

**2023 Summer Mark-Selective Recreational Chinook Fisheries  
In Marine Areas 5, 6, 7, 9, 10, 11, 12 and 13**

**Post-season Report**

**DRAFT**

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## INTRODUCTION

In the marine environments of the Strait of Juan de Fuca and Puget Sound, abundant runs of hatchery Chinook salmon (*Oncorhynchus tshawytscha*) have been mixed with depressed stocks of natural-origin Chinook salmon for many years. Providing recreational anglers with opportunities to harvest abundant hatchery stocks while simultaneously protecting weaker, natural-origin stocks has proven to be a significant conservation and management challenge. The combination of large-scale hatchery marking (i.e., adipose fin clipping) programs and mark-selective harvest regulations makes it possible for anglers to pursue and harvest hatchery Chinook salmon while minimally impacting natural-origin salmon populations. In such “mark-selective fisheries” (MSFs), recreational anglers are allowed to retain adipose-fin clipped (“marked”) hatchery fish and are required to release unharmed any unclipped (“unmarked”, predominantly natural-origin) salmon that are encountered<sup>1</sup>.

Since the Washington Department of Fish and Wildlife (WDFW) implemented the first mark-selective Chinook salmon fisheries in Marine Areas 5 and 6 (Strait of Juan de Fuca) in 2003 based on state-tribal agreements (Thiesfeld and Hagen-Breaux 2005a, 2005b, & 2006; WDFW 2008a), mark-selective Chinook salmon fishing regulations have been implemented in multiple Marine Areas in Puget Sound during both the summer and winter seasons.

During the 2023 summer season, May through September, WDFW implemented mark-selective Chinook salmon fisheries in Marine Areas 5, 6, 7, 9, 10, 11, 12 and 13. The Chinook MSF seasons in each area were scheduled as follows, though note that in some Areas management criteria were met prior to the end date and closed early:

- Marine Area 5 from July 1 through August 15, 2023
- Marine Area 6 from July 1 through August 15, 2023
- Marine Area 7 from July 13 through July 31, 2023 (3-day openers)
- Marine Area 9 from July 13 through July 31, 2023 (3-day openers)
- Marine Area 10 from July 13 through August 31, 2023
- Marine Area 11 from June 1 through September 30, 2023
- Marine Area 12 from July 10 through September 30, 2023
- Marine Area 13 from May 1 through September 30, 2023

## **RESULTS**

### **1) Marine Area 5 Summer Mark-Selective Chinook Fishery**

The Washington Department of Fish and Wildlife (WDFW) implemented a Chinook MSF in Marine Area 5 from July 1 through August 15, 2023. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program, a Full Murthy design, in Marine Area 5 throughout the season to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included dockside creel sampling, on-the-water effort surveys, test-fishing, and efforts to collect voluntary salmon trip reports (STRs) from the angling public. **Table 1.1** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). The fishery control for this area was based on the preseason Fishery Regulation Assessment Model (FRAM) prediction of 7,254 total legal-sized Chinook salmon encounters (**Table 1.4**). In this section we present results from our monitoring activities during the Area 5 summer Chinook MSF.



**Table 1.1** Sampling/estimation details on target parameters associated with the overall Marine Area 5 summer mark-selective fishery monitoring program.

Activity	Focal Parameter(s)	Secondary Parameter(s)	Sample Unit(s)	Finest Estimation Time Step	Comments
Dockside Creel Sampling	Fishing effort (boat & angler trips); kept and released fish <sup>1</sup>	Catch rates (CPUE); length, age, and CWT composition of harvest <sup>1</sup> ; collection of angler fishing methods.	Angler trip; kept fish; reported fish release	One week	Creel estimates were produced for one-week estimation periods and stratified into “weekday” (Mon.-Thurs.) and “weekend” (Fri.-Sun.) day-type strata within weeks. For the weekday stratum we sampled $n=2$ days out of $N=4$ available weekdays per one-week period. For the weekend stratum we sampled $n=3$ days out of $N=3$ available weekend days per week
		Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook salmon	Boat trip	Season	Dockside encounter data were not used for estimation of Chinook encounters for this fishery. <b>Table 1.9.</b> (See Conrad & McHugh 2008).
On-the-water Surveys	Proportion of total angler effort that uses sample-frame sites (i.e., site “size measures”) versus out-of-frame sites.	Total on-water boat and angler counts at assumed peak effort time interval (instantaneous count); spatial distribution of recreational fishing boats in the area.	Boats and anglers	Month	A total of 9 (5 weekday and 4 weekend) boat surveys were conducted during the Area 5 summer Chinook MSF.
Test Fishing	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Chinook length, age, and DNA-based <sup>2</sup> stock composition; species composition of non-Chinook encounters	Fish encounter	Season	Test fishing collected data when the fishery was open to Chinook retention. These data were used for estimating encounters and mortalities during this fishery. LM = 19%; LU = 15%; SM = 53%; SU = 13%. <b>Table 1.12.</b>
Voluntary Salmon Trip Reports (STRs)	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook salmon	Encounter data for non-Chinook salmon species (e.g., Coho salmon) that the angler may record on the STR form	Fish encounter	Season	One STR was returned during this fishery ( <b>Table 1.10</b> ). Due to low sample size of the STRs and a significant difference, $p\text{-value} < 0.05$ , between STR and test fishing data; only the higher quality test fishing data were used for estimates of encounters and mortalities for this fishery.
Overall Fishery Impacts Estimation	Total Chinook salmon encounters and mortalities by size/mark-status group	Ratios of encounters and mortalities per kept Chinook salmon	N/A	Season	Estimated on a monthly time step but considered at the season-total level.
Coded-wire tag (CWT) Impacts Estimation	Marked/unmarked double-index tag (DIT) encounters and mortalities	N/A	N/A	Season	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

<sup>1</sup> The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.

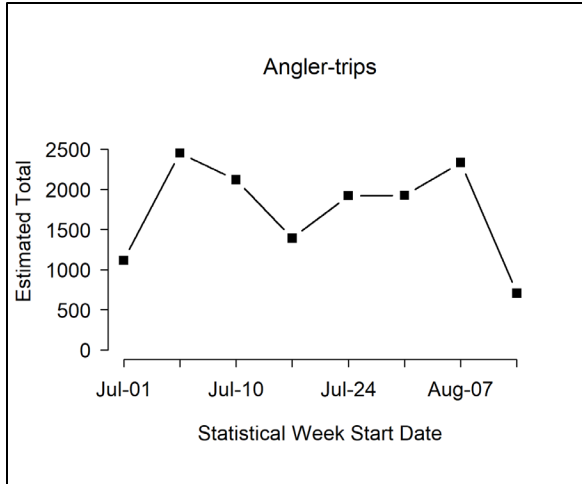
<sup>2</sup> Though samples were collected, DNA-based estimates of stock composition are not yet available for this fishery.

**Table 1.2** Estimates of total fishing effort and total salmon catch (harvest and releases) during the summer Chinook MSF in Marine Area 5. Values may not add up exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

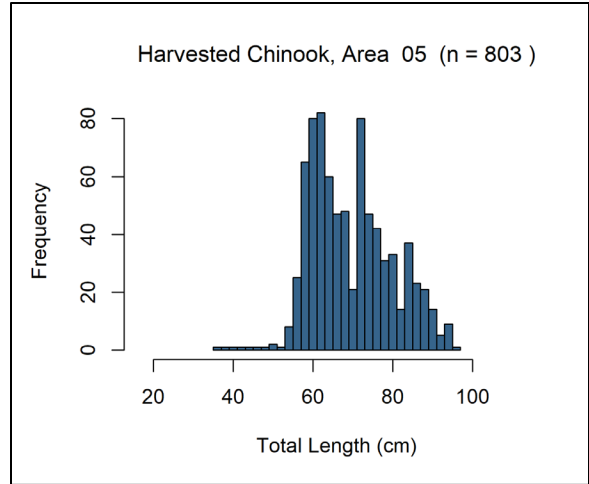
Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
July	27	1-Jul	2-Jul	440	1,115	468	6	1,532	761	2,767
	28	3-Jul	9-Jul	1,111	2,455	481	13	1,573	774	2,841
	29	10-Jul	16-Jul	963	2,120	506	18	1,657	811	2,992
	30	17-Jul	23-Jul	626	1,392	274	0	897	449	1,620
	31	24-Jul	30-Jul	814	1,922	518	8	1,694	840	3,060
August	32	31-Jul	6-Aug	710	1,925	462	5	1,513	753	2,733
	33	7-Aug	13-Aug	1,018	2,335	595	0	1,947	975	3,516
	34	14-Aug	15-Aug	278	706	187	0	611	306	1,103
<b>Season Total:</b>				<b>5,961</b>	<b>13,971</b>	<b>3,490</b>	<b>50</b>	<b>11,423</b>	<b>5,670</b>	<b>20,633</b>
<b>Variance:</b>				80,149	583,930	45,903	134	4,330,423	908,497	10,762,946
<b>SE:</b>				283	764	214	12	2081	953	3,281
<b>CV (%):</b>				5	5	6	23	18	17	16
<b>95% CI:</b>				5,406 - 6,516	12,473 - 15,469	3,070 - 3,910	28 - 73	7,344 - 15,502	3,802 - 7,538	14,203 - 27,063

**Table 1.3** Number of total length samples collected from retained Chinook salmon collected during dockside angler interviews in the summer Chinook MSF in Marine Area 5.

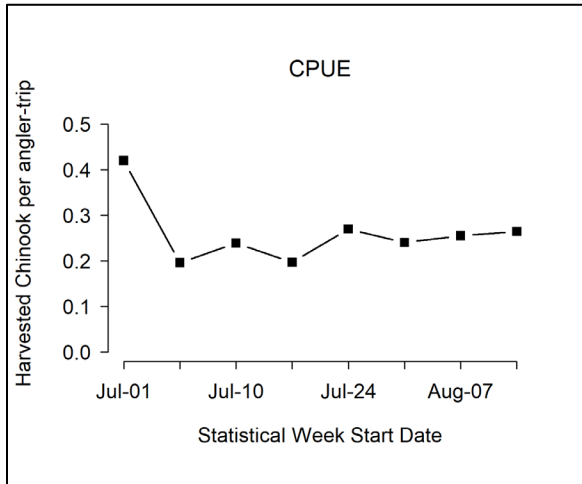
Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	777	26	803
Unmarked	6	2	8
<b>Total</b>	<b>783</b>	<b>28</b>	<b>811</b>



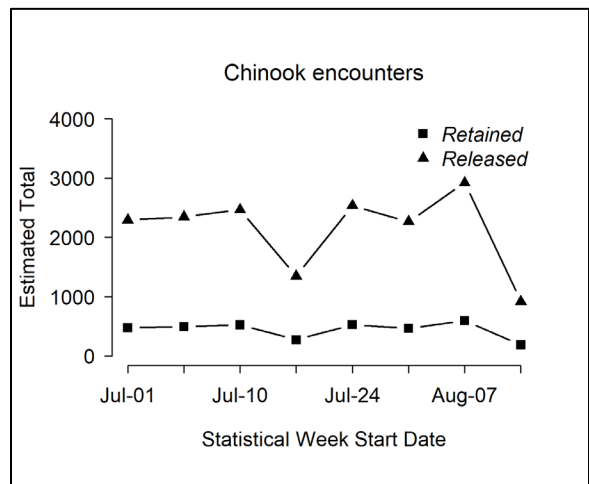
**Figure 1.1** Temporal patterns in fishing effort during the summer Chinook MSF in Marine Area 5.



**Figure 1.3** Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the summer Chinook MSF in Marine Area 5. Note: displayed values are observations where lengths are taken.



**Figure 1.2** Temporal patterns in CPUE (landed Chinook per angler trip) during the summer Chinook MSF in Marine Area 5.



**Figure 1.4** Temporal patterns in Chinook salmon encounters (retained and released) during the summer Chinook MSF in Marine Area 5.

**Table 1.4** Comparison of modeled and estimated total Chinook salmon encounters for the summer Chinook MSF in Marine Area 5. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

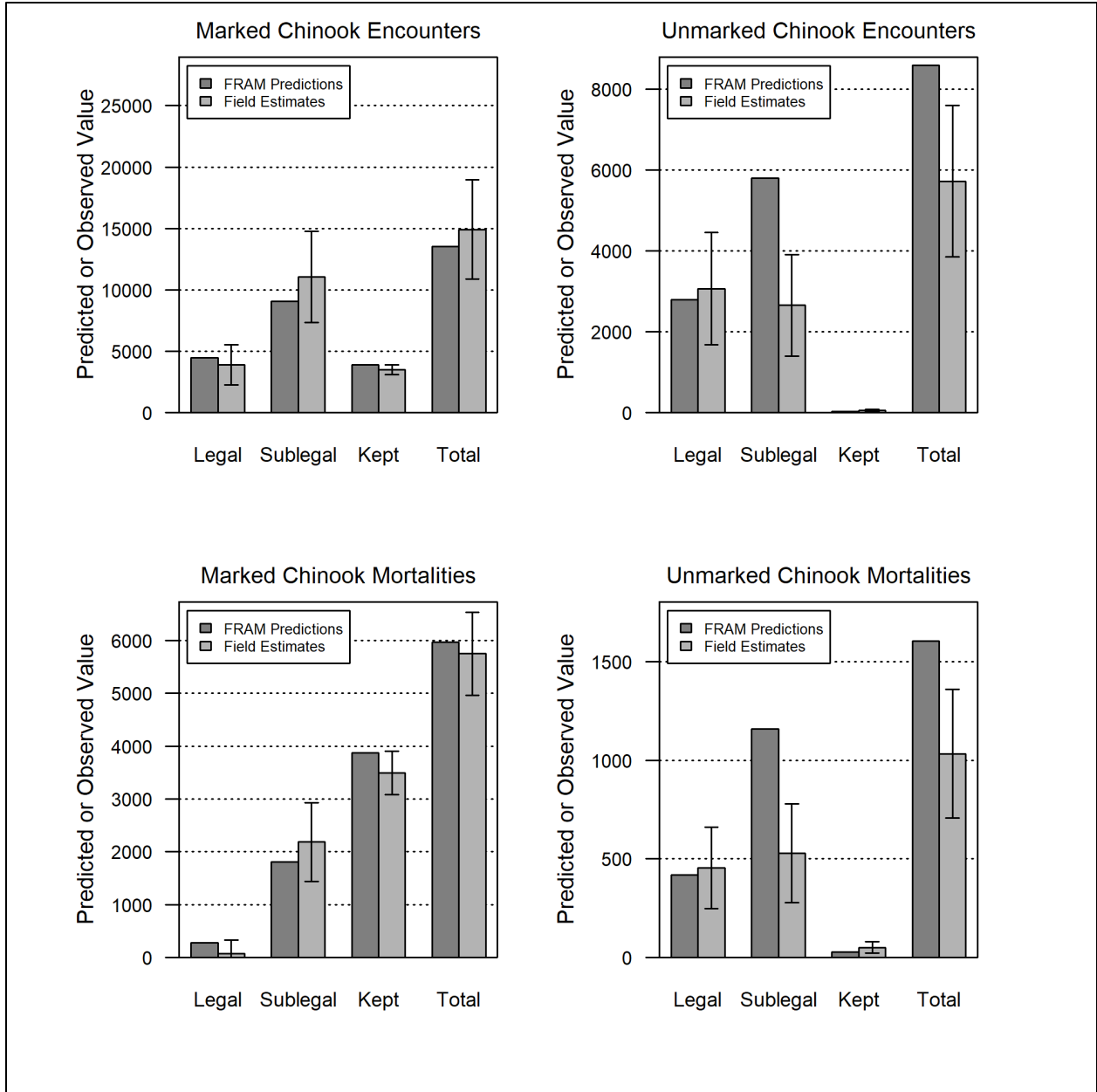
Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	8,593	2,797	5,796	28
	AD	13,519	4,458	9,061	3,878
	Total	22,112	7,255	14,857	3,906
	% Marked	61	61	61	99
Estimated (Creel) Encounters	UM	5,720	3,064	2,656	50
	AD	14,913	3,881	11,031	3,490
	Total	20,633	6,946	13,687	3,540
	% Marked	72	56	81	99

**Table 1.5** Summary of season-wide fishery impact estimates for the summer Chinook MSF in Marine Area 5. Release mortality rate = 0.15 for legal fish and 0.20 for sublegal fish. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	3,881	3,377	505	76	3,453	60,094	245	2,972 - 3,933	7
Legal UM	3,064	38	3,027	454	492	11,358	107	283 - 701	22
Sublegal AD	11,031	113	10,918	2,184	2,297	144,153	380	1,553 - 3,041	17
Sublegal UM	2,656	13	2,643	529	541	16,468	128	290 - 793	24
<b>Total</b>	<b>20,633</b>	<b>3,540</b>	<b>17,093</b>	<b>3,242</b>	<b>6,782</b>	<b>232,074</b>	<b>482</b>	<b>5,838 - 7,726</b>	<b>7</b>

**Table 1.6** Comparison of modeled and estimated total Chinook salmon mortalities for the summer Chinook MSF in Marine Area 5. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	1,604	5,971	7,575	1,033	5,749	6,782
Released Legal	417	281	698	454	76	530
Released Sublegal	1,159	1,812	2,971	529	2,184	2,712
Landed Only	28	3,878	3,906	50	3,490	3,540



**Figure 1.5** Comparison of modeled and estimated total Chinook salmon encounters and mortalities for the summer Chinook MSF in Marine Area 5. Error bars represent approximately 95% confidence intervals for field estimates.

**Table 1.7** Summary of the total number of anglers intercepted during on-the-water surveys conducted for the summer Chinook MSF in Marine Area 5. Sites in bold represent those included in the dockside sample frame.

Site Name	Weekday Anglers	Season Total (unadjusted) Size Measure	Weekend Anglers	Season Total (unadjusted) Size Measure
Coho Resort	38	0.0558	35	0.0602
<b>Curley's Resort</b>	<b>23</b>	<b>0.0338</b>	<b>25</b>	<b>0.0430</b>
<b>Mason's East Docks</b>	<b>147</b>	<b>0.2159</b>	<b>140</b>	<b>0.2410</b>
<b>Mason's Ramp &amp; Docks</b>	<b>177</b>	<b>0.2599</b>	<b>138</b>	<b>0.2375</b>
Mason's South Dock	18	0.0264	58	0.0998
<b>Mason's West Docks</b>	<b>39</b>	<b>0.0573</b>	<b>31</b>	<b>0.0534</b>
Pillar Pt Ramp	1	0.0015	0	0.0000
Private	49	0.0720	19	0.0327
<b>Van Riper's North</b>	<b>72</b>	<b>0.1057</b>	<b>69</b>	<b>0.1188</b>
<b>Van Riper's South</b>	<b>113</b>	<b>0.1659</b>	<b>60</b>	<b>0.1033</b>
Van Riper's Resort	4	0.0059	6	0.0103

**Table 1.8** Monthly sample rates (Total retained Chinook sampled<sup>1</sup> / Estimated retained Chinook) for the summer Chinook MSF in Marine Area 5. AD = marked (adipose-clipped), UM = unmarked.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
July	27 - 31	1 Jul - 30 Jul	2,246	46	2,292	589	7	596	26.0%
August	32 - 34	31 Jul - 15 Aug	1,244	5	1,248	256	1	257	20.6%
<b>Season Total</b>			<b>3,490</b>	<b>50</b>	<b>3,540</b>	<b>845</b>	<b>8</b>	<b>853</b>	<b>24.1%</b>

<sup>1</sup> Number of retained Chinook salmon sampled includes all retained Chinook salmon inspected for CWTs, from all sites sampled during the summer Chinook MSF in Marine Area 5 (creel estimates and fish sampled as part of baseline sampling).

**Table 1.9** Dockside encounters (retained and released) by size-mark category during the summer Chinook salmon MSF in Marine Area 5. Retained fish were sampled for mark-status and length, released fish by size-mark status were reported by the angler.

Dockside Encounters				
Metric	Legal		Sublegal	
	LM	LU	SM	SU
Encounters	797	646	278	279
Bias-corrected size/mark composition	35.47%	32.30%	13.90%	18.33%
Variance	0.0003	0.0004	0.0001	0.0002

**Table 1.10** Total Chinook salmon encountered (retained and released) by private-boat anglers logging their trips on STRs during the 2023 summer Chinook salmon MSF in Marine Area 5, with estimates of legal-size and overall (legal and sublegal) mark rates. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

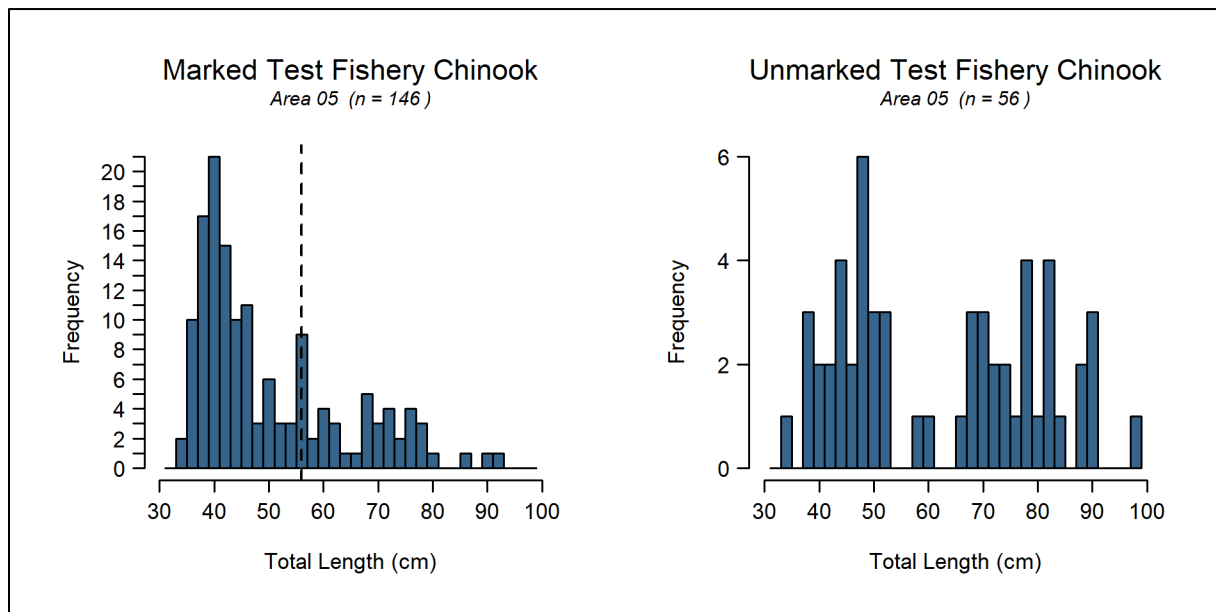
Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private STR	1 1-trip STRs	2	2	0	0	4	0.5	0.5
Size/mark-status composition:		0.5	0.5	0	0			
Variance:		(0.0365)	(0.0365)	(0.0000)	(0.0000)			

**Table 1.11** Fishery-total estimates of retained and released salmon (other than Chinook) for the summer Chinook MSF in Marine Area 5. Values may not add up exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Stat Week	Start Date	End Date	Retained Salmon						Released Salmon					
			Coho AD	Coho UM	Coho UNK	Sockeye	Pink	Unknown	Coho AD	Coho UM	Coho UNK	Pink	Sockeye	Unknown
27	1-Jul	2-Jul	66	4	0	0	0	5	12	16	8	5	0	34
28	3-Jul	9-Jul	75	2	0	0	11	2	19	62	24	5	0	28
29	10-Jul	16-Jul	112	4	0	0	5	10	36	74	55	0	0	114
30	17-Jul	23-Jul	125	2	0	4	117	53	20	131	87	79	0	33
31	24-Jul	30-Jul	238	2	4	0	435	9	53	344	163	377	0	113
32	31-Jul	6-Aug	115	19	0	0	706	22	24	269	50	879	14	71
33	7-Aug	13-Aug	518	27	0	0	879	27	39	436	50	1,186	0	109
34	14-Aug	15-Aug	102	0	0	0	260	14	6	241	5	502	0	181
<b>Season Total:</b>			<b>1,352</b>	<b>60</b>	<b>4</b>	<b>4</b>	<b>2,413</b>	<b>142</b>	<b>210</b>	<b>1,573</b>	<b>442</b>	<b>3,032</b>	<b>14</b>	<b>683</b>
<b>Variance:</b>			11,873	342	12	13	77,024	2,621	1,538	26,995	5,423	71,205	138	8,389
<b>Standard Error:</b>			109	18	3	4	278	51	39	164	74	267	12	92
<b>CV (%):</b>			8	31	84	84	11	36	19	10	17	9	87	13
<b>95% CI:</b>			1,138 - 1,565	24 - 96	0 - 11	0 - 11	1,869 - 2,957	42 - 242	133 - 287	1,251 - 1,895	297 - 586	2,509 - 3,555	0 - 37	504 - 863

**Table 1.12** Composition of test fishery Chinook salmon encounters and associated mark-rate and size/mark-status proportion estimates for the summer Chinook salmon MSF in Marine Area 5. AD = marked (adipose-clipped), UM = unmarked.

Stat Week	Fishing Effort		Legal		Sublegal		Total
	Days	Hours Fished	AD	UM	AD	UM	
27	2	12.25	6	3	10	2	21
28	5	24.24	6	2	11	1	20
29	5	28.14	6	5	21	7	39
30	3	16.33	5	2	18	3	28
31	5	25.35	1	4	9	2	16
32	5	26.11	5	6	18	6	35
33	5	29.40	9	8	21	5	43
<b>Total</b>	<b>17</b>	<b>161.82</b>	<b>38</b>	<b>30</b>	<b>108</b>	<b>26</b>	<b>202</b>
<b>Size/mark-status composition:</b>			0.19	0.15	0.53	0.13	
<b>Variance:</b>			(0.0008)	(0.0006)	(0.0012)	(0.0006)	
<b>Legal size mark rate:</b>			0.56				
<b>Overall mark rate:</b>			0.72				



**Figure 1.6** Length-frequency distributions of marked (*left panel*) and unmarked (*right panel*) Chinook salmon encountered by test fishers during the summer Chinook salmon MSF in Marine Area 5. The vertical dashed line in the left panel corresponds to the legal-size limit (22 in or 56 cm).



**Table 1.13** Summary of double-index tagged (DIT) Chinook salmon kept by anglers and estimated total mortality of unmarked DIT Chinook salmon due to hook-and-release impacts resulting from the summer Chinook MSF in Marine Area 5. AD = marked (adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs	Est.AD	var(Est.AD)	UM DIT Enc	Est.UM	var(Est.UM)	SE(Est.UM)
Bernie Gobin Hatchery	2018	1	4.4	14.71	4.4	0.4	0.15	0.39
Clear Creek Hatchery	2020	1	4.4	14.71	4.6	0.5	0.161	0.4
George Adams Hatchery	2020	2	8.7	29.42	8.8	0.9	0.301	0.78
Grovers Cr Hatchery	2020	1	4.4	14.71	4	0.4	0.126	0.35
Priest Rapids Hatchery	2019	1	4.4	14.71	4.6	0.5	0.165	0.41
Quinault Lk Hatchery	2019	1	4.4	14.71	4.3	0.4	0.146	0.38
Samish Hatchery	2019	3	13.1	44.13	13.2	1.3	0.446	1.16
Samish Hatchery	2020	2	8.7	29.42	8.8	0.9	0.301	0.78
Soos Cr Hatchery	2018	1	4.4	14.71	4.4	0.4	0.15	0.39
Soos Cr Hatchery	2019	2	8.7	29.42	8.8	0.9	0.296	0.77
Soos Cr Hatchery	2020	1	4.4	14.71	4.4	0.4	0.152	0.39
Spring Cr Nfh	2019	2	8.7	29.42	8.8	0.9	0.296	0.77
Spring Cr Nfh	2020	11	48	161.81	48.1	4.8	1.624	4.23
Willard Nfh	2019	1	4.4	14.71	5.3	0.5	0.215	0.46
<b>Total</b>		<b>30</b>	<b>131</b>	<b>441.29</b>	<b>132.6</b>	<b>13.3</b>	<b>4.528</b>	<b>11.64</b>

**Table 1.14** Summary of coded-wire tags recovered from Chinook salmon harvested during the 2023 summer Chinook MSF in Marine Area 5. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups. Note: Not all tags have been processed before the writing of this report.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs
BC	Thompson River (12.6%)	R-Chilliwack R	H-Chilliwack River H	15 (10.5%)	0
		R-Harrison R	H-Chehalis River H	2 (1.4%)	0
		R-Nicola R	H-Spius Creek H	1 (0.7%)	0
	W Vancouver Island (1.4%)	R-Robertson Cr	H-Robertson Creek H	1 (0.7%)	0
		R-Sooke Hb	H-Sooke Harbour Seapen	1 (0.7%)	0
	Georgia Strait (3.5%)	R-Capilano R	H-Capilano River H	1 (0.7%)	0
		R-Burrard In	H-Sandy Cove Seapen	4 (2.8%)	0
Washington	N Washington (4.2%)	Friday Cr 03.0017	Samish Hatchery	6 (4.2%)	6
	N Washington Coast (1.4%)	Quinault Lk (Gray)	Quinault Lk Hatchery	1 (0.7%)	1
		Tsoo-Yess R 20.0015	Makah Nfh on Tsoo-Yess R	1 (0.7%)	0
	Strait of Juan De Fuca (21.7%)	Elwha R 18.0272	Elwha Hatchery	1 (0.7%)	0
		Hoko R 19.0148	Hoko Falls Hatchery	30 (21%)	0
	Hood Canal (5.6%)	Finch Cr 16.0222	Hoodsport Hatchery	6 (4.2%)	0
		Purdy Cr 16.0005	George Adams Hatchery	2 (1.4%)	2
	N Puget Sound (2.1%)	Tulalip Cr 07.0001	Bernie Gobin Hatch	1 (0.7%)	1
		Wallace R 07.0940	Wallace R Hatchery	2 (1.4%)	0
Skagit River (0.7%)	Co Line Pd2 03.1853B	Marblemount Hatchery	1 (0.7%)	0	

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs
	Mid Puget Sound (11.2%)	Green R 09.0001	Palmer Hatchery	1 (0.7%)	0
		Big Soos Cr 09.0072	Soos Cr Hatchery	4 (2.8%)	4
		Clarks Cr Hatchery	Clarks Cr Hatchery	2 (1.4%)	0
		Clarks Cr 10.0027	Clarks Cr Hatchery	1 (0.7%)	0
		Icy Cr 09.0125	Icy Cr Hatchery	4 (2.8%)	0
		Grovers Cr Hatchery	Grovers Cr Hatchery	1 (0.7%)	1
		Point Defiance Net Pens	Clarks Cr Hatchery	1 (0.7%)	0
		Voights Cr 10.0414	Voights Cr Hatchery	1 (0.7%)	0
		Issaquah Cr 08.0178	Issaquah Hatchery	1 (0.7%)	0
	S Puget Sound (8.4%)	Chambers Cr 12.0007	Garrison Hatchery	3 (2.1%)	0
		Deschutes R 13.0028	Tumwater Falls Hatchery	3 (2.1%)	0
		Clear Cr 11.0013C	Clear Creek Hatchery	1 (0.7%)	1
		Kalama Cr 11.0017	Kalama Cr Hatchery	1 (0.7%)	0
		Minter Cr 15.0048	Minter Cr Hatchery	4 (2.8%)	0
	Columbia River	Columbia River General Region (0.7%)	Columbia R - General	Wells Hatchery	1 (0.7%)
Upper Columbia R (2.1%)		Col R @ Priest Rapids	Priest Rapids Hatchery	1 (0.7%)	1
		Yakima @ Prosser Dam	Bonneville Hatchery	1 (0.7%)	0
		Chelan R 47.0052	Chelan Falls Hatchery	1 (0.7%)	0
Central Columbia River (10.5%)		Ltl White Salmon @ Nfh	Willard Nfh	1 (0.7%)	1
		Spring Cr 29.0159	Spring Cr Nfh	13 (9.1%)	13
		Umatilla R	Umatilla Hatchery	1 (0.7%)	0
Lower Columbia River (4.9%)		Big Cr (Lwr Col R)	Big Cr Hatchery	5 (3.5%)	0
		Klaskanine R N Fk	Klaskanine Hatchery	1 (0.7%)	0
		Tanner Cr (Bnville)	Bonneville Hatchery	1 (0.7%)	0
Snake River (7.7%)		Lyons Ferry Rel.Site	Lyons Ferry Hatchery	5 (3.5%)	0
		Snake R @ Pittsburg L	Lyons Ferry Hatchery	4 (2.8%)	0
		Captain Johns Pd	Lyons Ferry Hatchery	2 (1.4%)	0
Oregon	N Oregon Coast (0.7%)	Salmon R	Salmon R Hatchery	1 (0.7%)	0
		Morgan Cr (Coos R)	Morgan Cr (Step-Coos)	1 (0.7%)	0
Total				143	31

**Table 1.15** Season-total estimates of Chinook salmon encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Marine Area 5 summer Chinook MSF. Values may not add up exactly due to rounding error.

Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
		LM	LU	SM	SU	LM	LU	SM	SU	
Jul 5 - Aug 3, 2003	19,398	2,251	53	225	0	336	3,435	1,656	5,174	13,131
Jul 1 - Aug 10, 2004	25,174	2,706	0	194	0	404	4,017	1,167	2,462	10,950
Jul 1 - Aug 10, 2005	30,115	1,520	23	100	26	227	1,418	1,210	1,459	5,984
Jul 1 - Aug 14, 18-21, 2006	23,177	3,105	10	196	7	464	3,125	1,010	2,212	10,129
Jul 1 - Aug 9, 2007	18,830	2,969	23	280	94	444	2,509	1,371	1,118	8,808
Jul 1 - Aug 10, 2008	13,004	2,773	0	45	0	414	1,869	65	330	5,496
Jul 1 - Aug 6, 2009	23,662	4,843	78	1,115	362	724	6,210	9,823	14,309	37,463
Jul 1 - Aug 15, 2010	16,806	5,461	14	242	0	816	4,961	3,163	4,140	18,796
Jul 1 - Aug 15, 2011	24,848	4,259	70	276	22	636	9,275	1,593	5,319	21,450
Jul 1 - Aug 15, 2012	21,074	5,437	9	242	9	812	4,617	3,105	4,765	18,996
Jul 1 - Aug 15, 2013	25,725	7,473	77	933	81	1,117	7,188	8,173	8,702	33,743
Jul 1 - Aug 15, 2014	23,310	4,684	41	401	8	700	3,005	3,707	7,359	19,905
Jul 1 - Aug 15, 2015	21,313	4,434	35	316	17	663	7,562	14,302	8,445	35,774
Jul 1 - Aug 15, 2016	14,684	3,113	2	230	0	465	1,248	14,903	6,122	26,083
Jul 1 - Aug 15, 2017	17,144	2,202	2	107	4	329	1,601	8,542	4,341	17,129
Jul 1 - Aug 15, 2018	13,967	3,630	0	208	0	542	2,562	9,437	4,264	20,645
Jul 1 - Aug 15, 2019	16,768	4,401	7	157	1	658	3,124	4,299	3,251	15,897
Jul 1 - Jul 30, 2020	15,490	3,449	31	169	0	515	3,350	4,567	3,686	15,767
Jul 1, - Jul 18, 2021	10,157	3,414	45	458	30	510	2,219	2,696	2,952	12,324
Jul 1 - Aug 15, 2022	13,084	3,647	9	289	0	545	3,921	26,174	6,026	40,611
Jul 1 - Aug 15, 2023	13,971	3,377	38	113	13	504	3,027	10,918	2,643	20,633

## **2) Marine Area 6 Summer Mark-Selective Chinook Fishery**

The Washington Department of Fish and Wildlife (WDFW) implemented a Chinook MSF in the sub-area of Marine Area 6 west of Ediz Hook from July 1 through August 15, 2023. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program, using a Full Murthy aerial design, in this sub area of Marine Area 6 throughout the season to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included intensive dockside creel sampling, aerial surveys, test fishing and collection of voluntary salmon trip reports (STRs) from the angling public when possible. The fishery control for this Area was based on the preseason prediction of total legal-sized Chinook salmon encountered. **Table 2.1** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). The fishery control for this area was based on the preseason Fishery Regulation Assessment Model (FRAM) prediction of 11,516 total legal-sized Chinook salmon encounters (**Table 2.4**). In this section we present results from our monitoring activities during the Marine Area 6 summer Chinook MSF.

**Table 2.1** Sampling/estimation details on target parameters associated with the overall Marine Area 6 summer mark-selective fishery monitoring program.

Activity	Focal Parameter(s)	Secondary Parameter(s)	Sample Unit(s)	Finest Estimation Time Step	Comments
Dockside Creel Sampling	Fishing effort (boat & angler trips); kept and released fish	Catch rates (CPUE); length, age, and CWT composition of harvest <sup>1</sup> ; collection of angler fishing methods.	Angler trip; kept fish; reported fish release	One week.	Creel estimates were produced for two-week estimation periods and stratified into “weekday” (Mon.-Thurs.) and “weekend” (Fri.-Sun.) day-type strata within weeks. For the weekday stratum we sampled $n=2$ days out of $N=4$ available weekdays per one-week period. For the weekend stratum we sampled $n=3$ days out of $N=3$ available weekend days per week
		Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook salmon	Boat trip	Season	Dockside encounter data were not used for estimation of Chinook encounters for this fishery. <b>Table 2.8.</b>
Aerial Surveys	Fraction of Marine Area 6 effort (boats) captured in the four-site sample frame via creel surveys (Sample Fraction, $f_{ij}$ ).	Total boat counts at assumed peak effort time interval (instantaneous count); spatial distribution of fishing boats in the area.	Boats	Season	The sample fraction was calculated for individual aerial survey dates (see <b>Table 2.11</b> ) A total of 10 aerial surveys (4 weekday and 6 weekend) were conducted during the 25-day fishery. Season-wide sample fraction was calculated as the average sample fraction over the 10 individual surveys.
Test Fishing	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Chinook length, age, and DNA-based <sup>2</sup> stock composition; species composition of non-Chinook encounters	Fish encounter	Season	Test fishing collected data when the fishery was open to Chinook retention. These data were used for estimating encounters and mortalities during this fishery. LM = 30%; LU = 18%; SM = 34%; SU = 18%. <b>Table 2.12.</b>
Voluntary Salmon Trip Reports (STRs)	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Encounter data for non-Chinook species (e.g., Coho) that the angler may record on the STR form	Fish encounter	Season	11 STRs were received during this fishery. Due to a significant difference, ( $p$ -value < 0.01) between STR and test fishing data; only the higher quality test fishing data were used for estimates of encounters and mortalities for this fishery. <b>Table 2.9.</b>
Overall Fishery Impacts Estimation	Total Chinook encounters and mortalities, by size/mark-status group	Ratios of encounters and mortalities per kept Chinook	N/A	Season	Estimated on a monthly time step but considered at the season-total level.
Coded-wire tag (CWT) Impacts Estimation	Marked/unmarked double-index tag (DIT) encounters and mortalities	N/A	N/A	Season	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

<sup>1</sup> The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.

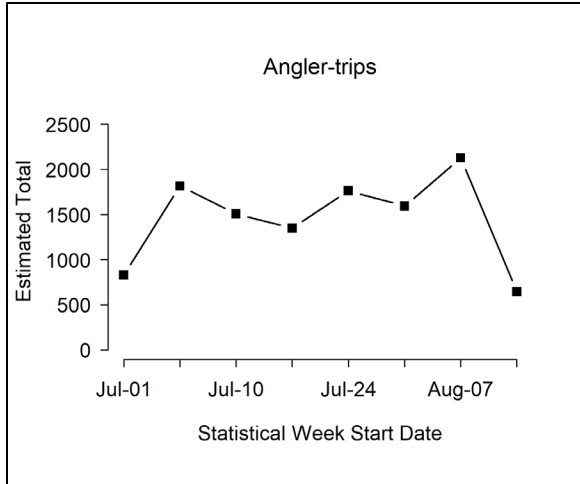
<sup>2</sup> Though samples were collected, DNA-based estimates of stock composition are not yet available for this fishery.

**Table 2.2** Estimates of total fishing effort and total salmon catch (harvest and releases) during the summer Chinook MSF in Marine Area 6. Values may not add up exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

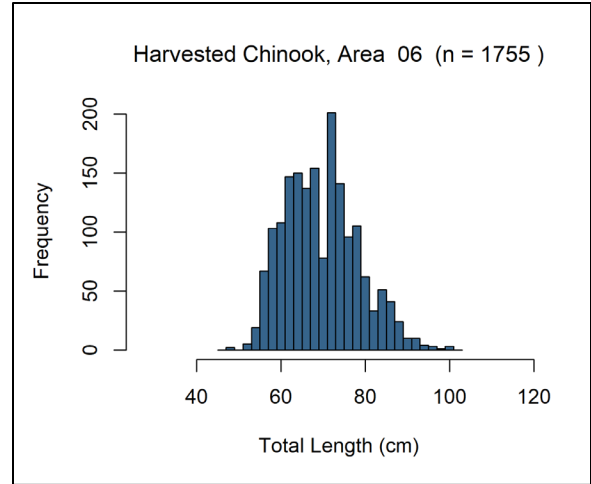
Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
July	27	1-Jul	2-Jul	389	832	599	3	823	771	2,196
	28	3-Jul	9-Jul	855	1,816	708	8	972	906	2,594
	29	10-Jul	16-Jul	768	1,507	533	3	732	686	1,954
	30	17-Jul	23-Jul	681	1,350	511	5	702	655	1,872
	31	24-Jul	30-Jul	923	1,764	926	0	1,271	1,195	3,392
August	32	31-Jul	6-Aug	842	1,594	1113	1	1,528	1,435	4,077
	33	7-Aug	13-Aug	1062	2,127	826	0	1,133	1,066	3,025
	34	14-Aug	15-Aug	322	646	194	0	266	251	711
<b>Season Total:</b>				<b>5,842</b>	<b>11,636</b>	<b>5,409</b>	<b>20</b>	<b>7,427</b>	<b>6,965</b>	<b>19,821</b>
<b>Variance:</b>				34,756	132,749	46,598	4	3,603,928	1,645,310	9,249,573
<b>SE:</b>				186	364	216	2	1898	1283	3,041
<b>CV (%):</b>				3	3	4	11	26	18	15
<b>95% CI:</b>				5,476 - 6,207	10,922 - 12,350	4,986 - 5,833	15 - 24	3,706 - 11,148	4,451 - 9,479	13,860 - 25,782

**Table 2.3** Number of total length samples collected from retained Chinook salmon collected during dockside angler interviews in the summer Chinook MSF in Marine Area 6.

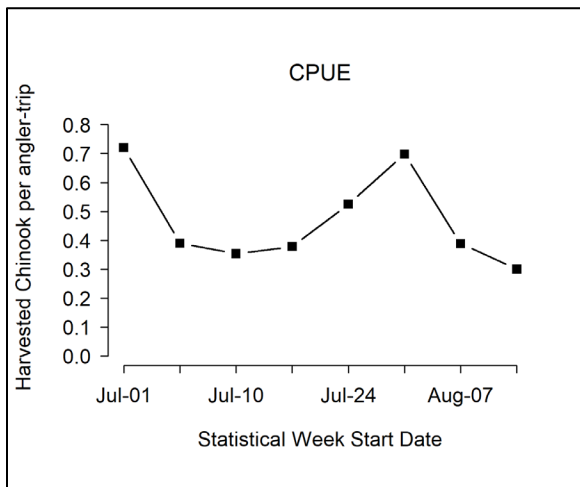
Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	1,705	50	1,755
Unmarked	7	2	9
<b>Total</b>	<b>1,712</b>	<b>52</b>	<b>1,764</b>



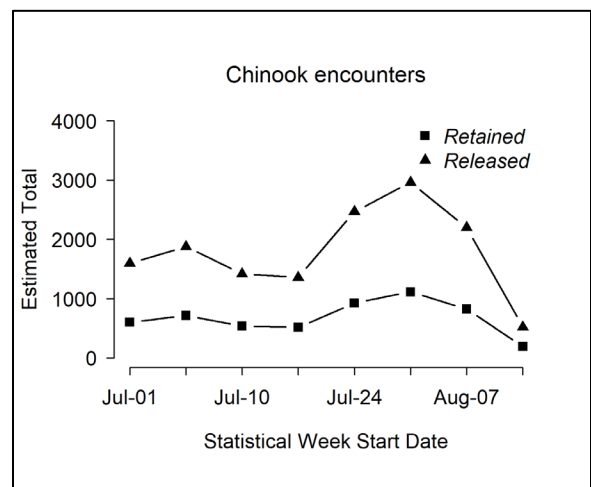
**Figure 2.1** Temporal patterns in fishing effort during the summer Chinook MSF in Marine Area 6.



**Figure 2.3** Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the summer Chinook MSF in Marine Area 6. Note: displayed values are observations where lengths are taken.



**Figure 2.2** Temporal patterns in CPUE (landed Chinook per angler trip) during the summer Chinook MSF in Marine Area 6.



**Figure 2.4** Comparison of modeled and estimated total Chinook salmon encounters for the summer Chinook MSF in Marine Area 6. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

**Table 2.4** Comparison of modeled and estimated total Chinook salmon encounters for the summer Chinook MSF in Marine Area 6. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	4,873	3,211	1,662	32
	AD	13,242	8,306	4,936	7,226
	Total	18,115	11,517	6,598	7,258
	% Marked	73	72	75	100
Estimated (Creel) Encounters	UM	6,984	3,587	3,398	20
	AD	12,836	6,041	6,796	5,409
	Total	19,821	9,627	10,193	5,429
	% Marked	65	63	67	100

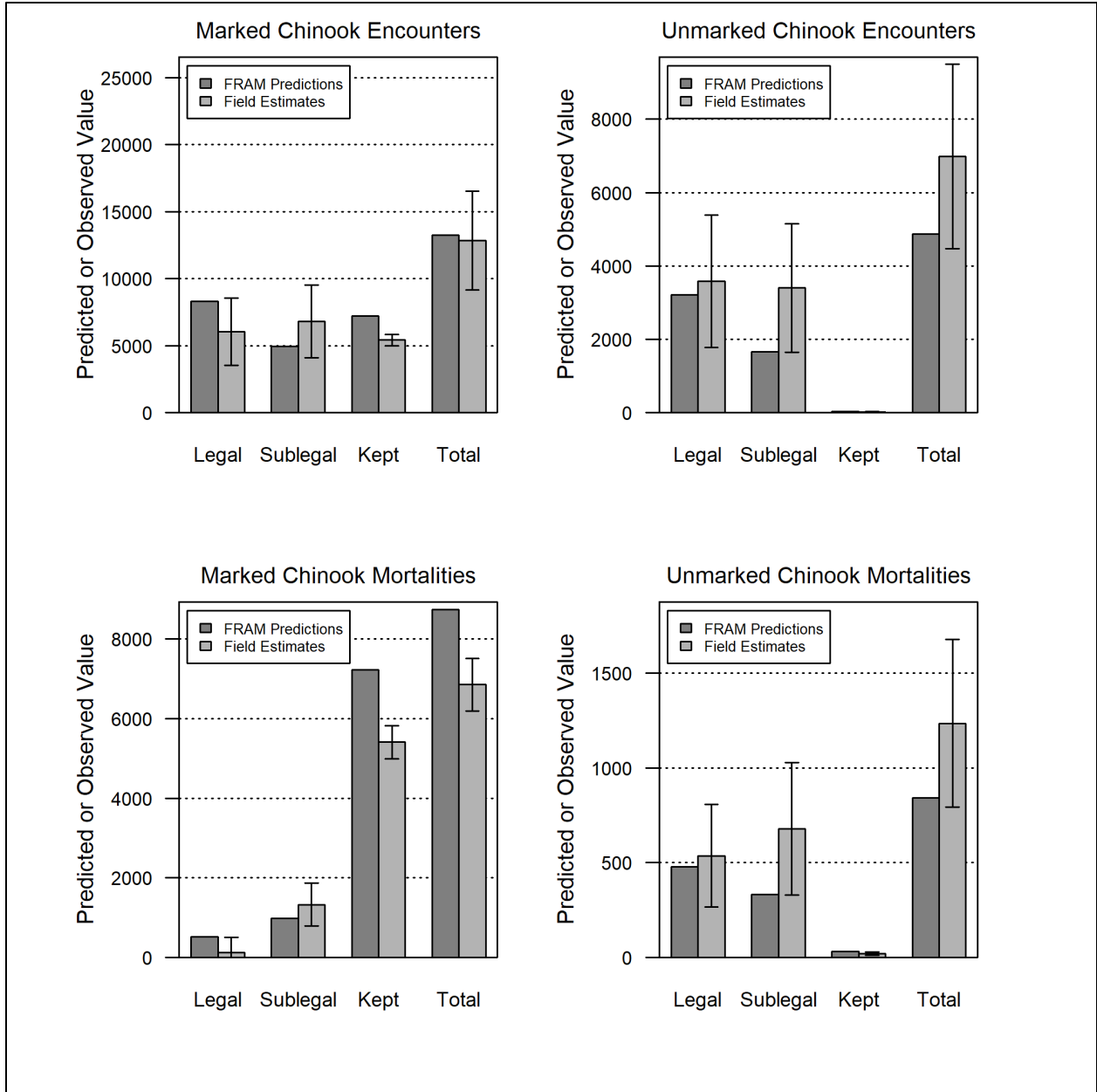
**Table 2.5** Summary of season-wide fishery impact estimates for the summer Chinook MSF in Marine Area 6. Release mortality rate = 0.15 for legal fish and 0.20 for sublegal fish. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	6,041	5,255	785	118	5,373	82,356	287	4,811 - 5,936	5
Legal UM	3,587	15	3,571	536	551	19,126	138	280 - 822	25
Sublegal AD	6,796	154	6,642	1,328	1,482	77,253	278	938 - 2,027	19
Sublegal UM	3,398	4	3,393	679	683	31,839	178	333 - 1,033	26
<b>Total</b>	<b>19,821</b>	<b>5,429</b>	<b>14,392</b>	<b>2,661</b>	<b>8,089</b>	<b>210,574</b>	<b>459</b>	<b>7,190 - 8,989</b>	<b>6</b>

**Table 2.6** Comparison of modeled and estimated total Chinook salmon mortalities for the summer Chinook MSF in Marine Area 6. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	842	8,736	9,578	1,234	6,856	8,089
Released Legal	478	523	1001	536	118	654
Released Sublegal	332	987	1,319	679	1,328	2,007
Landed Only	32	7,226	7,258	20	5,409	5,429





**Figure 2.5** Comparison of modeled and estimated total Chinook salmon encounters and mortalities for the summer Chinook MSF in Marine Area 6. Error bars represent approximately 95% confidence intervals for field estimates.

**Table 2.7** Monthly sample rates (Total retained Chinook sampled<sup>1</sup> / Estimated retained Chinook) for the summer Chinook MSF in Marine Area 6. AD = marked (adipose-clipped), UM = unmarked.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
July	27 - 31	01 Jul - 30 Jul	3,277	18	3,295	1,684	10	1,694	51.40%
August	32 - 34	31 Jul - 15 Aug	2,132	1	2,134	1,084	1	1,085	50.90%
<b>Season Total</b>			<b>5,409</b>	<b>20</b>	<b>5,429</b>	<b>2,768</b>	<b>11</b>	<b>2,779</b>	<b>51.20%</b>

<sup>1</sup> Number of retained Chinook salmon sampled includes all retained Chinook salmon inspected for CWTs, from all sites sampled during the summer Chinook MSF in Marine Area 6 (creel estimates and fish sampled as part of baseline sampling).

**Table 2.8** Dockside encounters (retained and released) by size-mark category during the summer Chinook salmon MSF in Marine Area 6. Retained fish were sampled for mark-status and length, released fish by size-mark status were reported by the angler.

Dockside Encounters				
Metric	Legal		Sublegal	
	LM	LU	SM	SU
Encounters	1,760	1,057	787	421
Bias-corrected size/mark composition	38.92%	26.26%	19.55%	15.27%
Variance	0.0002	0.0001	0.0001	0.0001

**Table 2.9** Total Chinook salmon encountered (retained and released) by private-boat anglers logging their trips on STRs during the 2023 summer Chinook salmon MSF in Marine Area 6, with estimates of legal-size and overall (legal and sublegal) mark rates. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private STR	11 1-trip STRs	15	6	69	16	106	0.79	0.71
Size/mark-status composition:		0.1415	0.0566	0.6509	0.1509			
Variance:		(0.0000)	(0.0000)	(0.0001)	(0.0000)			

**Table 2.10** Fishery-total estimates of retained and released salmon (other than Chinook) for the summer Chinook MSF in Marine Area 6. Values may not add up exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

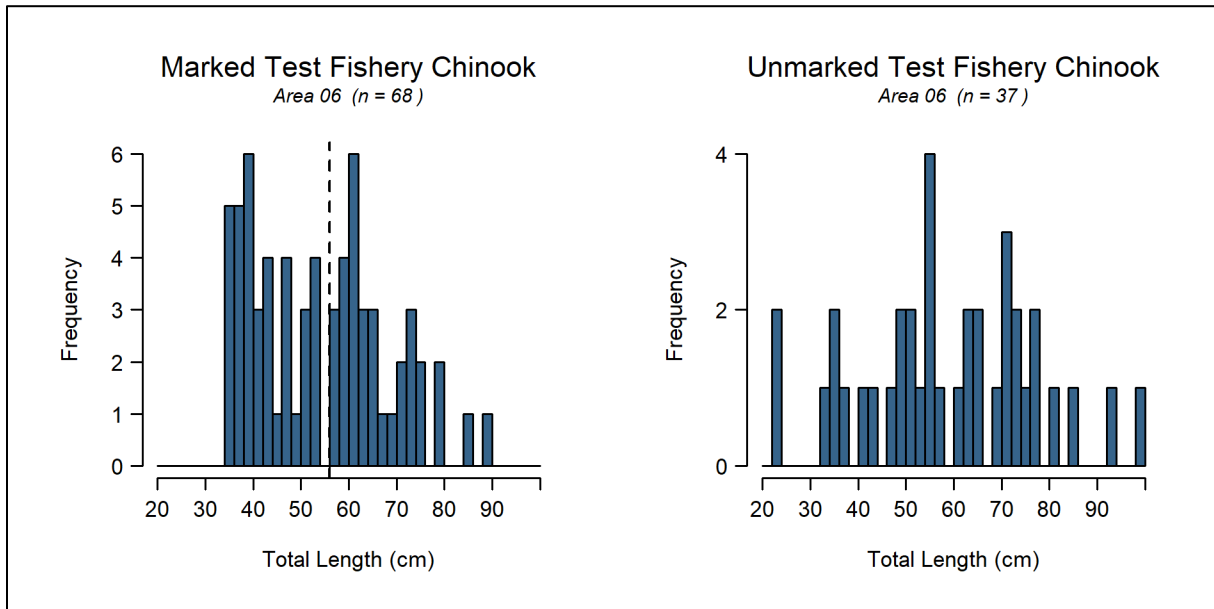
Stat Week	Start Date	End Date	Retained Salmon					Released Salmon					
			Coho AD	Coho UM	Pink	Sockeye	Unknown	Coho AD	Coho UM	Coho UK	Chum	Pink	Unknown
27	1-Jul	2-Jul	3	0	0	0	0	4	10	3	0	9	4
28	3-Jul	9-Jul	13	0	11	0	0	1	13	20	0	13	8
29	10-Jul	16-Jul	95	1	9	0	0	25	68	26	5	22	51
30	17-Jul	23-Jul	48	0	51	0	0	5	43	31	0	47	16
31	24-Jul	30-Jul	64	1	235	0	0	21	229	38	0	499	97
32	31-Jul	6-Aug	45	0	273	0	0	21	72	56	0	731	252
33	7-Aug	13-Aug	96	1	1,319	3	3	41	259	49	1	5,704	169
34	14-Aug	15-Aug	16	0	330	0	0	8	51	0	53	1,268	3
<b>Season Total:</b>			<b>380</b>	<b>4</b>	<b>2,227</b>	<b>3</b>	<b>3</b>	<b>126</b>	<b>744</b>	<b>223</b>	<b>60</b>	<b>8,294</b>	<b>600</b>
<b>Variance:</b>			994	0	19,979	3	0	63	7,842	241	55	370,084	9,316
<b>Standard Error:</b>			32	0	141	2	0	8	89	16	7	608	97
<b>CV (%):</b>			8	10	6	72	17	6	12	7	12	7	16
<b>95% CI:</b>			318 - 441	3 - 5	1,950 - 2,504	0 - 6	2 - 3	111 - 142	571 - 918	192 - 253	45 - 74	7,102 - 9,486	410 - 789

**Table 2.11** Summary of aerial survey and dockside data used to estimate the fraction of effort captured in the three-site sample frame during the summer Chinook salmon MSF in Marine Area 6. See Methods Report (WDFW 2012a) for computational details and notation.

Survey Date	Stratum	Aerial Survey Details			Dockside Sampling Details			Sample Fraction, $f_{ij}$
		Start Time	End Time	Total Boats, $m_{ij}$	Sampled Boats	Active Boats, $X_{ij}$	Total Boats, $S_{yijk}$	
1-Jul	WE	10:15	10:45	46	64	28	105	0.609
8-Jul	WE	12:07	12:30	95	121	48	239	0.505
11-Jul	WD	10:09	10:31	79	97	57	134	0.722
15-Jul	WE	10:15	10:33	110	140	86	179	0.782
20-Jul	WD	10:46	11:06	41	83	29	117	0.707
22-Jul	WE	12:22	12:43	58	129	52	144	0.897
23-Jul	WE	12:03	12:24	36	104	34	110	0.944
27-Jul	WD	10:02	10:25	92	125	80	144	0.870
1-Aug	WD	11:39	12:02	40	79	36	88	0.900
5-Aug	WE	12:56	13:18	82	149	66	185	0.805
<b>Season Totals:</b>				<b>679</b>	<b>1,091</b>	<b>516</b>	<b>1,446</b>	
Mean:				68	109	52	145	0.77
St Dev:				27	28	21	46	0.14
CV (%):				39.60%	25.80%	40.14%	31.48%	18.11%

**Table 2.12** Composition of test fishery Chinook salmon encounters and associated mark-rate and size/mark-status proportion estimates for the summer Chinook salmon MSF in Marine Area 6. AD = marked (adipose-clipped), UM = unmarked.

Stat Week	Fishing Effort		Legal		Sublegal		Total
	Days	Hours Fished	AD	UM	AD	UM	
27	2	15.52	4	2	0	2	8
28	3	17.93	2	2	1	2	7
29	4	26.68	4	2	2	0	8
30	5	26.21	5	3	2	1	11
31	5	35.83	6	2	13	8	29
32	5	35.40	7	5	9	3	24
33	5	30.64	2	3	4	1	10
34	2	14.03	2	0	5	1	8
<b>Total</b>	<b>31</b>	<b>202.25</b>	<b>32</b>	<b>19</b>	<b>36</b>	<b>18</b>	<b>105</b>
<b>Size/mark-status composition:</b>			0.30	0.18	0.34	0.17	
<b>Variance:</b>			(0.0020)	(0.0014)	(0.0022)	(0.0014)	
<b>Legal size mark rate:</b>			0.63				
<b>Overall mark rate:</b>			0.65				



**Figure 2.6** Length-frequency distributions of marked (*left panel*) and unmarked (*right panel*) Chinook salmon encountered by test fishers during the summer Chinook salmon MSF in Marine Area 6. The vertical dashed line in the left panel corresponds to the legal-size limit (22 in or 56 cm).

**Table 2.13** Summary of double-index tagged (DIT) Chinook salmon kept by anglers and estimated total mortality of unmarked DIT Chinook salmon due to hook-and-release impacts resulting from the summer Chinook MSF in Marine Area 6. AD = marked (adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs	Est.AD	var(Est.AD)	UM DIT Enc	Est.UM	var(Est.UM)	SE(Est.UM)
Bernie Gobin Hatch	2019	1	3.1	6.39	3.4	0.3	0.078	0.28
Clear Creek Hatchery	2018	1	3.1	6.39	3.2	0.3	0.067	0.26
Clear Creek Hatchery	2019	2	6.2	12.79	6	0.6	0.122	0.49
Clear Creek Hatchery	2020	1	3.1	6.39	3.2	0.3	0.07	0.26
George Adams Hatchery	2019	8	21.5	44.76	24	2.4	0.554	1.97
George Adams Hatchery	2020	17	52.3	108.7	52.9	5.3	1.111	4.35
Grovers Cr Hatchery	2019	8	24.6	51.15	25.2	2.5	0.536	2.07
Grovers Cr Hatchery	2020	8	24.6	51.15	22.8	2.3	0.437	1.87
Marblemount Hatchery	2020	1	3.1	6.39	3.1	0.3	0.067	0.26
Priest Rapids Hatchery	2019	2	6.2	12.79	6.2	0.6	0.131	0.51
Priest Rapids Hatchery	2020	2	6.2	12.79	6.2	0.6	0.128	0.51
Samish Hatchery	2019	2	6.2	12.79	6.2	0.6	0.129	0.51
Samish Hatchery	2020	10	30.8	63.94	31.1	3.1	0.653	2.56
Soos Creek Hatchery	2018	1	3.1	6.39	3.1	0.3	0.065	0.26
Soos Creek Hatchery	2019	10	30.8	63.94	30.9	3.1	0.643	2.53
Soos Creek Hatchery	2020	5	15.4	31.97	15.6	1.6	0.331	1.29
Spring Cr Nfh	2020	5	12.3	25.58	15.4	4.3	6.651	3.54
Wallace R Hatchery	2019	3	9.2	19.18	9.6	1	0.208	0.79
Wallace R Hatchery	2020	3	9.2	19.18	9.4	0.9	0.198	0.77
<b>Total</b>		<b>90</b>	<b>270.8</b>	<b>562.69</b>	<b>277.5</b>	<b>30.5</b>	<b>12.179</b>	<b>25.07</b>

**Table 2.14** Summary of coded-wire tags recovered from Chinook salmon harvested during the 2023 summer Chinook MSF in Marine Area 6. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups. Note: Not all tags have been processed before the writing of this report.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs
BC	Thompson River (2.8%)	R-Harrison R	H-Chehalis River H	3 (0.8%)	0
		R-Chilliwack R	H-Chilliwack River H	8 (2.1%)	0
	W Vancouver Island (0.3%)	R-Sarita R	H-Nitinat River H	1 (0.3%)	0
	Georgia Strait (1.8%)	R-Cowichan R	H-Cowichan River H	1 (0.3%)	0
		R-Burrard In	H-Sandy Cove Seapen	4 (1%)	0
		R-Capilano R	H-Capilano River H	2 (0.5%)	0
WA	N Washington (5.7%)	Skookum Cr 01.0273	Skookum Cr Hatchery	1 (0.3%)	0
		Lummi Hatchery - Pond	Lummi Hatchery - Pond	1 (0.3%)	0
		Kendall Cr 01.0406	Kendall Cr Hatchery	3 (0.8%)	0
		Friday Cr 03.0017	Samish Hatchery	12 (3.1%)	12
		East Sound Bay (San)	Glenwood Springs	5 (1.3%)	0
	N Washington Coast (0.5%)	Sol Duc R 20.0096	Solduc Hatchery	1 (0.3%)	0
		Sol Duc R 20.0096	Solduc Hatchery	1 (0.3%)	0

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs
	Strait of Juan De Fuca (13.1%)	Hoko R 19.0148	Hoko Falls Hatchery	7 (1.8%)	0
		Elwha R 18.0272	Elwha Hatchery	44 (11.3%)	0
	Hood Canal (18.3%)	Finch Cr 16.0222	Hoodsport Hatchery	44 (11.3%)	0
		Purdy Cr 16.0005	George Adams Hatchery	27 (7%)	25
	N Puget Sound (5.7%)	Tulalip Cr 07.0001	Bernie Gobin Hatch	8 (2.1%)	1
		Wallace R 07.0940	Wallace R Hatchery	13 (3.4%)	6
		Stillaguamish R -Sf	Brenner Hatchery	1 (0.3%)	0
	Skagit River (1.3%)	Cascade R 03.1411	Marblemount Hatchery	3 (0.8%)	1
		Co Line Slu 03.1853A	Marblemount Hatchery	1 (0.3%)	0
		Co Line Pd2 03.1853B	Marblemount Hatchery	1 (0.3%)	0
	Mid Puget Sound (23.5%)	Green R 09.0001	Palmer Hatchery	3 (0.8%)	0
		Big Soos Cr 09.0072	Soos Creek Hatchery	16 (4.1%)	16
		Issaquah Cr 08.0178	Issaquah Hatchery	5 (1.3%)	0
		Clarks Cr Hatchery	Clarks Cr Hatchery	3 (0.8%)	0
		Gorst Cr Rear.Pond-2	Gorst Cr Rearing Pnd	7 (1.8%)	0
		Icy Cr 09.0125	Icy Cr Hatchery	11 (2.8%)	0
		Clarks Cr 10.0027	Clarks Crk Hatchery	2 (0.5%)	0
		Puyallup R 10.0021	Clarks Cr Hatchery	1 (0.3%)	0
		Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	13 (3.4%)	0
		Grovers Cr Hatchery	Grovers Cr Hatchery	16 (4.1%)	16
		Voight Cr 10.0414	Voights Cr Hatchery	14 (3.6%)	0
	S Puget Sound (17.3%)	Narrows Marina Pens	Narrows Marina Pens	2 (0.5%)	0
		McAllister Springs Hatchery	McAllister Springs Hatchery	1 (0.3%)	0
Minter Cr 15.0048		Minter Cr Hatchery	24 (6.2%)	0	
Kalama Cr 11.0017		Kalama Cr Hatchery	6 (1.5%)	0	
Clear Cr 11.0013C		Clear Creek Hatchery	5 (1.3%)	4	
Chambers Cr 12.0007		Garrison Hatchery	14 (3.6%)	0	
Deschutes R 13.0028		Tumwater Falls Hatchery	15 (3.9%)	0	
Willapa Bay (0.3%)	Fork Cr 24.0356	Forks Cr Hatchery	1 (0.3%)	0	
Columbia River	Upper Columbia R (1.5%)	Col R @ Priest Rapids	Priest Rapids Hatchery	4 (1%)	4
		Chief Joseph Hatchery	Chief Joseph Hatchery	1 (0.3%)	0
		Springs Cr 36.0114	Ringold Springs Hatchery	1 (0.3%)	0
	Central Columbia River (1.3%)	Spring Cr 29.0159	Spring Cr Nfh	5 (1.3%)	5
	Lower Columbia River (3.1%)	Big Cr (Lwr Col R)	Big Cr Hatchery	5 (1.3%)	0
		Cowlitz R 26.0002	Cowlitz Salmon Hatchery	1 (0.3%)	0
		Klaskanine R N Fk	Klaskanine Hatchery	1 (0.3%)	0
		Tanner Cr (Bnville)	Bonneville Hatchery	3 (0.8%)	0
		Santiam R S Fk	South Santiam Hatchery	1 (0.3%)	0
	Deep R 25.0071	Deep R Net Pens	1 (0.3%)	0	
	Snake River (2.8%)	Snake R @Pittsburg L	Lyons Ferry Hatchery	4 (1%)	0

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs
		Lyons Ferry Rel.Site	Lyons Ferry Hatchery	4 (1%)	0
		Grande Ronde R 2	Irrigon Hatchery	1 (0.3%)	0
		Snake R-1 (Hells Canyon)	Irrigon Hatchery	1 (0.3%)	0
		Magrudor Corridor	Npt Hatchery	1 (0.3%)	0
OR	S Oregon Coast (0.3%)	Elk R	Elk R Hatchery	1 (0.3%)	0
NA	NA (0.5%)	Point Defiance Net Pens	Clarks Cr Hatchery	1 (0.3%)	0
		Omak Pond	Chief Joseph Hatchery	1 (0.3%)	0
<b>Total</b>				<b>388</b>	<b>90</b>

**Table 2.15** Season-total estimates of Chinook salmon encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Marine Area 6 summer Chinook MSF. Values may not add up exactly due to rounding error.

Area	Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
			LM	LU	SM	SU	LM	LU	SM	SU	
6	Jul 1 - Aug 3, 2021	8,863	4,968	11	90	28	742	1,920	3,888	1278	12,926
6	Jul 1 - Jul 30, 2022	9,066	4,654	2	136	0	695	8,915	26,018	8,024	48,444
6	Jul 1 - Aug 15, 2023	11,636	5,255	15	154	4.3	785	3,571	6,642	3,393	19,821

### 3) Marine Area 7 Summer Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a summer Chinook MSF in Marine Area 7 beginning on July 13 through July 15, 2023. After evaluation of in-season data, managers found sufficient quota to allow for two additional openers on July 21, and July 28 – 29. WDFW’s Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program, using a Full Murthy aerial design in Marine Area 7 throughout the season to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included intensive dockside creel sampling, aerial surveys, test fishing and collection of voluntary salmon trip reports (STRs) from the angling public when possible. The fisheries controls used for this fishery were total predicted catch quota (2,181), total unmarked encounters (4,258) and total sublegal encounters (2,544) (**Table 3.5**). **Table 3.2** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). In this section we present results from our monitoring activities during the Marine Area 7 summer Chinook MSF.

**Table 3.1** Fishery dates and fishery retention status of salmon in the 2023 summer Chinook salmon MSF in Marine Area 7.

Start Date	End Date	Fishery Status	Days
13-Jul	15-Jul	Open	3
16-Jul	20-Jul	Closed	5
21-Jul	21-Jul	Open	1
22-Jul	27-Jul	Closed	6
28-Jul	29-Jul	Open	2
Total days open			6



**Table 3.2** Sampling/estimation details on target parameters associated with the overall Marine Area 7 Chinook MSF monitoring program.

Activity	Focal Parameter(s)	Secondary Parameter(s)	Sample Unit(s)	Finest Estimation Time Step	Comments
Dockside Creel Sampling	Fishing effort (boat & angler trips); kept and released fish	Catch rates (CPUE); length, age, and CWT composition of harvest <sup>1</sup> ; collection of angler fishing methods.	Angler trip; kept fish; reported fish release	One week.	Within days, estimates were produced by day-type strata (weekday/weekend). Each week we sampled every Friday, Saturday, and Sunday, and we randomly selected $n=2$ out of $N=4$ weekdays (Monday-Thursday) for sampling.
		Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook salmon	Boat trip	Season	Dockside encounter data were not used for estimation of Chinook encounters for this fishery. <b>Table 3.9.</b>
Aerial Surveys	Fraction of Marine Area 7 effort (boats) captured in the four-site sample frame via creel surveys (Sample Fraction, $f_{ij}$ ).	Total boat counts at assumed peak effort time interval (instantaneous count); spatial distribution of fishing boats in the area.	Boats	Season	The sample fraction was calculated for individual aerial survey dates (see <b>Table 3.12</b> , $n=6$ surveys conducted out of $N=6$ days available in the season). Season-wide sample fraction was calculated as the average sample fraction over the 6 individual aerial surveys.
Test Fishing	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Chinook length, age, and DNA-based <sup>2</sup> stock composition; species composition of non-Chinook encounters	Fish encounter	Season	Test fishing data collected when the fishery was open to Chinook retention ( <b>Table 3.1</b> ) were used for estimate of encounters and mortalities during this fishery. LM = 33.3%; LU = 29.2%; SM = 29.2%; SU = 8.3%. <b>Table 3.13</b>
Voluntary Salmon Trip Reports (STRs)	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Encounter data for non-Chinook species (e.g., Coho) that the angler may record on the STR form	Fish encounter	Season	1 STR was returned during this fishery. STR data and test fishing data were found not to be significantly different, (chi-squared test, $p$ -value > 0.05), and were therefore combined for estimating encounters and mortalities for this fishery.
Overall Fishery Impacts Estimation	Total Chinook encounters and mortalities, by size/mark-status group	Ratios of encounters and mortalities per kept Chinook	N/A	Season	Estimated on a monthly time step but considered at the season-total level.
Coded-wire tag (CWT) Impacts Estimation	Marked/unmarked double-index tag (DIT) encounters and mortalities	N/A	N/A	Season	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

<sup>1</sup> The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.

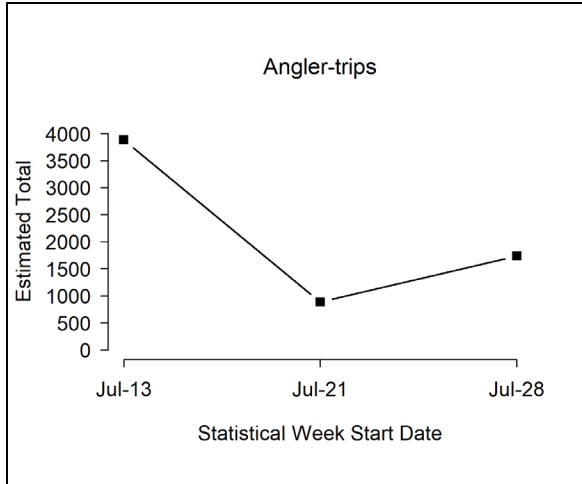
<sup>2</sup> Though samples were collected, DNA-based estimates of stock composition are not yet available for this fishery.

**Table 3.3** Estimates of total fishing effort and total salmon catch (harvest and releases) during the summer Chinook MSF in Marine Area 7. Values may not add up exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

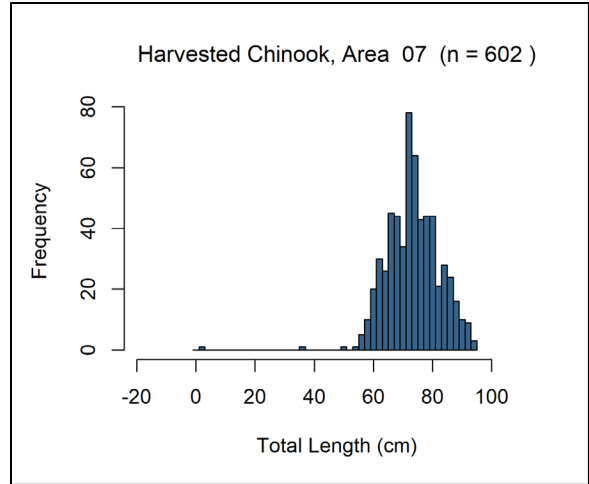
Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
July	29	13-Jul	15-Jul	1,566	3,882	1,446	10	1,644	2,050	5,150
	30	21-Jul	21-Jul	388	885	184	0	209	262	655
	31	28-Jul	29-Jul	715	1,737	442	0	502	629	1,573
<b>Season Total:</b>				<b>2,669</b>	<b>6,504</b>	<b>2,071</b>	<b>10</b>	<b>2,356</b>	<b>2,941</b>	<b>7,379</b>
<b>Variance:</b>				37,431	224,991	25,862	2	1,817,545	1,158,343	5,149,349
<b>SE:</b>				193	474	161	1	1348	1076	2269
<b>CV (%):</b>				7	7	8	13	57	37	31
<b>95% CI:</b>				2,290 - 3,048	5,575 - 7,434	1,756 - 2,387	8 - 13	0 - 4,998	832 - 5,051	2,931 - 11,826

**Table 3.4** Number of total length samples collected from retained Chinook salmon collected during dockside angler interviews in the summer Chinook MSF in Marine Area 7.

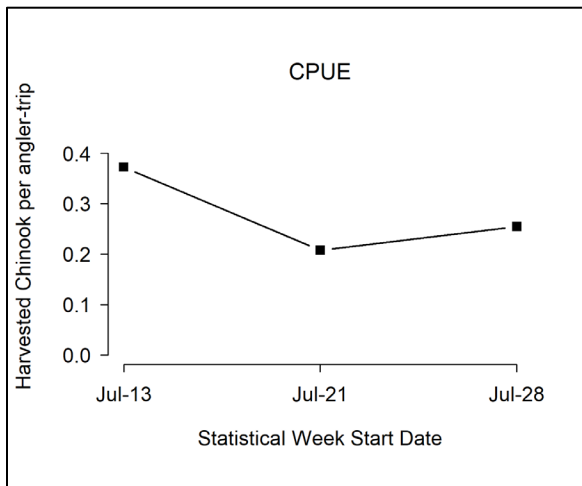
Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	597	5	602
Unmarked	3	0	3
<b>Total</b>	<b>600</b>	<b>5</b>	<b>605</b>



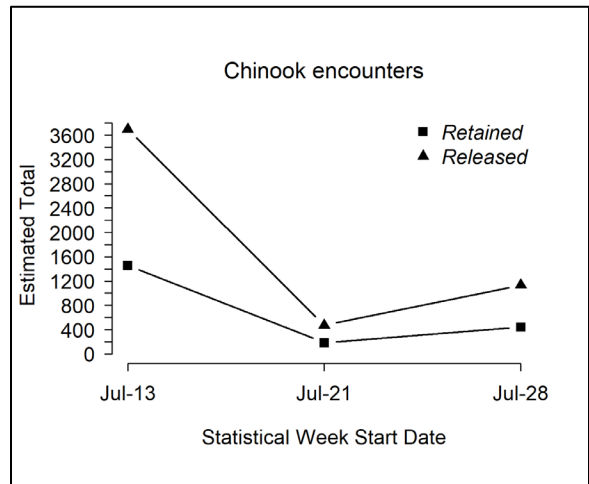
**Figure 3.1** Temporal patterns in fishing effort during the summer Chinook MSF in Marine Area 7.



**Figure 3.3** Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the summer Chinook MSF in Marine Area 7. Note: displayed values are observations where lengths are taken.



**Figure 3.2** Temporal patterns in CPUE (landed Chinook per angler trip) during the summer Chinook MSF in Marine Area 7.



**Figure 3.4** Temporal patterns in Chinook salmon encounters (retained and released) during the summer Chinook MSF in Marine Area 7.

**Table 3.5** Comparison of modeled and estimated total Chinook salmon encounters for the summer Chinook MSF in Marine Area 7. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

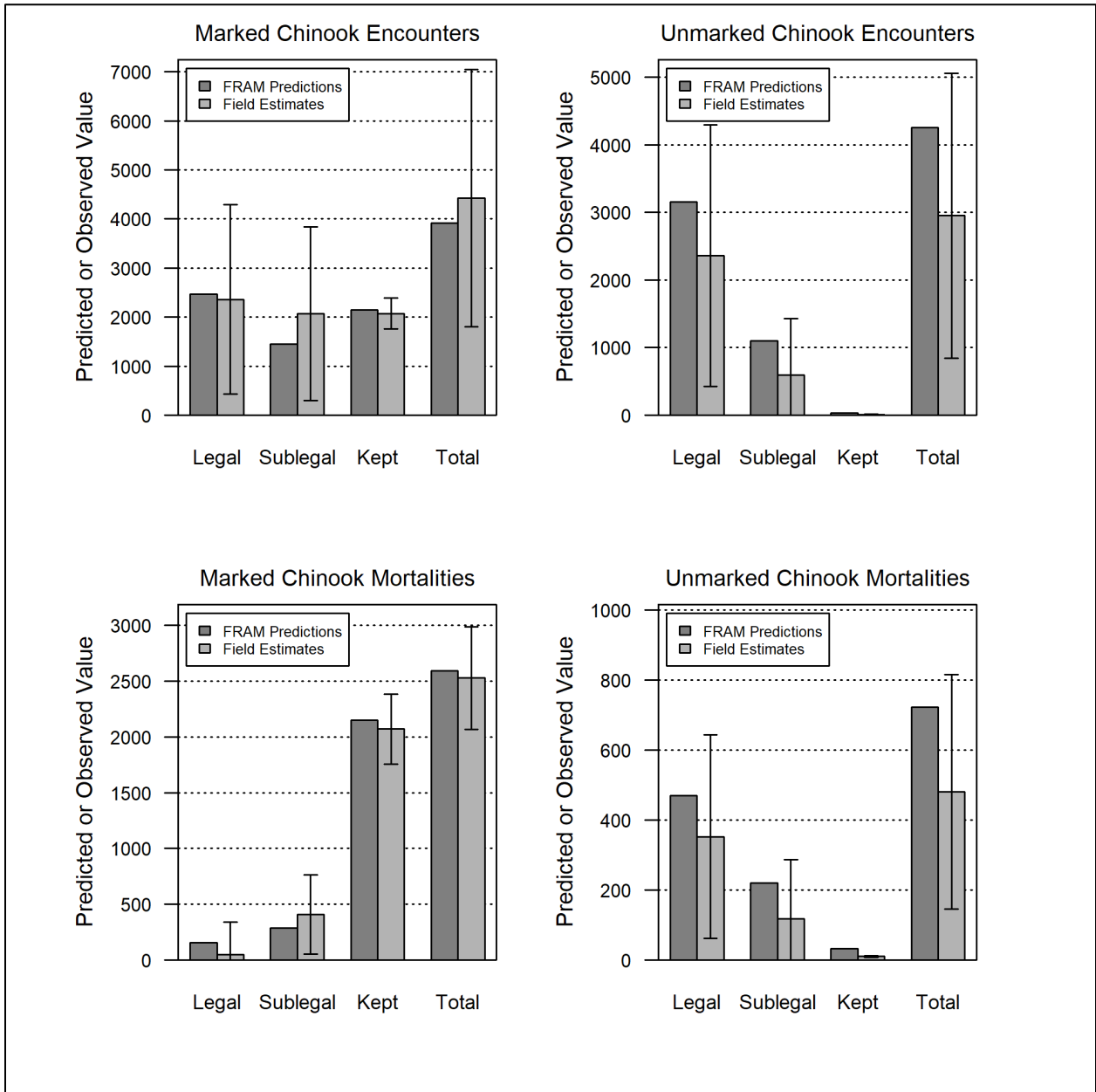
Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	4,258	3,158	1,100	32
	AD	3,915	2,471	1,444	2,149
	Total	8,173	5,629	2,544	2,181
	% Marked	48	44	57	99
Estimated (Creel) Encounters	UM	2,951	2,361	590	10
	AD	4,427	2,361	2066	2,071
	Total	7,379	4,722	2656	2,082
	% Marked	60	50	78	100

**Table 3.6** Summary of season-wide fishery impact estimates for the summer Chinook MSF in Marine Area 7. Release mortality rate = 0.15 for legal fish and 0.20 for sublegal fish. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	2,361	2,054	307	46	2,100	47,986	219	1,671 - 2,530	10%
Legal UM	2,361	10	2,351	353	363	21,922	148	73 - 653	41%
Sublegal AD	2066	17	2049	410	427	32,774	181	72 - 782	42%
Sublegal UM	590	0	590	118	118	7,365	86	0 - 286	73%
<b>Total</b>	<b>7,379</b>	<b>2,082</b>	<b>5,297</b>	<b>926</b>	<b>3,008</b>	<b>110,046</b>	<b>332</b>	<b>2,358 - 3,658</b>	<b>11%</b>

**Table 3.7** Comparison of modeled and estimated total Chinook salmon mortalities for the summer Chinook MSF in Marine Area 7. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	722	2,594	3,316	481	2,527	3,008
Released Legal	470	156	626	353	46	399
Released Sublegal	220	289	509	118	410	528
Landed Only	32	2,149	2,181	10	2,071	2,082



**Figure 3.5** Comparison of modeled and estimated total Chinook salmon encounters and mortalities for the summer Chinook MSF in Marine Area 7. Error bars represent approximately 95% confidence intervals for field estimates.

**Table 3.8** Monthly sample rates (Total retained Chinook sampled<sup>1</sup> / Estimated retained Chinook) for the summer Chinook MSF in Marine Area 7. AD = marked (adipose-clipped), UM = unmarked.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
7	29 - 31	13 Jul - 29 Jul	2,071	10	2,082	555	3	558	26.8%
<b>Season Total</b>			<b>2,071</b>	<b>10</b>	<b>2,082</b>	<b>555</b>	<b>3</b>	<b>558</b>	<b>26.8%</b>

<sup>1</sup> Number of retained Chinook salmon sampled includes all retained Chinook salmon inspected for CWTs, from all sites sampled during the summer Chinook MSF in Marine Area 7 (creel estimates and fish sampled as part of baseline sampling).

**Table 3.9** Dockside encounters (retained and released) by size-mark category during the summer Chinook salmon MSF in Marine Area 7. Retained fish were sampled for mark-status and length, released fish by size-mark status were reported by the angler.

Dockside Encounters				
Metric	Legal		Sublegal	
	LM	LU	SM	SU
Encounters	606	215	72	54
Bias-corrected size/mark composition	56.95%	22.70%	7.60%	12.74%
Variance	0.0006	0.0005	0.0001	0.0001

**Table 3.10** Total Chinook salmon encountered (retained and released) by private-boat anglers logging their trips on STRs during the 2023 summer Chinook salmon MSF in Marine Area 7, with estimates of legal-size and overall (legal and sublegal) mark rates. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private STR	1 1-trip STRs	0	1	0	0	1	0	0
Size/mark-status composition:		0.00	1.00	0.00	0.00			
Variance:		(0.0000)	(0.0000)	(0.0000)	(0.0000)			

**Table 3.10** Fishery-total estimates of retained and released salmon (other than Chinook) for the summer Chinook MSF in Marine Area 7. Values may not add up exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

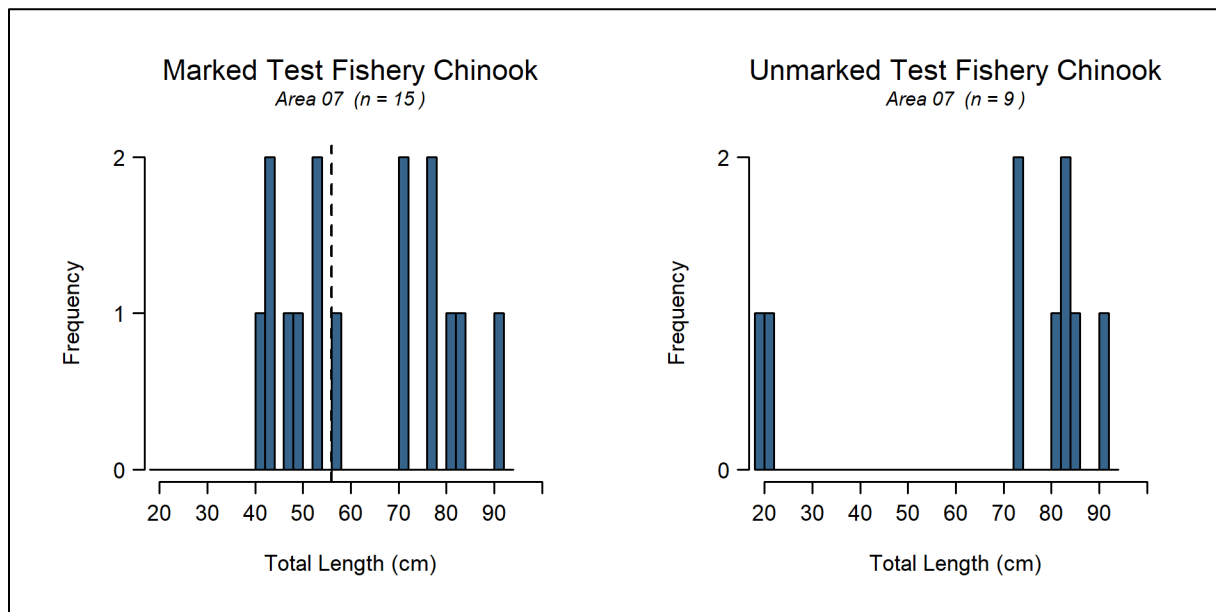
Stat Week	Start Date	End Date	Retained Salmon					Released Salmon				
			Coho AD	Coho UM	Coho UK	Pink	Sockeye	Coho AD	Coho UM	Coho UK	Pink	Unknown
29	14-Jul	16-Jul	14	0	0	45	0	3	55	3	10	86
30	21-Jul	23-Jul	3	0	0	14	3	0	51	24	10	14
31	28-Jul	30-Jul	161	0	0	188	7	51	257	0	92	65
<b>Season Total:</b>			<b>178</b>	<b>0</b>	<b>0</b>	<b>246</b>	<b>10</b>	<b>55</b>	<b>363</b>	<b>27</b>	<b>113</b>	<b>164</b>
<b>Variance:</b>			424	0	0	603	1	40	1153	18	155	190
<b>Standard Error:</b>			21	0	0	25	1	6	34	4	12	14
<b>CV (%):</b>			12	0	0	10	10	12	9	15	11	8
<b>95% CI:</b>			137 - 218	0 - 0	0 - 0	198 - 294	8 - 12	42 - 67	296 - 429	19 - 35	88 - 137	137 - 191

**Table 3.11** Summary of aerial survey and dockside data used to estimate the fraction of effort captured in the three-site sample frame during the summer Chinook salmon MSF in Marine Area 7. See Methods Report (WDFW 2012a) for computational details and notation.

Survey Date	Stratum	Aerial Survey Details			Dockside Sampling Details			Sample Fraction, $\hat{f}_{ij}$
		Start Time	End Time	Total Boats, $m_{ij}$	Sampled Boats	Active Boats, $X_{ij}$	Total Boats, $S_{yijk}$	
13-Jul	WD	9:56	11:17	393	171	108	622	0.275
14-Jul	WE	9:44	11:09	637	179	125	912	0.196
15-Jul	WE	10:52	12:09	729	306	222	1,005	0.305
21-Jul	WE	11:42	13:01	326	182	118	503	0.362
28-Jul	WE	12:33	14:04	310	167	93	557	0.300
29-Jul	WE	10:18	11:38	381	189	124	581	0.325
<b>Season Totals:</b>				<b>2,776</b>	<b>1,194</b>	<b>790</b>	<b>4,179</b>	
Mean:				463	199	132	697	0.29
St Dev:				176	53	46	209	0.06
CV(%):				38.03%	26.63%	34.81%	29.95%	19.06%

**Table 3.12** Composition of test fishery Chinook salmon encounters and associated mark-rate and size/mark-status proportion estimates for the summer Chinook salmon MSF in Marine Area 7. AD = marked (adipose-clipped), UM = unmarked.

Stat Week	Fishing Effort		Legal		Sublegal		Total
	Days	Hrs Fished	AD	UM	AD	UM	
28	4	26.27	2	2	0	0	4
29	2	14.42	3	1	2	0	6
30	3	27.01	1	0	3	0	4
31	5	37.05	2	4	2	2	10
<b>Total</b>	<b>14</b>	<b>104.74</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>2</b>	<b>24</b>
<b>Size/mark-status composition:</b>			0.33	0.29	0.29	0.08	
<b>Variance:</b>			(0.0097)	(0.0090)	(0.0090)	(0.0033)	
<b>Legal size mark rate:</b>			0.53				
<b>Overall mark rate:</b>			0.63				



**Figure 3.6** Length-frequency distributions of marked (*left panel*) and unmarked (*right panel*) Chinook salmon encountered by test fishers during the summer Chinook salmon MSF in Marine Area 7. The vertical dashed line in the left panel corresponds to the legal-size limit (22 in or 56 cm).



**Table 3.13** Summary of double-index tagged (DIT) Chinook salmon kept by anglers and estimated total mortality of unmarked DIT Chinook salmon due to hook-and-release impacts resulting from the summer Chinook MSF in Marine Area 7. AD = marked (adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs	Est.AD	var(Est.AD)	UM DIT Enc	Est.UM	var(Est.UM)	SE(Est.UM)
George Adams Hatchery	2019	2	6.9	16.8	7.7	0.8	0.208	0.64
George Adams Hatchery	2020	1	3.4	8.4	3.5	0.3	0.086	0.29
Grovers Cr Hatchery	2020	2	6.9	16.8	6.4	0.6	0.143	0.54
Marblemount Hatchery	2019	1	3.4	8.4	3.5	0.3	0.086	0.29
Marblemount Hatchery	2020	1	3.4	8.4	3.5	0.4	0.087	0.3
Samish Hatchery	2019	1	3.4	8.4	3.5	0.3	0.085	0.29
Samish Hatchery	2020	10	34.4	83.98	34.8	3.5	0.858	2.93
<b>Total</b>		<b>18</b>	<b>61.9</b>	<b>151.16</b>	<b>62.7</b>	<b>6.3</b>	<b>1.553</b>	<b>5.28</b>

**Table 3.14** Summary of coded-wire tags recovered from Chinook salmon harvested during the 2023 summer Chinook MSF in Marine Area 7. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups. Note: Not all tags have been processed before the writing of this report.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs
BC	Thompson River (8%)	R-Chilliwack R	H-Chilliwack River H	1 (2%)	0
		R-Nicola R	H-Spius Creek H	1 (2%)	0
		R-Shuswap R Low	H-Shuswap River, Middle,	1 (2%)	0
		R-Harrison R	H-Chehalis River H	1 (2%)	0
	Georgia Strait (2%)	R-Cowichan R	H-Cowichan River H	1 (2%)	0
WA	N Washington (24%)	Friday Cr 03.0017	Samish Hatchery	11 (22%)	11
		East Sound Bay (San)	Glenwood Springs	1 (2%)	0
	Hood Canal (14%)	Finch Cr 16.0222	Hoodsport Hatchery	4 (8%)	0
		Purdy Cr 16.0005	George Adams Hatchery	3 (6%)	3
	N Puget Sound (2%)	Tulalip Cr 07.0001	Bernie Gobin Hatch	1 (2%)	0
	Skagit River (8%)	Cascade R 03.1411	Marblemount Hatchery	2 (4%)	2
		Co Line Slu 03.1853A	Marblemount Hatchery	2 (4%)	0
	Mid Puget Sound (16%)	Gorst Cr 15.0216	Gorst Cr Rearing Pnd	1 (2%)	0
		Grovers Cr Hatchery	Grovers Cr Hatchery	2 (4%)	2
		Voight Cr 10.0414	Voights Cr Hatchery	2 (4%)	0
		Clarks Cr Hatchery	Clarks Cr Hatchery	1 (2%)	0
	Mid Puget Sound (16%)	Icy Cr 09.0125	Icy Cr Hatchery	2 (4%)	0
	S Puget Sound (20%)	Deschutes R 13.0028	Tumwater Falls Hatchery	2 (4%)	0
		Kalama Cr 11.0017	Kalama Cr Hatchery	2 (4%)	0
Minter Cr 15.0048		Minter Cr Hatchery	5 (10%)	0	
Chambers Cr 12.0007		Garrison Hatchery	1 (2%)	0	
Col. Riv.	Snake River (2%)	Captain Johns Pd	Lyons Ferry Hatchery	1 (2%)	0
NA	NA (4%)	Point Defiance Net Pens	Clarks Cr Hatchery	2 (4%)	0
<b>Total</b>				<b>50</b>	<b>18</b>

**Table 3.15** Season-total estimates of Chinook salmon encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Marine Area 7 summer Chinook MSF. Values may not add up exactly due to rounding error.

Area	Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
			LM	LU	SM	SU	LM	LU	SM	SU	
7	Jul 1 - Jul 31, 2016	9,553	1,292	0	42	0	193	1,485	1443	637	5,092
7	Jul 1 - Jul 31, 2017	17,535	3,608	22	7	0	539	2,941	4140	2370	13,627
7	Jul 1 - Jul 31, 2018	10,577	2,220	4	71	0	332	1,028	817	359	4,832
7	Jul 1 - Jul 31, 2019	11,738	2,947	10	68	0	440	1,370	559	376	5,771
7	Jul 1 - Jul 31, Aug 22- Aug 31, 2020	20,773	1,532	7	17	0	229	1,053	1,425	681	4,945
7	Jul 1 - Jul 7, 2021	6,716	2,504	0	0	0	374	759	387	593	4,618
7	Jul 14 - Jul 30, 2022	6,436	1,758	3	6	0	263	1,120	443	224	3,816
7	Jul 13 - Jul 29, 2023	6,504	2,054	10	17	0	307	2,351	2049	590	7,379

#### 4) Marine Area 9 Summer Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a summer Chinook MSF in Marine Area 9 as a series of short openers on July 13-15, July 20-22, and July 27-28, 2023. WDFW’s Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program, a Full Murthy design, in Area 9 throughout the season to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included intensive dockside creel sampling, on-the-water effort surveys, test fishing and collection of voluntary salmon trip reports (STRs) from the angling public when possible. The fisheries controls used for this fishery were total predicted catch quota of 4,300 (**Table 4.5**). **Table 4.2** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). In this section we present results from our monitoring activities during the Marine Area 9 summer Chinook MSF.

**Table 4.1** Fishery dates and fishery retention status of salmon in the 2023 summer Chinook salmon MSF in Marine Area 9.

Start Date	End Date	Fishery Status	Days
13-Jul	15-Jul	Open	3
16-Jul	19-Jul	Closed	4
20-Jul	22-Jul	Open	3
23-Jul	26-Jul	Closed	4
27-Jul	28-Jul	Open	2
Total days open			8

**Table 4.2** Sampling/estimation details on target parameters associated with the overall Marine Area 9 summer mark-selective fishery monitoring program.

Activity	Focal Parameter(s)	Secondary Parameter(s)	Sample Unit(s)	Finest Estimation Time Step	Comments
Dockside Creel Sampling	Fishing effort (boat & angler trips); kept and released fish	Catch rates (CPUE); length, age, and CWT composition of harvest <sup>1</sup> ; collection of angler fishing methods.	Angler trip; kept fish; reported fish release	One week	Within days, estimates were produced by day-type strata (weekday/weekend). Each week we sampled every Friday, Saturday and Sunday, and we randomly selected $n=2$ out of $N=4$ weekdays (Monday-Thursday) for sampling.
		Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook salmon	Boat trip	Season	Dockside encounter data were not used for estimation of Chinook encounters for this fishery. <b>Table 4.10.</b>
On-the-water Surveys	Proportion of total angler effort that uses sample-frame sites (i.e., site “size measures”) versus out-of-frame sites.	Total on-water boat and angler counts at assumed peak effort time interval (instantaneous count); spatial distribution of recreational fishing boats in the area.	Boats and anglers	Month	A total of 3 boat surveys (1 weekday and 2 weekend) were conducted during this fishery.
Test Fishing	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Chinook salmon length, age, and DNA-based <sup>2</sup> stock composition; species composition of non-Chinook salmon encounters	Fish encounter	Season	Test fishing data collected when the fishery was open to Chinook retention ( <b>Table 4.1</b> ) were used for estimate of encounters and mortalities during this fishery. LM = 43%; LU% = 10%; SM% = 39%; SU% = 9%. ( <b>Table 4.13</b> ).
Voluntary Salmon Trip Reports (STRs)	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Encounter data for non-Chinook salmon species (e.g., Coho) that the angler may record on the STR form	Fish encounter	Season	Thirteen STR were returned during this fishery. The size/mark-status proportions of Private STR data ( <b>Table 4.11</b> ) were significantly different than those of the test fishery data (Chi-Square p-value < .01). STR data were not used in impact estimation due to the assumed higher data quality and sufficient sample sizes of the test fishery data.
Overall Fishery Impacts Estimation	Total Chinook encounters and mortalities, by size/mark-status group	Ratios of encounters and mortalities per kept Chinook	N/A	Season	Estimated on a monthly time step but considered at the season-total level.
Coded-wire tag (CWT) Impacts Estimation	Marked/unmarked double-index tag (DIT) encounters and mortalities	N/A	N/A	Season	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

<sup>1</sup> The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.

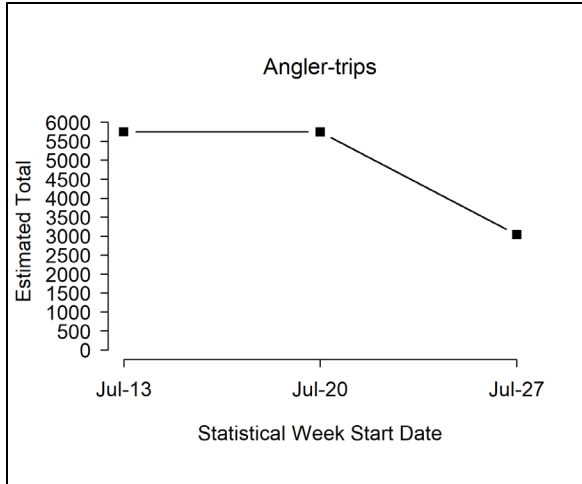
<sup>2</sup> Though samples were collected, DNA-based estimates of stock composition are not yet available for this fishery.

**Table 4.3** Estimates of total fishing effort and total salmon catch (harvest and releases) during the summer Chinook MSF in Marine Area 9. Values may not add up exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

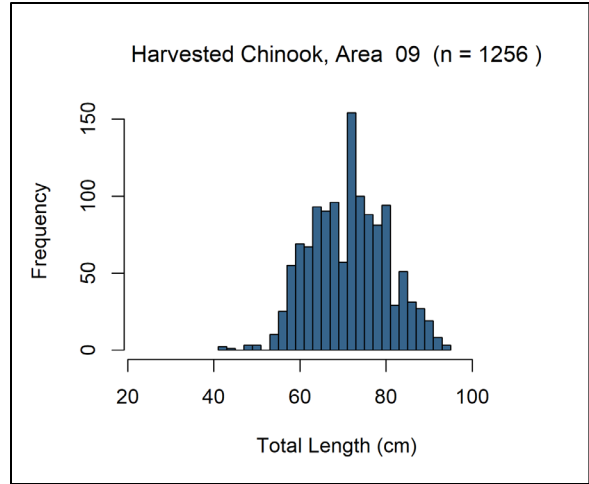
Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
July	29	13-Jul	15-Jul	2,253	5,745	2,088	3	2,396	1,026	5,513
	30	20-Jul	22-Jul	2,441	5,738	1,538	11	1,764	747	4,059
	31	27-Jul	28-Jul	1,467	3,036	925	0	1,061	455	2,441
<b>Season Total:</b>				<b>6,162</b>	<b>14,520</b>	<b>4,551</b>	<b>13</b>	<b>5,221</b>	<b>2,228</b>	<b>12,013</b>
<b>Variance:</b>				84,387	509,474	130,776	9	1,428,904	221,998	2,379,846
<b>SE:</b>				290	714	362	3	1,195	471	1,543
<b>CV (%):</b>				5	5	8	23	23	21	13
<b>95% CI:</b>				5,592 - 6,731	13,121 - 15,919	3,842 - 5,260	7 - 19	2,878 - 7,564	1,304 - 3,151	8,990 - 15,037

**Table 4.4** Number of total length samples collected from retained Chinook salmon collected during dockside angler interviews in the summer Chinook MSF in Marine Area 9.

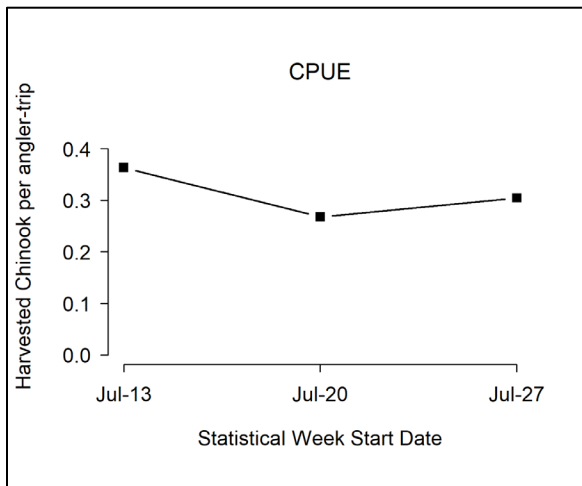
Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	1,227	29	1,256
Unmarked	3	0	3
<b>Total</b>	<b>1,230</b>	<b>29</b>	<b>1,259</b>



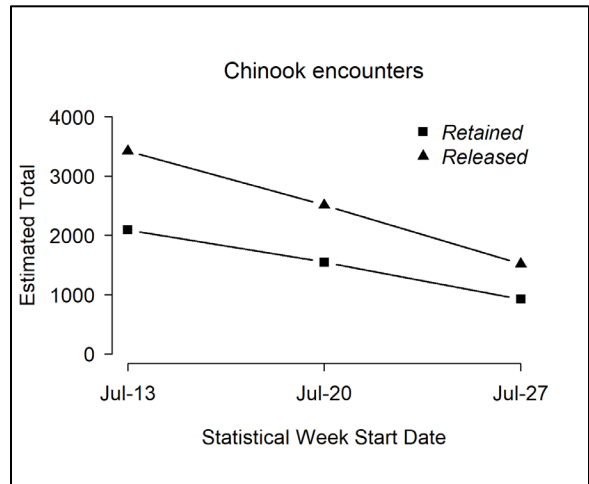
**Figure 4.1** Temporal patterns in fishing effort during the summer Chinook MSF in Marine Area 9.



**Figure 4.3** Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the summer Chinook MSF in Marine Area 9. Note: displayed values are observations where lengths are taken.



**Figure 4.2** Temporal patterns in CPUE (landed Chinook per angler trip) during the summer Chinook MSF in Marine Area 9.



**Figure 4.4** Temporal patterns in Chinook salmon encounters (retained and released) during the summer Chinook MSF in Marine Area 9.

**Table 4.5** Comparison of modeled and estimated total Chinook salmon encounters for the summer Chinook MSF in Marine Area 9. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

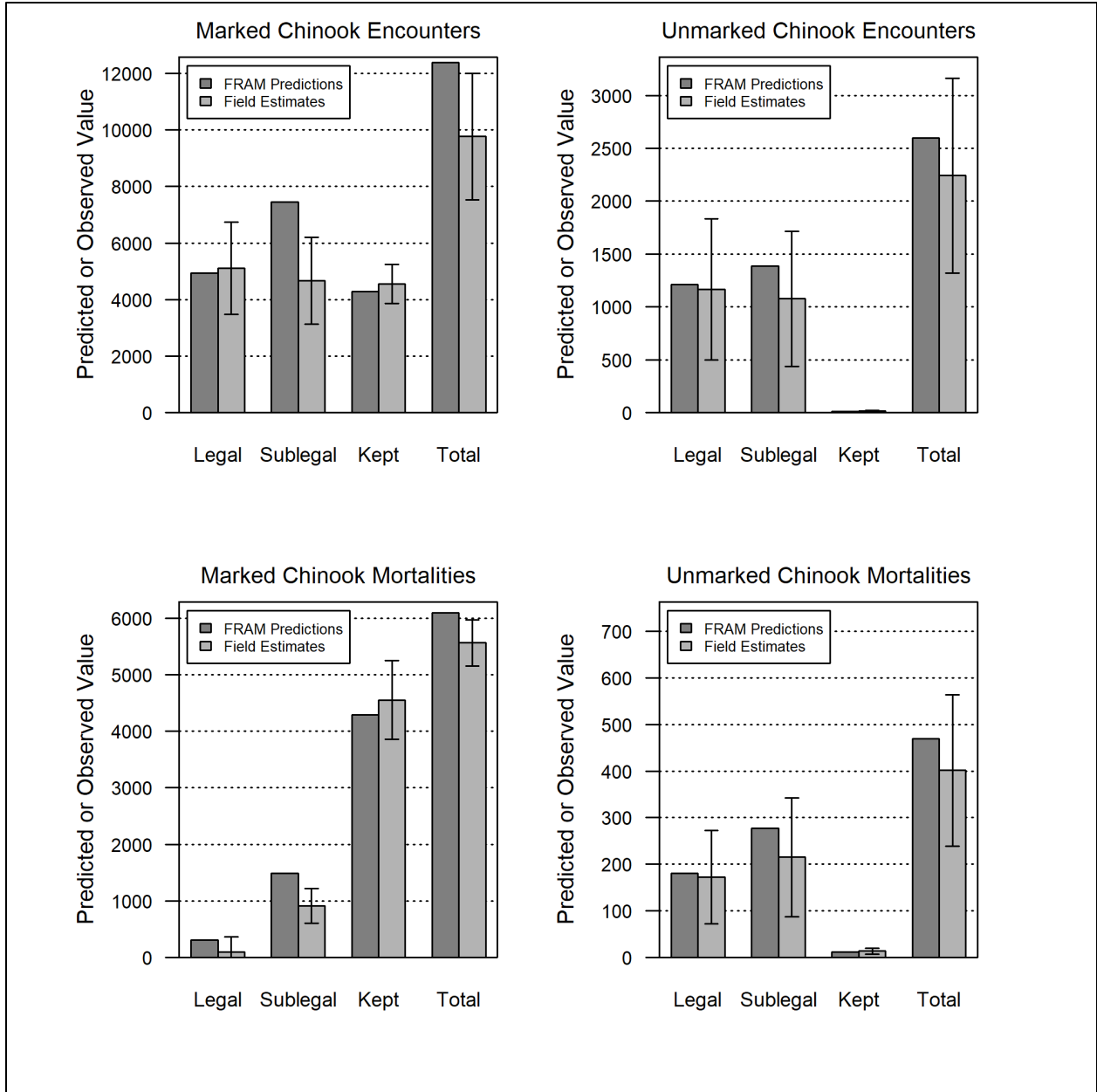
Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	2,598	1,214	1,384	12
	AD	12,384	4,929	7,455	4,288
	Total	14,982	6,143	8,839	4,300
	% Marked	83	80	84	100
Estimated (Creel) Encounters	UM	2,241	1,165	1,076	13
	AD	9,772	5,110	4,662	4,551
	Total	12,013	6,276	5,738	4,564
	% Marked	81	81	81	100

**Table 4.6** Summary of season-wide fishery impact estimates for the summer Chinook MSF in Marine Area 9. Release mortality rate = 0.15 for legal fish and 0.20 for sublegal fish. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	5,110	4,446	664	100	4,545	143,551	379	3,803 - 5,288	8
Legal UM	1,165	13	1,152	173	186	2,617	51	86 - 286	27
Sublegal AD	4,662	105	4,557	911	1,016	24,930	158	707 - 1,326	16
Sublegal UM	1,076	0	1,076	215	215	4,244	65	87 - 343	30
<b>Total</b>	<b>12,013</b>	<b>4,564</b>	<b>7,449</b>	<b>1,399</b>	<b>5,963</b>	<b>175,342</b>	<b>419</b>	<b>5,143 - 6,784</b>	<b>7</b>

**Table 4.7** Comparison of modeled and estimated total Chinook salmon mortalities for the summer Chinook MSF in Marine Area 9. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	470	6,089	6,559	401	5,562	5,963
Released Legal	181	310	491	173	100	272
Released Sublegal	277	1,491	1,768	215	911	1,127
Landed Only	12	4,288	4,300	13	4,551	4,564



**Figure 4.5** Comparison of modeled and estimated total Chinook salmon encounters and mortalities for the summer Chinook MSF in Marine Area 9. Error bars represent approximately 95% confidence intervals for field estimates.



**Table 4.8** Summary of the total number of anglers intercepted during on-the-water surveys conducted for the summer Chinook MSF in Marine Area 9. Sites in bold represent those included in the dockside sample frame.

Site Name	Weekday Anglers	Season Total (unadjusted) Size Measure	Weekend Anglers	Season Total (unadjusted) Size Measure
Bayside Marina/Drystack	2	0.0087	5	0.0124
Cap Sante Moorage & Sling	3	0.0131	0	0.0000
Driftwood Key Marina	3	0.0131	12	0.0299
<b>Edmonds Dry Storage</b>	<b>10</b>	<b>0.0437</b>	<b>9</b>	<b>0.0224</b>
Edmonds Marina	15	0.0655	30	0.0746
Everett Marina	16	0.0699	18	0.0448
<b>Everett Ramp</b>	<b>47</b>	<b>0.2052</b>	<b>64</b>	<b>0.1592</b>
<b>Fort Casey Public Ramp and Shore</b>	<b>31</b>	<b>0.1354</b>	<b>45</b>	<b>0.1119</b>
Fort Flagler Ramps-Marrowstone Is	9	0.0393	10	0.0249
Hadlock Public Ramp	1	0.0044	8	0.0199
John Wayne Marina Docks	2	0.0087	0	0.0000
Kingston Marina	5	0.0218	1	0.0025
<b>Kingston Public Ramp</b>	<b>3</b>	<b>0.0131</b>	<b>2</b>	<b>0.0050</b>
Manchester Public Ramp	4	0.0175	0	0.0000
<b>Mukilteo Lighthouse Park</b>	<b>9</b>	<b>0.0393</b>	<b>17</b>	<b>0.0423</b>
Mystery Bay Dock/Moorage	4	0.0175	0	0.0000
Onamac (Private)	2	0.0087	0	0.0000
Point Hudson Marina	4	0.0175	2	0.0050
Port Ludlow Marina/Beach Launch	6	0.0262	4	0.0100
Port Townsend Boat Haven	2	0.0087	11	0.0274
<b>Port Townsend Boat Haven Ramp</b>	<b>16</b>	<b>0.0699</b>	<b>59</b>	<b>0.1468</b>
Private	6	0.0262	7	0.0174
Salmon Club Ramp	4	0.0175	2	0.0050
Salsbury County Park Ramp	2	0.0087	18	0.0448
Shilshole Marina	5	0.0218	5	0.0124
Shilshole Public Ramp	8	0.0349	20	0.0498
Skyline Marina/Sling	7	0.0306	4	0.0100
Washington Park Launch Ramp	3	0.0131	5	0.0124
Anacortes Marina	0	0.0000	3	0.0075
Cornet Bay Public Ramp	0	0.0000	6	0.0149
Dagmar's Landing, Forklift Launch	0	0.0000	1	0.0025
Edmonds Boat Basin	0	0.0000	15	0.0373
Eglon Public Ramp	0	0.0000	4	0.0100
Fort Worden Ramp	0	0.0000	2	0.0050
John Wayne Marina	0	0.0000	2	0.0050
Lagoon Point Ramp and Beach	0	0.0000	5	0.0124
Port Hadlock Marina	0	0.0000	2	0.0050
Poulsbo Ramp/Marina	0	0.0000	4	0.0100
<b>Total Anglers</b>	<b>229</b>	<b>1</b>	<b>402</b>	<b>1</b>

**Table 4.9** Monthly sample rates (Total retained Chinook sampled<sup>1</sup> / Estimated retained Chinook) for the summer Chinook MSF in Marine Area 9. AD = marked (adipose-clipped), UM = unmarked.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
July	29 - 31	13 Jul - 28 Jul	4,551	13	4,564	1,184	4	1,188	26.0%
<b>Season Total</b>			<b>4,551</b>	<b>13</b>	<b>4,564</b>	<b>1,184</b>	<b>4</b>	<b>1,188</b>	<b>26.0%</b>

<sup>1</sup> Number of retained Chinook salmon sampled includes all retained Chinook salmon inspected for CWTs, from all sites sampled during the summer Chinook MSF in Marine Area 9 (creel estimates and fish sampled as part of baseline sampling).

**Table 4.10** Dockside encounters (retained and released) by size-mark category during the summer Chinook salmon MSF in Marine Area 9. Retained fish were sampled for mark-status and length, released fish by size-mark status were reported by the angler.

Dockside Encounters				
Metric	Legal		Sublegal	
	LM	LU	SM	SU
Encounters	1,268	208	421	325
Bias-corrected size/mark composition	50.79%	9.36%	18.95%	20.90%
Variance	0.0004	0.0001	0.0004	0.0002

**Table 4.11** Total Chinook salmon encountered (retained and released) by private-boat anglers logging their trips on STRs during the 2023 summer Chinook salmon MSF in Marine Area 9, with estimates of legal-size and overall (legal and sublegal) mark rates. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

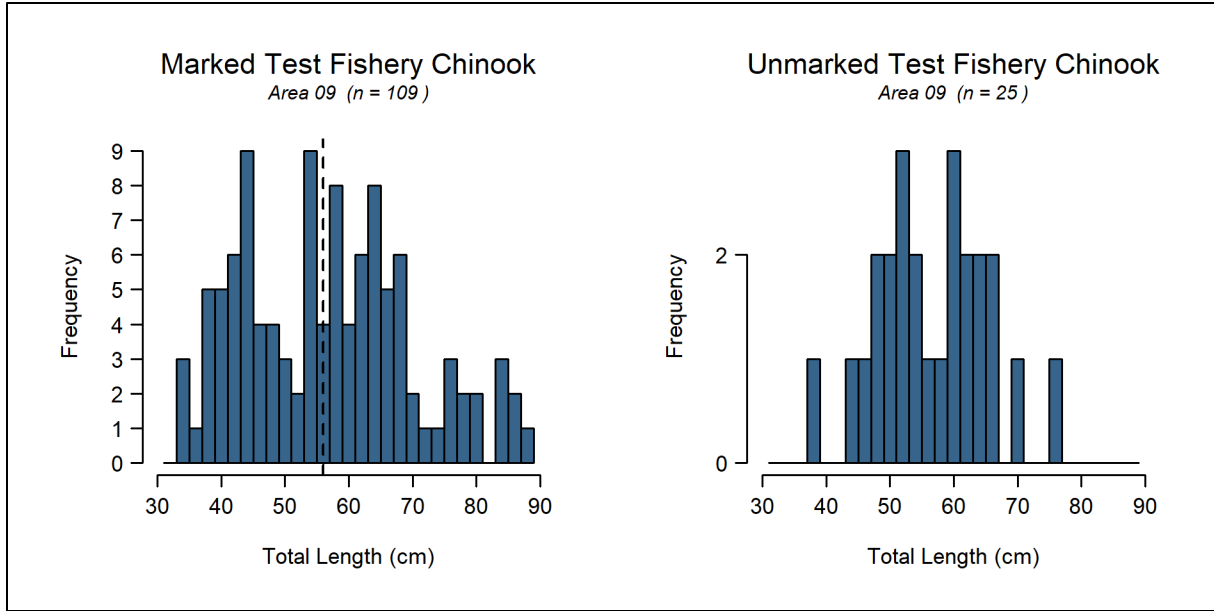
Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private STR	13 1-trip STRs	26	6	18	5	55	0.8	0.81
Size/mark-status composition:		0.5	0.1	0.3	0.1			
Variance:		(0.0002)	(0.0000)	(0.0001)	(0.0000)			

**Table 4.12** Fishery-total estimates of retained and released salmon (other than Chinook) for the summer Chinook MSF in Marine Area 9. Values may not add up exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Week	Start Date	End Date	Retained Salmon					Released Salmon				
			Coho AD	Coho UM	Coho UK	Pink	Unknown	Coho AD	Coho UM	Coho UK	Pink	Unknown
29	13-Jul	15-Jul	1,719	38	0	6	76	566	1,415	596	27	394
30	20-Jul	22-Jul	735	44	0	14	9	125	581	387	28	834
31	27-Jul	28-Jul	747	7	7	214	0	94	621	218	269	309
<b>Season Total:</b>			<b>3,201</b>	<b>89</b>	<b>7</b>	<b>233</b>	<b>85</b>	<b>785</b>	<b>2,617</b>	<b>1,201</b>	<b>324</b>	<b>1,536</b>
<b>Variance:</b>			184,417	223	19	1,523	756	31,978	114,481	53,324	4,805	108,121
<b>Standard Error:</b>			429	15	4	39	27	179	338	231	69	329
<b>CV (%):</b>			13	17	60	17	32	23	13	19	21	21
<b>95% CI:</b>			2,359 - 4,043	60 - 118	0 - 16	157 - 310	31 - 139	435 - 1,136	1,954 - 3,281	749 - 1,654	188 - 460	892 - 2,181

**Table 4.13** Composition of test fishery Chinook salmon encounters and associated mark-rate and size/mark-status proportion estimates for the summer Chinook salmon MSF in Marine Area 9. AD = marked (adipose-clipped), UM = unmarked.

Stat Week	Fishing Effort		Legal		Sublegal		Total
	Days	Hours Fished	AD	UM	AD	UM	
28	6	44.00	11	3	16	3	33
29	3	20.72	16	2	11	2	31
30	6	49.84	19	6	15	4	44
31	4	26.01	11	2	10	3	26
<b>Total</b>	<b>19</b>	<b>140.57</b>	<b>57</b>	<b>13</b>	<b>52</b>	<b>12</b>	<b>134</b>
<b>Size/mark-status composition:</b>			0.43	0.10	0.39	0.09	
<b>Variance:</b>			(0.0018)	(0.0007)	(0.0018)	(0.0006)	
<b>Legal size mark rate:</b>			0.8142857				
<b>Overall mark rate:</b>			0.81				



**Figure 4.6** Length-frequency distributions of marked (*left panel*) and unmarked (*right panel*) Chinook salmon encountered by test fishers during the summer Chinook salmon MSF in Marine Area 9. The vertical dashed line in the left panel corresponds to the legal-size limit (22 in or 56 cm).

**Table 4.14** Summary of double-index tagged (DIT) Chinook salmon kept by anglers and estimated total mortality of unmarked DIT Chinook salmon due to hook-and-release impacts resulting from the summer Chinook MSF in Marine Area 9. AD = marked (adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs	Est.AD	var(Est.AD)	UM DIT Enc	Est.UM	var(Est.UM)	SE(Est.UM)
Bernie Gobin Hatch	2019	3	10.9	28.55	12	1.2	0.35	1.02
Clear Creek Hatchery	2020	1	3.6	9.52	3.8	0.4	0.104	0.32
Clear Creek Hatchery	2021	1	3.6	9.52	3.7	0.4	0.098	0.31
George Adams Hatchery	2019	4	14.5	38.07	16.1	1.6	0.471	1.37
George Adams Hatchery	2020	2	7.3	19.04	7.3	0.7	0.195	0.62
Grovers Cr Hatchery	2019	2	7.3	19.04	7.4	0.7	0.199	0.63
Grovers Cr Hatchery	2020	2	7.3	19.04	6.7	0.7	0.163	0.57
Marblemount Hatchery	2021	1	3.6	9.52	3.7	0.4	0.098	0.31
Samish Hatchery	2019	2	7.3	19.04	7.3	0.7	0.192	0.62
Soos Creek Hatchery	2020	4	14.5	38.07	14.7	1.5	0.394	1.25
Wallace R Hatchery	2020	4	14.5	38.07	14.7	1.5	0.393	1.25
<b>Total</b>		<b>26</b>	<b>94.3</b>	<b>247.46</b>	<b>97.5</b>	<b>9.8</b>	<b>2.656</b>	<b>8.3</b>

**Table 4.15** Summary of coded-wire tags recovered from Chinook salmon harvested during the 2023 summer Chinook MSF in Marine Area 9. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups. Note: Not all tags have been processed before the writing of this report.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs
BC	Thompson River (1.1%)	R-Chilliwack R	H-Chilliwack River H	1 (1.1%)	0
WA	N Washington (2.1%)	Friday Cr 03.0017	Samish Hatchery	2 (2.1%)	2
		Hood Canal (14.7%)	Finch Cr 16.0222	Hoodsport Hatchery	8 (8.4%)
	Purdy Cr 16.0005		George Adams Hatchery	6 (6.3%)	6
	N Puget Sound (17.9%)	Tulalip Cr 07.0001	Bernie Gobin Hatch	4 (4.2%)	3
		Wallace R 07.0940	Wallace R Hatchery	11 (11.6%)	4
		Whitehorse Springs	Whitehorse Pond	2 (2.1%)	0
	Skagit River (1.1%)	Cascade R 03.1411	Marblemount Hatchery	1 (1.1%)	1
	Mid Puget Sound (24.2%)	Big Soos Cr 09.0072	Soos Creek Hatchery	4 (4.2%)	4
		Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	5 (5.3%)	0
		Gorst Cr Rear.Pond-2	Gorst Cr Rearing Pnd	1 (1.1%)	0
		Clarks Crk Hatchery	Clarks Crk Hatchery	1 (1.1%)	0
		Icy Cr 09.0125	Icy Cr Hatchery	4 (4.2%)	0
		Issaquah Cr 08.0178	Issaquah Hatchery	1 (1.1%)	0
		Green R 09.0001	Palmer Hatchery	1 (1.1%)	0
		Grovers Cr Hatchery	Grovers Cr Hatchery	4 (4.2%)	4
		Voight Cr 10.0414	Voights Cr Hatchery	2 (2.1%)	0
		S Puget Sound (37.9%)	Clear Cr 11.0013C	Clear Creek Hatchery	2 (2.1%)
	Chambers Cr 12.0007		Garrison Hatchery	2 (2.1%)	0
	Narrows Marina Pens		Narrows Marina Pens	3 (3.2%)	0
	Kalama Cr 11.0017		Kalama Cr Hatchery	2 (2.1%)	0
Minter Cr 15.0048	Minter Cr Hatchery		16 (16.8%)	0	
Deschutes R 13.0028	Tumwater Falls Hatchery		11 (11.6%)	0	
NA	NA (1.1%)	Point Defiance Net Pens	Clarks Crk Hatchery	1 (1.1%)	0
<b>Total</b>				<b>95</b>	<b>26</b>

**Table 4.16** Season-total estimates of Chinook salmon encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Marine Area 9 summer Chinook MSF. Values may not add up exactly due to rounding error.

Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
		LM	LU	SM	SU	LM	LU	SM	SU	
Jul 16 - Jul 31, 2007	18,160	5,094	13	146	20	711	1,111	1,286	317	8,697
Jul 16 - Aug 15, 2008	20,399	4,035	3	10	0	597	1,608	3,212	3,826	13,290
Jul 16 - Aug 31, 2009	42,219	3,090	20	139	0	462	1,272	8,256	2,905	16,143
Jul 16 - Aug 31, 2010	31,200	5,282	33	10	6	740	2,125	750	249	9,194
Jul 16 - Aug 31, 2011	37,862	2,285	19	78	6	339	1,142	2,150	1,070	7,090
Jul 16 - Aug 19, 2012	24,886	6,972	12	101	2	1,039	2,351	5,168	4,721	20,366
Jul 16 - Aug 4, 2013	20,501	4,667	18	39	0	697	1,174	1,750	397	8,742
Jul 16 - Aug 15, 2014	23,113	2,865	6	4	0	428	668	745	299	5,015
Jul 16 - Jul 26, 2015	14,118	2,277	13	35	7	340	1,502	1,481	131	5,786
Jul 16 - Aug 15, 2016	14,911	2,861	9	112	0	427	912	4,886	2104	11,311
Jul 16 - Jul 30, 2017	18,548	5,264	0	191	3	787	1261	9,388	2266	19,160
Jul 16 - Jul 29, 2018	17,356	5,935	1	93	1	887	1084	3,628	464	12,094
Jul 25 - Aug 9, 2019	17,147	3,434	5	11	0	513	579	573	146	5,263
Jul 16 - Aug 15, 2020	45,376	3,684	0	102	0	551	1,289	10,392	2,946	18,964
Jul 16 - Aug 5, 2021	24,266	5,119	6	150	13	765	1,675	14,981	5,872	28,580
Jul 14 - Aug 4, 2022	16,315	4,637	3	57	0	693	3,389	8,181	1,454	18,413
Jul 13 - Jul 28, 2023	14,520	4,446	13	105	0	664	1,152	4,557	1,076	12,013

### 5) Marine Area 10 Summer Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a summer Chinook MSF in Marine Area 10, originally scheduled as July 13 through August 31, 2023. The fishery closed early on August 4 to allow managers to reevaluate remaining quota and the status of the legal mark rate within the test fishery. The fishery was then reopened from August 11-13 and again August 18-20, 2023. WDFW’s Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program, a Full Murthy design, in Marine Area 10 throughout the season to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included intensive dockside creel sampling, on-the-water effort surveys, test fishing and collection of voluntary salmon trip reports (STRs) from the angling public whenever possible. The fishery control was the preseason modeled expected catch (3,566) and total sublegal encounters (7,748). **Table 5.2** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). In this section we present results from our monitoring activities during the Marine Area 10 summer Chinook MSF.

**Table 5.1** Fishery dates and fishery retention status of salmon in the 2023 summer Chinook salmon MSF in Marine Area 10.

Start Date	End Date	Fishery Status	Days
13-Jul	3-Aug	Open	21
4-Aug	10-Aug	Closed	7
11-Aug	13-Aug	Open	3
14-Aug	17-Aug	Closed	4
18-Aug	20-Aug	Open	3
Total days open			27

**Table 5.2** Sampling/estimation details on target parameters associated with the overall Marine Area 10 summer mark-selective fishery monitoring program.

Activity	Focal Parameter(s)	Secondary Parameter(s)	Sample Unit(s)	Finest Estimation Time Step	Comments
Dockside Creel Sampling	Fishing effort (boat & angler trips); kept and released fish	Catch rates (CPUE); length, age, and CWT composition of harvest <sup>1</sup> ; collection of angler fishing methods.	Angler trip; kept fish; reported fish release.	One week	Within days, estimates were produced by day-type strata (weekday/weekend). Each week we sampled every Friday, Saturday, and Sunday, and we randomly selected $n=2$ out of $N=4$ weekdays (Monday-Thursday) for sampling.
		Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook salmon	Boat trip	Season	Dockside encounter data were not used for estimation of Chinook encounters for this fishery. ( <b>Table 5.10</b> )
On-the-water Surveys	Proportion of total angler effort that uses sample-frame sites (i.e., site “size measures”) versus out-of-frame sites.	Total on-water boat and angler counts at assumed peak effort time interval (instantaneous count); spatial distribution of recreational fishing boats in the area.	Boats and anglers	Month	A total of 7 boat surveys (2 weekday and 5 weekend) were conducted during the fishery.
Test Fishing	Size (legal/sublegal) and mark-status composition (marked, unmarked) of encountered Chinook salmon	Chinook salmon length, age, and DNA-based <sup>2</sup> stock composition; species composition of non-Chinook salmon encounters	Fish encounter	Season	Test fishery data only were used to estimate the size/mark-status proportions (LM = 26%, LU = 12%, SM = 46%, SU = 16%; <b>Table 5.13</b> ) needed to produce encounter and mortality estimates. (CV = 0.12)
Voluntary Salmon Trip Reports (STRs)	Size (legal/sublegal) and mark-status composition (marked, unmarked) of encountered Chinook salmon	Encounter data for non-Chinook salmon species (e.g., Coho salmon) that the angler may record on the STR form	Fish encounter	Season	13 STRs were returned during this fishery, including 9 private STRs and 4 charter STRs ( <b>Table 5.11</b> ). Because TF data met sample size requirements of $CV < 0.20$ , STRs were not needed to produce encounter and mortality estimates.
Overall Fishery Impacts Estimation	Total Chinook salmon encounters and mortalities by size/mark-status group	Ratios of encounters and mortalities per kept Chinook salmon	N/A	Season	Estimated on a monthly time step but considered at the season-total level.
Coded-wire tag (CWT) Impacts Estimation	Marked/unmarked double-index tag (DIT) encounters and mortalities	N/A	N/A	Season	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

<sup>1</sup> The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.<sup>2</sup> Though samples were collected, DNA-based estimates of stock composition are not yet available for this fishery.

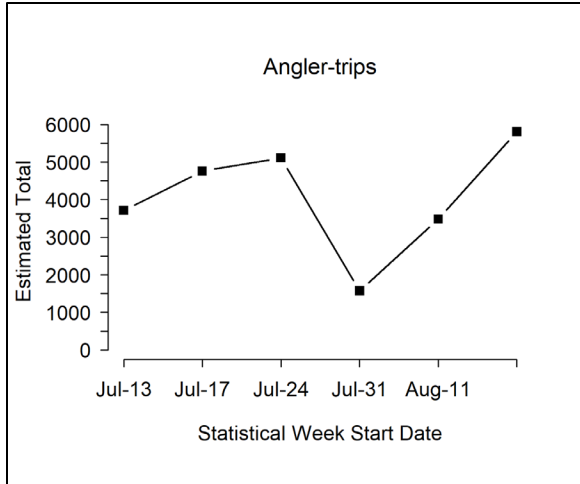


**Table 5.3** Estimates of total fishing effort and total salmon catch (harvest and releases) during the summer Chinook MSF in Marine Area 10. Values may not add up exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

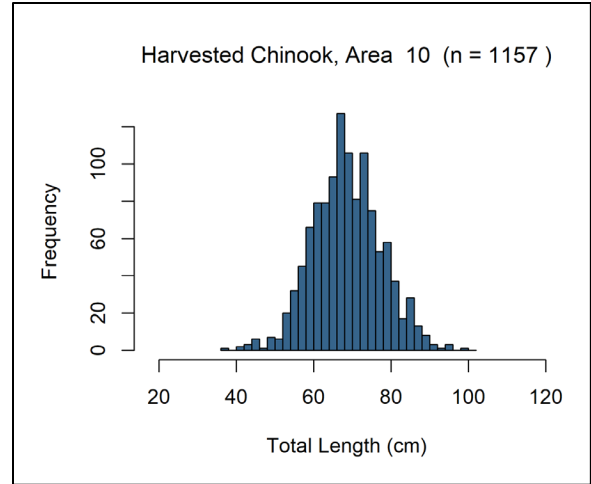
Month	Stat Week	Start Date	End Date	Estimated Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
<b>Jul</b>	29	13-Jul	16-Jul	1,658	3,712	417	8	870	487	1,783
	30	17-Jul	23-Jul	2,216	4,760	322	0	673	382	1,377
	31	24-Jul	30-Jul	2,580	5,109	618	3	1,290	730	2,641
<b>Aug</b>	32	31-Jul	3-Aug	821	1,571	244	0	509	289	1,042
	33	11-Aug	13-Aug	1,511	3,486	589	21	1,229	678	2,516
	34	18-Aug	20-Aug	2,428	5,810	1,190	3	2,482	1,408	5,083
<b>Season Total</b>				<b>11,214</b>	<b>24,447</b>	<b>3,381</b>	<b>35</b>	<b>7,052</b>	<b>3,974</b>	<b>14,442</b>
<b>Variance:</b>				125,587	903,349	42,071	88	1,281,296	315,282	3,156,753
<b>Standard Error:</b>				354	950	205	9	1132	561	1777
<b>CV (%):</b>				3	4	6	27	16	14	12
<b>95% CI:</b>				10,519 - 11,908	22,584 - 26,310	2,979 - 3,783	16 - 53	4,834 - 9,271	2,873 - 5,074	10,960 - 17,924

**Table 5.4** Number of total length samples collected from retained Chinook salmon collected during dockside angler interviews in the summer Chinook MSF in Marine Area 10.

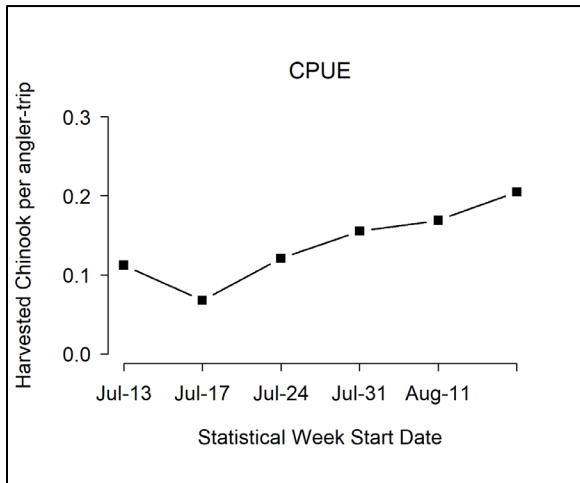
Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	1,079	78	1,157
Unmarked	13	9	22
<b>Total</b>	<b>1,092</b>	<b>87</b>	<b>1,179</b>



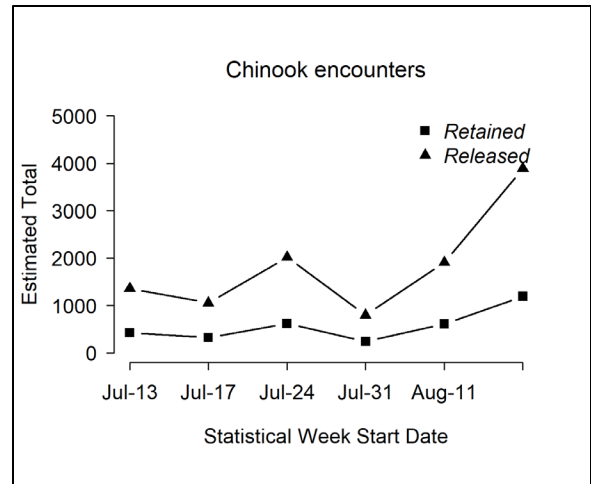
**Figure 5.1** Temporal patterns in fishing effort during the summer Chinook MSF in Marine Area 10.



**Figure 5.3** Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the summer Chinook MSF in Marine Area 10. Note: displayed values are observations where lengths are taken.



**Figure 5.2** Temporal patterns in CPUE (landed Chinook per angler trip) during the summer Chinook MSF in Marine Area 10.



**Figure 5.4** Temporal patterns in Chinook salmon encounters (retained and released) during the summer Chinook MSF in Marine Area 10.

**Table 5.5** Comparison of modeled and estimated total Chinook salmon encounters for the summer Chinook MSF in Marine Area 10. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

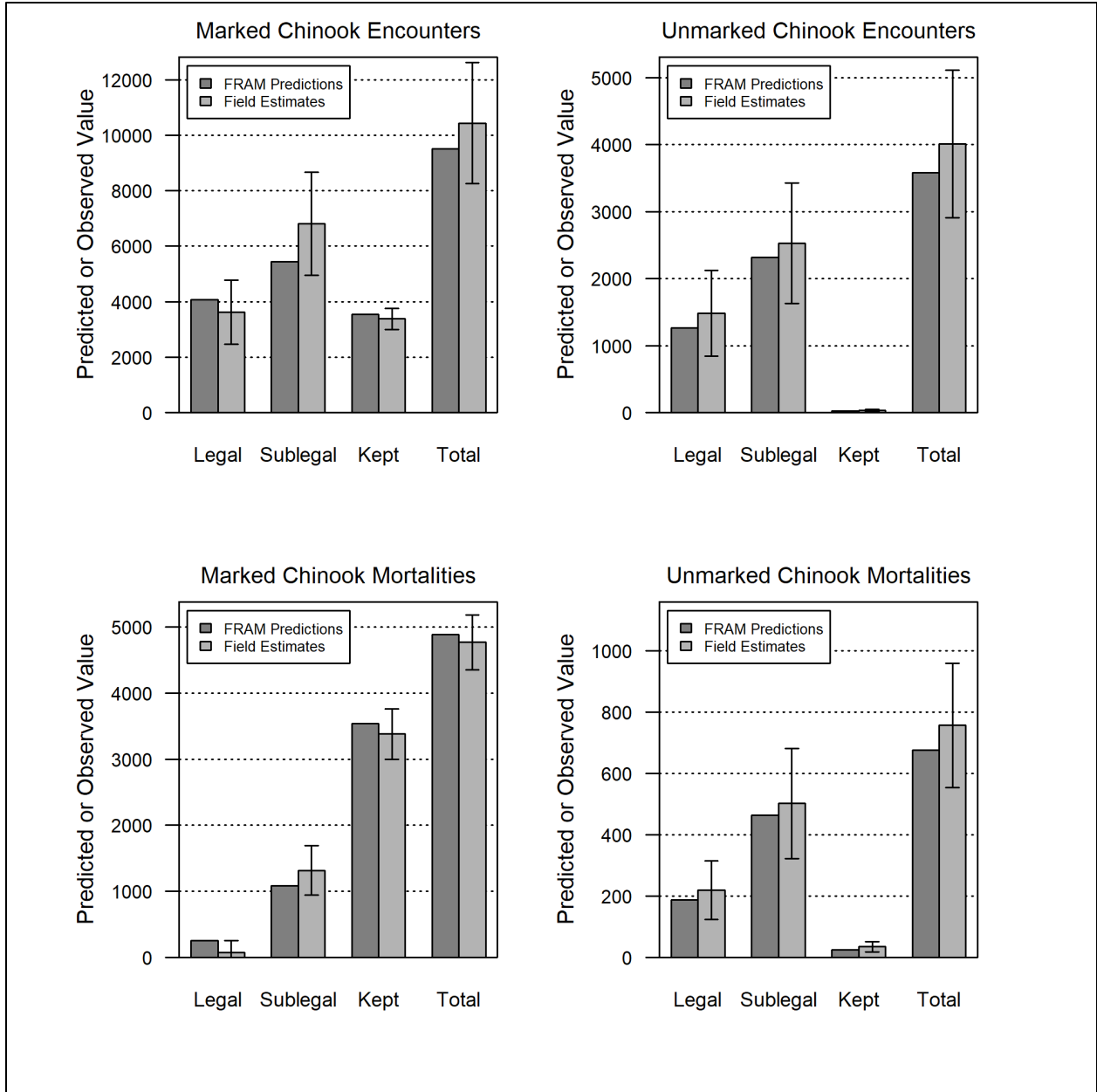
Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	3,583	1,265	2,318	25
	AD	9,500	4,070	5,430	3,541
	Total	13,083	5,335	7,748	3,566
	% Marked	73	76	70	99
Estimated (Creel) Encounters	UM	4,009	1,483	2,526	35
	AD	10,433	3,624	6,809	3,381
	Total	14,442	5,107	9,335	3,416
	% Marked	72	71	73	99

**Table 5.6** Summary of season-wide fishery impact estimates for the summer Chinook MSF in Marine Area 10. Release mortality rate = 0.15 for legal fish and 0.20 for sublegal fish. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	3,624	3,153	471	71	3,224	45,835	214	2,804 - 3,643	7
Legal UM	1,483	21	1,462	219	240	2,419	49	144 - 336	20
Sublegal AD	6,809	228	6,581	1316	1544	36,727	192	1,169 - 1,920	12
Sublegal UM	2,526	14	2,512	502	517	8,417	92	337 - 696	18
<b>Total</b>	<b>14,442</b>	<b>3,416</b>	<b>11,026</b>	<b>2,109</b>	<b>5,524</b>	<b>93,399</b>	<b>306</b>	<b>4,925 - 6,123</b>	<b>6</b>

**Table 5.7** Comparison of modeled and estimated total Chinook salmon mortalities for the summer Chinook MSF in Marine Area 10. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	676	4,883	5,559	757	4,768	5,524
Released Legal	187	256	443	219	71	290
Released Sublegal	464	1,086	1,550	502	1,316	1,819
Landed Only	25	3,541	3,566	35	3,381	3,416



**Figure 5.5** Comparison of modeled and estimated total Chinook salmon encounters and mortalities for the summer Chinook MSF in Marine Area 10. Error bars represent approximately 95% confidence intervals for field estimates.

**Table 5.8** Summary of the total number of anglers intercepted during on-the-water surveys conducted for the summer Chinook MSF in Marine Area 10. Sites in bold represent those included in the dockside sample frame.

Site Name	Weekday Anglers	Season Total (unadjusted) Size Measure	Weekend Anglers	Season Total (unadjusted) Size Measure
<b>Armeni Public Ramp</b>	<b>29</b>	<b>0.0455</b>	<b>102</b>	<b>0.0644</b>
Bremerton Yacht Club	2	0.0031	0	0
Brownsville Dock/Ramp	2	0.0031	10	0.0063
<b>Brownsville Marina</b>	<b>25</b>	<b>0.0392</b>	<b>34</b>	<b>0.0215</b>
Dagmar's Landing, Forklift Launch	2	0.0031	11	0.0069
Eagle Harbor Waterfront Park	7	0.0110	15	0.0095
Edmonds Boat Basin (Public Sling)	24	0.0376	53	0.0335
Edmonds Dry Storage (Boat Loft	32	0.0502	47	0.0297
Edmonds Marina	108	0.1693	180	0.1136
Edmonds Marine Beach	1	0.0016	1	0.0006
Elliott Bay Marina	17	0.0266	49	0.0309
Everett Marina	9	0.0141	33	0.0208
Everett Ramp (formerly Norton Street Ramp)	17	0.0266	138	0.0871
Kingston Marina	20	0.0313	30	0.0189
<b>Kingston Public Ramp</b>	<b>48</b>	<b>0.0752</b>	<b>124</b>	<b>0.0783</b>
<b>Manchester Public Ramp</b>	<b>5</b>	<b>0.0078</b>	<b>26</b>	<b>0.0164</b>
Mukilteo Lighthouse Park	6	0.0094	43	0.0271
Narrows Marina (Boathouse and Rental)	1	0.0016	1	0.0006
Point Defiance Public Ramp	4	0.0063	25	0.0158
Port Madison Marina	6	0.0094	6	0.0038
Port Orchard Public Ramp	3	0.0047	22	0.0139
Poulsbo Ramp/Marina	7	0.0110	3	0.0019
Private	7	0.0110	23	0.0145
Redondo Ramp	2	0.0031	5	0.0032
Shilshole Marina	126	0.1975	204	0.1288
<b>Shilshole Public Ramp</b>	<b>111</b>	<b>0.1740</b>	<b>330</b>	<b>0.2083</b>
Unknown	17	0.0266	0	0
Bayside Marina/Drystack	0	0	7	0.0044
Breakwater Marina (Warters)	0	0	4	0.0025
Camano Island State Park Public Ramp	0	0	2	0.0013
Des Moines Marina (Moorage)	0	0	19	0.0120
Ebey Waterfront Park	0	0	2	0.0013
Eglon Public Ramp	0	0	3	0.0019
Fox Island Public Ramp	0	0	2	0.0013
Gig Harbor Marina	0	0	2	0.0013
Harbor Isl Marina	0	0	2	0.0013
Point Defiance Boathouse	0	0	2	0.0013
Port Ludlow Marina/Beach Launch	0	0	2	0.0013
Port Orchard Marina	0	0	1	0.0006
Possession Waterfront Beach Park	0	0	2	0.0013
Sandy Point Marina/Ramp	0	0	4	0.0025
South Park - Duwamish	0	0	13	0.0082
Tyee Marina/Ramp	0	0	1	0.0006
<b>Winslow Marina</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0.0006</b>
<b>Total Anglers</b>	<b>638</b>	<b>1</b>	<b>1584</b>	<b>1</b>

**Table 5.9** Monthly sample rates (Total retained Chinook sampled<sup>1</sup> / Estimated retained Chinook) for the summer Chinook MSF in Marine Area 10. AD = marked (adipose-clipped), UM = unmarked.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
July	29 - 31	13 Jul - 30 Jul	1,358	11	1,369	376	4	380	27.8%
August	32 - 34	31 Jul - 20 Aug	2,023	24	2,047	620	16	636	31.1%
<b>Season Total</b>			<b>3,381</b>	<b>35</b>	<b>3,416</b>	<b>996</b>	<b>20</b>	<b>1,016</b>	<b>29.7%</b>

<sup>1</sup> Number of retained Chinook salmon sampled includes all retained Chinook salmon inspected for CWTs, from all sites sampled during the summer Chinook MSF in Marine Area 10 (creel estimates and fish sampled as part of baseline sampling).

**Table 5.10** Docksider encounters (retained and released) by size-mark category during the summer Chinook salmon MSF in Marine Area 10. Retained fish were sampled for mark-status and length, released fish by size-mark status were reported by the angler.

Docksider Encounters				
Metric	Legal		Sublegal	
	LM	LU	SM	SU
Encounters	1,101	343	514	334
Bias-corrected size/mark composition	42.75%	14.97%	22.43%	19.86%
Variance	0.0002	0.0001	0.0001	0.0001

**Table 5.11** Total Chinook salmon encountered (retained and released) by private-boat anglers logging their trips on STRs during the 2023 summer Chinook salmon MSF in Marine Area 10, with estimates of legal-size and overall (legal and sublegal) mark rates. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

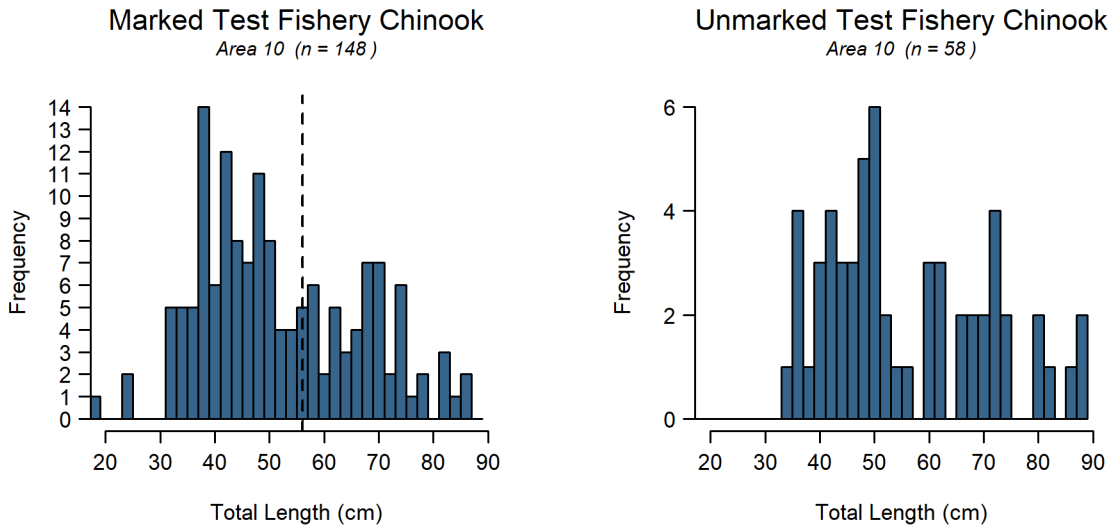
Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private STR	9 1-trip STRs	8	1	22	9	40	0.75	0.89
Charter STR	4 1-trip STRs	4	1	8	4	17	0.71	0.80
Total	13 1-trip STRs	12	2	30	13	57	0.74	0.86
Size/mark-status composition:		0.21	0.04	0.53	0.23			
Variance:		(0.0030)	(0.0006)	(0.0045)	(0.0031)			

**Table 5.12** Fishery-total estimates of retained and released salmon (other than Chinook) for the summer Chinook MSF in Marine Area 10. Values may not add up exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Week	Start Date	End Date	Retained Salmon						Released Salmon						
			Coho AD	Coho UM	Coho UK	Pink	Sockeye	Unknown	Coho AD	Coho UM	Coho UK	Chum	Pink	Cutthroat	Unknown
29	13-Jul	16-Jul	1,168	1,213	3	3	3	47	158	124	713	0	0	0	355
30	17-Jul	23-Jul	946	1,076	0	43	6	64	292	194	489	0	20	0	542
31	24-Jul	30-Jul	845	1,094	0	517	0	54	177	187	445	0	161	0	461
32	31-Jul	3-Aug	222	165	0	505	0	0	123	20	113	0	292	0	112
33	11-Aug	13-Aug	417	353	6	2,520	0	66	113	83	140	13	3,208	85	286
34	18-Aug	20-Aug	711	627	19	4,142	0	55	71	117	590	0	5,262	3	498
<b>Season Total:</b>			<b>4,310</b>	<b>4,527</b>	<b>28</b>	<b>7,729</b>	<b>9</b>	<b>286</b>	<b>933</b>	<b>726</b>	<b>2,490</b>	<b>13</b>	<b>8,944</b>	<b>88</b>	<b>2,254</b>
<b>Variance:</b>			20,776	24,653	42	179,655	27	2,569	3,533	9,532	16,845	28	266,921	3,686	57,300
<b>Standard Error:</b>			144	157	7	424	5	51	59	98	130	5	517	61	239
<b>CV (%):</b>			3	3	23	5	57	18	6	13	5	41	6	69	11
<b>95% CI:</b>			4,027 - 4,592	4,220 - 4,835	15 - 41	6,898 - 8,559	0 - 19	187 - 386	817 - 1,050	534 - 917	2,236 - 2,745	2 - 23	7,931 - 9,956	0 - 207	1,785 - 2,723

**Table 5.13** Composition of test fishery Chinook salmon encounters and associated mark-rate and size/mark-status proportion estimates for the summer Chinook salmon MSF in Marine Area 10. AD = marked (adipose-clipped), UM = unmarked.

Stat Week	Fishing Effort		Legal		Sublegal		Total
	Days	Hours Fished	AD	UM	AD	UM	
28	1	6.48	1	0	1	1	3
29	3	19.74	1	1	7	6	15
30	7	45.47	5	5	26	2	38
31	8	49.38	4	4	16	9	33
32	12	80.87	16	8	13	5	42
33	7	45.36	17	4	16	6	43
34	5	31.89	10	3	15	4	32
<b>Total</b>	<b>43</b>	<b>279.18</b>	<b>54</b>	<b>25</b>	<b>94</b>	<b>33</b>	<b>206</b>
<b>Size/mark-status composition:</b>			0.26	0.12	0.46	0.16	
<b>Variance:</b>			(0.0009)	(0.0005)	(0.0012)	(0.0007)	
<b>Legal size mark rate:</b>			0.68				
<b>Overall mark rate:</b>			0.72				



**Figure 5.6** Length-frequency distributions of marked (*left panel*) and unmarked (*right panel*) Chinook salmon encountered by test fishers during the summer Chinook salmon MSF in Marine Area 10. The vertical dashed line in the left panel corresponds to the legal-size limit (22 in or 56 cm).

**Table 5.14** Summary of double-index tagged (DIT) Chinook salmon kept by anglers and estimated total mortality of unmarked DIT Chinook salmon due to hook-and-release impacts resulting from the summer Chinook MSF in Marine Area 10. AD = marked (adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs	Est.AD	var(Est.AD)	UM DIT Enc	Est.UM	var(Est.UM)	SE(Est.UM)
Bernie Gobin Hatch	2020	1	2.9	5.5	3	0.3	0.058	0.24
George Adams Hatchery	2020	1	2.9	5.5	2.9	0.3	0.056	0.24
Grovers Cr Hatchery	2019	5	14.5	27.48	14.8	1.5	0.288	1.2
Grovers Cr Hatchery	2020	3	8.7	16.49	8	0.8	0.141	0.65
Samish Hatchery	2020	1	0	0	2.9	2.9	5.497	2.34
Soos Creek Hatchery	2019	1	0	0	2.9	2.9	5.497	2.34
Soos Creek Hatchery	2020	1	2.9	5.5	2.9	0.3	0.057	0.24
<b>Total</b>		<b>13</b>	<b>31.9</b>	<b>60.47</b>	<b>37.5</b>	<b>9</b>	<b>11.594</b>	<b>7.26</b>



**Table 5.15** Summary of coded-wire tags recovered from Chinook salmon harvested during the 2023 summer Chinook MSF in Marine Area 10. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups. Note: Not all tags have been processed before the writing of this report.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs
BC	Thompson River (6.1%)	R-Chilliwack R	H-Chilliwack River H	3 (4.5%)	0
		R-Harrison R	H-Chehalis River H	1 (1.5%)	0
	Georgia Strait (1.5%)	R-Burrard In	H-Sandy Cove Seapen	1 (1.5%)	0
WA	N Washington (3%)	Friday Cr 03.0017	Samish Hatchery	1 (1.5%)	1
		Kendall Cr 01.0406	Kendall Cr Hatchery	1 (1.5%)	0
	Hood Canal (7.6%)	Finch Cr 16.0222	Hoodsport Hatchery	4 (6.1%)	0
		Purdy Cr 16.0005	George Adams Hatchery	1 (1.5%)	1
	N Puget Sound (7.6%)	Tulalip Cr 07.0001	Bernie Gobin Hatch	2 (3%)	1
		Wallace R 07.0940	Wallace R Hatchery	3 (4.5%)	0
	Mid Puget Sound (48.5%)	Icy Cr 09.0125	Icy Cr Hatchery	1 (1.5%)	0
		Clarks Crk Hatchery	Clarks Crk Hatchery	2 (3%)	0
		Gorst Cr Rear.Pond-2	Gorst Cr Rearing Pnd	3 (4.5%)	0
		Big Soos Cr 09.0072	Soos Creek Hatchery	9 (13.6%)	2
		Voight Cr 10.0414	Voights Cr Hatchery	2 (3%)	0
		Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	4 (6.1%)	0
		Point Defiance Net Pens	Clarks Crk Hatchery	1 (1.5%)	0
		Grovers Cr Hatchery	Grovers Cr Hatchery	8 (12.1%)	8
		Issaquah Cr 08.0178	Issaquah Hatchery	1 (1.5%)	0
		White R 10.0031	White River Hatchery	1 (1.5%)	0
	S Puget Sound (25.8%)	Chambers Cr 12.0007	Garrison Hatchery	4 (6.1%)	0
		Minter Cr Tr 15.0051	Hupp Springs Rearing	1 (1.5%)	0
		Deschutes R 13.0028	Tumwater Falls Hatchery	2 (3%)	0
		Minter Cr 15.0048	Minter Cr Hatchery	9 (13.6%)	0
		Kalama Cr 11.0017	Kalama Cr Hatchery	1 (1.5%)	0
<b>Total</b>				<b>66</b>	<b>13</b>

**Table 5.16** Season-total estimates of Chinook salmon encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Marine Area 10 summer Chinook MSF. Values may not add up exactly due to rounding error.

Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
		LM	LU	SM	SU	LM	LU	SM	SU	
Jul 16 - Jul 28, 2007	8,374	1,469	30	70	8	209	497	3,101	723	6,107
Jul 16 - Aug 15, 2008	13,808	1,027	3	4	0	128	510	189	385	2,246
Jul 16 - Aug 31, 2009	23,179	1,505	22	116	0	220	82	2,488	1,017	5,450
Jul 16 - Aug 31, 2010	21,636	2,950	33	37	9	432	1,026	1,024	1,665	7,178
Jul 16 - Aug 31, 2011	27,753	2,548	14	94	14	372	1,872	964	694	6,573
Jul 16 - Aug 19, 2012	17,823	2,976	17	88	17	443	377	6,343	1,950	12,212
Jul 16 - Aug 18, 2013	27,317	3,434	6	77	17	512	298	2,149	1,603	8,097
Jul 16 - Aug 7, 2014	11,892	1,063	4	0	4	159	322	1,629	322	3,503
Jul 16 - Aug 15, 2016	9,314	1,032	0	53	0	154	274	1,087	593	3,192
Jul 16 - Aug 15, 2017	13,466	2,072	0	153	0	310	741	4,134	1112	8,522
Jul 16 - Aug 16, 2018	19,622	4,695	21	155	14	702	1010	3,733	1097	11,428
Jul 25 - Aug 16, 2019	16,115	3,202	3	64	14	478	1032	396	331	5,521
Jul 16- Aug 31, 2020	28,880	1,375	6	135	28	205	1123	4079	2079	9,029
Jul 16- Aug 21, 2021	22,900	3,268	25	199	57	488	1094	9791	3220	18,143
Jul 14 - Aug 31, 2022	30,594	4,100	12	140	8	613	1,046	2,938	2,589	11,446
Jul 13 - Aug 20, 2023	24,447	3,153	21	228	14	471	1,462	6,581	2,512	14,442

## 6) Marine Area 11 Summer Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a summer Chinook MSF in Marine Area 11, originally scheduled for June 1 through September 30, 2023, Thursday-Sunday. In June, the fishery was closed early on the 11<sup>th</sup> due to reaching the unmarked encounter limit for the month of June. The fishery was reopened in July and closed early due to reaching the sublegal and unmarked encounter limits for the July-September period. WDFW’s Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program, a Full Murthy design, in Marine Area 11 throughout the season to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included dockside creel sampling and collection of voluntary salmon trip reports (STRs) from the angling public. The fishery controls for the entire summer of Marine Area 11 were total catch (4,802), sublegal encounters (5,542), and unmarked encounters (2,903). **Table 6.2** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). In this section, we present results from our monitoring activities during the Marine Area 11 summer Chinook MSF.

**Table 6.1** Fishery dates and fishery retention status of salmon in the 2023 summer Chinook salmon MSF in Marine Area 11.

Start Date	End Date	Fishery Status	Days
1-Jun	4-Jun	Open	4
5-Jun	7-Jun	Closed	3
8-Jun	11-Jun	Open	4
12-Jun	30-Jun	Closed	18
1-Jul	2-Jul	Open	2
3-Jul	5-Jul	Closed	3
6-Jul	9-Jul	Open	4
10-Jul	12-Jul	Closed	3
13-Jul	14-Jul	Open	2
Total days open			16

**Table 6.2** Sampling/estimation details on target parameters associated with the overall Marine Area 11 summer mark-selective fishery monitoring program.

Activity	Focal Parameter(s)	Secondary Parameter(s)	Sample Unit(s)	Finest Estimation Time Step	Comments
Dockside Creel Sampling	Fishing effort (boat & angler trips); kept and released fish	Catch rates (CPUE); length, age, and CWT composition of harvest <sup>1</sup> ; collection of angler fishing methods.	Angler trip; kept fish; reported fish release	One week	Within days, estimates were produced by day-type strata (weekday/weekend). Each week we sampled every Friday, Saturday, and Sunday, and we randomly selected n=2 out of N=4 weekdays (Monday-Thursday) for sampling.
		Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook salmon	Boat trip	Season	Dockside encounter data were not used for estimation of Chinook encounters for this fishery. <b>Table 6.10.</b>
On-the-water Surveys	Proportion of total angler effort that uses sample-frame sites (i.e., site “size measures”) versus out-of-frame sites.	Total on-water boat and angler counts at assumed peak effort time interval (instantaneous count); spatial distribution of recreational fishing boats in the area.	Boats and anglers	Month	A total of 7 boat surveys (2 weekday and 5 weekend) were conducted during the two-month fishery.
Test Fishing	Size (legal/sublegal) and mark-status composition (marked, unmarked) of encountered Chinook salmon	Chinook salmon length, age, and DNA-based <sup>2</sup> stock composition; species composition of non-Chinook salmon encounters	Fish encounter	Season	Test fishing collected data when the fishery was open to Chinook retention ( <b>Table 6.1</b> ). Data collected during June and July were not statistically different (Chi-square p-value = 0.106), so the two months were combined for the purpose of estimating encounters and mortalities for this fishery. LM = 26%; LU% = 21%; SM% = 40%; SU% = 13%. <b>Table 6.13</b>
Voluntary Salmon Trip Reports (STRs)	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook salmon	Encounter data for non-Chinook salmon species (e.g., Coho salmon) that the angler may record on the STR form	Fish encounter	Season	21 STRs were returned during this fishery. STR data (LM = 63%, LU = 13%, SM = 21%, SU = 3%; <b>Table 6.11</b> ) were significantly different than test fishing data (Chi-square, p-value < 0.003) and were not used for estimates of encounters and mortalities in this fishery.
Overall Fishery Impacts Estimation	Total Chinook salmon encounters and mortalities by size/mark-status group	Ratios of encounters and mortalities per kept Chinook salmon	N/A	Season	Estimated on a monthly time step but considered at the season-total level.
Coded-wire tag (CWT) Impacts Estimation	Marked/unmarked double-index tag (DIT) encounters and mortalities	N/A	N/A	Season	The temporal resolution of DIT impacts is constrained by the total number of tags recovered. Only one tag has been processed for this fishery at the time this report was written.

<sup>1</sup> The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.

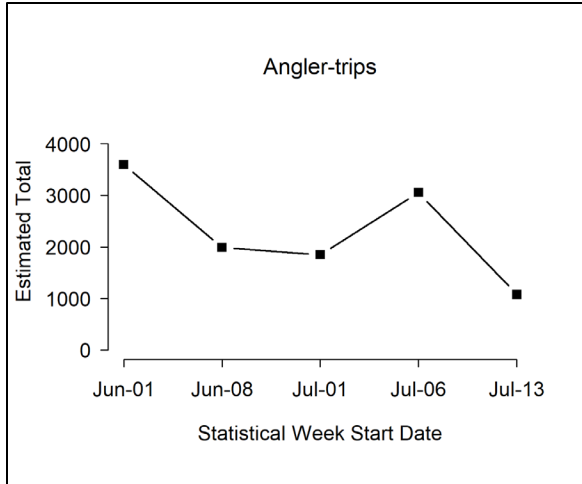
<sup>2</sup> Though samples were collected, DNA-based estimates of stock composition are not yet available for this fishery.

**Table 6.3** Estimates of total fishing effort and total salmon catch (harvest and releases) during the summer Chinook MSF in Marine Area 11. Values may not add up exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

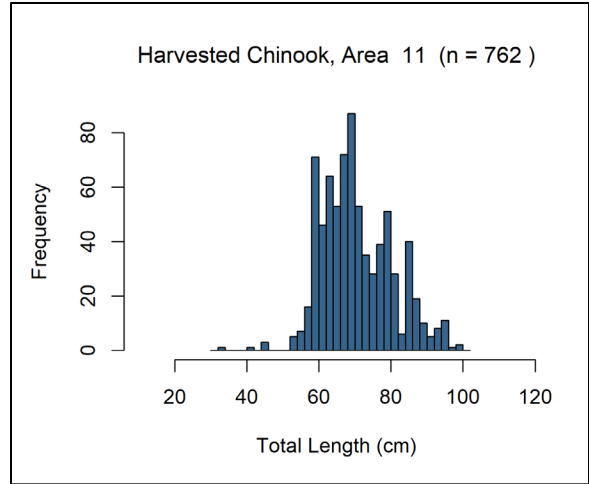
Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Est. Total Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
<b>June</b>	23	1-Jun	4-Jun	1,779	3,602	769	2	1,391	1,102	3,263
	24	8-Jun	11-Jun	1,004	1,987	223	2	404	318	947
<b>July</b>	27	1-Jul	2-Jul	896	1,847	272	7	493	384	1,157
	28	6-Jul	9-Jul	1,558	3,056	361	2	654	517	1,534
	29	13-Jul	14-Jul	658	1,075	169	0	306	243	718
<b>Total:</b>				<b>5,895</b>	<b>11,567</b>	<b>1,795</b>	<b>13</b>	<b>3,247</b>	<b>2,564</b>	<b>7,619</b>
<b>Variance:</b>				23,956	171,389	8,515	25	1,100,626	445,733	2,957,738
<b>SE:</b>				155	414	92	5	1,049	668	1,720
<b>CV (%):</b>				3	4	5	39	32	26	23
<b>95% CI:</b>				5,592 - 6,199	10,755 - 12,378	1,614 - 1,975	3 - 23	1,191 - 5,304	1,256 - 3,873	4,248 - 10,990

**Table 6.4** Number of total length samples collected from retained Chinook salmon collected during dockside angler interviews in the summer Chinook MSF in Marine Area 11.

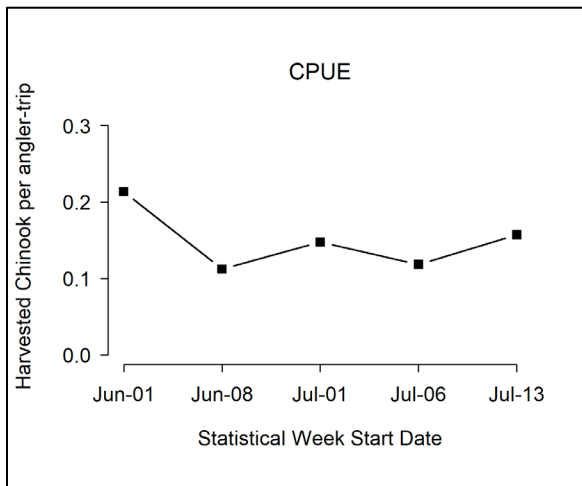
Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	745	17	762
Unmarked	5	1	6
<b>Total</b>	<b>750</b>	<b>18</b>	<b>768</b>



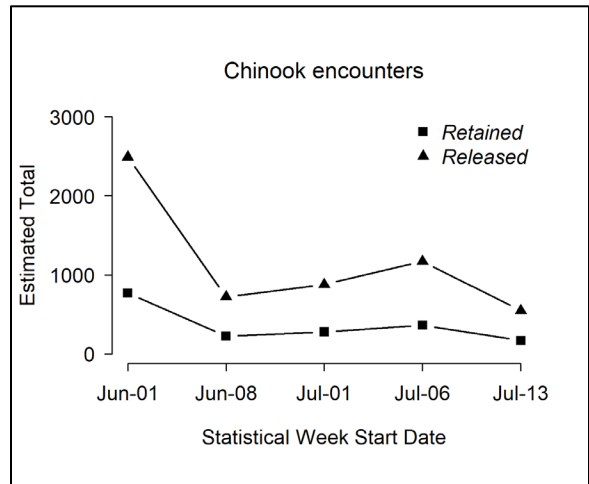
**Figure 6.1** Temporal patterns in fishing effort during the summer Chinook MSF in Marine Area 11.



**Figure 6.3** Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the summer Chinook MSF in Marine Area 11. Note: displayed values are observations where lengths are taken.



**Figure 6.2** Temporal patterns in CPUE (landed Chinook per angler trip) during the summer Chinook MSF in Marine Area 11.



**Figure 6.4** Temporal patterns in Chinook salmon encounters (retained and released) during the summer Chinook MSF in Marine Area 11.

**Table 6.5** Comparison of modeled and estimated total Chinook salmon encounters for the summer Chinook MSF in Marine Area 11. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

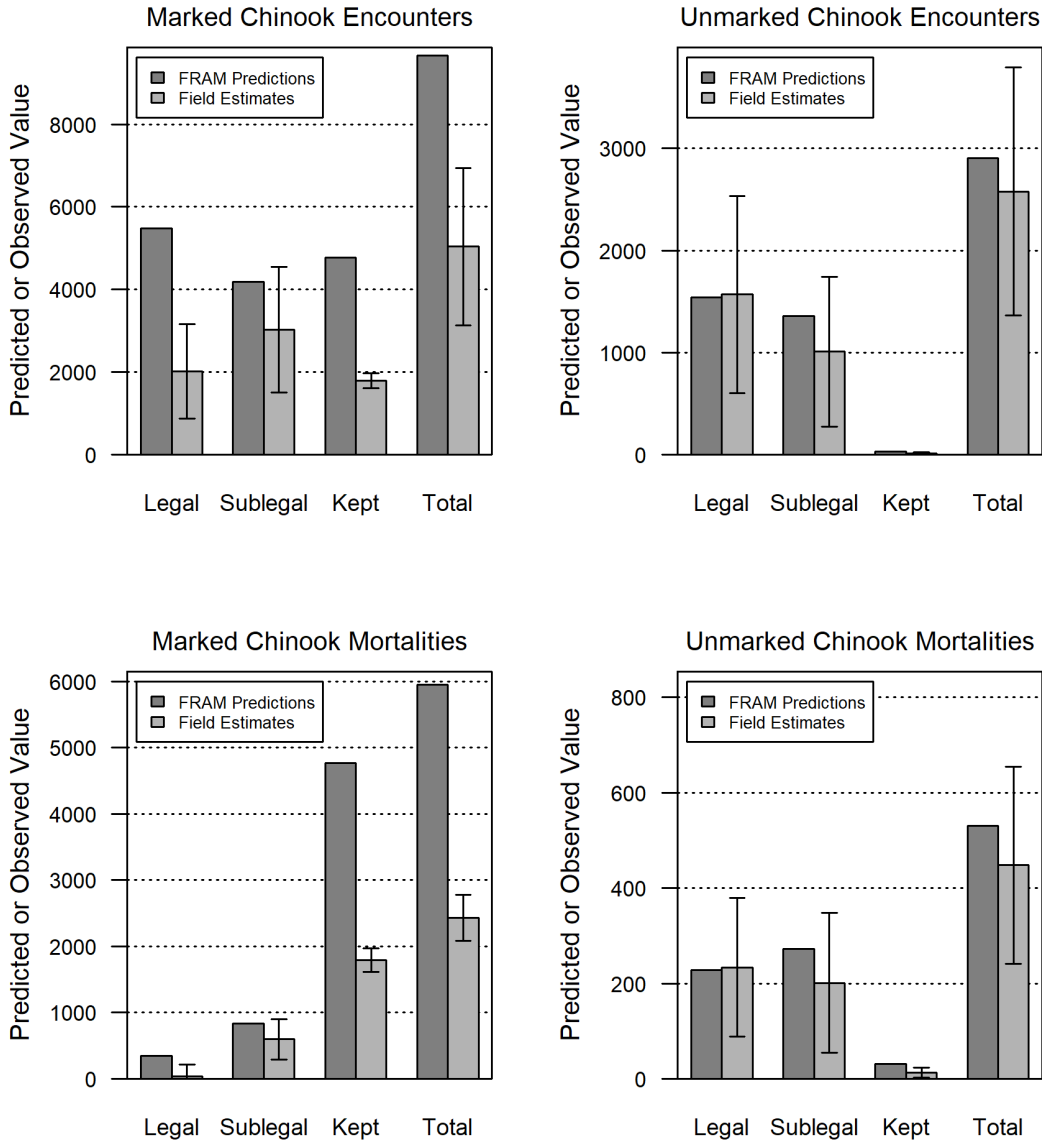
Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	2,903	1,544	1,359	31
	AD	9,667	5,484	4,183	4,771
	Total	12,570	7,028	5,542	4,802
	% Marked	77	78	75	99
Estimated (Creel) Encounters	UM	2,577	1,569	1,008	13
	AD	5,042	2,017	3,025	1,795
	Total	7,619	3,585	4,034	1,808
	% Marked	66	56	75	99

**Table 6.6** Summary of season-wide fishery impact estimates for the summer Chinook MSF in Marine Area 11. Release mortality rate = 0.15 for legal fish and 0.20 for sublegal fish. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	2,017	1,755	262	39	1,794	16,082	127	1,545 - 2,042	7
Legal UM	1,569	11	1,558	234	244	5,511	74	99 - 390	30
Sublegal AD	3,025	40	2,985	597	637	24,186	156	332 - 942	24
Sublegal UM	1,008	2	1,006	201	203	5,604	75	57 - 350	37
Total	7,619	1,808	5,811	1071	2,879	51,383	227	2,434 - 3,323	8

**Table 6.7** Comparison of modeled and estimated total Chinook salmon mortalities for the summer Chinook MSF in Marine Area 11. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	531	5,954	6,485	448	2,431	2,879
Released Legal	228	346	574	234	39	273
Released Sublegal	272	837	1,109	201	597	798
Landed Only	31	4,771	4,802	13	1,795	1,808



**Figure 6.5** Comparison of modeled and estimated total Chinook salmon encounters and mortalities for the summer Chinook MSF in Marine Area 11. Error bars represent approximate 95% confidence intervals for field estimates.



**Table 6.8** Summary of the total number of anglers intercepted during on-the-water surveys conducted for the summer Chinook MSF in Marine Area 11. Sites in bold represent those included in the dockside sample frame.

Site Name	Weekday Anglers	Season Total (unadj.) Size Measure	Weekend Anglers	Season Total (unadj.) Size Measure
<b>Armeni Public Ramp</b>	<b>1</b>	<b>0.0029</b>	<b>12</b>	<b>0.0121</b>
Breakwater Marina (Warters)	9	0.0262	16	0.0162
Browns Point Ramp	2	0.0058	9	0.0091
Commencement Bay Marina Services	7	0.0203	39	0.0394
Dash Point Shore	2	0.0058	0	0
Day Island Marina	3	0.0087	2	0.0020
Des Moines Marina (Moorage)	22	0.0640	70	0.0708
Dockton Ramp, Vashon Is	4	0.0116	8	0.0081
Elliott Bay Marina	3	0.0087	2	0.0020
Fox Island Public Ramp	1	0.0029	2	0.0020
Gardiner Ramp	1	0.0029	6	0.0061
Gig Harbor Marina	12	0.0349	44	0.0445
<b>Gig Harbor Ramp</b>	<b>14</b>	<b>0.0407</b>	<b>43</b>	<b>0.0435</b>
Harstine Is. Ramp	2	0.0058	6	0.0061
Jensen Point	1	0.0029	0	0
Narrows Marina	13	0.0378	31	0.0313
Olalla Public Ramp	2	0.0058	1	0.0010
<b>Point Defiance Boathouse</b>	<b>65</b>	<b>0.1890</b>	<b>125</b>	<b>0.1264</b>
<b>Point Defiance Public Ramp</b>	<b>137</b>	<b>0.3983</b>	<b>313</b>	<b>0.3165</b>
Private	9	0.0262	32	0.0324
<b>Redondo Ramp</b>	<b>20</b>	<b>0.0581</b>	<b>96</b>	<b>0.0971</b>
Steilacoom Public Ramp	4	0.0116	5	0.0051
Tacoma Yacht Club	2	0.0058	4	0.0040
Tyee Marina/Ramp	4	0.0116	13	0.0131
Wollochet Bay Public Ramp	2	0.0058	0	0
Zittels Marina	2	0.0058	14	0.0142
Browns Point Shore	0	0	9	0.0091
Brownsville Marina	0	0	2	0.0020
Chambers Bay Beach	0	0	2	0.0020
East Bay Marina/Ramp (Oly. Isle)	0	0	2	0.0020
Edmonds Dry Storage (Boat Loft)	0	0	1	0.0010
Edmonds Marina	0	0	3	0.0030
Home Public Ramp	0	0	2	0.0020
Horsehead Bay Ramp	0	0	3	0.0030
Manchester Public Ramp	0	0	5	0.0051
Narrows Ramp	0	0	14	0.0142
Oak Harbor Marina & Public Ramp	0	0	4	0.0040
Pleasant Harbor Marina	0	0	2	0.0020
Point Defiance Beach	0	0	1	0.0010
Point Defiance Boathouse Dock	0	0	2	0.0020
Port Orchard Marina	0	0	2	0.0020
Port Orchard Public Ramp	0	0	3	0.0030
Shilshole Marina	0	0	19	0.0192
Shilshole Public Ramp	0	0	2	0.0020
Steamboat Island Private Ramp	0	0	2	0.0020
Three Tree Point Launch (Pt Pully)	0	0	5	0.0051
Unknown	0	0	9	0.0091
Wauna Ramp	0	0	2	0.0020
<b>Total Anglers</b>	<b>344</b>	<b>1</b>	<b>989</b>	<b>1</b>

**Table 6.9** Monthly sample rates (Total retained Chinook sampled<sup>1</sup> / Estimated retained Chinook) for the summer Chinook MSF in Marine Area 11. AD = marked (adipose-clipped), UM = unmarked.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
June	23 - 24	1 Jun - 11 Jun	992	4	996	427	3	430	43.2%
July	27 - 29	1 Jul - 14 Jul	803	9	812	270	3	273	33.6%
<b>Season Total</b>			<b>1,795</b>	<b>13</b>	<b>1,808</b>	<b>697</b>	<b>6</b>	<b>703</b>	<b>38.9%</b>

<sup>1</sup> Number of retained Chinook salmon sampled includes all retained Chinook salmon inspected for CWTs, from all sites sampled during the summer Chinook MSF in Marine Area 11 (creel estimates and fish sampled as part of baseline sampling).

**Table 6.10** Dockside encounters (retained and released) by size-mark category during the summer Chinook salmon MSF in Marine Area 11. Retained fish were sampled for mark-status and length, released fish by size-mark status were reported by the angler.

Dockside Encounters				
Metric	Legal		Sublegal	
	LM	LU	SM	SU
Encounters	763	161	155	83
Bias-corrected size/mark composition	58.44%	13.86%	13.34%	14.37%
Variance	0.0003	0.0002	0.0002	0.0002

**Table 6.11** Total Chinook salmon encountered (retained and released) by private-boat anglers logging their trips on STRs during the 2023 summer Chinook salmon MSF in Marine Area 11, with estimates of legal-size and overall (legal and sublegal) mark rates. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

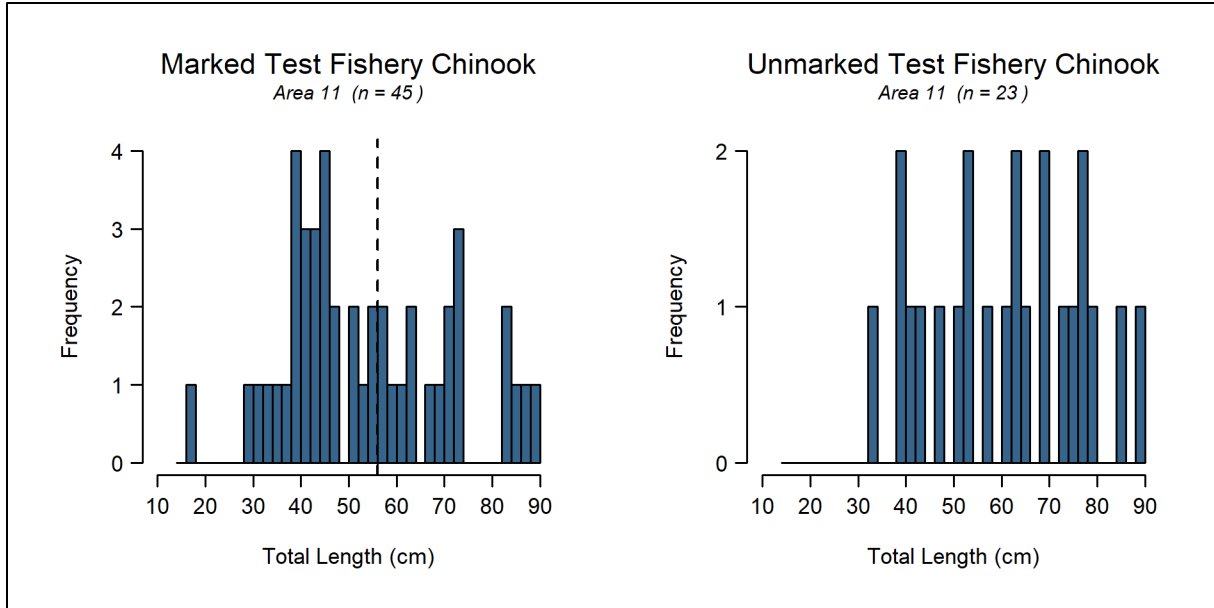
Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private STR	21 1-trip STRs	24	5	8	1	38	0.84	0.83
Size/mark-status composition:		0.63	0.13	0.21	0.03			
Variance:		(0.0004)	(0.0001)	(0.0001)	(0.0000)			

**Table 6.12** Fishery-total estimates of retained and released salmon (other than Chinook) for the summer Chinook MSF in Marine Area 11. Values may not add up exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Stat Week	Start Date	End Date	Retained Salmon			Released Salmon						
			Coho AD	Coho UM	Pink	Coho AD	Coho UM	Coho UK	Chum	Pink	Cutthroat	Unknown
23	1-Jun	4-Jun	134	66	2	10	10	30	2	6	0	92
24	8-Jun	11-Jun	60	25	0	15	2	10	0	2	0	67
27	1-Jul	2-Jul	268	80	2	23	2	10	0	0	2	81
28	6-Jul	9-Jul	82	37	2	27	8	34	0	0	0	119
29	13-Jul	14-Jul	53	37	0	3	0	20	0	0	0	61
<b>Season Total:</b>			<b>596</b>	<b>246</b>	<b>6</b>	<b>78</b>	<b>23</b>	<b>105</b>	<b>2</b>	<b>8</b>	<b>2</b>	<b>419</b>
<b>Variance:</b>			3,577	748	3	153	20	127	1	5	1	1,771
<b>Standard Error:</b>			60	27	2	12	4	11	1	2	1	42
<b>CV (%):</b>			10	11	26	16	20	11	46	28	44	10
<b>95% CI:</b>			479 - 714	192 - 299	3 - 9	54 - 102	14 - 31	83 - 127	0 - 4	4 - 13	0 - 4	336 - 501

**Table 6.13** Composition of test fishery Chinook salmon encounters and associated mark-rate and size/mark-status proportion estimates for the summer Chinook salmon MSF in Marine Area 11. AD = marked (adipose-clipped), UM = unmarked.

Stat Week	Fishing Effort		Legal		Sublegal		Total
	Days	Hours Fished	AD	UM	AD	UM	
22	3	20.14	5	3	4	1	13
23	3	21.58	3	1	0	1	5
24	8	44.22	4	3	4	2	13
27	3	15.75	3	1	5	1	10
28	13	62.12	3	6	13	4	26
29	1	3.42	0	0	1	0	1
<b>Total</b>	<b>31</b>	<b>167.22</b>	<b>18</b>	<b>14</b>	<b>27</b>	<b>9</b>	<b>68</b>
<b>Size/mark-status composition:</b>			0.26	0.21	0.40	0.13	
<b>Variance:</b>			(0.0029)	(0.0024)	(0.0036)	(0.0017)	
<b>Legal size mark rate:</b>			0.56				
<b>Overall mark rate:</b>			0.66				



**Figure 6.6** Length-frequency distributions of marked (*left panel*) and unmarked (*right panel*) Chinook salmon encountered by test fishers during the summer Chinook salmon MSF in Marine Area 11. The vertical dashed line in the left panel corresponds to the legal-size limit (22 in or 56 cm).

**Table 6.14** Summary of coded-wire tags recovered from Chinook salmon harvested during the 2023 summer Chinook MSF in Marine Area 11. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups. Note: **Not all tags have been processed before the writing of this report.**

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs
WA	S Puget Sound (100%)	Minter Cr 15.0048	Minter Cr Hatchery	1 (100%)	0
<b>Total</b>				<b>1</b>	<b>0</b>

**Table 6.15** Season-total estimates of Chinook salmon encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Area 11 summer Chinook MSF. Values may not add up exactly due to rounding error.

Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
		LM	LU	SM	SU	LM	LU	SM	SU	
Jun 1 - Sept 30, 2007	78,958	10,192	74	354	21	1,511	3,015	8,033	2,357	25,558
Jun 1 - Sept 30, 2008	65,728	7,277	18	100	5	1,087	1,999	1,969	248	12,703
Jun 1 - Sept 30, 2009	80,157	3,149	20	117	17	470	1,269	3,820	3,302	12,164
Jun 1 - Sept 30, 2010	54,594	3,883	64	27	0	580	1,105	900	405	6,965
Jun 1 - Sept 30, 2011	69,919	2,559	9	77	12	382	2,120	1,932	1,579	8,670
Jun 1 - Sept 30, 2012	56,065	4,894	57	72	14	731	2,665	2,649	1,157	12,240
Jun 1 - Sept 30, 2013	64,509	3,056	35	55	0	457	1,289	1,214	669	6,774
Jun 1 - Sept 30, 2014	39,426	2,912	20	11	0	435	1,585	2,142	861	7,966
Jun 1 - Sept 30, 2015	40,858	1,447	10	41	3	216	748	2,491	1599	6,556
Jun 24 - Aug 19, 2016	13,766	1,437	4	40	0	215	443	1,359	298	3,794
Jun 1 - Sep 30, 2017	35,899	3,276	20	265	36	489	1056	2,962	1685	9,789
Jun 1 - Aug 25, 2018	32,041	5,476	26	164	7	818	2222	7,929	2690	19,333
Jul 1 - Aug 25, 2019	22,935	2,574	12	32	0	385	1174	1,266	520	5,963
Jul 1 - Sep 30, 2020	40,866	2,002	25	100	0	299	677	1,851	234	5,189
Jun 16 - Aug 24, 2021	29,977	3,165	12	104	9	473	1136	2,576	948	8,424
Jun 1 - Aug 13, 2022	12,697	3,329	11	53	3	497	1,264	1,516	1,076	7,750
Jun 1 - Jul 14, 2023	11,567	1,755	11	40	2	262	1,558	2,985	1,006	7,619

## **7) Marine Area 12 Summer Mark-Selective Chinook Fishery**

The Washington Department of Fish and Wildlife (WDFW) implemented a summer Chinook MSF in the sub-area of Marine Area 12 south of Ayock from July 10 through September 30, 2023. WDFW's Puget Sound Sampling Unit (PSSU) implemented a "Baseline Sampling" program (see WDFW 2012a for details) consisting of dockside angler interviews with catch sampling along with efforts to distribute and collect voluntary salmon trip reports (STRs) from the angling public.

Unlike the other survey designs, Baseline Sampling does not provide a means for generating in-season or immediate post-season estimates of fishery total catch and effort. These estimates will be available approximately one year after the close of the fishery through the WDFW Catch Record Card (CRC) program. CRC-based catch estimates will be used to generate estimates of total Chinook salmon encounters and mortalities by size and mark-status using the methods provided in Conrad, R., T. Garber, and G. Rose (2020). Draft memo to the co-managers "Assessment of Two Methods for Estimating the Composition of Chinook Encounters Early in the Fishing Season." While these descriptors of MSF impacts are not presented in this document, they will be available at a future time.

**Table 7.1** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). In this section we present results from our monitoring activities during the Marine Area 12 summer Chinook MSF, including relative catch and effort patterns over the course of the season based on the assumption that baseline-sampling observations of these parameters are good indicators of associated fishery-wide trends.

**Table 7.1** Sampling/estimation details on target parameters associated with the overall Marine Area 12 summer mark-selective fishery monitoring program.

Activity	Focal Parameter(s)	Secondary Parameter(s)	Sample Unit(s)	Finest Estimation Time Step	Comments
Dockside Angler Interviews (Baseline Sampling)	Observed (in-sample) fishing effort (boat & angler trips); kept and released fish.	Catch rates (CPUE); length, age, and CWT composition of harvest <sup>1</sup> ; collection of angler fishing methods.	Angler trip; kept fish; reported fish release	Week	Observed catch per angler trip and species composition data obtained from baseline sampling will ultimately be combined with Catch Record Card (CRC) data to produce fishery-total estimates at a later time (approximately one year following the fishery).
		Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook salmon	Boat trip	Season	Dockside encounter data will not be used for estimation of Chinook encounters for this fishery. <b>Table 7.6.</b>
Voluntary Salmon Trip Reports (STRs)	Size (legal/sublegal) and mark-status composition (marked, unmarked) of encountered Chinook	Encounter data for non-Chinook species (e.g., Coho) that the angler may record on the STR form	Fish encounter	Season	15 STRs were turned in during the fishery ( <b>Table 7.7</b> ). With adequate sample size, STR data will be used to estimate encounters and mortalities at a later date.
Overall Fishery Impacts Estimation	Total Chinook encounters and mortalities, by size/mark-status group	Ratios of encounters and mortalities per kept Chinook	N/A	Season	Will be estimated at a later date using the CRC-based retained Chinook estimate, when it becomes available.
Coded-wire tag (CWT) Impacts Estimation	Marked/unmarked double-index tag (DIT) encounters and mortalities	N/A	N/A	Season	Will be estimated at a later date using the CRC-based retained Chinook estimate, when it becomes available. The temporal resolution of DIT impacts is constrained by the total number of tags recovered. No CWTs have been processed for this area at the time this report was written.

<sup>1</sup> The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.

<sup>2</sup> Though samples were collected, DNA-based estimates of stock composition are not yet available for this fishery.

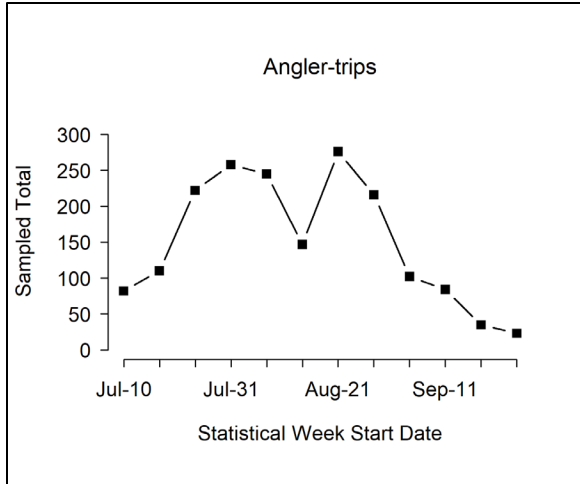
**Table 7.2** Observations of fishing effort, salmon harvest, and reported salmon releases, by week, for the summer Chinook MSF in Marine Area 12. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark status.

Stat Week	Start	End	Effort		Retained Fish			Released Fish		
			Boats	Anglers	Chin AD	Chin UM	Chin UK	Chin AD	Chin UM	Chin UK
29	10-Jul	16-Jul	49	82	5	0	1	2	2	3
30	17-Jul	23-Jul	50	110	30	1	0	3	1	0
31	24-Jul	30-Jul	110	222	51	0	0	2	5	1
32	31-Jul	6-Aug	133	258	67	0	0	2	0	0
33	7-Aug	13-Aug	133	245	96	1	0	0	1	1
34	14-Aug	20-Aug	81	147	57	0	0	1	2	0
35	21-Aug	27-Aug	155	276	98	0	0	4	4	0
36	28-Aug	3-Sep	130	216	19	0	0	2	13	0
37	6-Sep	10-Sep	68	102	1	0	0	0	1	0
38	11-Sep	17-Sep	60	84	0	0	0	2	0	0
39	18-Sep	24-Sep	24	35	0	0	0	0	0	0
40	25-Sep	30-Sep	20	23	0	0	0	0	0	0
<b>Season Total</b>			<b>1,013</b>	<b>1,800</b>	<b>424</b>	<b>2</b>	<b>1</b>	<b>18</b>	<b>29</b>	<b>5</b>

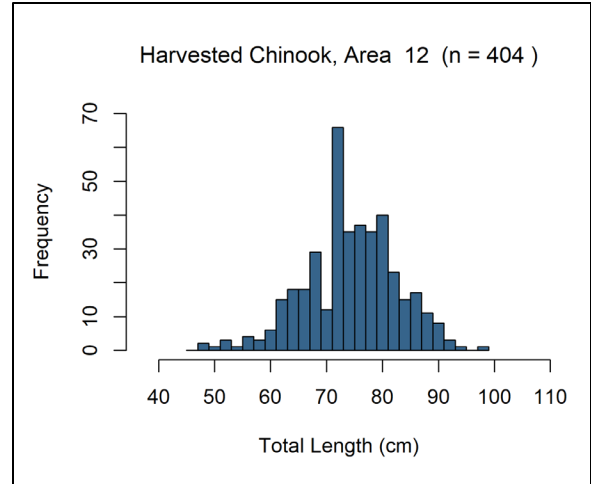
**Table 7.3** Observations of fishing effort, harvest and reported releases of salmon other than Chinook, by week, for the summer Chinook salmon MSF in Marine Area 12. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark-status, UD = undetermined mark-status.

Stat Week	Start	End	Effort		Retained Fish					Released Fish				
			Boats	Anglers	Coho AD	Coho UM	Coho UK	Pink	Chum	Coho AD	Coho UM	Coho UK	Pink	Chum
29	10-Jul	16-Jul	49	82	0	0	0	0	0	0	0	0	0	0
30	17-Jul	23-Jul	50	110	5	0	0	0	0	0	0	1	0	1
31	24-Jul	30-Jul	110	222	1	0	0	29	0	0	0	0	3	0
32	31-Jul	6-Aug	133	258	8	1	0	10	0	0	0	1	8	4
33	7-Aug	13-Aug	133	245	5	1	0	6	0	0	0	1	0	0
34	14-Aug	20-Aug	81	147	3	1	3	6	0	2	0	0	8	0
35	21-Aug	27-Aug	155	276	306	41	0	15	0	6	0	46	35	1
36	28-Aug	3-Sep	130	216	219	14	6	13	0	3	0	19	27	2
37	6-Sep	10-Sep	68	102	106	8	5	10	0	0	0	2	61	39
38	11-Sep	17-Sep	60	84	156	27	12	1	0	0	0	25	16	80
39	18-Sep	24-Sep	24	35	17	5	0	0	0	0	0	0	36	27
40	25-Sep	30-Sep	20	23	9	11	0	0	1	0	0	0	5	8
<b>Season Total</b>			<b>1,013</b>	<b>1,800</b>	<b>835</b>	<b>109</b>	<b>26</b>	<b>90</b>	<b>1</b>	<b>11</b>	<b>1</b>	<b>94</b>	<b>199</b>	<b>162</b>

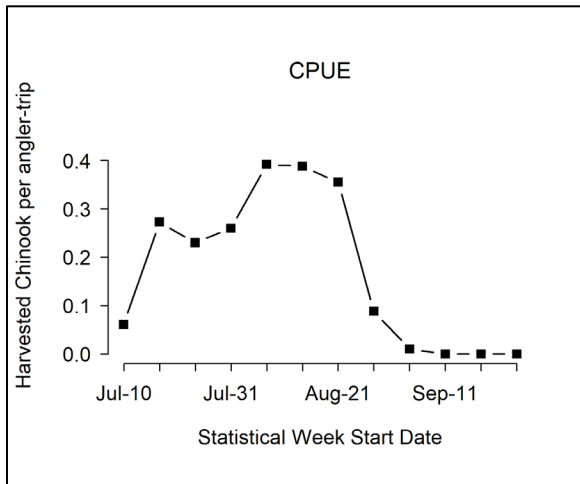




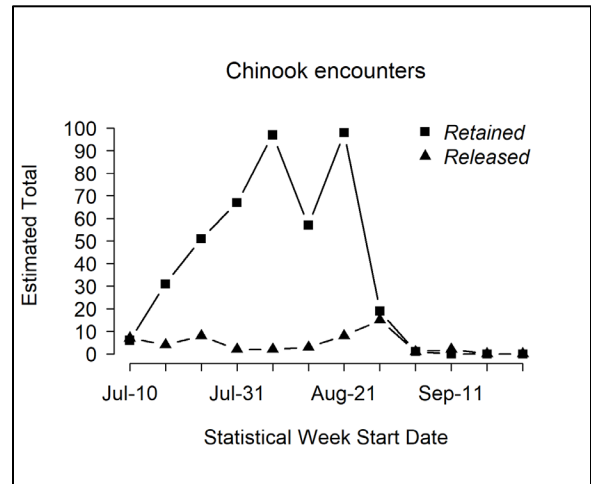
**Figure 7.1** Temporal patterns in fishing effort during the 2023 summer Chinook salmon MSF in Marine Area 12. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total.



**Figure 7.3** Length-frequency distributions of retained marked Chinook salmon sampled in dockside angler interviews during the 2023 summer Chinook salmon MSF in Marine Area 12.



**Figure 7.2** Temporal patterns in CPUE (number of Chinook salmon landed per angler trip) during the 2023 summer Chinook salmon MSF in Marine Area 12. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates.



**Figure 7.4** Temporal patterns in Chinook salmon encounters (number retained and released) during the 2023 summer Chinook salmon MSF in Marine Area 12

**Table 7.4** List of sites sampled with the number of sampling events (site-days) during the 2023 summer Chinook salmon MSF in Marine Area 12.

Location Name	Number of Site Days Sampled Per Month			Total Site-Days	% of Total
	July	August	September		
Hoodsport Shore	11	17	6	34	15.60%
Quilcene Bay Ramp	10	14	22	46	21.10%
Saltwater Park Ramp (Hood Canal Rmp Tacoma Light)	21	18	19	58	26.61%
Skokomish Tide Flats	7	17	4	28	12.84%
Triton Cove State Park	1	2	1	4	1.83%
Union Ramp	19	21	1	41	18.81%
Pleasant Harbor Boat Ramp (WDFW)	0	2	2	4	1.83%
Point Whitney Ramp	0	1	1	2	0.92%
Tahuya Ramp	0	0	1	1	0.46%
<b>Grand Total</b>	<b>69</b>	<b>92</b>	<b>57</b>	<b>218</b>	<b>100.00%</b>

**Table 7.5** Summary of total lengths from retained Chinook salmon collected during dockside angler interviews in the 2023 summer Chinook salmon MSF in Marine Area 12.

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	401	3	404
Unmarked	2	0	2
<b>Total</b>	<b>403</b>	<b>3</b>	<b>406</b>

**Table 7.6** Dockside encounters (retained and released) by size-mark category during the 2023 summer Chinook salmon MSF in Marine Area 12. Retained fish were sampled for mark-status and length, released fish by size-mark status were reported by the angler.

Dockside Encounters				
Metric	Legal		Sublegal	
	LM	LU	SM	SU
Encounters	402	22	20	9
Bias-corrected size/mark composition	78.98%	4.86%	4.42%	11.75%
Variance	0.0004	0.0002	0.0001	0.0001

**Table 7.7** Total Chinook salmon encountered (retained and released) by private-boat anglers logging their trips on STRs during the 2023 summer Chinook salmon MSF in Marine Area 12, with estimates of legal-size and overall (legal and sublegal) mark rates. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private STR	15 1-trip STRs	44	2	2	1	49	0.94	0.90
Size/mark-status composition:		0.90	0.04	0.04	0.02			
Variance:		(0.0004)	(0.0000)	(0.0000)	(0.0000)			

## **8) Marine Area 13 Summer Mark-Selective Chinook Fishery**

The Washington Department of Fish and Wildlife (WDFW) implemented a summer Chinook MSF in Marine Area 13 from May 1 through September 30, 2023. WDFW’s Puget Sound Sampling Unit (PSSU) implemented a “Baseline Sampling” program (see WDFW 2012a for details) consisting of dockside angler interviews with catch sampling along with efforts to distribute and collect voluntary salmon trip reports (STRs) from the angling public whenever possible.

Unlike the other survey designs, Baseline Sampling does not provide a means for generating in-season or immediate post-season estimates of fishery total catch and effort. These estimates will be available approximately one year after the close of the fishery through the WDFW Catch Record Card (CRC) program. Once available, CRC-based catch estimates will be used to generate estimates of total Chinook salmon encounters and mortalities by size and mark-status using the methods provided in Conrad, R., T. Garber, and G. Rose (2020). Draft memo to the co-managers “Assessment of Two Methods for Estimating the Composition of Chinook Encounters Early in the Fishing Season.” While these descriptors of MSF impacts are not presented in this document, they will be available at a future time.

**Table 8.1** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). In this section we present results from our monitoring activities during the Marine Area 13 summer Chinook MSF, including relative catch and effort patterns over the course of the season based on the assumption that baseline-sampling observations of these parameters are good indicators of associated fishery-wide trends.

**Table 8.1** Sampling/estimation details on target parameters associated with the overall Marine Area 13 mark-selective fishery monitoring program.

Activity	Focal Parameter(s)	Secondary Parameter(s)	Sample Unit(s)	Finest Estimation Time Step	Comments
Dockside Angler Interviews (Baseline Sampling)	Observed (in-sample) fishing effort (boat & angler trips); kept and released fish.	Catch rates (CPUE); length, age, and CWT composition of harvest <sup>1</sup> ; collection of angler fishing methods.	Angler trip; kept fish; reported fish release	Week	Observed catch per angler trip and species composition data obtained from baseline sampling will ultimately be combined with Catch Record Card (CRC) data to produce fishery-total estimates at a later time (approximately one year following the fishery).
		Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook salmon	Boat trip	Season	Dockside encounter data will not be used for estimation of Chinook encounters for this fishery. <b>Table 8.6.</b>
Voluntary Salmon Trip Reports (STRs)	Size (legal/sublegal) and mark-status composition (marked, unmarked) of encountered Chinook salmon	Encounter data for non-Chinook salmon species (e.g., Coho salmon) that the angler may record on the STR form	Fish encounter	Season	32 STRs were turned in during the fishery ( <b>Table 8.7</b> ). With adequate sample size, STR data will be used to estimate encounters and mortalities at a later date.
Overall Fishery Impacts Estimation	Total Chinook salmon encounters and mortalities by size/mark-status group	Ratios of encounters and mortalities per kept Chinook salmon	N/A	Season	Will be estimated at a later date using the CRC-based retained Chinook salmon estimate, when it becomes available.
Coded-wire tag (CWT) Impacts Estimation	Marked/unmarked double-index tag (DIT) encounters and mortalities	N/A	N/A	Season	Will be estimated at a later date using the CRC-based retained Chinook salmon estimate when it becomes available. The temporal resolution of DIT impacts is constrained by the total number of tags recovered. No CWTs have been processed for this area at the time this report was written.

<sup>1</sup> The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.

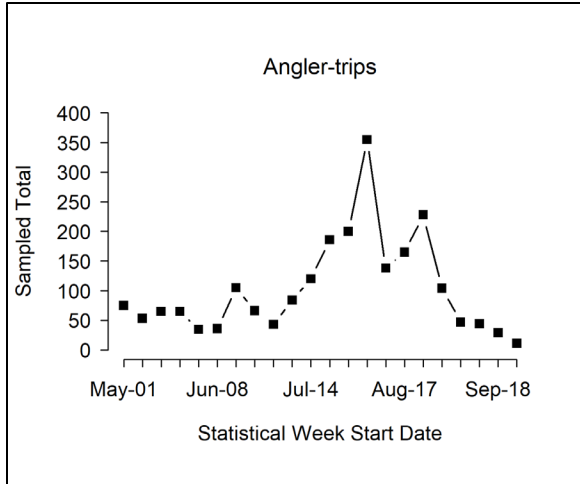
<sup>2</sup> Though samples were collected, DNA-based estimates of stock composition are not yet available for this fishery.

**Table 8.2** Observations of fishing effort, salmon harvest, and reported salmon releases, by week, for the summer Chinook MSF in Marine Area 13. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark status.

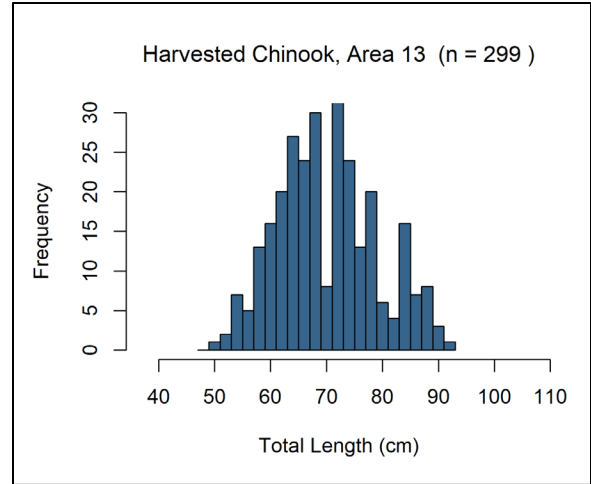
Stat Week	Start	End	Effort		Retained Fish			Released Fish		
			Boats	Anglers	Chin AD	Chin UM	Chin UK	Chin AD	Chin UM	Chin UK
19	1-May	7-May	45	75	12	0	0	4	3	0
20	8-May	14-May	35	53	20	0	0	4	5	6
21	15-May	21-May	45	65	23	0	1	9	8	5
22	22-May	27-May	33	65	7	0	0	9	2	8
23	1-Jun	4-Jun	21	35	6	0	0	2	3	0
24	8-Jun	11-Jun	17	36	9	0	0	1	2	0
25	15-Jun	18-Jun	62	105	6	0	2	4	4	1
26	22-Jun	25-Jun	44	66	8	0	0	6	4	1
27	26-Jun	2-Jul	23	43	9	0	0	1	0	0
28	6-Jul	9-Jul	42	84	8	0	0	4	4	1
29	14-Jul	16-Jul	56	120	11	0	0	15	12	0
30	17-Jul	23-Jul	101	186	19	0	0	6	6	2
31	24-Jul	30-Jul	104	200	7	0	0	11	4	0
32	3-Aug	6-Aug	178	355	26	0	0	14	7	3
33	7-Aug	13-Aug	80	138	19	0	1	6	4	3
34	17-Aug	20-Aug	81	165	31	0	1	9	7	3
35	21-Aug	27-Aug	117	228	54	0	0	10	12	2
36	28-Aug	3-Sep	56	104	21	0	0	3	1	3
37	6-Sep	10-Sep	26	47	6	0	0	1	0	0
38	11-Sep	17-Sep	19	44	4	0	0	0	2	1
39	18-Sep	24-Sep	14	29	0	0	0	3	1	0
40	25-Sep	30-Sep	6	11	0	0	0	0	0	0
<b>Season Total</b>			<b>1,205</b>	<b>2,254</b>	<b>306</b>	<b>0</b>	<b>5</b>	<b>122</b>	<b>91</b>	<b>39</b>

**Table 8.3** Observations of fishing effort, harvest and reported releases of salmon other than Chinook, by week, for the summer Chinook salmon MSF in Marine Area 13. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark-status, UD = undetermined mark-status.

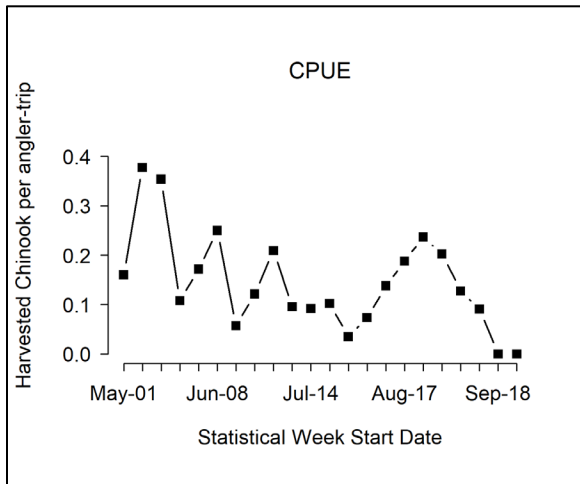
Stat Week	Start	End	Effort		Retained Fish			Released Fish					
			Boats	Anglers	Coho AD	Coho UM	Pink	Coho AD	Coho UM	Coho UK	Pink	Chum	
19	1-May	7-May	45	75	1	0	0	0	0	0	0	0	0
20	8-May	14-May	35	53	0	0	0	2	0	0	0	0	0
21	15-May	21-May	45	65	1	1	0	2	0	0	0	0	0
22	22-May	27-May	33	65	2	0	0	1	0	0	0	0	0
23	1-Jun	4-Jun	21	35	0	0	0	0	0	0	0	0	0
24	8-Jun	11-Jun	17	36	0	0	0	0	0	1	0	0	0
25	15-Jun	18-Jun	62	105	2	0	0	0	0	0	0	0	0
26	22-Jun	25-Jun	44	66	0	0	0	0	0	0	0	0	0
27	26-Jun	2-Jul	23	43	2	0	0	0	0	0	0	0	0
28	6-Jul	9-Jul	42	84	2	0	0	0	0	3	0	0	0
29	14-Jul	16-Jul	56	120	1	0	0	0	0	0	0	0	0
30	17-Jul	23-Jul	101	186	3	1	3	0	3	0	0	0	0
31	24-Jul	30-Jul	104	200	3	1	0	0	1	0	0	0	0
32	3-Aug	6-Aug	178	355	12	0	8	0	5	1	7	0	0
33	7-Aug	13-Aug	80	138	2	0	1	0	1	0	2	0	0
34	17-Aug	20-Aug	81	165	4	0	11	0	1	0	10	0	0
35	21-Aug	27-Aug	117	228	3	0	11	0	2	0	5	1	0
36	28-Aug	3-Sep	56	104	10	0	4	0	0	1	4	0	0
37	6-Sep	10-Sep	26	47	2	0	3	1	0	0	0	0	0
38	11-Sep	17-Sep	19	44	6	0	1	1	0	1	0	0	0
39	18-Sep	24-Sep	14	29	1	0	0	1	1	1	0	0	0
40	25-Sep	30-Sep	6	11	0	0	0	0	0	0	0	0	0
<b>Season Total</b>			<b>1,205</b>	<b>2,254</b>	<b>57</b>	<b>3</b>	<b>42</b>	<b>8</b>	<b>14</b>	<b>8</b>	<b>28</b>	<b>1</b>	<b>0</b>



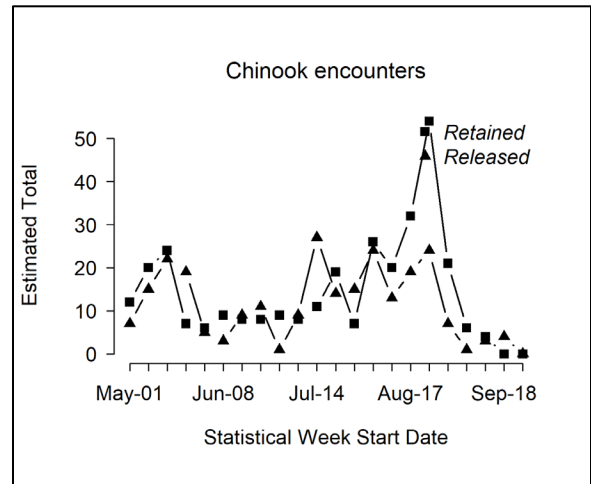
**Figure 8.1** Temporal patterns in fishing effort during the 2023 summer Chinook salmon MSF in Marine Area 13. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total.



**Figure 8.3** Length-frequency distributions of retained marked Chinook salmon sampled in dockside angler interviews during the 2023 summer Chinook salmon MSF in Marine Area 13.



**Figure 8.2** Temporal patterns in CPUE (number of Chinook salmon landed per angler trip) during the 2023 summer Chinook salmon MSF in Marine Area 13. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates.



**Figure 8.4** Temporal patterns in Chinook salmon encounters (number retained and released) during the 2023 summer Chinook salmon MSF in Marine Area 13.

**Table 8.4** List of sites sampled with the number of sampling events (site-days) during the 2023 summer Chinook salmon MSF in Marine Area 13.

Location Name	Number of Site Days Sampled Per Month					Total Site-Days	% of Total
	May	June	July	August	September		
Harstine Is. Ramp	2	4	6	10	5	27	10.47%
Home Public Ramp	1	0	0	0	0	1	0.39%
Luhr Beach Ramp	17	12	23	21	11	84	32.56%
Narrows Marina	12	7	7	10	1	37	14.34%
Vaughn Public Ramp	1	1	0	0	0	2	0.78%
Wauna Shore	2	1	0	0	0	3	1.16%
Zittels Marina	9	9	17	13	12	60	23.26%
Allyn Public Ramp	0	1	0	0	1	2	0.78%
Arcadia Ramp	0	1	0	1	1	3	1.16%
Boston Harbor Ramp/Marina	0	4	0	1	0	5	1.94%
Concrete Dock	0	1	0	0	0	1	0.39%
East Bay Marina/Ramp	0	3	1	11	4	19	7.36%
Fox Island Public Ramp	0	1	0	1	0	2	0.78%
Grapeview Public Ramp	0	1	0	1	1	3	1.16%
Horsehead Bay Ramp	0	1	0	0	0	1	0.39%
Longbranch Public Ramp	0	1	0	0	0	1	0.39%
Wollochet Bay Public Ramp	0	1	0	0	0	1	0.39%
Bayshore (John's Creek)	0	0	0	0	1	1	0.39%
Priest Point Park	0	0	0	0	5	5	1.94%
Narrows Park (Narrows Properties Park)	0	0	0	0	0	0	0.00%
<b>Grand Total</b>	<b>44</b>	<b>49</b>	<b>54</b>	<b>69</b>	<b>42</b>	<b>258</b>	<b>100%</b>

**Table 8.5** Summary of total lengths from retained Chinook salmon collected during dockside angler interviews in the 2023 summer Chinook salmon MSF in Marine Area 13.

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	298	1	299
Unmarked	0	0	0
<b>Total</b>	<b>298</b>	<b>1</b>	<b>299</b>



**Table 8.6** Dockside encounters (retained and released) by size-mark category during the 2023 summer Chinook salmon MSF in Marine Area 13. Retained fish were sampled for mark-status and length, released fish by size-mark status were reported by the angler.

Dockside Encounters				
Metric	Legal		Sublegal	
	LM	LU	SM	SU
Encounters	310	58	111	33
Bias-corrected size/mark composition	53.89%	11.33%	21.68%	13.11%
Variance	0.0009	0.0002	0.0006	0.0002

**Table 8.7** Total Chinook salmon encountered (retained and released) by private-boat anglers logging their trips on STRs during the 2023 summer Chinook salmon MSF in Marine Area 13, with estimates of legal-size and overall (legal and sublegal) mark rates. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private STR	32 1-trip STRs	20	7	11	4	42	0.74	0.48
Size/mark-status composition:		0.48	0.17	0.26	0.10			
Variance:		(0.0003)	(0.0001)	(0.0002)	(0.0001)			

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## APPENDICES

### 1) SITE WEIGHTS

**Appendix 1** Size measures by sample date, for sites sampled during dockside creel surveys for the summer Chinook MSF in Marine Area 5.

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
7/1/2023	27	Mason's Ramp & Docks	0.3378	Van Riper's North Docks	0.1492
7/2/2023	27	Mason's East Docks	0.2312	Van Riper's North Docks	0.1492
7/6/2023	28	Mason's Ramp & Docks	0.1994	Van Riper's North Docks	0.1695
7/7/2023	28	Mason's Ramp & Docks	0.3378	Mason's West Docks	0.0533
7/8/2023	28	Mason's Ramp & Docks	0.3378	Mason's East Docks	0.2312
7/9/2023	28	Mason's Ramp & Docks	0.3378	Mason's East Docks	0.2312
7/11/2023	29	Mason's Ramp & Docks	0.1994	Mason's East Docks	0.3098
7/13/2023	29	Mason's Ramp & Docks	0.1994	Van Riper's South Docks	0.1542
7/14/2023	29	Mason's Ramp & Docks	0.3378	Van Riper's North Docks	0.1492
7/15/2023	29	Mason's East Docks	0.2313	Van Riper's North Docks	0.1492
7/16/2023	29	Van Riper's South Docks	0.1608	Van Riper's North Docks	0.1492
7/17/2023	30	Mason's Ramp & Docks	0.1994	Mason's West Docks	0.091
7/20/2023	30	Mason's East Docks	0.3098	Van Riper's North Docks	0.1695
7/21/2023	30	Mason's East Docks	0.2312	Curleys/Straitside	0.0677
7/22/2023	30	Mason's Ramp & Docks	0.3378	Van Riper's North Docks	0.1492
7/23/2023	30	Mason's Ramp & Docks	0.3378	Van Riper's North Docks	0.1492
7/26/2023	31	Mason's East Docks	0.3264	Mason's West Docks	0.0896
7/27/2023	31	Mason's East Docks	0.3264	Van Riper's North Docks	0.1567
7/28/2023	31	Mason's Ramp & Docks	0.3083	Van Riper's North Docks	0.1507
7/29/2023	31	Mason's Ramp & Docks	0.3083	Curleys/Straitside	0.0688
7/30/2023	31	Van Riper's South Docks	0.149	Van Riper's North Docks	0.1507
8/1/2023	32	Mason's West Docks	0.1735	Van Riper's South Docks	0.1176
8/2/2023	32	Mason's Ramp & Docks	0.2396	Van Riper's North Docks	0.1851
8/4/2023	32	Mason's Ramp & Docks	0.3003	Mason's West Docks	0.089
8/5/2023	32	Mason's Ramp & Docks	0.3003	Van Riper's North Docks	0.1641
8/6/2023	32	Mason's East Docks	0.2101	Van Riper's North Docks	0.1641
8/7/2023	33	Van Riper's South Docks	0.1176	Curleys/Straitside	0.0849
8/10/2023	33	Mason's Ramp & Docks	0.2396	Mason's West Docks	0.1735
8/11/2023	33	Mason's Ramp & Docks	0.3003	Van Riper's North Docks	0.1641
8/12/2023	33	Mason's West Docks	0.089	Van Riper's South Docks	0.1828
8/13/2023	33	Mason's East Docks	0.2101	Van Riper's South Docks	0.1828
8/15/2023	34	Mason's Ramp & Docks	0.2396	Mason's West Docks	0.1735

**Appendix 2** Size measures by sample date, for sites sampled during dockside creel surveys for the summer Chinook MSF in Marine Area 9.

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
7/13/2023	29	Everett Ramp	0.3664	Fort Casey/Keystone Ramp	0.1721
7/14/2023	29	Everett Ramp	0.4383	Fort Casey/Keystone Ramp	0.1607
7/15/2023	29	Everett Ramp	0.4383	Mukilteo Lighthouse Park Ramp	0.1244
7/20/2023	30	Everett Ramp	0.3664	Fort Casey/Keystone Ramp	0.1721
7/21/2023	30	Everett Ramp	0.4383	Port Townsend BH Ramp	0.1534
7/22/2023	30	Everett Ramp	0.4383	Mukilteo Lighthouse Park Ramp	0.1244
7/27/2023	31	Everett Ramp	0.4276	Fort Casey/Keystone Ramp	0.1964
7/28/2023	31	Everett Ramp	0.4695	Kingston Public Ramp	0.0657

**Appendix 3** Size measures by sample date, for sites sampled during dockside creel surveys for the summer Chinook MSF in Marine Area 10.

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
7/13/2023	29	Shilshole Ramp	0.5048	Kingston Ramp	0.1899
7/14/2023	29	Shilshole Ramp	0.5082	Armeni Ramp	0.1941
7/15/2023	29	Shilshole Ramp	0.5082	Armeni Ramp	0.1941
7/16/2023	29	Shilshole Ramp	0.5082	Kingston Ramp	0.134
7/17/2023	30	Shilshole Ramp	0.5082	Armeni Ramp	0.1941
7/20/2023	30	Shilshole Ramp	0.5082	Kingston Ramp	0.134
7/21/2023	30	Shilshole Ramp	0.4842	Kingston Ramp	0.1697
7/22/2023	30	Shilshole Ramp	0.4842	Brownsville Ramp	0.1295
7/23/2023	30	Shilshole Ramp	0.4842	Armeni Ramp	0.1629
7/26/2023	31	Shilshole Ramp	0.5048	Kingston Ramp	0.1899
7/27/2023	31	Shilshole Ramp	0.5048	Armeni Ramp	0.1804
7/28/2023	31	Shilshole Ramp	0.5018	Kingston Ramp	0.1597
7/29/2023	31	Shilshole Ramp	0.5018	Brownsville Ramp	0.1229
7/30/2023	31	Shilshole Ramp	0.5018	Armeni Ramp	0.1594
8/1/2023	32	Shilshole Ramp	0.4595	Armeni Ramp	0.2273
8/2/2023	32	Shilshole Ramp	0.4595	Kingston Ramp	0.1899
8/11/2023	33	Shilshole Ramp	0.4624	Armeni Ramp	0.2287
8/12/2023	33	Shilshole Ramp	0.4624	Armeni Ramp	0.2287
8/13/2023	33	Shilshole Ramp	0.4624	Armeni Ramp	0.2287
8/18/2023	34	Shilshole Ramp	0.4624	Kingston Ramp	0.2136
8/19/2023	34	Shilshole Ramp	0.4624	Armeni Ramp	0.2287
8/20/2023	34	Shilshole Ramp	0.4624	Armeni Ramp	0.2287

**Appendix 4** Size measures by sample date, for sites sampled during dockside creel surveys for the summer Chinook MSF in Marine Area 11.

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
6/1/2023	23	Pt. Defiance Ramp	0.4435	Pt. Defiance BH	0.258
6/2/2023	23	Pt. Defiance Ramp	0.4508	Pt. Defiance BH	0.1771
6/3/2023	23	Pt. Defiance Ramp	0.4508	Pt. Defiance BH	0.1771
6/4/2023	23	Pt. Defiance Ramp	0.4508	Pt. Defiance BH	0.1771
6/8/2023	24	Pt. Defiance Ramp	0.4435	Gig Harbor Ramp	0.1709
6/9/2023	24	Pt. Defiance Ramp	0.4508	Redondo Ramp	0.1033
6/10/2023	24	Pt. Defiance Ramp	0.4508	Gig Harbor Ramp	0.1238
6/11/2023	24	Pt. Defiance Ramp	0.4508	Pt. Defiance BH	0.1771
7/1/2023	27	Pt. Defiance Ramp	0.5092	Pt. Defiance BH	0.203
7/2/2023	27	Pt. Defiance Ramp	0.5092	Pt. Defiance BH	0.203
7/6/2023	28	Pt. Defiance Ramp	0.4536	Gig Harbor Ramp	0.1208
7/7/2023	28	Pt. Defiance Ramp	0.5092	Pt. Defiance BH	0.203
7/8/2023	28	Pt. Defiance Ramp	0.5092	Pt. Defiance BH	0.203
7/9/2023	28	Pt. Defiance Ramp	0.5092	Redondo Ramp	0.1736
7/13/2023	29	Pt. Defiance Ramp	0.4536	Pt. Defiance BH	0.2232
7/14/2023	29	Pt. Defiance Ramp	0.5092	Pt. Defiance BH	0.203

## 2) CWT RECOVERIES

**Appendix 5** Coded-wire tag (CWT) recoveries from the summer 2023 Chinook MSF in Marine Area 5. Note: Not all tags have been processed before the writing of this report.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT codes	FL(cm)	Label	Recovery Mark
5	2-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	72	CWT00047454	AD
5	2-Jul-23	220294	2020	Snake R @ Pittsburg L	Lyons Ferry Hatchery	NPT	NA	53	CWT00047455	AD
5	2-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	64	CWT00092296	AD
5	2-Jul-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	76	CWT00092297	AD
5	2-Jul-23	186547	2020	R-Burrard In	H-Sandy Cove Seapen	CDFO	NA	66	CWT00092298	AD
5	2-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	78	CWT00092299	AD
5	2-Jul-23	186822	2020	R-Harrison R	H-Chehalis River H	CDFO	NA	55	CWT00096227	AD
5	2-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	64	CWT00096228	AD
5	2-Jul-23	637626	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	68	CWT00096230	AD
5	2-Jul-23	56447	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56446	60	CWT00096232	AD
5	2-Jul-23	637940	2020	Lyons Ferry Rel.Site	Lyons Ferry Hatchery	WDFW	NA	64	CWT00096234	AD
5	2-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	62	CWT00096237	AD
5	2-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	67	CWT00096238	AD
5	3-Jul-23	56447	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56446	57	CWT00046194	AD
5	3-Jul-23	211353	2018	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	211352	90	CWT00046549	AD
5	3-Jul-23	637371	2018	Big Soos Cr 09.0072	Soos Cr Hatchery	WDFW	637412	67	CWT00046582	AD
5	3-Jul-23	56447	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56446	56	CWT00046593	AD
5	3-Jul-23	637918	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	60	CWT00091245	AD
5	3-Jul-23	637740	2019	Columbia R - General	Wells Hatchery	DCPUD	NA	61	CWT00091247	AD
5	3-Jul-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	62	CWT00091430	AD
5	3-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	67	CWT00091432	AD
5	3-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	75	CWT00091459	AD
5	3-Jul-23	220199	2019	Snake R @ Pittsburg L	Lyons Ferry Hatchery	NPT	NA	79	CWT00092520	AD
5	3-Jul-23	91455	2019	Umatilla R	Umatilla Hatchery	ODFW	NA	65	CWT00092523	AD
5	3-Jul-23	211386	2019	Clarks Cr 10.0027	Clarks Cr Hatchery	PUYA	NA	70	CWT00096239	AD
5	7-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	56	CWT00091248	AD
5	7-Jul-23	186547	2020	R-Burrard In	H-Sandy Cove Seapen	CDFO	NA	69	CWT00096221	AD
5	7-Jul-23	220196	2019	Captain Johns PD	Lyons Ferry Hatchery	NPT	NA	61	CWT00096226	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT codes	FL(cm)	Label	Recovery Mark
5	8-Jul-23	56447	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56446	58	CWT00092521	AD
5	8-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	58	CWT00096225	AD
5	9-Jul-23	637852	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	51	CWT00088502	AD
5	9-Jul-23	637616	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	54	CWT00091252	AD
5	9-Jul-23	56279	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56164	56	CWT00091253	AD
5	9-Jul-23	637528	2018	Chelan R 47.0052	Chelan Falls Hatchery	WDFW	NA	85	CWT00091254	AD
5	9-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	60	CWT00091433	AD
5	9-Jul-23	91504	2019	Yakima @ Prosser Dam	Bonneville Hatchery	YAKA	NA	58	CWT00096222	AD
5	10-Jul-23	186547	2020	R-Burrard In	H-Sandy Cove Seapen	CDFO	NA	59	CWT00091255	AD
5	10-Jul-23	91458	2019	Tanner Cr (Bnville)	Bonneville Hatchery	ODFW	NA	59	CWT00091434	AD
5	10-Jul-23	637787	2020	Issaquah Cr 08.0178	Issaquah Hatchery	WDFW	NA	68	CWT00091435	AD
5	12-Jul-23	211387	2019	Co Line Pd2 03.1853B	Marblemount Hatchery	WDFW	NA	85	CWT00046580	AD
5	12-Jul-23	211393	2019	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ	NA	69	CWT00092526	AD
5	12-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	56	CWT00097029	AD
5	14-Jul-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	56	CWT00046584	AD
5	14-Jul-23	637429	2019	Green R 09.0001	Palmer Hatchery	WDFW	NA	61	CWT00091301	AD
5	14-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	63	CWT00091438	AD
5	15-Jul-23	211441	2020	Clarks Cr Hatchery	Clarks Cr Hatchery	PUYA	NA	51	CWT00091256	AD
5	15-Jul-23	637762	2019	Lyons Ferry Rel.Site	Lyons Ferry Hatchery	WDFW	NA	56	CWT00091456	AD
5	16-Jul-23	91326	2019	Morgan Cr (Coos R)	Morgan Cr (Step-Coos)	ODFW	NA	71	CWT00096204	AD
5	16-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	53	CWT00096206	AD
5	16-Jul-23	186822	2020	R-Harrison R	H-Chehalis River H	CDFO	NA	71	CWT00096207	AD
5	17-Jul-23	56278	2019	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56387	84	CWT00088505	AD
5	17-Jul-23	186561	2019	R-Nicola R	H-Spius Creek H	CDFO	NA	63	CWT00091461	AD
5	17-Jul-23	637762	2019	Lyons Ferry Rel.Site	Lyons Ferry Hatchery	WDFW	NA	56	CWT00091481	AD
5	17-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	56	CWT00091482	AD
5	17-Jul-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	54	CWT00096209	AD
5	17-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	66	CWT00096210	AD
5	18-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	63	CWT00091442	AD
5	18-Jul-23	637920	2020	Voight Cr 10.0414	Voight Cr Hatchery	WDFW	NA	57	CWT00097030	AD
5	18-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	55	CWT00097083	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT codes	FL(cm)	Label	Recovery Mark
5	21-Jul-23	637758	2019	Lyons Ferry Rel.Site	Lyons Ferry Hatchery	WDFW	NA	81	CWT00096211	AD
5	22-Jul-23	638243	2021	Point Defiance Net Pens	Clarks Cr Hatchery	PUYA	NA	43	CWT00046184	AD
5	22-Jul-23	91516	2020	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW	NA	59	CWT00091462	AD
5	23-Jul-23	91513	2020	Klaskanine R N Fk	Klaskanine Hatchery	ODFW	NA	69	CWT00083611	AD
5	23-Jul-23	637614	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	80	CWT00083612	AD
5	23-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	74	CWT00091424	AD
5	23-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	64	CWT00091463	AD
5	23-Jul-23	637426	2019	Big Soos Cr 09.0072	Soos Cr Hatchery	WDFW	637427	60	CWT00091464	AD
5	23-Jul-23	637426	2019	Big Soos Cr 09.0072	Soos Cr Hatchery	WDFW	637427	60	CWT00091465	AD
5	23-Jul-23	637725	2019	Col R @ Priest Rapids	Priest Rapids Hatchery	WDFW	637730	73	CWT00096212	AD
5	24-Jul-23	56278	2019	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56387	68	CWT00083638	AD
5	27-Jul-23	637625	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	73	CWT00088513	AD
5	27-Jul-23	637352	2018	Friday Cr 03.0017	Samish Hatchery	WDFW	NA	61	CWT00088514	AD
5	27-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	80	CWT00091425	AD
5	28-Jul-23	211491	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211490; 637628; 637811	59	CWT00091423	AD
5	28-Jul-23	637745	2019	Friday Cr 03.0017	Samish Hatchery	WDFW	637746	68	CWT00091467	AD
5	28-Jul-23	56279	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56164	79	CWT00091478	AD
5	28-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	55	CWT00091487	AD
5	29-Jul-23	637588	2019	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	70	CWT00088515	AD
5	29-Jul-23	91516	2020	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW	NA	62	CWT00088516	AD
5	29-Jul-23	56525	2020	Tsoo-Yess R 20.0015	Makah NFH on Tsoo-Yess R	USFWS	NA	59	CWT00091427	AD
5	29-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	56	CWT00093868	AD
5	29-Jul-23	56279	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56164	59	CWT00093869	AD
5	30-Jul-23	637745	2019	Friday Cr 03.0017	Samish Hatchery	WDFW	637746	55	CWT00083764	AD
5	30-Jul-23	637766	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	54	CWT00091401	AD
5	30-Jul-23	220290	2020	Captain Johns PD	Lyons Ferry Hatchery	NPT	NA	66	CWT00091477	AD
5	31-Jul-23	186546	2020	R-Capilano R	H-Capilano River H	CDFO	NA	61	CWT00091500	AD
5	2-Aug-23	637855	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	64	CWT00088518	AD
5	2-Aug-23	56279	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56164	53	CWT00091443	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT codes	FL(cm)	Label	Recovery Mark
5	3-Aug-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	72	CWT00091494	AD
5	3-Aug-23	211488	2020	Clear Cr 11.0013C	Clear Cr Hatchery	NISQ	637780; 637781; 211489	62	CWT00091495	AD
5	5-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	76	CWT00091454	AD
5	5-Aug-23	56279	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56164	62	CWT00091468	AD
5	5-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	71	CWT00091491	AD
5	5-Aug-23	220199	2019	Snake R @ Pittsburg L	Lyons Ferry Hatchery	NPT	NA	81	CWT00091492	AD
5	5-Aug-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	55	CWT00091496	AD
5	5-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	72	CWT00091497	AD
5	6-Aug-23	56447	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56446	57	CWT00046190	AD
5	6-Aug-23	91503	2019	Salmon R	Salmon R Hatchery	ODFW	NA	80	CWT00047462	AD
5	6-Aug-23	186547	2020	R-Burrard In	H-Sandy Cove Seapen	CDFO	NA	NA	CWT00047463	AD
5	6-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	68	CWT00088519	AD
5	6-Aug-23	637940	2020	Lyons Ferry Rel.Site	Lyons Ferry Hatchery	WDFW	NA	50	CWT00091488	AD
5	6-Aug-23	211441	2020	Clarks Cr 10.0027	Clarks Cr Hatchery	PUYA	NA	77	CWT00091498	AD
5	7-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	77	CWT00091451	AD
5	7-Aug-23	211502	2020	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	57	CWT00091452	AD
5	7-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	72	CWT00091453	AD
5	7-Aug-23	211390	2019	Quinalt Lk (Gray)	Quinalt Lk Hatchery	QDNR	211389	71	CWT00091469	AD
5	7-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	74	CWT00091470	AD
5	7-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	73	CWT00091475	AD
5	7-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	76	CWT00091476	AD
5	7-Aug-23	637626	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	81	CWT00093864	AD
5	8-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	76	CWT00046187	AD
5	8-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	79	CWT00088520	AD
5	8-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	79	CWT00091472	AD
5	8-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	76	CWT00091473	AD
5	8-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	75	CWT00091474	AD
5	8-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	68	CWT00093847	AD
5	11-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	78	CWT00046588	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT codes	FL(cm)	Label	Recovery Mark
5	11-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	69	CWT00088522	AD
5	11-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	65	CWT00091402	AD
5	11-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	78	CWT00091420	AD
5	12-Aug-23	211502	2020	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	56	CWT00046586	AD
5	12-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	76	CWT00046587	AD
5	12-Aug-23	185981	2019	R-Sooke Hb	H-Sooke Harbour Seapen	CDFO	NA	64	CWT00082730	AD
5	12-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	64	CWT00088523	AD
5	12-Aug-23	56447	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56446	59	CWT00091404	AD
5	12-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	77	CWT00091417	AD
5	12-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	72	CWT00091418	AD
5	13-Aug-23	91460	2019	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW	NA	78	CWT00046600	AD
5	13-Aug-23	182776	2018	R-Robertson Cr	H-Robertson Cr H	CDFO	NA	76	CWT00088526	AD
5	13-Aug-23	637917	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	57	CWT00091450	AD
5	13-Aug-23	220199	2019	Snake R @ Pittsburg L	Lyons Ferry Hatchery	NPT	NA	82	CWT00092322	AD
5	13-Aug-23	55419	2019	Ltl White Salmon @ NFH	Willard NFH	USFWS	55079; 56336; 56388; 55578	70	CWT00092323	AD
5	13-Aug-23	91460	2019	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW	NA	91	CWT00092324	AD
5	14-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	65	CWT00046180	AD
5	14-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	84	CWT00046188	AD
5	14-Aug-23	637898	2020	Big Soos Cr 09.0072	Soos Cr Hatchery	WDFW	637899	75	CWT00082785	AD
5	14-Aug-23	91460	2019	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW	NA	77	CWT00091101	AD
5	14-Aug-23	637854	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	69	CWT00091414	AD
5	14-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	81	CWT00091415	AD
5	14-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	80	CWT00091416	AD
5	14-Aug-23	637616	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	85	CWT00091484	AD
5	14-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	79	CWT00091485	AD
5	14-Aug-23	637745	2019	Friday Cr 03.0017	Samish Hatchery	WDFW	637746	81	CWT00091486	AD



**Appendix 6** Coded-wire tag (CWT) recoveries from the Chinook MSF in Marine Area 6. Note: Not all tags have been processed before the writing of this report.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
6	2-Jul-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	72	CWT00040868	AD
6	2-Jul-23	211440	2020	Skookum Cr 01.0273	Skookum Cr Hatchery	LUMMI	NA	51	CWT00086610	UM
6	2-Jul-23	637762	2019	Lyons Ferry Rel.Site	Lyons Ferry Hatchery	WDFW	NA	59	CWT00086611	AD
6	2-Jul-23	56164	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56279	72	CWT00086629	UM
6	2-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	52	CWT00086630	AD
6	2-Jul-23	637766	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	62	CWT00086631	AD
6	2-Jul-23	637863	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	60	CWT00086639	AD
6	2-Jul-23	211409	2019	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	211410	71	CWT00086640	AD
6	2-Jul-23	637890	2020	Kendall Cr 01.0406	Kendall Cr Hatchery	WDFW	NA	65	CWT00095302	AD
6	3-Jul-23	211321	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	637438; 637437; 211320	59	CWT00040869	AD
6	3-Jul-23	637898	2020	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637899	58	CWT00040870	AD
6	3-Jul-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	59	CWT00040871	AD
6	3-Jul-23	637745	2019	Friday Cr 03.0017	Samish Hatchery	WDFW	637746	74	CWT00040872	AD
6	3-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	77	CWT00044704	AD
6	3-Jul-23	637749	2019	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637750	72	CWT00044729	AD
6	3-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	55	CWT00047456	AD
6	3-Jul-23	211394	2019	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ	NA	68	CWT00047457	AD
6	3-Jul-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	56	CWT00047458	AD
6	3-Jul-23	637863	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	68	CWT00047474	AD
6	3-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	NA	CWT00047475	AD
6	3-Jul-23	91393	2018	Santiam R S Fk	South Santiam Hatchery	ODFW	NA	87	CWT00047476	AD
6	3-Jul-23	637615	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	58	CWT00047477	AD
6	3-Jul-23	211505	2020	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ	NA	61	CWT00047478	AD
6	3-Jul-23	211490	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211491; 637628; 637811	62	CWT00086632	AD
6	3-Jul-23	200146	2018	Omak Pond	Chief Joseph Hatchery	CCT	NA	77	CWT00086633	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
6	3-Jul-23	637920	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	59	CWT00086634	AD
6	3-Jul-23	637614	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	69	CWT00086635	AD
6	3-Jul-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	71	CWT00086636	AD
6	3-Jul-23	637791	2020	East Sound Bay (SAN)	Glenwood Springs	COOP	NA	65	CWT00086637	AD
6	3-Jul-23	91484	2019	Elk R	Elk R Hatchery	ODFW	NA	73	CWT00086638	AD
6	3-Jul-23	637429	2019	Green R 09.0001	Palmer Hatchery	WDFW	NA	67	CWT00088212	AD
6	3-Jul-23	637751	2019	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	78	CWT00095203	AD
6	3-Jul-23	637625	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	66	CWT00095211	AD
6	3-Jul-23	637855	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	58	CWT00095214	AD
6	3-Jul-23	637626	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	64	CWT00095215	AD
6	3-Jul-23	637787	2020	Issaquah Cr 08.0178	Issaquah Hatchery	WDFW	NA	59	CWT00095303	AD
6	3-Jul-23	637787	2020	Issaquah Cr 08.0179	Issaquah Hatchery	WDFW	NA	74	CWT00095304	AD
6	3-Jul-23	91516	2020	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW	NA	78	CWT00095305	AD
6	7-Jul-23	211491	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211490; 637628; 637811	60	CWT00040747	AD
6	7-Jul-23	91516	2020	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW	NA	58	CWT00040748	AD
6	7-Jul-23	637745	2019	Friday Cr 03.0017	Samish Hatchery	WDFW	637746	70	CWT00040767	AD
6	7-Jul-23	211333	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211339; 637775; 637720	71	CWT00044373	AD
6	7-Jul-23	637810	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	56	CWT00044374	AD
6	7-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	72	CWT00047172	AD
6	7-Jul-23	211491	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211490; 637628; 637811	NA	CWT00047173	AD
6	7-Jul-23	637622	2019	Cowlitz R 26.0002	Cowlitz Salmon Hatchery	WDFW	NA	70	CWT00047174	AD
6	7-Jul-23	637742	2019	Kendall Cr 01.0406	Kendall Cr Hatchery	WDFW	NA	78	CWT00047175	AD
6	7-Jul-23	637588	2019	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	69	CWT00047459	AD
6	7-Jul-23	637901	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	637823	53	CWT00095299	AD
6	7-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	75	CWT00095300	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
6	8-Jul-23	637735	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	67	CWT00040749	AD
6	8-Jul-23	637626	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	67	CWT00040750	AD
6	8-Jul-23	637429	2019	Green R 09.0001	Palmer Hatchery	WDFW	NA	77	CWT00044356	AD
6	8-Jul-23	211394	2019	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ	NA	82	CWT00044357	AD
6	8-Jul-23	211447	2020	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	NA	59	CWT00044358	AD
6	8-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	55	CWT00044359	AD
6	8-Jul-23	211447	2020	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	NA	57	CWT00044360	AD
6	8-Jul-23	637426	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637427	55	CWT00044361	AD
6	8-Jul-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	57	CWT00047176	AD
6	8-Jul-23	637849	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	64	CWT00047188	AD
6	8-Jul-23	637751	2019	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	93	CWT00047189	AD
6	8-Jul-23	211411	2019	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	NA	96	CWT00047190	AD
6	8-Jul-23	637920	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	63	CWT00047191	AD
6	8-Jul-23	637625	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	66	CWT00047192	AD
6	8-Jul-23	637849	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	62	CWT00088210	AD
6	8-Jul-23	637426	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637427	53	CWT00088211	AD
6	8-Jul-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	61	CWT00093781	AD
6	8-Jul-23	211387	2019	Co Line Slu 03.1853A	Marblemount Hatchery	WDFW	NA	81	CWT00095308	AD
6	9-Jul-23	637749	2019	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637750	95	CWT00047177	AD
6	9-Jul-23	637735	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	63	CWT00047186	AD
6	9-Jul-23	211383	2019	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211384; 637619; 637620	NA	CWT00088207	AD
6	9-Jul-23	186596	2019	R-Cowichan R	H-Cowichan River H	CDFO	NA	72	CWT00088208	AD
6	9-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	68	CWT00089101	AD
6	9-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	70	CWT00089102	AD
6	9-Jul-23	637627	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	89	CWT00095307	AD
6	10-Jul-23	637765	2019	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	67	CWT00040753	AD
6	10-Jul-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	68	CWT00040754	AD
6	10-Jul-23	637852	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	54	CWT00095201	AD
6	10-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	74	CWT00095210	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
6	12-Jul-23	211518	2020	Sol Duc R 20.0096	Solduc Hatchery	WDFW	NA	67	CWT00047183	AD
6	12-Jul-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	73	CWT00047185	AD
6	12-Jul-23	637873	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	61	CWT00047828	AD
6	12-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	67	CWT00047829	AD
6	12-Jul-23	637853	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	61	CWT00088237	AD
6	12-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	70	CWT00088238	AD
6	12-Jul-23	637872	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	55	CWT00095202	AD
6	12-Jul-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	64	CWT00095212	AD
6	12-Jul-23	637854	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	61	CWT00095213	AD
6	12-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	75	CWT00095297	AD
6	14-Jul-23	211447	2020	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	NA	74	CWT00088236	AD
6	14-Jul-23	637863	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	61	CWT00092528	AD
6	14-Jul-23	186822	2020	R-Harrison R	H-Chehalis River H	CDFO	NA	79	CWT00093104	AD
6	14-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	64	CWT00093134	AD
6	14-Jul-23	637625	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	62	CWT00093135	AD
6	14-Jul-23	637751	2019	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	90	CWT00095306	AD
6	15-Jul-23	211317	2018	Co Line Pd2 03.1853B	Marblemount Hatchery	WDFW	NA	87	CWT00046651	AD
6	15-Jul-23	56279	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56164	67	CWT00047178	AD
6	15-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	59	CWT00047179	AD
6	15-Jul-23	637941	2020	Grande Ronde R 2	Irrigon Hatchery	ODFW	NA	58	CWT00047180	AD
6	15-Jul-23	637885	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	NA	CWT00088234	AD
6	15-Jul-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	54	CWT00088235	AD
6	15-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	67	CWT00089114	AD
6	16-Jul-23	637920	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	56	CWT00046632	AD
6	16-Jul-23	200158	2019	Chief Joseph Hatchery	Chief Joseph Hatchery	CCT	NA	82	CWT00047181	AD
6	16-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	73	CWT00047182	AD
6	16-Jul-23	211386	2019	Clarks Cr 10.0027	Clarks Crk Hatchery	PUYA	NA	95	CWT00047184	AD
6	16-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	70	CWT00088230	AD
6	16-Jul-23	637810	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	67	CWT00088231	AD
6	16-Jul-23	91458	2019	Tanner Cr (Bnville)	Bonneville Hatchery	ODFW	NA	78	CWT00089113	AD
6	16-Jul-23	637371	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637412	69	CWT00090201	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
6	16-Jul-23	637758	2019	Lyons Ferry Rel.Site	Lyons Ferry Hatchery	WDFW	NA	74	CWT00090202	AD
6	16-Jul-23	637418	2019	Tanner Cr (Bnville)	Bonneville Hatchery	ODFW	NA	76	CWT00093140	AD
6	17-Jul-23	637743	2019	Wallace R 07.0940	Wallace R Hatchery	WDFW	637744	62	CWT00088229	AD
6	17-Jul-23	637616	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	72	CWT00089103	AD
6	17-Jul-23	637827	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	NA	CWT00095312	AD
6	18-Jul-23	637918	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	66	CWT00046656	AD
6	18-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	58	CWT00088213	AD
6	18-Jul-23	637822	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	51	CWT00088228	AD
6	18-Jul-23	637738	2019	Deep R 25.0071	Deep R Net Pens	WDFW	NA	63	CWT00089112	AD
6	18-Jul-23	637751	2019	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	80	CWT00090203	AD
6	18-Jul-23	637615	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	81	CWT00090204	AD
6	18-Jul-23	220276	2019	Magrudor Corridor	Npt Hatchery	NPT	NA	72	CWT00090209	AD
6	18-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	63	CWT00090210	AD
6	18-Jul-23	637807	2019	Narrows Marina Pens	Narrows Marina Pens	PUYA	NA	55	CWT00092530	AD
6	18-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	64	CWT00092532	AD
6	18-Jul-23	637792	2020	East Sound Bay (SAN)	Glenwood Springs	COOP	NA	64	CWT00092533	AD
6	18-Jul-23	637742	2019	Kendall Cr 01.0406	Kendall Cr Hatchery	WDFW	NA	80	CWT00095310	AD
6	18-Jul-23	637917	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	58	CWT00095313	AD
6	21-Jul-23	637871	2020	Gorst Cr Rear.Pond-2	Gorst Cr Rearing Pnd	SUQ	NA	61	CWT00046637	AD
6	21-Jul-23	637849	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	59	CWT00046639	AD
6	21-Jul-23	637863	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	57	CWT00046643	AD
6	21-Jul-23	56447	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56446	60	CWT00095315	AD
6	22-Jul-23	637627	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	67	CWT00093138	AD
6	22-Jul-23	637920	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	59	CWT00095316	AD
6	22-Jul-23	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW	NA	92	CWT00095317	AD
6	22-Jul-23	637749	2019	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637750	70	CWT00095318	AD
6	22-Jul-23	637686	2019	Narrows Marina Pens	Narrows Marina Pens	PUYA	NA	67	CWT00095319	AD
6	23-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	61	CWT00046644	AD
6	23-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	56	CWT00046687	AD
6	23-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	66	CWT00046688	AD
6	23-Jul-23	637426	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637427	67	CWT00046689	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
6	23-Jul-23	211339	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	637775; 211333; 637720	75	CWT00089111	AD
6	23-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	70	CWT00093139	AD
6	23-Jul-23	637791	2020	East Sound Bay (SAN)	Glenwood Springs	COOP	NA	57	CWT00095216	AD
6	23-Jul-23	637857	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	67	CWT00095296	AD
6	23-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	59	CWT00095320	AD
6	24-Jul-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	84	CWT00088206	AD
6	24-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	68	CWT00089104	AD
6	24-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	70	CWT00089105	AD
6	24-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	70	CWT00090206	AD
6	24-Jul-23	637863	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	58	CWT00093142	AD
6	24-Jul-23	637918	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	53	CWT00093143	AD
6	24-Jul-23	637827	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	60	CWT00093144	AD
6	24-Jul-23	637849	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	55	CWT00093145	AD
6	24-Jul-23	637526	2018	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	83	CWT00095217	AD
6	24-Jul-23	637426	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637427	NA	CWT00095323	AD
6	24-Jul-23	186547	2020	R-Burrard In	H-Sandy Cove Seapen	CDFO	NA	NA	CWT00095325	AD
6	27-Jul-23	220293	2020	Snake R @Pittsburg L	Lyons Ferry Hatchery	NPT	NA	56	CWT00050109	AD
6	27-Jul-23	637749	2019	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637750	76	CWT00083623	AD
6	27-Jul-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	68	CWT00083624	AD
6	27-Jul-23	186822	2020	R-Harrison R	H-Chehalis River H	CDFO	NA	67	CWT00088202	AD
6	27-Jul-23	184965	2019	R-Sarita R	H-Nitinat River H	CDFO	NA	85	CWT00090208	AD
6	27-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	68	CWT00090211	AD
6	27-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	70	CWT00090212	AD
6	27-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	71	CWT00095321	AD
6	27-Jul-23	637728	2019	Col R @ Priest Rapids	Priest Rapids Hatchery	WDFW	637733	72	CWT00095322	AD
6	27-Jul-23	637626	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	82	CWT00095324	AD
6	27-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	55	CWT00095330	AD
6	28-Jul-23	637901	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	637823	58	CWT00050110	AD
6	28-Jul-23	637871	2020	Gorst Cr Rear.Pond-2	Gorst Cr Rearing Pnd	SUQ	NA	71	CWT00083625	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
6	28-Jul-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	65	CWT00083626	AD
6	28-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	69	CWT00083627	AD
6	28-Jul-23	211386	2019	Clarks Cr 10.0027	Clarks Crk Hatchery	PUYA	NA	58	CWT00083628	AD
6	28-Jul-23	637885	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	63	CWT00089106	AD
6	28-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	58	CWT00089107	AD
6	28-Jul-23	637743	2019	Wallace R 07.0940	Wallace R Hatchery	WDFW	637744	87	CWT00090213	AD
6	28-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	59	CWT00090214	AD
6	28-Jul-23	637863	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	69	CWT00090215	AD
6	28-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	52	CWT00090216	AD
6	28-Jul-23	637614	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	70	CWT00092534	AD
6	28-Jul-23	637751	2019	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	73	CWT00092539	AD
6	28-Jul-23	211383	2019	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211384; 637619; 637620	75	CWT00092546	AD
6	28-Jul-23	637898	2020	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637899	57	CWT00092547	AD
6	28-Jul-23	637626	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	56	CWT00095329	AD
6	29-Jul-23	211441	2020	Clarks Crk Hatchery	Clarks Crk Hatchery	PUYA	NA	65	CWT00050111	AD
6	29-Jul-23	186822	2020	R-Harrison R	H-Chehalis River H	CDFO	NA	73	CWT00050112	AD
6	29-Jul-23	211310	2018	Sol Duc R 20.0097	Solduc Hatchery	QUIL	NA	NA	CWT00088203	AD
6	29-Jul-23	637426	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637427	64	CWT00088239	AD
6	29-Jul-23	211339	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	637775; 211333; 637720	76	CWT00089108	AD
6	29-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	59	CWT00090217	AD
6	29-Jul-23	637588	2019	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	82	CWT00090218	AD
6	29-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	78	CWT00090219	AD
6	29-Jul-23	637625	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	74	CWT00095218	AD
6	29-Jul-23	637627	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	59	CWT00095222	AD
6	29-Jul-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	76	CWT00095293	AD
6	29-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	64	CWT00095327	AD
6	29-Jul-23	211394	2019	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ	NA	74	CWT00095328	AD

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6	30-Jul-23	637857	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	70	CWT00050113	AD
6	30-Jul-23	637872	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	54	CWT00050114	AD
6	30-Jul-23	637787	2020	Issaquah Cr 08.0180	Issaquah Hatchery	WDFW	NA	53	CWT00050117	AD
6	30-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	65	CWT00083630	AD
6	30-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	66	CWT00088224	AD
6	30-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	64	CWT00088225	AD
6	30-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	81	CWT00088226	AD
6	30-Jul-23	211333	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211339; 637775; 637720	75	CWT00089136	AD
6	30-Jul-23	637588	2019	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	75	CWT00089142	AD
6	30-Jul-23	637426	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637427	77	CWT00090220	AD
6	30-Jul-23	637872	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	55	CWT00095291	AD
6	30-Jul-23	211490	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211491; 637628; 637811	64	CWT00095295	AD
6	30-Jul-23	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	56	CWT00095333	AD
6	30-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	49	CWT00095336	AD
6	30-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	72	CWT00095337	AD
6	31-Jul-23	220282	2019	Snake R @Pittsburg L	Lyons Ferry Hatchery	NPT	NA	64	CWT00050115	AD
6	31-Jul-23	637625	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	62	CWT00050116	AD
6	31-Jul-23	637810	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	60	CWT00083632	AD
6	31-Jul-23	637751	2019	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	85	CWT00083635	AD
6	31-Jul-23	637810	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	60	CWT00083636	AD
6	31-Jul-23	56279	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56164	63	CWT00083637	AD
6	31-Jul-23	637863	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	NA	CWT00088221	AD
6	31-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	63	CWT00089115	AD
6	31-Jul-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	65	CWT00089133	AD
6	31-Jul-23	637749	2019	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637750	65	CWT00089134	AD
6	31-Jul-23	637871	2020	Gorst Cr Rear.Pond-2	Gorst Cr Rearing Pnd	SUQ	NA	55	CWT00090221	AD
6	31-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	67	CWT00090222	AD



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6	31-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	65	CWT00090223	AD
6	31-Jul-23	637852	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	68	CWT00090224	AD
6	31-Jul-23	637743	2019	Wallace R 07.0940	Wallace R Hatchery	WDFW	637744	69	CWT00090225	AD
6	31-Jul-23	637885	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	56	CWT00092540	AD
6	31-Jul-23	211490	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211491; 637628; 637811	54	CWT00092543	AD
6	31-Jul-23	211447	2020	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	NA	59	CWT00092545	AD
6	31-Jul-23	637854	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	69	CWT00095220	AD
6	31-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	76	CWT00095263	AD
6	31-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	71	CWT00095264	AD
6	31-Jul-23	220293	2020	Snake R @Pittsburg L	Lyons Ferry Hatchery	NPT	NA	54	CWT00095289	AD
6	31-Jul-23	637626	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	50	CWT00095290	AD
6	31-Jul-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	68	CWT00095292	AD
6	31-Jul-23	186547	2020	R-Burrard In	H-Sandy Cove Seapen	CDFO	NA	59	CWT00095332	AD
6	31-Jul-23	637615	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	76	CWT00095335	AD
6	2-Aug-23	637426	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637427	66	CWT00047830	AD
6	2-Aug-23	637849	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	58	CWT00047832	AD
6	2-Aug-23	637716	2019	Cascade R 03.1411	Marblemount Hatchery	WDFW	NA	66	CWT00047833	AD
6	2-Aug-23	91516	2020	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW	NA	63	CWT00047835	AD
6	2-Aug-23	637750	2019	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637749	NA	CWT00047840	NA
6	2-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	80	CWT00047841	AD
6	2-Aug-23	637944	2020	Lyons Ferry Rel.Site	Lyons Ferry Hatchery	WDFW	NA	57	CWT00089132	AD
6	2-Aug-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	67	CWT00090226	AD
6	2-Aug-23	637871	2020	Gorst Cr Rear.Pond-2	Gorst Cr Rearing Pnd	SUQ	NA	63	CWT00092542	AD
6	2-Aug-23	211430	2020	Lummi Hatchery -Pond	Lummi Hatchery -Pond	LUMMI	NA	62	CWT00095294	AD
6	2-Aug-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	54	CWT00095331	AD
6	2-Aug-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	60	CWT00095334	AD
6	2-Aug-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	70	CWT00095338	AD
6	3-Aug-23	637920	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	61	CWT00047836	AD
6	3-Aug-23	211394	2019	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ	NA	64	CWT00047838	AD

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6	3-Aug-23	637631	2019	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	69	CWT00047839	AD
6	3-Aug-23	637426	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637427	79	CWT00088214	AD
6	3-Aug-23	91516	2020	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW	NA	58	CWT00089116	AD
6	3-Aug-23	91515	2020	Tanner Cr (Bnville)	Bonneville Hatchery	ODFW	NA	72	CWT00089117	AD
6	3-Aug-23	211441	2020	Clarks Crk Hatchery	Clarks Crk Hatchery	PUYA	NA	53	CWT00089118	AD
6	3-Aug-23	637791	2020	East Sound Bay (SAN)	Glenwood Springs	COOP	NA	67	CWT00089119	AD
6	3-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	77	CWT00090227	AD
6	3-Aug-23	211491	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211490; 637628; 637811	63	CWT00092544	AD
6	3-Aug-23	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW	NA	74	CWT00092548	AD
6	3-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	68	CWT00095257	AD
6	3-Aug-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	64	CWT00095261	AD
6	3-Aug-23	637588	2019	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	69	CWT00095339	AD
6	3-Aug-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	68	CWT00095341	AD
6	3-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	68	CWT00095343	AD
6	3-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	68	CWT00095344	AD
6	5-Aug-23	211586	2021	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	NA	58	CWT00047850	AD
6	5-Aug-23	211333	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211339; 637775; 637720	72	CWT00089152	AD
6	5-Aug-23	637855	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	72	CWT00090229	AD
6	5-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	76	CWT00092549	AD
6	5-Aug-23	637853	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	65	CWT00092550	AD
6	5-Aug-23	211412	2019	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	NA	67	CWT00095223	AD
6	5-Aug-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	59	CWT00095258	AD
6	5-Aug-23	637871	2020	Gorst Cr Rear.Pond-2	Gorst Cr Rearing Pnd	SUQ	NA	54	CWT00095342	AD
6	5-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	61	CWT00095345	AD
6	5-Aug-23	186547	2020	R-Burrard In	H-Sandy Cove Seapen	CDFO	NA	70	CWT00095346	AD
6	6-Aug-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	68	CWT00047849	AD
6	6-Aug-23	637791	2020	East Sound Bay (SAN)	Glenwood Springs	COOP	NA	66	CWT00088218	AD

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6	6-Aug-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	59	CWT00088219	AD
6	6-Aug-23	637810	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	61	CWT00088220	AD
6	6-Aug-23	637898	2020	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637899	67	CWT00089143	AD
6	6-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	68	CWT00089144	AD
6	6-Aug-23	211491	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211490; 637628; 637811	71	CWT00089145	AD
6	6-Aug-23	211339	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	637775; 211333; 637720	78	CWT00089149	AD
6	6-Aug-23	637588	2019	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	71	CWT00089150	AD
6	6-Aug-23	637810	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	NA	CWT00089151	AD
6	6-Aug-23	637855	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	59	CWT00090230	AD
6	6-Aug-23	637901	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	637823	55	CWT00092559	AD
6	6-Aug-23	637614	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	59	CWT00092560	AD
6	6-Aug-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	67	CWT00095250	AD
6	6-Aug-23	637614	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	57	CWT00095251	AD
6	6-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	63	CWT00095252	AD
6	6-Aug-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	69	CWT00095253	AD
6	6-Aug-23	637871	2020	Gorst Cr Rear.Pond-2	Gorst Cr Rearing Pnd	SUQ	NA	62	CWT00095254	AD
6	6-Aug-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	58	CWT00095255	AD
6	6-Aug-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	56	CWT00095260	AD
6	6-Aug-23	211339	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	637775; 211333; 637720	63	CWT00095347	AD
6	6-Aug-23	637855	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	60	CWT00095348	AD
6	6-Aug-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	49	CWT00095349	AD
6	6-Aug-23	637898	2020	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637899	58	CWT00095351	AD
6	6-Aug-23	637854	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	65	CWT00095352	AD
6	6-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	69	CWT00095353	AD
6	6-Aug-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	57	CWT00095356	AD

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6	6-Aug-23	637879	2020	Col R @ Priest Rapids	Priest Rapids Hatchery	WDFW	637884	58	CWT00095360	AD
6	6-Aug-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	76	CWT00095361	AD
6	7-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	70	CWT00047847	AD
6	7-Aug-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	62	CWT00047848	AD
6	7-Aug-23	91459	2019	Snake R-1 (Hells Canyon)	Irrigon Hatchery	ODFW	NA	NA	CWT00089131	AD
6	7-Aug-23	220199	2019	Snake R @Pittsburg L	Lyons Ferry Hatchery	NPT	NA	NA	CWT00089139	AD
6	7-Aug-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	77	CWT00089140	AD
6	7-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	66	CWT00090233	AD
6	7-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	60	CWT00090242	AD
6	7-Aug-23	637787	2020	Issaquah Cr 08.0181	Issaquah Hatchery	WDFW	NA	75	CWT00090243	AD
6	7-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	66	CWT00090501	AD
6	7-Aug-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	76	CWT00090502	AD
6	7-Aug-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	56	CWT00095248	AD
6	7-Aug-23	186546	2020	R-Capilano R	H-Capilano River H	CDFO	NA	60	CWT00095249	AD
6	7-Aug-23	211447	2020	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	NA	58	CWT00095355	AD
6	8-Aug-23	186547	2020	R-Burrard In	H-Sandy Cove Seapen	CDFO	NA	68	CWT00047846	AD
6	8-Aug-23	637429	2019	Green R 09.0001	Palmer Hatchery	WDFW	NA	67	CWT00088275	AD
6	8-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	78	CWT00088299	AD
6	8-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	60	CWT00089120	AD
6	8-Aug-23	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	78	CWT00089121	AD
6	8-Aug-23	91513	2020	Klaskanine R N Fk	Klaskanine Hatchery	ODFW	NA	69	CWT00089122	AD
6	8-Aug-23	637687	2020	Point Defiance Net Pens	Clarks Crk Hatchery	PUYA	NA	57	CWT00089129	AD
6	8-Aug-23	211333	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211339; 637775; 637720	69	CWT00089130	AD
6	8-Aug-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	69	CWT00090503	AD
6	8-Aug-23	637857	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	55	CWT00090504	AD
6	8-Aug-23	637853	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	55	CWT00090505	AD
6	8-Aug-23	637749	2019	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637750	71	CWT00090506	AD
6	8-Aug-23	211351	2019	Puyallup R 10.0021	Clarks Crk Hatchery	PUYA	NA	68	CWT00092556	AD
6	8-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	NA	CWT00095101	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
6	8-Aug-23	637920	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	70	CWT00095354	AD
6	8-Aug-23	211356	2020	McAllister Springs Hatchery	McAllister Springs Hatchery	NISQ	NA	63	CWT00095357	AD
6	8-Aug-23	637924	2020	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	70	CWT00095359	AD
6	11-Aug-23	637787	2020	Issaquah Cr 08.0182	Issaquah Hatchery	WDFW	NA	55	CWT00088300	AD
6	11-Aug-23	637873	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	66	CWT00090231	AD
6	11-Aug-23	211488	2020	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	637780; 637781; 211489	59	CWT00090507	AD
6	11-Aug-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	NA	CWT00090508	AD
6	11-Aug-23	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	72	CWT00095102	AD
6	11-Aug-23	637859	2020	Cascade R 03.1411	Marblemount Hatchery	WDFW	NA	NA	CWT00095103	AD
6	11-Aug-23	637879	2020	Col R @ Priest Rapids	Priest Rapids Hatchery	WDFW	637884	74	CWT00095104	AD
6	11-Aug-23	637863	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	59	CWT00095237	AD
6	11-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	64	CWT00095245	AD
6	12-Aug-23	637827	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	70	CWT00088274	AD
6	12-Aug-23	211393	2019	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ	NA	72	CWT00088298	AD
6	12-Aug-23	637810	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	68	CWT00089128	AD
6	12-Aug-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	NA	CWT00089304	AD
6	12-Aug-23	637917	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	59	CWT00092553	AD
6	12-Aug-23	637581	2019	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	66	CWT00092554	AD
6	12-Aug-23	211491	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211490; 637628; 637811	67	CWT00092555	AD
6	12-Aug-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	58	CWT00092557	AD
6	12-Aug-23	91431	2019	Springs Cr 36.0114	Ringold Springs Hatchery	WDFW	NA	75	CWT00095225	AD
6	12-Aug-23	637871	2020	Gorst Cr Rear.Pond-2	Gorst Cr Rearing Pnd	SUQ	NA	59	CWT00095238	AD
6	12-Aug-23	91516	2020	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW	NA	70	CWT00095240	AD
6	12-Aug-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	66	CWT00095242	AD
6	12-Aug-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	67	CWT00095256	AD
6	12-Aug-23	211441	2020	Clarks Crk Hatchery	Clarks Crk Hatchery	PUYA	NA	55	CWT00095362	AD
6	12-Aug-23	211318	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	69	CWT00095363	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
6	13-Aug-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	75	CWT00083640	AD
6	13-Aug-23	637751	2019	Elwha R 18.0272	Elwha Hatchery	WDFW	NA	80	CWT00083641	AD
6	13-Aug-23	186546	2020	R-Capilano R	H-Capilano River H	CDFO	NA	61	CWT00088242	AD
6	13-Aug-23	637891	2020	Cascade R 03.1411	Marblemount Hatchery	WDFW	637892	63	CWT00088243	AD
6	13-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	67	CWT00088244	AD
6	13-Aug-23	56447	2020	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56446	71	CWT00089303	AD
6	13-Aug-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	66	CWT00090234	AD
6	13-Aug-23	637855	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	68	CWT00090235	AD
6	13-Aug-23	637762	2019	Lyons Ferry Rel.Site	Lyons Ferry Hatchery	WDFW	NA	65	CWT00092563	AD
6	13-Aug-23	637898	2020	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637899	58	CWT00092565	AD
6	13-Aug-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	79	CWT00095239	AD
6	13-Aug-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	67	CWT00095358	AD
6	13-Aug-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	71	CWT00095365	AD
6	14-Aug-23	637718	2019	Fork CR 24.0356	Forks Cr Hatchery	WDFW	NA	71	CWT00083645	AD
6	14-Aug-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	60	CWT00083646	AD
6	14-Aug-23	637766	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	54	CWT00083647	AD
6	14-Aug-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	57	CWT00088271	AD
6	14-Aug-23	637426	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637427	78	CWT00089124	AD
6	14-Aug-23	637726	2019	Col R @ Priest Rapids	Priest Rapids Hatchery	WDFW	637731	75	CWT00089135	AD
6	14-Aug-23	211507	2020	Stillaguamish R -Sf	Brenner Hatchery	STIL	NA	66	CWT00089137	AD
6	14-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	82	CWT00089138	AD
6	14-Aug-23	637426	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637427	65	CWT00089302	AD
6	14-Aug-23	637872	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	63	CWT00089306	AD
6	14-Aug-23	211385	2019	Hoko R 19.0148	Hoko Falls Hatchery	MAKAH	NA	78	CWT00092564	AD
6	14-Aug-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	55	CWT00095224	AD
6	14-Aug-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	55	CWT00095366	AD
6	14-Aug-23	637749	2019	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637750	63	CWT00095367	AD

**Appendix 7** Coded-wire tag (CWT) recoveries from the Chinook MSF in Marine Area 7. Note: Not all tags have been processed before the writing of this report.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
7	14-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	89	CWT00040330	AD
7	14-Jul-23	637791	2020	East Sound Bay (San)	Glenwood Springs	COOP	NA	64	CWT00040343	AD
7	14-Jul-23	637614	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	71	CWT00040755	AD
7	14-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	62	CWT00041056	AD
7	14-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	71	CWT00041057	AD
7	14-Jul-23	637918	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	56	CWT00041075	AD
7	14-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	72	CWT00044706	AD
7	15-Jul-23	637856	2020	Finch Cr 16.0222	Hoodspport Hatchery	WDFW	NA	69	CWT00040333	AD
7	15-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	78	CWT00040334	AD
7	15-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	78	CWT00040335	AD
7	15-Jul-23	186595	2020	R-Cowichan R	H-Cowichan River H	CDFO	NA	NA	CWT00040341	AD
7	15-Jul-23	637891	2020	Cascade R 03.1411	Marblemount Hatchery	WDFW	637892	61	CWT00040342	AD
7	15-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	57	CWT00041020	AD
7	15-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	71	CWT00041058	AD
7	15-Jul-23	211493	2020	Co Line Slu 03.1853A	Marblemount Hatchery	WDFW	NA	63	CWT00041074	AD
7	15-Jul-23	637713	2019	Cascade R 03.1411	Marblemount Hatchery	WDFW	637714	62	CWT00044372	AD
7	15-Jul-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	66	CWT00044755	AD
7	15-Jul-23	211441	2020	Clarks Crk Hatchery	Clarks Crk Hatchery	PUYA	NA	73	CWT00044757	AD
7	16-Jul-23	220196	2019	Captain Johns Pd	Lyons Ferry Hatchery	NPT	NA	66	CWT00040336	AD
7	16-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	69	CWT00040340	AD
7	16-Jul-23	211490	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211491; 637628; 637811	61	CWT00040369	AD
7	16-Jul-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	84	CWT00040757	AD
7	16-Jul-23	211493	2020	Co Line Slu 03.1853A	Marblemount Hatchery	WDFW	NA	63	CWT00040758	AD
7	16-Jul-23	637855	2020	Finch Cr 16.0222	Hoodspport Hatchery	WDFW	NA	71	CWT00040883	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
7	16-Jul-23	637855	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	64	CWT00040884	AD
7	16-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	61	CWT00040885	AD
7	16-Jul-23	637745	2019	Friday Cr 03.0017	Samish Hatchery	WDFW	637746	76	CWT00040886	AD
7	16-Jul-23	637855	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	76	CWT00041021	AD
7	16-Jul-23	637863	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	64	CWT00041022	AD
7	16-Jul-23	637687	2020	Point Defiance Net Pens	Clarks Crk Hatchery	PUYA	NA	66	CWT00041023	AD
7	16-Jul-23	637749	2019	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637750	74	CWT00041032	AD
7	16-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	79	CWT00041033	AD
7	16-Jul-23	637614	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	69	CWT00041069	AD
7	16-Jul-23	186561	2019	R-Nicola R	H-Spius Creek H	CDFO	NA	63	CWT00041070	AD
7	16-Jul-23	637852	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	63	CWT00041072	AD
7	16-Jul-23	637749	2019	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637750	75	CWT00044758	AD
7	22-Jul-23	637920	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	71	CWT00040378	AD
7	22-Jul-23	186822	2020	R-Harrison R	H-Chehalis River H	CDFO	NA	74	CWT00040890	AD
7	22-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	66	CWT00041024	AD
7	22-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	75	CWT00041068	AD
7	22-Jul-23	211393	2019	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ	NA	81	CWT00041071	AD
7	22-Jul-23	637920	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	63	CWT00044750	AD
7	22-Jul-23	637687	2020	Point Defiance Net Pens	Clarks Crk Hatchery	PUYA	NA	60	CWT00044751	AD
7	29-Jul-23	186613	2020	R-Shuswap R Low	H-Shuswap River, Middle,	CDFO	NA	72	CWT00040382	AD
7	29-Jul-23	211393	2019	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ	NA	84	CWT00043742	AD
7	29-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	71	CWT00043743	AD
7	29-Jul-23	637895	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637896	63	CWT00044368	AD
7	29-Jul-23	637873	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	56	CWT00044747	AD
7	29-Jul-23	211447	2020	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	NA	59	CWT00044748	AD
7	29-Jul-23	211490	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211491; 637628; 637811	55	CWT00044749	AD



**Appendix 8** Coded-wire tag (CWT) recoveries from the Chinook MSF in Marine Area 9. Note: Not all tags have been processed before the writing of this report.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
9	14-Jul-23	637901	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	637823	54	CWT00038219	AD
9	14-Jul-23	211391	2019	Whitehorse Springs	Whitehorse Pond	STIL	NA	76	CWT00038220	AD
9	14-Jul-23	637854	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	63	CWT00040371	AD
9	14-Jul-23	211391	2019	Whitehorse Springs	Whitehorse Pond	STIL	NA	76	CWT00040766	AD
9	14-Jul-23	637898	2020	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637899	61	CWT00040873	AD
9	14-Jul-23	637901	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	637823	63	CWT00040874	AD
9	14-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	70	CWT00040875	AD
9	14-Jul-23	637745	2019	Friday Cr 03.0017	Samish Hatchery	WDFW	637746	85	CWT00040876	AD
9	14-Jul-23	637873	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	68	CWT00042289	AD
9	14-Jul-23	637917	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	59	CWT00083488	AD
9	14-Jul-23	637901	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	637823	55	CWT00083497	AD
9	14-Jul-23	637856	2020	Finch Cr 16.0222	Hoodspport Hatchery	WDFW	NA	82	CWT00094204	AD
9	14-Jul-23	637898	2020	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637899	66	CWT00094205	AD
9	14-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	62	CWT00094207	AD
9	14-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	63	CWT00094305	AD
9	14-Jul-23	637915	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	55	CWT00095725	AD
9	14-Jul-23	637853	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	69	CWT00096044	AD
9	14-Jul-23	637873	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	66	CWT00096046	AD
9	14-Jul-23	637901	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	637823	52	CWT00096047	AD
9	14-Jul-23	637810	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	67	CWT00096048	AD
9	14-Jul-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	65	CWT00096049	AD
9	15-Jul-23	637918	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	65	CWT00038230	AD
9	15-Jul-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	61	CWT00038232	AD
9	15-Jul-23	637626	2019	Finch Cr 16.0222	Hoodspport Hatchery	WDFW	NA	62	CWT00038345	AD
9	15-Jul-23	637745	2019	Friday Cr 03.0017	Samish Hatchery	WDFW	637746	80	CWT00040375	AD
9	15-Jul-23	637916	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	66	CWT00040376	AD
9	15-Jul-23	637429	2019	Green R 09.0001	Palmer Hatchery	WDFW	NA	72	CWT00040756	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
9	15-Jul-23	637749	2019	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637750	73	CWT00040764	AD
9	15-Jul-23	211393	2019	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ	NA	79	CWT00040765	AD
9	15-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	66	CWT00040877	AD
9	15-Jul-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	76	CWT00040878	AD
9	15-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	70	CWT00040879	AD
9	15-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	79	CWT00040880	AD
9	15-Jul-23	637615	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	64	CWT00040881	AD
9	15-Jul-23	637615	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	74	CWT00040882	AD
9	15-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	70	CWT00044752	AD
9	15-Jul-23	637855	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	76	CWT00083495	AD
9	15-Jul-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	59	CWT00084115	AD
9	15-Jul-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	61	CWT00084117	AD
9	15-Jul-23	637849	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	61	CWT00088742	AD
9	15-Jul-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	65	CWT00094210	AD
9	15-Jul-23	637425	2020	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	68	CWT00094212	AD
9	15-Jul-23	637871	2020	Gorst Cr Rear.Pond-2	Gorst Cr Rearing Pnd	SUQ	NA	66	CWT00094306	AD
9	16-Jul-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	60	CWT00038531	AD
9	16-Jul-23	637856	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	73	CWT00038532	AD
9	16-Jul-23	637916	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	54	CWT00038533	AD
9	16-Jul-23	211491	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211490; 637628; 637811	61	CWT00049516	AD
9	16-Jul-23	637787	2020	Issaquah Cr 08.0178	Issaquah Hatchery	WDFW	NA	67	CWT00049524	AD
9	16-Jul-23	211409	2019	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	211410	78	CWT00088786	AD
9	16-Jul-23	637863	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	71	CWT00094216	AD
9	16-Jul-23	211537	2021	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	638313	40	CWT00095727	AD
9	16-Jul-23	637780	2020	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ		53	CWT00095740	AD

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
							211488; 637781; 211489			
9	21-Jul-23	637898	2020	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637899	64	CWT00040377	AD
9	21-Jul-23	637749	2019	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637750	82	CWT00040887	AD
9	21-Jul-23	637863	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	66	CWT00044371	AD
9	21-Jul-23	637873	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	57	CWT00084123	AD
9	21-Jul-23	638316	2021	Cascade R 03.1411	Marblemount Hatchery	WDFW	638311	45	CWT00088778	AD
9	21-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	54	CWT00088781	AD
9	21-Jul-23	637857	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	68	CWT00094222	AD
9	21-Jul-23	637849	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	55	CWT00095856	AD
9	21-Jul-23	211505	2020	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ	NA	62	CWT00095857	AD
9	22-Jul-23	211339	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	637775; 211333; 637720	82	CWT00038535	AD
9	22-Jul-23	211441	2020	Clarks Crk Hatchery	Clarks Crk Hatchery	PUYA	NA	61	CWT00038536	AD
9	22-Jul-23	637631	2019	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	73	CWT00084372	AD
9	22-Jul-23	637735	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	70	CWT00092535	AD
9	22-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	67	CWT00092536	AD
9	22-Jul-23	637686	2019	Narrows Marina Pens	Narrows Marina Pens	PUYA	NA	67	CWT00092537	AD
9	22-Jul-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	59	CWT00092538	AD
9	22-Jul-23	637687	2020	Point Defiance Net Pens	Clarks Crk Hatchery	PUYA	NA	66	CWT00093822	AD
9	22-Jul-23	211409	2019	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	211410	73	CWT00095860	AD
9	23-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	62	CWT00038539	AD
9	23-Jul-23	637749	2019	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637750	72	CWT00044730	AD
9	23-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	66	CWT00084373	AD
9	23-Jul-23	637614	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	74	CWT00088709	AD
9	23-Jul-23	637631	2019	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	76	CWT00088762	AD
9	23-Jul-23	211491	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ		64	CWT00094221	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
							211490; 637628; 637811			
9	23-Jul-23	637917	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	57	CWT00095015	AD
9	23-Jul-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	60	CWT00095017	AD
9	23-Jul-23	637918	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	63	CWT00095863	AD
9	23-Jul-23	211409	2019	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	211410	78	CWT00095864	AD
9	23-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	72	CWT00095865	AD
9	28-Jul-23	637872	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	63	CWT00038425	AD
9	28-Jul-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	61	CWT00038542	AD
9	28-Jul-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	81	CWT00040379	AD
9	28-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	68	CWT00040380	AD
9	28-Jul-23	637749	2019	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637750	70	CWT00040381	AD
9	28-Jul-23	637686	2019	Narrows Marina Pens	Narrows Marina Pens	PUYA	NA	63	CWT00040759	AD
9	28-Jul-23	637614	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	73	CWT00040763	AD
9	28-Jul-23	211412	2019	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	NA	77	CWT00040891	AD
9	28-Jul-23	637855	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	74	CWT00040892	AD
9	28-Jul-23	637686	2019	Narrows Marina Pens	Narrows Marina Pens	PUYA	NA	71	CWT00040893	AD
9	28-Jul-23	637428	2019	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	75	CWT00044369	AD
9	28-Jul-23	211333	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211339; 637775; 637720	69	CWT00044370	AD
9	28-Jul-23	637898	2020	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637899	56	CWT00084124	AD
9	28-Jul-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	65	CWT00084127	AD

**Appendix 9** Coded-wire tag (CWT) recoveries from the Chinook MSF in Marine Area 10. Note: Not all tags have been processed before the writing of this report.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
10	14-Jul-23	637787	2020	Issaquah Cr 08.0178	Issaquah Hatchery	WDFW	NA	62	CWT00038228	AD
10	14-Jul-23	211441	2020	Clarks Crk Hatchery	Clarks Crk Hatchery	PUYA	NA	61	CWT00042298	AD
10	14-Jul-23	211339	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	637775; 211333; 637720	81	CWT00088701	AD
10	14-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	67	CWT00088750	AD
10	14-Jul-23	211447	2020	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	NA	71	CWT00095748	AD
10	15-Jul-23	638310	2021	Kendall Cr 01.0406	Kendall Cr Hatchery	WDFW	NA	54	CWT00088749	AD
10	15-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	50	CWT00094711	AD
10	15-Jul-23	637896	2020	Friday Cr 03.0017	Samish Hatchery	WDFW	637895	49	CWT00094712	UM
10	15-Jul-23	186823	2021	R-Harrison R	H-Chehalis River H	CDFO	NA	43	CWT00095741	AD
10	15-Jul-23	637873	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	60	CWT00095840	AD
10	16-Jul-23	211339	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	637775; 211333; 637720	66	CWT00041193	AD
10	16-Jul-23	637821	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	49	CWT00041195	AD
10	16-Jul-23	637625	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	65	CWT00041258	AD
10	16-Jul-23	186818	2020	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	63	CWT00088754	AD
10	16-Jul-23	211339	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	637775; 211333; 637720	81	CWT00095842	AD
10	16-Jul-23	637863	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	62	CWT00095844	AD
10	17-Jul-23	637885	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	65	CWT00042255	AD
10	17-Jul-23	186884	2021	R-Burrard In	H-Sandy Cove Seapen	CDFO	NA	45	CWT00088727	AD
10	18-Jul-23	211441	2020	Clarks Crk Hatchery	Clarks Crk Hatchery	PUYA	NA	54	CWT00095853	AD
10	21-Jul-23	637871	2020	Gorst Cr Rear.Pond-2	Gorst Cr Rearing Pnd	SUQ	NA	69	CWT00088780	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
10	21-Jul-23	637871	2020	Gorst Cr Rear.Pond-2	Gorst Cr Rearing Pnd	SUQ	NA	59	CWT00088782	AD
10	21-Jul-23	187093	2021	R-Chilliwack R	H-Chilliwack River H	CDFO	NA	45	CWT00088784	AD
10	21-Jul-23	637922	2020	Purdy Cr 16.0005	George Adams Hatchery	WDFW	637923	67	CWT00095772	AD
10	22-Jul-23	637853	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	58	CWT00088710	AD
10	22-Jul-23	637916	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	59	CWT00088800	AD
10	22-Jul-23	637873	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	56	CWT00095858	AD
10	23-Jul-23	211333	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211339; 637775; 637720	75	CWT00088759	AD
10	23-Jul-23	637735	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	75	CWT00088799	AD
10	23-Jul-23	637916	2020	Wallace R 07.0940	Wallace R Hatchery	WDFW	NA	52	CWT00095752	AD
10	23-Jul-23	637827	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	58	CWT00095757	AD
10	24-Jul-23	211490	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211491; 637628; 637811	52	CWT00041199	AD
10	24-Jul-23	638281	2021	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	50	CWT00042267	AD
10	24-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	75	CWT00094718	AD
10	24-Jul-23	637425	2020	Icy Cr 09.0125	Icy Cr Hatchery	WDFW	NA	56	CWT00094719	AD
10	27-Jul-23	637853	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	57	CWT00042268	AD
10	27-Jul-23	637871	2020	Gorst Cr Rear.Pond-2	Gorst Cr Rearing Pnd	SUQ	NA	55	CWT00088726	AD
10	27-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	72	CWT00091011	AD
10	27-Jul-23	637417	2020	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	52	CWT00095869	AD
10	28-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	60	CWT00083487	AD
10	28-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	63	CWT00091005	AD
10	28-Jul-23	637419	2019	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW	NA	77	CWT00095872	AD
10	28-Jul-23	637872	2020	Gorst Cr Rear.Pond-1	Gorst Cr Rearing Pnd	SUQ	NA	70	CWT00095873	AD
10	29-Jul-23	637616	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	82	CWT00088705	AD
10	29-Jul-23	211490	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ		67	CWT00091002	AD

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Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
							211491; 637628; 637811			
10	29-Jul-23	637849	2020	Voight Cr 10.0414	Voights Cr Hatchery	WDFW	NA	54	CWT00091003	AD
10	29-Jul-23	638243	2021	Point Defiance Net Pens	Clarks Crk Hatchery	PUYA	NA	53	CWT00095874	AD
10	30-Jul-23	637853	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	78	CWT00088751	AD
10	30-Jul-23	211490	2020	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211491; 637628; 637811	69	CWT00091012	AD
10	30-Jul-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	58	CWT00094738	AD
10	30-Jul-23	211394	2019	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ	NA	64	CWT00095018	AD
10	31-Jul-23	211525	2020	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	211526	53	CWT00095762	AD
10	2-Aug-23	637885	2020	Finch Cr 16.0222	Hoodsport Hatchery	WDFW	NA	65	CWT00083191	AD
10	3-Aug-23	211333	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211339; 637775; 637720	69	CWT00094736	AD
10	3-Aug-23	637853	2020	Chambers Cr 12.0007	Garrison Hatchery	WDFW	NA	55	CWT00095019	AD
10	5-Aug-23	637784	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	NA	80	CWT00091018	UM
10	5-Aug-23	211483	2020	White R 10.0031	White River Hatchery	MIT	NA	71	CWT00091019	AD
10	5-Aug-23	637752	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	NA	77	CWT00091020	UM
10	5-Aug-23	637426	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637427	68	CWT00091021	UM
10	5-Aug-23	637925	2020	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	NA	62	CWT00091022	UM
10	5-Aug-23	637784	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	NA	78	CWT00091023	UM
10	5-Aug-23	637784	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	NA	52	CWT00091027	UM
10	5-Aug-23	637898	2020	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637899	64	CWT00091086	AD
10	5-Aug-23	637784	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	NA	69	CWT00095020	UM
10	5-Aug-23	637784	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	NA	78	CWT00095038	UM
10	5-Aug-23	637612	2019	Minter Cr Tr 15.0051	Hupp Springs Rearing	WDFW	NA	59	CWT00095039	AD
10	5-Aug-23	637863	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	NA	63	CWT00095040	AD

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**Appendix 10** Coded-wire tag (CWT) recoveries from the Chinook MSF in Marine Area 11. Note: Not all tags have been processed before the writing of this report.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	FL(cm)	Label	Recovery Mark
11	12-Jun-23	637921	2020	Minter Cr 15.0048	Minter Cr Hatchery	WDFW	63	CWT00095802	AD