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**2021 Summer Mark-Selective Recreational Chinook Fisheries  
In Marine Areas 5, 6, 7, 9, 10, 11, 12 and 13**

**Post-season Report**

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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), anglers are generally allowed to retain adipose-fin clipped (“marked”) hatchery fish and are required to release unharmed any unclipped (“unmarked”, predominantly natural-origin) salmon encountered<sup>1</sup>.

Since the Washington Department of Fish and Wildlife (WDFW) implemented the first marine 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, 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. Including the 2020-2021 management season, mark-selective fisheries for Chinook salmon have been conducted in Puget Sound for the last 19 summer (May through September) seasons and the last 17 winter (October through April) seasons.

During the 2021 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 prior to it:

- Marine Area 5 from July 1 through August 15, 2021;
- Marine Area 6 from July 1 through August 15, 2021;
- Marine Area 7 from July 1 through July 31, 2021; August 16-31;
- Marine Area 9 from July 16 through August 15, 2021;
- Marine Area 10 from July 16 through August 31, 2021;
- Marine Area 11 from June 16 through September 30, 2021;
- Marine Area 12 from July 1 through September 30, 2021;
- Marine Area 13 from May 1 through September 30, 2021

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<sup>1</sup>The regulations specific to summer mark-selective fisheries in Puget Sound Marine Catch Areas allowed for the retention of up to two legal-sized (>22 inches [56 cm]) marked Chinook salmon per day and required the immediate release of all unmarked or sublegal Chinook salmon. Additionally, anglers were: i) required to use single-point, barbless hooks while fishing for salmon, ii) held to a combined (all salmon species) two-fish daily limit, and iii) held to a handling rule that prevented them from bringing unmarked and/or sublegal Chinook aboard their vessels.

## **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 July 18, 2021. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program, a Reduced Murthy, in 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 and efforts to collect voluntary salmon trip reports (STRs) from the angling public. Salmon trips reports were not physically handed out to anglers, to reduce exposure with Covid-19, though the form was available online for anglers to fill out. The fishery control for this Area was based on the pre-season prediction of total legal-sized Chinook salmon encountered. **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). 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 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	Two weeks	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 $N=8$ available weekdays per two-week period. For the weekend stratum we sampled $n=2$ 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	Because no STRs were returned during the fishery, but 2,063 Chinook encounters were reported in Dockside sampling, bias-corrected encounter proportions from the Dockside data ( <b>Table 1.13</b> ) used to produce encounter and mortality estimates.
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	No weekday surveys or weekend surveys were conducted during the 2021 Area 5 summer Chinook MSF. Recent average site weights to compute catch and effort estimates.
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	No STRs were returned during the course of 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.

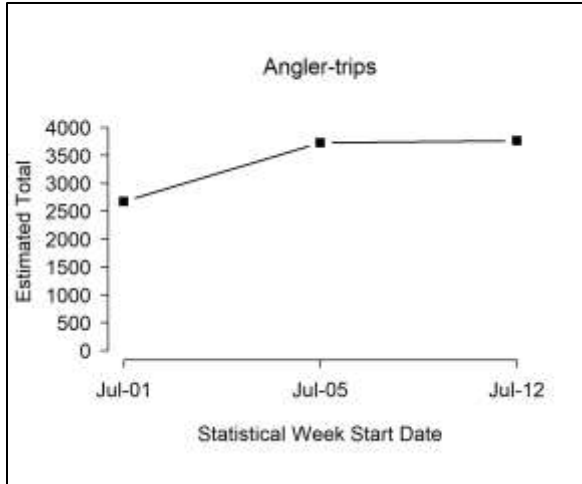
<sup>1</sup> The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.

**Table 1.2** Estimates of total fishing effort and total salmon catch (harvest and releases) during the 2021 summer Chinook MSF in Marine Area 5. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

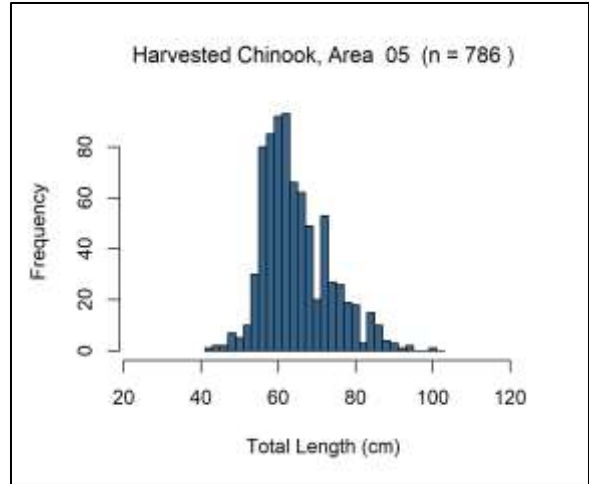
Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
July	27	1-Jul	4-Jul	1,067	2,672	998	15	826	1,337	3,176
	28	5-Jul	11-Jul	1,515	3,725	1,244	15	1,030	1,671	3,960
	29	12-Jul	18-Jul	1,565	3,760	1,630	46	1,350	2,163	5,188
<b>Season Total:</b>				<b>4,147</b>	<b>10,157</b>	<b>3,872</b>	<b>75</b>	<b>3,206</b>	<b>5,171</b>	<b>12,324</b>
<b>Variance:</b>				126,597	809,438	195,723	387	684,777	332,451	2,536,701
<b>SE:</b>				356	900	442	20	828	577	1,593
<b>CV (%):</b>				9	9	11	26	26	11	13
<b>95% CI:</b>				3,450 - 4,845	8,393 - 11,920	3,005 - 4,739	36 - 114	1,584 - 4,828	4,041 - 6,301	9,203 - 15,446

**Table 1.3** Number of total length samples collected from retained Chinook salmon collected during dockside angler interviews in the 2021 summer Chinook MSF in Marine Area 5.

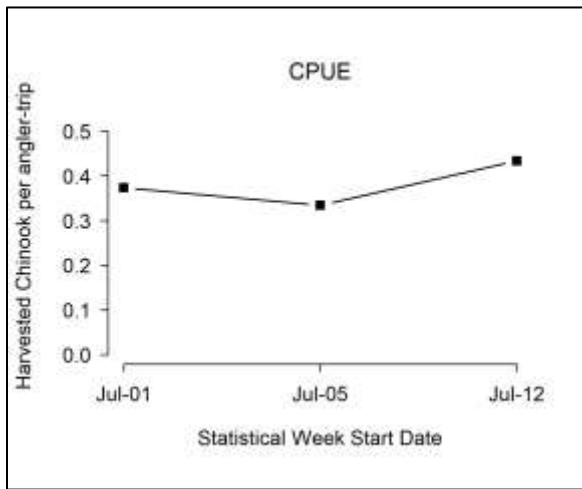
Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	693	93	786
Unmarked	9	6	15
<b>Total</b>	<b>702</b>	<b>99</b>	<b>801</b>



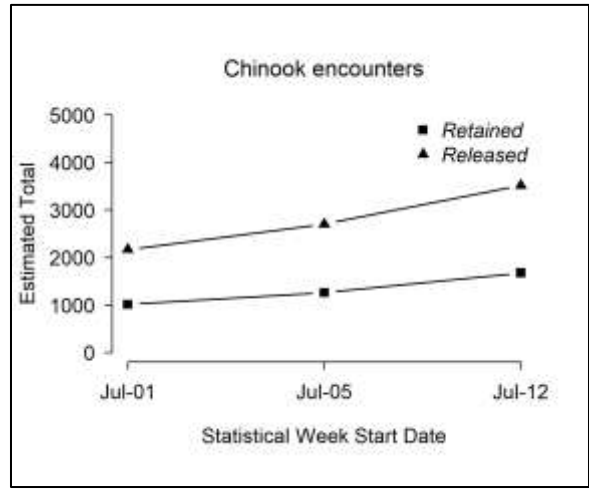
**Figure 1.1** Temporal patterns in fishing effort during the 2021 summer Chinook MSF in Marine Area 5.



**Figure 1.3** Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the 2021 summer Chinook MSF in Marine Area 5. Note: displayed values are observations where lengths taken.



**Figure 1.2** Temporal patterns in CPUE (landed Chinook per angler trip) during the 2021 summer Chinook MSF in Marine Area 5.



**Figure 1.4** Temporal patterns in Chinook salmon encounters (number retained and released) during the 2021 summer Chinook MSF in Marine Area 5.

**Table 1.4** Summary of season-wide fishery impact estimates for the 2021 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.

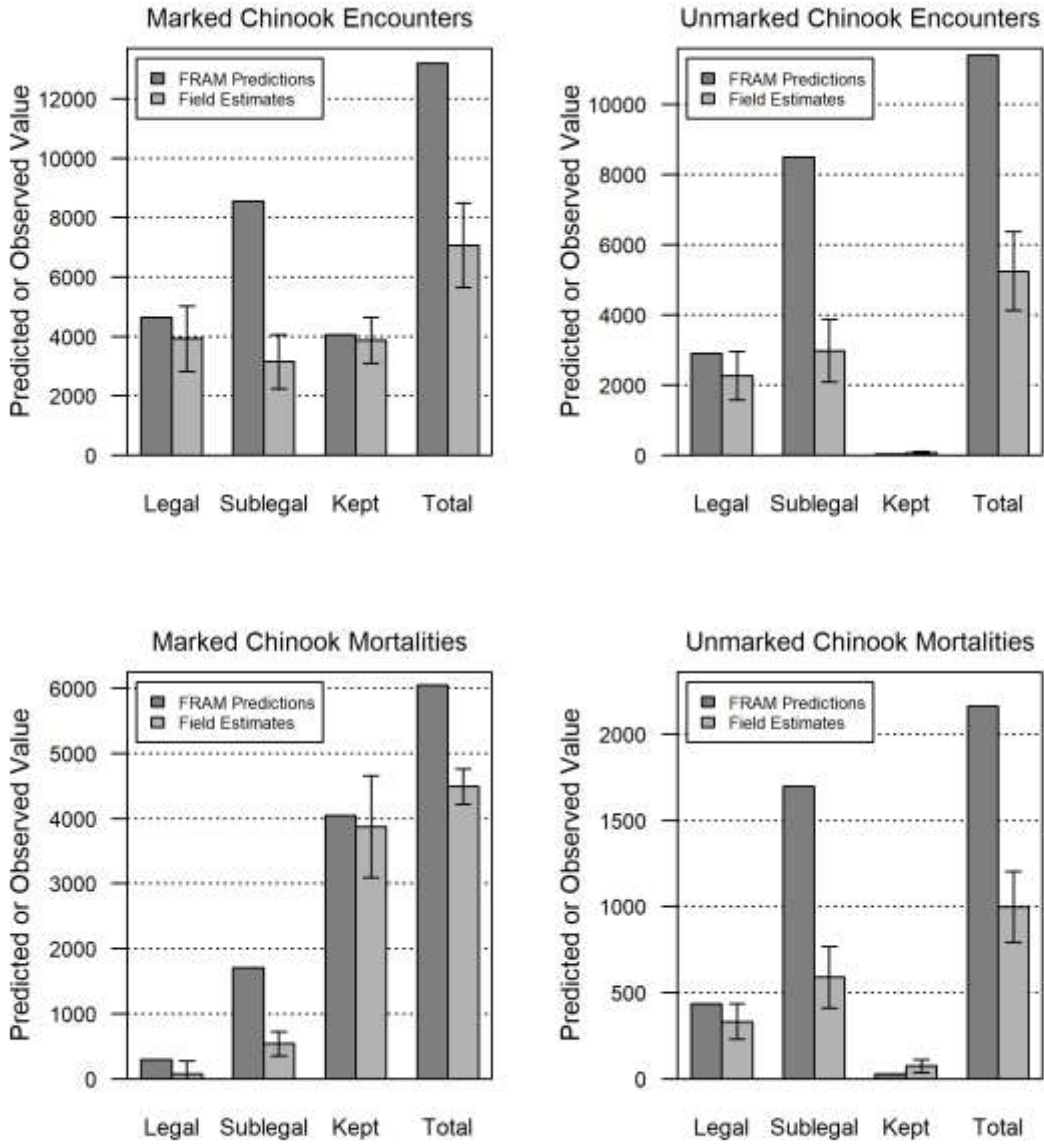
Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	3,924	3,414	510	77	3,490	164,550	406	2,695 - 4,285	12
Legal UM	2,264	45	2,219	333	378	3,061	55	269 - 486	15
Sublegal AD	3,154	458	2,696	539	997	13,542	116	769 - 1,225	12
Sublegal UM	2,982	30	2,952	590	620	8,416	92	441 - 800	15
<b>Total</b>	<b>12,324</b>	<b>3,947</b>	<b>8,377</b>	<b>1,539</b>	<b>5,486</b>	<b>189,569</b>	<b>435</b>	<b>4,632 - 6,339</b>	<b>8</b>

**Table 1.5** Comparison of modeled and estimated total Chinook salmon encounters for the 2021 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	11,401	2,912	8,489	29
	AD	13,205	4,653	8,552	4,048
	Total	24,606	7,565	17,041	4,077
	% Marked	54	62	50	99
Estimated (Creel) Encounters	UM	5,246	2,264	2,982	75
	AD	7,078	3,924	3,154	3,872
	Total	12,324	6,188	6,136	3,947
	% Marked	57	63	51	98

**Table 1.6** Comparison of modeled and estimated total Chinook salmon mortalities for the 2021 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)	2161	6,051	8,212	998	4,488	5,486
Released Legal	434	293	727	333	77	409
Released Sublegal	1698	1,710	3,408	590	539	1,130
Landed Only	29	4,048	4,077	75	3,872	3,947



**Figure 1.5** Comparison of modeled and estimated total Chinook salmon encounters and mortalities for the 2021 summer Chinook MSF in Marine Area 5. Error bars represent approximate 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 2021 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
No boat surveys were able to be completed.				

**Table 1.8** Monthly sample rates (Total retained Chinook sampled<sup>1</sup> / Estimated retained Chinook) for the 2021 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 - 29	1 Jul - 18 Jul	3,872	75	3,947	848	16	864	21.90%
<b>Season Total</b>			<b>3,872</b>	<b>75</b>	<b>3,947</b>	<b>848</b>	<b>16</b>	<b>864</b>	<b>21.90%</b>

<sup>1/</sup> Number of retained Chinook salmon sampled includes all retained Chinook salmon inspected for CWT's, from all sites sampled during the 2021 summer Chinook MSF in Marine Area 5 (creel estimates and fish sampled as part of baseline sampling).

**Table 1.9** Fishery-total estimates of retained and released salmon (other than Chinook) for the 2021 summer Chinook MSF in Marine Area 5. Values may not add 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	Unknown	Pink	Coho AD	Coho UM	Coho UK	Pink	Unknown
27	1-Jul	4-Jul	57	0	0	26	48	31	70	25	14	331
28	5-Jul	11-Jul	106	0	0	29	96	96	157	69	174	681
29	12-Jul	18-Jul	175	0	0	37	184	157	157	10	437	495
<b>Season Total:</b>			<b>338</b>	<b>0</b>	<b>0</b>	<b>92</b>	<b>329</b>	<b>284</b>	<b>383</b>	<b>104</b>	<b>626</b>	<b>1507</b>
<b>Variance:</b>			1,511	0	0	640	3177	3,687	4,112	1,543	47175	80,649
<b>Standard Error:</b>			39	0	0	25	56	61	64	39	217	284
<b>CV (%):</b>			12	0	0	27	17	21	17	38	35	19
<b>95% CI:</b>			262 - 414	0 - 0	0 - 0	43 - 142	219 - 440	165 - 403	258 - 509	27 - 181	200 - 1,051	951 - 2,064

**Table 1.10** Summary of coded-wire tags recovered from Chinook salmon harvested during the 2021 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 writing of this report. Continued on the next page.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs	
BC	Thompson River (35.8%)	R-Chilliwack R	H-Chilliwack River H	30 (24.4%)	0	
		R-Harrison R	H-Chehalis River H	13 (10.6%)	0	
		R-Shuswap R Low	H-Shuswap River, Middle,	1 (0.8%)	0	
	Georgia Strait (8.1%)	R-Capilano R	H-Capilano River H	2 (1.6%)	0	
		R-Cowichan R	H-Cowichan River H	1 (0.8%)	0	
		R-Puntledge R	H-Puntledge River H	1 (0.8%)	0	
		R-Burrard In	H-Sandy Cove Seapen	6 (4.9%)	0	
WA	N Washington (7.3%)	Lummi Hatchery -Pond	Lummi Sea Ponds	1 (0.8%)	0	
		Friday Cr 03.0017	Samish Hatchery	2 (1.6%)	0	
		Nooksack -Sf 01.0246	Skookum Cr Hatchery	1 (0.8%)	0	
		Skookum Cr 01.0273	Skookum Cr Hatchery	3 (2.4%)	0	
		East Sound Bay (San)	Glenwood Springs	2 (1.6%)	0	
	Hood Canal (3.3%)	Purdy Cr 16.0005	George Adams Hatchery	3 (2.4%)	0	
		Finch Cr 16.0222	Hoodsport Hatchery	1 (0.8%)	0	
	N Puget Sound (5.7%)	Tulalip Cr 07.0001	Bernie Gobin Hatch	1 (0.8%)	1	
		Whitehorse Springs	Fortson Pond Net Pen	1 (0.8%)	0	
		Wallace R 07.0940	Wallace R Hatchery	3 (2.4%)	0	
		Stillaguamish R -Sf	Brenner Hatchery	2 (1.6%)	0	
	Skagit River (2.4%)	Co Line Pd2 03.1853B	Marblemount Hatchery	1 (0.8%)	0	
		County Line Cr3.2363	Marblemount Hatchery	1 (0.8%)	0	
		Clark Cr 03.1421	Marblemount Hatchery	1 (0.8%)	0	
	Mid Puget Sound (4.9%)	Big Soos Cr 09.0072	Soos Creek Hatchery	1 (0.8%)	0	
		Sammamish R 08.0057	Issaquah Hatchery	1 (0.8%)	0	
		Icy Cr 09.0125	Icy Cr Hatchery	1 (0.8%)	0	
		Grovers Cr Hatchery	Grovers Cr Hatchery	3 (2.4%)	3	
	S Puget Sound (4.9%)	Minter Cr 15.0048	Minter Cr Hatchery	3 (2.4%)	0	
		Deschutes R 13.0028	Tumwater Falls Hatchery	1 (0.8%)	0	
		Kalama Cr 11.0017	Kalama Cr Hatchery	1 (0.8%)	0	
		Deschutes R 13.0028	Minter Cr Hatchery	1 (0.8%)	0	
	Col. Riv.	Upper Columbia R (4.1%)	Col R @ Priest Rapids	Priest Rapids Hatchery	1 (0.8%)	0
			Wenatchee R 45.0030		1 (0.8%)	0
			Springs Cr 36.0114	Ringold Springs Hatchery	1 (0.8%)	0
			Columbia Near Wells	Wells Hatchery	2 (1.6%)	0
		Central Columbia R (4.1%)	Spring Cr 29.0159	Spring Cr Nfh	5 (4.1%)	5
		Lower Columbia R(11.4%)	Tanner Cr (Bnville)	Bonneville Hatchery	2 (1.6%)	0
Cowlitz R 26.0002			Cowlitz Salmon Hatchery	2 (1.6%)	0	
Kalama R 27.0002			Kalama Falls Hatchery	1 (0.8%)	0	
Bull Run R			Sandy Hatchery	1 (0.8%)	0	
Big Cr (Lwr Col R)			Big Cr Hatchery	4 (3.3%)	0	
Youngs R & Bay			Cedc Net Pens	1 (0.8%)	0	
Washougal R 28.0159			Washougal Hatchery	2 (1.6%)	0	
Klaskanine R N Fk			Klaskanine Hatchery	1 (0.8%)	0	
Snake River (4.9%)		Lyons Ferry Rel.Site	Lyons Ferry Hatchery	1 (0.8%)	0	
		Hammer Crk:Salmon R	Irrigon Hatchery	1 (0.8%)	0	
		Snake R @Pittsburg L	Lyons Ferry Hatchery	1 (0.8%)	0	
		Captain Johns Pd	Lyons Ferry Hatchery	3 (2.4%)	0	
OR		S Oregon Coast (2.4%)	Chetco R	Elk R Hatchery	1 (0.8%)	0
			Elk R	Elk R Hatchery	2 (1.6%)	0

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs
CA	Sacramento River (0.8%)	Coleman Nfh	Coleman Nfh	1 (0.8%)	0
<b>Total</b>				<b>123</b>	<b>9</b>

**Table 1.11** Total Chinook salmon encountered (retained and released) by charter and private-boat anglers logging their trips on STRs, with estimates of legal-size and overall (legal and sublegal) mark rates during 2021 summer Chinook salmon MSF in Marine Area 5. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Hatchery	Brood Year	DITs Obs	Est.AD	var(Est.AD)	UM DIT Enc	Est.UM	var(Est.UM)	SE(Est.UM)
Bernie Gobin Hatch	2018	1	4.9	19.35	5	0.5	0.197	0.44
Grovers Cr Hatchery	2018	3	9.9	38.7	14.5	5.9	19.719	5.26
Spring Cr Nfh	2018	4	19.7	77.41	24.2	2.4	1.289	2.16
Spring Cr Nfh	2019	1	4.9	19.35	4.9	0.5	0.194	0.44
<b>Total</b>		<b>9</b>	<b>39.4</b>	<b>154.81</b>	<b>48.7</b>	<b>9.3</b>	<b>21.4</b>	<b>8.31</b>

**Table 1.12** 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 2021 summer Chinook MSF in Marine Area 5. AD = marked (adipose-clipped), UM = unmarked.

Data Source	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private VTR	0 1-trip VTRs	0	0	0	0	0	NA	NA
Size/mark-status composition:		NA	NA	NA	NA			
Variance:		NA	NA	NA	NA			

**Table 1.13** Dockside encounters (retained and released) by size-mark category during the 2021 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	738	379	528	418
Bias-corrected size/mark composition	31.8%	18.4%	25.6%	24.2%
Variance	0.0004	0.0003	0.0003	0.0004



**Table 1.14** 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 5 summer Chinook MSF. Values may not add 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

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

The Washington Department of Fish and Wildlife (WDFW) implemented a summer Chinook MSF in a sub-area of Marine Area 6 west of Ediz Hook from July 1 through August 3, 2021. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program, Reduced Murthy, using an aerial design in a sub-area of Marine Area 6 east of Ediz Hook 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). In this section we present results from our monitoring activities during the Marine Area 6 summer Chinook MSF.

An analysis of historical fishing effort was conducted pre-season in the Marine Area 6 sub-area to determine viable in-sample locations. The top three locations of historical angler effort in the sub-area fishery were chosen; Ediz Hook Public Ramp, Freshwater Bay Ramp, and Port Angeles West Ramp. In-season aerial surveys yielded an average 77% recapture rate for boats with these sites selected (**Table 2.7**).

**Table 2.1** Sampling/estimation details on target parameters associated with the overall 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 $N=8$ available weekdays per two-week period. For the weekend stratum we sampled $n=2$ 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	STR sample size was not sufficient to produce estimate of encounters and mortalities with a coefficient of variation of 21.4% ( <b>Table 2.10</b> ). Dockside encounters ( $N=2,476$ ; LM = 44%, LU = 15%, SM = 31%, SU = 10%) were used to estimate estimates of encounters and mortalities ( <b>Table.2.9</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 2.7</b> $n=6$ surveys conducted out of $N=34$ days available in the season). Season-wide sample fraction was calculated as the average sample fraction over the 6 individual aerial surveys.
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	STRs sample size was not large enough to produce estimates of encounters ( $CV\% > .2$ ) ( <b>Table 2.10</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.

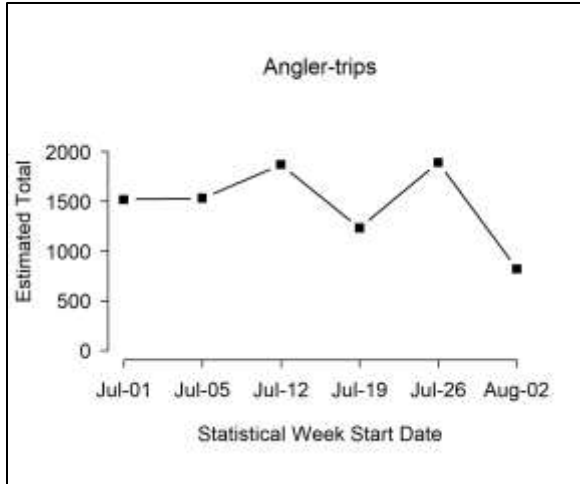
<sup>1</sup> The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.

**Table 2.2** Estimates of total fishing effort and total salmon catch (harvest and releases) during the 2021 summer Chinook MSF in Marine Area 6. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

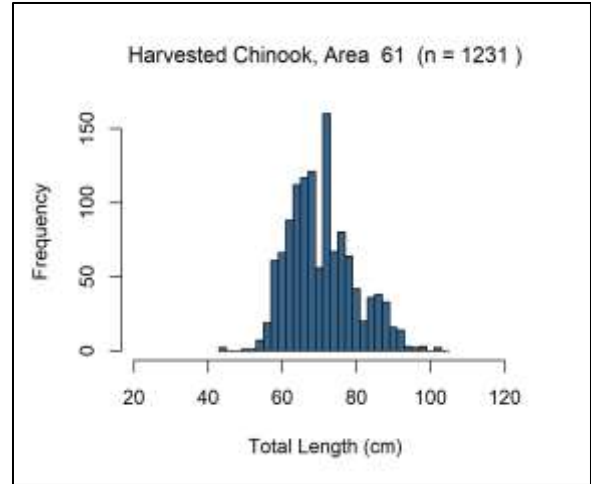
Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
July	27	1-Jul	4-Jul	690	1518	569	3	520	361	1453
	28	5-Jul	11-Jul	770	1,531	855	5	783	543	2,185
	29	12-Jul	18-Jul	939	1,870	1086	17	994	678	2,775
	30	19-Jul	25-Jul	627	1,232	693	5	634	438	1,771
	31	26-Jul	1-Aug	981	1,891	1223	5	1120	778	3126
August	32	2-Aug	3-Aug	443	821	633	5	579	400	1617
<b>Season Total:</b>				<b>4,450</b>	<b>8,863</b>	<b>5,058</b>	<b>40</b>	<b>4,630</b>	<b>3,198</b>	<b>12,926</b>
<b>Variance:</b>				173,401	720,014	194,948	155	732,251	75,613	1,540,661
<b>SE:</b>				416	849	442	12	856	275	1,241
<b>CV (%):</b>				9	10	9	32	18	9	10
<b>95% CI:</b>				3,634 - 5,266	7,199 - 10,526	4,193 - 5,924	15 - 64	2,953 - 6,307	2,659 - 3,737	10,493 - 15,359

**Table 2.3** Number of total length samples collected from retained Chinook salmon collected during dockside angler interviews in the 2021 summer Chinook MSF in Marine Area 6.

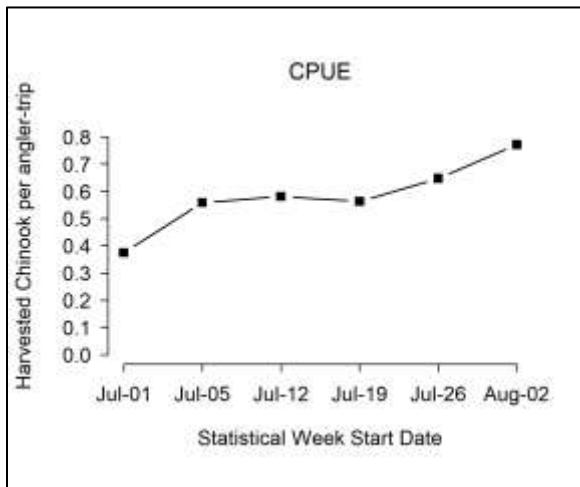
Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	1209	22	1231
Unmarked	2	5	7
<b>Total</b>	<b>1211</b>	<b>27</b>	<b>1238</b>



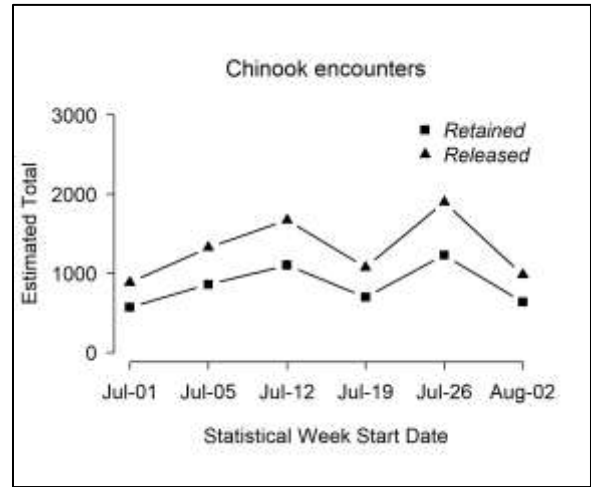
**Figure 2.1** Temporal patterns in fishing effort during the 2021 summer Chinook MSF in Marine Area 6.



**Figure 2.3** Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the 2021 summer Chinook MSF in Marine Area 6. Note: displayed values are observations where lengths taken.



**Figure 2.2** Temporal patterns in CPUE (landed Chinook per angler trip) during the 2021 summer Chinook MSF in Marine Area 6.



**Figure 2.4** Temporal patterns in Chinook salmon encounters (number retained and released) during the 2021 summer Chinook MSF in Marine Area 6.

**Table 2.4** Summary of season-wide fishery impact estimates for the 2021 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.

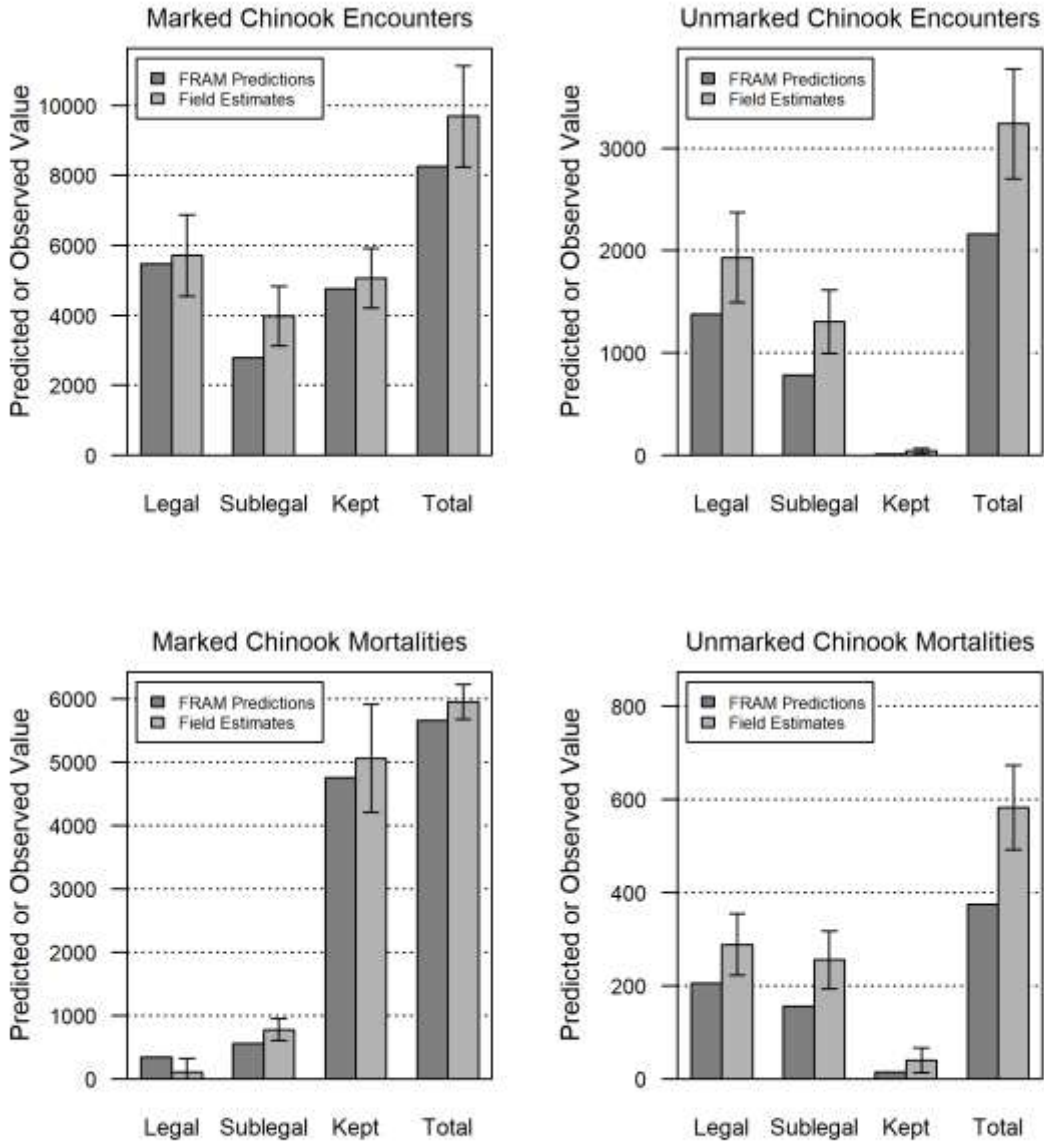
Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	5,710	4,968	742	111	5,079	200,562	448	4,202 - 5,957	9
Legal UM	1,932	11	1,920	288	299	1,196	35	232 - 367	12
Sublegal AD	3,978	90	3,888	778	868	8,101	90	692 - 1,044	10
Sublegal UM	1,306	28	1,278	256	284	1,133	34	218 - 350	12
<b>Total</b>	<b>12,926</b>	<b>5,098</b>	<b>7,828</b>	<b>1,433</b>	<b>6,530</b>	<b>210,992</b>	<b>459</b>	<b>5,630 - 7,431</b>	<b>7</b>

**Table 2.5** Comparison of modeled and estimated total Chinook salmon encounters for the 2021 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	2,158	1,377	781	14
	AD	8,258	5,466	2,792	4,755
	Total	10,416	6,843	3,573	4,769
	% Marked	79	80	78	100
Estimated (Creel) Encounters	UM	3,238	1,932	1,306	40
	AD	9,688	5,710	3,978	5,058
	Total	12,926	7,642	5,284	5,098
	% Marked	75	75	75	99

**Table 2.6** Comparison of modeled and estimated total Chinook salmon mortalities for the 2021 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)	375	5,658	6,033	583	5,947	6,530
Released Legal	205	345	550	288	111	399
Released Sublegal	156	558	714	256	778	1,033
Landed Only	14	4,755	4,769	40	5,058	5,098



**Figure 2.5** Comparison of modeled and estimated total Chinook salmon encounters and mortalities for the 2021 summer Chinook MSF in Marine Area 6. Error bars represent approximate 95% confidence intervals for field estimates.

**Table 2.7** Summary of aerial survey and dockside data used to estimate the fraction of effort captured in the three-site sample frame during the 2021 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	WD	11:02	11:17	123	170	98	213	0.797
17-Jul	WE	9:22	9:38	212	183	155	250	0.731
25-Jul	WE	12:04	12:20	12	31	10	37	0.833
28-Jul	WD	12:49	13:04	57	103	42	140	0.737
30-Jul	WE	8:46	9:02	149	149	112	198	0.752
31-Jul	WE	8:58	9:03	77	91	60	117	0.779
<b>Season Totals:</b>				<b>630</b>	<b>727</b>	<b>477</b>	<b>956</b>	
Mean:				105	121	80	159	0.771
St Dev:				71	57	52	77	0.039
CV(%):				67.9%	47.2%	65.9%	48.5%	5.1%

**Table 2.8** Monthly sample rates (Total retained Chinook sampled<sup>1</sup> / Estimated retained Chinook) in the 2021 summer Chinook MSF in Marine Area 6.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
7	27 - 31	1 Jul - 1 Aug	4,426	34	4,460	1,799	12	1,811	40.6%
8	32 - 32	2 Aug - 3 Aug	633	5	638	0	0	0	0.0%
<b>Season Total</b>			<b>5,058</b>	<b>40</b>	<b>5,098</b>	<b>1,799</b>	<b>12</b>	<b>1,811</b>	<b>35.5%</b>

<sup>1/</sup> Number of retained Chinook sampled includes all retained Chinook inspected for CWT's, from all sites sampled during the summer 2021 Marine Area 6 Chinook MSF (creel estimates and the fish sampled as part of baseline sampling).

**Table 2.9** Dockside encounters (retained and released) by size-mark category during the 2021 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	1,229	370	762	115
Bias-corrected size/mark composition	44.2%	14.9%	30.8%	10.1%
Variance	0.0003	0.0001	0.0003	0.0001



**Table 2.10** Total Chinook encountered (retained and released) by private-boat anglers logging their trips on STRs, with estimates of legal-size and overall (legal and sublegal) mark rates during the 2021 summer Chinook MSF in Marine Area 6. 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 VTR	12 1-trip VTRs	15	2	19	10	46	0.74	0.88
Size/mark-status composition:		0.33	0.04	0.41	0.22			
Variance:		(0.0049)	(0.0009)	(0.0054)	(0.0038)			

**Table 2.11** Fishery-total estimates of retained and released salmon (other than Chinook) during the 2021 summer Chinook MSF in Marine Area 6. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark-status.

Stat Week	Start Date	End Date	Retained Salmon					Released Salmon						
			Coho AD	Coho UM	Coho UK	Unknown	Pink	Coho AD	Coho UM	Coho UK	Pink	Chum	Sockeye	Unknown
27	1-Jul	4-Jul	6	0	0	1	37	1	12	23	37	4	6	35
28	5-Jul	11-Jul	2	0	0	8	60	7	10	8	60	0	0	49
29	12-Jul	18-Jul	5	0	0	27	30	2	10	7	30	0	0	281
30	19-Jul	25-Jul	3	0	0	0	19	2	0	5	19	0	0	96
31	26-Jul	1-Aug	0	0	0	0	186	2	12	19	186	0	0	80
32	2-Aug	3-Aug	1	0	0	0	9	0	0	3	9	0	0	75
<b>Season Total:</b>			<b>16</b>	<b>0</b>	<b>0</b>	<b>36</b>	<b>342</b>	<b>14</b>	<b>43</b>	<b>66</b>	<b>342</b>	<b>4</b>	<b>6</b>	<b>616</b>
<b>Variance:</b>			29	0	0	39	6824	30	97	388	6824	0	11	25146
<b>Standard Error:</b>			5	0	0	6	83	6	10	20	83	0	3	159
<b>CV (%):</b>			33	0	0	17	24	39	23	30	24	3	58	26
<b>95% CI:</b>			6 - 27	0 - 0	0 - 0	24 - 49	180 - 504	3 - 25	24 - 62	27 - 104	180 - 504	4 - 4	0 - 12	305 - 927

**Table 2.12** Summary of coded-wire tags recovered from Chinook salmon harvested during the 2021 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 writing of this report.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs	
BC	Thompson River (3.9%)	R-Chilliwack R	H-Chilliwack River H	5 (3.9%)	0	
	Georgia Strait (3.1%)	R-Puntledge R	H-Puntledge River H	1 (0.8%)	0	
		R-Big Qualicum R	H-Big Qualicum River H	1 (0.8%)	0	
		R-Capilano R	H-Capilano River H	1 (0.8%)	0	
		R-Cowichan R	H-Cowichan River H	1 (0.8%)	0	
WA	N Washington (4.7%)	East Sound Bay (San)	Glenwood Springs	1 (0.8%)	0	
		Friday Cr 03.0017	Samish Hatchery	5 (3.9%)	0	
		Sol Duc R 20.0096	Solduc Hatchery	1 (0.8%)	0	
	Strait of Juan De Fuca (6.3%)	Elwha R 18.0272	Elwha Hatchery	8 (6.3%)	0	
	Hood Canal (20.5%)	Finch Cr 16.0222	Hoodsport Hatchery	14 (11%)	0	
		Purdy Cr 16.0005	George Adams Hatchery	12 (9.4%)	0	
	N Puget Sound (6.3%)	Tulalip Cr 07.0001	Bernie Gobin Hatch	2 (1.6%)	2	
		Stillaguamish R -Sf	Brenner Hatchery	2 (1.6%)	0	
		Wallace R 07.0940	Wallace R Hatchery	4 (3.1%)	0	
	Skagit River (1.6%)	Cascade R 03.1411	Marblemount Hatchery	2 (1.6%)	0	
	Mid Puget Sound (24.4%)	Big Soos Cr 09.0072	Soos Creek Hatchery	8 (6.3%)	0	
		Icy Cr 09.0125	Icy Cr Hatchery	7 (5.5%)	0	
		Gorst Cr 15.0216	Gorst Cr Rearing Pnd	3 (2.4%)	0	
		Grovers Cr Hatchery	Grovers Cr Hatchery	9 (7.1%)	9	
		Grovers Cr 15.0299	Grovers Cr Hatchery	4 (3.1%)	4	
		S Puget Sound (19.7%)	Clear Cr 11.0013C	Clear Creek Hatchery	2 (1.6%)	2
			Deschutes R 13.0028	Tumwater Falls Hatchery	2 (1.6%)	0
	Chambers Cr 12.0007		Garrison Hatchery	1 (0.8%)	0	
	Kalama Cr 11.0017		Kalama Cr Hatchery	8 (6.3%)	0	
	Deschutes R 13.0028		Minter Cr Hatchery	1 (0.8%)	0	
	Minter Cr Tr 15.0051		Hupp Springs Rearing	2 (1.6%)	0	
	Willapa Bay (0.8%)	Minter Cr 15.0048	Minter Cr Hatchery	9 (7.1%)	0	
	Col. Riv.	Upper Columbia R (1.6%)	North Nemah R24.0460	Nemah Hatchery	1 (0.8%)	0
Methow R 48.0002				1 (0.8%)	0	
Central Columbia R (3.1%)		Yakima R-Low 37.0002	Marion Yakama Trib Hat	1 (0.8%)	0	
		Spring Cr 29.0159	Spring Cr Nfh	3 (2.4%)	3	
Lower Columbia River (1.6%)		Umatilla R	Umatilla Hatchery	1 (0.8%)	0	
		Tanner Cr (Bnville)	Bonneville Hatchery	1 (0.8%)	0	
Snake River (0.8%)		Big Cr (Lwr Col R)	Big Cr Hatchery	1 (0.8%)	0	
	Npt Hatchery	Npt Hatchery	1 (0.8%)	0		
CA	San Joaquin River (0.8%)	San Joaq Shrm Isl Net Pen	Mok R Fish Ins	1 (0.8%)	0	
<b>Total</b>				<b>127</b>	<b>20</b>	

**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 2021 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	2018	2	8.2	25.68	8.3	0.8	0.262	0.72
Clear Creek Hatchery	2018	2	8.2	25.68	8.5	0.8	0.27	0.74
Grovers Cr Hatchery	2017	4	16.5	51.36	15.8	1.6	0.474	1.38
Grovers Cr Hatchery	2018	9	37.1	115.55	36.1	3.6	1.098	3.14
Spring Cr Nfh	2017	1	4.1	12.84	4.1	0.4	0.129	0.36
Spring Cr Nfh	2018	2	8.2	25.68	8.3	0.8	0.259	0.72
<b>Total</b>		<b>20</b>	<b>82.4</b>	<b>256.78</b>	<b>81.1</b>	<b>8.1</b>	<b>2.492</b>	<b>7.06</b>

**Table 2.14** Season-total estimates of Chinook 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 exactly due to rounding error. LM = legal-sized marked, LU = legal-sized unmarked, SM = sublegal-sized marked, SU = sublegal-sized unmarked.

Area	Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
			LM	LU	SM	SU	LM	LU	SM	SU	
6	Jul 1, 2021 - Aug 3, 2021	8,863	4,968	11	90	28	742	1,920	3888	1278	12,926

### **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 from July 1 through July 7, 2021. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program, Full Murthy, using an 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, total unmarked encounters and total sublegal encounters. **Table 3.1** 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 7 summer Chinook MSF.

**Table 3.1** 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	Sample sizes were not sufficient in neither the test fishery nor STRs. Dockside encounter proportions were used to estimate encounters and mortalities ( <b>Table 3.10</b> ). $N=584$ ; LM = 62%, LU = 16%, SM = 8%, SU = 13%.
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 3.7</b> $n=3$ surveys conducted out of $N=7$ days available in the season). Season-wide sample fraction was calculated as the average sample fraction over the 3 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	No fish were encountered in the test fishery during the Marine Area 7 fishery.
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.
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.

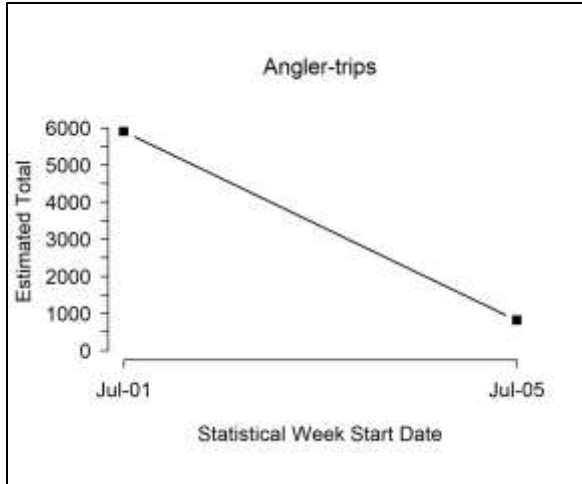
<sup>1</sup> The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.

**Table 3.2** Estimates of total fishing effort and total salmon catch (harvest and releases) during the 2021 Summer Chinook MSF in Marine Area 7. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

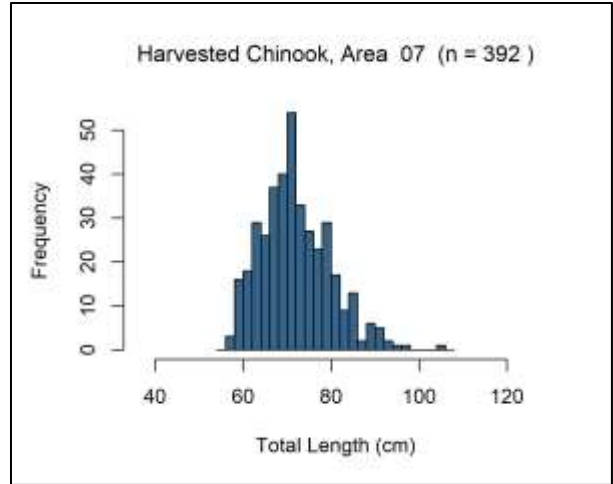
Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
July	27	1-Jul	4-Jul	2431	5900	2307	0	702	1246	4254
	28	5-Jul	7-Jul	408	816	197	0	60	107	364
<b>Season Total:</b>				<b>2,839</b>	<b>6,716</b>	<b>2,504</b>	<b>0</b>	<b>762</b>	<b>1,352</b>	<b>4,618</b>
<b>Variance:</b>				7,260	42,770	6,337	0	50,008	18,042	58,842
<b>SE:</b>				85	207	80	0	224	134	243
<b>CV (%):</b>				3	3	3	0	29	10	5
<b>95% CI:</b>				2,672 - 3,006	6,311 - 7,122	2,348 - 2,660	0 - 0	323 - 1,200	1,089 - 1,615	4,143 - 5,094

**Table 3.3** Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the Marine Area 7 Chinook MSF.

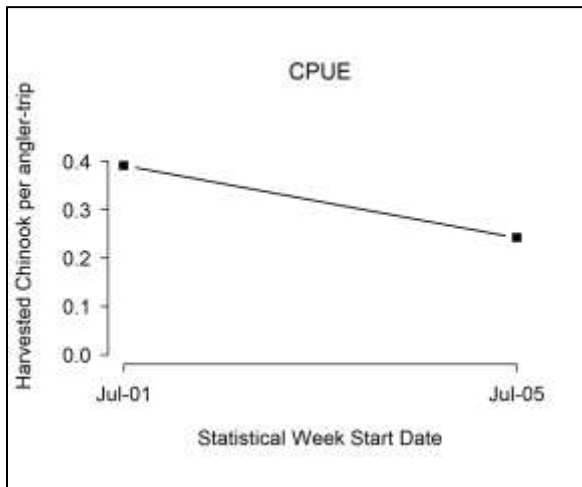
Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	392	0	392
Unmarked	0	0	0
<b>Total</b>	<b>392</b>	<b>0</b>	<b>392</b>



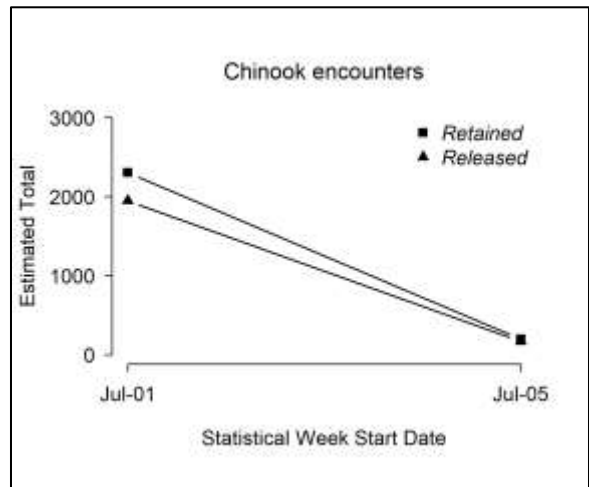
**Figure 3.1** Temporal patterns in fishing effort during the 2021 summer Chinook MSF in Marine Area 7.



**Figure 3.3** Length-frequency distribution of retained marked Chinook salmon sampled in dockside angler interviews during the 2021 summer Chinook MSF in Marine Area 7.



**Figure 3.2** Temporal patterns in CPUE (number of Chinook landed per angler trip) during the 2021 summer Chinook MSF in Marine Area 7.



**Figure 3.4** Temporal patterns in Chinook salmon encounters (number retained and released) during the 2021 summer Chinook MSF in Marine Area 7.

**Table 3.4** Summary of season-wide fishery impact estimates for the 2021 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	2,879	2,504	374	56	2,561	7,319	86	2,393 - 2,728	3%
Legal UM	759	0	759	114	114	291	17	80 - 147	15%
Sublegal AD	387	0	387	77	77	254	16	46 - 109	21%
Sublegal UM	593	0	593	119	119	204	14	91 - 147	12%
<b>Total</b>	<b>4,618</b>	<b>2,504</b>	<b>2,114</b>	<b>366</b>	<b>2,870</b>	<b>8,069</b>	<b>90</b>	<b>2,694 - 3,047</b>	<b>3%</b>

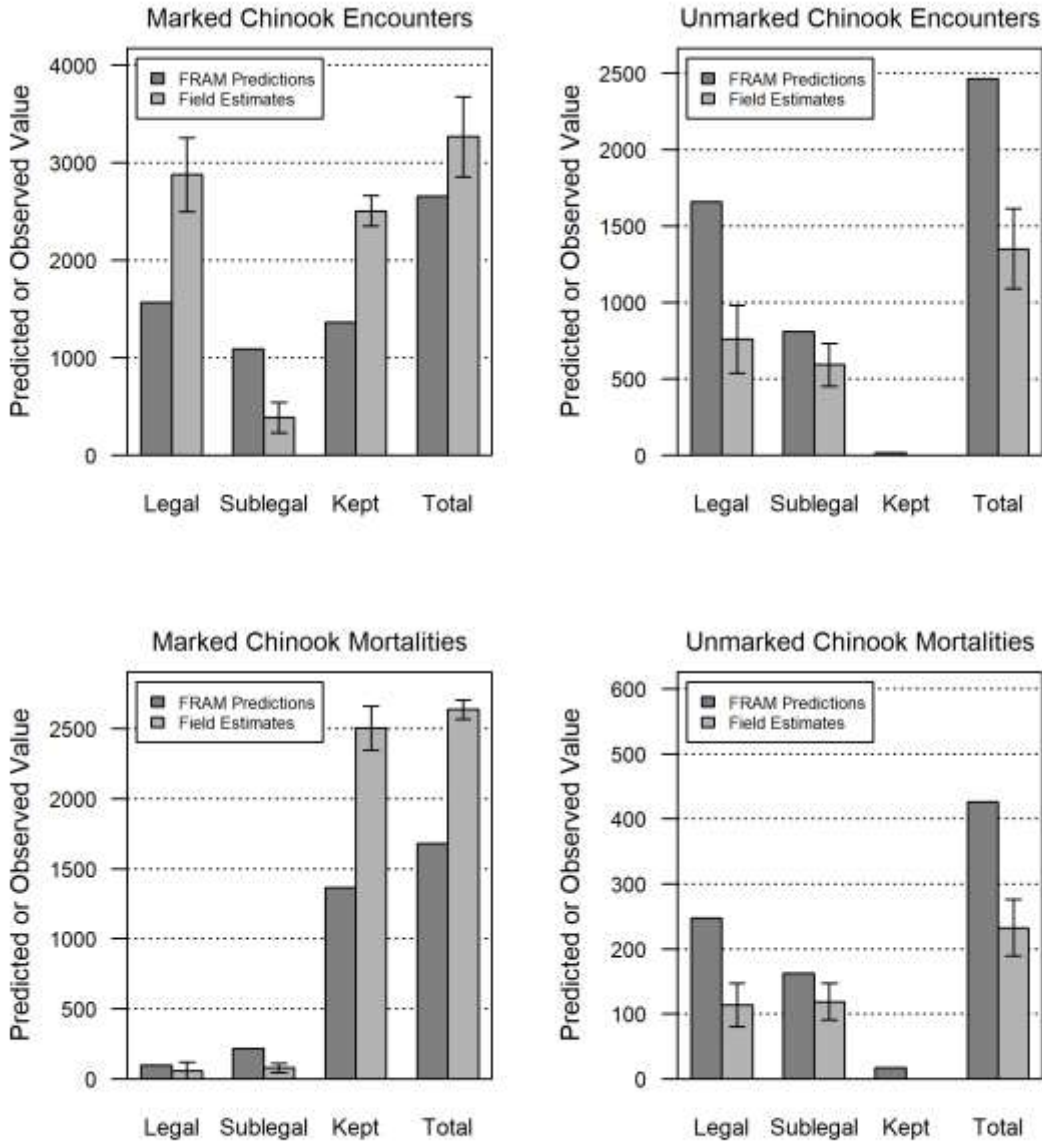
**Table 3.5** Comparison of modeled and estimated total Chinook salmon encounters for the 2021 summer Chinook MSF in Marine Area 7. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	2466	1658	808	17
	AD	2,660	1,569	1,091	1365
	Total	5,126	3,227	1,899	1382
	% Marked	52	49	57	99
Estimated (Creel) Encounters	UM	1,352	759	593	0
	AD	3,266	2,879	387	2,504
	Total	4,618	3,638	981	2,504
	% Marked	71	79	40	100

**Table 3.6** Comparison of modeled and estimated total Chinook salmon mortalities for the 2021 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)	426	1,682	2,108	232	2638	2870
Released Legal	247	99	346	114	56	170
Released Sublegal	162	218	380	119	77	196
Landed Only	17	1365	1382	0	2504	2504





**Figure 3.5** Comparison of modeled and estimated total Chinook encounters and mortalities for the 2021 summer Chinook MSF in Marine Area 7. Error bars represent approximate 95% confidence intervals for field estimates.

**Table 3.7** Summary of aerial survey and dockside data used to estimate the fraction of effort captured in the three-site sample frame during the 2021 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, $f_{ij}$
		Start Time	End Time	Total Boats, $m_{ij}$	Sampled Boats	Active Boats, $X_{ij}$	Total Boats, $S_{yijk}$	
1-Jul	WD	11:35	12:42	427	131	91	615	0.213
2-Jul	WE	12:29	13:38	389	152	86	688	0.221
3-Jul	WE	11:48	12:54	477	174	119	697	0.249
<b>Season Totals:</b>				<b>1293</b>	<b>457</b>	<b>296</b>	<b>2000</b>	
Mean:				431	152	99	667	0.228
St Dev:				44	22	18	45	0.019
CV(%):				10.2%	14.1%	18.0%	6.8%	8.4%

**Table 3.8** Monthly sample rates (Total retained Chinook sampled<sup>1</sup> / Estimated retained Chinook) in the 2021 summer Chinook MSF in Marine Area 7.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
7	27 - 28	1 Jul - 7 Jul	2,504	0	2,504	404	0	404	16.10%
<b>Season Total</b>			<b>2,504</b>	<b>0</b>	<b>2,504</b>	<b>404</b>	<b>0</b>	<b>404</b>	<b>16.10%</b>

**Table 3.9** Total Chinook encountered (retained and released) by private-boat anglers logging their trips on STRs, with estimates of legal-size and overall (legal and sublegal) mark rates during the 2021 summer Chinook MSF in Marine Area 7. 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 VTR	1 1-trip VTRs	1	0	0	0	1	1.00	1.00
Size/mark-status composition:		1.00	0.00	0.00	0.00			
Variance:		NA	NA	NA	NA			

**Table 3.10** Dockside encounters (retained and released) by size-mark category during the 2021 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	409	96	49	30
Bias-corrected size/mark composition	62.3%	16.4%	8.4%	12.8%
Variance	0.0007	0.0005	0.0003	0.0002

**Table 3.11** Fishery-total estimates of retained and released salmon (other than Chinook) during the 2021 summer Chinook MSF in Marine Area 7. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark-status.

Stat Week	Start Date	End Date	Retained Salmon					Released Salmon			
			Coho AD	Coho UM	Coho UK	Unknown	Pink	Coho AD	Coho UM	Coho UK	Pink
27	1-Jul	4-Jul	0	0	0	10	14	0	14	4	5
28	5-Jul	7-Jul	0	0	0	0	0	0	0	0	0
<b>Season Total:</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>14</b>	<b>0</b>	<b>14</b>	<b>4</b>	<b>5</b>
<b>Variance:</b>			0	0	0	0	0	0	0	0	0
<b>Standard Error:</b>			0	0	0	0	1	0	1	0	0
<b>CV (%):</b>			0	0	0	5	4	0	4	7	7
<b>95% CI:</b>			0 - 0	0 - 0	0 - 0	9 - 10	13 - 15	0 - 0	13 - 15	4 - 5	4 - 5

**Table 3.12** Summary of CWTs recovered from Chinook salmon harvested during the 2021 summer Chinook MSF in Marine Area 7. The field “Number DITs” indicates the number of tags that belonged to double-index tag groups. Note: Not all tags have been processed before writing of this report.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs
BC	Thompson River (7.1%)	R-Chilko R	H-Chehalis River H	1 (2.4%)	0
		R-Harrison R	H-Chehalis River H	1 (2.4%)	0
		R-Nicola R	H-Spius Creek H	1 (2.4%)	0
	Georgia Strait (7.1%)	R-Cowichan R	H-Cowichan River H	1 (2.4%)	0
		R-Burrard In	H-Sandy Cove Seapen	1 (2.4%)	0
		R-Capilano R	H-Capilano River H	1 (2.4%)	0
WA	N Washington (16.7%)	Friday Cr 03.0017	Samish Hatchery	2 (4.8%)	0
		Nooksack -Sf 01.0246	Skookum Cr Hatchery	1 (2.4%)	0
		East Sound Bay (San)	Glenwood Springs	2 (4.8%)	0
		Skookum Cr 01.0273	Skookum Cr Hatchery	2 (4.8%)	0
	Hood Canal (19%)	Finch Cr 16.0222	Hoodsport Hatchery	4 (9.5%)	0
		Purdy Cr 16.0005	George Adams Hatchery	4 (9.5%)	0
	N Puget Sound (14.3%)	Wallace R 07.0940	Wallace R Hatchery	5 (11.9%)	0
		Stillaguamish R -Sf	Brenner Hatchery	1 (2.4%)	0
	Skagit River (2.4%)	Clark Cr 03.1421	Marblemount Hatchery	1 (2.4%)	0
	Mid Puget Sound (9.5%)	Big Soos Cr 09.0072	Soos Creek Hatchery	1 (2.4%)	0
		Grovers Cr Hatchery	Grovers Cr Hatchery	2 (4.8%)	2
		Icy Cr 09.0125	Icy Cr Hatchery	1 (2.4%)	0
	S Puget Sound (21.4%)	Chambers Cr 12.0007	Garrison Hatchery	3 (7.1%)	0
		Deschutes R 13.0028	Tumwater Falls Hatchery	1 (2.4%)	0
		Deschutes R 13.0028	Minter Cr Hatchery	2 (4.8%)	0
Clear Cr 11.0013C		Clear Creek Hatchery	3 (7.1%)	3	
Columbia River	Upper Columbia R (2.4%)	Chelan R 47.0052	Chelan Falls Hatchery	1 (2.4%)	0
<b>Total</b>				<b>42</b>	<b>5</b>

**Table 3.13** Summary of double-index tagged (DIT) Chinook kept by anglers and estimated total mortality of unmarked DIT Chinook due to hook-and-release impacts resulting from the 2021 summer Chinook MSF in Marine Area 7. AD = marked (adipose-clipped), UM = unmarked. Note: Not all tags have been processed before writing of this report.

Hatchery	Brood Year	DITs Obs	Est.AD	var(Est.AD)	UM DIT Enc	Est.UM	var(Est.UM)	SE(Est.UM)
Clear Creek Hatchery	2018	3	19.2	103.28	19.7	2	1.088	1.81
Grovers Cr Hatchery	2018	2	12.8	68.85	12.5	1.2	0.654	1.14
<b>Total</b>		<b>5</b>	<b>31.9</b>	<b>172.14</b>	<b>32.1</b>	<b>3.2</b>	<b>1.742</b>	<b>2.95</b>

**Table 3.14** Season-total estimates of Chinook 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 exactly due to rounding error. LM = legal-sized marked, LU = legal-sized unmarked, SM = sublegal-sized marked, SU = sublegal-sized unmarked.

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

#### **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 from July 16 through August 5, 2021. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program, Full Murthy, 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. Fishery controls were the preseason modeled expected catch. **Table 4.1** 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 9 summer Chinook MSF.

**Table 4.1** 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.
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 5 boat surveys (two weekday and three weekend) were conducted during the five week 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	Given sufficient sample size ( $n=102$ , .2 LM percentage CV) of fish caught in the test fishery, we used the test fishery data only to estimate the size/mark-status proportions (LM = 21%, LU = 6%, SM = 53%, SU = 21%; <b>Table 4.7</b> ) needed to produce encounter and mortality estimates.
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	The size/mark-status proportions of Private STR data (LM = 71%, LU = 17%, SM = 11%, SU = 0%; <b>Table 4.8</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.

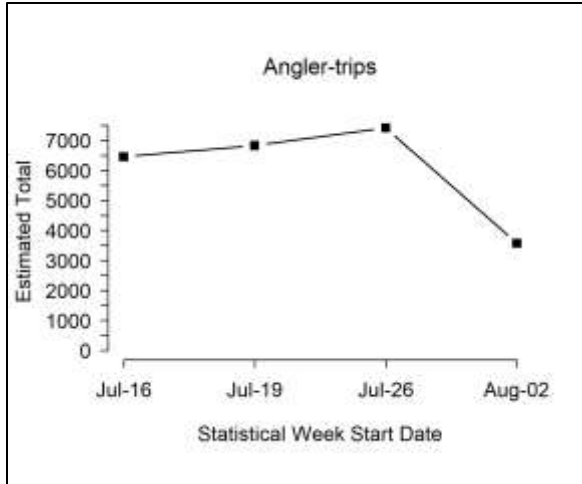
**Table 4.2** Estimates of total fishing effort and total salmon catch (harvest and releases) during the 2021 summer Chinook MSF in Marine Area 9. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

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	16-Jul	18-Jul	2,733	6,452	1,688	9	5,043	2,414	9,154
	30	19-Jul	25-Jul	3,140	6,828	1168	0	3,492	1678	6,337
	31	26-Jul	1-Aug	3,485	7,417	1586	10	4,740	2268	8,603
August	32	2-Aug	5-Aug	1,641	3,568	827	0	2,471	1187	4,485
<b>Season Total:</b>				<b>10,999</b>	<b>24,266</b>	<b>5,269</b>	<b>19</b>	<b>15,746</b>	<b>7,546</b>	<b>28,580</b>
<b>Variance:</b>				269,909	1,435,134	189,598	49	15,238,306	3,377,118	36,791,199
<b>SE:</b>				520	1,198	435	7	3,904	1,838	6,066
<b>CV (%):</b>				5	5	8	37	25	24	21
<b>95% CI:</b>				9,981 - 12,017	21,918 – 26,614	4,415 – 6,122	5 - 33	8,095 – 23,397	3,945 – 11,148	16,692 – 40,469

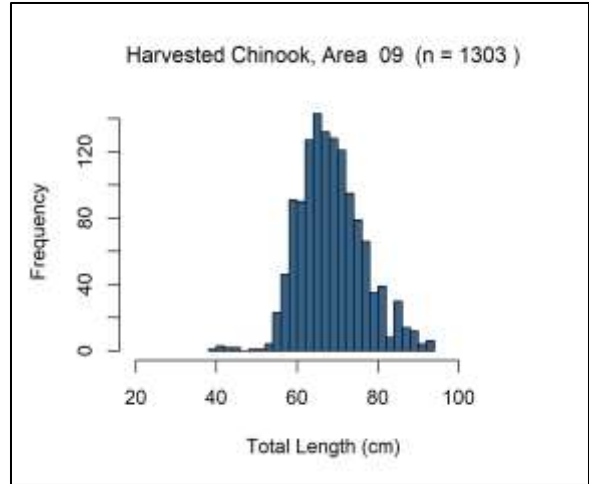
**Table 4.3** Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the 2021 summer Chinook MSF in Marine Area 9.

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	1266	37	1303
Unmarked	2	4	6
<b>Total</b>	<b>1268</b>	<b>41</b>	<b>1309</b>

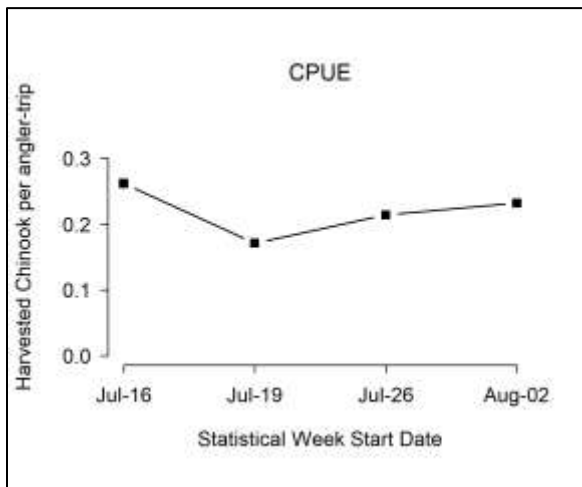




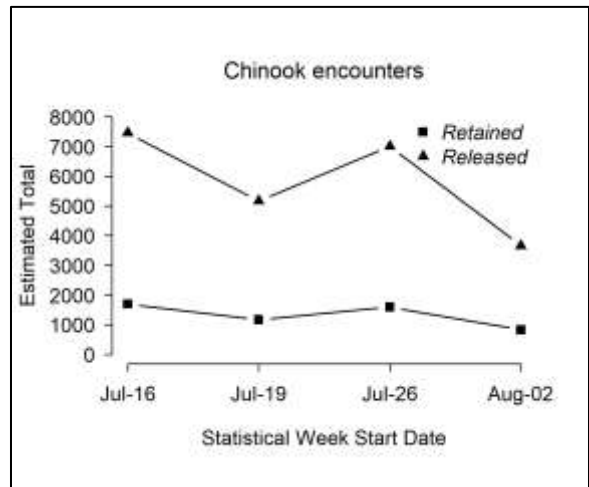
**Figure 4.1** Temporal patterns in fishing effort during the 2021 summer Chinook MSF in Marine Area 9.



**Figure 4.3** Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the 2021 summer Chinook MSF in Marine Area 9. Note: displayed values are observations where lengths taken.



**Figure 4.2** Temporal patterns in CPUE (landed Chinook salmon per angler trip) during the 2021 summer Chinook MSF in Marine Area 9.



**Figure 4.4** Temporal patterns in Chinook salmon encounters (retained and released) during the 2021 summer Chinook MSF in Marine Area 9.

**Table 4.4** Comparison of modeled and estimated total Chinook encounters for the 2021 summer Chinook MSF in Marine Area 9. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped) and UM = unmarked.

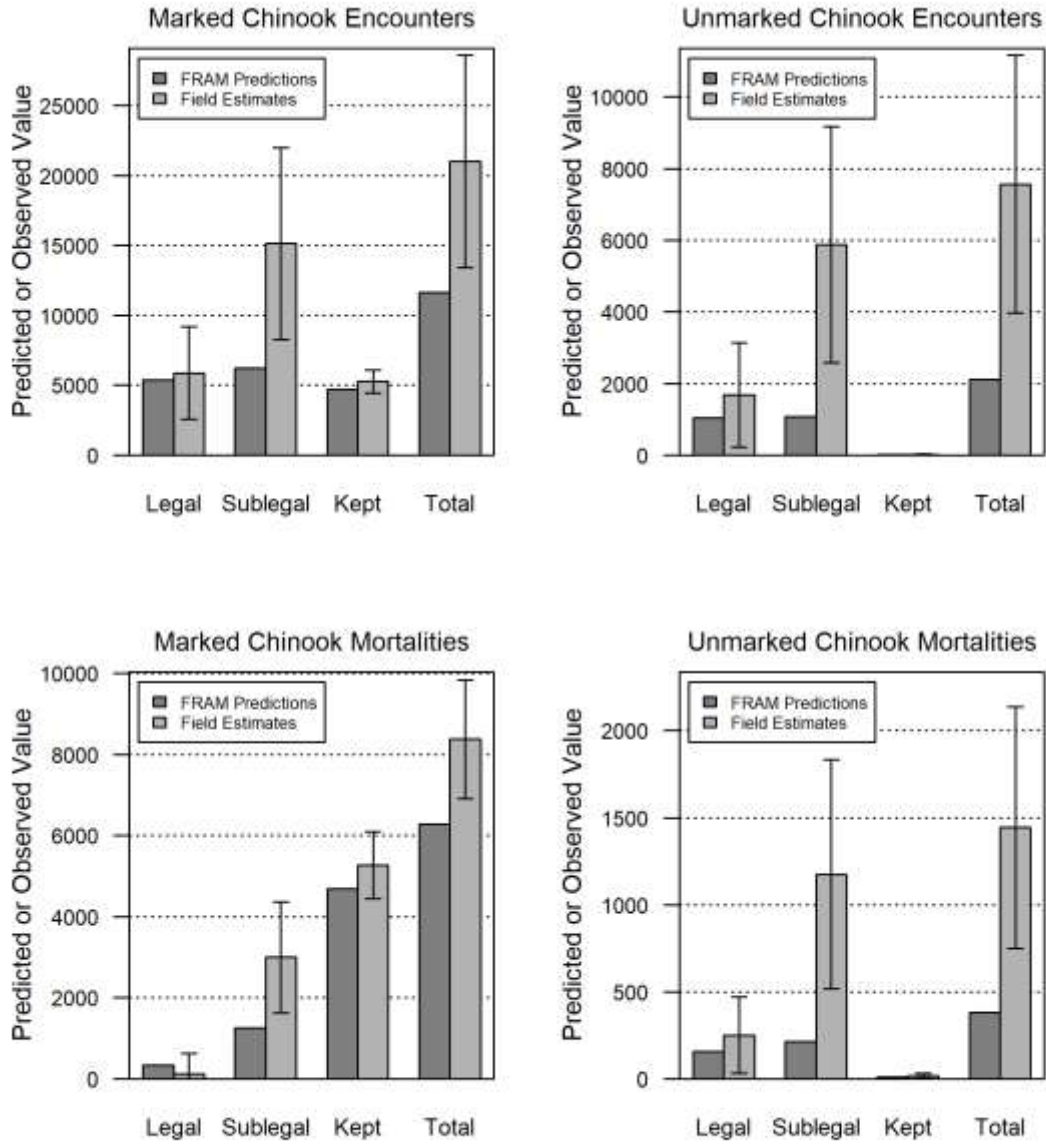
Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	2,110	1036	1074	10
	AD	11,633	5,390	6,243	4,690
	Total	13,743	6,426	7,317	4,700
	% Marked	85	84	85	100
Estimated (Creel) Encounters	UM	7565	1681	5884	19
	AD	21,015	5,884	15131	5,269
	Total	28,580	7,565	21015	5,288
	% Marked	74	78	72	100

**Table 4.5** Summary of season-wide fishery impact estimates for the 2021 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.

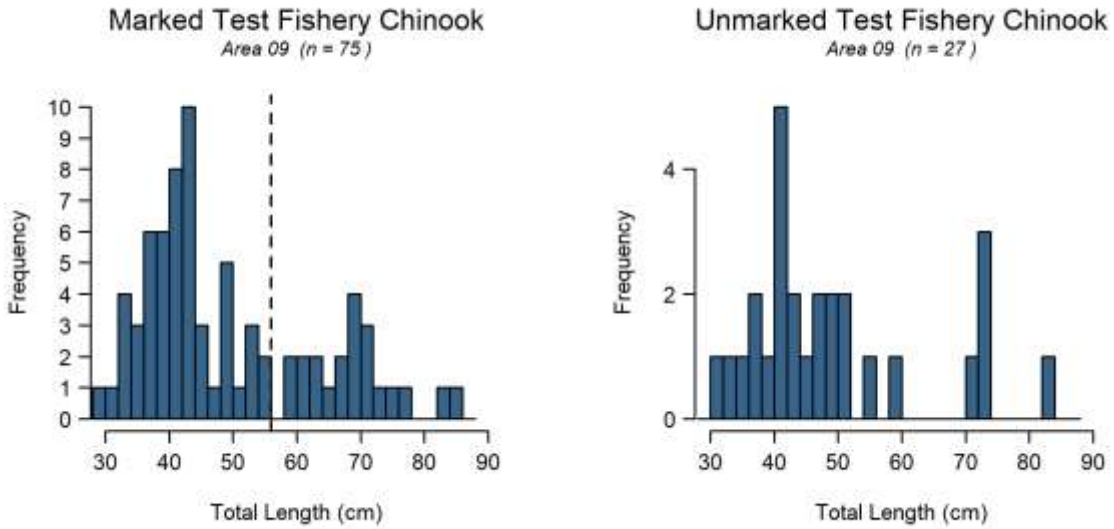
Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	5,884	5,119	765	115	5,234	247,107	497	4,260 - 6,208	9
Legal UM	1681	6	1675	251	258	12,504	112	38 - 477	43
Sublegal AD	15131	150	14981	2996	3146	490,199	700	1,774 - 4,518	22
Sublegal UM	5884	13	5872	1174	1187	112924	336	528 - 1,846	28
<b>Total</b>	<b>28,580</b>	<b>5,288</b>	<b>23,292</b>	<b>4537</b>	<b>9,824</b>	<b>862,735</b>	<b>929</b>	<b>8,004 - 11,645</b>	<b>9</b>

**Table 4.6** Comparison of modeled and estimated total Chinook mortalities for the 2021 summer Chinook MSF in Marine Area 9. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped) and UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	380	6,278	6,658	1444	8,380	9,824
Released Legal	155	339	494	251	115	366
Released Sublegal	215	1249	1464	1174	2996	4171
Landed Only	10	4,690	4,700	19	5,269	5,288



**Figure 4.5** Comparison of modeled and estimated total Chinook salmon encounters and mortalities for the 2021 summer Chinook MSF in Marine Area 9. Error bars represent approximate 95% confidence intervals for field estimates.



**Figure 4.6** Length-frequency distributions of marked (left panel) and unmarked (right panel) Chinook salmon encountered by test fishers during the 2021 summer Chinook 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 4.7** Composition of test fishery Chinook salmon encounters and associated mark-rate and size/mark-status proportion estimates for the summer 2021 Chinook salmon MSF in Marine Area 9. AD = marked (adipose-clipped), UM = unmarked.

Stat Week	Fishing Effort		Legal		Sublegal		Total
	Trips	Hrs Fished	AD	UM	AD	UM	
29	5	24.43	8	0	19	6	33
30	8	45.23	2	1	11	4	18
31	10	56.80	7	3	17	10	37
32	5	24.26	4	2	7	1	14
<b>Total</b>	<b>28</b>	<b>150.72</b>	<b>21</b>	<b>6</b>	<b>54</b>	<b>21</b>	<b>102</b>
<b>Size/mark-status composition:</b>			0.21	0.06	0.53	0.21	
<b>Variance:</b>			(0.0016)	(0.0005)	(0.0025)	(0.0016)	
<b>Legal size mark rate:</b>			0.78				
<b>Overall mark rate:</b>			0.74				

**Table 4.8** Total Chinook salmon encountered (retained and released) by private-boat anglers logging their trips on voluntary salmon trip reports (STRs), with estimates of legal-size and overall (legal and sublegal) mark rates during the 2021 summer Chinook MSF in Marine Area 9. 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 VTR	16 1-trip VTRs	25	6	4	0	35	0.83	0.81
Size/mark-status composition:		0.71	0.17	0.11	0.00			
Variance:		(0.0060)	(0.0042)	(0.0030)	(0.0000)			

**Table 4.9** Dockside encounters (retained and released) by size-mark category during the 2021 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	1,310	275	769	303
Bias-corrected size/mark composition	43.9%	10.4%	28.9%	16.8%
Variance	0.0002	0.0001	0.0002	0.0001

**Table 4.10** Summary of coded-wire tags recovered from Chinook salmon harvested during the 2021 summer Chinook MSF in Marine Area 9. The field “Number DITs” corresponds to the number of recovered CWTs that belonged to double-index tag groups. Note: Not all tags have been processed before writing of this report.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs
BC	Thompson River (1.8%)	R-Chilko R	H-Inch Creek H	1 (0.9%)	0
		R-Harrison R	H-Chehalis River H	1 (0.9%)	0
	Georgia Strait (0.9%)	R-Shovelnose Cr	H-Tenderfoot Creek H	1 (0.9%)	0
WA	N Washington (0.9%)	Friday Cr 03.0017	Samish Hatchery	1 (0.9%)	0
	Strait of Juan De Fuca (0.9%)	Elwha R 18.0272	Elwha Hatchery	1 (0.9%)	0
	Hood Canal (23.9%)	Purdy Cr 16.0005	George Adams Hatchery	9 (8%)	0
		Finch Cr 16.0222	Hoodsport Hatchery	18 (15.9%)	0
	N Puget Sound (7.1%)	Stillaguamish R -Sf	Brenner Hatchery	1 (0.9%)	0
		Wallace R 07.0940	Wallace R Hatchery	7 (6.2%)	0
	Skagit River (5.3%)	Cascade R 03.1411	Marblemount Hatchery	1 (0.9%)	0
		Co Line Pd2 03.1853B	Marblemount Hatchery	3 (2.7%)	0
		County Line Cr3.2363	Marblemount Hatchery	2 (1.8%)	0
	Mid Puget Sound (38.1%)	Icy Cr 09.0125	Icy Cr Hatchery	20 (17.7%)	0
		Gorst Cr 15.0216	Gorst Cr Rearing Pnd	5 (4.4%)	0
		Big Soos Cr 09.0072	Soos Creek Hatchery	2 (1.8%)	0
		Grovers Cr Hatchery	Grovers Cr Hatchery	13 (11.5%)	13
		Portage Bay/Ship Cnl	Issaquah Hatchery	1 (0.9%)	0
		Grovers Cr 15.0299	Grovers Cr Hatchery	2 (1.8%)	2
		Clear Cr 11.0013C	Clear Creek Hatchery	7 (6.2%)	7
	S Puget Sound (21.2%)	Deschutes R 13.0028	Tumwater Falls Hatchery	2 (1.8%)	0
		Chambers Cr 12.0007	Garrison Hatchery	5 (4.4%)	0
		Kalama Cr 11.0017	Kalama Cr Hatchery	3 (2.7%)	0
		Mcallister Springs Hatch	Mcallister Springs Hatch	1 (0.9%)	0
Minter Cr 15.0048		Minter Cr Hatchery	5 (4.4%)	0	
Deschutes R 13.0028		Minter Cr Hatchery	1 (0.9%)	0	
<b>Total</b>				<b>113</b>	<b>22</b>

**Table 4.11** 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 2021 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)
Clear Creek Hatchery	2018	7	28.3	85.95	29	2.9	0.905	2.52
Grovers Cr Hatchery	2017	2	8.1	24.56	7.8	0.8	0.227	0.67
Grovers Cr Hatchery	2018	13	52.5	159.62	51.2	5.1	1.517	4.44
<b>Total</b>		<b>22</b>	<b>88.9</b>	<b>270.12</b>	<b>88</b>	<b>8.8</b>	<b>2.649</b>	<b>7.63</b>

**Table 4.12** Monthly sample rates (Total retained Chinook salmon sampled<sup>1</sup> / Estimated retained Chinook) in the 2021 summer Chinook MSF in Marine Area 9.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
July	29 - 31	16 Jul - 1 Aug	4,442	19	4,461	1338	6	1344	30.10%
August	32 - 32	2 Aug - 5 Aug	827	0	827	113	0	113	13.70%
<b>Season Total</b>			<b>5,269</b>	<b>19</b>	<b>5,288</b>	<b>1451</b>	<b>6</b>	<b>1457</b>	<b>27.60%</b>

<sup>1/</sup> Number of retained Chinook sampled includes all retained Chinook inspected for CWT's, from all sites sampled during the Marine Area 9 selective fishery

**Table 4.13** Fishery-total estimates of retained and released salmon (*other than Chinook salmon*) in the 2021 summer Chinook MSF in Marine Area 9. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark-status.

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	16-Jul	18-Jul	500	54	3	104	90	174	289	158	68	1,726
30	19-Jul	25-Jul	562	41	54	173	99	347	493	208	94	821
31	26-Jul	1-Aug	348	26	0	327	42	64	380	82	170	786
32	2-Aug	5-Aug	159	45	0	637	26	58	235	26	116	185
<b>Season Total:</b>			<b>1,570</b>	<b>165</b>	<b>57</b>	<b>1242</b>	<b>257</b>	<b>643</b>	<b>1,397</b>	<b>474</b>	<b>448</b>	<b>3,518</b>
<b>Variance:</b>			54,112	1390	359	23,715	8,944	13,253	37,299	9,717	9,986	343,347
<b>Standard Error:</b>			233	37	19	154	95	115	193	99	100	586
<b>CV (%):</b>			15	23	33	12	37	18	14	21	22	17
<b>95% CI:</b>			1,114 – 2,026	92 - 238	20 - 94	940 - 1,543	71 - 442	417 – 868	1,018 – 1,775	281 - 667	253 - 644	2,369 – 4,666

**Table 4.14** Summary of the total number of anglers intercepted during on-the-water surveys conducted for the 2021 summer Chinook MSF in Marine Area 9. Sites in bold represent those included in the dockside sample frame. Continued on to the next page.

Site Name	Weekday Anglers	Season Total (unadjusted) Size Measure	Weekend Anglers	Season Total (unadjusted) Size Measure
Agate and Crescent Beach	1	0.0020	0	0.0000
Anacortes Marina	6	0.0122	14	0.0157
Armeni Public Ramp	2	0.0041	8	0.0089
Bayside Marina/Drystack	2	0.0041	0	0.0000
Brownsville Marina	4	0.0081	6	0.0067
Bush Point Ramp and Beach	10	0.0203	10	0.0112
Camano Island State Park Public Ramp	0	0.0000	6	0.0067
Cap Sante Moorage & Sling	0	0.0000	2	0.0022
Cape George Marina	3	0.0061	3	0.0034
Cornet Bay Marina	4	0.0081	2	0.0022
Cornet Bay Public Ramp	3	0.0061	4	0.0045
Coupeville Public Ramp	2	0.0041	15	0.0168
Dagmar's Landing	4	0.0081	11	0.0123
Des Moines Marina (Moorage)	0	0.0000	2	0.0022
Driftwood Key Marina	14	0.0284	13	0.0145
Edmonds Boat Basin	7	0.0142	16	0.0179
<b>Edmonds Dry Storage</b>	<b>13</b>	<b>0.0264</b>	<b>19</b>	<b>0.0213</b>
Edmonds Marina	55	0.1116	69	0.0772
Eglon Public Ramp	1	0.0020	2	0.0022
Elliott Bay Marina	2	0.0041	6	0.0067
Everett Marina	34	0.0690	61	0.0682
<b>Everett Ramp</b>	<b>75</b>	<b>0.1521</b>	<b>173</b>	<b>0.1935</b>
<b>Fort Casey Public Ramp and Shore</b>	<b>60</b>	<b>0.1217</b>	<b>95</b>	<b>0.1063</b>
Fort Flagler Ramps-Marrowstone Is	2	0.0041	7	0.0078
Fort Worden Ramp	7	0.0142	13	0.0145
Hadlock Public Ramp	1	0.0020	4	0.0045
John Wayne Marina	3	0.0061	0	0.0000
Kingston Marina	4	0.0081	9	0.0101
<b>Kingston Public Ramp</b>	<b>14</b>	<b>0.0284</b>	<b>23</b>	<b>0.0257</b>
La Conner Marina/Sling (Port of Skagit-Dry Storage)	3	0.0061	0	0.0000
Lagoon Point Ramp and Beach	18	0.0365	14	0.0157
Langley Marina/Ramp	0	0.0000	2	0.0022
Mats Mats Bay Ramp	2	0.0041	0	0.0000
<b>Mukilteo Lighthouse Park</b>	<b>21</b>	<b>0.0426</b>	<b>59</b>	<b>0.0660</b>
Mutiny Bay Resort	0	0.0000	6	0.0067
Mystery Bay Dock/Moorage	0	0.0000	2	0.0022
Oak Harbor Marina & Public Ramp	0	0.0000	4	0.0045
Pleasant Harbor Boat Ramp	0	0.0000	2	0.0022
Point Defiance Public Ramp	2	0.0041	0	0.0000
Point Hudson Marina	6	0.0122	3	0.0034
Point No Point Beach	0	0.0000	3	0.0034
Port Hadlock Marina	4	0.0081	9	0.0101



Site Name	Weekday Anglers	Season Total (unadjusted) Size Measure	Weekend Anglers	Season Total (unadjusted) Size Measure
Port Ludlow Marina/Beach Launch	6	0.0122	2	0.0022
Port Townsend Boat Haven	3	0.0061	8	0.0089
<b>Port Townsend Boat Haven Ramp</b>	<b>38</b>	<b>0.0771</b>	<b>73</b>	<b>0.0817</b>
Possession Waterfront Beach Park	3	0.0061	11	0.0123
Poulsbo Ramp/Marina	0	0.0000	3	0.0034
Private	20	0.0406	19	0.0213
Salmon Club Ramp	6	0.0122	5	0.0056
Salsbury County Park Ramp	6	0.0122	13	0.0145
Shilshole Marina	9	0.0183	28	0.0313
Shilshole Public Ramp	6	0.0122	21	0.0235
Skyline Marina/Sling	5	0.0101	0	0.0000
South Park - Duwamish	0	0.0000	4	0.0045
Unknown	2	0.0041	10	0.0112
<b>Total Anglers</b>	<b>493</b>	<b>1</b>	<b>894</b>	<b>1</b>

**Table 4.15** 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 9 summer Chinook MSF. Values may not add 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, 2016 - Aug 15, 2016	14,911	2,861	9	112	0	427	912	4,886	2104	11,311
Jul 16, 2017 - Jul 30, 2017	18,548	5,264	0	191	3	787	1261	9,388	2266	19,160
Jul 16, 2018 - Jul 29, 2018	17,356	5,935	1	93	1	887	1084	3,628	464	12,094
Jul 25, 2019 - Aug 9, 2019	17,147	3,434	5	11	0	513	579	573	146	5,263
Jul 16, 2020 - Aug 15, 2020	45,376	3,684	0	102	0	551	1,289	10,392	2,946	18,964
Jul 16, 2021 - Aug 5, 2021	24,266	5,119	6	150	13	765	1,675	14,981	5,872	28,580

## **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 from July 16 through August 21, 2021. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program, Full Murthy, 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. **Table 5.1** 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 10 summer Chinook MSF.

**Table 5.1** 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.
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 6 boat surveys (2 weekday and 4 weekend) were conducted during the month-long 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	Given sufficient sample size ( $n=227$ , .13 LM percentage CV) of fish caught in the test fishery, we used the test fishery data only to estimate the size/mark-status proportions (LM = 21%, LU = 6%, SM = 55%, SU = 18%; <b>Table 5.7</b> ) needed to produce encounter and mortality estimates.
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	The size/mark-status proportions of Private STR data (LM = 58%, LU = 23%, SM = 15%, SU = 5%; <b>Table 5.8</b> ) were significantly different (Chi-Square $p$ -value < 0.1) than test fishing data. Given the adequate sample size and greater accuracy, only test was used to create 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.

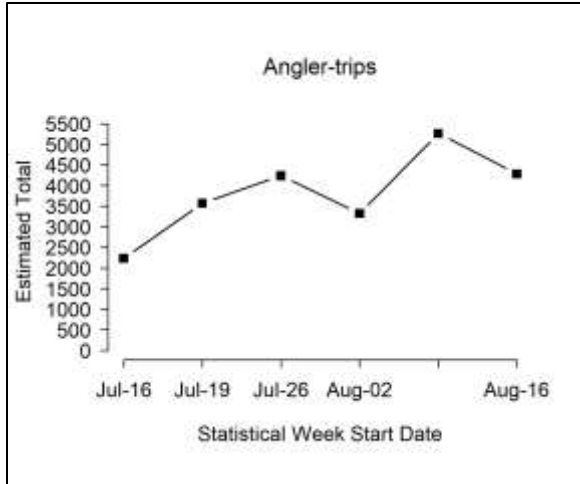
<sup>1</sup> The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.<sup>2</sup> Though samples were collected, DNA-based estimates of stock composition are not yet available for this fishery.

**Table 5.2** Estimates of total fishing effort and total salmon catch (harvest and releases) during the 2021 summer Chinook MSF in Marine Area 10. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

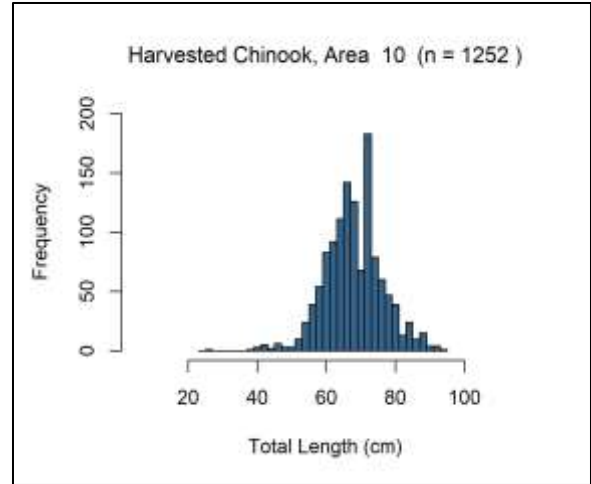
Month	Stat Week	Start Date	End Date	Estimated Effort		Est. Retained Chinook		Est. Released Chinook		Total Est. Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
Jul	29	16-Jul	18-Jul	1054	2235	180	6	533	222	941
	30	19-Jul	25-Jul	1794	3569	210	14	623	252	1099
	31	26-Jul	1-Aug	2070	4,236	530	17	1572	656	2775
Aug	32	2-Aug	8-Aug	1,664	3,321	416	5	1234	522	2179
	33	9-Aug	15-Aug	2,608	5,261	1191	17	3529	1492	6229
	34	16-Aug	21-Aug	2,205	4,279	941	23	2788	1169	4921
<b>Season Total</b>				<b>11,395</b>	<b>22,900</b>	<b>3,468</b>	<b>82</b>	<b>10280</b>	<b>4314</b>	<b>18,143</b>
<b>Variance:</b>				76,667	255,100	12,606	117	2,656,611	510,972	5,939,424
<b>Standard Error:</b>				277	505	112	11	1630	715	2437
<b>CV (%):</b>				2	2	3	13	16	17	13
<b>95% CI:</b>				10,852 - 11,937	21,910 - 23,890	3,248 - 3,688	61 - 103	7,085 - 13,474	2,913 - 5,715	13,367 - 22,920

**Table 5.3** Number of total length samples collected from retained Chinook salmon collected during dockside angler interviews in the 2021 summer Chinook MSF in Marine Area 10.

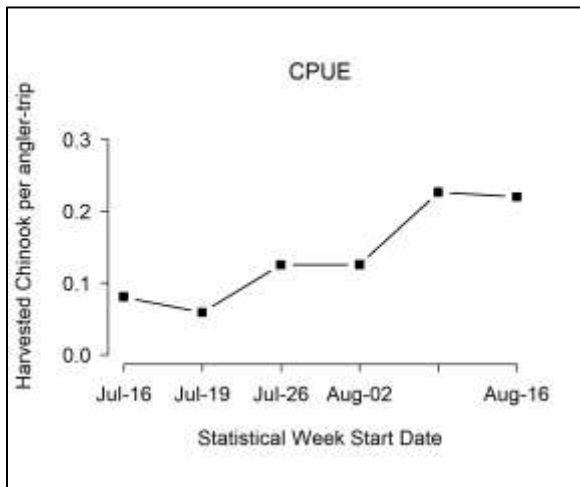
Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	1180	72	1252
Unmarked	8	18	26
<b>Total</b>	<b>1188</b>	<b>90</b>	<b>1278</b>



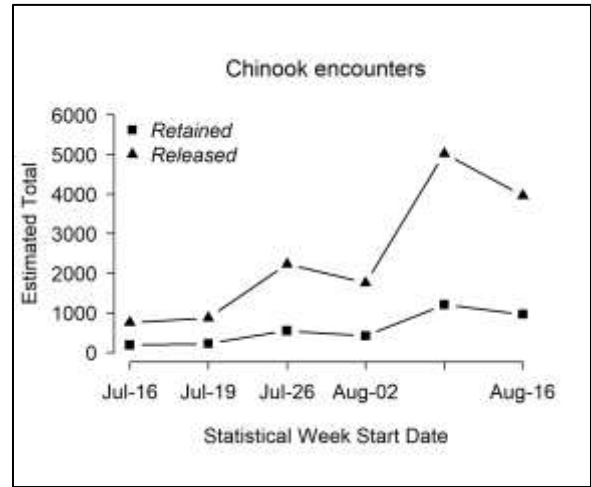
**Figure 5.1** Temporal patterns in fishing effort during the 2021 summer Chinook MSF in Marine Area 10.



**Figure 5.3** Length-frequency distribution of retained marked Chinook salmon sampled in dockside angler interviews during the 2021 summer Chinook MSF in Marine Area 10. Note: displayed values are observations where lengths taken.



**Figure 5.2** Temporal patterns in CPUE (landed Chinook salmon per angler trip) during the 2021 summer Chinook MSF in Marine Area 10.



**Figure 5.4** Temporal patterns in Chinook salmon encounters (retained and released) during the 2021 summer Chinook MSF in Marine Area 10.

**Table 5.4** Comparison of modeled and estimated total Chinook salmon encounters for the 2021 summer Chinook MSF in Marine Area 10. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped) and UM = unmarked.

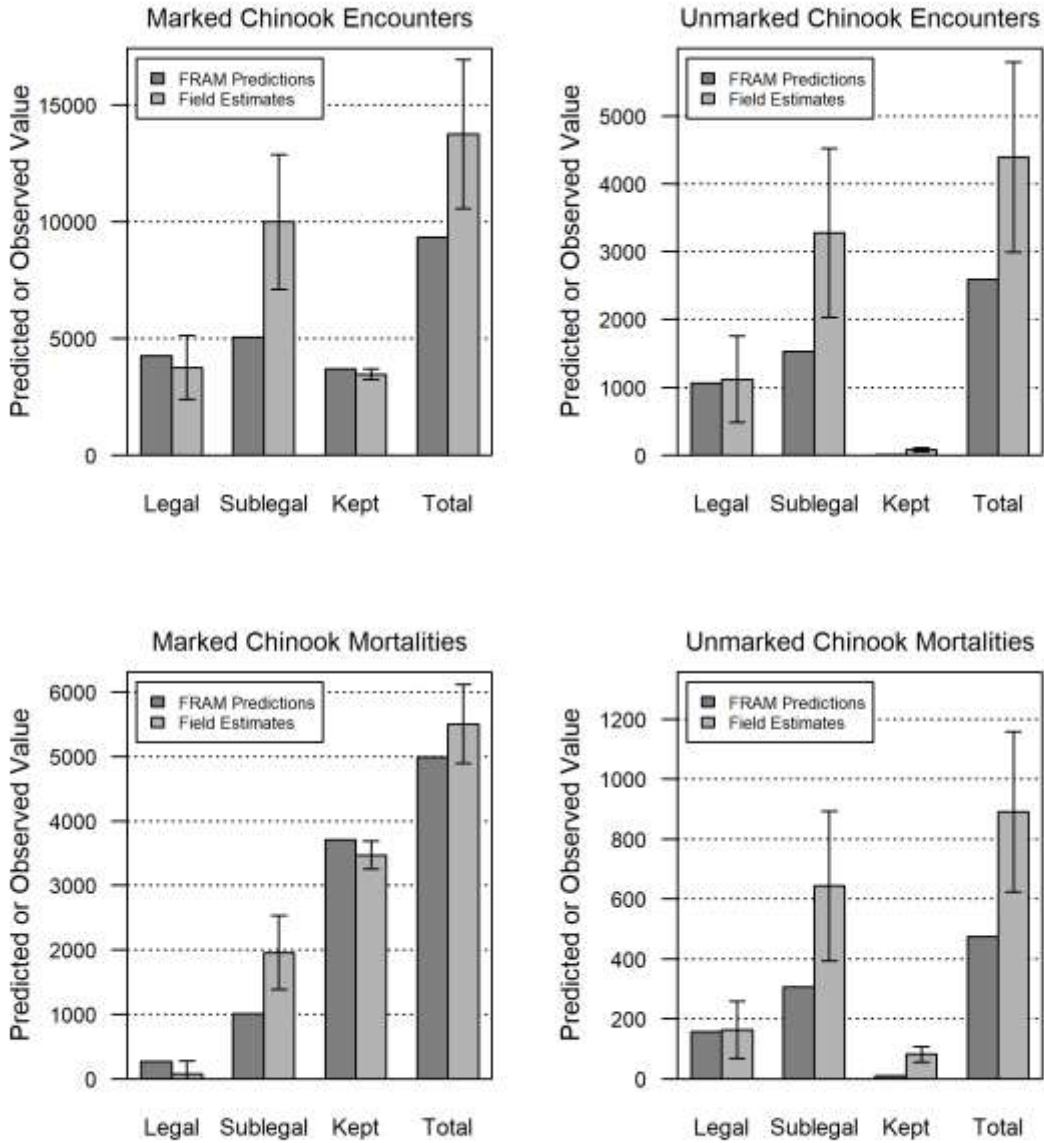
Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	2,586	1057	1529	11
	AD	9,325	4,261	5,064	3,707
	Total	11,911	5,318	6,593	3,718
	% Marked	78	80	77	100
Estimated (Creel) Encounters	UM	4396	1119	3277	82
	AD	13,747	3,757	9991	3,468
	Total	18,143	4,876	13268	3,550
	% Marked	76	77	75	98

**Table 5.5** Summary of season-wide fishery impact estimates for the 2021 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	3,757	3,268	488	73	3,341	22,994	152	3,044 - 3,639	5
Legal UM	1119	25	1094	164	189	2440	49	93 - 286	26
Sublegal AD	9991	199	9791	1958	2158	86,780	295	1,580 - 2,735	14
Sublegal UM	3277	57	3220	644	701	16,334	128	450 - 951	18
<b>Total</b>	<b>18,143</b>	<b>3,550</b>	<b>14,594</b>	<b>2840</b>	<b>6,389</b>	<b>128,549</b>	<b>359</b>	<b>5,687 - 7,092</b>	<b>6</b>

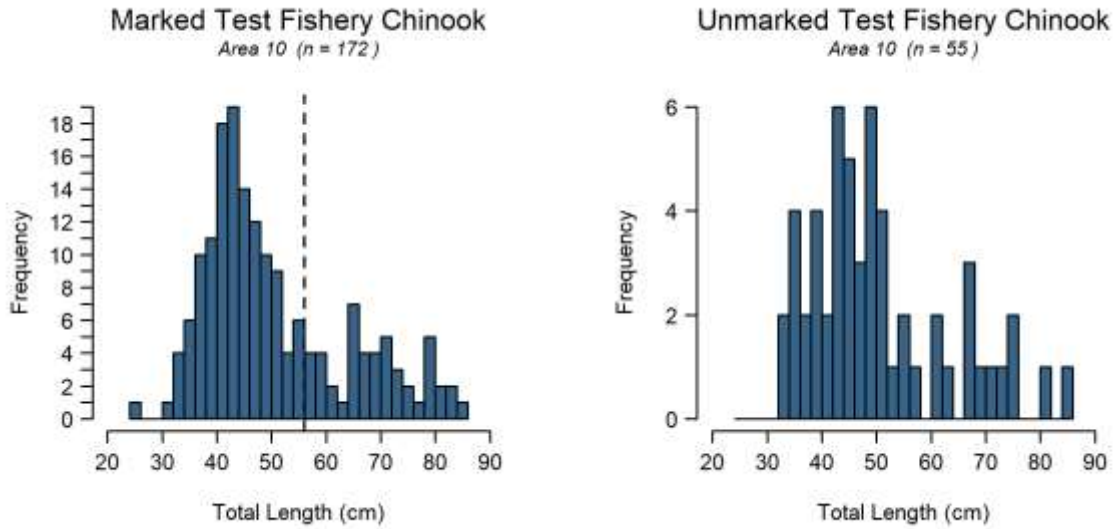
**Table 5.6** Comparison of modeled and estimated total Chinook salmon mortalities for the 2021 summer Chinook MSF in Marine Area 10. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped) and UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	474	4,989	5,463	890	5,499	6,389
Released Legal	157	269	426	164	73	237
Released Sublegal	306	1013	1319	644	1958	2602
Landed Only	11	3,707	3,718	82	3,468	3,550



**Figure 5.5** Comparison of modeled and estimated total Chinook salmon encounters and mortalities for the 2021 summer Chinook MSF in Marine Area 10. Error bars represent approximate 95% confidence intervals for field estimates.





**Figure 5.6** Length-frequency distributions of marked (left panel) and unmarked (right panel) Chinook salmon encountered by test fishers during the 2021 summer Chinook 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 5.7** Composition of test fishery Chinook salmon encounters and associated mark-rate and size/mark-status proportion estimates for the 2021 summer Chinook MSF in Marine Area 10. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Stat Week	Fishing Effort		Legal		Sublegal		Total
	Trips	Hrs Fished	AD	UM	AD	UM	
29	5	29.37	0	3	23	10	36
30	9	50.00	6	3	21	6	36
31	7	44.80	7	3	26	7	
32	8	50.23	2	2	17	6	27
33	13	82.89	25	2	26	6	
34	9	56.63	7	1	12	6	26
<b>Total</b>	<b>51</b>	<b>313.91</b>	<b>47</b>	<b>14</b>	<b>125</b>	<b>41</b>	<b>227</b>
<b>Size/mark-status composition:</b>			0.21	0.06	0.55	0.18	
<b>Variance:</b>			(0.0007)	(0.0003)	(0.0011)	(0.0007)	
<b>Legal size mark rate:</b>			0.77				
<b>Overall mark rate:</b>			0.76				

**Table 5.8** Total Chinook salmon encountered (retained and released) by private-boat anglers logging their trips on voluntary salmon trip reports (STRs), with estimates of legal-size and overall (legal and sublegal) mark rates during the 2021 summer Chinook MSF in Marine Area 10. 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 VTR	20 1-trip VTRs	23	9	6	2	40	0.73	0.72
Size/mark-status composition:		0.58	0.23	0.15	0.05			
Variance:		(0.0063)	(0.0045)	(0.0033)	(0.0012)			

**Table 5.9** Dockside encounters (retained and released) by size-mark category during the 2021 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.

Dockside Encounters				
Metric	Legal		Sublegal	
	LM	LU	SM	SU
Encounters	1,224	383	780	398
Bias-corrected size/mark composition	39.12%	13.75%	28.01%	19.13%
Variance	0.0002	0.0001	0.0001	0.0001

Draft; January 28, 2022

**Table 5.10** Fishery-total estimates of retained and released salmon (*other than Chinook salmon*) in the 2021 summer Chinook MSF in Marine Area 10. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark-status.

Week	Start Date	End Date	Retained Salmon						Released Salmon							
			Coho AD	Coho UM	Coho UK	Chum	Pink	Unknown	Coho AD	Coho UM	Coho UK	Chum	Pink	Sockeye	Cutthroat	Unknown
29	16-Jul	18-Jul	288	363	11	0	13	0	121	118	247	0	18	0	8	494
30	19-Jul	25-Jul	291	475	17	0	99	0	180	313	446	0	35	16	0	461
31	26-Jul	1-Aug	413	638	0	0	171	6	207	55	476	0	86	0	46	663
32	2-Aug	8-Aug	219	277	0	0	628	0	84	35	251	0	224	5	0	751
33	9-Aug	15-Aug	266	246	0	12	1736	0	101	92	121	4	605	0	0	747
34	16-Aug	21-Aug	205	249	5	0	1465	0	58	21	126	0	915	0	0	694
<b>Season Total:</b>			<b>1,680</b>	<b>2,248</b>	<b>33</b>	<b>12</b>	<b>4112</b>	<b>6</b>	<b>751</b>	<b>635</b>	<b>1,668</b>	<b>4</b>	<b>1882</b>	<b>21</b>	<b>54</b>	<b>3,810</b>
<b>Variance:</b>			8,463	10,805	131	84	41344	20	9,324	23,825	18,014	6	12412	75	1,266	69,831
<b>Standard Error:</b>			92	104	11	9	203	4	97	154	134	2	111	9	36	264
<b>CV (%):</b>			5	5	35	79	5	77	13	24	8	65	6	41	66	7
<b>95% CI:</b>			1,500 - 1,861	2,044 - 2,452	11 - 56	0 - 30	3,713 - 4,510	0 - 14	562 - 940	332 - 937	1,405 - 1,931	0 - 8	1,663 - 2,100	4 - 38	0 - 123	3,292 - 4,328

**Table 5.11** Summary of the total number of anglers intercepted during on-the-water surveys conducted for the 2021 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
Alki Point	0	0.0000	1	0.0010
<b>Armeni Public Ramp</b>	<b>20</b>	<b>0.0599</b>	<b>64</b>	<b>0.0618</b>
Bayside Marina/Drystack	2	0.0060	3	0.0029
Blake Island	0	0.0000	3	0.0029
Bremerton Yacht Club	0	0.0000	3	0.0029
<b>Brownsville Dock/Ramp</b>	<b>0</b>	<b>0.0000</b>	<b>9</b>	<b>0.0087</b>
Brownsville Marina	15	0.0449	48	0.0464
Dagmar's Landing, Forklift Launch	2	0.0060	2	0.0019
Des Moines Marina (Moorage)	2	0.0060	3	0.0029
Driftwood Key Marina	2	0.0060	0	0.0000
Eagle Harbor Waterfront Park	6	0.0180	24	0.0232
Edmonds Boat Basin	12	0.0359	36	0.0348
Edmonds Dry Storage	8	0.0240	30	0.0290
Edmonds Marina	33	0.0988	128	0.1237
Eglon Public Ramp	0	0.0000	2	0.0019
Elliott Bay Marina	10	0.0299	34	0.0329
Everett Marina	9	0.0269	18	0.0174
Everett Ramp	7	0.0210	29	0.0280
Gig Harbor Marina	0	0.0000	2	0.0019
Harbor Isl Marina	0	0.0000	7	0.0068
Keyport Ramp	2	0.0060	0	0.0000
Kingston Marina	6	0.0180	31	0.0300
<b>Kingston Public Ramp</b>	<b>43</b>	<b>0.1287</b>	<b>88</b>	<b>0.0850</b>
Lions Park Ramp (Coal Dock)	0	0.0000	1	0.0010
<b>Manchester Public Ramp</b>	<b>5</b>	<b>0.0150</b>	<b>24</b>	<b>0.0232</b>
Mukilteo Lighthouse Park	2	0.0060	0	0.0000
Point Defiance Public Ramp	4	0.0120	7	0.0068
Port Ludlow Marina/Beach Launch	0	0.0000	2	0.0019
Port Madison Marina	2	0.0060	10	0.0097
Port Orchard Marina	0	0.0000	4	0.0039
Port Orchard Public Ramp	4	0.0120	20	0.0193
Possession Waterfront Beach Park	3	0.0090	0	0.0000
Poulsbo Ramp/Marina	0	0.0000	6	0.0058
Private	7	0.0210	31	0.0300
Redondo Ramp	5	0.0150	2	0.0019
Shilshole Marina	56	0.1677	136	0.1314
<b>Shilshole Public Ramp</b>	<b>63</b>	<b>0.1886</b>	<b>218</b>	<b>0.2106</b>
South Park - Duwamish	0	0.0000	2	0.0019
Suquamish Public Ramp	1	0.0030	0	0.0000
Unknown	0	0.0000	2	0.0019
Winslow City Ramp	0	0.0000	4	0.0039
Winslow Marina	3	0.0090	1	0.0010
<b>Total Anglers</b>	<b>334</b>	<b>1</b>	<b>1035</b>	<b>1</b>

**Table 5.12** Summary of coded-wire tags recovered from Chinook salmon harvested during the 2021 summer Chinook MSF in Marine Area 10. The field “Number DITs” corresponds to the number of recovered CWTs that belonged to double-index tag groups. Note: Not all tags have been processed before writing of this report.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs	
BC	Thompson River (0.8%)	R-Chilliwack R	H-Chilliwack River H	1 (0.8%)	0	
WA	N Washington (0.8%)	Friday Cr 03.0017	Samish Hatchery	1 (0.8%)	0	
	Strait of Juan De Fuca (0.8%)	Elwha R 18.0272	Elwha Hatchery	1 (0.8%)	0	
	Hood Canal (7.8%)	Nf Skokomish Dam #2 Pool	Nf Skokomish Hatchery	1 (0.8%)	0	
		Purdy Cr 16.0005	George Adams Hatchery	3 (2.3%)	0	
		Finch Cr 16.0222	Hoodsport Hatchery	6 (4.7%)	0	
	N Puget Sound (2.3%)	Wallace R 07.0940	Wallace R Hatchery	3 (2.3%)	0	
	Skagit River (0.8%)	Cascade R 03.1411	Marblemount Hatchery	1 (0.8%)	0	
		Gorst Cr 15.0216	Gorst Cr Rearing Pnd	2 (1.6%)	0	
	Mid Puget Sound (54.7%)	Big Soos Cr 09.0072	Soos Creek Hatchery	15 (11.7%)	1	
		Portage Bay/Ship Cnl	Issaquah Hatchery	1 (0.8%)	0	
		Icy Cr 09.0125	Icy Cr Hatchery	18 (14.1%)	0	
		Grovers Cr 15.0299	Grovers Cr Hatchery	4 (3.1%)	4	
		Grovers Cr Hatchery	Grovers Cr Hatchery	29 (22.7%)	29	
		Sammamish R 08.0057	Issaquah Hatchery	1 (0.8%)	0	
		S Puget Sound (32%)	Deschutes R 13.0028	Tumwater Falls Hatchery	3 (2.3%)	0
			Chambers Cr 12.0007	Garrison Hatchery	8 (6.2%)	0
	Clear Cr 11.0013C		Clear Creek Hatchery	5 (3.9%)	5	
	Kalama Cr 11.0017		Kalama Cr Hatchery	9 (7%)	0	
	Minter Cr 15.0048		Minter Cr Hatchery	8 (6.2%)	0	
	Minter Cr Tr 15.0051		Hupp Springs Rearing	2 (1.6%)	0	
	Deschutes R 13.0028	Minter Cr Hatchery	6 (4.7%)	0		
<b>Total</b>				<b>128</b>	<b>39</b>	

**Table 5.13** 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 2021 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)
Clear Creek Hatchery	2018	5	13.9	24.69	14.3	1.4	0.26	1.14
Grovers Cr Hatchery	2017	4	11.1	19.75	10.7	1.1	0.182	0.85
Grovers Cr Hatchery	2018	26	69.4	123.44	70.5	9.5	6.111	7.64
Grovers Cr Hatchery	2019	3	8.3	14.81	8.5	0.9	0.155	0.68
Soos Creek Hatchery	2019	1	0	0	2.8	2.8	4.938	2.22
<b>Total</b>		<b>39</b>	<b>102.8</b>	<b>182.69</b>	<b>106.7</b>	<b>15.7</b>	<b>11.646</b>	<b>12.54</b>

**Table 5.14** Monthly sample rates (Total retained Chinook salmon sampled <sup>1/</sup> Estimated retained Chinook salmon) in the 2021 summer Chinook MSF in Marine Area 10.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
July	29 - 31	16 Jul - 1 Aug	920	36	956	365	9	374	39.10%
August	32 - 34	2 Aug - 21 Aug	2547	46	2593	910	18	928	35.80%
<b>Season Total</b>			<b>3,468</b>	<b>82</b>	<b>3,550</b>	<b>1275</b>	<b>27</b>	<b>1302</b>	<b>36.70%</b>

<sup>1/</sup> Number of retained Chinook sampled includes all retained Chinook inspected for CWT's, from all sites sampled during the Marine Area 10 selective fishery

**Table 5.15** 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 10 summer Chinook MSF. Values may not add 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

## **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 from June 16 through August 24, 2021. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program, Full Murthy, 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) which included a small, committed group from the angling public as part of a pilot project. The fishery control was the preseason modeled expected catch. **Table 6.1** 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 11 summer Chinook MSF.

**Table 6.1** 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	Two weeks	Creel estimates were produced for two-week estimation periods and stratified into “weekday” (Mon.-Weds.) and “weekend” (Sat.-Sun.) day-type strata within weeks. For the weekday stratum, we sampled $n=2$ days out of $N=6$ available weekdays per two-week period. For the weekend stratum, we sampled $n=2$ days out of $N=2$ available weekend days per week.
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 8 boat surveys. 4 weekday and 4 weekend boat surveys 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 (LM = 23%, LU = 6%, SM = 58%, SU = 12%; <b>Table 6.9</b> ) was significantly different than STRs (Chi-Square $p$ -value < .01), and test fishing sample size was not adequate (LM CV% > .20) to produce encounter and mortality estimates.
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	STR data (LM = 43%, LU = 14%, SM = 32%, SU = 11%; <b>Table 6.7</b> ) were used to estimate the size/mark-status proportions 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

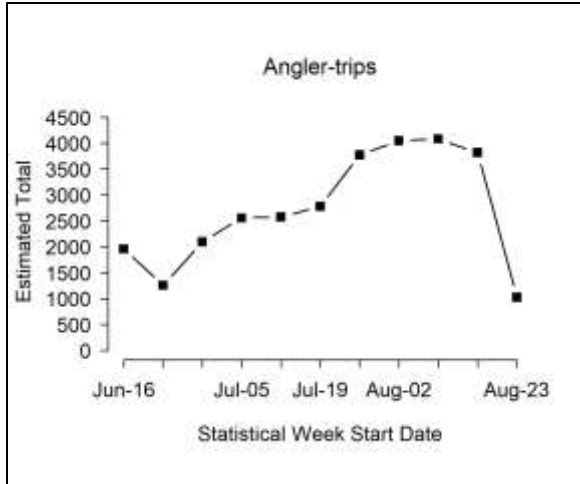


**Table 6.2** Estimates of total fishing effort and total salmon catch (harvest and releases) during the 2021 summer Chinook MSF in Marine Area 11. Values may not add exactly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

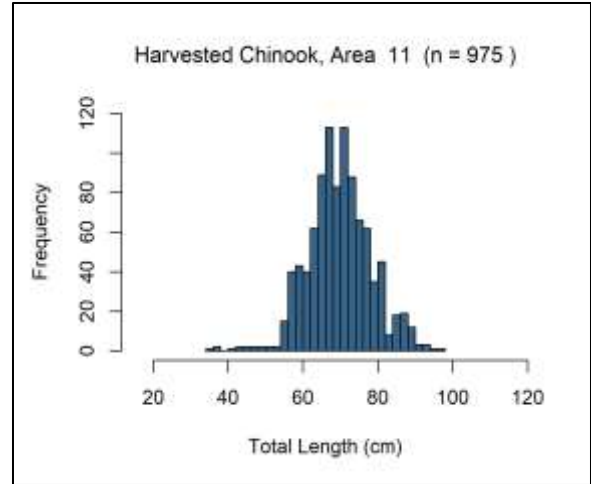
Month	Stat Week	Start Date	End Date	Est. Effort		Est. Retained Chinook		Est. Released Chinook		Est. Total Chinook Encounters
				Boats	Anglers	AD	UM	AD	UM	
<b>June</b>	25	16-Jun	20-Jun	990	1959	290	0	271	187	749
	26	21-Jun	27-Jun	618	1259	59	0	55	38	152
<b>July</b>	27	28-Jun	4-Jul	1,135	2,095	180	8	168	108	464
	28	5-Jul	11-Jul	1,323	2,559	184	4	172	115	475
	29	12-Jul	18-Jul	1,312	2,577	229	0	214	148	591
	30	19-Jul	25-Jul	1,435	2,780	208	4	194	130	537
	31	26-Jul	1-Aug	1,923	3,771	403	0	376	260	1,040
<b>August</b>	32	2-Aug	8-Aug	1,973	4,047	468	0	437	301	1206
	33	9-Aug	15-Aug	2,039	4,086	634	5	592	404	1635
	34	16-Aug	22-Aug	1,878	3,819	478	0	446	308	1231
	35	23-Aug	24-Aug	524	1,025	134	0	125	86	345
<b>Season Total:</b>				<b>15,149</b>	<b>29,977</b>	<b>3,268</b>	<b>22</b>	<b>3,049</b>	<b>2084</b>	<b>8,424</b>
<b>Variance:</b>				226,183	688,056	22,062	29	516,627	144,107	861,611
<b>SE:</b>				476	829	149	5	719	380	928
<b>CV (%):</b>				3	3	5	25	24	18	11
<b>95% CI:</b>				14,217 – 16,081	28,352 – 31,603	2,977 – 3,560	11 – 32	1,640 – 4,458	1,340 – 2,828	6,604 – 10,243

**Table 6.3** Number of total length samples collected from retained Chinook salmon collected during dockside angler interviews in the 2021 summer Chinook MSF in Marine Area 11.

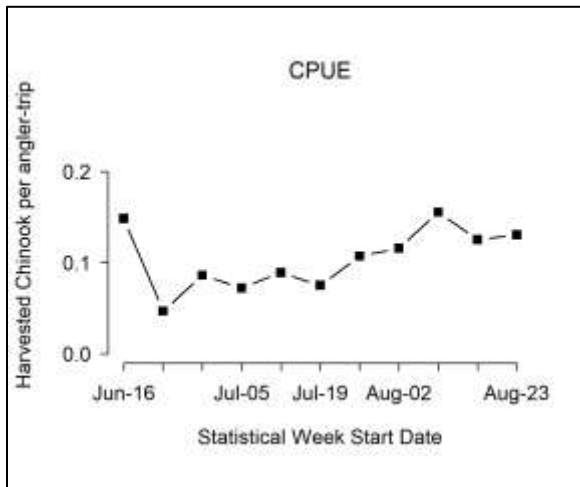
Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	944	31	975
Unmarked	4	3	7
<b>Total</b>	<b>948</b>	<b>34</b>	<b>982</b>



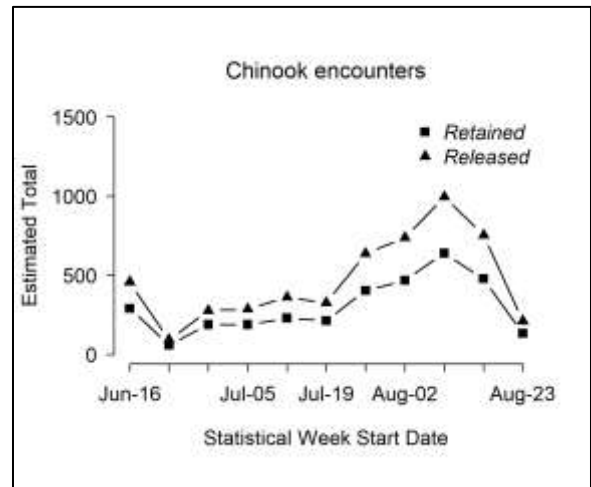
**Figure 6.1** Temporal patterns in fishing effort during the 2021 summer Chinook MSF in Marine Area 11.



**Figure 6.3** Length-frequency distributions of retained marked Chinook salmon sampled in dockside angler interviews during the 2021 summer Chinook MSF in Marine Area 11. Note: displayed values are observations where lengths taken.



**Figure 6.2** Temporal patterns in CPUE (landed Chinook salmon per angler trip) during the 2021 summer Chinook MSF in Marine Area 11.



**Figure 6.4** Temporal patterns in Chinook salmon encounters (retained and released) during the 2021 summer Chinook MSF in Marine Area 11.

**Table 6.4** Comparison of modeled and estimated total Chinook salmon encounters for the 2021 summer Chinook MSF in Marine Area 11. Values may not add up perfectly due to rounding error. AD = marked (adipose-clipped), UM = unmarked.

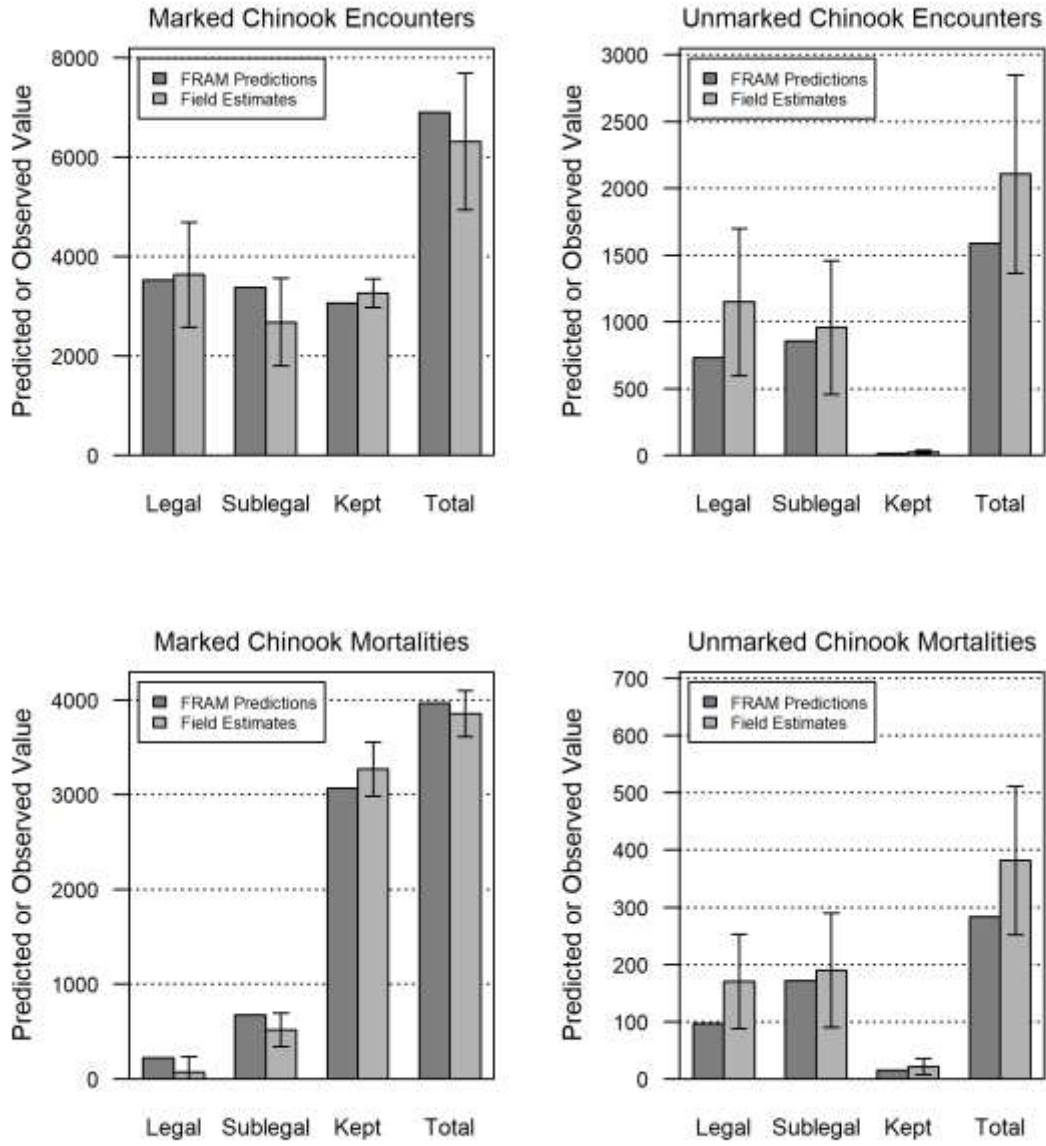
Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	1,586	729	857	15
	AD	6,902	3,527	3,375	3,069
	Total	8,488	4,256	4,232	3,084
	% Marked	81	83	80	100
Estimated (Creel) Encounters	UM	2106	1149	957	22
	AD	6,318	3,637	2,680	3,268
	Total	8,424	4,786	3,637	3,290
	% Marked	75	76	74	99

**Table 6.5** Summary of season-wide fishery impact estimates for the 2021 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	3,637	3,165	473	71	3,235	28,060	168	2,907 - 3,564	5
Legal UM	1149	12	1136	170	183	1807	43	100 - 266	23
Sublegal AD	2,680	104	2,576	515	619	8,506	92	438 - 800	15
Sublegal UM	957	9	948	190	199	2625	51	98 - 299	26
Total	8,424	3,290	5,133	946	4,236	40,997	202	3,840 - 4,633	5

**Table 6.6** Comparison of modeled and estimated total Chinook salmon mortalities for the 2021 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)	283	3,966	4,249	382	3,855	4,236
Released Legal	97	222	319	170	71	241
Released Sublegal	171	675	846	190	515	705
Landed Only	15	3,069	3,084	22	3,268	3,290



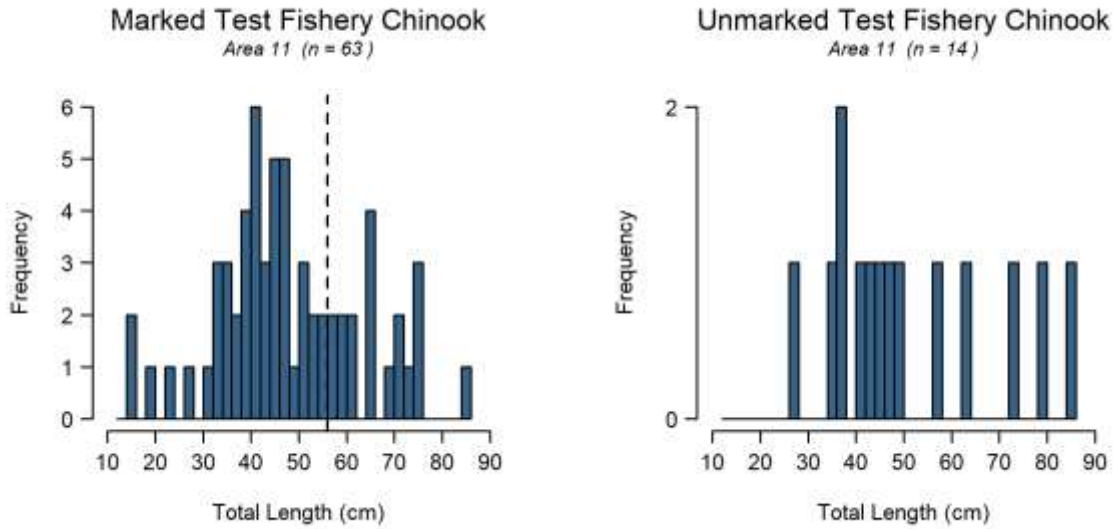
**Figure 6.5** Comparison of modeled and estimated total Chinook salmon encounters and mortalities for the 2021 summer Chinook MSF in Marine Area 11. Error bars represent approximate 95% confidence intervals for field estimates.

**Table 6.7** Total Chinook salmon encountered (retained and released) by private-boat anglers logging their trips on voluntary salmon trip reports (STRs) during the 2021 summer Chinook 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 VTR	98 1-trip VTRs	57	18	42	15	132	0.75	0.76
Size/mark-status composition:		0.43	0.14	0.32	0.11			
Variance:		(0.0019)	(0.0009)	(0.0017)	(0.0008)			

**Table 6.8** Dockside encounters (retained and released) by size-mark category during the 2021 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	929	124	543	94
Bias-corrected size/mark composition	48.92%	7.34%	32.13%	11.61%
Variance	0.0003	0.0000	0.0002	0.0001



**Figure 6.6** Length-frequency distributions of marked (left panel) and unmarked (right panel) Chinook salmon encountered by test fishers during the 2021 summer Chinook 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 6.9** Composition of test fishery Chinook salmon encounters and associated mark-rate and size/mark-status proportion estimates for the 2021 summer Chinook MSF in Marine Area 11. AD = marked (adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Stat Week	Fishing Effort		Legal		Sublegal		Total
	Trips	Hrs Fished	AD	UM	AD	UM	
25	2	10.20	1	2	1	0	4
26	8	39.46	3	0	2	0	5
27	5	23.16	0	0	0	0	0
28	6	37.21	1	0	12	3	16
29	6	28.30	2	2	3	1	8
30	5	22.56	3	0	4	1	8
31	5	26.67	1	0	5	2	8
32	5	24.92	2	0	3	2	7
33	4	21.95	1	0	4	0	5
34	8	40.64	0	1	7	0	8
35	2	12.37	4	0	4	0	8
<b>Total</b>	<b>56</b>	<b>287.43</b>	<b>18</b>	<b>5</b>	<b>45</b>	<b>9</b>	<b>77</b>
<b>Size/mark-status composition:</b>			0.23	0.06	0.58	0.12	
<b>Variance:</b>			(0.0024)	(0.0008)	(0.0032)	(0.0014)	
<b>Legal size mark rate:</b>			0.78				
<b>Overall mark rate:</b>			0.82				

**Table 6.10** Summary of the total number of anglers intercepted during on-the-water surveys conducted for the 2021 summer Chinook MSF in Marine Area 11. 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>6</b>	<b>0.0084</b>	<b>17</b>	<b>0.0111</b>
Blake Island	2	0.0028	0	0.0000
Breakwater Marina (Warters)	22	0.0307	46	0.0300
Browns Point Ramp	7	0.0098	9	0.0059
Browns Point Shore	0	0.0000	2	0.0013
Brownsville Marina	0	0.0000	2	0.0013
Bush Point Ramp and Beach	1	0.0014	0	0.0000
Chambers Bay Boat Owners' Assoc	0	0.0000	1	0.0007
Commencement Bay Marina	35	0.0489	45	0.0293
Dash Point Shore	12	0.0168	19	0.0124
Day Island Marina	5	0.0070	8	0.0052
Day Island Yacht Club	0	0.0000	2	0.0013
Des Moines Marina (Moorage)	67	0.0936	112	0.0730
Dockton Ramp, Vashon Is	4	0.0056	19	0.0124
Foss Tug Dock	0	0.0000	3	0.0020
Fox Island Public Ramp	0	0.0000	6	0.0039
Gardiner Ramp	0	0.0000	3	0.0020
Gig Harbor Marina	6	0.0084	36	0.0235
<b>Gig Harbor Ramp</b>	<b>26</b>	<b>0.0363</b>	<b>72</b>	<b>0.0469</b>
Hylebos Boat Haven	0	0.0000	3	0.0020
Jensen Point	0	0.0000	1	0.0007
Joemma Beach Ramp	2	0.0028	0	0.0000
Kingston Marina	0	0.0000	2	0.0013
Luhr Beach Ramp	0	0.0000	2	0.0013
Manchester Public Ramp	9	0.0126	22	0.0143
Narrows Marina	32	0.0447	59	0.0385
Narrows Ramp	0	0.0000	6	0.0039
Normandy Beach	0	0.0000	2	0.0013
Olalla Public Ramp	0	0.0000	6	0.0039
Pleasant Harbor Marina	0	0.0000	2	0.0013
Point Defiance Boathouse Dock	3	0.0042	0	0.0000
<b>Point Defiance Boathouse</b>	<b>99</b>	<b>0.1383</b>	<b>158</b>	<b>0.1030</b>
<b>Point Defiance Public Ramp</b>	<b>208</b>	<b>0.2905</b>	<b>545</b>	<b>0.3553</b>
Point Roberts Marina	1	0.0014	0	0.0000
Port Madison Marina	2	0.0028	0	0.0000
Port Orchard Marina	0	0.0000	9	0.0059
Port Orchard Public Ramp	6	0.0084	4	0.0026
Private	37	0.0517	58	0.0378
<b>Redondo Ramp</b>	<b>96</b>	<b>0.1341</b>	<b>165</b>	<b>0.1076</b>
Seacrest Boathouse (Lloyds)	0	0.0000	1	0.0007
Shilshole Public Ramp	0	0.0000	4	0.0026
Solo Point (Tatsolo Pt-Ft Lewis) Rm	0	0.0000	2	0.0013
Steilacoom Public Ramp	0	0.0000	10	0.0065
Sunrise County Park	1	0.0014	1	0.0007

Site Name	Weekday Anglers	Season Total (unadjusted) Size Measure	Weekend Anglers	Season Total (unadjusted) Size Measure
Tacoma Outboard Association	0	0.0000	2	0.0013
Tacoma Yacht Club	0	0.0000	2	0.0013
Three Tree Point Launch (Pt Pully)	1	0.0014	4	0.0026
Tyee Marina/Ramp	22	0.0307	40	0.0261
Unknown	1	0.0014	0	0.0000
Winslow City Ramp	0	0.0000	3	0.0020
Wollochet Bay Public Ramp	3	0.0042	9	0.0059
Zittels Marina	0	0.0000	10	0.0065
<b>Total Anglers</b>	<b>716</b>	<b>1</b>	<b>1534</b>	<b>1</b>

**Table 6.11** Monthly sample rates (Total retained Chinook salmon sampled<sup>1</sup> / Estimated retained Chinook salmon) in the 2021 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	
July	25 - 26	16 Jun - 27 Jun	349	0	349	136	0	136	38.90%
August	27 - 31	28 Jun - 1 Aug	1206	17	1222	337	6	343	28.10%
September	32 - 35	2 Aug - 24 Aug	1714	5	1719	517	1	518	30.10%
<b>Season Total</b>			<b>3,268</b>	<b>22</b>	<b>3,290</b>	<b>990</b>	<b>7</b>	<b>997</b>	<b>30.30%</b>

<sup>1</sup> Number of retained Chinook salmon sampled includes all retained Chinook salmon inspected for CWT's, from all sites sampled during the summer 2021 Marine Area 11 Chinook MSF (creel estimates and the fish sampled as part of baseline sampling).

**Table 6.12** Summary of coded-wire tags recovered from Chinook salmon harvested during the 2021 summer Chinook MSF in Marine Area 11. The field "Number DITs" corresponds to the number of recovered CWTs that belonged to double-index tag groups. Note: Not all tags have been processed before writing of this report.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	No. DITs
WA	Hood Canal (12.5%)	Finch Cr 16.0222	Hoodspport Hatchery	1 (12.5%)	0
	N Puget Sound (12.5%)	Wallace R 07.0940	Wallace R Hatchery	1 (12.5%)	0
	Mid Puget Sound (62.5%)	Icy Cr 09.0125	Icy Cr Hatchery	5 (62.5%)	0
	S Puget Sound (12.5%)	Deschutes R 13.0028	Minter Cr Hatchery	1 (12.5%)	0
<b>Total</b>				<b>8</b>	<b>0</b>



**Table 6.13** 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 2021 summer Chinook MSF in Marine Area 11. 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)
No DITS								
<b>Total</b>								

**Table 6.14** Fishery-total estimates of retained and released salmon (other than Chinook salmon) for the 2021 summer Chinook MSF in Marine Area 11. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark-status. Values may not add exactly due to rounding error.

Stat Week	Start Date	End Date	Retained Salmon						Released Salmon						
			Coho AD	Coho UM	Coho UK	Chum	Pink	Unknown	Coho AD	Coho UM	Coho UK	Pink	Cutthroat	Unknown	
25	16-Jun	20-Jun	2	2	0	0	0	0	0	0	0	0	0	0	35
26	21-Jun	27-Jun	0	0	0	0	0	0	0	0	0	0	0	0	28
27	28-Jun	4-Jul	0	0	0	4	0	0	0	0	0	3	0	0	111
28	5-Jul	11-Jul	17	2	0	0	4	0	0	4	21	4	0	0	108
29	12-Jul	18-Jul	47	15	2	0	9	0	17	8	4	0	0	0	144
30	19-Jul	25-Jul	70	30	0	0	77	0	3	2	8	15	4	0	150
31	26-Jul	1-Aug	92	15	0	0	89	6	22	10	0	44	0	0	141
32	2-Aug	8-Aug	66	25	0	0	299	0	51	17	4	122	0	0	178
33	9-Aug	15-Aug	45	4	0	2	414	0	5	0	9	188	0	0	143
34	16-Aug	22-Aug	58	17	0	0	454	0	0	2	10	165	0	0	129
35	23-Aug	24-Aug	56	24	0	0	149	0	0	0	24	220	0	0	7
<b>Season Total:</b>			<b>454</b>	<b>134</b>	<b>2</b>	<b>6</b>	<b>1495</b>	<b>6</b>	<b>97</b>	<b>44</b>	<b>80</b>	<b>763</b>	<b>4</b>	<b>1,174</b>	
<b>Variance:</b>			1,450	446	1	3	18491	8	1,173	129	124	17,045	4	12,644	
<b>Standard Error:</b>			38	21	1	2	136	3	34	11	11	131	2	112	
<b>CV (%):</b>			8	16	50	28	9	47	35	26	14	17	47	10	
<b>95% CI:</b>			379 – 528	93 – 176	0 – 4	3 – 10	1,228 – 1,761	1 – 12	30 – 164	22 – 66	59 – 102	507 – 1,019	0 – 8	953 – 1,394	

**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 Marine Area 11 summer Chinook MSF. Values may not add 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

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

The Washington Department of Fish and Wildlife (WDFW) implemented a summer Chinook MSF in Marine Area 12 from July 1 through September 30, 2021. 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. 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 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	When CRC-based retained Chinook estimates become available bias-corrected dockside proportion data will be used to estimate Chinook encounters by size/mark group (LM = 59%, LU = 9%, SM = 23%, SU = 9%; <b>Table 7.7</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	STR sample size will not be sufficient to produce encounter estimates. LM% CV = .25.
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.

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

Draft; January 28, 2022

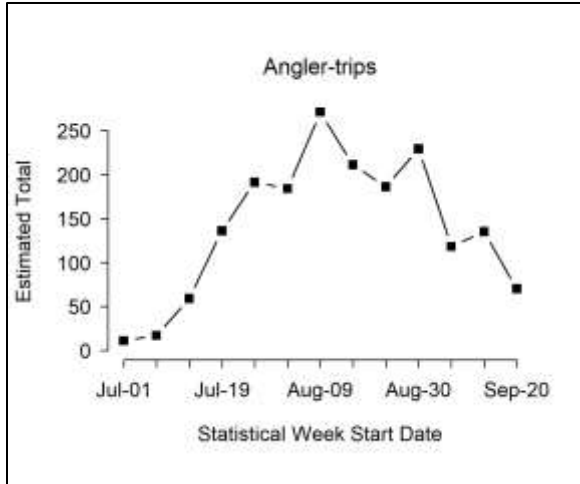
**Table 7.2** Observations of fishing effort, Chinook salmon retained, and reported Chinook salmon releases, by week, for the summer 2021 Chinook salmon MSF in Marine Area 12 Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark-status, UD = undetermined mark-status.

Stat Week	Start	End	Effort		Retained Fish			Released Fish		
			Boats	Anglers	Chin AD	Chin UM	Chin UK	Chin AD	Chin UM	Chin Unk
27	1-Jul	4-Jul	5	11	0	0	0	3	0	0
28	5-Jul	11-Jul	11	17	0	0	0	2	1	0
29	12-Jul	18-Jul	29	59	5	1	0	2	0	7
30	19-Jul	25-Jul	80	136	26	0	0	0	1	0
31	26-Jul	1-Aug	102	193	42	1	1	13	4	0
32	2-Aug	8-Aug	105	184	54	0	0	9	3	5
33	9-Aug	15-Aug	135	271	71	0	1	26	12	14
34	16-Aug	22-Aug	132	211	117	0	2	9	19	6
35	23-Aug	29-Aug	104	186	23	0	4	42	8	9
36	30-Aug	5-Sep	121	229	14	0	0	11	5	6
37	6-Sep	12-Sep	76	118	1	0	0	2	0	0
38	13-Sep	19-Sep	77	135	2	0	0	0	0	0
39	20-Sep	30-Sep	47	70	0	0	0	0	0	0
40	27-Sep	30-Sep	0	0	0	0	0	0	0	0
<b>Season Total</b>			<b>1024</b>	<b>1820</b>	<b>355</b>	<b>2</b>	<b>8</b>	<b>119</b>	<b>53</b>	<b>47</b>

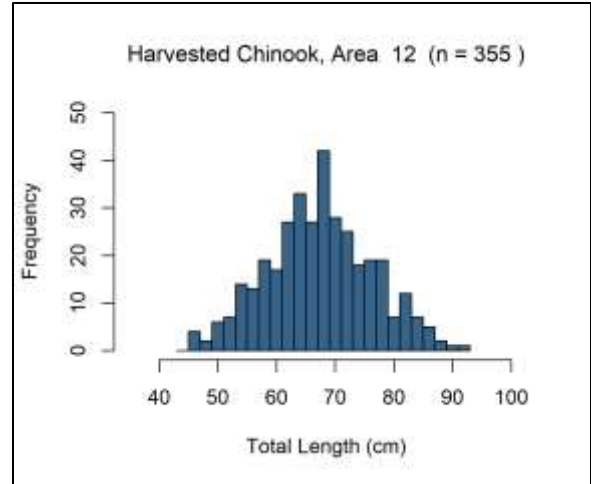
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**Table 7.3** Observations of fishing effort, salmon retained (other than Chinook), and reported salmon releases (other than Chinook), by week, for the summer 2021 Chinook salmon MSF in Marine Area 12. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates. AD = marked (adipose-clipped), UM = unmarked, UK = unknown mark-status, UD = undetermined mark-status.

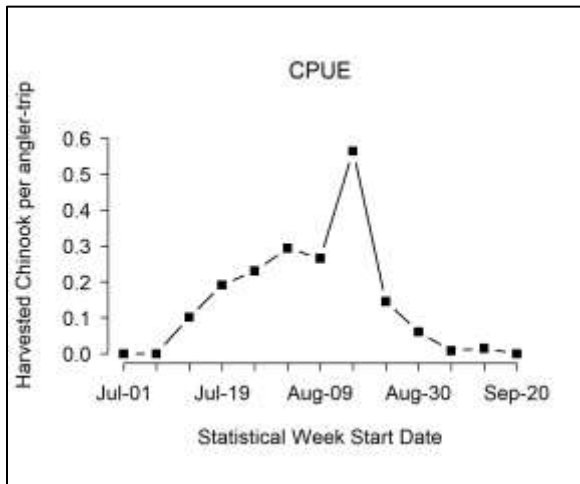
Stat Week	Start	End	Effort		Retained Fish				Released Fish					
			Boats	Anglers	Coho AD	Coho UM	Coho UK	Pink	Coho AD	Coho UM	Coho UK	Chum	Pink	Sockeye
27	1-Jul	4-Jul	5	11	0	0	0	0	0	0	0	0	0	0
28	5-Jul	11-Jul	11	17	0	0	0	0	0	0	0	0	0	0
29	12-Jul	18-Jul	29	59	0	0	0	15	0	0	0	0	2	0
30	19-Jul	25-Jul	80	136	0	0	0	3	0	0	0	0	4	0
31	26-Jul	1-Aug	102	193	1	0	0	13	0	0	0	0	2	1
32	2-Aug	8-Aug	105	184	2	0	0	13	0	0	0	0	0	0
33	9-Aug	15-Aug	135	271	4	1	0	1	0	1	1	0	1	0
34	16-Aug	22-Aug	132	211	152	16	0	0	1	1	0	1	4	0
35	23-Aug	29-Aug	104	186	153	16	3	1	3	0	0	0	2	0
36	30-Aug	5-Sep	121	229	403	68	1	1	4	2	12	6	0	0
37	6-Sep	12-Sep	76	118	155	31	0	0	4	2	5	0	0	0
38	13-Sep	19-Sep	77	135	181	41	1	0	1	0	6	3	0	0
39	20-Sep	26-Sep	47	70	37	14	0	0	0	0	1	1	1	0
40	27-Sep	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0
<b>Season Total</b>			<b>1024</b>	<b>1820</b>	<b>1088</b>	<b>187</b>	<b>5</b>	<b>47</b>	<b>13</b>	<b>6</b>	<b>25</b>	<b>11</b>	<b>16</b>	<b>1</b>



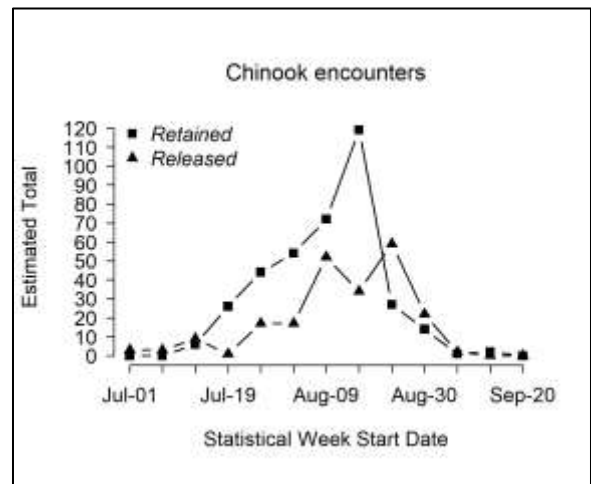
**Figure 7.1** Temporal patterns in fishing effort during the 2021 summer Chinook MSF in Marine Area 12. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates.



**Figure 7.3** Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the 2021 summer Chinook MSF in Marine Area 12. Note: displayed values are observations where lengths taken. Note: displayed values are observations where lengths taken.



**Figure 7.2** Temporal patterns in CPUE (landed Chinook per angler trip) during the 2021 summer Chinook 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 encounters (retained and released) during the 2021 summer Chinook MSF in Marine Area 12. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates.

**Table 7.4** Number of total length samples collected from retained Chinook salmon collected during dockside angler interviews in the 2021 summer Chinook MSF in Marine Area 12.

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	349	6	355
Unmarked	2	0	2
<b>Total</b>	<b>351</b>	<b>6</b>	<b>357</b>

**Table 7.5** List of sites sampled with the number of sampling events (site-days) during the 2021 summer Chinook MSF in Marine Area 12.

Location Name	Number of Site Days Sampled Per Month			Total Site-Days	% of Total
	July	August	September		
Hoodspoint Shore	1	0	8	9	2.91%
Misery Point Ramp	0	0	1	1	0.32%
Pleasant Harbor Boat Ramp	1	2	0	3	0.97%
Pleasant Harbor Marina	1	0	0	1	0.32%
Point Whitney Ramp	1	0	0	1	0.32%
Quilcene Bay Ramp	14	23	24	61	19.74%
Saltwater Park Ramp	11	21	25	57	18.45%
Skokomish Tide Flats	19	35	27	81	26.21%
Tahuya Ramp	1	0	0	1	0.32%
Triton Cove State Park	2	2	1	5	1.62%
Twanoh State Park	5	0	0	5	1.62%
Union Ramp	26	29	29	84	27.18%
<b>Grand Total</b>	<b>82</b>	<b>112</b>	<b>115</b>	<b>309</b>	<b>100.00%</b>

**Table 7.6** Total Chinook salmon encountered (retained and released) by private-boat anglers logging their trips on voluntary salmon trip reports (STRs) during the 2021 summer Chinook 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

	Effort and Sample Size	Legal		Sublegal		Totals	Mark Rate	
		AD	UM	AD	UM		Overall	Legal
Private VTR	8 1-trip VTRs	12	1	2	0	15	0.93	0.92
Size/mark-status composition:		0.80	0.07	0.13	0.00			
Variance:		(0.0114)	(0.0044)	(0.0083)	(0.0000)			



**Table 7.7** Dockside encounters (retained and released) by size-mark category during the 2021 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	350	48	124	7
Bias-corrected size/mark composition	58.88%	9.07%	23.44%	8.60%
Variance	0.0011	0.0002	0.0011	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, 2021. The fishery was closed May 1 through May 19 due to a delay in Endangered Species Act coverage. 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	When CRC-based retained Chinook estimates become available bias-corrected dockside proportion data will be used to estimate Chinook encounters by size/mark group (LM = 61%, LU = 7%, SM = 22%, SU = 9%; <b>Table 8.7</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	Due to low sample size (N=15, LM percentage CV=.25) STRs will not be used for Chinook encounter estimates based on CRC data.
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.

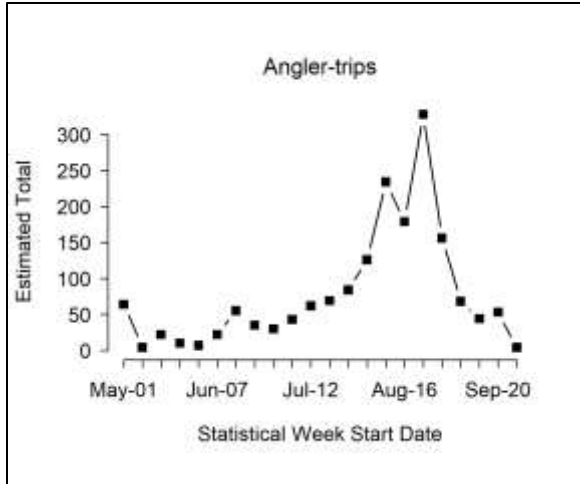
<sup>1</sup> The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.

**Table 8.2** Observations of fishing effort, salmon harvest, and reported salmon releases, by week, for the 2021 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.

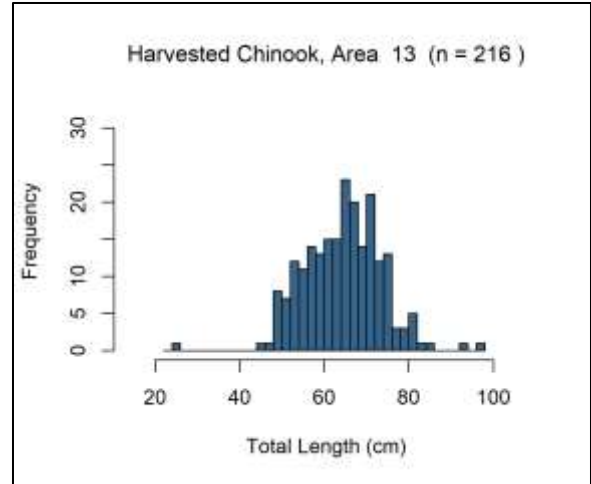
Stat Week	Start	End	Effort		Retained Fish			Released Fish		
			Boats	Anglers	Chin AD	Chin UM	Chin UK	Chin AD	Chin UM	Chin UK
18	1-May	2-May	30	64	0	0	0	4	0	0
19	3-May	9-May	2	4	0	0	0	0	0	0
21	17-May	23-May	11	22	3	0	0	4	0	0
22	24-May	30-May	5	10	0	0	0	5	0	0
23	31-May	6-Jun	4	7	4	0	0	1	0	0
24	7-Jun	13-Jun	14	22	6	0	0	1	0	1
25	14-Jun	20-Jun	28	55	16	0	0	2	1	0
26	21-Jun	27-Jun	19	35	2	0	0	2	1	0
27	28-Jun	4-Jul	18	30	6	0	0	5	3	1
28	5-Jul	11-Jul	23	43	15	0	0	0	1	0
29	12-Jul	18-Jul	33	62	15	0	0	7	0	0
30	19-Jul	25-Jul	36	69	5	1	0	0	1	0
31	26-Jul	1-Aug	51	84	8	0	0	5	0	0
32	2-Aug	8-Aug	66	126	15	0	0	1	8	0
33	9-Aug	15-Aug	124	234	33	0	0	11	1	2
34	16-Aug	22-Aug	89	179	18	0	0	1	1	1
35	23-Aug	29-Aug	159	328	60	0	0	14	6	0
36	30-Aug	5-Sep	81	156	13	0	1	5	2	0
37	6-Sep	12-Sep	40	68	3	0	0	4	0	1
38	13-Sep	19-Sep	28	44	0	0	0	1	0	0
39	20-Sep	26-Sep	33	53	0	0	0	1	2	0
40	27-Sep	30-Sep	3	4	0	0	0	0	0	0
<b>Season Total</b>			<b>897</b>	<b>1699</b>	<b>222</b>	<b>1</b>	<b>1</b>	<b>74</b>	<b>27</b>	<b>6</b>

**Table 8.3** Number of total length samples collected from retained Chinook salmon collected during dockside angler interviews in the 2021 summer Chinook MSF in Marine Area 13.

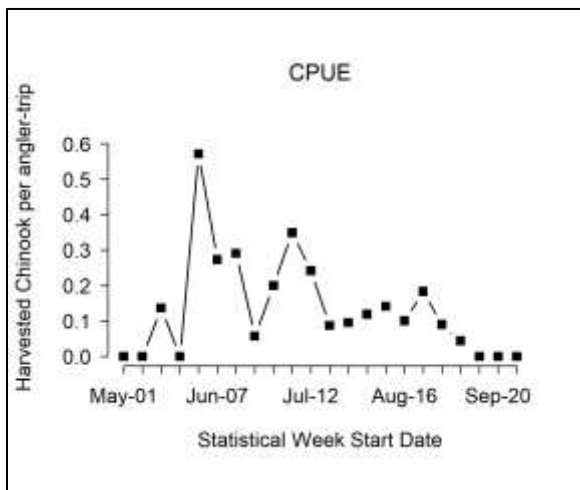
Stat Week	Start	End	Effort		Retained Fish					Released Fish				
			Boats	Anglers	Coho AD	Coho UM	Coho UK	Pink	Chum	Coho AD	Coho UM	Coho UK	Chum	Pink
18	1-May	2-May	30	64	0	0	0	0	0	0	0	0	0	0
19	3-May	9-May	2	4	0	0	0	0	0	0	0	0	0	0
21	17-May	23-May	11	22	0	0	0	0	0	0	0	0	0	0
22	24-May	30-May	5	10	0	0	0	0	0	0	0	0	0	0
23	31-May	6-Jun	4	7	0	0	0	0	0	0	0	0	0	0
24	7-Jun	13-Jun	14	22	0	0	0	0	0	0	0	0	0	0
25	14-Jun	20-Jun	28	55	0	0	0	0	0	0	0	0	0	0
26	21-Jun	27-Jun	19	35	0	0	0	0	0	0	0	0	0	0
27	28-Jun	4-Jul	18	30	1	0	0	0	0	0	0	0	0	0
28	5-Jul	11-Jul	23	43	1	0	0	0	0	0	0	0	0	0
29	12-Jul	18-Jul	33	62	0	0	0	0	0	0	0	0	0	0
30	19-Jul	25-Jul	36	69	0	0	0	1	0	0	0	0	0	1
31	26-Jul	1-Aug	51	84	0	0	0	0	0	1	0	0	0	0
32	2-Aug	8-Aug	66	126	0	0	0	1	0	0	0	0	0	0
33	9-Aug	15-Aug	124	234	1	0	0	1	0	0	0	0	0	0
34	16-Aug	22-Aug	89	179	0	0	0	1	0	0	0	0	0	0
35	23-Aug	29-Aug	159	328	7	0	0	6	1	2	1	2	0	4
36	30-Aug	5-Sep	81	156	6	0	0	0	0	0	0	1	0	0
37	6-Sep	12-Sep	40	68	4	0	0	0	0	0	0	0	0	0
38	13-Sep	19-Sep	28	44	0	0	0	0	0	0	0	0	0	0
39	20-Sep	26-Sep	33	53	1	0	0	0	0	0	0	1	0	0
40	27-Sep	30-Sep	3	4	0	0	0	0	0	0	0	0	0	0
<b>Season Total</b>			<b>897</b>	<b>1699</b>	<b>21</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>5</b>



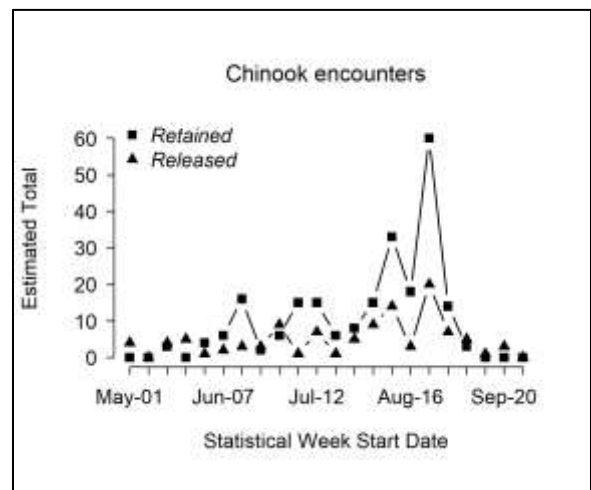
**Figure 8.1** Temporal patterns in fishing effort during the 2021 summer Chinook salmon MSF in Marine Area 13. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates.



**Figure 8.3** Length-frequency distribution of retained marked Chinook salmon sampled in dockside angler interviews during the 2021 summer Chinook MSF in Marine Area 13. Note: displayed values are observations where lengths taken.



**Figure 8.2** Temporal patterns in CPUE (landed Chinook salmon per angler trip) during the 2021 summer Chinook 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 encounters (retained and released) during the 2021 summer Chinook MSF in Marine Area 13. Note: displayed values are sample observations (summed across sampled sites) and not fishery-total estimates.

**Table 8.4** Number of total length samples collected from retained Chinook salmon collected during dockside angler interviews in the 2021 summer Chinook MSF in Marine Area 13.

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	213	3	216
Unmarked	0	1	1
<b>Total</b>	<b>213</b>	<b>4</b>	<b>217</b>

**Table 8.5** Total Chinook salmon encountered (retained and released) by private-boat anglers logging their trips on voluntary salmon trip reports (STRs) during the 2021 summer Chinook 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 VTR	26 1-trip VTRs	15	4	20	3	42	0.83	0.79
Size/mark-status composition:		0.36	0.10	0.48	0.07			
Variance:		(0.0056)	(0.0021)	(0.0061)	(0.0016)			

**Table 8.6** Dockside encounters (retained and released) by size-mark category during the 2021 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	219	22	71	6
Bias-corrected size/mark composition	61.29%	6.92%	22.33%	9.46%
Variance	0.0011	0.0003	0.0009	0.0001

**Table 8.7** List of sites sampled with the number of sampling events (site-days) during the 2021 summer Chinook MSF in Marine Area 13.

Location Name	Number of Site Days Sampled Per Month					Total Site-Days	% of Total
	May	June	July	August	September		
Allyn Public Ramp	2	0	0	0	0	2	0.81%
Arcadia Ramp	0	0	1	0	3	4	1.61%
Boston Harbor Ramp	1	1	13	21	17	53	21.37%
East Bay Marina	3	1	0	2	1	7	2.82%
Fairharbor - Nyne's Marina	0	0	1	0	4	5	2.02%
Fox Island Public Ramp	1	0	0	0	1	2	0.81%
Grapeview Public Ramp	2	0	0	0	0	2	0.81%
Hartstene Is. Ramp (aka Lat...	3	0	3	4	8	18	7.26%
Home Public Ramp	4	0	0	1	0	5	2.02%
Landover	1	0	0	0	0	1	0.40%
Longbranch Marina	0	0	0	1	0	1	0.40%
Luhr Beach Ramp	8	9	23	19	7	66	26.61%
Narrows Marina	2	1	3	5	1	12	4.84%
Narrows Park	1	0	0	0	1	2	0.81%
Solo Point	1	0	1	1	2	5	2.02%
Steamboat Island Bridge	0	0	1	0	7	8	3.23%
Steilacoom Public Ramp	1	0	0	0	3	4	1.61%
Vaughn Public Ramp	2	0	0	0	0	2	0.81%
Wauna Shore	1	0	0	0	0	1	0.40%
Wollochet Bay Public Ramp	1	0	0	0	1	2	0.81%
Zittels Marina	3	6	9	15	13	46	18.55%
<b>Grand Total</b>	<b>37</b>	<b>18</b>	<b>55</b>	<b>69</b>	<b>69</b>	<b>248</b>	<b>100.00%</b>



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The completion of the 2021 summer mark-selective Chinook salmon fisheries in the Marine Areas of Puget Sound is the result of the dedicated efforts of many individuals. We thank the WDFW Puget Sound Sampling Unit (PSSU) field staff who successfully implemented comprehensive sampling programs during the summer 2021 Chinook MSFs. Staff conducted many hours of dockside creel surveys, test fishery sampling, on-the-water effort surveys, aerial surveys, voluntary salmon trip reports, angler education, as well as compiled, error-checked, and delivered high-quality monitoring data to enable MSF evaluations. From Central Sound, we thank Jeff McKee (Central Sound Sampling Supervisor), Kathryn Young-Berg, April Bosley, Susan Kraemer, Pete Sergeeff, Corey Corrick, Mary Raymond, Jonathan Grindal, Mitchell Gellhause, Andrew Fouts, Eileen Long, Ryan Horn, Kelsey Cunningham, Annalei Lees, Haydyn Wagner, Parker Lehman, Logan Baker, Lauren Ryan Booth and Clair Klippel. From the Olympic Peninsula area, we thank, Connie Konopaski (acting Peninsula Sampling Supervisor), Hope Anderson, Lorena McGovern, Steve Sapp, Holly Keedy, Kristopher Clark, Cami De Silva, Michelle Leach, Alex Steinline, Evan Hill, Mathew Pellingier, Brent Burns, Enoch Dye, Karisma Sexton and Ashley Smith. From North Sound, we thank Chad Paul (North Sampling Supervisor), Christopher Berry, Nathan Layman, Dean Toba, Patrick Morrison, Dyanne Dalrymple, Henry Kei, Katherine Kissinger, Simeon Crossfield, John McKay, Ron Lewis, Piper McCarthy, Jamie Manske, Sabrina Weiss, and Andrew Delaney. From South Sound including Hood Canal and the Kitsap Peninsula, we thank Justin Terry (South Sound Supervisor), Marcus Thompson, Ryan Ollerman, Scott Walker, Cara Crowley, John Pahutski, Paul Lorenz, Tom Matthews, Bryan Blazer, Tom Mathews, Maria Garcia-Rojas, Morgan Kroeger, Fred Bodine, Andrew Potter Maul, Madison Guest, Sonja Garcia, Ann Marie Ring, Cameron Artz, Clifford Williams, Emilee Slaght, Sarah Scott, and Jason Wiek. Additionally, we thank WDFW pilots Marty Kimbrel, and Kevin Nelson and samplers Brant Boelts, Karen Kloempken, Sarah Golden, Sam Bund and Kenmore Air for their time surveying Marine Areas 6 and 7 from the sky.

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## APPENDICES

### 1) SITE WEIGHTS

**Appendix 1** Size measures by sample date, for sites sampled during dockside creel surveys for the 2021 summer Chinook MSF in Marine Area 5.

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
7/1/2021	27	Van Riper's South	0.1618	Olson's East Docks	0.2965
7/2/2021	27	Van Riper's South	0.1774	Olson's East Docks	0.2171
7/3/2021	27	Van Riper's North	0.1153	Olson's East Docks	0.2171
7/7/2021	28	Van Riper's North	0.1615	Olson's Ramp	0.2138
7/9/2021	28	Van Riper's South	0.1774	Olson's Ramp	0.346
7/11/2021	28	Olson's West Docks	0.0646	Olson's Ramp	0.346
7/13/2021	29	Van Riper's South	0.1618	Olson's East Docks	0.2965
7/17/2021	29	Van Riper's North	0.1153	Olson's Ramp	0.346
7/18/2021	29	Van Riper's South	0.1774	Olson's East Docks	0.2171

**Appendix 2** Size measures by sample date, for sites sampled during dockside creel surveys for the 2021 summer Chinook MSF in Marine Area 9.

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
7/16/2021	29	Norton Street (Everett) Ramp	0.389	Kingston Public Ramp	0.0745
7/17/2021	29	Norton Street (Everett) Ramp	0.389	Fort Casey Public Ramp (Keystone)	0.1806
7/18/2021	29	Norton Street (Everett) Ramp	0.389	Port Townsend Boat Haven Ramp	0.1666
7/19/2021	30	Norton Street (Everett) Ramp	0.3736	Port Townsend Boat Haven Ramp	0.2117
7/21/2021	30	Kingston Public Ramp	0.0869	Port Townsend Boat Haven Ramp	0.2117
7/23/2021	30	Norton Street (Everett) Ramp	0.389	Kingston Public Ramp	0.0745
7/24/2021	30	Kingston Public Ramp	0.0745	Port Townsend Boat Haven Ramp	0.1666
7/25/2021	30	Norton Street (Everett) Ramp	0.389	Port Townsend Boat Haven Ramp	0.1666
7/26/2021	31	Kingston Public Ramp	0.0869	Port Townsend Boat Haven Ramp	0.2117
7/28/2021	31	Norton Street (Everett) Ramp	0.3736	Fort Casey Public Ramp (Keystone)	0.1755
7/30/2021	31	Norton Street (Everett) Ramp	0.389	Port Townsend Boat Haven Ramp	0.1666
7/31/2021	31	Norton Street (Everett) Ramp	0.389	Fort Casey Public Ramp (Keystone)	0.1806
8/1/2021	32	Norton Street (Everett) Ramp	0.4823	Port Townsend Boat Haven Ramp	0.0922
8/3/2021	32	Norton Street (Everett) Ramp	0.3652	Fort Casey Public Ramp (Keystone)	0.1691
8/4/2021	32	Norton Street (Everett) Ramp	0.3652	Port Townsend Boat Haven Ramp	0.1615



**Appendix 3** Size measures by sample date, for sites sampled during dockside creel surveys for the 2021 summer Chinook MSF in Marine Area 10.

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
7/16/2021	29	Armeni Public Ramp	0.1987	Shilshole Public Ramp	0.4854
7/17/2021	29	Kingston Public Ramp	0.1377	Shilshole Public Ramp	0.4854
7/18/2021	29	Brownsville Marina/Dock/Ramp	0.1225	Shilshole Public Ramp	0.4854
7/19/2021	30	Kingston Public Ramp	0.1884	Shilshole Public Ramp	0.4947
7/21/2021	30	Kingston Public Ramp	0.1884	Shilshole Public Ramp	0.4947
7/23/2021	30	Kingston Public Ramp	0.1377	Shilshole Public Ramp	0.4854
7/24/2021	30	Kingston Public Ramp	0.1377	Shilshole Public Ramp	0.4854
7/25/2021	30	Kingston Public Ramp	0.1377	Armeni Public Ramp	0.1987
7/26/2021	31	Kingston Public Ramp	0.1884	Shilshole Public Ramp	0.4947
7/28/2021	31	Armeni Public Ramp	0.1846	Shilshole Public Ramp	0.4947
7/30/2021	31	Armeni Public Ramp	0.1987	Shilshole Public Ramp	0.4854
7/31/2021	31	Kingston Public Ramp	0.1377	Shilshole Public Ramp	0.4854
8/1/2021	31	Armeni Public Ramp	0.2425	Shilshole Public Ramp	0.4537
8/3/2021	32	Armeni Public Ramp	0.2596	Shilshole Public Ramp	0.4576
8/4/2021	32	Armeni Public Ramp	0.2596	Shilshole Public Ramp	0.4576
8/6/2021	32	Armeni Public Ramp	0.2425	Shilshole Public Ramp	0.4537
8/7/2021	32	Armeni Public Ramp	0.2425	Shilshole Public Ramp	0.4537
8/8/2021	32	Armeni Public Ramp	0.2425	Shilshole Public Ramp	0.4537
8/9/2021	33	Armeni Public Ramp	0.2596	Shilshole Public Ramp	0.4576
8/12/2021	33	Kingston Public Ramp	0.1498	Shilshole Public Ramp	0.4576
8/13/2021	33	Armeni Public Ramp	0.2425	Shilshole Public Ramp	0.4537
8/14/2021	33	Kingston Public Ramp	0.1789	Shilshole Public Ramp	0.4537
8/15/2021	33	Armeni Public Ramp	0.2425	Shilshole Public Ramp	0.4537
8/16/2021	34	Armeni Public Ramp	0.2596	Shilshole Public Ramp	0.4576
8/18/2021	34	Kingston Public Ramp	0.1498	Shilshole Public Ramp	0.4576
8/20/2021	34	Armeni Public Ramp	0.2425	Shilshole Public Ramp	0.4537
8/21/2021	34	Armeni Public Ramp	0.2425	Shilshole Public Ramp	0.4537

**Appendix 4** Size measures by sample date, for sites sampled during dockside creel surveys for the 2021 summer Chinook MSF in Marine Area 11.

Sample Date	Week	Location #1	Site Size	Location #2	Site Size
7/1/2021	27	Point Defiance Boathouse	0.2057	Point Defiance Public Ramp	0.4905
7/2/2021	27	Point Defiance Boathouse	0.1837	Point Defiance Public Ramp	0.4774
7/3/2021	27	Point Defiance Boathouse	0.1837	Point Defiance Public Ramp	0.4774
7/7/2021	28	Point Defiance Boathouse	0.2057	Point Defiance Public Ramp	0.4905
7/8/2021	28	Point Defiance Boathouse	0.2057	Point Defiance Public Ramp	0.4905
7/9/2021	28	Gig Harbor Ramp	0.0832	Point Defiance Public Ramp	0.4774
7/10/2021	28	Gig Harbor Ramp	0.0832	Point Defiance Public Ramp	0.4774
7/11/2021	28	Redondo Ramp	0.2075	Point Defiance Public Ramp	0.4774
7/13/2021	29	Point Defiance Boathouse	0.2057	Point Defiance Public Ramp	0.4905
7/15/2021	29	Redondo Ramp	0.122	Point Defiance Public Ramp	0.4905
7/16/2021	29	Point Defiance Boathouse	0.1837	Point Defiance Public Ramp	0.4774
7/17/2021	29	Gig Harbor Ramp	0.0832	Point Defiance Public Ramp	0.4774
7/18/2021	29	Point Defiance Boathouse	0.1837	Point Defiance Public Ramp	0.4774
7/19/2021	30	Point Defiance Boathouse	0.2057	Point Defiance Public Ramp	0.4905
7/21/2021	30	Gig Harbor Ramp	0.1066	Point Defiance Public Ramp	0.4905
7/23/2021	30	Redondo Ramp	0.2075	Point Defiance Public Ramp	0.4774
7/24/2021	30	Redondo Ramp	0.2075	Point Defiance Public Ramp	0.4774
7/25/2021	30	Point Defiance Boathouse	0.1837	Point Defiance Public Ramp	0.4774
7/26/2021	31	Gig Harbor Ramp	0.1066	Point Defiance Public Ramp	0.4905
7/28/2021	31	Point Defiance Boathouse	0.2057	Point Defiance Public Ramp	0.4905
7/30/2021	31	Point Defiance Boathouse	0.1837	Point Defiance Public Ramp	0.4774
7/31/2021	31	Point Defiance Boathouse	0.1837	Point Defiance Public Ramp	0.4774
8/1/2021	31	Gig Harbor Ramp	0.0853	Point Defiance Public Ramp	0.4357
8/3/2021	32	Gig Harbor Ramp	0.1184	Point Defiance Public Ramp	0.4053
8/4/2021	32	Point Defiance Boathouse	0.1592	Point Defiance Public Ramp	0.4053
8/6/2021	32	Armeni Public Ramp	0.077	Point Defiance Public Ramp	0.4357
8/7/2021	32	Redondo Ramp	0.2475	Point Defiance Public Ramp	0.4357
8/8/2021	32	Redondo Ramp	0.2475	Point Defiance Public Ramp	0.4357
8/9/2021	33	Point Defiance Boathouse	0.1592	Point Defiance Public Ramp	0.4053
8/12/2021	33	Redondo Ramp	0.2302	Point Defiance Public Ramp	0.4053
8/13/2021	33	Armeni Public Ramp	0.077	Point Defiance Public Ramp	0.4357
8/14/2021	33	Point Defiance Boathouse	0.1546	Point Defiance Public Ramp	0.4357
8/15/2021	33	Point Defiance Boathouse	0.1546	Point Defiance Public Ramp	0.4357
8/16/2021	34	Gig Harbor Ramp	0.1184	Point Defiance Public Ramp	0.4053
8/18/2021	34	Redondo Ramp	0.2302	Point Defiance Public Ramp	0.4053
8/20/2021	34	Redondo Ramp	0.2475	Point Defiance Public Ramp	0.4357
8/21/2021	34	Point Defiance Boathouse	0.1546	Point Defiance Public Ramp	0.4357

## 2) CWT RECOVERIES

**Appendix 5** Coded-wire tag (CWT) recoveries from the 2021 Chinook MSF in Marine Area 5. Note: Not all tags have been processed before 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-21	56236	2017	Coleman Nfh	Coleman Nfh	USFWS		57	CWT00048934	AD
5	2-Jul-21	185894	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		52	CWT00048935	AD
5	2-Jul-21	637506	2018	East Sound Bay (San)	Glenwood Springs	COOP		59	CWT00050038	AD
5	2-Jul-21	637338	2017	Cowlitz R 26.0002	Cowlitz Salmon Hatchery	WDFW		62	CWT00050060	AD
5	2-Jul-21	637369	2018	Deschutes R 13.0028	Minter Cr Hatchery	WDFW		59	CWT00050063	AD
5	2-Jul-21	185966	2018	R-Harrison R	H-Chehalis River H	CDFO		59	CWT00050064	AD
5	2-Jul-21	184474	2017	R-Chilliwack R	H-Chilliwack River H	CDFO		72	CWT00050065	AD
5	2-Jul-21	637350	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		49	CWT00050066	AD
5	2-Jul-21	211317	2018	Co Line Pd2 03.1853B	Marblemount Hatchery	WDFW		58	CWT00087519	AD
5	2-Jul-21	637378	2017	Wenatchee R 45.0030		WDFW		57	CWT00087541	AD
5	2-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		59	CWT00087764	AD
5	2-Jul-21	637345	2017	Columbia Near Wells	Wells Hatchery	DCPUD		56	CWT00087767	AD
5	2-Jul-21	184295	2016	R-Cowichan R	H-Cowichan River H	CDFO		67	CWT00087768	AD
5	2-Jul-21	183480	2018	R-Puntledge R	H-Puntledge River H	CDFO		60	CWT00087820	AD
5	3-Jul-21	185188	2018	R-Harrison R	H-Chehalis River H	CDFO		56	CWT00048937	AD
5	3-Jul-21	185895	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		59	CWT00048939	AD
5	3-Jul-21	185894	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		56	CWT00048970	AD
5	3-Jul-21	637441	2018	Washougal R 28.0159	Washougal Hatchery	WDFW		55	CWT00048986	AD
5	3-Jul-21	637411	2018	Tanner Cr (Bnville)	Bonneville Hatchery	ODFW		51	CWT00048987	AD
5	3-Jul-21	185187	2018	R-Harrison R	H-Chehalis River H	CDFO		57	CWT00050039	AD
5	3-Jul-21	56161	2018	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56019	52	CWT00050040	AD
5	3-Jul-21	637439	2018	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		52	CWT00050041	AD
5	3-Jul-21	185894	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		59	CWT00087542	AD
5	3-Jul-21	185895	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		55	CWT00087559	AD
5	3-Jul-21	637227	2017	Wallace R 07.0940	Wallace R Hatchery	WDFW		75	CWT00087769	AD
5	3-Jul-21	637335	2017	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		61	CWT00087770	AD

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5	3-Jul-21	637173	2016	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		69	CWT00087787	AD
5	3-Jul-21	185966	2018	R-Harrison R	H-Chehalis River H	CDFO		56	CWT00087788	AD
5	3-Jul-21	91186	2017	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW		62	CWT00087789	AD
5	3-Jul-21	56161	2018	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56019	73	CWT00087802	AD
5	3-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	53	CWT00087803	AD
5	3-Jul-21	185896	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		61	CWT00087804	AD
5	3-Jul-21	637261	2017	Kalama R 27.0002	Kalama Falls Hatchery	WDFW		62	CWT00087805	AD
5	3-Jul-21	185780	2018	R-Burrard In	H-Sandy Cove Seapen	CDFO		68	CWT00087817	AD
5	3-Jul-21	185895	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		56	CWT00087818	AD
5	3-Jul-21	220509	2018	Captain Johns Pd	Lyons Ferry Hatchery	NPT		62	CWT00087819	AD
5	4-Jul-21	185895	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		58	CWT00048944	AD
5	4-Jul-21	185780	2018	R-Burrard In	H-Sandy Cove Seapen	CDFO		58	CWT00048945	AD
5	4-Jul-21	637311	2017	Sammamish R 08.0057	Issaquah Hatchery	WDFW		71	CWT00048946	AD
5	4-Jul-21	185779	2018	R-Burrard In	H-Sandy Cove Seapen	CDFO		60	CWT00048947	AD
5	4-Jul-21	185779	2018	R-Burrard In	H-Sandy Cove Seapen	CDFO		60	CWT00048948	AD
5	4-Jul-21	185896	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		63	CWT00050042	AD
5	4-Jul-21	185187	2018	R-Harrison R	H-Chehalis River H	CDFO		55	CWT00050044	AD
5	4-Jul-21	637506	2018	East Sound Bay (San)	Glenwood Springs	COOP		58	CWT00050045	AD
5	4-Jul-21	211315	2018	Skookum Cr 01.0273	Skookum Cr Hatchery	LUMMI		57	CWT00050046	AD
5	4-Jul-21	56161	2018	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56019	61	CWT00087823	AD
5	4-Jul-21	185780	2018	R-Burrard In	H-Sandy Cove Seapen	CDFO		55	CWT00087824	AD
5	4-Jul-21	90569	2018	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW		57	CWT00087825	AD
5	4-Jul-21	91377	2018	Springs Cr 36.0114	Ringold Springs Hatchery	WDFW		53	CWT00087900	AD
5	8-Jul-21	91286	2018	Hammer Crk:Salmon R	Irrigon Hatchery	IDFG		66	CWT00048951	AD
5	8-Jul-21	211353	2018	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	211352	59	CWT00087520	AD
5	9-Jul-21	185894	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		54	CWT00050028	AD
5	9-Jul-21	637497	2018	Clark Cr 03.1421	Marblemount Hatchery	WDFW		57	CWT00050029	AD
5	9-Jul-21	211336	2018	Nooksack -Sf 01.0246	Skookum Cr Hatchery	LUMMI		59	CWT00087502	AD
5	9-Jul-21	211280	2017	County Line Cr3.2363	Marblemount Hatchery	WDFW		80	CWT00087503	AD
5	9-Jul-21	185896	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		62	CWT00087511	AD
5	9-Jul-21	184474	2017	R-Chilliwack R	H-Chilliwack River H	CDFO		70	CWT00087512	AD

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5	9-Jul-21	90569	2018	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW		77	CWT00087556	AD
5	9-Jul-21	56163	2018	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56025	68	CWT00087557	AD
5	9-Jul-21	91208	2017	Youngs R & Bay	Cedc Net Pens	CCF		66	CWT00087562	AD
5	9-Jul-21	91228	2017	Bull Run R	Sandy Hatchery	ODFW		69	CWT00087586	AD
5	9-Jul-21	185782	2018	R-Capilano R	H-Capilano River H	CDFO		59	CWT00087775	AD
5	9-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		64	CWT00087828	AD
5	9-Jul-21	185894	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		61	CWT00087897	AD
5	10-Jul-21	637241	2017	Columbia Near Wells	Wells Hatchery	DCPUD		62	CWT00048955	AD
5	10-Jul-21	220514	2018	Snake R @Pittsburg L	Lyons Ferry Hatchery	NPT		63	CWT00048956	AD
5	10-Jul-21	90569	2018	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW		68	CWT00048960	AD
5	10-Jul-21	637375	2017	Purdy Cr 16.0005	George Adams Hatchery	WDFW		62	CWT00048961	AD
5	10-Jul-21	91336	2018	Elk R	Elk R Hatchery	ODFW		59	CWT00087436	AD
5	10-Jul-21	185185	2018	R-Harrison R	H-Chehalis River H	CDFO		59	CWT00087437	AD
5	10-Jul-21	637234	2017	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW		60	CWT00087517	AD
5	10-Jul-21	185090	2017	R-Shuswap R Low	H-Shuswap River, Middle,	CDFO		77	CWT00087545	AD
5	10-Jul-21	185894	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		62	CWT00087600	AD
5	10-Jul-21	211330	2018	Stillaguamish R -Sf	Brenner Hatchery	STIL		52	CWT00087786	AD
5	10-Jul-21	90597	2018	Klaskanine R N Fk	Klaskanine Hatchery	ODFW		60	CWT00087829	AD
5	10-Jul-21	637258	2017	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		90	CWT00087830	AD
5	10-Jul-21	211313	2018	Whitehorse Springs	Fortson Pond Net Pen	STIL		58	CWT00087831	AD
5	10-Jul-21	211337	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		63	CWT00087832	AD
5	12-Jul-21	185894	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		55	CWT00087504	AD
5	12-Jul-21	185895	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		50	CWT00087509	AD
5	12-Jul-21	185896	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		66	CWT00087527	AD
5	12-Jul-21	184475	2017	R-Chilliwack R	H-Chilliwack River H	CDFO		79	CWT00087530	AD
5	12-Jul-21	637225	2017	Friday Cr 03.0017	Samish Hatchery	WDFW		65	CWT00087532	AD
5	12-Jul-21	637337	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		62	CWT00087540	AD
5	12-Jul-21	184475	2017	R-Chilliwack R	H-Chilliwack River H	CDFO		64	CWT00087584	AD
5	12-Jul-21	185098	2017	R-Harrison R	H-Chehalis River H	CDFO		75	CWT00087585	AD
5	12-Jul-21	185188	2018	R-Harrison R	H-Chehalis River H	CDFO		65	CWT00087763	AD
5	12-Jul-21	91298	2018	Chetco R	Elk R Hatchery	ODFW		56	OSP27649	AD
5	14-Jul-21	185296	2017	R-Harrison R	H-Chehalis River H	CDFO		61	CWT00050048	AD

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5	14-Jul-21	211330	2018	Stillaguamish R -Sf	Brenner Hatchery	STIL		54	CWT00050049	AD
5	14-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	47	CWT00050050	AD
5	14-Jul-21	211315	2018	Skookum Cr 01.0273	Skookum Cr Hatchery	LUMMI		80	CWT00087121	AD
5	14-Jul-21	637603	2018	Lyons Ferry Rel.Site	Lyons Ferry Hatchery	WDFW		44	CWT00087122	AD
5	14-Jul-21	56278	2019	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56387	42	CWT00087123	AD
5	14-Jul-21	185894	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		71	CWT00087302	AD
5	14-Jul-21	220509	2018	Captain Johns Pd	Lyons Ferry Hatchery	NPT		59	CWT00087304	AD
5	14-Jul-21	185896	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		59	CWT00087305	AD
5	14-Jul-21	185895	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		60	CWT00087306	AD
5	14-Jul-21	211331	2018	Lummi Hatchery -Pond	Lummi Sea Ponds	LUMMI		62	CWT00087307	AD
5	14-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		56	CWT00087309	AD
5	14-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	49	CWT00087434	UM
5	14-Jul-21	91349	2018	Elk R	Elk R Hatchery	ODFW		61	CWT00087523	AD
5	14-Jul-21	185896	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		63	CWT00087524	AD
5	14-Jul-21	185186	2018	R-Harrison R	H-Chehalis River H	CDFO		56	CWT00087583	AD
5	15-Jul-21	185966	2018	R-Harrison R	H-Chehalis River H	CDFO		58	CWT00087101	AD
5	15-Jul-21	220510	2018	Captain Johns Pd	Lyons Ferry Hatchery	NPT		63	CWT00087102	AD
5	15-Jul-21	637352	2018	Friday Cr 03.0017	Samish Hatchery	WDFW		70	CWT00087308	AD
5	15-Jul-21	185779	2018	R-Burrard In	H-Sandy Cove Seapen	CDFO		75	CWT00087311	AD
5	15-Jul-21	185781	2018	R-Capilano R	H-Capilano River H	CDFO		71	CWT00087313	AD
5	15-Jul-21	637411	2018	Tanner Cr (Bnville)	Bonneville Hatchery	ODFW		53	CWT00087507	AD
5	15-Jul-21	185894	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		57	CWT00087508	AD
5	15-Jul-21	185895	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		63	CWT00087521	AD
5	18-Jul-21	637371	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW			CWT00048978	AD
5	18-Jul-21	185966	2018	R-Harrison R	H-Chehalis River H	CDFO		55	CWT00048980	AD
5	18-Jul-21	637361	2017	Col R @ Priest Rapids	Priest Rapids Hatchery	WDFW		59	CWT00050051	AD
5	18-Jul-21	637505	2018	Cowlitz R 26.0002	Cowlitz Salmon Hatchery	WDFW		44	CWT00050052	AD
5	18-Jul-21	637441	2018	Washougal R 28.0159	Washougal Hatchery	WDFW		64	CWT00087105	AD
5	18-Jul-21	185894	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		71	CWT00087314	AD

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5	18-Jul-21	185187	2018	R-Harrison R	H-Chehalis River H	CDFO		64	CWT00087315	AD
5	18-Jul-21	185896	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		62	CWT00087317	AD
5	18-Jul-21	185894	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		64	CWT00087318	AD
5	18-Jul-21	185895	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		65	CWT00087835	AD
5	18-Jul-21	211315	2018	Skookum Cr 01.0273	Skookum Cr Hatchery	LUMMI		65	CWT00087836	AD

**Appendix 6** Coded-wire tag (CWT) recoveries from the 2021 Chinook MSF in Marine Area 6. Note: Not all tags have been processed before 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-21	1901010108	2017	Yakima R-Low 37.0002	Marion Yakama Trib Hat	YAKA		70	CWT00046401	AD
6	2-Jul-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		66	CWT00046402	AD
6	2-Jul-21	637229	2017	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		67	CWT00046403	AD
6	2-Jul-21	211337	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		61	CWT00047491	AD
6	2-Jul-21	637377	2017	Elwha R 18.0272	Elwha Hatchery	WDFW		84	CWT00049730	AD
6	2-Jul-21	185896	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		63	CWT00088001	AD
6	2-Jul-21	185781	2018	R-Capilano R	H-Capilano River H	CDFO		64	CWT00088002	AD
6	2-Jul-21	637258	2017	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		65	CWT00088003	AD
6	2-Jul-21	637350	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		61	CWT00088004	AD
6	2-Jul-21	211275	2017	Grovers Cr 15.0299	Grovers Cr Hatchery	SUQ	637249; 211276; 637248	57	CWT00088005	AD
6	3-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		61	CWT00044113	AD
6	3-Jul-21	637377	2017	Elwha R 18.0272	Elwha Hatchery	WDFW		84	CWT00045184	AD
6	3-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		63	CWT00046404	AD
6	3-Jul-21	211343	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		54	CWT00046405	AD
6	3-Jul-21	637352	2018	Friday Cr 03.0017	Samish Hatchery	WDFW		55	CWT00047421	AD
6	3-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	65	CWT00047422	AD
6	3-Jul-21	637225	2017	Friday Cr 03.0017	Samish Hatchery	WDFW		62	CWT00047490	AD
6	3-Jul-21	91177	2018	Umatilla R	Umatilla Hatchery	ODFW		54	CWT00047493	AD
6	3-Jul-21	637229	2017	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		74	CWT00049731	AD
6	3-Jul-21	637230	2017	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		73	CWT00049732	AD
6	3-Jul-21	91285	2018	Tanner Cr (Bnville)	Bonneville Hatchery	ODFW		65	CWT00088006	AD
6	3-Jul-21	637232	2017	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		60	CWT00088007	AD
6	3-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		57	CWT00088008	UD
6	4-Jul-21	211275	2017	Grovers Cr 15.0299	Grovers Cr Hatchery	SUQ	637249; 211276; 637248	65	CWT00045169	AD
6	4-Jul-21	637380	2017	Minter Cr Tr 15.0051	Hupp Springs Rearing	WDFW		71	CWT00046406	AD
6	4-Jul-21	637337	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		56	CWT00046407	AD



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6	4-Jul-21	185894	2018	R-Chilliwack R	H-Chilliwack River H	CDFO			CWT00047423	AD
6	4-Jul-21	55827	2017	Spring Cr 29.0159	Spring Cr Nfh	USFWS	55826	87	CWT00049768	AD
6	4-Jul-21	185772	2017	R-Puntledge R	H-Puntledge River H	CDFO		80	CWT00088010	AD
6	10-Jul-21	56161	2018	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56019	66	CWT00045161	AD
6	10-Jul-21	61479	2017	San Joaq Shrm Isl Net Pen	Mok R Fish Ins	CDFW		72	CWT00045168	AD
6	10-Jul-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		59	CWT00045170	AD
6	10-Jul-21	185975	2018	R-Big Qualicum R	H-Big Qualicum River H	CDFO		65	CWT00045183	AD
6	10-Jul-21	56161	2018	Spring Cr 29.0159	Spring Cr Nfh	USFWS	56019	76	CWT00046408	AD
6	10-Jul-21	211285	2017	Stillaguamish R -Sf	Brenner Hatchery	STIL		66	CWT00047424	AD
6	10-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		61	CWT00049733	AD
6	10-Jul-21	185894	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		71	CWT00049734	AD
6	10-Jul-21	637232	2017	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		65	CWT00049735	AD
6	12-Jul-21	637230	2017	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		84	CWT00045162	AD
6	12-Jul-21	637352	2018	Friday Cr 03.0017	Samish Hatchery	WDFW		61	CWT00045171	AD
6	12-Jul-21	211343	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		60	CWT00047425	AD
6	12-Jul-21	637444	2018	Gorst Cr 15.0216	Gorst Cr Rearing Pnd	SUQ		72	CWT00047426	AD
6	12-Jul-21	637234	2017	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW			CWT00048608	AD
6	12-Jul-21	637375	2017	Purdy Cr 16.0005	George Adams Hatchery	WDFW		69	CWT00048610	AD
6	12-Jul-21	185292	2017	R-Chilliwack R	H-Chilliwack River H	CDFO		84	CWT00048612	AD
6	12-Jul-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		58	CWT00049736	AD
6	14-Jul-21	637230	2017	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		47	CWT00045172	UM
6	14-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		56	CWT00047427	AD
6	14-Jul-21	211343	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ			CWT00047428	AD
6	14-Jul-21	637230	2017	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		59	CWT00047488	AD
6	17-Jul-21	637450	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		66	CWT00045163	AD
6	17-Jul-21	637369	2018	Deschutes R 13.0028	Minter Cr Hatchery	WDFW		62	CWT00045181	AD
6	17-Jul-21	637367	2017	Methow R 48.0002	Na	DCPUD		64	CWT00048609	AD
6	17-Jul-21	637526	2018	Elwha R 18.0272	Elwha Hatchery	WDFW		62	CWT00049737	AD
6	17-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		74	CWT00049738	AD
6	17-Jul-21	637377	2017	Elwha R 18.0272	Elwha Hatchery	WDFW		97	CWT00049739	AD
6	17-Jul-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		60	CWT00049741	AD
6	17-Jul-21	637446	2018	Cascade R 03.1411	Marblemount Hatchery	WDFW		61	CWT00088013	AD

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6	17-Jul-21	211330	2018	Stillaguamish R -Sf	Brenner Hatchery	STIL		74	CWT00088014	AD
6	17-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW			CWT00088015	AD
6	18-Jul-21	637343	2018	Minter Cr Tr 15.0051	Hupp Springs Rearing	WDFW		64	CWT00040678	AD
6	18-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	75	CWT00045164	AD
6	18-Jul-21	637234	2017	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW		63	CWT00045166	AD
6	18-Jul-21	637375	2017	Purdy Cr 16.0005	George Adams Hatchery	WDFW		61	CWT00045167	AD
6	18-Jul-21	637335	2017	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		60	CWT00045182	AD
6	18-Jul-21	211321	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211320; 637438; 637437	60	CWT00047429	AD
6	18-Jul-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW			CWT00047430	AD
6	18-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443		CWT00047431	AD
6	18-Jul-21	211337	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		57	CWT00047487	AD
6	18-Jul-21	184887	2018	R-Cowichan R	H-Cowichan River H	CDFO			CWT00047593	AD
6	18-Jul-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		55	CWT00047594	AD
6	18-Jul-21	637371	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		54	CWT00047599	AD
6	18-Jul-21	637337	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		64	CWT00047600	AD
6	18-Jul-21	637506	2018	East Sound Bay (San)	Glenwood Springs	COOP		59	CWT00049742	AD
6	18-Jul-21	637375	2017	Purdy Cr 16.0005	George Adams Hatchery	WDFW		60	CWT00049743	AD
6	18-Jul-21	637439	2018	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		59	CWT00049744	AD
6	19-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	65	CWT00047432	AD
6	19-Jul-21	637337	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW			CWT00047595	AD
6	19-Jul-21	90569	2018	Big Cr (Lwr Col R)	Big Cr Hatchery	ODFW		71	CWT00049746	AD
6	19-Jul-21	637232	2017	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		61	CWT00088016	AD
6	20-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		52	CWT00040153	AD
6	20-Jul-21	211275	2017	Grovers Cr 15.0299	Grovers Cr Hatchery	SUQ	637249; 211276; 637248	81	CWT00043440	AD
6	20-Jul-21	637258	2017	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		76	CWT00045165	AD

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6	20-Jul-21	211353	2018	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	211352	60	CWT00047433	AD
6	20-Jul-21	211353	2018	Tulalip Cr 07.0001	Bernie Gobin Hatch	TULA	211352	61	CWT00048700	AD
6	20-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		64	CWT00049747	AD
6	20-Jul-21	637526	2018	Elwha R 18.0272	Elwha Hatchery	WDFW		61	CWT00052498	AD
6	20-Jul-21	637439	2018	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		51	CWT00052581	AD
6	24-Jul-21	637444	2018	Gorst Cr 15.0216	Gorst Cr Rearing Pnd	SUQ		64	CWT00042781	AD
6	24-Jul-21	637377	2017	Elwha R 18.0272	Elwha Hatchery	WDFW		85	CWT00049748	AD
6	26-Jul-21	637352	2018	Friday Cr 03.0017	Samish Hatchery	WDFW		57	CWT00043049	AD
6	27-Jul-21	211262	2017	Sol Duc R 20.0096	Solduc Hatchery	QUIL		67	CWT00049749	AD
6	29-Jul-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		62	CWT00042782	AD
6	29-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	65	CWT00043794	AD
6	29-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	71	CWT00043795	AD
6	29-Jul-21	637335	2017	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		64	CWT00045177	AD
6	29-Jul-21	211343	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		69	CWT00047435	AD
6	29-Jul-21	637258	2017	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		84	CWT00047436	AD
6	29-Jul-21	637352	2018	Friday Cr 03.0017	Samish Hatchery	WDFW		64	CWT00047437	AD
6	29-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	62	CWT00049700	AD
6	29-Jul-21	637230	2017	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		82	CWT00049750	AD
6	29-Jul-21	637232	2017	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		79	CWT00052187	AD
6	29-Jul-21	637439	2018	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		72	CWT00052192	AD
6	31-Jul-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		68	CWT00042783	AD
6	31-Jul-21	637258	2017	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		62	CWT00043441	AD
6	31-Jul-21	637236	2017	North Nemah R24.0460	Nemah Hatchery	WDFW		78	CWT00043797	AD
6	31-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		69	CWT00045174	AD
6	31-Jul-21	637526	2018	Elwha R 18.0272	Elwha Hatchery	WDFW		65	CWT00045178	AD
6	31-Jul-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		64	CWT00046509	AD
6	31-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	62	CWT00047438	AD

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6	31-Jul-21	211275	2017	Grovers Cr 15.0299	Grovers Cr Hatchery	SUQ	637249; 211276; 637248	83	CWT00047439	AD
6	31-Jul-21	637446	2018	Cascade R 03.1411	Marblemount Hatchery	WDFW		55	CWT00047440	AD
6	31-Jul-21	637371	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		61	CWT00047441	AD
6	31-Jul-21	637258	2017	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		82	CWT00047442	AD
6	31-Jul-21	637377	2017	Elwha R 18.0272	Elwha Hatchery	WDFW		84	CWT00049688	AD
6	31-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	67	CWT00052495	AD
6	31-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		68	CWT00052582	AD
6	1-Aug-21	220266	2017	Npt Hatchery	Npt Hatchery	NPT		98	CWT00040740	AD
6	1-Aug-21	211337	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		75	CWT00045176	AD
6	1-Aug-21	637444	2018	Gorst Cr 15.0216	Gorst Cr Rearing Pnd	SUQ		67	CWT00045179	AD
6	1-Aug-21	185895	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		72	CWT00045450	AD
6	1-Aug-21	637230	2017	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		73	CWT00047443	AD
6	1-Aug-21	637439	2018	Minter Cr 15.0048	Minter Cr Hatchery	WDFW			CWT00047444	AD
6	1-Aug-21	211320	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211321; 637438; 637437	67	CWT00049751	AD
6	1-Aug-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		71	CWT00052191	AD
6	2-Aug-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		66	CWT00049753	AD
6	2-Aug-21	211229	2016	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		67	CWT00049754	AD

**Appendix 7** Coded-wire tag (CWT) recoveries from the 2021 Chinook MSF in Marine Area 7. Note: Not all tags have been processed before 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	2-Jul-21	185298	2017	R-Chilko R	H-Chehalis River H	CDFO		73	CWT00040118	AD
7	2-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	66	CWT00040162	AD
7	2-Jul-21	637227	2017	Wallace R 07.0940	Wallace R Hatchery	WDFW		80	CWT00040163	AD
7	2-Jul-21	211315	2018	Skookum Cr 01.0273	Skookum Cr Hatchery	LUMMI		68	CWT00040613	AD
7	2-Jul-21	637393	2017	East Sound Bay (San)	Glenwood Springs	COOP		77	CWT00040614	AD
7	2-Jul-21	637450	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		65	CWT00040768	AD
7	2-Jul-21	637232	2017	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		80	CWT00040770	AD
7	2-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		57	CWT00040771	AD
7	2-Jul-21	211290	2017	Skookum Cr 01.0273	Skookum Cr Hatchery	LUMMI		72	CWT00040772	AD
7	2-Jul-21	211285	2017	Stillaguamish R -Sf	Brenner Hatchery	STIL		56	CWT00043703	AD
7	2-Jul-21	183483	2017	R-Nicola R	H-Spius Creek H	CDFO		64	CWT00043704	AD
7	2-Jul-21	185185	2018	R-Harrison R	H-Chehalis River H	CDFO		67	CWT00043727	AD
7	2-Jul-21	637451	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		60	CWT00043728	AD
7	2-Jul-21	637246	2018	Finch Cr 16.0222	Hoodspport Hatchery	WDFW		70	CWT00043729	AD
7	3-Jul-21	637230	2017	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		72	CWT00040308	AD
7	3-Jul-21	637225	2017	Friday Cr 03.0017	Samish Hatchery	WDFW		76	CWT00040713	AD
7	3-Jul-21	637348	2018	Clark Cr 03.1421	Marblemount Hatchery	WDFW		63	CWT00043720	AD
7	3-Jul-21	185178	2018	R-Cowichan R	H-Cowichan River H	CDFO		64	CWT00043726	AD
7	3-Jul-21	637229	2017	Finch Cr 16.0222	Hoodspport Hatchery	WDFW		78	CWT00043730	AD
7	3-Jul-21	637234	2017	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW		79	CWT00043731	AD
7	3-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		63	CWT00043732	AD
7	3-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		61	CWT00043734	AD
7	3-Jul-21	637450	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		53	CWT00043766	AD
7	3-Jul-21	211321	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211320; 637438; 637437	63	CWT00043833	AD

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7	3-Jul-21	637352	2018	Friday Cr 03.0017	Samish Hatchery	WDFW		69	CWT00043834	AD
7	3-Jul-21	637350	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		64	CWT00043874	AD
7	3-Jul-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		59	CWT00044114	AD
7	3-Jul-21	637393	2017	East Sound Bay (San)	Glenwood Springs	COOP		67	CWT00044116	AD
7	3-Jul-21	211336	2018	Nooksack -Sf 01.0246	Skookum Cr Hatchery	LUMMI		71	CWT00044331	AD
7	3-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	68	CWT00044334	AD
7	4-Jul-21	637335	2017	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		76	CWT00043835	AD
7	5-Jul-21	211320	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211321; 637438; 637437	65	CWT00040157	AD
7	5-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		64	CWT00040310	AD
7	5-Jul-21	185781	2018	R-Capilano R	H-Capilano River H	CDFO		62	CWT00040311	AD
7	5-Jul-21	637227	2017	Wallace R 07.0940	Wallace R Hatchery	WDFW		80	CWT00040774	AD
7	5-Jul-21	637369	2018	Deschutes R 13.0028	Minter Cr Hatchery	WDFW		67	CWT00043722	AD
7	5-Jul-21	637379	2017	Chelan R 47.0052	Chelan Falls Hatchery	WDFW		70	CWT00043723	AD
7	5-Jul-21	211321	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211320; 637438; 637437	66	CWT00043733	AD
7	5-Jul-21	637350	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		75	CWT00043749	AD
7	5-Jul-21	637227	2017	Wallace R 07.0940	Wallace R Hatchery	WDFW		78	CWT00043765	AD
7	5-Jul-21	185780	2018	R-Burrard In	H-Sandy Cove Seapen	CDFO		66	CWT00044106	AD
7	5-Jul-21	637369	2018	Deschutes R 13.0028	Minter Cr Hatchery	WDFW		59	CWT00044112	AD

**Appendix 8** Coded-wire tag (CWT) recoveries from the 2021 Chinook MSF in Marine Area 9. Note: Not all tags have been processed before 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	17-Jul-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		50	CWT00038339	AD
9	17-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		55	CWT00038592	AD
9	17-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		55	CWT00038593	AD
9	17-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	64	CWT00038594	AD
9	17-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		60	CWT00039549	AD
9	17-Jul-21	637446	2018	Cascade R 03.1411	Marblemount Hatchery	WDFW		57	CWT00039551	AD
9	17-Jul-21	211321	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211320; 637438; 637437	55	CWT00039552	AD
9	17-Jul-21	637444	2018	Gorst Cr 15.0216	Gorst Cr Rearing Pnd	SUQ		59	CWT00039562	AD
9	17-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		65	CWT00039563	AD
9	17-Jul-21	637337	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		54	CWT00039574	AD
9	17-Jul-21	637450	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		61	CWT00039575	AD
9	17-Jul-21	211343	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		65	CWT00039576	AD
9	17-Jul-21	211275	2017	Grovers Cr 15.0299	Grovers Cr Hatchery	SUQ	637249; 211276; 637248	69	CWT00039578	AD
9	17-Jul-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		54	CWT00041109	AD
9	17-Jul-21	211337	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		70	CWT00042243	AD
9	17-Jul-21	180282	2017	R-Shovelnose Cr	H-Tenderfoot Creek H	CDFO		72	CWT00042245	AD
9	18-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	71	CWT00038572	AD
9	18-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		55	CWT00038573	AD
9	18-Jul-21	637444	2018	Gorst Cr 15.0216	Gorst Cr Rearing Pnd	SUQ		66	CWT00038587	AD
9	18-Jul-21	637337	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		58	CWT00038597	AD
9	18-Jul-21	637451	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		56	CWT00038598	AD
9	18-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442;	68	CWT00038599	AD

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							637443			
9	18-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		56	CWT00038752	AD
9	18-Jul-21	637337	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		55	CWT00038801	AD
9	18-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	63	CWT00039554	AD
9	18-Jul-21	637337	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		54	CWT00039555	AD
9	18-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		54	CWT00039569	AD
9	18-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		55	CWT00039570	AD
9	18-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		84	CWT00039695	AD
9	18-Jul-21	637439	2018	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		65	CWT00039697	AD
9	18-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	57	CWT00040720	AD
9	18-Jul-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		56	CWT00041110	AD
9	18-Jul-21	637369	2018	Deschutes R 13.0028	Minter Cr Hatchery	WDFW		69	CWT00041163	AD
9	18-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		60	CWT00041164	AD
9	18-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	66	CWT00042068	AD
9	18-Jul-21	185188	2018	R-Harrison R	H-Chehalis River H	CDFO		79	CWT00042070	AD
9	18-Jul-21	637350	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		65	CWT00043501	AD
9	18-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		65	CWT00043502	AD
9	18-Jul-21	637225	2017	Friday Cr 03.0017	Samish Hatchery	WDFW			CWT00043503	AD
9	18-Jul-21	211342	2018	Mcallister Springs Hatch	Mcallister Springs Hatch	NISQ		55	CWT00043505	AD
9	18-Jul-21	211337	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		62	CWT00043539	AD
9	18-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443		CWT00043540	AD
9	18-Jul-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		68	CWT00044128	AD
9	18-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		59	CWT00046409	AD
9	19-Jul-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		60	CWT00038755	AD
9	19-Jul-21	637337	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		55	CWT00038756	AD



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9	19-Jul-21	185673	2017	R-Chilko R	H-Inch Creek H	CDFO		70	CWT00038802	AD
9	19-Jul-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		61	CWT00038813	AD
9	19-Jul-21	637371	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		65	CWT00038963	AD
9	19-Jul-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		56	CWT00039581	AD
9	19-Jul-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		57	CWT00041772	AD
9	19-Jul-21	637234	2017	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW		74	CWT00042071	AD
9	19-Jul-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		69	CWT00043447	AD
9	19-Jul-21	637229	2017	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		74	CWT00044105	AD
9	20-Jul-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		63	CWT00038964	AD
9	20-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		58	CWT00041166	AD
9	20-Jul-21	637439	2018	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		64	CWT00041774	AD
9	20-Jul-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		60	CWT00043402	AD
9	21-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	68	CWT00038803	AD
9	23-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		59	CWT00039558	AD
9	23-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		64	CWT00039559	AD
9	24-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	58	CWT00038800	AD
9	24-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		43	CWT00038810	AD
9	24-Jul-21	637232	2017	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		65	CWT00038811	AD
9	24-Jul-21	637450	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		66	CWT00038812	AD
9	24-Jul-21	637439	2018	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		61	CWT00041775	AD
9	24-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		61	CWT00041776	AD
9	25-Jul-21	637232	2017	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		74	CWT00038814	AD
9	25-Jul-21	211317	2018	Co Line Pd2 03.1853B	Marblemount Hatchery	WDFW		57	CWT00038968	AD
9	25-Jul-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		58	CWT00039557	AD
9	25-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		62	CWT00046410	AD
9	25-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		56	CWT00046411	AD
9	26-Jul-21	637439	2018	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		65	CWT00038577	AD
9	26-Jul-21	637230	2017	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		66	CWT00046412	AD

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9	27-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	77	CWT00038797	AD
9	27-Jul-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		61	CWT00041169	AD
9	27-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		54	CWT00046413	AD
9	28-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	65	CWT00038580	AD
9	29-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		64	CWT00038816	AD
9	29-Jul-21	211317	2018	Co Line Pd2 03.1853B	Marblemount Hatchery	WDFW		70	CWT00038970	AD
9	29-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		65	CWT00043410	AD
9	31-Jul-21	637444	2018	Gorst Cr 15.0216	Gorst Cr Rearing Pnd	SUQ		61	CWT00039631	AD
9	31-Jul-21	637450	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		57	CWT00039632	AD
9	31-Jul-21	637167	2016	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		78	CWT00043409	AD
9	31-Jul-21	211276	2017	Grovers Cr 15.0299	Grovers Cr Hatchery	SUQ	637249; 211275; 637248	80	CWT00046415	AD
9	1-Aug-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	60	CWT00038761	AD
9	1-Aug-21	637439	2018	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		70	CWT00038762	AD
9	1-Aug-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		56	CWT00038948	AD
9	1-Aug-21	211321	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211320; 637438; 637437	60	CWT00038973	AD
9	1-Aug-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	58	CWT00038974	AD
9	1-Aug-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		63	CWT00039630	AD
9	1-Aug-21	211321	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211320; 637438; 637437	76	CWT00041170	AD
9	1-Aug-21	211321	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211320; 637438; 637437	60	CWT00041174	AD
9	1-Aug-21	211320	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211321;	59	CWT00041756	AD

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							637438; 637437			
9	1-Aug-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		51	CWT00041780	AD
9	1-Aug-21	637444	2018	Gorst Cr 15.0216	Gorst Cr Rearing Pnd	SUQ		65	CWT00042072	AD
9	1-Aug-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		56	CWT00042073	AD
9	1-Aug-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		64	CWT00042074	AD
9	1-Aug-21	211280	2017	County Line Cr3.2363	Marblemount Hatchery	WDFW		88	CWT00043408	AD
9	1-Aug-21	637526	2018	Elwha R 18.0272	Elwha Hatchery	WDFW		66	CWT00044107	AD
9	2-Aug-21	637337	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		55	CWT00038760	AD
9	2-Aug-21	637627	2019	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		41	CWT00038763	AD
9	2-Aug-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		52	CWT00038819	AD
9	2-Aug-21	637509	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		62	CWT00038978	AD
9	2-Aug-21	211321	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211320; 637438; 637437	70	CWT00039751	AD
9	2-Aug-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		59	CWT00046416	AD
9	4-Aug-21	637444	2018	Gorst Cr 15.0216	Gorst Cr Rearing Pnd	SUQ		60	CWT00038706	AD
9	4-Aug-21	211317	2018	Co Line Pd2 03.1853B	Marblemount Hatchery	WDFW		52	CWT00038950	AD
9	4-Aug-21	637310	2017	Portage Bay/Ship Cnl	Issaquah Hatchery	WDFW		74	CWT00038976	AD
9	4-Aug-21	211280	2017	County Line Cr3.2363	Marblemount Hatchery	WDFW		82	CWT00039596	AD
9	4-Aug-21	637234	2017	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW		67	CWT00043407	AD
9	5-Aug-21	211285	2017	Stillaguamish R -Sf	Brenner Hatchery	STIL		80	CWT00043403	AD
9	5-Aug-21	211321	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211320; 637438; 637437	58	CWT00043436	AD

**Appendix 9** Coded-wire tag (CWT) recoveries from the 2021 Chinook MSF in Marine Area 10. Note: Not all tags have been processed before 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	17-Jul-21	637369	2018	Deschutes R 13.0028	Minter Cr Hatchery	WDFW		65	CWT00039573	AD
10	18-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	67	CWT00038582	AD
10	19-Jul-21	637451	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		60	CWT00039579	AD
10	20-Jul-21	211339	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	637775; 211333; 637720	57	CWT00039303	AD
10	20-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	55	CWT00039584	AD
10	23-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		59	CWT00038576	AD
10	24-Jul-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		56	CWT00039304	AD
10	24-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	67	CWT00039305	AD
10	24-Jul-21	637371	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		58	CWT00041745	AD
10	26-Jul-21	637234	2017	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW		81	81199	AD
10	26-Jul-21	211149	2017	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		71	CWT00038566	AD
10	26-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	66	CWT00039308	AD
10	26-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		54	CWT00039514	AD
10	26-Jul-21	637232	2017	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		80	CWT00039586	AD
10	27-Jul-21	637343	2018	Minter Cr Tr 15.0051	Hupp Springs Rearing	WDFW		53	CWT00038798	UM
10	27-Jul-21	637499	2019	Minter Cr Tr 15.0051	Hupp Springs Rearing	WDFW		43	CWT00041760	UM
10	29-Jul-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		65	CWT00038568	AD
10	29-Jul-21	637258	2017	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		68	CWT00039309	AD
10	29-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	56	CWT00041759	AD

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10	31-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	72	CWT00038743	AD
10	31-Jul-21	637439	2018	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		65	CWT00038744	AD
10	31-Jul-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		62	CWT00038852	AD
10	31-Jul-21	637369	2018	Deschutes R 13.0028	Minter Cr Hatchery	WDFW		63	CWT00038854	AD
10	31-Jul-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	66	CWT00039310	AD
10	31-Jul-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	63	CWT00039311	AD
10	31-Jul-21	637227	2017	Wallace R 07.0940	Wallace R Hatchery	WDFW		87	CWT00041758	AD
10	1-Aug-21	637229	2017	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		63	CWT00038570	AD
10	1-Aug-21	637443	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 211323; 637442	76	CWT00038702	AD
10	1-Aug-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	72	CWT00038703	AD
10	1-Aug-21	637439	2018	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		61	CWT00038704	AD
10	1-Aug-21	637509	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		59	CWT00038742	AD
10	1-Aug-21	637258	2017	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		67	CWT00038750	AD
10	1-Aug-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		56	CWT00038859	AD
10	1-Aug-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	62	CWT00039591	AD
10	1-Aug-21	211333	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211339; 637775; 637720	51	CWT00039592	AD
10	1-Aug-21	637337	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		60	CWT00039593	AD
10	1-Aug-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		57	CWT00041171	AD
10	1-Aug-21	211275	2017	Grovers Cr 15.0299	Grovers Cr Hatchery	SUQ	637249; 211276; 637248	83	CWT00041173	AD
10	1-Aug-21	637246	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		65	CWT00041763	AD
10	2-Aug-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322;	65	CWT00038747	AD

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							637442; 637443			
10	2-Aug-21	637337	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		60	CWT00038862	AD
10	2-Aug-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	63	CWT00038863	AD
10	2-Aug-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	79	CWT00039594	AD
10	2-Aug-21	211339	2019	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	637775; 211333; 637720	53	CWT00039595	AD
10	2-Aug-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	68	CWT00041747	AD
10	3-Aug-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		66	CWT00038741	AD
10	3-Aug-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	56	CWT00038867	AD
10	4-Aug-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		56	CWT00039599	AD
10	5-Aug-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	67	CWT00038705	AD
10	5-Aug-21	637451	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		62	CWT00038749	AD
10	7-Aug-21	637372	2018	Elwha R 18.0272	Elwha Hatchery	WDFW		60	CWT00038547	AD
10	7-Aug-21	637234	2017	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW		64	CWT00038921	AD
10	7-Aug-21	637231	2017	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		84	CWT00088601	UM
10	7-Aug-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	62	CWT00088603	AD
10	8-Aug-21	637444	2018	Gorst Cr 15.0216	Gorst Cr Rearing Pnd	SUQ		60	CWT00038766	AD
10	8-Aug-21	637369	2018	Deschutes R 13.0028	Minter Cr Hatchery	WDFW		64	CWT00038821	AD
10	8-Aug-21	637451	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		68	CWT00038871	AD
10	8-Aug-21	637616	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		54	CWT00041765	AD
10	9-Aug-21	637412	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		78	CWT00038549	UM

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10	9-Aug-21	637310	2017	Portage Bay/Ship Cnl	Issaquah Hatchery	WDFW		76	CWT00041752	AD
10	9-Aug-21	211321	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211320; 637438; 637437	59	CWT00041753	AD
10	9-Aug-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		51	CWT00041767	AD
10	9-Aug-21	637232	2017	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		83	CWT00088602	AD
10	10-Aug-21	637232	2017	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		65	CWT00038707	AD
10	10-Aug-21	637450	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		54	CWT00041754	AD
10	13-Aug-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	NA	72306	AD
10	13-Aug-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	58	CWT00038740	AD
10	13-Aug-21	637444	2018	Gorst Cr 15.0216	Gorst Cr Rearing Pnd	SUQ		72	CWT00038927	AD
10	14-Aug-21	637369	2018	Deschutes R 13.0028	Minter Cr Hatchery	WDFW		66	CWT00038551	AD
10	14-Aug-21	211337	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		57	CWT00038708	AD
10	14-Aug-21	637371	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		67	CWT00038709	AD
10	14-Aug-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		57	CWT00038768	AD
10	14-Aug-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		65	CWT00038769	AD
10	14-Aug-21	637369	2018	Deschutes R 13.0028	Minter Cr Hatchery	WDFW		64	CWT00038925	AD
10	14-Aug-21	637451	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		75	CWT00038951	AD
10	14-Aug-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		55	CWT00041768	AD
10	14-Aug-21	637412	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		77	CWT00041769	UM
10	14-Aug-21	211321	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211320; 637438; 637437	72	CWT00041781	AD
10	15-Aug-21	637412	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		66	CWT00038552	UM
10	15-Aug-21	185895	2018	R-Chilliwack R	H-Chilliwack River H	CDFO		74	CWT00038881	AD
10	15-Aug-21	211321	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211320; 637438; 637437	62	CWT00038882	AD
10	15-Aug-21	637311	2017	Sammamish R 08.0057	Issaquah Hatchery	WDFW		69	CWT00038884	AD
10	15-Aug-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	70	CWT00038885	AD

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10	15-Aug-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		58	CWT00038923	AD
10	15-Aug-21	637371	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		70	CWT00038924	AD
10	15-Aug-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		69	CWT00041207	AD
10	15-Aug-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		57	CWT00041782	AD
10	15-Aug-21	637371	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		62	CWT00041783	AD
10	15-Aug-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		60	CWT00041785	AD
10	15-Aug-21	637439	2018	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		76	CWT00042077	AD
10	15-Aug-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		57	CWT00089001	AD
10	15-Aug-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	68	CWT00089002	AD
10	16-Aug-21	637451	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		60	CWT00038201	AD
10	16-Aug-21	637427	2019	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW	637426	59	CWT00038249	UM
10	16-Aug-21	637412	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		61	CWT00038250	UM
10	16-Aug-21	637234	2017	Deschutes R 13.0028	Tumwater Falls Hatchery	WDFW		61	CWT00038711	AD
10	16-Aug-21	637371	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		63	CWT00038712	AD
10	16-Aug-21	637369	2018	Deschutes R 13.0028	Minter Cr Hatchery	WDFW		70	CWT00038737	AD
10	16-Aug-21	637442	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 211323; 637443	70	CWT00038739	UM
10	16-Aug-21	637446	2018	Cascade R 03.1411	Marblemount Hatchery	WDFW		57	CWT00038770	AD
10	16-Aug-21	211343	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ			CWT00038826	AD
10	16-Aug-21	637371	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		75	CWT00041770	UM
10	16-Aug-21	211275	2017	Grovers Cr 15.0299	Grovers Cr Hatchery	SUQ	637249; 211276; 637248	68	CWT00089003	AD
10	16-Aug-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		72	CWT00089004	AD
10	17-Aug-21	637371	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		65	CWT00038248	AD
10	17-Aug-21	637232	2017	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		86	CWT00038713	AD
10	17-Aug-21	637352	2018	Friday Cr 03.0017	Samish Hatchery	WDFW		72	CWT00038714	AD
10	17-Aug-21	211394	2019	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		51	CWT00038771	AD
10	17-Aug-21	637258	2017	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		75	CWT00038772	AD
10	17-Aug-21	211337	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		77	CWT00038889	AD



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10	17-Aug-21	211320	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211321; 637438; 637437	70	CWT00089011	AD
10	19-Aug-21	211276	2017	Grovers Cr 15.0299	Grovers Cr Hatchery	SUQ	637249; 211275; 637248	73	CWT00038246	AD
10	19-Aug-21	211320	2018	Clear Cr 11.0013C	Clear Creek Hatchery	NISQ	211321; 637438; 637437	65	CWT00038773	AD
10	19-Aug-21	211343	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		65	CWT00038828	AD
10	19-Aug-21	637450	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		65	CWT00038892	AD
10	19-Aug-21	211343	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		65	CWT00038953	AD
10	19-Aug-21	637232	2017	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		84	CWT00089007	AD
10	19-Aug-21	211343	2018	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		67	CWT00089008	AD
10	19-Aug-21	637371	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		69	CWT00089009	AD
10	19-Aug-21	637524	2018	Purdy Cr 16.0005	George Adams Hatchery	WDFW		64	CWT00089010	AD
10	21-Aug-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	67	CWT00038202	AD
10	21-Aug-21	211149	2017	Kalama Cr 11.0017	Kalama Cr Hatchery	NISQ		61	CWT00038556	AD
10	21-Aug-21	211360	2018	Nf Skokomish Dam #2 Pool	Nf Skokomish Hatchery	TP		61	CWT00038557	AD
10	21-Aug-21	211322	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211323; 637442; 637443	67	CWT00038954	AD
10	21-Aug-21	211275	2017	Grovers Cr 15.0299	Grovers Cr Hatchery	SUQ	637249; 211276; 637248	77	CWT00038955	AD
10	21-Aug-21	637371	2018	Big Soos Cr 09.0072	Soos Creek Hatchery	WDFW		64	CWT00089005	AD
10	21-Aug-21	211323	2018	Grovers Cr Hatchery	Grovers Cr Hatchery	SUQ	211322; 637442; 637443	74	CWT00089006	AD
10	21-Aug-21	637616	2019	Minter Cr 15.0048	Minter Cr Hatchery	WDFW		56	CWT00089093	AD

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**Appendix 10** Coded-wire tag (CWT) recoveries from the 2021 Chinook MSF in Marine Area 11. Note: Not all tags have been processed before writing of this report.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
11	17-Jun-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		81	CWT00050833	AD
11	17-Jun-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		60	CWT00084801	AD
11	17-Jun-21	637350	2018	Wallace R 07.0940	Wallace R Hatchery	WDFW		65	CWT00084901	AD
11	18-Jun-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		55	CWT00084902	AD
11	19-Jun-21	637369	2018	Deschutes R 13.0028	Minter Cr Hatchery	WDFW		57	CWT00084903	AD
11	20-Jun-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		62	CWT00046007	AD
11	20-Jun-21	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		64	CWT00050835	AD
11	4-Jul-21	637336	2018	Finch Cr 16.0222	Hoodsport Hatchery	WDFW		51	CWT00042041	AD

**Appendix 11** Coded-wire tag (CWT) recoveries from the 2021 Chinook MSF in Marine Area 12. Note: Not all tags have been processed before writing of this report.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
No CWTs										

**Appendix 12** Coded-wire tag (CWT) recoveries from the 2021 Chinook MSF in Marine Area 13. Note: Not all tags have been processed before writing of this report.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL(cm)	Label	Recovery Mark
13	5/24/2021	637413	2018	Icy Cr 09.0125	Icy Cr Hatchery	WDFW		54	CWT00047795	AD
13	6/3/2021	211280	2017	County Line Cr3.2363	Marblemount Hatchery	WDFW		64	CWT00051513	AD
13	6/19/2021	637450	2018	Chambers Cr 12.0007	Garrison Hatchery	WDFW		63	CWT00084802	AD