

SALMON TECHNICAL TEAM REPORT 1

Excerpts from the Review of 2022 Ocean Salmon Fisheries and 2023 Preseason 1 Report

2022 Review: TABLE II-6. Chinook stock status relative to overfished and overfishing criteria. A stock is overfished if the 3-year geometric mean spawning escapement is less than the minimum stock size threshold (MSST); a stock experiences overfishing if the total annual exploitation rate exceeds the maximum fishing mortality threshold (MFMT).

Chinook Stock	Spawning Escapement						3-yr Geo			Exploitation Rate						
	2017	2018	2019	2020	2021	2022	Mean	MSST	S <sub>MSY</sub>	2017	2018	2019	2020	2021	2022	MFMT
Sacramento Fall	44,329	105,466	163,767	138,091	105,584	61,850	96,613	91,500	122,000	0.68	0.52	0.68	0.61	0.68	NA	0.78
Klamath River Fall	19,904	52,352	20,022	26,185	29,942	22,050	<b>25,857</b>	30,525	40,700	0.10	0.32	0.43	0.30	0.38	NA	0.71
Southern Oregon	91,977	39,507	18,436	29,387	48,979	17,615	29,378	20,500	34,992	NA	NA	NA	NA	NA	NA	0.78
Central and Northern OR <sup>a/</sup>	114	92	65	137	85	64	91	30 fish/mile	150k-200k	0.44	0.66	0.50	0.42	NA	NA	0.78
Upper River Bright - Fall <sup>a/</sup>	96,096	58,540	77,880	98,401	86,644	82,295	88,859	19,182	39,625	0.49	0.34	0.38	0.29	NA	NA	0.86
Upper River - Summer <sup>a/</sup>	56,265	38,816	41,090	70,654	52,076	64,497	61,911	6,072	12,143	0.46	0.44	0.17	0.30	NA	NA	0.75
Willapa Bay - Fall <sup>b/</sup>	3,147	2,847	2,894	3,585	2,966	NA	3,134	1,696	3,393	0.51	0.61	0.66	0.51	NA	NA	0.78
Grays Harbor Fall <sup>a/b/</sup>	17,145	20,741	14,880	20,879	13,207	NA	16,009	5,694	13,326	0.48	0.63	0.65	0.54	NA	NA	0.78
Grays Harbor Spring	1,384	493	983	2,828	2,573	NA	1,927	546	1,400	NA	NA	NA	NA	NA	NA	0.78
Queets - Fall <sup>a/</sup>	2,822	2,207	2,663	3,622	3,364	NA	3,190	1,250	2,500	0.55	0.66	0.73	0.71	NA	NA	0.87
Queets - Sp/Su	825	484	322	342	280	NA	<b>314</b>	350	700	NA	NA	NA	NA	NA	NA	0.78
Hoh - Fall <sup>a/b/</sup>	1,808	2,478	1,552	2,273	2,622	NA	2,099	600	1,200	0.51	0.56	0.73	0.64	NA	NA	0.90
Hoh Sp/Su	1,364	793	766	1,248	817	NA	921	450	900	NA	NA	NA	NA	NA	NA	0.78
Quillayute - Fall <sup>a/b/</sup>	3,604	3,937	7,765	8,672	5,568	6,761	6,886	1,500	3,000	0.69	0.72	0.65	0.55	NA	NA	0.87
Quillayute - Sp/Su	1,097	990	1,442	942	1,056	1,441	1,128	600	1,200	NA	NA	NA	NA	NA	NA	0.78
Hoko -Su/Fa <sup>a/</sup>	1,188	2,179	1,815	1,347	2,256	NA	1,767	425	850	0.27	0.57	NA <sup>c/</sup>	0.22	NA	NA	0.78

a/ CWT based exploitation rates from PSC-CTC 2022 Exploitation Rate Analysis (TCCHINOOK (23)-01).

b/ Queets River fall Chinook coded-wire-tag (CWT) exploitation rates used as a proxy. Adjustments made to terminal fishery impacts to account for differential harvest rates.

c/ Calculation of a reliable exploitation rate estimate was not possible due to insufficient CWT information.

2022 Review: TABLE III-7. Coho stock status relative to overfished and overfishing criteria. A stock is overfished if the 3-year geometric mean spawning escapement is less than the minimum stock size threshold (MSST); a stock experiences overfishing if the total annual exploitation rate exceeds the maximum fishing mortality threshold (MFMT).

Coho Stock	Spawning Escapement						3-yr Geo			Exploitation Rate						
	2017	2018	2019	2020	2021	2022	Mean	MSST	S <sub>MSY</sub>	2017	2018	2019	2020	2021	2022	MFMT
	Willapa Bay	11,379	17,228	15,115	16,476	31,369	NA	19,842	8,600	17,200	0.34	0.35	0.39	0.33	NA	NA
Grays Harbor	26,907	49,622	30,468	23,814	62,762	NA	35,710	18,320	24,426	0.32	0.22	0.39	0.29	NA	NA	0.65
Queets <sup>a/</sup>	5,232	2,631	1,700	4,181	5,752	NA	<b>3,445</b>	4,350	5,800	0.23	0.23	0.57	0.22	NA	NA	0.65
Hoh	4,478	2,463	2,445	2,840	6,396	NA	3,541	1,890	2,520	0.43	0.34	0.57	0.49	NA	NA	0.65
Quillayute Fall	7,474	6,091	6,852	7,695	9,938	13,000	9,980	4,725	6,300	0.42	0.30	0.37	0.16	NA	NA	0.59
Juan de Fuca <sup>a/</sup>	5,530	5,470	4,625	8,548	20,837	NA	9,374	7,000	11,000	0.05	0.08	0.12	0.07	NA	NA	0.60
Hood Canal	23,871	7,512	7,884	17,312	35,178	NA	16,870	10,750	14,350	0.35	0.57	0.46	0.29	NA	NA	0.65
Skagit	20,184	19,047	14,246	23,808	75,532	NA	29,479	14,875	25,000	0.09	0.49	0.48	0.43	NA	NA	0.60
Stillaguamish	6,099	23,937	12,887	21,555	38,176	NA	21,970	6,100	10,000	0.12	0.22	0.20	0.13	NA	NA	0.50
Snohomish <sup>b/</sup>	18,195	58,135	40,314	42,675	97,523	NA	55,154	31,000	50,000	0.21	0.25	0.17	0.11	NA	NA	0.60

a/ Categorized as overfished in 2018. Rebuilding plan in place.

b/ Categorized as overfished in 2018, categorized as 'not overfished-rebuilding in 2021. Rebuilding plan in place.

2023 Preseason I Report: TABLE I-1. Preseason adult Chinook salmon stock forecasts in thousands of fish. (Page 1 of 3)

Production Source and Stock or Stock Group	2018	2019	2020	2021	2022	2023	Methodology for 2023 Prediction and Source
<b>Sacramento River</b>							
Fall (Sacramento Index)	229.4	379.6	473.2	271.0	396.5	169.8	Log-log regression of the Sacramento Index on jack escapement from the previous year, accounting for lag-1 autocorrelated errors. STT.
Winter (age-3 absent fishing)	1.6	1.9	3.1	9.1	6.0	4.5	Stochastic life cycle model applied to natural- and hatchery-origin production. STT.
<b>Klamath River (Ocean Abundance)</b>							
Fall	359.2	274.2	186.6	181.5	200.1	103.8	Linear regression analysis of age-specific ocean abundance estimates on river runs of same cohort. STT.
<b>Oregon Coast</b>							
North and South/Local Migrating	--	--	--	--	--	--	None.
<b>Columbia River (Ocean Escapement)</b>							
Cowlitz Spring	5.2	1.3	1.4	1.8	4.1	9.0	Cowlitz, Kalama, and Lewis: Age-specific linear regressions of cohort returns in previous run years. WDFW.
Kalama Spring	1.5	1.4	1.0	2.2	2.0	2.4	
Lewis Spring	3.7	1.5	1.4	2.4	2.4	4.7	Recent 3-year average. ODFW.
Sandy Spring	5.3	5.5	5.2	5.3	5.6	7.8	
Willamette Spring	53.8	40.2	40.8	50.1	51.2	71.0	Age-specific linear regressions of cohort returns in previous run years. ODFW. Forecast includes adult fish only.
Upriver Spring <sup>a/</sup>	166.7	99.3	81.7	75.2	122.9	198.6	Columbia River Upriver Spring and Summer Chinook: AIC-weighted average of age-specific cohort ratios and sibling regression models. Columbia River TAC subgroup and WDFW.
Upriver Summer <sup>b/</sup>	67.3	35.9	38.3	77.6	57.5	84.8	
LRW Fall	7.6	13.7	19.7	20.0	10.8	8.6	Columbia River Fall Chinook: AIC-weighted average of age-specific cohort ratios and sibling regression models. Columbia River TAC subgroup and WDFW.
LRH Fall	62.4	54.5	51.0	73.1	73.0	77.1	
SCH Fall	50.1	46.0	46.2	46.8	91.2	136.1	
MCB Fall	36.4	56.7	71.8	77.4	70.2	48.3	
URB Fall	200.1	158.4	233.4	354.2	230.4	272.4	

TABLE I-1. Preseason adult Chinook salmon stock forecasts in thousands of fish. (Page 2 of 3)

Production Source and Stock or Stock Group		2018	2019	2020	2021	2022	2023	Methodology for 2023 Prediction and Source
<b>Washington Coast</b>								
Willapa Bay Fall	Natural	3.8	4.3	2.9	3.9	3.1	2.8	Sibling and environmental relationships from recent year returns.
	Hatchery	40.3	23.6	28.3	30.5	30.1	27.5	Relationships between brood year survival and number of spawners.
Grays Harbor Fall	Natural	16.4	18.0	15.0	15.5	17.9	15.0	Combination of geometric mean of recent year returns and linear relationships of sibling recruits per spawner.
	Hatchery	4.8	7.7	6.9	7.6	8.6	5.9	Combination of recent year smolt return rates and log linear regressions of sibling returns per smolt.
Quinault Spring/Summer	Natural	NA	NA	NA	NA	NA	NA	
	Hatchery	4.8	NA	NA	NA	NA	NA	
Quinault Fall	Natural	5.2	5.3	4.2	6.0	3.2	4.0	Recent 5-year mean return rates, applied to brood year natural spawning escapements of age 3-6 returns.
	Hatchery	3.1	2.7	4.5	4.9	5.6	7.6	Recent 5-year mean terminal return rates (return/smolt release) for age 3-6 adult returns.
Queets Spring/Sum	Natural	0.5	0.6	0.6	0.6	0.6	0.4	Recent 5-year (2018-2022) mean terminal run size.
Queets Fall	Natural	3.3	3.4	4.1	4.3	5.3	4.3	Recent 5-year return/spawner rates.
	Hatchery	0.6	0.8	0.7	0.6	0.5	0.8	Recent year rates (return/smolt release) adjusted by brood performance.
Hoh Spring/Summer	Natural	1.1	1.0	0.8	1.0	0.7	1.0	Spring/Summer: 5-year mean recruit/spawner rates.
Hoh Fall	Natural	2.6	2.5	2.6	2.6	3.4	2.6	Fall: Recent 3-year mean recruit/spawner adjusted by previous performance.
Quillayute Spring	Hatchery	2.1	2.1	2.4	2.6	3.0	2.8	Spring: Recent 2-year mean returns per smolt.
Quillayute Sum/Fall	Natural	8.0	7.9	9.8	9.6	8.8	11.3	Summer/Fall: Recent 5-year mean for all ages. Fall: Recent 3-year mean return/spawner.
Hoko <sup>cl</sup>	Natural	1.5	2.8	2.6	1.3	0.9	2.8	Escapement without fishing, includes supplemental. Sibling regressions using data from return years 1989-2022.
<b>North Coast Totals</b>								
Spring/Summer	Natural	1.6	1.7	1.4	1.5	1.3	1.4	
Fall	Natural	19.1	19.2	20.6	22.5	20.7	22.1	
Spring/Summer	Hatchery	2.1	2.1	2.4	2.6	3.0	2.8	
Fall	Hatchery	3.7	3.5	5.2	5.5	6.1	8.4	

TABLE I-1. Preseason adult Chinook salmon stock forecasts in thousands of fish. (Page 3 of 3)

Production Source and Stock or Stock Group		2018	2019	2020	2021	2022	2023	Methodology for 2023 Prediction and Source
<b>Puget Sound summer/fall<sup>d/</sup></b>								
Nooksack/Samish	Hatchery	24.6	21.3	18.2	18.9	28.1	41.2	Three year average return rate.
East Sound Bay	Hatchery	0.7	0.3	0.3	0.6	0.4	0.2	Three year average return rate.
Skagit	Natural	13.3	13.6	12.9	10.5	12.5	12.2	Natural: Hierarchical Bayesian model to estimate the spawner-recruit dynamics. Hatchery: One year ahead forecasts generated using Chinook run sizes and GAM and ARIMA models.
	Hatchery	0.3	0.3	0.5	0.5	0.5	0.5	
Stillaguamish <sup>e/</sup>	Natural	1.6	0.9	0.9	0.9	0.9	1.2	Natural plus hatchery. Multiple regression environmental model (Environmental Model to Predict Adult Returns, EMPAR).
Snohomish <sup>e/</sup>	Natural	3.5	3.2	3.0	2.9	2.4	3.4	Natural fingerling: Multiple regression environmental model (EMPAR). Natural yearling: Naïve models using the ForecastR tool (Vélez-Espino et al. 2018; <a href="https://solve-code.shinyapps.io/forecastr/">https://solve-code.shinyapps.io/forecastr/</a> ).
	Hatchery	6.5	7.0	6.8	6.1	6.0	7.5	Average brood survival by age and juvenile rearing type (yearling and sub-yearling), of recent 3 complete brood returns (2015 - 2017), applied to current returning release groups (2019 – 2022).
Tulalip <sup>e/</sup>	Hatchery	7.5	12.5	6.0	5.8	7.7	5.5	Multiple regression environmental model (EMPAR).
South Puget Sound	Natural	4.8	8.4	5.8	7.0	6.9	7.0	Natural: Lake Washington; 4-yr avg recruit per spawner for age 3, 4-yr avg sibling ratios for ages 4 & 5. Green; 3-yr average return rates. Puyallup; climate relationship for age 3, 5-yr average return per spawner for ages 4-5. Nisqually; smolt to adult power for age 3, sibling relationship age 4, 3-yr smolt to adult age 5. Hatchery: Variety of recent year average return rates or sibling relationships.
	Hatchery	123.6	99.9	100.7	78.8	90.3	90.4	
Hood Canal	Natural	3.9	1.2	4.6	5.7	5.4	3.2	Includes hatchery strays to spawning grounds in Skokomish River. Proportioned using Hood Canal terminal run reconstruction-based relative contribution of the individual management units for 2018-2022 return years. Area 12B returns derived by applying an average proportion of natural origin recruits returning to area 12B for 2018-2022.
	Hatchery	57.6	66.0	67.6	64.1	51.9	53.6	Brood 2018 fingerling lbs released from WDFW facilities in 2019, multiplied by the average of post-season estimated terminal area return rates for the last 5 years (2018-2022).
Strait of Juan de Fuca Including Dungeness spring run	Natural	6.0	8.3	5.0	5.5	5.0	3.7	Natural and hatchery. Dungeness and Elwha hatchery estimated by all year mean return/release rates. Dungeness wild estimated by smolts times all year mean return rate. Elwha wild estimated using 12 year hatchery/wild breakouts from otolith and CWT.

a/ Since 2005, the upriver spring Chinook run includes Snake River summer Chinook.

b/ Since 2005, the upriver summer Chinook run includes only upper Columbia summer Chinook, and not Snake River summer Chinook.

c/ Expected spawning escapement without fishing.

d/ Unless otherwise noted, Puget Sounds forecasts are in units of terminal run size.

e/ Includes a mixture of runsize types including escapement without fishing and terminal run. 2023 values are terminal runsize.

2023 Preseason I Report: TABLE I-2. Preseason adult coho salmon stock forecasts in thousands of fish. (Page 1 of 2)

Production Source and Stock or Stock Group		2018	2019	2020	2021	2022	2023	Methodology for 2023 Prediction and Source
<b>OPI Area Total Abundance</b> (California, Oregon Coasts, and Columbia River)		349.0	1,009.6	268.7	1,732.9	1,225.9	1,135.7	Abundance of all OPI components based on cohort reconstruction including all fishery impacts using Mixed Stock Model (MSM); prior to 2008 only fishery impacts south of Leadbetter Point were used (traditional OPI accounting). OPITT, see Chapter III for details.
OPI Public	Hatchery	294.1	933.5	185.7	1607.9	1003.5	896.9	OPIH: Columbia River jacks adjusted for delayed smolt releases and total OPI jacks regressed on 1970-2022 adults. Columbia/Coastal proportions based on jacks; Columbia early/late proportions based on jacks; Coastal N/S proportions based on smolts.
Columbia River Early		164.7	545.0	130.7	1014.0	592.5	481.8	
Columbia River Late		121.5	360.6	50.3	576.0	404.7	404.3	
Coastal N. of Cape Blanco		3.3	12.0	2.4	6.4	1.9	3.0	
Coastal S. of Cape Blanco		4.6	15.9	2.3	11.5	4.4	7.8	
Lower Columbia River	Natural	21.9	36.9	24.8	39.2	65.7	45.5	Oregon: recent three year average return; Washington: natural smolt production multiplied by 2020 brood marine survival rate. Abundance is subset of early/late hatchery abundance above.
Oregon Coast (OCN)	Natural	54.9	76.1	83.0	125.0	222.4	238.8	Rivers: Generalized additive model (GAM) relating ocean recruits to parental spawners and marine environmental variables. See text in Chapter III for details. Lakes: recent three year average abundance.
<b>Washington Coast</b>								
Willapa	Natural	20.6	63.4	17.9	19.0	35.8	42.7	Washington Coast stocks: A variety of methods were used for 2022, primarily based on smolt production and survival. See text in Chapter III for details.
	Hatchery	44.5	94.0	51.8	61.6	74.7	111.0	
Grays Harbor	Natural	42.4	71.5	50.0	44.8	120.4	102.8	
	Hatchery	51.4	64.3	42.3	31.7	78.3	111.4	
Quinault	Natural	25.4	13.9	17.5	15.0	19.4	23.6	
	Hatchery	29.6	26.9	27.0	24.6	42.7	30.6	
Queets	Natural	7.0	11.1	7.8	3.9	18.2	12.4	
	Hatchery	10.8	13.2	10.9	11.8	22.2	14.9	
Hoh	Natural	5.8	7.0	4.2	3.0	4.7	6.5	

TABLE I-2. Preseason adult coho salmon stock forecasts in thousands of fish. (Page 2 of 2)

Production Source and Stock or Stock Group		2018	2019	2020	2021	2022	2023	Methodology for 2023 Prediction and Source	
Quillayute Fall	Natural	10.6	14.7	9.2	7.5	12.5	13.5	For all Washington Coast stocks: A variety of methods were used for 2022, primarily based on smolt production and survival. See text in Chapter III for details.	
	Hatchery	16.5	17.0	13.0	15.1	20.3	19.1		
Quillayute Summer	Natural	2.7	1.2	0.8	0.3	0.9	1.6		
	Hatchery	3.3	3.4	3.4	3.4	4.6	3.9		
North Coast Independent Tributaries	Natural	4.1	8.1	5.1	4.7	18.0	13.5		
	Hatchery	7.9	12.5	1.3	0.1	0.1	11.8		
<i>WA Coast Total</i>	<i>Natural</i>	<i>118.7</i>	<i>191.0</i>	<i>112.4</i>	<i>98.4</i>	<i>229.8</i>	<i>216.6</i>		
	<i>Hatchery</i>	<i>164.1</i>	<i>231.3</i>	<i>149.6</i>	<i>148.2</i>	<i>243.0</i>	<i>302.7</i>		
<b>Puget Sound</b>									
Strait of Juan de Fuca	Natural	7.2	8.8	7.5	6.7	7.3	15.6		For all Puget Sound stocks: A variety of methods were used for 2022, primarily based on smolt production and survival. See text in Chapter III and Joint WDFW and tribal annual reports on Puget Sound Coho Salmon Forecast Methodology for details.
	Hatchery	10.6	16.8	20.6	12.5	12.7	21.8		
Nooksack-Samish	Natural	20.6	25.1	15.4	35.3	36.0	29.5		
	Hatchery	61.3	59.8	42.5	54.6	73.8	49.2		
Skagit	Natural	59.2	57.9	31.0	58.4	80.4	43.1		
	Hatchery	13.1	9.9	18.2	22.0	21.3	21.1		
Stillaguamish	Natural	19.0	23.8	19.5	26.8	24.9	30.2		
	Hatchery	0.0	2.2	2.3	4.0	1.9	1.7		
Snohomish	Natural	65.9	62.6	39.0	60.0	64.2	76.5		
	Hatchery	38.3	43.7	26.6	29.9	22.6	64.0		
South Sound	Natural	15.0	30.4	7.3	27.5	31.0	58.3		
	Hatchery	103.0	180.4	164.0	192.7	208.5	218.8		
Hood Canal	Natural	59.5	40.1	35.0	28.8	20.2	37.9		
	Hatchery	84.5	87.9	72.2	55.7	61.4	74.8		
<i>Puget Sound Total</i>	<i>Natural</i>	<i>246.4</i>	<i>248.8</i>	<i>154.6</i>	<i>243.5</i>	<i>264.0</i>	<i>291.2</i>		
	<i>Hatchery</i>	<i>310.8</i>	<i>400.7</i>	<i>346.3</i>	<i>371.4</i>	<i>402.3</i>	<i>451.4</i>		



2023 Preseason I Report: TABLE V-4. Stock status relative to overfished and overfishing criteria. A stock is approaching an overfished condition if the 3-year geometric mean of the most recent two years and the forecast spawning escapement is less than the minimum stock size threshold (MSST); a stock would experience overfishing if the total annual exploitation rate exceeds the maximum fishing mortality threshold (MFMT). Occurrences of stocks *at risk* of approaching an overfished condition or experiencing overfishing are indicated in **bold**. 2023 spawning escapement and exploitation rate estimates are based on preliminary 2022 preseason abundance forecasts and 2022 Council regulations.

	Estimated Adult Spawning Escapement									Total Exploitation Rate						
	2018	2019	2020	2021	2022 <sup>a/</sup>	Forecast 2023 <sup>b/</sup>	3-yr Geo Mean	MSST	S <sub>MSY</sub>	2018	2019	2020	2021	2022 <sup>a/</sup>	2023 <sup>b/</sup>	MFMT
<b>Chinook</b>																
Sacramento Fall	105,466	163,767	138,091	104,483	61,850	84,750	81,817	91,500	122,000	0.52	0.68	0.61	0.68	0.52	0.50	0.78
Klamath River Fall	52,352	20,022	26,185	30,056	22,051	17,792	<b>22,761</b>	30,525	40,700	0.32	0.43	0.30	0.38	0.45	0.32	0.71
Southern Oregon <sup>c/</sup>	39,507	18,436	29,387	48,979	17,615	NA	29,378	20,500	34,992	NA	NA	NA	NA	NA	NA	0.78
Central and Northern OR <sup>d/</sup>	92	65	137	85	105	NA	107	30 fish/mi	60 fish/mi	0.66	0.50	0.66	0.50	0.42	NA	0.78
Upper River Bright - Fall <sup>d/</sup>	58,540	77,880	98,401	86,644	53,961	99,945	77,600	19,182	39,625	0.34	0.37	0.34	0.38	0.29	NA	0.86
Upper River - Summer <sup>d/</sup>	38,816	41,090	70,654	52,076	64,497	57,178	57,695	6,072	12,143	0.54	0.26	0.44	0.17	0.30	NA	0.75
Willapa Bay - Fall <sup>e/</sup>	2,847	2,894	3,585	2,966	NA	NA	3,134	1,696	3,393	0.61	0.73	0.61	0.66	0.51	NA	0.78
Grays Harbor Fall <sup>d/e/</sup>	20,741	14,880	20,879	13,207	NA	NA	16,009	5,694	13,326	0.63	0.72	0.63	0.65	0.54	NA	0.78
Grays Harbor Spring	493	983	2,828	2,573	NA	NA	1,927	700	1,400	NA	NA	NA	NA	NA	NA	0.78
Queets - Fall <sup>d/</sup>	2,207	2,663	3,622	3,364	NA	NA	3,190	1,250	2,500	0.66	0.64	0.66	0.73	0.71	NA	0.87
Queets - Sp/Su	484	322	342	280	NA	NA	314	350	700	NA	NA	NA	NA	NA	NA	0.78
Hoh - Fall <sup>d/e/</sup>	2,478	1,552	2,273	2,622	NA	NA	2,099	600	1,200	0.56	0.79	0.56	0.73	0.64	NA	0.90
Hoh Sp/Su	793	766	1,248	817	NA	NA	921	450	900	NA	NA	NA	NA	NA	NA	0.78
Quillayute - Fall <sup>d/e/</sup>	3,937	7,765	8,672	5,568	6,761	NA	6,886	1,500	3,000	0.72	0.73	0.72	0.65	0.55	NA	0.87
Quillayute - Sp/Su	990	1,442	942	1,056	1,128	NA	1,039	600	1,200	NA	NA	NA	NA	NA	NA	0.78
Hoko -Su/Fa <sup>d/</sup>	2,179	1,815	1,347	2,256	NA	NA	1,767	425	850	0.54	0.77	0.57	NAg/	0.22	NA	0.78
<b>Coho</b>																
Willapa Bay <sup>f/</sup>	17,228	15,115	16,476	31,369	NA	28,005	24,370	8,600	17,200	0.35	0.39	0.33	0.24	NA	0.53	0.74
Grays Harbor <sup>f/</sup>	49,622	30,468	23,814	62,762	NA	57,517	44,134	18,320	24,426	0.22	0.39	0.29	0.23	NA	0.49	0.65
Queets	2,631	1,700	4,181	5,752	NA	7,956	5,762	4,350	5,800	0.23	0.57	0.22	0.10	NA	0.36	0.65
Hoh	2,463	2,445	2,840	6,396	NA	3,057	3,815	1,890	2,520	0.34	0.57	0.49	0.18	NA	0.54	0.65
Quillayute Fall	6,091	6,852	7,695	9,938	13,000	8,469	10,304	4,725	6,300	0.30	0.37	0.16	0.04	NA	0.37	0.59
Juan de Fuca	5,470	4,625	8,548	20,837	NA	14,094	13,591	7,000	11,000	0.08	0.12	0.07	0.07	NA	0.10	0.60
Hood Canal	7,512	7,884	17,312	35,178	NA	22,872	24,061	10,750	14,350	0.57	0.46	0.29	0.25	NA	0.40	0.65
Skagit	19,047	14,246	23,808	75,532	NA	22,712	34,438	14,875	25,000	0.49	0.48	0.43	0.33	NA	0.48	0.60
Stillaguamish	23,937	12,887	21,555	38,176	NA	23,080	26,680	6,100	10,000	0.22	0.20	0.13	0.11	NA	0.24	0.50
Snohomish	58,135	40,314	42,675	97,523	NA	60,842	63,265	31,000	50,000	0.25	0.17	0.11	0.11	NA	0.21	0.60

a/ Preliminary.

b/ Preliminary approximations based on preseason forecasts and the previous year fishing regulations.

c/ MSST 18,440 (20,500 as measured at Huntley Park).

d/ Preliminary CWT based exploitation rates from PSC-CTC 2021 Exploitation Rate Analysis.

e/ Queets River fall Chinook coded-wire-tag (CWT) exploitation rates used as a proxy. Adjustments made to terminal fishery impacts to account for differential harvest rates.

f/ Willapa Bay and Grays Harbor coho escapement and exploitation rate estimates based on natural area adult spawners.

g/ Calculation of a reliable exploitation rate estimate was not possible due to insufficient CWT information.

2023 Preseason I Report: TABLE V-5. Postseason  $S_{ACL}$ ,  $S_{OFL}$ , and spawner escapement estimates for Sacramento River fall Chinook (SRFC) and Klamath River fall Chinook (KRFC). For the current year,  $S_{ACL}$ ,  $S_{OFL}$ , and spawner escapements are preseason values based on current abundance forecasts and the previous year fishing regulations.

Year	SRFC			KRFC			Willapa Bay Coho		
	$S_{ACL}^{a/}$	$S_{OFL}$	Escapement <sup>tb/</sup>	$S_{ACL}^{a/}$	$S_{OFL}$	Escapement <sup>c/</sup>	$S_{ACL}^{a/}$	$S_{OFL}$	Escapement <sup>c/</sup>
2012	188,378	138,144	285,429	70,922	64,273	121,543	--	--	--
2013	260,798	191,251	406,846	52,032	47,154	59,156	--	--	--
2014	165,355	121,260	212,476	47,674	43,205	95,104	--	--	--
2015	76,485	56,089	113,468	22,202	20,120	28,112	9,440	8,181	17,086
2016	61,595	45,170	89,699	7,056	6,394	13,937	14,839	12,860	30,667
2017	41,119	30,154	44,329	7,113	6,446	19,904	5,180	4,489	11,379
2018	66,110	48,481	105,466	24,468	22,174	52,352	7,903	6,849	17,228
2019	152,116	111,551	163,767	11,314	10,253	20,022	7,458	6,464	15,115
2020	105,746	77,547	138,091	12,014	10,887	26,185	7,399	6,413	16,476
2021	96,809	70,994	104,483	15,608	14,145	30,056	12,432	10,774	31,369
2022	<b>75,357</b>	55,262	<b>61,850</b>	12,917	11,706	22,051	NA	NA	NA
2023	50,930	37,349	84,750	8,396	7,609	17,792	17,825	15,448	28,005

a/  $S_{ACL} = S_{ABC}$ .

b/ Hatchery and natural area adult spaw ners.

c/ Natural area adult spaw ners.

2023 Preseason I Report: TABLE V-6. Comparison of projected ocean escapements and exploitation rates for critical natural and Columbia River hatchery coho stocks (thousands of fish) resulting from application of 2022 Council-adopted regulations to 2022 and 2023 ocean abundance forecasts.<sup>a/</sup>

Stock	Ocean Escapement and ER Estimates Under 2022 Regulations <sup>b/</sup>				2023 FMP Conservation Objective <sup>c/</sup>
	2022 Abundance Forecasts		2023 Abundance Forecasts		
	Ocean Escapement	Exploitation Rate	Ocean Escapement	Exploitation Rate	
<b>Natural Coho Stocks</b>					
Skagit	75.8	43.2%	40.7	47.6%	Exploitation Rate ≤35.0% <sup>d/</sup>
Stillaguamish	63.4	35.9%	75.4	23.9%	Exploitation Rate ≤50.0% <sup>d/</sup>
Snohomish	61.7	33.5%	73.5	20.7%	Exploitation Rate ≤40.0% <sup>d/</sup>
Hood Canal	18.9	44.1%	35.4	39.9%	Exploitation Rate ≤45.0% <sup>d/</sup>
Strait of Juan de Fuca	6.9	10.9%	14.8	10.1%	Exploitation Rate ≤40.0% <sup>d/</sup>
Quillayute Fall	11.6	37.4%	12.6	37.4%	6.3 - 15.8 Spaw ners
Hoh	3.9	53.6%	5.5	53.5%	2.0 - 5.0 Spaw ners
Queets	15.2	36.3%	10.4	36.5%	5.8 - 14.5 Spaw ners
Grays Harbor <sup>f/</sup>	118.9	49.6%	105.9	49.3%	35.4 Spaw ners
LCN	55.0	17.5%	37.5	18.8%	Exploitation Rate ≤23.0% <sup>e/</sup>
OCN	190.0	15.0%	202.9	15.4%	Exploitation Rate ≤20.0% <sup>e/</sup>
<b>SONCC</b>					
Trinity Natural	--	13.5%	--	13.5%	Exploitation Rate ≤16.0% <sup>e/</sup>
Klamath Natural	--	8.7%	--	8.7%	Exploitation Rate ≤15.0% <sup>e/</sup>
Rogue Natural	--	7.8%	--	7.8%	Exploitation Rate ≤15.0% <sup>e/</sup>
Other Natural	--	2.9%	--	2.9%	Exploitation Rate ≤15.0% <sup>e/</sup>
<b>Hatchery Coho Stocks</b>					
Columbia Early	379.2	50.6%	302.7	50.3%	6.2 Hatchery Escapement
Columbia Late	241.1	46.6%	223.6	50.9%	14.2 Hatchery Escapement

a/ Quota levels include harvest and hooking mortality estimates used in planning the Council's 2022 ocean fisheries and a coho catch for the Canadian troll fishery off the West Coast of Vancouver Island (WCVI).

b/ 2022 preseason regulations with the following coho quotas: U.S. Canada Border to Cape Falcon: Treaty Indian troll-52,000; non-Indian troll-32,000 selective; recreational-168,000 selective; Cape Falcon to OR/CA border: recreational-100,000 selective and 17,000 non-selective; troll-10,000 selective. Ocean escapement is generally the estimated number of coho escaping ocean fisheries and entering freshwater. For Puget Sound stocks, ocean escapement is the total abundance minus ocean fisheries (ie outside Puget Sound). For the OCN coho stock, this value represents the estimated spawner escapement in SRS accounting. For Columbia R. hatchery and LCN stocks, ocean escapement represents the number of coho after the Buoy 10 fishery; the LCN exploitation rates shown are total marine and mainstem Columbia R. fishery ERs.

c/ Goals represent FMP conservation objectives, ESA consultation standards, or hatchery escapement needs. Spawning escapement goals are not directly comparable to ocean escapement because the latter occur before inside fisheries.

d/ Assumed exploitation rate based on preliminary abundance forecasts.

e/ Pending confirmation of 2023 ESA consultation standard.

f/ Grays Harbor escapements and exploitation rate estimates based on natural area adult spawners.

2023 Preseason I Report: TABLE V-7. Comparison of Lower Columbia natural (LCN), Oregon coastal natural (OCN), and Southern Oregon/Northern California Coastal (SONCC) coho projected harvest mortality and exploitation rates by fishery under Council-adopted 2022 regulations and preliminary 2023 preseason abundance estimates.

Fishery	Projected Harvest Mortality and Exploitation Rate							
	LCN		OCN		SONCC Natural <sup>a/</sup>			
	Number	Percent	Number	Percent	Trinity	Klamath	Rogue	Other
<b>SOUTHEAST ALASKA</b>	0	0.0%	0	0.0%	0.0%	0.0%	0.0%	0.0%
<b>BRITISH COLUMBIA</b>	62	0.1%	699	0.3%	0.1%	0.1%	0.1%	0.1%
<b>PUGET SOUND/STRAITS</b>	73	0.2%	58	0.0%	0.0%	0.0%	0.0%	0.0%
<b>NORTH OF CAPE FALCON</b>								
Recreational	2,233	4.9%	2,210	0.9%	0.0%	0.0%	0.0%	0.0%
Treaty Indian Troll	946	2.1%	1,168	0.5%	0.0%	0.0%	0.0%	0.0%
Non-Indian Troll	744	1.6%	796	0.3%	0.0%	0.0%	0.0%	0.0%
<b>SOUTH OF CAPE FALCON</b>								
Recreational:								
Cape Falcon to Humbug Mt.	1,943	4.3%	19,473	8.1%	0.6%	0.6%	0.6%	0.6%
Humbug Mt. to Horse Mt. (KMZ)	43	0.1%	896	0.4%	1.1%	1.1%	1.1%	1.1%
Fort Bragg	12	0.0%	445	0.2%	0.4%	0.4%	0.4%	0.4%
South of Pt. Arena	4	0.0%	229	0.1%	0.2%	0.2%	0.2%	0.2%
Troll:								
Cape Falcon to Humbug Mt.	444	1.0%	2,326	1.0%	0.1%	0.1%	0.1%	0.1%
Humbug Mt. to Horse Mt. (KMZ)	3	0.0%	47	0.0%	0.0%	0.0%	0.0%	0.0%
Fort Bragg	2	0.0%	225	0.1%	0.2%	0.2%	0.2%	0.2%
South of Pt. Arena	8	0.0%	323	0.1%	0.1%	0.1%	0.1%	0.1%
<b>BUOY 10</b>	1,295	2.9%	388	0.2%	0.0%	0.0%	0.0%	0.0%
<b>ESTUARY/FRESHWATER</b>	718	1.6%	7,769	3.2%	10.6%	5.8%	4.9%	0.0%
<b>TOTAL</b>	8,530	18.8%	37,052	15.4%	13.5%	8.7%	7.8%	2.9%

a/ Harvest mortality estimates not available.

Changes in stock status for Chinook and coho stocks from 2022-2023.

Stock	2022 status	2023 status	Comments
<b>Chinook</b>			
SRFC	Not overfished	Rebuilt	At risk of approaching an overfished condition
KRFC	Overfished	Overfished	At risk of approaching an overfished condition
Queets Spring/Summer Chinook	Not overfished	Overfished	Based on 2019-2021 escapement
<b>Coho</b>			
Queets natural coho	Overfished	Overfished	
Strait of Juan de Fuca natural coho	Overfished	Not overfished-rebuilding	
Snohomish natural coho	Not overfished-rebuilding	Rebuilt	

Corrections to the 2023 Preseason Report I report.

- In Table V-4, the Sacramento River fall Chinook forecast value for 2023 should be bolded, indicating that SRFC are at risk of approaching an overfished condition.
- In Table V-4, the SRFC total exploitation rate for 2022 should be 0.75 (the values is 0.52 in the report)
- In Table I-2 and the Chapter 3 text of Preseason Report I, the Nooksack-Samish coho hatchery forecast for 2023 was reported to be 49,208. The revised value is 66,567.

PFMC  
03/04/23