1,552**	

Table 4-42. Estimated total number of Chinook salmon that returned to the Sekiu and Hoko rivers in 2015 based on spawning ground surveys and broodstock collections.

Source	Method	Redds	Adult estimate	Total spawner estimate	Broodstock Males	Broodstock Females	Broodstock jacks	Totals
Sekiu, NF, SF	Sum of redd counts	16	40	40				
WDFW and Makah SGS	Total new redds + expansion	621	1,552					
Hoko Hatchery	Broodstock spawned		236		111	110	15	236
Hoko Hatchery	Returned to the river		1,157		685	424	48	1,157
Hoko Hatchery	Culled		1		1	0	0	1
Hoko Hatchery	Surpluses		213		69	143	1	213
Hoko Hatchery	Mortalities		13		8	3	2	13
Total			**3,212**		**874**	**680**	**66**	**1,620**

Table 4-43. Dates of Hoko Hatchery female and male Chinook salmon broodstock released back into Hoko River between October 12 and October 19, 2015 and allowed to spawn.

Date released back to river	No. of females released	No. of males released	Total broodstock released
10/12/15	347	538	885
10/15/15	30	61	91
10/16/15	4	40	44
10/19/15	41	20	61
Totals	**422**	**659**	**1,081**

Based on spawning ground surveys and the adults estimated from redd counts, the maximum number of adults that possibly could have been double-counted from the hatchery releases was 745 (Table 4-44). The minimum number of adults that possibly could have been counted was zero. Since it was not possible to track the spawning activity of these hatchery released fish in the river, both Makah and WDFW fisheries management staff agreed to use the mid-point of 373 adults as the possible number of adults double-counted (Table 4-44).

Table 4-44. Estimated maximum, minimum, and mid-point number of Hoko Hatchery Chinook salmon that could have been double-counted during surveys in 2015.

Source	Redd counts from SGS	Adult estimate	Comment
Makah	134	335	Number of redds d observed by Makah staff during period of broodstock released back to river. Adults = redds x 2.5.
WDFW	163	410	Number of redds d by WDFW staff observed during period of broodstock released back to river. Adults = redds x 2.5.
Total	**298**	**745**	Maximum number of adults that possibly could have been double-counted. Adults = redds x 2.5.
		0	Minimum number of Chinook that possibly could have been double-counted
Estimated number of fish possibly double-counted		**373**	The mid-point of the two possible numbers

Of the estimated 2,415 natural in-river spawners, 1,171 were hatchery origin spawners (HOS) and 1,245 were natural origin spawners (NOS) (Table 4-45). The number of hatchery origin and natural origin Chinook salmon spawned for the broodstock program were 207 and 255, respectively. The total numbers and percentages, by age, of in-river spawners and broodstock collected, including jacks were 160 age 2 (5.6%), 437 age 3 (15.2%), 2,145 age 4 (74.6%), 135 age 5 (4.6%), and no age 6 or age 7. The in-river spawners plus broodstock collected consisted of 1,377 (47.9%) hatchery origin and 1,500 (52.1%) natural origin for a total return of 2,877 fish (Table 4-45).

Table 4-45. Age and origin of broodstock and natural Chinook spawners in the Hoko River in 2015.

		In-River spawners by Origin			Hatchery Broodstock by Origin			Total Spawners by Origin		
Brood	**Age**	**HOS**	**NOS**	**Total**	**HOS**	**NOS**	**Total**	**HOS**	**NOS**	**Total**
2013	2	115	27	142	12	6	18	127	33	160
2012	3	190	185	374	36	27	63	226	211	437
2011	4	760	1,018	1,778	150	218	368	910	1,235	2,145
2010	5	106	15	122	8	5	13	115	20	135
2009	6	0	0	0	0	0	0	0	0	0
2008	7	0	0	0	0	0	0	0	0	0
	Total	**1,171**	**1,245**	**2,415**	**207**	**255**	**462**	**1,377**	**1,500**	**2,877**

5 Coded-wire Tag Sampling

Commercial and recreational catch is sampled to recover coded-wire tagged Chinook and coho. General objectives are to sample 20% of commercial catch in each area and week, and 10% of marine recreational catch in each area and month. Sampling rates in 2014 are summarized below, and were based on catches reported by local biologists, and sample sizes queried from the RMIS database. Sampling rates of commercial fisheries in areas with significant Chinook catch generally exceeded the objective, with the exception of a few areas (Table 5-1). Catch from Areas 13D-F is generally not sampled since hatchery production returning to the area is not coded-wire tagged. Marine area recreational fisheries were sampled at rates between 10% and 36% for the year (Table 5-2). Note that these data were updated just prior to completion of this report, and will be validated and corrected as needed prior to submission to update the RMIS (Regional Mark Information System) database.

Table 5-1. Chinook coded-wire tag sampling rates for commercial fisheries in 2014 (calendar year).

Catch Area/River	Catch	# Sampled	Sample Rate
7-7A	6,845	2,277	33%
7B-7C-7D-Nooksack River	63	5	8%
Skagit River/Bay	2,311	1,128	49%
8A	13	1	8%
8D	1,735	386	22%
Stillaguamish River	8	4	50%
10	15	14	93%
10E	2,468	857	35%
10F	140	97	69%
10A	133	129	97%
Duwamish River	345	83	24%
Puyallup/White rivers	3,083	1,541	50%
Nisqually River	4,189	2,592	62%
13A	328	88	27%
13C	363	258	71%
13D-F	2,389	29	1%
9	42	10	24%
9A-12-12A-12B	79	14	18%
12C	4,360	1,451	33%
12H	7,794	3,757	48%
Skokomish River	3,707	1,545	42%
Purdy Creek	5,581	2,762	49%
Strait of JDF 4B-5-6C	1,300	408	31%

Table 5-2. Chinook coded-wire tag sampling rates for marine recreational fisheries in 2014.

Catch Area	Catch	# Sampled	Sample Rate
Marine Sport Area 5	5,552	1,758	31.7%
Marine Sport Area 6	5,507	1,729	31.4%
Marine Sport Area 7	9,216	1,309	14.2%
Marine Sport Area 8.1	139	42	30.2%
Marine Sport Area 8.2	439	157	35.8%
Marine Sport Area 9	5,285	1,443	27.3%
Marine Sport Area 10	1,625	353	21.7%
Marine Sport Area 11	3,235	900	27.8%
Marine Sport Area 13	606	62	10.2%
Marine Sport Area 12	821	177	21.6%

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Appendix 1. 2015-2016 List of Agreed Fisheries

Part I. Treaty/Non-Treaty OCEAN Fisheries (FRAM #2115Final (Chinook) & #1523 (Coho))

Treaty Troll Quota	60,000 Chinook; 42,500 Coho
Non-treaty TAC	131,000 Chinook (non-mark selective equivalent of 125,000); 170,000 Coho. Commercial troll fishery traded 8,000 Coho to the recreational fishery (all in Area 1) for 2,000 Chinook.
NT Troll TAC	67,000 Chinook; Mark Selective Fishery impacts associated with a landed catch of 19,200 Coho
Recreational TAC	64,000 Chinook (includes non-selective quota of 54,000 and mark selective fishery impacts associated with a landed catch of 10,000 Chinook) and Mark Selective Fishery impacts associated with a landed catch of 150,800 Coho.

1.1 Treaty Troll: Areas 2, 3, 4 & 4B

5/1-6/30	Chinook directed fishery with sub quota of 30,000 Chinook. May 1 through June 30 or attainment of 30,000 Chinook sub quota, whichever comes first. All salmon except Coho. If the Chinook quota for the May-June fishery is not fully utilized, the excess fish may be transferred into the later all-salmon season on an impact-neutral basis for limiting stocks into the later all-salmon season. If the Chinook quota is exceeded, the excess will be deducted from the later all-salmon season.
7/1-9/15	All salmon species with sub quota of 30,000 Chinook plus any portion of uncaught Chinook rolled over from the May 1st through June 30th time period on an impact neutral basis or quota of 42,500 Coho whichever comes first. Chum release 8/1-9/15.

1.2 Non-Treaty Troll: U.S./Canada border to Cape Falcon

5/1- thru earliest of 6/30 or pre-season Chinook sub-quota of 40,200 (no more than 9,000 of which may be caught in the area between the U.S./Canada border and the Queets River and no more than 15,000 of which may be caught in the area between Leadbetter Pt. and Cape Falcon)	All salmon except Coho with 40,200 Chinook quota; no more than 9,000 of which may be caught in the area between the U.S./Canada border and the Queets River and no more than 15,000 of which may be caught in the area between Leadbetter Pt. and Cape Falcon; Open May 1-June 30, 7 days per week. An in-season conference call will occur when it is projected that 29,250 Chinook have been landed overall or 6,750 have been landed in the area between the U.S./Canada border and the Queets River or 11,250 have been landed in the area between Leadbetter Pt and Cape Falcon to consider modifying the open period and adding landing and possession limits. Mandatory Yelloweye Rockfish Conservation Area, Columbia and Cape Flattery Control Zones closed. Trip limits, gear restrictions, and guidelines may be implemented or adjusted in-season. Vessels must land their fish within 24 hours of any closure of this fishery; under state law, vessels must report their catch on a state fish receiving ticket. Vessels in possession of salmon north of the Queets River may not cross the Queets

	River line without first notifying WDFW with area fished, total chinook and halibut catch aboard, and destination. Vessels in possession of salmon south of the Queets River may not cross the Queets River line without first notifying WDFW with area fished, total chinook and halibut catch aboard, and destination. Vessels fishing, or in possession of salmon while fishing north of Leadbetter Point must land and deliver their fish within the area and north of Leadbetter Point. Vessels fishing, or in possession of salmon while fishing south of Leadbetter Point must land and deliver their fish within the area and south of Leadbetter Point, except that Oregon permitted vessels may also land their fish in Garibaldi.
7/1 thru earliest of 9/22 or pre-season Chinook sub-quota of 26,800 (no more than 11,000 of which may be taken in the area between the U.S./Canada border and the Queets River) or Mark Selective Fishery quota of 19,200 Coho.	Open July 1-7, then Friday through Tuesday July 10 through September 22 with a landing and possession limit of 50 Chinook and 50 marked Coho per vessel per open period. All salmon, except no Chum retention north of Cape Alava, Washington beginning August 1 (all retained Coho must have a healed adipose fin clip). An in-season conference call will occur when it is projected that 19,500 Chinook have been landed overall or 8,250 have been landed in the area between the U.S./Canada border and the Queets River to consider modifying the open period and adding landing and possession limits. Mandatory Yelloweye Rockfish Conservation Area, Cape Flattery and Columbia Control Zones closed. Grays Harbor Control Zone closed beginning August 9. Trip limits, gear restrictions, and guidelines may be implemented or adjusted in-season. Vessels must land their fish within 24 hours of any closure of this fishery. Under state law, vessels must report their catch on a state fish receiving ticket. Vessels in possession of salmon north of the Queets River may not cross the Queets River line without first notifying WDFW with area fished, total chinook, coho, and halibut catch aboard, and destination. Vessels in possession of salmon south of the Queets River may not cross the Queets River line without first notifying WDFW with area fished, total chinook, coho, and halibut catch aboard, and destination. Vessels fishing, or in possession of salmon while fishing north of Leadbetter Point must land and deliver their fish within the area and north of Leadbetter Point. Vessels fishing, or in possession of salmon while fishing south of Leadbetter Point must land and deliver their fish within the area and south of Leadbetter Point, except that Oregon permitted vessels may also land their fish in Garibaldi.

1.3 Non-Treaty Recreational

Area 1: Leadbetter Point to Cape Falcon (Oregon)

5/30-6/12 (10,000 Coastwide Mark Selective Fishery Chinook guideline)	Open 7 days per week; 2 fish per day; all salmon except Coho. All retained Chinook must have a healed adipose fin clip; Chinook minimum size limit 24 inches. In-season management may be used to sustain season length and keep harvest within the overall Chinook recreational TAC for north of Cape Falcon.
6/13-9/30 (79,400 Mark Selective Fishery Coho sub quota)	Open 7 days per week; 2 fish per day, only one of which may be a Chinook; retained Coho must have a healed adipose fin clip; Chinook minimum size limit 24 inches and Coho minimum size 16”; Chinook guideline: 15,000; closed in Columbia Control Zone. In-season management may be used to sustain season length and keep harvest within the overall Chinook recreational TAC for north of Cape Falcon.

Buoy 10

8/1-9/7	Open 7 days/week; 2 fish per day, only one of which may be a Chinook; Chinook minimum size 24 inches and Coho minimum size 16 inches; retained Coho must have a healed adipose fin clip. Release all salmon other than Chinook and hatchery Coho. Barbless hooks only.
9/8-9/30	Open 7 days/week; 2 fish per day. Release all salmon other than hatchery Coho. Coho minimum size 16 inches retained Coho must have a healed adipose fin clip. Barbless hooks only.
10/1-12/31	Open 7 days/week; 6 fish per day, 2 adults (minimum size 12 inches) may be retained, Coho must have a healed adipose fin clip. Release all salmon other than Chinook and hatchery Coho. Barbless hooks only.
1/1-3/31	Open 7 days/week; 6 hatchery Chinook per day, 2 adults (minimum size 12 inches); retained Chinook must have a healed adipose fin clip; release sockeye, Chum, Coho and wild Chinook. Barbless hooks only.
North Jetty	Open 7 days per week when Area 1 or Buoy 10 area is open. When Buoy 10 area and Area 1 are open concurrently, the daily limit and minimum size restrictions follow the most liberal regulations of those areas. Barbless hooks only.
Area 2: Queets River to Leadbetter Point	
5/30-6/12 (10,000 Coastwide Mark Selective Fishery Chinook guideline)	Open 7 days per week; 2 fish per day; all salmon except Coho. All retained Chinook must have a healed adipose fin clip; Chinook minimum size limit 24 inches. In-season management may be used to sustain season length and keep harvest within the overall Chinook recreational TAC for north of Cape Falcon.
6/13-9/30 (52,840 Mark Selective Fishery Coho sub quota)	Open 7 days per week; 2 fish per day, only one of which may be a Chinook; retained Coho must have a healed adipose fin clip; Chinook minimum size limit 24 inches and Coho minimum size 16 inches; Chinook guideline: 27,900. In-season management may be used to sustain season length and keep harvest within the overall Chinook recreational TAC for north of Cape Falcon.
Area 2-1 (east of a line from Leadbetter Point to Cape Shoalwater): Willapa Bay	
5/30-7/15	Open concurrent with Area 2, when Area 2 is open for salmon. Area 2 rules apply.
7/16-1/31	6 fish limit, 4 adults, 12” min size limit. Release wild Chinook. 2 pole endorsement.
Area 2-2 (east of line between tips of exposed jetties): Grays Harbor	
West of Buoy 13 line 5/30-8/9	Open concurrent with Area 2, when Area 2 is open for salmon. Area 2 rules apply.
East of Buoy 13 line, when open	All salmon required to be released may not be totally removed from the water, except anglers fishing from boats 30’ or longer as listed on either their State or Coast Guard regulation are exempt. Single-point barbless hooks required.
East of Buoy 13 line 7/1-7/31	Closed.
East of Buoy 13 line 8/1-9/15	2 fish limit, 2 adults, 12” min size limit. Release wild Coho. Open to salmon angling only in the area described as Humptulips – North Bay (the area conforms to the commercial SMCRA 2C).

East of Buoy 13 line 9/16-11/30	3 fish limit, 3 adults, 12” min size limit. Release Chinook. Open to salmon angling only in the area described as East Grays Harbor (the area conforms to the commercial SMCRA 2D).
Westport Boat Basin and Ocean Shores Boat Basin	
8/16-1/31	6 fish limit, 4 adults; 12” min size limit. Release Chinook.
Areas 3-4: U.S./Canada border to Queets River	
5/15-5/16, 5/22-5/23, 5/30-6/12 (10,000 Coastwide Mark Selective Fishery Chinook guideline)	Open 7 days per week; 2 fish per day; all salmon except Coho. All retained Chinook must have a healed adipose fin clip; Chinook minimum size limit 24 inches. Closed waters: east of a true north-south line running through Sail Rock. In-season management may be used to sustain season length and keep harvest within the overall Chinook recreational TAC for north of Cape Falcon.

Area 3: Cape Alava to Queets River	
6/13-9/30 (3,610 Mark Selective Fishery Coho sub quota)	Open 7 days per week; 2 fish per day; plus 2 additional pink salmon; retained Coho must have a healed adipose fin clip; Chinook minimum size limit 24 inches, Coho minimum size 16 inches; Chinook guideline: 2,600. In-season management may be used to sustain season length and keep harvest within the overall Chinook recreational TAC for north of Cape Falcon.
La Push Late Season Area 10/1-10/11	(100 Coho sub quota; 100 Chinook sub quota, included above) Fishery restricted to the area north of 47°50'00" N latitude and south of 48°00'00" N latitude. Open 7 days/wk. Other regulations as described above.
Area 4: U.S./Canada border to Cape Alava and east to Sekiu River	
6/13-9/30 (14,850 Mark Selective Fishery Coho sub quota)	Open 7 days per week; 2 fish per day plus 2 additional pink salmon; retained Coho must have a healed adipose fin clip. Chum non-retention during August and September. Chinook minimum size limit 24 inches and Coho minimum size 16 inches; Chinook guideline: 8,400; Chinook non-retention east of Bonilla-Tatoosh line beginning August 1. Closed waters: east of a true north-south line running through Sail Rock in July; **Closed to salmon angling** July 1-Sept. 30 inside the area bounded by a line from Kydaka Point to Shipwreck Point. In-season management may be used to sustain season length and keep harvest within the overall Chinook recreational TAC for north of Cape Falcon.

Area 4A: Makah Bay Treaty Evaluation Marine Set Net Fishery		
Chinook	Trty	Open 8/15 through 9/15 inside an area bounded by a line running from Strawberry Rock Point (48º 19' 07"N, 124º 40' 00"W) to the group of rocks (48º 19' 46"N, 124º 40' 35"W) which are located off Hobuck Beach and a line to the mouth of Hobuck Creek (48º 19' 54"N, 124º 39' 37"W), to be implemented per agreement between the Makah Tribe and WDFW.

Part II. PUGET SOUND including STRAIT of JUAN de FUCA and SAN JUAN ISLANDS fisheries (All fisheries modeled in FRAM #2115Final (Chinook) & #1523 (Coho))

2.1 Strait of Juan de Fuca Pre-terminal Areas

Areas 5, 6, 6C Treaty Troll (Ntrty net closed)

NOTE: Area 4B: 5/1-10/31 see Ocean Troll. For 11/1-12/31 & 1/1-4/15 see below.

5/1-6/15	Closed
6/16-9/30	Open for salmon, Chum release; Freshwater Bay closed, south of Angeles Pt./Observatory Pt. line; Pt. Angeles Harbor closed west of line from tip of Ediz Hook to ITT Rayonier Dock; Hoko Bay closed inside the area bounded by a line from Kydaka Point to Shipwreck Point; Area 6 closed east of a line true north from Green Point; 1,000 foot closure around stream mouths. The catch estimates for this fishery modeled in FRAM are statistically-derived predictions, and are the best available pre-season estimates of

	catch in this fishery. In order to have the actual catch reflect run strength, however, these estimates will not be treated as a ceiling when the managers make in-season fishery management decisions.
10/1-10/31	Open for salmon, Chinook release.
11/1-4/15	In Areas 4B, 5, 6, 6C the treaty troll fishery will be open from November 1, 2015 through April 15, 2016, or when the catch reaches the harvest ceiling of 8,500 Chinook, whichever comes first. 1,000-foot closures around stream mouths. Hoko Bay closed inside the area bounded by a line from Kydaka Point to Shipwreck Point for the month of November. The catch estimates for this fishery modeled in FRAM are statistically-derived predictions, and are the best available pre-season estimates of catch in this fishery. In order to have the actual catch reflect run strength, however, these estimates will not be treated as a ceiling when the managers make in-season fishery management decisions. The winter troll catch ceiling is 8,500 Chinook.
4/16-4/30	Closed

Areas 4B, 5, & 6C Treaty Net (Ntrty net closed)

Note: The catch estimates for this fishery modeled in FRAM are statistically-derived predictions, and are the best available pre-season estimates of catch in this fishery. In order to have the actual catch reflect run strength, however, these estimates will not be treated as a ceiling when the managers make in-season fishery management decisions.

Chinook	Open for setnet gear only, 6/21 through 8/15; 7 days a week; Hoko Bay closed, inside the area bounded by a line from Kydaka Point to Shipwreck Point; Freshwater Bay closed, south of Angeles Pt./Observatory Pt. line; 1,000-ft. closure around stream mouths.
Sockeye/Pink	Start to be determined by Fraser River Panel. The Co-managers have identified the following management actions to control by-catch of Chinook. Estimated by-catches are best estimates and are not quotas or ceilings. The priority for this fishery is to harvest the full Treaty share of sockeye and pink salmon, while managing the fishery so as to not greatly exceed the projected incidental harvest of Chinook salmon. All Chinook by-catch in this fishery will be promptly reported by each Tribe to the NWIFC TOCAS database and reported to the U.S. section of the Fraser Panel at least weekly, including take home and ceremonial and subsistence (C&S). If in-season the Chinook by-catch in this fishery exceeds 1,300, the Tribes will consider management actions to limit the Chinook by-catch, such as time or area restrictions, while continuing the priority objective of harvesting sockeye salmon. If in-season the fishery is projected to result in a total Chinook by-catch exceeding 3,300 Chinook, the Tribes will, effective with that scheduled fishery opening, prohibit any commercial sales of Chinook salmon, and any Chinook salmon landed must be delivered to the fishers' respective Tribe.
Coho	Open for gillnets starting at 6 days per week with in-season adjustments based on cumulative catch. Fishery will target Coho from the end of Fraser Panel control, through 10/10; 1,000 ft. closure around stream mouths. Hoko Bay closed, inside the area bounded by a line from Kydaka Point to Shipwreck Point.
Chum	Open for gillnets, starting at 6 days per week (day may be added if effort is low), 10/11 through 11/14; 1,000-foot closure around stream mouths. Hoko

	Bay closed, inside the area bounded by a line from Kydaka Point to Shipwreck Point.

Area 5 Recreational

Kydaka Point Closure: Waters south of a line from Kydaka Point westerly approximately 4 miles to Shipwreck Point closed to salmon angling 5/31-10/31.

5/1-6/30	Closed
7/1-8/15	2 fish limit, plus 2 additional Pink or Sockeye salmon (Chinook 22" min size); release wild Chinook, wild Coho, and Chum.
8/16-9/11	2 fish limit, plus 2 additional Pink or Sockeye salmon; release Chinook, wild Coho, and Chum.
9/12-9/30	2 fish limit; Release Chinook and Chum. Release wild Coho Sept. 15-18, 22-25, and 28-30.
10/1-10/31	2 fish limit, Release Chinook
11/1-2/15	Closed
2/16-4/30	2 fish limit (Chinook 22” min size), release wild Chinook.

Area 6 Recreational

5/1-6/30	Closed
7/1-8/15	2 fish limit, plus 2 additional Pink or Sockeye salmon, release Chinook, wild Coho, and Chum, except W. of true N/S line through “2” buoy near tip of Ediz Hook retention of marked Chinook allowed (Chinook 22" min size);. South of Angeles Pt./Observatory Pt. line – closed to angling. Pt. Angeles Hbr. W. of line from tip of Ediz Hook to ITT Rayonier Dock – closed to salmon angling.
8/16-9/30	2 fish limit, plus 2 additional Pink or Sockeye salmon; Release Chinook, wild Coho, and Chum. South of Angeles Pt./Observatory Point line - closed to angling. Pt. Angeles Hbr. W. of a line from the tip of Ediz Hook to ITT Rayonier Dock – closed to salmon angling.
10/1-10/31	2 fish limit, (Chinook 22” min size) release wild Chinook. South of Angeles Pt./Observatory Point line – closed to angling. Pt. Angeles Hbr. W. of a line from the tip of Ediz Hook to ITT Rayonier Dock – closed to salmon angling. Sequim Bay south of a line from the south end of Gibson Spit to the west end of Travis Spit - closed to salmon angling. Discovery Bay south of a line from the Gardiner Boat Ramp to Beckett Point - closed to salmon angling.
11/1-11/30	Closed
12/1-4/10	2 fish limit (Chinook 22” min size). Release wild Chinook.
4/11-4/30	Closed

2.2 Strait of Juan de Fuca Terminal Areas

Area 6D Dungeness Bay Net

Chinook	All	Closed

Pink	Trty	Open 7/19 through 8/22; Beach seine gear only; Release all Chinook and Chum salmon; Fishery mortality on Dungeness Chinook will monitored in-season and held to the fishery mortality value modeled in the final 2015 pre-season Chinook FRAM run.
	Ntrty	Open wk 30 (wb 7/19) through wk 31 (wb 7/26) for beach seines 7AM – 7PM M-F; Chinook and Chum NR. Limit 2 beach seines and fishers. Observers required when fishing and will not exceed 4 Chinook mortalities.
Coho	Trty	Open 9/21 through 10/31; Additional days beyond 10/31 may be considered; 9/21 through 10/10, seven days per week, fishing 7 am to 7 pm only, nets must be attended by fisher, Chinook and Chum release; 10/11 through 10/31, seven days per week, 24 hours per day; 1,500 ft closure around mouth of Dungeness River.
	Ntrty	Open Wk 39 (wb 9/20) through Wk 44 (wb 10/25) for skiff gillnet gear; M-F 7AM – 7PM,; Chinook and Chum NR, release by cutting ensnaring meshes; 1,500 ft. (1/4 nautical mile) closure around each river mouth. Openings possible in Wk 44 (wb 10/25) based on in-season information.
Chum	All	Closed

Dungeness River (Treaty and Recreational)

Note 1: The following applies to all in-river pink fisheries (Tribal & WDFW): Co-managers will meet prior to opening any 2015 pink fishery to review the status of the return and river conditions. In-river fisheries will remain closed until co-managers agree to open, based on river conditions and return status.

Note 2: The following applies to all in-river coho fisheries (Tribal & WDFW): Co-managers will meet on, or prior to October 7, 2015 to review river flow and weather conditions for the week of October 8-15.. In the absence of river flow and weather conditions meeting agreed-to criteria, Dungeness River fisheries remain closed prior to the dates listed below.

Dungeness River Treaty (Ntrty net closed)

Chinook	Trty	Closed
Pink	Trty	Subsistence fishing may open as early as July 1 for 31 days using selective gear.
Coho	Trty	Commercial fishing up to 3 days/wk, to be determined in-season, for Coho only, is scheduled to open on 10/16 and will be restricted to areas below the Dungeness hatchery intake using species selective (hand-held) gear. Subsistence fishing using selective gear is scheduled to open on 10/16. Refer to the co-management agreement above for possible emergency openings.
Chum	Trty	Closed

Elwha River Treaty (Ntrty net closed)

Chinook	Trty	Closed except Ceremonial Harvest of 4 fish in July.
Coho	Trty	Closed

Chum	Trty	Closed
Dungeness Bay Recreational		
5/1-7/15	Closed to salmon angling.	
7/16-8/15	4 Pink salmon only. No bait; one single point barbless hook measuring ½ inch or less from point to shank. Fishery may open early by emergency regulation and comanager agreement. Fishery not to exceed 31 days	
8/16 – 9/30	Closed to salmon angling.	
10/1-10/31	2 fish limit, Coho only.	
11/1-4/30	Closed to salmon angling.	
Dungeness River Recreational		
East Anderson Road (School House) Bridge (RM 0.9) to hatchery intake pipe (RM 11.3) or as defined by emergency regulation	7/16-8/15	Up to 4 Pink salmon only. Release all other salmon. No bait. Night closure. One single point barbless hook measuring ½ inch or less from point to shank. Open for 31 days by emergency regulation as early as July 1; close by 8/16 or sooner by emergency regulation.
(mouth to hatchery intake pipe at RM 11.3)	10/16-12/31	4 fish limit, Coho only; 12” min size.
Elwha River Recreational		
Closed to all fishing.		
Hoko River Recreational		
(mouth to cement bridge (mile 7.0) on Hoko/Ozette Hwy.)	All year Closed to salmon.	
All other STRAIT OF JUAN DE FUCA REGION freshwater recreational closed to salmon angling.		

2.3 San Juan Islands/Point Roberts Area

Areas 6, 7, & 7A Net

Chinook	All	Closed
Sockeye	Trty	Schedule to be determined. The Co-managers have identified the following management actions to track and control by-catch of Chinook. Estimated by-catches are best estimates and are not quotas. The priority for this fishery is to harvest the full treaty share of sockeye salmon, while managing the fishery so as to not greatly exceed the projected incidental harvest of Chinook salmon. All Chinook by-catch in this fishery will be promptly reported by each Tribe to the NWIFC TOCAS database and reported to the U.S. Section of the Fraser Panel at least weekly, including take home and ceremonial and subsistence (C&S). Prior to achieving a

		by-catch of 4,200 Chinook there will be no restrictions on the retention or sale of Chinook salmon. If, during the season, the Fraser Panel schedules a fishery that is projected to result in a total Chinook by-catch exceeding 4,200 fish, the Tribes will, effective with that scheduled fishery, prohibit any commercial sales of Chinook salmon, and any Chinook salmon landed must be delivered to the fisher's respective Tribe. Prior to achieving a purse seine bycatch of 2,500 coho for the month of September, there will be no restrictions on the retention or sale of coho salmon. After a purse seine bycatch of 2,500, the Tribes will prohibit coho retention for purse seines only. Reef net wild coho, wild Chinook, and chum NR. Reef net may retain marked Chinook through 9/30. July and August – C&S fishery. Further policy discussion may occur among the affected parties prior to the season.
	Ntrty	Schedule to be determined. The Co-managers have identified the following management actions to track and control by-catch. Modeled by-catches are best estimates and are not quotas. All vessel operators must complete best fishing practices certification prior to fishing. PS: brailing required. Chinook, Coho, and Chum NR. Reef net wild Coho, Chum, and wild Chinook NR. Reef net: fishers may retain hatchery Chinook, with a cap of 300 for all gears through 9/30. Estimates of by-catch will be shared at least weekly in the U.S. Section of the Fraser River Panel. Purse seine and gillnet fisheries will be managed to ensure that the non-treaty impact does not exceed 3,924 total Chinook (120% of pre-season estimate).
Pink	Trty	Purse seine, gill net, and reef net: schedule dependent upon Fraser Panel. See Chinook by-catch in-season actions description in sockeye section above. Reef net: wild coho, wild Chinook, and chum NR. Reef net may retain marked Chinook through 9/30. Purse seine coho release requirements listed in sockeye fishery description, above.
	Ntrty	Schedule to be determined. All vessel operators must complete best fishing practices certification prior to fishing. PS: brailing required. Chinook, Coho, and chum NR. Reef net: Chum, wild Chinook, and wild Coho NR. See Chinook by-catch in-season actions description in Sockeye section above.
Coho	Trty	Reef net: 7 days/wk beginning at end of Fraser Panel management through 11/8; Chinook NR after 9/30; wild Coho NR through 9/30, then coho retention. Chum NR through 9/30.
	Ntrty	Reef net: 7 days/wk beginning at end of Fraser Mgmt through Chum mgmt wk 45 (wb 11/1); Chinook NR after 9/30; wild-Coho release through 9/30, then Coho non-selective. Chum retention prohibited until after 9/30. All vessel operators must complete best fishing practices certification prior to fishing.
Chum	Trty	The Treaty fishery will open October 10 and remain open for the duration of the chum fishery, dependent on run status updates from CDFO. See attached 2015 7/7A Chum Fishing Plan. Reef nets open from end of Fraser Panel management through end of chum management (11/8), 7 days/wk. Reef net release requirements listed in Coho fishery description, above.

	Ntrty	Dependent on update of run status from CDFO. PS and GN open wk 42 (wb 10/11) through wk 45 (wb 11/1). Open 10/12, 10/13, 10/15 and 10/19 through end of season. Co-managers will meet via conference call on Friday 10/16 to discuss catch to date. Fishery will re-open based on conditions outlined in the attached agreement. PS: brailing required, Chinook and Coho NR. GN: during wks 41 and 42, Chinook and Coho NR, live box required and limited soak times in effect. Reef nets open from end of Fraser Panel management through wk 45 (wb 11/1), 7 days/wk, must release all Chinook and wild Coho. All vessel operators must complete best fishing practices certification prior to fishing.
Subsistence	Trty	12/1 – 4/30 subsistence troll fishery (Chinook 22" min size). Bellingham Bay closed 4/1 – 4/30.

Area 7 Recreational

5/1-6/30	Closed
7/1-7/31	2 fish limit, 1 Chinook (Chinook 22" min size) plus 2 additional pink Pink or sockeye Sockeye salmon; Waters of Area 7 in Rosario Strait and the eastern portion of the Strait of Juan de Fuca southerly of a line running true south from the westernmost point on Fidalgo Head to Burrows Island, then westerly and southerly along the shore of Burrows Island to the Burrows Island Lighthouse, then westerly to Bird Rocks, then westerly from Bird Rocks to the southernmost point on Decatur Island, then southerly across Lopez Pass to Lopez Island and following the shore of Lopez Island southerly and westerly to Iceberg Point, then from Iceberg Point to Cattle Point, then south southwest to the Salmon Bank Buoy, and then true south from the Salmon Bank Buoy to the Area 7 boundary, closed to salmon angling. Bellingham and Samish Bay closed to salmon angling.
8/1-9/30	2 fish limit, 1 Chinook (Chinook 22" min size) plus 2 additional Pink or Sockeye salmon; release Chum and wild Coho; Waters of Area 7 in Rosario Strait and the eastern portion of the Strait of Juan de Fuca southerly of a line running true south from the westernmost point on Fidalgo Head to Burrows Island, then westerly and southerly along the shore of Burrows Island to the Burrows Island Lighthouse, then westerly to Bird Rocks, then westerly from Bird Rocks to the southernmost point on Decatur Island, then southerly across Lopez Pass to Lopez Island and following the shore of Lopez Island southerly and westerly to Iceberg Point, then from Iceberg Point to Cattle Point, then south southwest to the Salmon Bank Buoy, and then true south from the Salmon Bank Buoy to the Area 7 boundary, closed to salmon angling. Bellingham Bay closed to salmon angling 7/1-8/15; Samish Bay closed to salmon angling. Lummi Bay closure area: east of a line from Gooseberry Point to Sandy Point 9/8 – 10/15.
10/1-10/31	2 fish limit, (Chinook 22" min size); Release wild Chinook. Samish Bay closed to salmon angling 10/1-10/15. Lummi Bay closure area: east of a line from Gooseberry Point to Sandy Point 9/8 – 10/15.
11/1-11/30	Closed
12/1-4/30	2 fish limit, (Chinook 22" min size), release wild Chinook; Bellingham Bay and Samish Bay closed to salmon angling 4/1 – 4/30.

2.4 Nooksack/Samish Terminal Region

Bellingham Bay (Areas 7B, 7C, 7D; 7A On-Reservation) Net

Chinook/Pink	Trty	Areas 7B, & 7D: August 2 through September 4, open weekly 4 PM Sunday to 4 PM Friday. Fishing pattern 5,5,5,5,5. Area 7C: August 2 through September 18, open weekly 4 PM Sunday to 4 PM Friday; fishing pattern 5,5,5,5,5,5,5. Samish Bay is closed southeasterly of a line from Oyster Creek to the fisheries marker on Samish Island, except that hand pull gill nets may fish from 4 PM Sunday – 4 PM Wednesday south to a line from Oyster Creek to Fish Point on Samish Island, August 2 through September 16 Sunday 4 PM - Wednesday 4 PM, weekly; fishing pattern: 3,3,3,3,3,3,3. 6 ½" mesh in 7C and off-reservation areas of 7B, except when open for sockeye in 7 and 7A.
	Ntrty	Areas 7B & 7C: Wks 33 (wb 8/9) - 36 (wb 8/30); PS Coho NR. GN fishing pattern: 3, 4, 4, 5; PS fishing pattern: 1,1,1,1. See Hales Pass closure below beginning 9/1.
Coho	Trty	Area 7A on-reservation fishery: September 13 through October 7. Open weekly 4 PM Sunday – 4 PM Wednesday. Fishing pattern 3,3,3,3.
		Areas 7B and 7D: September 6 through October 24, open Sunday 4 PM – Saturday 4 PM. Fishing Pattern:6,6,6,6,6,6,6. Except for 3 days in management week 38, no fishing in the waters of Area 7B west of a line from Point Francis (48°41'46"N, 122°36'32"W) to the red and green buoy southeast of Point Francis (48°40'27"N, 122°35'24"W), then to the northernmost tip of Eliza Island (48°39'38"N, 122°35'14"W), then along the eastern shore of the island to its southernmost tip (40°38'40"N, 122°34'57"W) then north of a line from the southernmost tip of Eliza Island to Carter Point (48°38'24"N, 122°36'31"W).
		7C: On October 1, a Co-manager conference call will be held to determine the status of Samish Chinook escapement. If the escapement goal appears to be attainable, and through development of a co-manager agreed in-season update methodology it is determined that there is a harvestable surplus of Samish Coho, then a Coho fishery will open October 4 – October 21, Sunday 4 PM – Wednesday 4 PM, weekly; fishing pattern 3,3,3.
	Ntrty	Area 7B: Wks 37 (wb 9/6) - 43 (wb 10/18); GN fishing pattern: 5,5,7,7,7,7,7 (24 hrs for all days); PS fishing pattern: 3,3,7,7,7,7,7. Hales Pass closed for all GN openings from Sept. 1 - 21, in the waters of Area 7B west of a line from Point Francis (48°41'46"N, 122°36'32"W) to the red and green buoy southeast of Point Francis (48°40'27"N, 122°35'24"W), then to the northernmost tip of Eliza Island (48°39'38"N, 122°35'14"W), then along the eastern shore of the island to its southernmost tip (40°38'40"N, 122°34'57"W) then north of a line from the southernmost tip of Eliza Island to Carter Point (48°38'24"N, 122°36'31"W).NT purse seine fisheries fishing in this area must release Coho Sept. 1-21.

Chum	Trty	Areas 7B & 7D: Oct. 25 – Dec.9; open weekly 4 PM Sunday – 4 PM Wednesday; 3,3,3,3,3,3,3,3.
	Ntrty	Area 7B: Wks 44 (wb 10/25)- 48 (wb 11/22); PS/GN; 5,5,5,5,5. Whatcom Creek Zone (east of line from Post Point to flashing red light at west entrance of Squalicum Harbor) open 7 days per week.

Nooksack River Treaty Net (Ntrty net closed)

Note: On a weekly basis, Nooksack Tribe commercial fisheries on the Nooksack River will open at 12:01 AM Sun, except that portion of the river between Marine Drive Bridge and the first turn ("Big Bend") in the river upstream of the Slater Road Bridge (approximately ¼ mile upriver from the Slater Road Bridge), which will open at 4:00 PM Sunday. On a weekly basis the Nooksack Tribe's commercial Chinook and pink fisheries will close 4:00 PM Friday; coho fisheries will close 4:00 PM Saturday and chum fisheries will close 4:00 PM Wednesday.

Chinook/Pink	4/1-6/15	April to mid-June: limited ceremonial and subsistence fishery will be managed for a total mortality of 16 NOR Chinook. A traditional fishery will occur 500 feet upriver from the Highway 9 bridge in the lower North Fork and the Nugents Corner Boat Launch in the mainstem (the boat launch is located just down river from Nugent's Corner Bridge) (RM 30.6 and 36.8). A total of 32 Chinook are projected in this fishery with an anticipated 4 NORs among the 32. This fishery is by permit only. Another fishery will occur in the lower Nooksack River between the Slater Road bridge and the river mouth (between RM 0.0 and 3.5). The lower river fishery will be selective and is projected to encounter 30 NOR Chinook with an expected survival rate of 60% and an estimated mortality of 12 NOR Chinook.
	8/1-9/5	Open weekly 4 PM Sunday to 4 PM Saturday, August 2 to 4 PM September 5. Fishing pattern: 6,6,6,6,6. The river is divided into five zones during this period. These zones open in subsequent weeks, proceeding upriver, to protect migrating spring Chinook. The area in Zone 4 upriver of the Nooksack Tribal Works building will remain closed from August 23 through September 5 to protect holding Spring Chinook Zone 1 is from Marine Drive Bridge to Slater Bridge. Zone 2 is from Slater Bridge To Hannegan Bridge In Lynden. Zone 3 is from Hannegan Bridge to Nugents Corner Bridge. Zone 4 is from Nugents Corner Bridge to the confluence of the north and south forks. Zone 5 is upriver of the confluence of the north and south forks.
Coho	9/6-10/24	Open weekly 4 PM Sunday through 4 PM Saturday. Fishing Pattern: 6,6,6,6,6,6,6. The area up-river of the Nooksack Tribal Works Building will remain closed until September 21.
Chum	11/5-6 or 11/12-13	Subsistence harvest only. The Lummi Nation and Nooksack Tribe will determine in-season which two days to hold this subsistence fishery.

	10/25 – 12/9	Commercial. Open weekly 4 PM Sunday through 4 PM Wednesday. Fishing Pattern: 3,3,3,3,3,3,3.
Bellingham Bay Terminal Area Recreational		
5/1-8/15	Closed to salmon angling.	
8/16-10/31	4 fish limit, 2 Chinook (Chinook 22" min size); release wild Chinook from 10/1-10/31 Samish Bay closed to salmon angling through 10/15.	
11/1-3/31	Same as Area 7.	
4/1-4/30	Closed to salmon angling.	
Nooksack River Recreational; mainstem and North Fork		
(from Lummi Indian Reservation boundary to Hwy 544 Bridge at Everson	7/16-8/31	Daily limit 4 Pink salmon only.
(from Lummi Indian Reservation boundary to Hwy 544 Bridge at Everson	9/1 – 12/31	2 fish limit, plus 2 additional Coho; 12” min size. Release wild Chinook through 9/30.
(from Hwy 544 Bridge at Everson to yellow marker at the FFA high school barn in Deming)	9/1 – 12/31	2 fish limit, plus 2 additional Coho; 12” min size. Release wild Chinook through 9/30.
(from yellow marker at the FFA high school barn in Deming to confluence of North and South forks)	10/1 – 12/31	2 fish limit, plus 2 additional Coho; 12” min size.
(from confluence of North and South forks to Maple Creek on North Fork)	10/1 – 11/30	2 fish limit, plus 2 additional Coho; 12” min size.
Nooksack River Recreational, South Fork		
(from mouth to Skookum Creek	10/1 – 12/31	2 fish limit, plus 2 additional Coho; 12” min size. Release Chum.
Samish River Recreational		
(from mouth to I-5 Bridge)	8/1-11/30	2 fish limit, 12” min size.
Dakota Creek Recreational		
(mouth to Giles Road Bridge)	10/1 – 12/31	2 fish limit, 12” min size. Release wild Chinook.

Whatcom Creek Recreational

(mouth to yellow markers below foot bridge below Dupont St. in Bellingham)	8/1 – 12/31	6 fish limit, 2 adults; 12" min size.

All other NOOKSACK/SAMISH TERMINAL REGION freshwater recreational: Closed to salmon angling.

2.5 Skagit Terminal Region

Terminal area fisheries will be managed so as not to exceed total projected incidental fishery mortalities of Skagit wild summer/fall Chinook. Based on the pre-season abundance forecast, projected incidental impacts in terminal area fisheries are expected to result in a terminal exploitation rate of 9.6% contributing to the total exploitation rate of 46.0% on Skagit summer/fall Chinook (FRAM model # Chin2115Final).

Skagit Bay (Area 8) Net

Note: Fishing schedules for Skagit Bay, Skagit River, and Baker River are pre-season projections. Schedules may be changed in-season as necessary to meet management objectives and harvestable shares.

Spring Chinook	Area 8 – Trty	**Swinomish Tribe fishing pattern: [Wk 19 (wb 5/3) thru wk 21 (wb 5/17); 2,2,2;] Due to the failure to quantify the Swinomish Skagit stock preterminal catches and the need for that information for allocation purposes, the Upper Skagit Indian Tribe cannot agree to the catches as modeled.** **Upper Skagit Tribe fishing pattern: No scheduled fishery.**
Sockeye	Area 8 – Trty	**Swinomish Tribe fishing pattern: [Wk 25 (wb 6/14) thru wk 28 (wb 7/5); 3,5,5,3;] Due to the failure to quantify the Swinomish Skagit stock preterminal catches and the need for that information for allocation purposes, the Upper Skagit Indian Tribe cannot agree to the catches as modeled.** **Upper Skagit Tribe fishing pattern: No scheduled fishery.**
	Ntrty	Closed
Pink	Area 8 - Trty	**Swinomish Tribe fishing pattern: [Wk 35 (wb 8/23) thru wk 37 (wb 9/6); 1,4,3.333.] Schedule after ISU dependent upon ISU. Due to the failure to quantify the Swinomish Skagit stock preterminal catches and the need for that information for allocation purposes, the Upper Skagit Indian Tribe cannot agree to the catches as modeled.** **Upper Skagit Tribe fishing pattern: No scheduled fishery.**
	Area 8 – Ntrty	Wk 35 (w/b 8/23) – 37 (w/b 9/6); PS NR for Chinook, Sockeye, and Chum salmon; PS fishing pattern 1, 1, 1; GN fish daylight hours; GN fishing pattern 1, 1, 1.
Coho	Trty	Terminal Treaty HR target 20% as a response to "Normal" abundance. If ISU changes abundance status, HR target may be modified following co-manager discussions.

	Area 8 – Trty	**<u>Swinomish Tribe fishing pattern:</u> [Wk 38 (wb 9/13) thru wk 41 (wb 10/4); 1,2,2,2.] Due to the failure to quantify the Swinomish Skagit stock preterminal catches and the need for that information for allocation purposes, the Upper Skagit Indian Tribe cannot agree to the catches as modeled.** **<u>Upper Skagit Tribe fishing pattern:</u> No scheduled fishery.**
	Ntrty	Closed
Chum Test	Area 8	1 boat at Jetty 1 day/wk 44 (wb 10/25) & 45 (wb 11/1) and 1 boat in Bay 1 day/wk 44 (wb 10/25) & 45 (wb 11/1).
Chum	Area 8 – Trty	**<u>Swinomish Tribe fishing pattern</u>: No preseason harvestable. [Placeholder modeled schedule wk 46 (wb 11/8); 1.] Due to the failure to quantify the Swinomish Skagit stock preterminal catches and the need for that information for allocation purposes, the Upper Skagit Indian Tribe cannot agree to the catches as modeled. Fishery dependent on ISU and harvestable fish.** **<u>Upper Skagit Tribe fishing pattern</u>: No preseason harvestable.**
	Ntrty	Closed. May open pending co-manager agreement on ISU that indicates harvestable runsize.

Skagit River Treaty Net (Ntrty net closed)

Note: Fishers from the Sauk-Suiattle Tribe are invited to participate in the 2015 Swinomish salmon fishery in Skagit River Area 78C from the Mount Vernon bridge to the Spud House, subject to and in accordance with all provisions of fishing ordinances and regulations of the Swinomish Indian Tribal Community that apply to such fishery. **[Sauk-Suiattle Tribe reserves their treaty right to execute the release of C&S regulations that mirror their modeled impacts to obtain their species specific allocations if scheduled Skagit River fisheries are not implemented or an invitation to participate in commercial fisheries is not received.]**

Chinook	Ceremonial and Subsistence – 299 fish (24 spring and 275 summer/fall) total Swinomish, Sauk-Suiattle, and Upper Skagit Tribes.	
Spring Chinook	Area 78C	**<u>Swinomish and Sauk-Suiattle Tribes fishing pattern</u>: [wk 19 (wb 5/3) thru wk 21 (wb 5/17);2,2,2;] Due to the failure to quantify the Swinomish Skagit stock preterminal catches and the need for that information for allocation purposes, the Upper Skagit Indian Tribe cannot agree to the catches as modeled.** **<u>Upper Skagit Tribe fishing pattern</u>: [wk 20 (wb 5/10) thru wk 21 (wb 5/17);1,1.] Swinomish cannot agree to fisheries proposed by Upper Skagit.**
	Area 78D	**<u>Upper Skagit Tribe fishing pattern</u>: [wk 20 (wb 5/10) thru wk 21 (wb 5/17);1,1.] Swinomish cannot agree to fisheries proposed by Upper Skagit.**

Sockeye	Area 78C	**<u>Swinomish and Sauk-Suiattle Tribes fishing pattern:</u> [wk 25 (wb 6/14) thru wk 28 (wb 7/5);3,5,5,3; Fishery will be managed so as not to exceed the Swinomish sockeye share based on preseason forecast until such time as an in-season update becomes available. Additional fishing dependent on ISU, per MOU;] Due to the failure to quantify the Swinomish Skagit stock preterminal catches and the need for that information for allocation purposes, the Upper Skagit Indian Tribe cannot agree to the catches as modeled.** **<u>Upper Skagit Tribe fishing pattern</u>: [wk 27 (wb 6/28) thru wk 29 (wb 7/12);0.667,0.667,0.458; Chinook non-retention. Additional fishing dependent on ISU, per MOU.] Swinomish cannot agree to fisheries proposed by Upper Skagit.**
	Area 78D	**<u>Swinomish Tribe fishing pattern (Area 78D-4 and Baker River):</u>** **[Wk 28 (wb 7/5) thru wk 29 (wb 7/12):0.75, 0.75; Fishery will be managed so as not to exceed the Swinomish sockeye share based on preseason forecast until such time as an in-season update becomes available. Additional fishing dependent on ISU, per MOU;] Due to the failure to quantify the Swinomish Skagit stock preterminal catches and the need for that information for allocation purposes, the Upper Skagit Indian Tribe cannot agree to the catches as modeled.** **<u>Upper Skagit Tribe fishing pattern</u>: Areas 78D-2, 78D-3, 78D-4, and 78O (Baker River): [wk 27 (wb 6/28) thru wk 29 (wb 7/12);0.667,0.667,0.458; Chinook non-retention.] Swinomish cannot agree to fisheries proposed by Upper Skagit.**
Pink	Area 78C	**<u>Swinomish and Sauk-Suiattle Tribes fishing pattern:</u> Wk 35 (wb 8/23) thru wk 37 (wb 9/6); 1,4,3.333. Schedule after ISU dependent upon ISU.] Due to the failure to quantify the Swinomish Skagit stock preterminal catches and the need for that information for allocation purposes, the Upper Skagit Indian Tribe cannot agree to the catches as modeled.** **<u>Upper Skagit Tribe fishing pattern: [</u>Wk 37 (wb 9/6) and Wk 38 (wb 9/13) Chinook non-retention. 2,2.] Swinomish cannot agree to fisheries proposed by Upper Skagit.**
	Area 78D	**<u>Upper Skagit Tribe fishing pattern:</u> [Wk 37 (wb 9/6) and wk 38 (wb 9/13) Chinook non-retention. 2,2.] Swinomish cannot agree to fisheries proposed by Upper Skagit.**
Coho	Terminal Treaty HR target 20% as a response to “Normal” abundance. If ISU changes abundance status, HR target may be modified following co-manager discussions.	

	Area 78C:	Swinomish and Sauk-Suiattle Tribes fishing pattern: [Wk 38 (wb 9/13) thru wk 41 (wb 10/4);1,2,2,2;] **Due to the failure to quantify the Swinomish Skagit stock preterminal catches and the need for that information for allocation purposes, the Upper Skagit Indian Tribe cannot agree to the catches as modeled.** **Upper Skagit Tribe fishing pattern: [Wk 40 (wb 9/27) thru wk 43 (wb 10/18);1,1,1,0.75.] Swinomish cannot agree to fisheries proposed by Upper Skagit.**
	Area 78D	**Upper Skagit Tribe fishing pattern: [Wk 40 (wb 9/27) thru wk 43 (wb 10/18) Chinook non-retention;1,1,1,0.75.] Swinomish cannot agree to fisheries proposed by Upper Skagit.**
Chum	Area 78C	**Swinomish and Sauk-Suiattle Tribes fishing pattern: No preseason harvestable. [Placeholder modeled schedule wk 46 (wb 11/8);1.] Due to the failure to quantify the Swinomish Skagit stock preterminal catches and the need for that information for allocation purposes, the Upper Skagit Indian Tribe cannot agree to the catches as modeled. Fishery dependent on ISU and harvestable fish.** **Upper Skagit Tribe fishing pattern: No preseason harvestable.**
	Area 78D	Upper Skagit Tribe fishing pattern: No preseason harvestable.
River Test	Chinook	Area 78C - Blakes wk 19 (wb 5/3) thru wk 35 (wb 8/23);1 boat, 6 hours/wk.
	Sockeye	Area 78C – Blakes wk 24 (wb 6/7) thru wk 29 (wb 7/12); 1 boat, 12 hours/wk; Area 78D-3 - Upper Skagit - wk 23 (wb 5/31) thru wk 30 (wb 7/19);1 boat, 4 hrs/wk.
	Coho	Area 78C - Blakes Drift wk 34 (wb 8/16) thru wk 45 (wb 11/1), 12 hours/wk; Area 78C – Spudhouse Drift, Upper Skagit, wk 34 (wb 8/16) thru wk 44 (wb 10/25);1 boat, 12 hours/wk; Area 78D-3 Wk 35 (wb 8/23) thru wk 44 (wb 10/25);1 boat, 4 hours/wk.
	Chum	Area 78C - Blakes Drift wk 44 (wb 10/25) and wk 45 (wb 11/1);1 boat, 12 hours/wk.

Swinomish Channel Treaty Net (Ntrty net closed)	
Coho	No separate openings. Area opens during Area 8 openings.

Area 8-1 Recreational	
5/1-7/31	Closed
8/1-9/30	2 fish limit, plus 2 additional Pink, release Chinook.
10/1- 10/31	2 fish limit, release Chinook.
11/1 – 4/30	2 fish limit (Chinook 22” min size). Release wild Chinook.

Baker River/Lake Recreational

(mouth to Hwy 20 Bridge)	Closed.	
From Hwy 20 Bridge upstream to Dam	Closed.	
Baker Lake	7/10-9/7	4 fish limit, Sockeye only, 18” min. size.

Cascade River Recreational

(mouth to Rockport-Cascade Road Bridge)	6/1–7/15	4 fish limit, only 2 may be adults, hatchery Chinook only, 12” min. size. Co-managers will consult on harvest guidelines and fishery may close early.
	9/16 – 11/30	4 fish limit, Coho only, 12” min size.

Skagit River Recreational

(mouth to Memorial Hwy. Bridge (Hwy 536 at Mt. Vernon))	8/1–12/31	4 fish limit, only 2 wild Coho, 12” min size, release Chum and Chinook.
(From Memorial Hwy Bridge to Gilligan Creek)	6/16-7/15	3 fish limit, sockeye only (12” min size). Release Chinook.
	8/1–12/31	4 fish limit, no more than 2 wild Coho, 12” min size, release Chum and Chinook.
(From Gilligan Creek to Dalles Bridge at Concrete)	8/16–12/31	4 fish limit, no more than 2 wild coho, 12” min size, release Chum and Chinook.
(From Dalles Bridge at Concrete to Hwy 530 Bridge at Rockport)	6/1–8/31	Closed waters – between a line projected across the thread of the river 200’ above the east bank of the Baker River and a line projected across the thread of the river 200’ below the west bank of the Baker River.
	9/1–12/31	4 fish limit, no more than 2 wild coho, 12” min size, release Chum and Chinook.
Hwy 530 Bridge at Rockport to Marblemount Bridge	6/1–7/15	4 fish limit, only 2 may be adults, hatchery Chinook only,12” min size.
	9/1–12/31	4 fish limit, no more than 2 wild coho, 12” min size, release Chum and Chinook.

All other SKAGIT TERMINAL REGION freshwater recreational closed to salmon angling.

2.6 Stillaguamish/Snohomish Terminal Region

Area 8A Net

Chinook	Trty	Closed (Ceremonial set-aside of up to 100 Chinook, July-September period).
	Ntrty	Closed

Pink	Trty	**[Tulalip Tribes – 8/9 – 9/12; up to 7 days per week. Closed north of the line drawn from Kayak Point due west to Camano Island.]** **[Swinomish and Suquamish Tribes – Wk 34 (wb 8/16) – wk 35 (wb 8/23); 0.25, 0.25. PS only, limit to 4 vessels, release Chinook, Coho, and Chum. Closed north of a line from the Mulkiteo ferry dock to the Clinton ferry dock.]**
	Ntrty	Wk 34 (w/b 8/16) – 36 (w/b 8/30); PS NR for CK, SO, and CH; PS fishing pattern 1, 1, 1; GN fish daylight hours; GN fishing pattern 1, 1, 1.
Coho	Trty	Tulalip Tribes: (9/13 – 10/17) 5 days per week. Update fishery through 10/3. Manage for Comprehensive Coho Management Plan breakpoints and rates.
	Test	Tulalip Tribes: (9/13 – 11/17) 2 days per week.
	Ntrty	Wks 38 (wb 9/13) – 39 (wb 9/20): PS limited participation (2 boats per day): Chinook and Chum NR; fishing pattern: 1,1. GN wk 39 limited participation 2 boats only. GN fishing pattern: 1-2, GN fish night hours. Closed south of a line from the Clinton ferry dock to the Mukilteo ferry dock.
Chum	Trty	Evaluation Fishery, 10/18 – 11/21: Dependent on Co-manager agreement on ISU indicating increased run size. Port Susan closed; Max 2,000 Chum. Commercial fishery depending on evaluation fishery, 10/18 – 11/21, manage for Stillaguamish and Snohomish harvest rates and minimum escapement goals.
	Test	10/18 – 11/28; 1 day per week; 2 GN landings per week.
	Ntrty	Closed. May open pending co-manager agreement on ISU that indicates harvestable run size.
Area 8D Net		
Chinook	Trty	BS, RH, GN gear outside Tulalip Bay may be open during the following periods: 4/27 – 5/30 12:01 AM Sun – 11:59 PM Sat 5/31 – 8/22 12:01 PM Mon – 11:59 PM Thu 8/23 – 9/12 12:01 AM Mon – 11:59 PM Fri Setnets inside Tulalip Bay may be open during the following period: 5/1 – 9/12 12:01 AM Sun – 11:59 PM Sat
	Ntrty	Closed (see recreational SAF)
Coho	Trty	9/13 – 10/31; BS, RH, GN gear outside Tulalip Bay open Sun, Mon, Thu, Fri; open to target Tulalip hatchery Coho.
	Ntrty	Wks 39 (wb 9/20) - 45 (wb 11/1); PS Chinook NR; PS fishing pattern: 1,1,1,1,2,1,2; GN fish each night Sunday through Thursday night (5,5,5,5,5,5,5); also open daylight hours Tuesdays and Wednesdays (2,2,2,2,2,2,2). Closed east of the line from Mission Point to Hermosa Point.

Chum	Trty	11/1 – 12/12; open to target Tulalip hatchery Chum. Managed to allow for hatchery egg take needs based on Tulalip hatchery escapement updates and projections. All Area 8D fisheries will close concurrently as agreed to by Tulalip and WDFW to ensure egg take requirements are met.
	Ntrty	Wks 46 (wb 11/8) - 48 (wb 11/22); PS fishing pattern: 1,1,1; GN fishing pattern: 3,3,3 daylight hours. Closed east of the line from Mission Point to Hermosa Point. Managed to allow for hatchery egg take needs based on Tulalip hatchery escapement updates and projections. All Area 8D fisheries will close concurrently as agreed to by co-managers to ensure egg take requirements are met.
Stillaguamish River Treaty Net (Ntrty net closed)		
Chinook	C&S fishery; Wb 5/31 – wb 8/2; maximum catch of 30 Chinook; Open from mouth of Hatt Slough (RM 0) to Danielson Hole (RM 14).	
Pink	Open wb 8/9 – wb 8/30, up to 5 days per week; Open from mouth of Hatt Slough (RM 0) to Danielson Hole (RM 14).	
Coho	Comm. Fishery; Wb 9/6 - wb 10/25; Up to 5 days per week; Open from mouth of Hatt Slough (RM 0) to Danielson Hole (RM 14).	
Chum	C&S fishery; wb 11/1- wb 11/29; Up to 3 days per week; max catch of 300 Chum; Open from mouth of Hatt Slough (RM 0) to Danielson Hole (RM 14).	
Snohomish River Treaty Net (Ntrty net closed)		
Chinook, Pink, Coho, Chum	Closed	
Coho Test	Closed	
Area 8-2 Recreational		
5/1-7/31	Closed	
8/1-9/30	2 fish limit, plus 2 additional Pink salmon, release Chinook.	
10/1–10/31	2 fish limit, release Chinook.	
11/1–4/30	2 fish limit (Chinook 22" min size). Release wild Chinook.	
Tulalip Special Area Recreational Fishery		
Same as Area 8-2 Recreational, except during the period 5/30-9/27:	5/29-9/7	Open 12:01 AM Friday – 11:59 AM Monday each week. Closed June 13. Open within Tulalip Special Area boundaries only. Closed to all angling east of the line from Mission Point to Hermosa Point. 2 fish limit salmon, plus 2 additional Pink salmon, 2 pole endorsement (Chinook 22” min. size).

	9/12-9/27	Open Saturday and Sunday each week. Open within Tulalip Special Area boundaries only. Closed to all angling east of the line from Mission Point to Hermosa Point. 2 fish limit salmon, plus 2 additional Pink salmon, 2 pole endorsement (Chinook 22” min. size).
Snohomish River Recreational		
Mouth to Highway 9 bridge	8/1–8/15	3 fish limit, plus 1 additional pink salmon, 12” min. size. Release Chinook and Chum.
(mouth to confluence of Skykomish and Snoqualmie rivers, including all channels)	8/16–12/31	3 fish limit, plus 1 additional pink salmon, 12” min. size. Release Chinook and Chum.
Snoqualmie River Recreational		
(mouth to Snoqualmie Falls, including all channels)	9/1–12/31	3 fish limit, plus 1 additional Pink salmon, 12” min size. Release Chinook and Chum.
Skykomish River Recreational		
(From mouth to Wallace River)	7/1–8/15	4 fish limit, only 2 may be adults, hatchery Chinook only 12” min. size. Chinook fishery dependent on agreed ISU of Chinook abundance sufficient to meet the hatchery escapement goal. Chinook may open 7/1 by emergency rule if projected to meet broodstock.
(From mouth to Lewis St. Bridge in Monroe)	8/16 – 12/31	3 fish limit, plus 1 additional Pink salmon. 12” min size. Release Chinook and Chum.
From Lewis St Bridge in Monroe to confluence of North and South forks.	9/1 – 12/31	3 fish limit, plus 1 additional Pink salmon, 12” min size. Release Chinook and Chum
Wallace River Recreational		
Mouth to 200’ upstream of water intake of salmon hatchery	9/16 – 11/30	3 fish limit, plus 1 additional Pink salmon, 12” min size. Release Chinook and Chum.
Stillaguamish River Recreational		

(river and all sloughs downstream of Marine Drive	9/1 – 11/30	2 fish limit, 12" min size. Release Chinook and Chum.
(Marine Drive upstream to forks)	9/1 – 11/30	2 fish limit, 12" min size. Release Chinook and Chum.

All other STILLAGUAMISH/SNOHOMISH TERMINAL REGION freshwater recreational closed to salmon angling.

2.7 Admiralty Inlet Area

Area 9 Net

Note: The Tribes established a chum technical workgroup in 2014. The workgroup met on 3 occasions during 2014 working under the direction of an oversight policy committee of tribal representatives, with the ultimate goal of developing a management framework for chum salmon originating from the watersheds and hatchery programs of the Hood Canal, North Puget Sound, Mid-Puget Sound, and South Puget Sound production regions. Meetings were held on May 21, Sept 10 & Nov 20, 2014 to develop a technical task agenda and products for policy consideration. This process and schedule will be discussed at the May 2015 NWIFC meeting.

Chinook	Trty	Ceremonial and Subsistence – Up to 500 Chinook as agreed upon by those Tribes with U&A in Area 9, (PS and Hook & Line, release all Chum 6/1 – 9/30).
Chum	Research	Wks 42 (wb 10/11) – 47 (wb 11/15) research fishery to develop stock composition/timing information. Research catch quota of 2,400 Chum. Details of research program will be based on previously agreed sampling design and a review of prior years' sampling results. Reference 2014 Area 9 Chum Salmon Research Fishery Plan.
	Trty	Currently, there is no tribal agreement on proposed treaty chum and pink fisheries in this management area
	Ntrty	Closed

Area 9 Recreational

5/1 – 6/30	Closed
7/1 – 7/15	2 fish limit; plus 2 additional Pink salmon. Release Chinook and Chum.

7/16 – 8/15	2 fish limit; plus 2 additional Pink salmon, (Chinook 22” min size) release Chum and wild Chinook. Closed south and west of a line from Foulweather Bluff to Olele Point, except angling allowed from shore between Hood Canal Bridge and the northern boundary of Salsbury Point Park, daily limit 2, plus 2 additional Pink salmon. Release Chinook and Chum.
8/16 – 9/30	2 fish limit, plus 2 additional Pink salmon, release Chinook and Chum.
10/1 – 10/31	2 fish limit, release Chinook
11/1 – 11/30	2 fish limit, (Chinook 22” min size), release wild Chinook.
12/1 – 1/15	Closed
1/16 – 4/15	2 fish limit, (Chinook 22” min size), release wild Chinook.
4/16 – 4/30	Closed
Edmonds Pier Recreational	
Year-Round	2 fish limit, 1 Chinook (Chinook 22" min size), plus 2 additional Pink salmon 7/1 – 9/30, release Chum 8/1-9/30.

3.0 South Sound Region

3.1 Area 10 Sub region

Area 10 Net

Chinook	Closed	
Sockeye	Trty	Fishery dependent upon ISU (Ballard lock counts)
	Ntrty	Closed
Pink	Trty	Chinook encounters limited to 400. Coho mortality limited to 250. Retention of Chinook prohibited. All waters within 1,800 feet of shoreline closed; Fishing schedule for Area 10 shall be set consistent with the MST agreement (1983). Suquamish – Wk 31 (wb 7/26) – wk 36 (wb 8/30), Maximum of 5 days/wk, 1 PS, Tulalip – Wk 34 (wb 8/16) – wk 36 (wb 8/30), Anticipated effort: 3 GN, 1 RH, East portion of Area 10 closed. Fishery monitoring will include observer and fisheries enforcement.

	Ntrty	Wks 34 (wb 8/16) – 36 (wb 8/30); PS limited participation (5 boats/day); fishing pattern 1,2,2; Brailing and live boxes required; NR for CK, CO, SO, and CH; GN limited participation (5boats/day); fishing pattern 1,2,2; Live boxes and limited soak times required; NR for CK, CO, SO, and CH; observers required on vessels. Fishery will close if 200 Chinook mortalities are reached prior to scheduled completion. Fisheries closed east inside of a line originating from West Point, extending west to the closest mid-channel buoy; thence true through Pt Wells, until reaching latitude 47 44 500, thence extending directly east to the shoreline.
Coho	Test	Gillnet: Wk 37 (wb 9/6) - wk 39 (wb 9/20); 3 boats, 3 sites; fishing pattern: 2,2,2.
	Trty	Fishery based on ISU beginning Wk 37 (wb 9/6). Treaty allocation based on intertribal sharing agreement. Fishing schedule for Area 10 shall be set consistent with the MST agreement (1983).
	Ntrty	Closed
Chum	In order to allow fishing opportunity that allows both the treaty and non-treaty fleets to have the ability to catch their shares; better communication and cooperation is expected from both non-treaty and treaty co-managers to allow both parties the opportunity to access their shares.	
	Test	Purse Seine: Wk 41 (wb 10/4) - wk 46 (wb 11/8); 1 site, fishing pattern: 1,1,1,1,1,1.
	Trty	Treaty allocation based on intertribal sharing agreement; wk 41 (wb 10/4) – wk 48 (wb 11/22) fishing pattern – ISU dependent; Fishing schedule for Area 10 shall be set consistent with the MST agreement (1983).
	Ntrty	Wks 42 (wb 10/11) - 48 (wb 11/22); PS Chinook and Coho NR; PS fishing pattern: 1,1,1,1,2,1,1; GN fishing pattern: 2,2,2,2,2,2,2. ISU Dependent. Area east of a line from Four Mile Rock south to Alki Point will be closed.
Area 10A Treaty Net (Ntrty net closed): That portion of Elliott Bay east of the line from Pier 91 to the light at Duwamish Head.		
Chinook	Trty Test	Closed
	Trty	Closed
Pink	Trty	Wk 36 (wb 8/30) – wk 37 (wb 9/6) Fishery will open August 30; (5 days per week (Sun – Fri).
Coho	Trty	Gillnet: wk 37 (wb 9/6)-wk 44 (wb 10/25); fishing pattern: 5 days per week (Sun – Fri).
Chum	Trty	Gillnet: wk 45 (wb 11/1)-wk 48 (wb 11/22); fishing pattern: up to 5 days per week (Sun – Fri).
Duwamish/Green River (Area 80B) Treaty Net (Ntrty net closed)		
Chinook	Trty	Closed

Pink	Trty	Gillnet: wk 36 (wb 8/30) – wk 37 up to 1st Avenue Bridge (wb 9/6): fishing pattern 5 days per week (Sun – Fri).
Coho	Trty	Gillnet: wk 38 (wb 9/13) – wk 44 (wb 10/25) Starting September 13th fishery will open up to 16th Avenue Street Bridge, starting September 20th fishery will open up to Boeing St. Bridge. Starting September 27th fishery will open up to Hwy 99 Bridge; fishing pattern: Sunday – Friday; 5 days per week.
Chum	Trty	Gillnet: wk 45 (wb 11/1) - wk 48 (wb 11/22); fishing pattern: 5 days per week (Sun – Fri).
Area 10E Treaty Net (Ntrty net closed; see below for recreational SAF)		
Chinook	Trty	Wk 30 (wb 7/19) - wk 38 (wb 9/13); fishing pattern: 7 days/wk. Possible extension for Sinclair Inlet.
Coho	Trty	On-Reservation only; wk 38 (wb 9/13) - wk 43 (wb 10/18); gillnet/beach seine; 7 days/wk.
Chum	Trty	Wk 43 (wb 10/18) - wk 50 (wb 12/6); schedule dependent upon ISU.
Lake Washington System (includes Lake, Lake Union, Ship Canal, & Lake Sammamish)		
Areas 10F, 10G, 10C, 10D Treaty Net (Ntrty net closed)		
Sockeye	Based on ISU (lock counts).	
Chinook	Based on ISU and adaptive management consistent with the harvest plan and co-manager agreement.	
Coho	The Coho fisheries in the four following areas are based on the ISU (if lock counts project run size <10,000 Coho entering the lake, then no Coho fishery):	
	Lower ship canal (below Ballard Locks)	Closed until Chinook clearance as seen in lock counts; anticipated pattern 5-7 days/wk dependent on in-season information, with a potential start date for fisheries beginning Wk 38 (9/13).
	Upper ship canal (above Ballard Locks):	Fishing pattern 5 days/wk (Sun – Fri) with a potential start date for fisheries beginning Wk 38 (9/13).
	North end Lake Washington (North of Hwy. 520 bridge):	Starting Wk 40 (wb 9/27): fishing pattern 5 days/wk (Sun – Fri).
Lake Sammamish Treaty Net		
Chinook	Fishery will be based on ISU from the Ballard Lock counts.	
Coho	Fishery will be based on ISU from the Ballard Lock counts.	
Area 10 Recreational		
5/1-5/31	Closed	

6/1-6/30	Catch-and-release in waters N of Meadow Pt./Pt. Monroe line.
7/1-9/30	2 fish limit, plus 2 additional Pink salmon, Release Chinook and release Chum through 9/15.
10/1-1/31	2 fish limit, release wild Chinook (Chinook 22" min size).
2/1-4/30	Closed

Shilshole Bay (East of Meadow Point/West Point line) closed 7/1-8/31.

Outer Elliott Bay (E of West Pt./Alki Pt line to Pier 91/Duwamish Head line) Closed to salmon angling 7/1-8/31. Except 8/16 – 8/31 see Elliott Bay recreational SAF.

Inner Elliott Bay (E of Pier 91/Duwamish Head line) closed to salmon angling 7/1-8/31.

Area 10 Piers Recreational

Seacrest Pier, Pier 86, Waterman Pier, Bremerton Boardwalk, Illahee State Park Pier	Year-Round	2 fish limit, 1 Chinook (22" min size), plus 2 additional Pink salmon 7/1 – 9/30, release Chum 8/1-9/15.

Elliott Bay Recreational SAF

5/1 – 6/30	Same as Area 10
7/1 – 8/15	Closed
8/14-8/31	2 fish limit, plus 2 additional Pink salmon, Release Chinook and Chum. Open Friday – Sunday in waters north of a line continuing from Jack Block Park through the north tip of Harbor island to shore northeast of the North Waterway (47°35.47'N, 122°20.58'W). All waters south to the 1st Ave bridge are closed.
9/1-4/30	Same as Area 10.

Sinclair Inlet Recreational SAF

5/1-6/30	Same regulations as Area 10.
7/1-9/30	Open S of Manette Bridge, S of line drawn true W from Battle Point, and W of line drawn true S from Point White; 3 fish limit, plus 1 additional pink salmon, (Chinook 22" min size), release wild Chinook and release Chum 8/1-9/15, 2 pole endorsement.
10/1-4/30	Same regulations as Area 10.

Green River Recreational

(1st Ave South Bridge to Old Hwy.99/ Tukwila Intl. Blvd.)	8/20 – 12/31	Daily limit 6. No more than 3 adults may be any combination of Coho and Chum, 12" min size, release Chinook.
(Old Highway 99/Tukwila Intl. Boulevard to I-405)	8/20 – 12/31	Daily limit 6. No more than 3 adults may be any combination of Coho and Chum, 12" min size, release Chinook.

(I-405 to the S. 277th Bridge in Auburn)	9/1 – 12/31	Daily limit 6. No more than 3 adults may be any combination of Coho and Chum, 12" min size, release Chinook.
(S. 277th Bridge to Auburn Black Diamond Rd Bridge)	9/16 – 12/31	Daily limit 6. No more than 3 adults may be any combination of Coho and Chum, 12" min size, release Chinook.
(from Auburn-Black Diamond Rd Bridge to mouth of Cristy Creek at Flaming Geyser Park)	9/16-10/31	Closed to all fishing.
(from Auburn-Black Diamond Rd Bridge to Tacoma Headworks Dam)	11/1 – 12/31	Daily limit 6. No more than 3 adults may be any combination of Coho and Chum, 12" min size, release Chinook, Closed waters - within 150' of the Palmer Ponds outlet rack and within 150' of the mouth of Keta (Crisp) Creek.

The 2015/2016 WDFW sport pamphlet will reflect the following season end dates for trout and other game fish fall/winter season. These end dates are subject to change based on State-Tribal agreement:

Mouth to S. 277th Bridge in Auburn: Jan. 15

S. 277th Bridge to Tacoma Headworks Dam: Jan. 31

Soos Creek Recreational		
Closed		
Lake Washington Recreational		
East of the Montlake Bridge	July-August	Dependent upon ISU (lock counts). Potential fishery starting date to be determined. 2 fish limit, sockeye only, 12" min. size. Chinook retention dependent on ISU and co-manager agreement.
North of Hwy 520 Bridge	9/16 – 10/31	4 fish limit, Coho only; 12" min size
Lake Sammamish Recreational		
8/16 – 11/30	Closed to salmon angling.	

All other SOUTH SOUND AREA 10 REGION freshwater: Closed to salmon angling.

3.2 Area 11 Sub region

Area 11 Net

Chinook	All	Closed

Pink	Trty	Commercial fishery open beginning wk 32 (wb 8/2) – wk 35 (wb 8/23) Drift gillnets only, 3 days per week, 2 hours before sunrise through 2 hours after sunset, times will vary per week. Fishery will end when either 100 Chinook or 200 Coho mortalities are reached or the end of week 35.
	Ntrty	Closed
Coho	Trty:	Commercial fishery open beginning Wk 37 (wb 9/6) - Wk 41 (wb 10/4); ISU dependent; gillnets 7 days/wk, could close any time. Beach seine daylight hours only, 7 days/wk.
	Ntrty:	Closed
Chum	In order to allow fishing opportunity that allows both the treaty and non-treaty fleets to have the ability to catch their shares; better communication and cooperation is expected from both non-treaty and treaty co-managers to allow both parties the opportunity to access their shares.	
	Trty:	Commercial fishery open Wk 42 (wb 10/11) - wk 49 (wb 11/29); gillnets 7 nights/wk, could close at anytime. Beach seine daylight hours only, 7 days/wk.
	Ntrty	Wks 42 (wb 10/11) - 48 (wb 11/22); PS Chinook and Coho NR; PS fishing pattern: 1,1,1,1,2,1,1; GN fishing pattern: 2,2,2,2,2,2,2. ISU dependent.

Area 11A Net Treaty Net (Ntrty net closed)

Chinook	Closed
Coho	Commercial fishery open Wk 37 (wb 9/6) - wk 42 (wb 10/11); 3 nights/wk.
Chum	Commercial fishery open Wk 46 (wb 11/8) – Wk 53 (wb 12/27) 3 nights/wk.

Puyallup River (Area 81B) Treaty Net (Ntrty net closed)

Chinook	Spring Chinook	Ceremonial and Subsistence
	Summer - Fall	Commercial fishery Wk 33 8/9, fishing pattern: 6 hours.
Coho	Commercial fishery Wk 36 (wb 8/30) - wk 42 (wb 10/11) fishing pattern: 1,2,2,3,3,3,3.	
Chum	Test fishery Wk 43 (wb 10/18) - wk 46 (wb 11/8) 1 day/wk, drift net only.	
Winter Chum	Commercial fishery wk 46 (wb 11/8) – wk 2 (wb 1/10/2016) 1 to 3 days a week	

White River Treaty Net

Ceremonial and subsistence fisheries.

Fishing pattern 7 days/wk.

Area 11 Recreational

5/1-5/31	Closed
6/1-6/30	2 fish limit (Chinook 22” min. size), release wild Chinook; Commencement Bay (E. of Cliff House Restaurant/Sperry Ocean Dock line) closed to salmon angling.

7/1-9/30	2 fish limit (Chinook 22” min. size), plus 2 additional pink salmon, release wild Chinook. Commencement Bay (E. of Cliff House Restaurant/Sperry Ocean Dock line) closed to salmon angling through 7/31.
10/1-12/31	2 fish limit, (Chinook 22" min size), release wild Chinook
1/1-1/31	Closed

2/1-4/30	2 fish limit (Chinook 22” min size), release wild Chinook. Commencement Bay (E. of Cliff House Restaurant/Sperry Ocean Dock line) closed to salmon angling 4/1-4/30.	
Dash Point Dock, Point Defiance Boathouse Dock, Les Davis Pier, Des Moines Pier and Redondo Pier	Year-Round	2 fish limit, 1 Chinook (Chinook 22" min size), plus 2 additional Pink salmon 7/1 – 9/30.
Puyallup River Recreational **Clarks Creek Closure: closed to all angling within 400’ of creek mouth.**		
(from 11th St. Bridge to Freeman Rd.	8/10 – 12/31	6 fish limit, 2 adults, plus 2 additional Pink, 12” min size, release wild adult Chinook. Closed August 30, 31, September 6-8, 13-15, 20-23, 27-30, October 4-7, 11-14.
Freeman Rd to East Main Ave Bridge	8/11 – 12/31	6 fish limit, 2 adults, plus 2 additional Pink, 12” min size, release wild adult Chinook. Closed August 30, 31, September 6-8, 13-15, 20-23, 27-30.
East Main Ave Bridge to Carbon River	8/1 – 12/31	6 fish limit, 2 adults, plus 2 additional Pink, 12” min size, release wild adult Chinook.
Carbon River Recreational		
(mouth to Voight Creek)	9/1 – 11/30	6 fish limit, 4 adults; no more than 2 adult Chinook may be retained; 12” min size, release Chum and wild adult Chinook.
All other SOUTH SOUND AREA 11 REGION freshwater recreational Closed to salmon angling		

3.3 Area 13 Sub region

Fox Island/Ketron Island (Area 13)		
Chinook	Treaty	8/1-9/15, 7 days/wk
	Ntrty	Closed
Coho	Treaty	9/15-10/20, 7 days/wk
	Ntrty	Closed

Chum	Treaty	Closed unless opened by Medicine Creek Treaty Tribes' agreement
	Ntrty	Closed

Area 13 Treaty Net (Ntrty net closed)

Chinook	Closed
Pink	Currently, there is no tribal agreement on proposed treaty pink fisheries in this management area
Coho	Closed
Chum	Closed

Carr Inlet (Area 13A) Treaty Net [1](Ntrty net closed) **[1] Based on Medicine Creek Treaty Tribal proposal annual regulations. Individual Tribal regulations may deviate from this schedule.**

Chinook	8/1 - 9/19, 7 days/wk, opens in sections.
Coho	9/13 – 10/24, 7 days/wk, in-season monitoring to meet hatchery escapement need.
Chum	10/26 – 12/5, 7 days/wk.

Chambers Bay (Area 13C) Treaty Net[1] (Ntrty net closed)

Chinook	7/26 – 10/10; Beach seines Sunday noon to Tuesday noon. Set nets Wednesday noon to Friday noon.
Coho	10/11 – 10/31; Beach seines Sunday noon to Monday noon. Set nets Monday noon to Tuesday noon.
Chum	11/1 – 11/28; Beach seines Sunday noon to Tuesday noon. Set nets Wednesday noon to Friday noon.

Area 13D Treaty Net (Ntrty net closed)

Chinook	7/15 - 9/9 or earlier date dependent on in-season management needs; 7 days/wk
Coho	9/10 - 12/31 or earlier date dependent on in-season management needs.
Dana Pass (13D-1)	7 days/wk
Pickering Pass (13D-2)	7 days/wk
Peale Pass (13D-3)	7 days/wk
Southern Case (13D-4)	7 days/wk
Chum	Open approximately 10/11; 2-3 days per week; managed weekly by updates (~10/11).
Area 13E Net	Closed to all fishing

Budd Inlet (Area 13F) Treaty Net (Ntrty net closed)

Chinook	7/15-9/9 or earlier date dependent on in-season management needs; 7 days/wk 9/10-9/23 open dependent on in-season monitoring to meet hatchery escapement needs.
Coho	Closed
Chum	Open approximately 11/8, 2-3 days per week, managed by weekly in-season updates
Eld Inlet (Area 13G) Treaty Net (Ntrty net closed)	
Chinook	7/15-9/9; opening dependent upon in-season data, outer portion only.
Coho	Closed
Chum	Open approximately 11/8, 2-3 days per week, managed by weekly escapement updates
Totten Inlet (Area 13H) Treaty Net (Ntrty net closed)	
Chinook	8/1-9/9; schedule dependent on in-season data
Coho	Closed
Chum	Open approximately 10/11, 2-3 days per week; managed by weekly escapement updates
Little Skookum Inlet (Area 13I) Treaty Net (Ntrty net closed)	
Chinook	8/1-9/9; schedule dependent upon in-season data
Coho	Closed
Chum	Open approximately 11/8, 2-3 days per week; managed by weekly escapement updates
Hammersley Inlet (Area 13J) Treaty Net (Ntrty net closed)	
Chinook	8/1-9/9 or earlier date dependent on in-season management needs
Coho	Closed
Chum	Open approximately, 9/13 - 12/31, 2-3 days/wk; managed by weekly escapement updates
Northern Case Inlet (Area 13K) Treaty Net (Ntrty net closed)	
Chinook	7/15-9/9
Coho	9/10-10/31 or earlier date dependent on in-season management needs
Chum	Open approximately 9/13-12/31; 2-3 days/wk; managed by weekly escapement updates
Nisqually River (Area 83D) Treaty Net (Ntrty net closed)	

Chinook/Pink	Gill Net 2 days/wk during the following weeks: wk 31 (wb 7/26) through wk 34 (wb 8/16).One day wk 35 (wb 8/23). Beach Seine (all freshwater immersion beaches from Luhr Beach to East Bank of Red Salmon Slough, McAllister Creek, Red Salmon Slough, and the Nisqually River) 3 daylight days/wk during the following weeks: wk 36 (wb 8/30) through wk 39 (wb 9/20). Release all wild Chinook. Tangle Net 1 daylight day a week wk 36 (wb 8/30) and wk 39 (wb 20). Release all unmarked Chinook. If at any point the weekly average of UM retention is above 10% the TN fishery will close. Experimental Pound Trap: 7 days/wk during the following weeks: wk 32-39; Total Chinook encounter cap of 500.
Coho	Beach Seine (all freshwater immersion beaches from Luhr Beach to East Bank of Red Salmon Slough, McAllister Creek, Red Salmon Slough, and the Nisqually River) 3 daylight days a week wk 40 (wb 9/27) and wk 41 (wb 10/4). Release all unmarked Chinook. Tentative Tangle Net: 1 daylight day a week wk 40 (wb 9/27) and wk 41 (wb 10/4). Release all unmarked Chinook. If at any point the weekly average of UM retention is above 10% the TN fishery will close. *If there are remaining UM savings from previous TN days, co-managers will meet to discuss schedule for opening. Experimental Pound Trap: 7 days/wk during the following weeks: wk 40 – 47; Total Chinook encounter cap of 500. Gill Net 3 days/wk during the following weeks: wk 42 (wb 10/11) through wk 47 (wb 11/15).
Chum	Proposed schedule: Gill Net 3-4 days/wk during the following weeks: wk 48 (wb 11/22) through wk 5 (wb 1/24/2016) per annual Nisqually River Chum/steelhead management plan.
McAllister Creek (Area 83F) Treaty Net (Ntrty net closed)	
Chinook/Pink	Wk 27 (wb 6/28) - wk 40 (wb 9/27); 3 days/wk.
Coho	Wk 41 (wb 10/4) - wk 48 (wb 11/22); 3-4 days/wk.
Chum	Proposed schedule: Wk 49 (wb 11/29) - Wk 5 (wb 1/24/2016); 4 days/wk per annual Nisqually River Chum/steelhead management plan.
Area 13 Recreational	
5/1-6/30	2 fish limit (Chinook 22” min. size), Release wild Chinook, Minter Creek mouth closed. 2 pole endorsement
7/1-10/31	2 fish limit (Chinook 22” min. size) plus 2 additional Pink salmon 7/1-9/30; release wild Chinook and wild Coho. Minter Creek mouth closed through 9/30; Lower Budd Inlet closure zone 7/16-10/31. 2 pole endorsement.

11/1-4/30	2 fish limit, (Chinook 22" min size), release wild Chinook. 2 pole endorsement. Minter Creek mouth closure begins 4/16.

Fox Island Pier Recreational		
Year-Round	2 fish limit, 1 Chinook (Chinook 22" min size) plus 2 additional Pink salmon (7/1-9/30)	
Chambers Creek Estuary Recreational		
(downstream of markers 400' below Boise-Cascade Dam to Burlington Northern Railroad Bridge)	7/1 – 11/15	6 fish limit, 4 adults; 12" min size, release wild Coho.
Deschutes River Recreational		
Capitol Lake (from outlet to 400' below lowest Tumwater Falls (Deschutes River) fish ladder).	7/1 – 10/15	Closed
(from Old Hwy 99 Bridge on Capitol Blvd in Tumwater to Henderson Blvd Bridge)	7/1 – 10/15	6 fish limit, 2 adults, 12" min size, release Coho.
(upstream of Henderson Blvd Bridge)	7/1 – 10/15	6 fish limit, 2 adults, 12" min size, release Coho.
Kennedy Creek Recreational		
(mouth to northbound Hwy. 101 Bridge)	10/1 – 11/30	6 fish limit, 2 adults, 12" min size, release wild Coho.
McAllister Creek Recreational		
(mouth to Olympia-Steilacoom Rd Bridge)	7/1 – 11/30	6 fish limit, 2 adults, 12" min size.
McLane Creek Recreational		
(from a line 50' north of and parallel to the Mud Bay Rd. Bridge to a line 100' upstream of and	Same as Area 13	Same as Area 13

parallel to the south bridge on Hwy.101)		
Minter Creek Recreational		
(mouth to 50' downstream of hatchery rack)	11/1 – 12/31	4 fish limit, 12" min size, Chum only.
Nisqually River Recreational		
(mouth to the military tank crossing bridge, one mile upstream of the mouth of Muck Creek)	7/1 –10/31	6 fish limit, 3 adults, plus 1 Pink, 12" min. size; release wild Chinook. Only 2 may be any combination of Coho and Chum. Closed 8/3-8/5, 8/10-8/12, 8/17-8/19, 8/24-8/26, 8/31-9/2, 9/8-9/10, 9/14-9/16, 9/21-9/23 and 9/28-9/29.
	11/1-1/31	6 fish limit, 2 adults, 12" min. size; release wild Chinook.

All other SOUTH SOUND AREA 13 REGION freshwater recreational closed to salmon angling.

4.0 Hood Canal Region (All fisheries modeled in FRAM #2115Final (Chinook) & #1523 (Coho))

Hood Canal Mainstem (Areas 12, 12B, 12C, 12D)

Treaty: 1,500 feet closure around streams that are closed to net fishing. Beach seines and hook and line gear release Chum through 9/30 (through 10/10 if within 500' of western shore of Areas 12B and 12C).

Nontreaty: See WAC 220-47-307 for Nontreaty exclusion zones.

Chinook	Trty	Areas 12, 12B and 12D: Closed
		Area 12C: Beach seines open wb 7/15 - 8/31; 5 days/wk; release Chum 8/1-8/31. Open wb 7/15 – 8/24 for gillnets 5 days/wk; restricted to 7" min mesh starting 8/1.
		Area 12H: Open wb 7/12 through 9/19; hook and line gear continuous; beach seines daylight hours Tues and Thur each week; possible in-season modifications; Chum release.
	Ntrty	Closed
Pink	All	Same as Chinook openings.
Coho	Trty	Area 12: Open 9/25 through 10/11 for gillnets. Beach seines for Coho only (release all Chinook and Chum through 9/30) may start no earlier than 9/16. Both gear types open 7 days/wk.
		Area 12B: Open 10/1 through 10/17 for gillnets; 500 foot closure along western shore through 10/10; beach seines for Coho only (release all Chinook and Chum through 9/30) may start no earlier than 9/16. Both gear types open 7 days/wk.
		Area 12C: Open 10/1 through 10/17 for gillnets; with 500 foot beach closure from Ayock Pt. to approx. 2,000 feet south of Lilliwaup (at the large house, north of Octopus Hole) through 10/10; beach seines for Coho DAYLIGHT HOURS ONLY (release all Chum through 9/30) may start no earlier than 9/21. Both gear types may fish 7 days/wk when open.
		Area 12D (west of Madrona Pt. - local name): Open for gillnets no earlier than 10/1. Weekly schedules identical to Area 12C.
	Ntrty	Closed
Chum	The Co-Managers have reached agreement on a co-management process to assess and agree on in-season abundance estimation methods. Chum fishing schedules may be modified if pre-season harvestable abundance and catch shares are changed using the agreed ISU, based on Non-Treaty purse seine cumulative CPUE for October 15 through October 31.	
	Trty	Area 12: Open 10/11 through 11/20; 7 d/wk

		Area 12B: Open 10/18 through 11/20; 7 d/wk; except north of an East-West line from Zelatched Point to Seal Rock open through 11/27.
		Area 12C: Open 10/18 through 11/27; 7d/wk.
		Area 12D: Closed.
		Area 12H: Hook and line gear open from 10/11 through 11/28; beach seines open Tuesday and Thursday of each week. Then Monday and Wednesday for the week beginning 11/08; possible in-season adjustments to 3 days/wk. Starting 11/1, hatchery escapement control measures will go into effect.
	Ntrty	Area 12, 12B. Fisheries scheduled wks 42 (wb 10/11) - 47 (wb 11/15): PS Chinook NR; PS fishing pattern: 1,1,1,1,2,1; GN fishing pattern: 2,2,2,2,2 daylight hours. PS closed within 2 miles south of the Hood Canal Bridge in wks 44-45.
		Area 12C Fisheries scheduled wks 45 (wb 11/1) - 48 (wb 11/22): PS Chinook NR; PS fishing pattern: 1,2,1,1; GN fishing pattern: 2,2,2,2 daylight hours.Fishing is contingent upon the results from the agreed to ISU.
		Area 12H: BS (Hoodsport Hatchery Zone) beach seine fishing wks 45-48, pattern pending discussions with tribal Co-managers.
		Area 12D Closed
Port Gamble (Area 9A)		
Chinook	All	Closed
Coho	Trty	Open wb 8/16 through wb 10/25; 7 days/wk; gillnet only. Ceremonial Harvest of 20 Chinook in August.
	Test	Open wb 8/2 through wb 9/30, gillnet only. 2 days per week.
	Ntrty	Open Wks 34 (wb 8/16) - 44 (wb 10/25) skiff GN limited to 100 fathoms length and 60 meshes in depth; 7 days/wk; Chinook NR; Chum NR through 9/30; release NR fish by cutting ensnaring meshes. The beach area of the Port Gamble Indian Reservation, between Pt. Julia and the boundary marker at the south end of the reservation - closed to all fishing.
Chum	Trty	Open 11/1 through 11/28; 7 days/wk; gillnet only.
	Ntrty	Closed
Quilcene / Dabob (Area 12A)		

Coho	Trty	Open 8/21 through 10/10; Chum and Chinook release from hook and line and beach seine gear through 9/30; beach seines 5 days/wk, daylight hours. Hook and line fisheries for Coho only, open continuously. Gillnets closed until Summer Chum escapement exceeds 1500. Beach seine advance notification required prior to fishing.
	Ntrty	Beach seine open wks 34 (wb 8/16) – 40 (wb 9/27); Limited participation (4 permits/day); CK and CH NR; fishing pattern 2,5,5,5,5,5,3; Fishery will be managed consistent with SCSCI. GN closed unless Treaty GN opening.
Chum	Trty	Open to set and drift gillnets wb 10/11 through 11/20, South of an E-W line through Pt. Whitney.
	Ntrty	Closed

Big Quilcene River (Area 82F) Treaty (Ntrty net closed)

Coho	Openings to be determined in-season, for Coho only, from 9/1 through 10/15. Closed below Rogers St. From Rogers St. to U.S. Hwy 101, hook and line gear only, release all other salmon. The hatchery area, from U.S. Hwy 101 to the Quilcene Hatchery rack, may be opened for short periods to take surplus Coho. Hand held gear only (dipnets, hand lines, etc.).
Chum	Closed

Skokomish River (Area 82G) Treaty (Ntrty net closed)
Purdy Creek (Area 82J) Treaty Net (Ntrty net closed)

The Skokomish Tribe will continue to sample all agreed to fisheries in order to provide weekly in-season updates (i.e. CWT, species, mark status, and mark rates). The WDFW will provide weekly in-season updates for Chinook returns to the George Adams Hatchery rack. Note: Hook and line gear and beach seines release Chum through 10/15 above Hwy 106 Bridge.

Skokomish River – Mouth to HWY 106 Bridge (Area 82G) Treaty (Ntrty net closed)

Chinook	Open wb 7/12 – wb 7/26, 3 days/wk.
Coho	Open 10/1 – 10/10, 2 days/wk; wb 10/11 – wb 11/01, 7 days/wk.
Chum	Open wb 11/08 through wb 11/22, 7 days/wk.

Skokomish River – HWY 106 Bridge to HWY 101 Bridge (Area 82G) Treaty (Ntrty net closed)

Chinook	Open wb 8/02 - wb 8/16, 3 days/wk.
Coho	Open wb 9/13 – wb 10/04, 2 days/wk; wb 10/11 – wb 11/01, 7 days/wk.
Chum	Open 11/08 through wb 11/22; 7 days/wk.

Purdy Creek (Area 82J) Treaty Net (Ntrty net closed) 250 feet from the confluence/mouth of Purdy Creek to the HWY 101 Bridge (fishing nets may not be attached to any abutment or railings on the HWY 101 Bridge).

Chinook	Gill Nets only: Open every Saturday beginning July 11 – September 5. In-season adjustments will occur to ensure weekly broodstock targets are achieved.

Chum	Gill Nets, Dip Nets and Hook & Line: Open beginning 11/15 as necessary to reach tribal share.
Misc. Hood Canal Rivers (Dosewallips, Duckabush, Hamma Hamma, Tahuya, Dewatto, Union)	
All species	Closed to commercial harvest.
Area 12 Recreational (Including Quilcene/Dabob Bay)	
5/1-6/30	Closed
7/1-10/15	North of Ayock Pt. –4 fish limit, release Chinook and Chum. River mouth closures on Dosewallips, Duckabush, Dewatto, Hamma Hamma rivers. No bait, one single point barbless hook measuring ½ inch or less from point to shank from 7/1-7/31. Closed in Tarboo Bay north of Broad Spit starting 9/16.
7/1-10/15	South of Ayock Pt. - 4 fish limit, 2 Chinook (Chinook 22" min size); release Chum and wild Chinook; Skokomish river mouth closure.
10/16-12/31	4 fish limit, 2 Chinook (Chinook 22" min size). Release wild Chinook. Closed in Tarboo Bay N of Broad Spit.
1/1-1/31	Closed
2/1-4/30	2 fish limit (Chinook 22" min size), release wild Chinook

Hoodsport Hatchery Zone Recreational		
Same as Area 12 except:		
7/1-12/31	4 fish limit, no minimum size, only 2 Chinook greater than 24"; Release wild Chinook and Chum 7/1-10/15.	
Dewatto River Recreational		
(mouth to Dewatto-Holly Rd. Bridge)	10/1 – 10/31	2 fish limit, 12" min size, Coho only.
Dosewallips River Recreational		
(mouth to Hwy. 101 Bridge)	11/1 – 12/15	2 fish limit, 12" min size, Chum only.
Duckabush River Recreational		
(mouth to Mason Co. PUD #1 overhead electrical distribution line)	11/1 – 12/15	2 fish limit, 12" min size, Chum only.
Quilcene River Recreational		
(from Rodgers St. to Hwy 101 Bridge)	8/16 – 10/31	4 fish, 12" min size, Coho only.
Skokomish River Recreational		
Mouth to Tacoma Powerlines	7/1-10/15	Closed
Tacoma Powerlines to Hwy 106 Bridge	8/1 – 9/1	2 fish limit, 12" min size, release wild Chinook and Chum.
	9/15 – 12/15	6 fish limit, 4 adults, 12" min size, release Chinook and release Chum through 10/15.Terminal gear (hooks, weights, lures or baits) and line must not be within 25' of Tribal gillnets.
(Hwy. 106 Bridge to Purdy Creek)	7/24 –9/1	2 fish limit, 12" min size, release wild Chinook and Chum. Float rules from 7/24 – 7/31. Friday, Saturday, Sunday only from 8/1-8/21.
Purdy Creek to Hwy. 101	7/24 – 9/1	2 fish limit, 12" min size, release wild Chinook and Chum. Float rules.
Hwy. 106 Bridge to Hwy. 101	9/15 – 12/15	6 fish limit, 4 adults, 12" min size, release Chinook and release Chum through 10/15. Terminal gear (hooks, weights, lures or baits) and line must not be within 25' of Tribal gillnets.
Tahuya River Recreational		

(mouth to marker 1 mile above N. Shore Rd. Bridge)	10/1 – 10/31	Closed

All other HOOD CANAL REGION freshwater recreational closed to salmon angling.

7 10-Year Spawning Escapements

Nooksack Early Management Unit. Spawning escapement in the South Fork Nooksack River, are a complex of multiple origin and run-timing Chinook populations. The portion of the complex estimated to be of SF early NOR returns are highlighted for convenience.

	N./Mid. Fork		South Fork				
Year	NOR	HOR	SF Native NOR	N. Fk. Early NOR	Fall NOR	Kendall Cr. HOR	Other HOR/Unk
2006	311	873	62	104	192	84	90
2007	334	1,104	29	44	128	112	35
2008	307	959	83	106	126	109	23
2009	269	1,634	45	58	187	128	38
2010	206	1,840	24	49	123	299	58
2011	99	766	81	81	93	172	24
2012	281	477	121	172	17	81	41
2013	100	1,247	10	39	16	162	15
2014							

Skagit Springs Management Unit.

Year	Upper Sauk	Suiattle	Upper Cascade
2006	1,043	375	478
2007	282	108	223
2008	983	203	284
2009	367	273	338
2010	768	263	330
2011	345	215	265
2012	1,826	460	488
2013	1,080	620	310
2014	923	460	225

Skagit Summer/Falls Management Unit.

Year	Upper Skagit	Lower Sauk	Lower Skagit
2006	16,165	1,095	3,508
2007	9,845	383	1,053
2008	8,441	538	2,685
2009	5,290	250	1,439
2010	6,644	356	1,017
2011	4,480	210	820
2012	9,808	715	3,295
2013	8,801	530	1,551
2014	8,308	364	1,808

Stillaguamish Management Unit. Stillaguamish River escapement estimates for both summer and fall Chinook populations proportioned by HOR/NOR adult returns. Numbers in parentheses from represent additional fish (both HOR and NOR) collected for brood-stock utilization.

	N. Fork		S. Fork & Mainstem	
Year	NOR	HOR	NOR	HOR
2006*	756	279	219	-
2007*	214	353	40	-
2008	872	521	278	-
2009	497	461	43	-
2010	479 (48)	284 (92)	21	-
2011	538 (38)	376 (135)	104	-
2012	714 (109)	631 (70)	172	17
2013	470 (73)	303 (59)	51	30
2014	141 (57)	276 (87)	12	3

Snohomish Management Unit.

	Skykomish		Snoqualmie	
Year	NOR	HOR	NOR	HOR
2006	4,642	931	2,161	454
2007	1,510	1,138	1,174	160
2008	4,780	1,033	2,190	370
2009	1,146	268	649	246
2010	1,836	676	1,585	203
2011	881	299	479	221
2012	2,462	1,283	891	488
2013	1,860	495	770	119
2014	1,654	1,409	698	140

Lake Washington Management Unit.

	Cedar River		N. Lake Washington	
Year	NOR	HOR	NOR	HOR
2006	1,164	303	620	1,603
2007	1,893	255	168	1,132
2008	1,346	152	155	1,146
2009	577	136	47	877
2010	546	109	83	1,698
2011	646	159	33	700
2012	910	173	161	1,873
2013	1,605	245	248	2,399
2014	306	262	35	447

Green River Management Unit.

Year	NOR	HOR
2006	2,663	3,127
2007	1,904	2,397
2008	3,974	1,997
2009	169	519
2010	925	1,162
2011	397	596
2012		
2013	524	1,517
2014	756	1,974

Puyallup River Fall Management Unit.

Year	NOR	HOR
2006	922	1,310
2007	1,200	1,732
2008	1,779	946
2009	501	1,025
2010	481	1,082
2011	343	1,143
2012	353	419
2013	175	599
2014	518	926

White River Spring Management Unit.

Year	NOR	HOR
2006	1,403	741
2007	2,838	2,147
2008	1,329	859
2009	573	334
2010	521	486
2011	2,640	451
2012	1,121	1,273
2013		
2014	245	637

Nisqually River Management Unit.

Year	NOR	HOR
2006	222	1,957
2007	741	1,003
2008	1,368	2,031
2009	185	687
2010	353	1,714
2011	302	1,962
2012	617	1,850
2013	738	933
2014	528	512

Skokomish River Management Unit.

Year	NOR	HOR
2006	492	717
2007	419	112
2008	257	877
2009	304	762
2010	312	902
2011	157	1,164
2012	199	1,334
2013	233	1,489
2014	208	641

Mid-Hood Canal Management Unit.

Year	Hamma Hamma	Duckabush	Dosewallips
2006	16	1	13
2007	60	4	9
2008	255	0	18
2009	98	9	23
2010	67	0	15
2011	279	5	11
2012	416	6	7
2013	661	4	7
2014	117	13	11

Dungeness River Management Unit.

	Natural Spawners[1/]			Broodstock Collection[2/]			Total Returns (Natural Spawners + Broodstock)		
Return year	NOR	HOR	*Total*	NOR	HOR	Total	NOR	HOR	Total
2006	293	1,112	*1,405*	46	92	*138*	**339**	**1,204**	***1,543***
2007	146	159	*305*	47	51	*98*	**193**	**210**	***403***
2008	86	54	*140*	53	36	*89*	**139**	**90**	***229***
2009	71	57	*128*	42	50	*92*	**113**	**107**	***220***
2010	76	269	*345*	18	94	*112*	**94**	**363**	***457***
2011	83	452	*535*	21	109	*130*	**104**	**561**	***665***
2012	212	296	*508*	38	68	*106*	**250**	**364**	***614***
2013	46	122	*168*	31	79	*110*	**77**	**201**	***278***
2014	21	87	*108*	22	74	*96*	**43**	**161**	***204***
2015	65	200	*265*	37	105	*142*	**102**	**305**	***407***

1/ Natural spawners: Chinook that spawned naturally in the river. Natural spawner estimate based on redd surveys.
2/ Broodstock collection: Chinook that were collected in the river or returned to the hatchery and used for broodstock. Includes pre-spawned mortalities as well.
3/ NORs and HORs determined by CWT, otolith, scales, or visible marks from broodstock and river carcasses sampled.

Elwha River Management Unit.

Year	HOR/NOR
2006	1933
2007	1146
2008	1153
2009	2192
2010	1278
2011	1863
2012	2136
2013	5510
2014	4360
2015	4112

Hoko River Management Unit.

Year	HOR/NOR
2006	895
2007	558
2008	483
2009	385
2010	793
2011	1504
2012	663
2013	1406
2014	1534
2015	2998