

**2011-12 Winter Mark-Selective Recreational Chinook Fisheries
In Marine Areas 7, 8-1, 8-2, 9, 10, 11 and 12**

Post-season Report

REVISED DRAFT

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Prepared by:

Mark Baltzell, Jon Carey, Karen Kloempken and Laurie Peterson

**Washington Department of Fish and Wildlife
Fish Program
600 Capitol Way North
Olympia, Washington 98501**

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INTRODUCTION

In recent years, abundant runs of hatchery Chinook salmon (*Oncorhynchus tshawytscha*) have been mixed with depressed runs of wild Chinook salmon in the marine environments of the Strait of Juan de Fuca and Puget Sound. Providing recreational anglers with opportunities to harvest abundant hatchery stocks while simultaneously protecting weaker, wild stocks has proven to be a significant conservation and management challenge. The combination of large-scale hatchery marking (i.e., fin clipping) programs and mark-selective harvest regulations makes it possible for anglers to pursue and harvest hatchery Chinook salmon while minimally impacting wild 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 wild) salmon encountered¹.

Since the Washington Department of Fish and Wildlife (WDFW) implemented the first marine mark-selective Chinook fishery in Marine Catch 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 on a pilot basis in multiple Puget Sound Marine Catch Areas during both the summer and winter seasons. As of the close of the summer 2012 fishing season, pilot *summer* selective Chinook fisheries have occurred in Areas 5 and 6 for ten years (Thiesfeld and Hagen-Breaux 2005a, Thiesfeld and Hagen-Breaux 2005b, WDFW 2008a, WDFW 2009a, WDFW 2010g, WDFW 2011a, WDFW 2012c) and in Areas 9, 10, 11, and 13 for six years (WDFW 2007a and 2007b, WDFW 2009b and 2009c, WDFW 2010e and 2010f, WDFW 2011a, WDFW 2012c). The 2012 summer mark-selective fisheries report is currently in preparation. Additionally, pilot *winter* selective Chinook fisheries have occurred in Areas 8-1 and 8-2 for seven consecutive seasons beginning in the winter of 2005/2006 (WDFW 2008b, WDFW 2009d, WDFW 2010b, WDFW 2011b, WDFW 2012b), Areas 7, 9 and 10 for five consecutive seasons beginning in the winter of 2007/2008 (WDFW 2009e, WDFW 2010a, WDFW 2010c, WDFW 2010d, WDFW 2011b, WDFW 2012b), and in Areas 11 and 12 for three consecutive seasons beginning in the winter of 2009/2010 (WDFW 2011b, WDFW 2012b).

During the 2011-12 winter season (October 2011 through April 2012), WDFW implemented seven pilot mark-selective Chinook fisheries in Areas 7, 8-1, 8-2, 9, 10, 11 and 12. The 2011-12 winter Chinook MSF seasons in each of the areas were as follows:

- Area 7 from December 1, 2011 through April 30, 2012;
- Areas 8-1 and 8-2 from November 1, 2011 through April 30, 2012;
- Area 9 from November 1-30, 2011 and January 16 – April 15, 2012;
- Area 10 from October 1, 2011 through January 31, 2012; and
- Areas 11 and 12 from February 1 through April 30, 2012.

¹The regulations specific to winter 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. 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.

Consistent with the 2004 (and 2010 update) Puget Sound Chinook Harvest Management Plan (Puget Sound Indian Tribes and WDFW 2004 and 2010), a key goal of implementing each of these mark-selective Chinook fisheries has been to provide meaningful opportunity to the recreational angling public while minimally impacting ESA-listed Puget Sound Chinook salmon.

Comprehensive Sampling and Monitoring Program

WDFW's Puget Sound Sampling Unit (PSSU) was tasked with implementing a comprehensive sampling and monitoring program in Areas 7, 8-1, 8-2, 9,10,11 and 12 to collect the data needed to evaluate each pilot mark-selective Chinook fishery and its impact on unmarked salmon. As per state-tribal agreement (e.g., WDFW and NWIFC 2011), we developed area-specific sampling plans consisting of several comprehensive and complementary sampling components, including dockside creel sampling, test fishing, on-water or aerial effort surveys, and angler-completed voluntary trip reports (VTRs). We tailored area-specific sampling plans so that we could reliably estimate the following critical parameters needed for evaluating mark-selective fisheries:

- i) the mark rate of the targeted Chinook population
- ii) the total number of Chinook salmon harvested (by size [legal or sublegal] and mark-status [marked or unmarked] group)
- iii) the total number of Chinook salmon released (by size and mark-status group)
- iv) the coded-wire tag- (CWT) and/or DNA-based stock composition of marked and unmarked Chinook mortalities²
- v) the total mortality of marked and unmarked double index tag (DIT) CWT stocks

In addition, we acquired and analyzed relevant data characterizing other aspects of the pilot fisheries, including descriptors of fishing effort, fishing success (catch [landed Chinook] per unit effort), the length and age composition of encountered Chinook, and the overall intensity of our sampling efforts.

Reporting Efficiencies

In July 2010, technical staffs from the WDFW Puget Sound Sampling Unit, Northwest Indian Fisheries Commission (NWIFC), and Puget Sound Treaty Tribes met to discuss potential reporting efficiencies in WDFW's mark-selective Chinook fishery post-season reports. NWIFC and tribal representatives had initiated the idea for such a meeting, considering that we at WDFW had been submitting a separate post-season report for each area and season (since 2003) to the co-managers, resulting in redundancies between individual reports, particularly in the Methods section. Also, over the years we kept adding sections to the selective fishery annual reports, in response to individual tribal co-manager requests, and sustained those additions in each future report, resulting in ever-lengthening post-season reports. From both the WDFW and tribal technical perspectives, we needed to prioritize the most essential reporting elements and achieve efficiencies to streamline the selective fishery reporting work load.

² Though the necessary tissue samples have been collected, DNA-based estimates of stock composition are presently unavailable for Puget Sound/Strait of Juan de Fuca mark-selective fisheries. In the present report, methods for producing CWT-based (unexpanded) estimates of the stock composition of marked Chinook harvest are provided.

Thus, at the July 2010 meeting the WDFW and tribal staffs worked on prioritizing the most essential elements (i.e., tables, figures, and appendices) needed in WDFW's annual post-season selective fishery reports in an effort to define reporting efficiencies. Based on these decisions (details available in a WDFW memo dated August 16, 2010 summarizing the July 2010 meeting), we began implementing reporting efficiencies starting with the 2009-10 winter mark-selective Chinook fisheries post-season report and continuing thereafter.

At the July 2010 meeting we also agreed that a key efficiency in the annual reporting process would be for WDFW staff to produce a centralized Methods Report. The Methods Report would be a stand-alone document that includes the details of each area's Chinook MSF study design (for both winter and summer fisheries), sampling procedures, data analysis methods, and all equations used to generate estimates and variances. Thus, we refer the reader to our Methods Report (WDFW 2012a) for detailed descriptions of the diverse study designs and protocols used to monitor and evaluate the selective Chinook fisheries in Areas 7, 8-1, 8-2, 9, 10, 11, and 12 during winter 2011-12.

In the following pages, we report the results generated through our monitoring activities during the 2011-12 winter mark-selective Chinook fisheries. We report results based on our more efficient reporting format agreed-to between state and tribal technical representatives, in which we focus on presenting data tables and figures rather than interpretive text (unless text is needed to specify noteworthy in-season adjustments or other circumstances unique to the particular season). We present 2011-12 winter Chinook MSF results in separate chapters (1 through 6) by area, and within each chapter the data are presented in a series of tables and figures generally according to the following sequence: *i*) estimates of fishery characteristics obtained from the dockside creel survey data, including catch and effort total estimates, Chinook length-frequency data, and CWT recovery results; *ii*) results from our recreational test fishery (where applicable); *iii*) results from our VTR collection efforts; *iv*) total mortality estimates of marked and unmarked DIT CWT stocks by hatchery and brood year; *v*) total fishery Chinook encounters and impacts—estimated based on creel survey and test fishery or VTR data—which we compare with pre-season expectations (based on Fishery Regulation Assessment Model [FRAM] predictions); *vi*) sample rate information based on dockside sampling of harvested Chinook; and *vii*) historical Chinook encounters estimates for each area's winter mark-selective Chinook fishery.

RESULTS

1) Marine Area 7 Winter Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a fifth consecutive winter mark-selective Chinook fishery (MSF) in Marine Area 7 from December 1, 2011 through April 30, 2012. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program in Area 7 throughout the season in order to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included dockside creel sampling, aerial effort surveys, test fishing and collection of voluntary trip reports (VTRs) from the angling public. **Table 1.1** summarizes the parameters estimated and the sampling activities associated with each parameter. Specific procedures used for collecting these data and estimating critical data parameters are presented in detail in our separate Methods Report (WDFW 2012a). In this section we present results from our monitoring activities during the Area 7 winter mark-selective Chinook fishery from December 1, 2011 through April 30, 2012. In addition to the major components of the results described previously (page 3), we present aerial survey and dockside data used to estimate the sample fraction in Area 7 (see WDFW 2012a, *Aerial-Access Design*). Total salmon harvest and release estimates presented in this chapter include only Chinook salmon because no other salmon were reported as retained or released during the Area 7 winter fishery.

Table 1.1 Sampling/estimation details on target parameters associated with the overall Area 7 winter 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 ¹ ; 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.
Aerial Surveys	Fraction of 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 (5 months)	The sample fraction was calculated for individual aerial survey dates (see Table 1.12 ; $n=22$ surveys conducted out of $N=152$ days available in the season). Season-wide sample fraction was calculated as the average sample fraction over the 22 individual aerial surveys.
Test Fishing	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Chinook length, age, and DNA-based ² stock composition; species composition of non-Chinook encounters	Fish encounter	Season (5 months)	We used the test fishery data only to estimate the size/mark-status proportions (LM = 40%, LU = 21%, SM = 29%, SU = 10%) needed to produce encounter and mortality estimates.
Voluntary Trip Reports (VTRs)	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 VTR form	Fish encounter	Season (5 months)	VTR data (Table 1.6) were not used for impact estimation steps due to the assumed higher data quality and sufficient sample size of test fishery data. See comment in row above.
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 (5 months)	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 (5 months)	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

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

Table 1.2 Estimates of total fishing effort and total salmon catch (harvest and releases) during the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012. Values may not add exactly due to rounding error. AD = marked (i.e., 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	
Dec	49	01-Dec	04-Dec	400	881	236	0	224	208	667
	50	05-Dec	11-Dec	349	708	134	0	127	118	378
	51	12-Dec	18-Dec	294	581	113	0	107	99	319
	52	19-Dec	25-Dec	132	262	30	0	29	27	85
	53/1	26-Dec	01-Jan	107	210	59	0	56	52	167
Jan	2	02-Jan	08-Jan	186	343	71	0	67	62	200
	3	09-Jan	15-Jan	81	165	42	0	40	37	119
	4	16-Jan	22-Jan	26	47	26	0	25	23	74
	5	23-Jan	29-Jan	142	284	71	0	67	62	200
Feb	6	30-Jan	05-Feb	330	654	47	0	45	42	133
	7	06-Feb	12-Feb	220	391	84	0	80	74	237
	8	13-Feb	19-Feb	189	328	41	0	39	36	115
	9	20-Feb	26-Feb	88	149	29	0	27	25	82
Mar	10	27-Feb	04-Mar	41	63	9	0	9	8	26
	11	05-Mar	11-Mar	206	385	121	0	114	106	341
	12	12-Mar	18-Mar	257	464	140	0	133	123	397
	13	19-Mar	25-Mar	333	689	151	0	143	133	427
	14	26-Mar	01-Apr	266	558	86	0	82	76	245
Apr	15	02-Apr	08-Apr	206	435	132	0	125	117	374
	16	09-Apr	15-Apr	253	529	136	0	129	120	385
	17	16-Apr	22-Apr	199	387	128	0	122	113	363
	18	23-Apr	29-Apr	191	347	117	0	111	103	330
	19	30-Apr	30-Apr	18	33	10	0	10	9	30
Area 7 Season Sub-Total:				4,514	8,893	2,013	0	1,908	1,772	5,694
Resurrection Derby Dec 1-3, 2011				69	225	96	0	91	85	272
Roche Harbor Derby Feb 3-4, 2012				85	293	93	0	88	82	263
Anacortes Derby Mar 31 – Apr 1, 2012				375	1,125	211	0	200	186	597
Area 7 Season Total:				5,043	10,536	2,413	0	2,288	2,124	6,825
Variance:				221,278	899,274	83,966	0	493,414	140,356	1,143,881
SE:				470	948	290	0	702	375	1,070
CV (%):				9.3%	9.0%	12.0%	-	30.7%	17.6%	15.7%
95% CI:				4,121-5,964	8,677-12,394	1,845-2,981	-	911-3,664	1,390-2,859	4,729-8,922

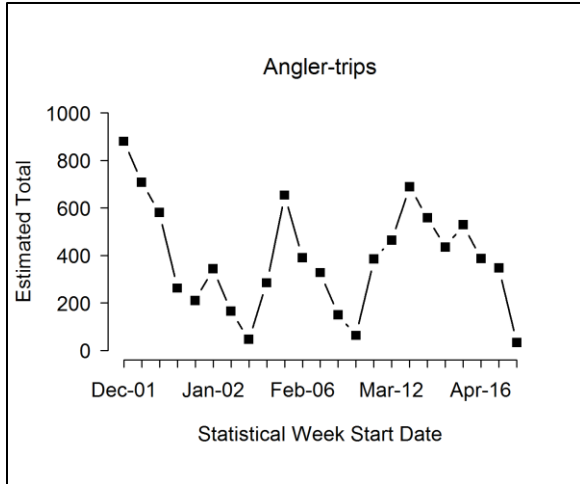


Figure 1.1 Temporal patterns in fishing effort during the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012.

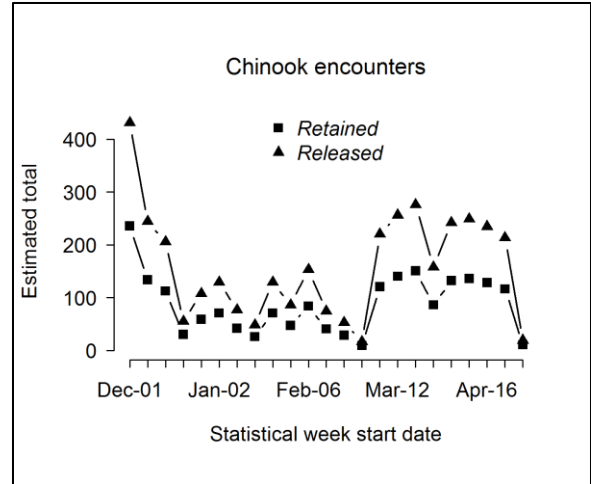


Figure 1.3 Temporal patterns in Chinook encounters (number retained and released) during the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012.

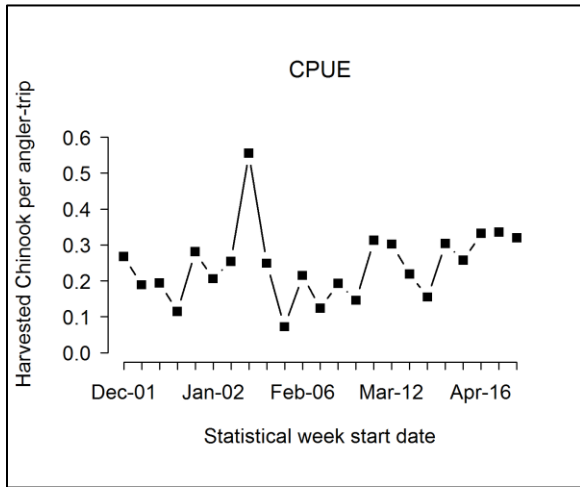


Figure 1.2 Temporal patterns in CPUE (number of Chinook landed per angler trip) during the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012.

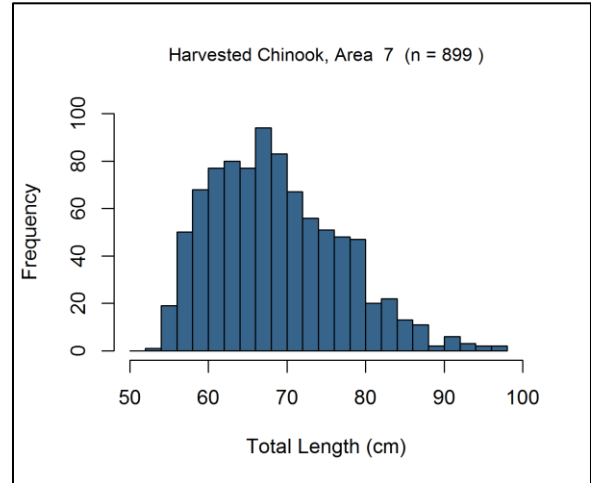


Figure 1.4 Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012.

Table 1.3 Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012.

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	879	20	899
Unmarked	1	0	1
Total	880	20	900

Table 1.4 Summary of coded-wire tags recovered from Chinook salmon harvested during the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012. The field “Number DITs” corresponds to the number of recovered CWTs that belonged to double-index tag groups.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	Number DITs
British Columbia (15.6%)	Fraser River – Thompson River (1.5%)	Chilliwack River	Chilliwack River	2 (1.5%)	2
	Georgia Strait (14.1%)	Chemainus River	Seaspring Salmon Farm	4 (3%)	0
		Cowichan River	Cowichan River	14 (10.4%)	0
		Big Qualicum River	Big Qualicum River	1 (0.7%)	0
Washington (84.4%)	Northern Washington (11.9%)	Samish River 03.0005	Samish	7 (5.2%)	7
		East Sound Bay (SAN)	Glenwood Springs	1 (0.7%)	0
		Nooksack R -NF 01.0120	Kendall Creek	8 (5.9%)	8
	Hood Canal (5.2%)	Purdy Creek 16.0005	George Adams	7 (5.2%)	7
		Northern Puget Sound (20.7%)	Wallace River 07.0940	Wallace River	19 (14.1%)
	Whitehorse Springs		Whitehorse Pond	9 (6.7%)	0
	Skagit River (31.9%)		Baker River 03.0435	Marblemount	1 (0.7%)
		Skagit River 03.0176	Marblemount	1 (0.7%)	0
		Cascade River 03.1411	Marblemount	41 (30.4%)	14
	Mid Puget Sound (10.4%)	Grovers Creek Hatchery	Grovers Creek	4 (3%)	4
		Big Soos Creek 09.0072	Soos Creek	5 (3.7%)	5
		Green River 09.0001	Icy Creek	2 (1.5%)	0
		Icy Creek 09.0125	Icy Creek	1 (0.7%)	0
		Gorst Creek 15.0216	Gorst Rearing Pond	1 (0.7%)	0
		White River 10.0031	White River	1 (0.7%)	0
	Southern Puget Sound (4.4%)	Chambers Creek 12.0007	Garrison	1 (0.7%)	0
		Clear Creek 11.0013C	Clear Creek	1 (0.7%)	1
		Lakewood Hatchery	Lakewood	1 (0.7%)	0
		Minter Creek 15.0048	Minter Creek	1 (0.7%)	0
		Kalama Creek 11.0017	Kalama Creek	2 (1.5%)	0
Total				135	57

Table 1.5 Composition of test fishery Chinook encounters and associated mark-rate and size/mark-status proportion estimates for the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012. AD = marked (i.e., 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
	Days	Hours Fished	AD	UM	AD	UM	
49	2	6.5	2	0	0	0	2
50	4	19.7	5	1	6	1	13
51	5	27.7	3	4	3	4	14
52	4	21.8	3	1	5	1	10
53/1	2	9.5	1	0	2	0	3
2	2	10.1	1	1	1	0	3
3	5	25.3	6	2	5	3	16
4	1	3.0	0	0	0	0	0
5	4	15.2	4	4	0	0	8
6	5	26.4	2	1	1	0	4
7	5	23.2	7	4	0	0	11
8	4	19.9	4	4	2	1	11
9	1	4.8	0	0	0	0	0
10	3	16.0	3	0	0	1	4
11	3	15.5	1	0	4	1	6
12	2	8.3	1	1	2	1	5
13	4	19.7	2	2	2	0	6
14	3	16.3	4	0	0	0	4
15	3	16.8	2	1	2	2	7
16	5	29.0	2	3	2	0	7
17	5	26.6	3	1	6	0	10
18	4	22.2	4	2	1	0	7
19	0	0.0	0	0	0	0	0
Total	76	383.2	60	32	44	15	151
Size/mark-status composition:			0.40 (0.0016)	0.21 (0.0011)	0.29 (0.0014)	0.10 (0.0006)	
Legal size mark rate:			0.65 (0.0025)				
Overall mark rate:			0.69 (0.0014)				

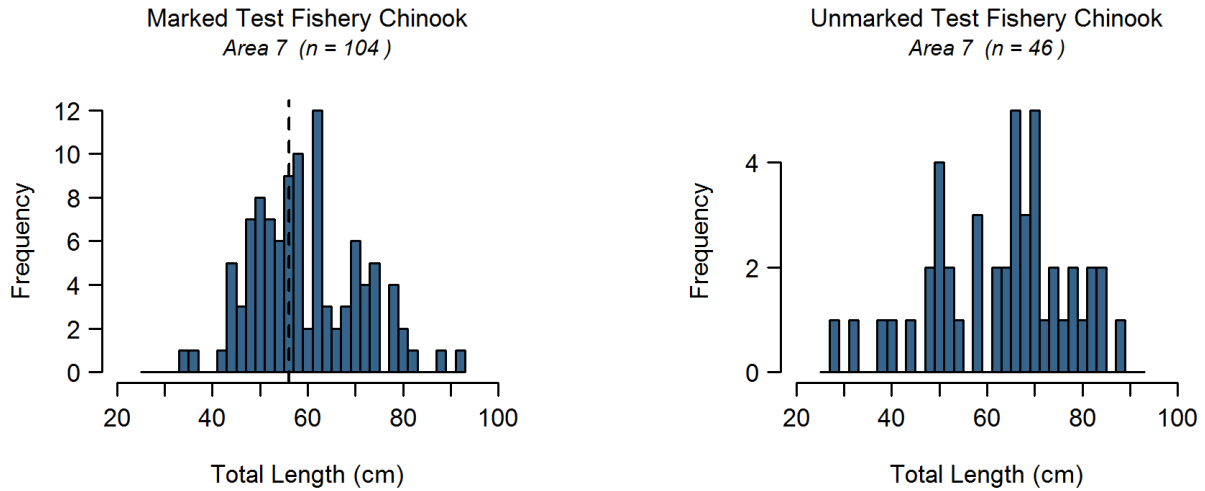


Figure 1.5 Length-frequency distributions of marked (*left panel*) and unmarked (*right panel*) Chinook encountered by test fishers during the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012. The vertical dashed line in the left panel corresponds to the legal size limit (22 in or 56 cm).

Table 1.6 Total Chinook encountered (retained and released) by private-boat anglers logging their trips on voluntary trip reports (VTRs) compared to test fishing encounter data, with estimates of legal-size and overall (legal and sublegal) mark rates during the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012. AD = marked (i.e., 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	48 1-trip VTRs, 72 Angler Trips	72	56	14	17	159	0.54	0.56
Test Fishery	76 Days, 152 Angler Trips	60	32	44	15	151	0.69	0.65
Test fishery size/mark-status composition:		0.40	0.21	0.29	0.10			
Variance:		(0.0016)	(0.0011)	(0.0014)	(0.0006)			

We used Pearson’s chi-square test to compare the Chinook size and mark-status composition of the Area 7 test fishery and VTR data. Results suggest a significant difference in composition between the two data sets ($\chi^2 = 23.09$, $df = 3$, $p < 0.001$), indicating that they should not be combined. Given the sufficient sample sizes in the test fishery data (and assuming higher data quality), we elected to use only this data as an estimate of the Chinook size/mark-status proportions needed for estimating total Chinook encounters and associated mortalities in the Area 7 mark-selective fishery.

Table 1.7 Summary of season-wide fishery impact estimates for the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012. 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 (i.e., adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	2,712	2,359	353	53	2,412	87,916	297	1831 - 2993	12
Legal UM	1,446	0	1,446	217	217	2,294	48	123 - 311	22
Sublegal AD	1,989	54	1,935	387	441	6,575	81	282 - 600	18
Sublegal UM	678	0	678	136	136	1,536	39	59 - 212	29
Total	6,825	2,413	4,412	792	3,206	98,321	314	2591 - 3820	10

Table 1.8 Comparison of modeled (FRAM model run 1811) and estimated total Chinook encounters for the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012. Values may not add up perfectly due to rounding error. AD = marked (i.e., adipose-clipped), UM = unmarked.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	2,949	779	2,170	8
	AD	11,492	3,492	8,000	3,038
	Total	14,441	4,271	10,170	3,046
	% Marked	80	82	79	100
Estimated (Creel) Encounters	UM	2,124	1,446	678	0
	AD	4,701	2,712	1,989	2,413
	Total	6,825	4,158	2,667	2,413
	% Marked	69	65	75	100

Table 1.9 Comparison of modeled (FRAM model run 1811) and estimated total Chinook mortalities for the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012. Values may not add up perfectly due to rounding error. AD = marked (i.e., adipose-clipped), UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	558	4,858	5,416	353	2,853	3,206
Released Legal	116	220	336	217	53	270
Released Sublegal	434	1,600	2,034	136	387	523
Landed Only	8	3,038	3,046	0	2,413	2,413

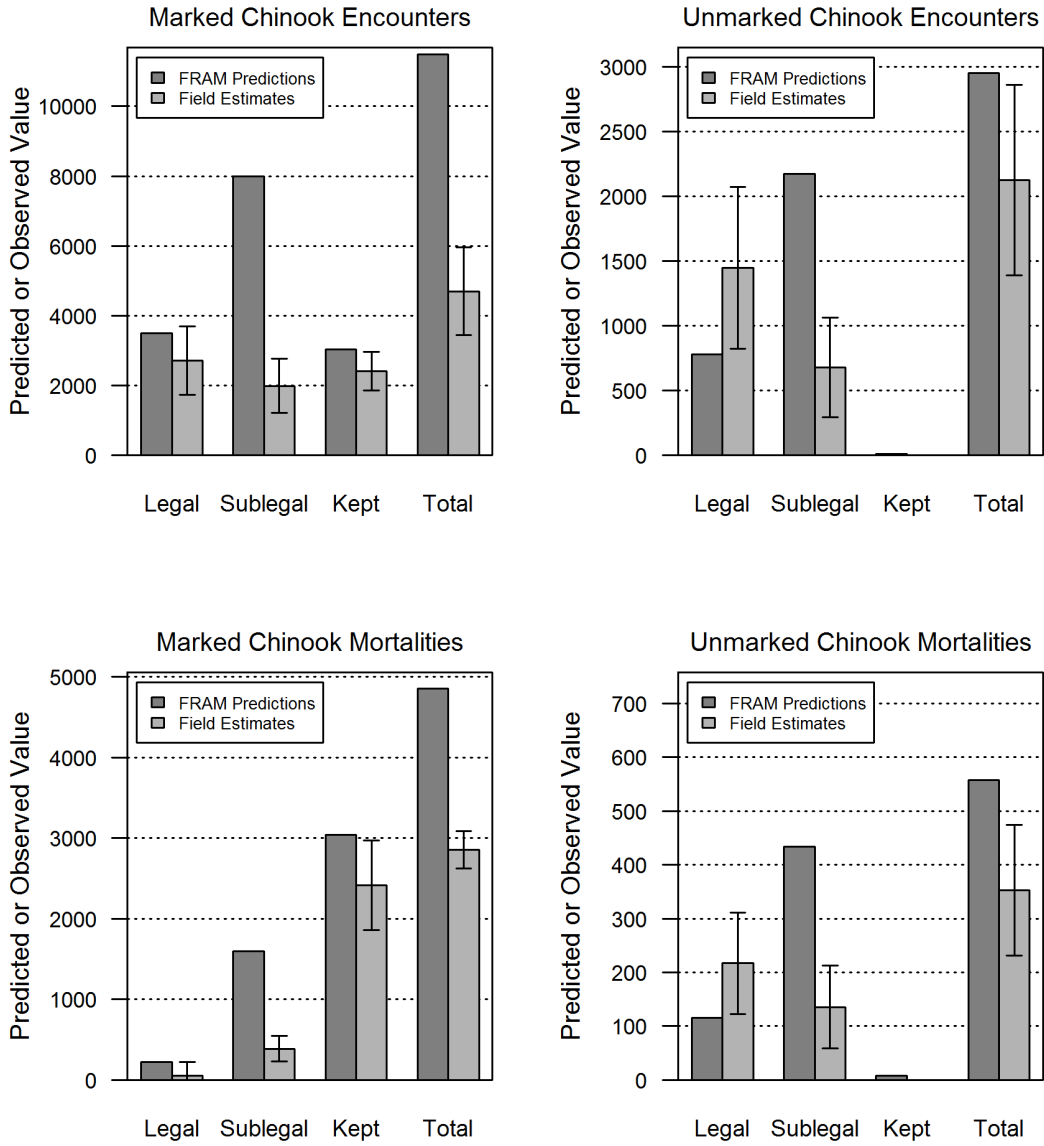


Figure 1.6 Comparison of modeled (FRAM model run 1811) and estimated total Chinook encounters and mortalities for the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012. Error bars represent approximate 95% confidence intervals for field estimates.

Table 1.10 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 Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012. AD = marked (i.e., adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs'd	AD DIT Harvest		UM DIT Enc.	UM DIT Mortality		
			Est.	var(Est.)		Est.	var(Est.)	SE(Est.)
Clear Creek Hatchery	2009	1	2.7	4.5	2.7	0.3	0.05	0.2
George Adams Hatchery	2007	1	2.7	4.5	2.7	0.3	0.05	0.2
	2008	1	2.7	4.5	2.7	0.3	0.05	0.2
	2009	5	13.4	22.5	13.4	1.3	0.20	1.1
Grovers Creek Hatchery	2008	4	10.7	18.0	11.9	1.2	0.20	0.9
Chilliwack River Hatchery	2008	2	5.4	9.0	5.4	0.5	0.10	0.4
Kendall Creek Hatchery	2008	4	10.7	18.0	11.1	1.1	0.20	0.9
	2009	4	10.7	18.0	10.9	1.1	0.20	0.9
Marblemount Hatchery	2007	4	10.7	18.0	10.7	1.1	0.20	0.9
	2008	10	26.8	45.1	26.4	2.6	0.40	2.1
Samish Hatchery	2009	7	18.8	31.6	19.0	1.9	0.30	1.5
Soos Creek Hatchery	2008	4	10.7	18.0	11.3	1.1	0.20	0.9
	2009	1	2.7	4.5	2.8	0.3	0.05	0.2
Wallace River Hatchery	2008	8	21.4	36.1	21.5	2.2	0.40	1.7
	2009	1	2.7	4.5	2.7	0.3	0.05	0.2
Total		57	152.8	256.9	155.4	15.5	2.70	12.3

Table 1.11 Monthly sample rates (Total retained Chinook sampled¹ / Estimated retained Chinook) in the Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012. AD = marked (i.e., 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	
December	49-53/1	1 Dec - 1 Jan	667	0	667	198	0	198	29.7%
January	2-5	2 Jan - 29 Jan	210	0	210	66	0	66	31.4%
February	6-9	30 Jan - 26 Feb	294	0	294	159	0	159	54.1%
March	10-14	27 Feb - 1 Apr	718	0	718	318	1	319	44.5%
April	15-19	2 Apr - 30 Apr	524	0	524	158	0	158	30.2%
Season Total			2413	0	2413	899	1	900	37.3%

^{1/} Number of retained Chinook sampled includes all retained Chinook inspected for CWT's, from all sites sampled during the winter 2011-12 Area 7 mark-selective Chinook fishery (i.e., the four sample-frame sites included in the creel estimates, derby samples, and the fish sampled as part of baseline sampling in Area 7).

Table 1.12 Summary of aerial survey and dockside data used to estimate the fraction of Area 7 effort captured in the four-site sample frame during the Area 7 mark-selective Chinook fishery from December 1, 2011 – April 30, 2012. 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}	Total Boats, $S_{y_{ijk}}$	Fishing Boats	Active Boats, X_{ij}	
04-Dec	Weekend	10:45	12:00	94	145	60	39	0.415
08-Dec	Weekday	11:23	12:24	10	16	13	8	0.800
09-Dec	Weekend	10:30	11:45	45	76	32	19	0.422
17-Dec	Weekend	10:38	11:57	102	127	51	41	0.402
30-Dec	Weekend	10:35	11:28	9	32	7	2	0.222
07-Jan	Weekend	10:47	11:59	80	118	34	23	0.288
10-Jan	Weekday	10:45	11:52	18	32	14	8	0.444
26-Jan	Weekday	10:45	11:52	5	35	7	1	0.200
27-Jan	Weekend	12:03	13:11	44	78	16	9	0.205
28-Jan	Weekend	11:20	12:30	44	55	25	20	0.455
04-Feb	Weekend	11:03	12:02	240	288	66	55	0.229
08-Feb	Weekday	10:50	11:31	7	16	9	4	0.571
19-Feb	Weekend	11:05	12:03	84	102	34	28	0.333
03-Mar	Weekend	12:27	13:42	44	79	27	15	0.341
08-Mar	Weekday	10:41	11:44	37	55	43	29	0.784
11-Mar	Weekend	11:11	12:06	30	50	10	6	0.200
21-Mar	Weekday	10:54	11:49	38	92	17	7	0.184
07-Apr	Weekend	11:07	12:18	99	140	62	44	0.444
10-Apr	Weekday	10:50	11:54	33	119	18	5	0.152
14-Apr	Weekend	11:05	12:20	83	106	69	54	0.651
22-Apr	Weekend	10:37	11:43	111	216	74	38	0.342
24-Apr	Weekday	10:33	11:35	29	77	24	9	0.310
Totals:				1286	2053	712	464	
Mean:				58	93	32	21	0.382
St Dev:				53	65	22	17	0.185
CV(%):				90.1%	69.8%	68.2%	82.1%	48.5%

Table 1.13 Season-total estimates of Chinook encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Area 7 winter mark-selective Chinook fishery. Values may not add exactly due to rounding error.

Area	Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
			LM	LU	SM	SU	LM	LU	SM	SU	
7	Feb 1 - Feb 29, 2008	4,862	1,301	2	24	0	200	1,042	244	155	2,967
7	Feb 1 - Apr 15, 2009	8,167	1,406	9	14	0	210	708	139	17	2,501
7	Dec 1, 2009 - Apr 30, 2010	9,589	1,400	0	18	0	209	673	150	74	2,524
7	Dec 1, 2010 - Apr 30, 2011	11,814	2,368	4	10	0	354	1,988	521	531	5,776
7	Dec 1, 2011 - Apr 30, 2012	10,536	2,359	0	54	0	353	1,446	1,935	678	6,825

2) Marine Areas 8-1 & 8-2 Winter Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a seventh consecutive winter mark-selective Chinook fishery (MSF) in Marine Areas 8-1 and 8-2 from November 1, 2011 through April 30, 2012. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program in Areas 8-1 and 8-2 during the November-April season in order to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included dockside creel sampling, on-the-water effort surveys, and collection of voluntary trip reports (VTR's) from the angling public. **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 Areas 8-1 and 8-2 winter mark-selective Chinook fishery from November 1, 2011 through April 30, 2012.

Table 2.1 Sampling/estimation details on target parameters associated with the overall Areas 8-1 and 8-2 winter 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 ¹ ; 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.
On-the-water Surveys	Proportion of total angler effort that uses sample-frame sites (i.e., “size measures” or “weights” of sampled sites) versus out-of-frame sites.	Total on-water boat and angler counts at assumed peak effort time interval (instantaneous count); spatial distribution of fishing boats in the area.	Boats and anglers.	Month	A total of 6 boat surveys were conducted during the six-month fishery. The site size measures calculated from 2011-12 data were compared with the average size measures from previous seasons and did not vary significantly from the past average size measures per site.
Voluntary Trip Reports (VTRs)	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 VTR form	Fish encounter	Season (6 months)	We combined the Areas 8-1 and 8-2 VTR data to estimate the size/mark-status proportions (LM = 18%, LU = 8%, SM = 58%, SU =15%) needed to produce encounter and mortality estimates (see Table 2.6).
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 (6 months)	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 (6 months)	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

¹ 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 Area 8-1 mark-selective Chinook fishery from November 1, 2011 - April 30, 2012. Values may not add exactly due to rounding error. AD = marked (i.e., 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	
Nov	45	01-Nov	06-Nov	241	505	52	0	191	73	315
	46	07-Nov	13-Nov	84	152	27	0	98	37	161
	47	14-Nov	20-Nov	28	44	8	0	31	12	51
	48	21-Nov	27-Nov	0	0	0	0	0	0	0
	49	28-Nov	04-Dec	98	193	5	0	20	8	33
Dec	50	05-Dec	11-Dec	26	53	5	0	20	8	33
	51	12-Dec	18-Dec	93	176	0	0	0	0	0
	52	19-Dec	25-Dec	27	53	0	0	0	0	0
	53/1	26-Dec	01-Jan	16	31	5	0	19	7	32
Jan	2	02-Jan	08-Jan	11	23	0	0	0	0	0
	3	09-Jan	15-Jan	2	5	2	0	9	3	14
	4	16-Jan	22-Jan	0	0	0	0	0	0	0
	5	23-Jan	29-Jan	10	20	2	0	9	3	15
	6	30-Jan	05-Feb	34	68	3	0	10	4	16
Feb	7	06-Feb	12-Feb	37	71	8	0	29	11	48
	8	13-Feb	19-Feb	37	69	7	0	27	10	44
	9	20-Feb	26-Feb	40	79	15	0	55	21	91
	10	27-Feb	04-Mar	23	39	4	0	16	6	27
Mar	11	05-Mar	11-Mar	122	247	48	0	177	68	293
	12	12-Mar	18-Mar	95	188	7	0	24	9	40
	13	19-Mar	25-Mar	78	142	5	0	19	7	32
	14	26-Mar	01-Apr	32	56	3	0	11	4	18
Apr	15	02-Apr	08-Apr	60	122	12	0	43	16	71
	16	09-Apr	15-Apr	47	99	30	0	109	42	181
	17	16-Apr	22-Apr	108	219	31	0	113	43	186
	18	23-Apr	29-Apr	59	104	10	0	35	13	58
	19	30-Apr	30-Apr	5	8	2	0	6	2	9
Area 8-1 Season Total:				1,415	2,767	291	0	1,069	408	1,768
Variance:				37,750	144,189	3,128	0	145,049	18,607	332,183
SE:				194	380	56	0	381	136	576
CV (%):				13.7%	13.7%	19.2%	-	35.6%	33.4%	32.6%
95% CI:				1,034-1,796	2,023-3,511	181-400	-	323-1,816	141-675	638-2,897

Table 2.3 Estimates of total fishing effort and total salmon catch (harvest and releases) during the Area 8-2 mark-selective Chinook fishery from November 1, 2011 - April 30, 2012. Values may not add exactly due to rounding error. AD = marked (i.e., 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	
Nov	45	01-Nov	06-Nov	261	501	47	0	166	64	276
	46	07-Nov	13-Nov	98	174	16	0	56	22	93
	47	14-Nov	20-Nov	58	124	5	0	16	6	27
	48	21-Nov	27-Nov	13	28	0	0	0	0	0
	49	28-Nov	04-Dec	230	446	28	0	98	38	164
Dec	50	05-Dec	11-Dec	47	89	4	0	15	6	25
	51	12-Dec	18-Dec	196	387	13	0	47	18	79
	52	19-Dec	25-Dec	118	219	13	0	47	18	79
	53/1	26-Dec	01-Jan	79	150	8	0	30	11	50
Jan	2	02-Jan	08-Jan	59	115	6	0	22	8	36
	3	09-Jan	15-Jan	28	44	11	0	37	14	62
	4	16-Jan	22-Jan	19	26	11	0	37	14	62
	5	23-Jan	29-Jan	26	48	0	0	0	0	0
	6	30-Jan	05-Feb	66	136	15	0	54	21	89
Feb	7	06-Feb	12-Feb	148	274	17	0	58	22	97
	8	13-Feb	19-Feb	93	167	10	0	35	13	58
	9	20-Feb	26-Feb	39	68	5	0	17	7	29
	10	27-Feb	04-Mar	26	43	5	0	18	7	29
Mar	11	05-Mar	11-Mar	90	171	29	0	102	39	170
	12	12-Mar	18-Mar	154	358	52	0	184	71	307
	13	19-Mar	25-Mar	129	227	16	0	56	21	93
	14	26-Mar	01-Apr	53	85	12	0	43	17	72
Apr	15	02-Apr	08-Apr	112	216	34	0	121	47	202
	16	09-Apr	15-Apr	146	271	42	0	147	56	245
	17	16-Apr	22-Apr	243	449	44	0	156	60	261
	18	23-Apr	29-Apr	188	363	50	2	177	66	294
	19	30-Apr	30-Apr	12	20	4	0	15	6	25
Area 8-2 Season Total:				2,728	5,197	496	2	1,753	673	2,925
Variance:				48,321	189,630	4,070	2	327,792	46,305	734,155
SE:				220	435	64	1	573	215	857
CV (%):				8%	8%	13%	66%	33%	32%	29%
95% CI:				2,297-3,159	4,344-6,051	371-621	0-5	631-2,876	251-1,095	1,245-4,604

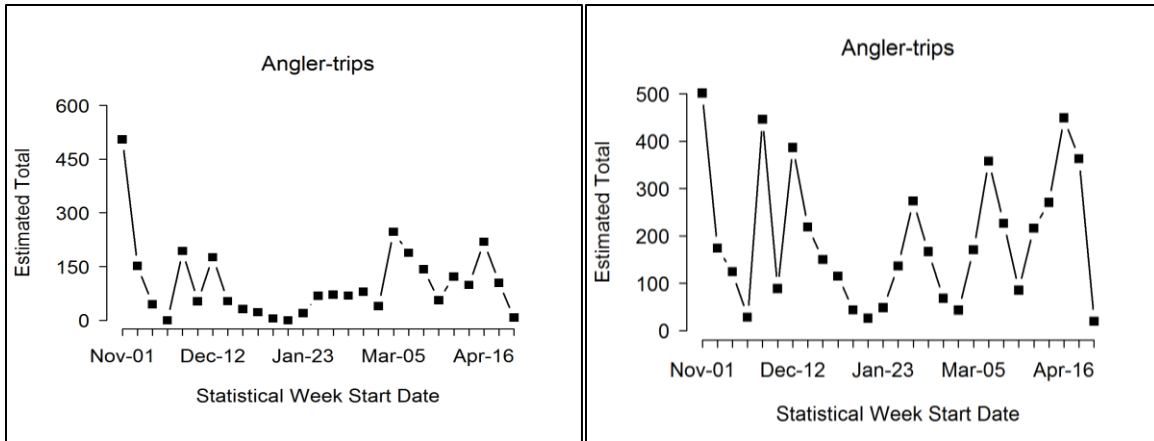


Figure 2.1 Temporal patterns in fishing effort during the Area 8-1 (*left panel*) and 8-2 (*right panel*) mark-selective Chinook fisheries from November 1, 2011 - April 30, 2012.

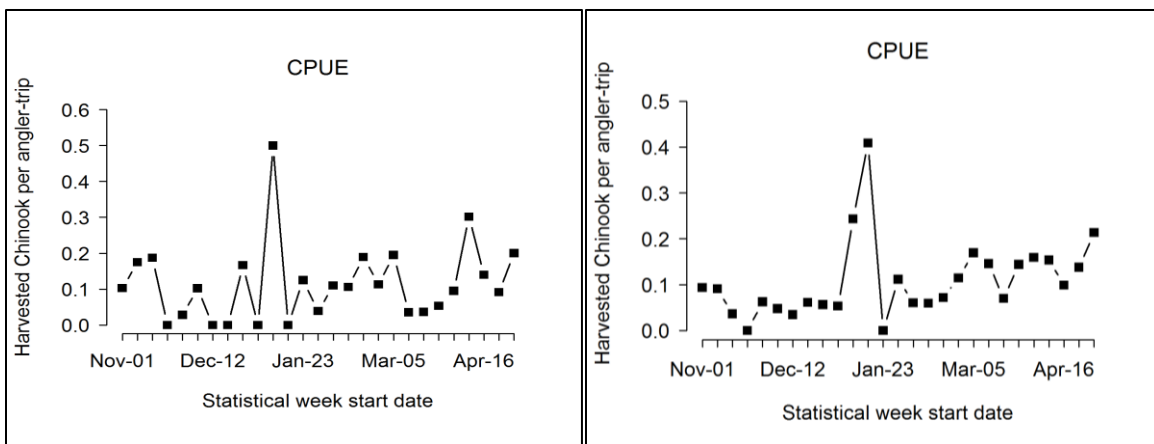


Figure 2.2 Temporal patterns in CPUE (number of Chinook landed per angler trip) during the Area 8-1 (*left panel*) and 8-2 (*right panel*) mark-selective Chinook fisheries from November 1, 2011 - April 30, 2012.

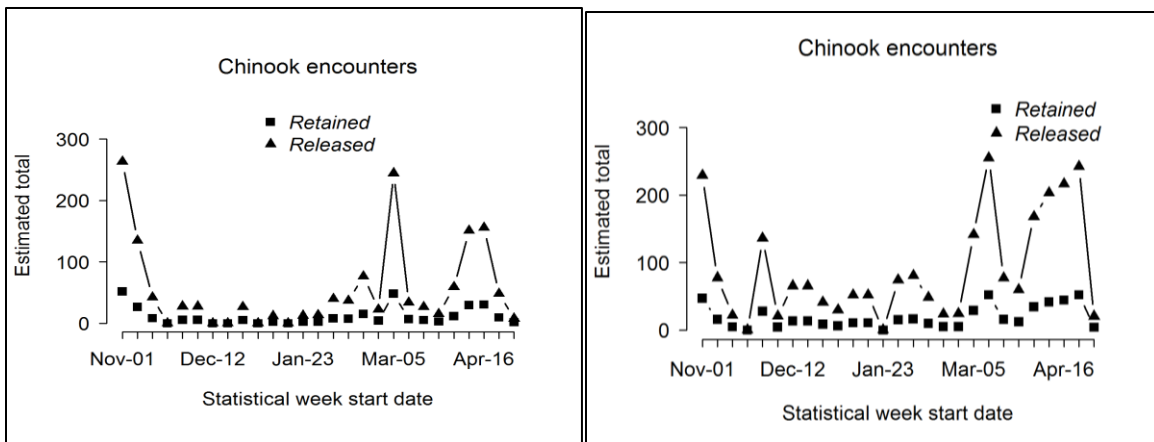


Figure 2.3 Temporal patterns in Chinook encounters (number retained and released) during the Area 8-1 (*left panel*) and 8-2 (*right panel*) mark-selective Chinook fisheries from November 1, 2011 - April 30, 2012.

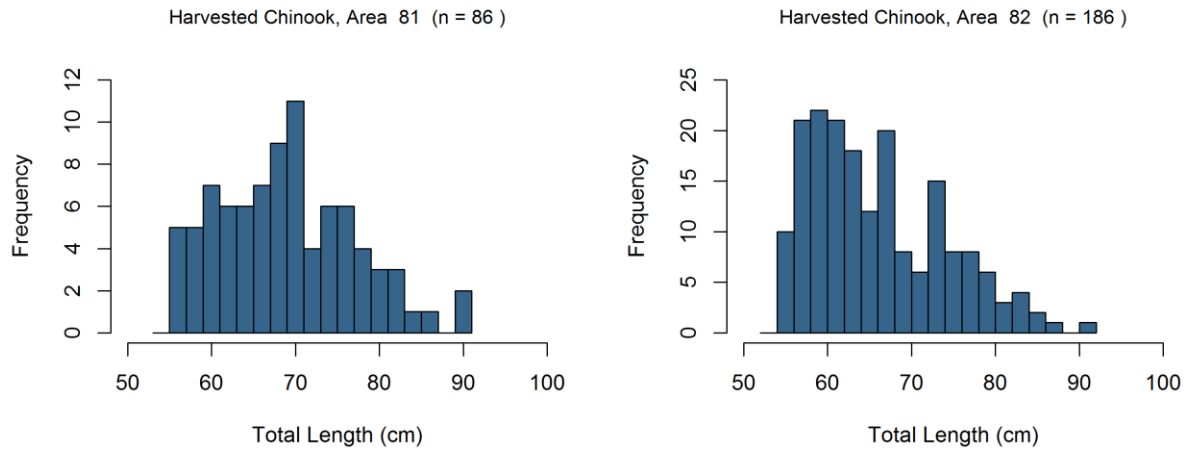


Figure 2.4 Length-frequency distributions of retained marked Chinook sampled in dockside angler interviews during the Area 8-1 (*left panel*) and 8-2 (*right panel*) mark-selective Chinook fisheries from November 1, 2011 - April 30, 2012.

Table 2.4 Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the Area 8-1 (*upper panel*) and 8-2 (*lower panel*) mark-selective Chinook fisheries from November 1, 2011 - April 30, 2012.

Area 8-1

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	84	2	86
Unmarked	0	0	0
Total	84	2	86

Area 8-2

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	176	10	186
Unmarked	1	0	1
Total	177	10	187

Table 2.5 Summary of coded-wire tags recovered from Chinook salmon harvested during the Area 8-1 and 8-2 mark-selective Chinook fisheries from November 1, 2011 - April 30, 2012. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	Number DITs
British Columbia (9%)	Fraser River – Thompson River (3%)	Harrison River	Chehalis River	1 (3%)	0
	Georgia Strait (6%)	Cowichan River	Cowichan River	2 (6%)	0
Washington (91%)	Northern Washington (3%)	East Sound Bay (SAN)	Glenwood Springs	1 (3%)	0
		Hood Canal (6%)	Finch Creek 16.0222	Hoodspout	1 (3%)
	Purdy Creek 16.0005		George Adams	1 (3%)	1
	Northern Puget Sound (27%)	Wallace River 07.0940	Wallace River	6 (18%)	1
		Whitehorse Springs	Whitehorse Pond	3 (9%)	0
	Skagit River (21%)	Cascade River 03.1411	Marblemount	7 (21%)	6
	Mid Puget Sound (21%)	Voight Creek Tr 10.0428	Voights Creek	1 (3%)	0
		Gorst Creek 15.0216	Gorst Rearing Pond	2 (6%)	0
		Green River 09.0001	Icy Creek	1 (3%)	0
		Grovers Creek Hatchery	Grovers Creek	3 (9%)	3
	Southern Puget Sound (12%)	Chambers Creek 12.0007	Chambers Creek	1 (3%)	0
		Clear Creek 11.0013C	Clear Creek	1 (3%)	1
		Kalama Creek 11.0017	Kalama Creek	1 (3%)	0
		Lakewood Hatchery	Lakewood	1 (3%)	0
Total				33	12

Table 2.6 Total Chinook encountered (retained and released) by private-boat anglers logging their trips on voluntary trip reports (VTRs) during the Area 8-1 and 8-2 mark-selective Chinook fisheries from November 1, 2011 - April 30, 2012, with estimates of legal-size and overall (legal and sublegal) mark rates. AD = marked (i.e., 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 Area 8-1	6 1-trip VTRs, 10 Angler Trips	2	2	4	3	11	0.55	0.50
Private VTR Area 8-2	18 1-trip VTRs, 27 Angler Trips	10	3	34	7	54	0.81	0.77
VTR Total	24 1-trip VTRs, 37 Angler Trips	12	5	38	10	65	0.77	0.71
Combined size/mark-status composition:		0.18	0.08	0.58	0.15			
Variance:		(0.0024)	(0.0011)	(0.0038)	(0.0020)			

Due to small sample sizes, we used the Freeman and Halton extension of the Fisher exact test to compare the Chinook size and mark-status composition of the Area 8-1 and 8-2 VTR data. Results suggested no significant difference in composition between the two data sets ($p = 0.146$); thus, we combined VTR data from the two areas to provide one estimate of Chinook size/mark-status proportions. This combined set of proportions was used to estimate total Chinook encounters and associated mortalities for the mark-selective fisheries in Area 8-1 and 8-2 combined.

Table 2.7 Summary of season-wide fishery impact estimates for the Area 8-1 (*upper panel*) and 8-2 (*lower panel*) mark-selective Chinook fisheries from November 1, 2011 - April 30, 2012. 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 (i.e., adipose-clipped), UM = unmarked.

Area 8-1

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	326	284	42	6	290	3,476	59	175 - 406	20
Legal UM	136	0	136	20	20	114	11	0 - 41	52
Sublegal AD	1,033	7	1,027	205	212	4,990	71	74 - 351	33
Sublegal UM	272	0	272	54	54	542	23	9 - 100	43
Total	1,768	291	1,477	287	577	9,121	96	390 - 764	17

Area 8-2

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	540	470	70	11	480	4,771	69	345 - 616	14
Legal UM	225	2	223	33	36	295	17	2 - 69	48
Sublegal AD	1,710	27	1,683	337	363	11,305	106	155 - 572	29
Sublegal UM	450	0	450	90	90	1,331	36	18 - 162	41
Total	2,925	499	2,426	471	969	17,702	133	708 - 1230	14

Table 2.8 Comparison of modeled (FRAM model run 1811) and estimated total Chinook encounters for the combined Area 8-1 and 8-2 mark-selective Chinook fisheries from November 1, 2011 - April 30, 2012. Values may not add up perfectly due to rounding error. AD = marked (i.e., adipose-clipped), UM = unmarked.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	5,474	669	4,805	67
	AD	13,348	2,273	11,075	1,978
	Total	18,822	2,942	15,880	2,045
	% Marked	71	77	70	97
Estimated (Creel) Encounters	UM	1,083	361	722	2
	AD	3,610	866	2,743	787
	Total	4,693	1,227	3,465	789
	% Marked	77	71	79	100

Table 2.9 Comparison of modeled (FRAM model run 1811) and estimated total Chinook mortalities for the combined Area 8-1 and 8-2 mark-selective Chinook fisheries from November 1, 2011 - April 30, 2012. Values may not add up perfectly due to rounding error. AD = marked (i.e., adipose-clipped), UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	1,121	4,337	5,458	200	1,346	1,546
Released Legal	93	144	237	54	17	71
Released Sublegal	961	2,215	3,176	144	542	686
Landed Only	67	1,978	2,045	2	787	789

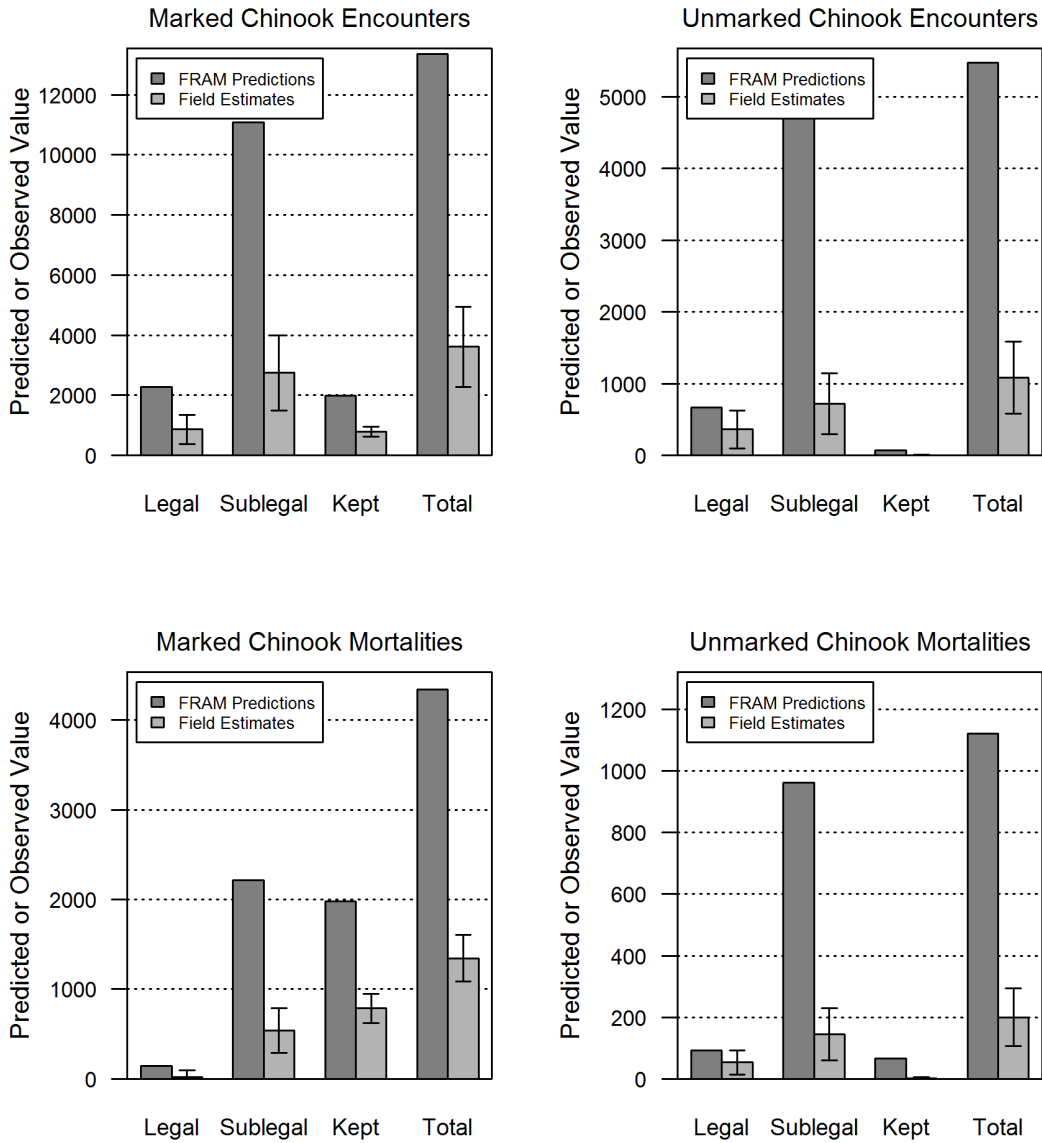


Figure 2.5 Comparison of modeled (FRAM model run 1811) and estimated total Chinook encounters and mortalities for the combined Area 8-1 and 8-2 mark-selective Chinook fisheries from November 1, 2011 - April 30, 2012. Error bars represent approximate 95% confidence intervals for field estimates.

Table 2.10 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 combined Area 8-1 and 8-2 mark-selective Chinook fisheries from November 1, 2011 - April 30, 2012. AD = marked (i.e., adipose-clipped), UM = unmarked.

Area	Hatchery	Brood Year	DITs Obs'd	AD DIT Harvest		UM DIT Enc.	UM DIT Mortality		
				Est.	var(Est.)		Est.	var(Est.)	SE(Est.)
8-1	Grovers Creek Hatchery	2009	1	3.4	8.3	3.3	0.3	0.10	0.3
8-1	Marblemount Hatchery	2008	2	6.8	16.6	6.7	0.7	0.20	0.6
8-1	Marblemount Hatchery	2009	1	3.4	8.3	3.4	0.3	0.10	0.3
8-2	Clear Creek Hatchery	2009	1	2.7	4.4	2.7	0.3	0.05	0.2
8-2	George Adams Hatchery	2009	1	2.7	4.4	2.7	0.3	0.05	0.2
8-2	Grovers Creek Hatchery	2009	2	5.3	8.9	5.1	0.5	0.10	0.4
8-2	Marblemount Hatchery	2008	2	5.3	8.9	5.3	0.5	0.10	0.4
8-2	Marblemount Hatchery	2009	1	2.7	4.4	2.7	0.3	0.04	0.2
8-2	Wallace River Hatchery	2008	1	2.7	4.4	2.7	0.3	0.05	0.2
Total			12	35	68.6	34.6	3.5	0.78	2.8

Table 2.11 Monthly sample rates (Total retained Chinook sampled¹ / Estimated retained Chinook) in the Area 8-1 (upper panel) and 8-2 (lower panel) mark-selective Chinook fisheries from November 1, 2011 - April 30, 2012.

Area 8-1

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
November	45-48	1 Nov – 27 Nov	92	0	92	13	0	13	14.1%
December	49-53/1	28 Nov - 1 Jan	11	0	11	5	0	5	47.0%
January	2-5	2 Jan - 29 Jan	7	0	7	2	0	2	26.8%
February	6-9	30 Jan - 26 Feb	35	0	35	15	0	15	43.4%
March	10-14	27 Feb - 1 Apr	63	0	63	23	0	23	36.5%
April	15-19	2 Apr - 30 Apr	83	0	83	27	0	27	32.5%
Season Total			291	0	291	85	0	85	29.2%

Area 8-2

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
November	45-48	1 Nov – 27 Nov	95	0	95	28	0	28	29.5%
December	49-53/1	28 Nov - 1 Jan	39	0	39	22	0	22	55.9%
January	2-5	2 Jan - 29 Jan	42	0	42	9	0	9	21.2%
February	6-9	30 Jan - 26 Feb	36	0	36	14	0	14	38.7%
March	10-14	27 Feb - 1 Apr	109	0	109	37	0	37	33.9%
April	15-19	2 Apr - 30 Apr	174	2	177	76	1	77	43.6%
Season Total			496	2	499	186	1	187	37.5%

^{1/} Number of retained Chinook sampled includes all retained Chinook inspected for CWT's, from all sites sampled during the winter 2011-12 Area 8-1 and 8-2 mark-selective Chinook fisheries (i.e., the sample-frame sites included in the creel estimates and the fish sampled as part of baseline sampling in the Area).

Table 2.12 Fishery-total estimates of retained and released salmon (other than Chinook salmon) for the Area 8-1 mark-selective Chinook fishery from November 1, 2011 - April 30, 2012. AD = marked (i.e., adipose-clipped), UK = unknown mark-status. Values may not add exactly due to rounding error.

Week	Start Date	End Date	Retained Chum	Released Salmon					
				Chum	Coho AD	Coho UK	Pink	Trout	Unknown Salmon
45	1-Nov	6-Nov	0	0	8	0	0	31	8
46	7-Nov	13-Nov	0	0	0	0	0	0	0
47	14-Nov	20-Nov	0	0	0	0	0	0	0
48	21-Nov	27-Nov	0	0	0	0	0	0	0
49	28-Nov	4-Dec	0	0	0	0	0	0	0
50	5-Dec	11-Dec	0	0	0	0	0	0	0
51	12-Dec	18-Dec	0	0	0	0	0	0	0
52	19-Dec	25-Dec	0	0	0	0	0	0	0
53/1	26-Dec	1-Jan	0	0	0	0	0	0	0
2	2-Jan	8-Jan	0	0	0	0	0	0	0
3	9-Jan	15-Jan	0	0	0	0	0	0	0
4	16-Jan	22-Jan	0	0	0	0	0	0	0
5	23-Jan	29-Jan	0	0	0	0	0	0	0
6	30-Jan	5-Feb	0	0	3	0	0	0	0
7	6-Feb	12-Feb	0	0	0	0	0	0	0
8	13-Feb	19-Feb	0	0	0	0	0	0	0
9	20-Feb	26-Feb	0	0	0	0	0	0	0
10	27-Feb	4-Mar	0	0	0	0	0	0	0
11	5-Mar	11-Mar	0	0	0	0	0	0	0
12	12-Mar	18-Mar	0	0	0	0	0	0	0
13	19-Mar	25-Mar	0	0	0	0	0	0	0
14	26-Mar	1-Apr	0	0	0	0	0	0	0
15	2-Apr	8-Apr	0	0	0	0	0	0	0
16	9-Apr	15-Apr	0	0	0	0	0	0	0
17	16-Apr	22-Apr	0	0	0	0	0	0	0
18	23-Apr	29-Apr	0	0	0	0	0	0	0
19	30-Apr	30-Apr	0	0	0	0	0	0	0
Area 8-1 Season Total:			0	0	10	0	0	31	8
Variance:			0	0	56	0	0	673	52
Standard Error:			0	0	7	0	0	26	7
CV (%):			-	-	71%	-	-	85%	92%
95% CI:			-	-	0-25	-	-	0-82	0-22

Table 2.13 Fishery-total estimates of retained and released salmon (other than Chinook salmon) for the Area 8-2 mark-selective Chinook fishery from November 1, 2011 - April 30, 2012. AD = marked (i.e., adipose-clipped), UK = unknown mark-status. Values may not add exactly due to rounding error.

Week	Start Date	End Date	Retained Chum	Released Salmon					
				Chum	Coho AD	Coho UK	Pink	Trout	Unknown Salmon
45	1-Nov	6-Nov	8	2	0	2	7	0	69
46	7-Nov	13-Nov	0	3	0	0	0	0	3
47	14-Nov	20-Nov	0	0	2	0	0	0	12
48	21-Nov	27-Nov	0	0	0	0	0	0	0
49	28-Nov	4-Dec	0	0	0	0	0	0	3
50	5-Dec	11-Dec	0	0	0	0	0	0	0
51	12-Dec	18-Dec	2	0	0	0	0	0	0
52	19-Dec	25-Dec	0	0	0	0	0	0	10
53/1	26-Dec	1-Jan	0	0	0	0	0	0	8
2	2-Jan	8-Jan	0	0	0	0	0	0	2
3	9-Jan	15-Jan	0	0	0	0	0	0	0
4	16-Jan	22-Jan	0	0	0	0	0	0	0
5	23-Jan	29-Jan	0	0	0	0	0	0	0
6	30-Jan	5-Feb	0	0	0	0	0	0	10
7	6-Feb	12-Feb	0	0	0	0	0	0	14
8	13-Feb	19-Feb	0	0	0	0	0	0	14
9	20-Feb	26-Feb	0	0	0	0	0	0	0
10	27-Feb	4-Mar	0	0	0	0	0	0	0
11	5-Mar	11-Mar	0	0	0	0	0	0	2
12	12-Mar	18-Mar	0	0	0	0	0	0	0
13	19-Mar	25-Mar	0	0	0	0	0	0	0
14	26-Mar	1-Apr	0	0	0	0	0	0	0
15	2-Apr	8-Apr	0	0	0	0	0	0	0
16	9-Apr	15-Apr	0	0	0	0	0	0	0
17	16-Apr	22-Apr	0	0	0	0	0	0	0
18	23-Apr	29-Apr	0	0	0	0	0	0	12
19	30-Apr	30-Apr	0	0	0	0	0	0	0
Area 8-2 Season Total:			10	5	2	2	7	0	159
Variance:			10	17	2	2	23	0	1,252
Standard Error:			3	4	2	1	5	0	35
CV (%):			30%	86%	67%	62%	68%	-	22%
95% CI:			4-16	0-13	0-5	0-5	0-16	-	90-229

Table 2.14 Summary of the total number of anglers intercepted in Areas 8-1 and 8-2 during on-the-water surveys conducted from November 1, 2011 - April 30, 2012. Sites in bold represent those included in the dockside sample frame.

Area	Site Name	Total Anglers	Season Total (unadjusted) Size Measure
8-1	Camano Island State Park Ramp	25	0.417
8-1	Maple Grove Ramp	15	0.250
8-1	Oak Harbor Marina/Ramp	4	0.067
8-1	Private	4	0.067
8-1	LaConner Marina/Moorage	2	0.033
8-1	Utsalady Ramp	3	0.050
8-1	Everett Ramp	2	0.033
8-1	Coupeville Ramp	5	0.083
Area 8-1 Total Anglers		60	1.00
8-2	Bayside Marina/Drystack	8	0.098
8-2	Camano Isl. State Park	5	0.061
8-2	Dagmar's Landing	3	0.037
8-2	Ebby Waterfront Park	2	0.024
8-2	Everett Marina	6	0.073
8-2	Everett Ramp	41	0.500
8-2	Langley Marina/Ramp	3	0.037
8-2	Mukilteo St. Park Ramp	4	0.049
8-2	Possession Waterfront Beach Park	2	0.024
8-2	Private	3	0.037
8-2	Sandy Point Marina/Ramp	1	0.012
8-2	Tulalip Marina/Ramp	4	0.049
Area 8-2 Total Anglers		82	1.00

Table 2.15 Season-total estimates of Chinook encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Area 8-1 and 8-2 winter mark-selective Chinook fisheries. Values may not add exactly due to rounding error.

Area	Season Dates	Effort (Angler-trips)	Retained Chinook				Released Chinook				Total Encounters
			LM	LU	SM	SU	LM	LU	SM	SU	
8-1	Oct 1, 2005 - Apr 30, 2006	3,976	303	0	39	0	45	188	763	575	1,914
8-1	Oct 1, 2006 - Apr 30, 2007	3,454	278	8	37	4	42	118	1,437	857	2,781
8-1	Nov 1, 2007 - Apr 30, 2008	3,288	638	5	36	0	95	304	1,345	577	3,000
8-1	Jan 1, 2009 - Apr 30, 2009	2,518	396	12	7	0	59	45	1,443	909	2,870
8-1	Nov 1, 2009 - Apr 30, 2010	3,192	273	0	11	0	41	45	595	269	1,234
8-1	Nov 1, 2010 - Apr 30, 2011	2,398	87	0	9	0	13	15	91	69	283
8-1	Nov 1, 2011 - Apr 30, 2012	2,767	284	0	7	0	42	136	1,027	272	1,768
8-2	Oct 1, 2005 - Apr 30, 2006	8,521	735	40	35	0	106	618	1,706	876	4,116
8-2	Oct 1, 2006 - Apr 30, 2007	7,848	766	18	95	3	113	183	10,486	5,407	17,071
8-2	Nov 1, 2007 - Apr 30, 2008	5,678	795	15	74	3	114	181	942	303	2,428
8-2	Jan 1, 2009 - Apr 30, 2009	5,946	495	15	14	0	74	18	1,557	468	2,641
8-2	Nov 1, 2009 - Apr 30, 2010	6,732	814	4	10	0	122	164	1300	487	2,902
8-2	Nov 1, 2010 - Apr 30, 2011	3,505	111	0	5	0	17	20	122	88	363
8-2	Nov 1, 2011 - Apr 30, 2012	5,197	470	2	27	0	70	223	1683	450	2,925

3) Marine Area 9 Winter Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a fifth consecutive winter mark-selective Chinook fishery (MSF) in Marine Area 9 from November 1-30, 2011 and January 16– April 15, 2012. WDFW’s Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program in Area 9 throughout the season in order to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included dockside creel sampling, aerial effort surveys, test fishing and collection of voluntary trip reports (VTRs) from the angling public. **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 Area 9 winter mark-selective Chinook fishery from November 1-30, 2011 and January 16-April 30, 2012. In addition to the major components of the results described previously (page 3), we present the aerial survey and dockside data used to estimate the sample fraction in Area 9 (see WDFW 2012a, *Aerial-Access Design*).

Table 3.1 Sampling/estimation details on target parameters associated with the overall Area 9 winter 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 ¹ ; 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.
Aerial Surveys	Fraction of Area 9 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	Month	The sample fraction was calculated for individual aerial survey dates (see Table 3.12 ; $n=18$ surveys conducted out of $N=121$ days available in the season). Mean sample fractions were calculated for each time stratum (Nov & Jan-Apr) and used to calculate estimates of Chinook encounters and mortality.
Test Fishing	Size (legal/sublegal) and mark-status (marked/unmarked) composition of encountered Chinook	Chinook length, age, and DNA-based ² stock composition; species composition of non-Chinook encounters	Fish encounter	Season (4 months)	Due to significant differences in size/mark-status composition between the Nov. and Jan.-Apr. test fishery data, we calculated encounter and mortality estimates separately for each time stratum. We used proportions of LM=12%, LU=4%, SM=62% and SU=22% for the Nov. stratum and LM=25%, LU=7%, SM=49% and SU=19% for the Jan.-Apr. stratum (see Table 3.5).
Voluntary Trip Reports (VTRs)	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 VTR form	Fish encounter	Season (4 months)	We elected to use stratum-specific test fishery data only to estimate the size/mark status proportions needed to produce the Area 9 Chinook encounter and mortality estimates.
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 (4 months)	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 (4 months)	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

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

Table 3.2 Estimates of total fishing effort and total salmon catch (harvest and releases) during the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012. Values may not add exactly due to rounding error. AD = marked (i.e., 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	
Nov	45	1-Nov	6-Nov	543	1,111	95	0	530	221	846
	46	7-Nov	13-Nov	218	339	25	0	139	58	223
	47	14-Nov	20-Nov	110	204	25	0	139	58	223
	48	21-Nov	27-Nov	15	30	5	0	28	12	45
	49	28-Nov	30-Nov	0	0	0	0	0	0	0
November Total:				885	1,684	149	0	836	349	1,335
Variance:				50,791	178,283	791	0	80,117	12,865	187,689
Standard Error:				225	422	28	0	283	113	433
CV (%):				25%	25%	19%	-	34%	32%	32%
95% CI:				443-1,327	856-2,511	94-205	-	282-1,391	127-572	486-2,184
Jan - Apr	4	16-Jan	22-Jan	10	16	0	0	0	0	0
	5	23-Jan	29-Jan	121	223	42	0	91	47	179
	6	30-Jan	5-Feb	245	455	45	0	97	50	192
	7	6-Feb	12-Feb	131	240	18	0	39	20	77
	8	13-Feb	19-Feb	199	427	39	0	84	44	167
	9	20-Feb	26-Feb	61	101	15	0	32	17	64
	10	27-Feb	4-Mar	96	145	8	0	17	9	34
	11	5-Mar	11-Mar	87	127	8	0	17	9	34
	12	12-Mar	18-Mar	50	117	6	0	13	7	26
	13	19-Mar	25-Mar	107	168	9	0	19	10	38
	14	26-Mar	1-Apr	6	12	3	0	6	3	13
	15	2-Apr	8-Apr	114	219	60	3	129	64	256
16	9-Apr	15-Apr	257	429	53	0	114	59	226	
January - April Total:				1,482	2,678	305	3	659	339	1,307
Variance:				54,244	177,327	4,500	5	46,833	7,883	124,022
Standard Error:				233	421	67	2	216	89	352
CV (%):				16%	16%	22%	74%	33%	26%	27%
95% CI:				1,025-1,938	1,852-3,503	174-437	0-7	235-1,084	165-513	617-1,997
Area 9 Season Total:				2,367	4,361	455	3	1,496	688	2,642
Variance:				105,035	355,610	5,291	5	126,949	20,749	311,710
Standard Error:				324	596	73	2	356	144	558
CV (%):				14%	14%	16%	74%	24%	21%	21%
95% CI:				1,731-3,002	3,193-5,530	312-598	0-7	798-2,194	406-971	1,548-3,736

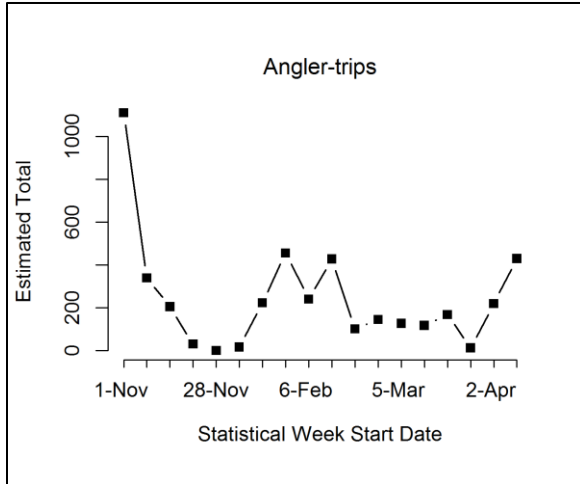


Figure 3.1 Temporal patterns in fishing effort during the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012.

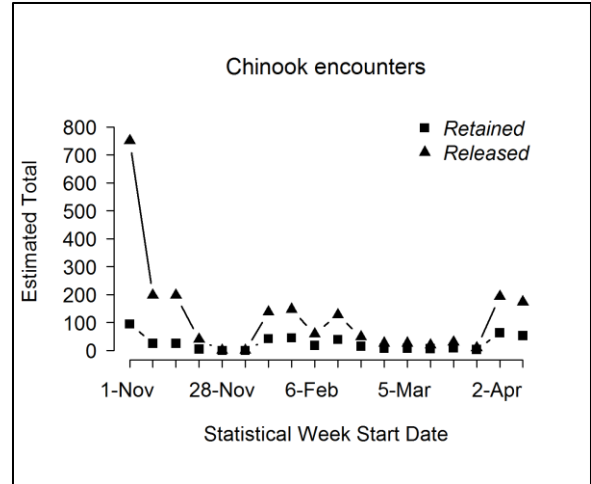


Figure 3.3 Temporal patterns in Chinook encounters (number retained and released) during the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012.

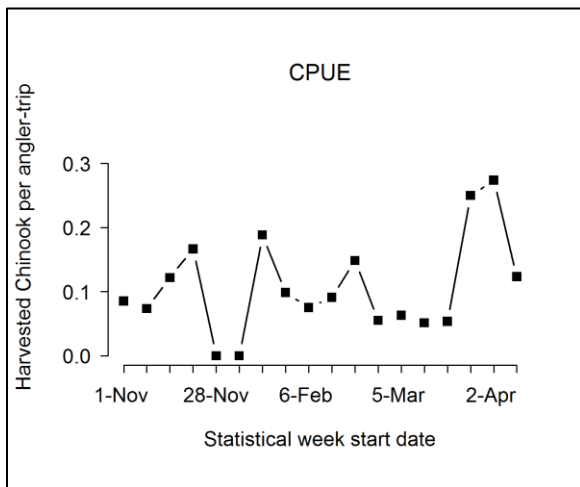


Figure 3.2 Temporal patterns in CPUE (number of Chinook landed per angler trip) during the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16-April 15, 2012.

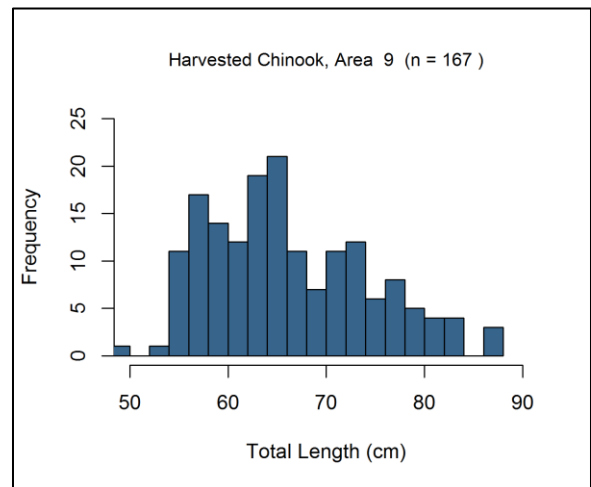


Figure 3.4 Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012.

Table 3.3 Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the Area 9 mark-selective Chinook fishery from November 1-30, 2011 (*left panel*) and January 16 - April 15, 2012 (*right panel*).

Mark Type	November # Sampled			Mark Type	January – April # Sampled		
	Legal-size	Sublegal-size	Total		Legal-size	Sublegal-size	Total
Marked	34	2	36	Marked	120	11	131
Unmarked	0	0	0	Unmarked	0	0	0
Total	34	2	36	Total	120	11	131

Table 3.4 Summary of coded-wire tags recovered from Chinook salmon harvested during the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012. The field “Number DITs” corresponds to the number of recovered CWTs that belonged to double-index tag groups.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	Number DITs
Washington (100%)	Northern Washington (4.8%)	Samish River 03.0005	Samish	1 (4.8%)	1
		Finch Creek 16.0222	Hoodspout	1 (4.8%)	0
	Hood Canal (9.5%)	Purdy Creek 16.0005	George Adams	1 (4.8%)	1
		Wallace River 07.0940	Wallace River	4 (19%)	3
	Northern Puget Sound (23.8%)	Whitehorse Springs	Whitehorse Pond	1 (4.8%)	0
		Skagit River (28.6%)	Cascade River 03.1411	Marblemount	6 (28.6%)
	Mid Puget Sound (33.3%)		Big Soos Creek 09.0072	Soos Creek	2 (9.5%)
		Icy Creek 09.0125	Icy Creek	1 (4.8%)	0
		Gorst Creek 15.0216	Gorst Rearing Pond	1 (4.8%)	0
		Grovers Creek Hatchery	Grovers Creek	1 (4.8%)	1
		Voight Creek 10.0414	Voights Creek	1 (4.8%)	0
White River 10.0031		White River	1 (4.8%)	0	
Total				21	11

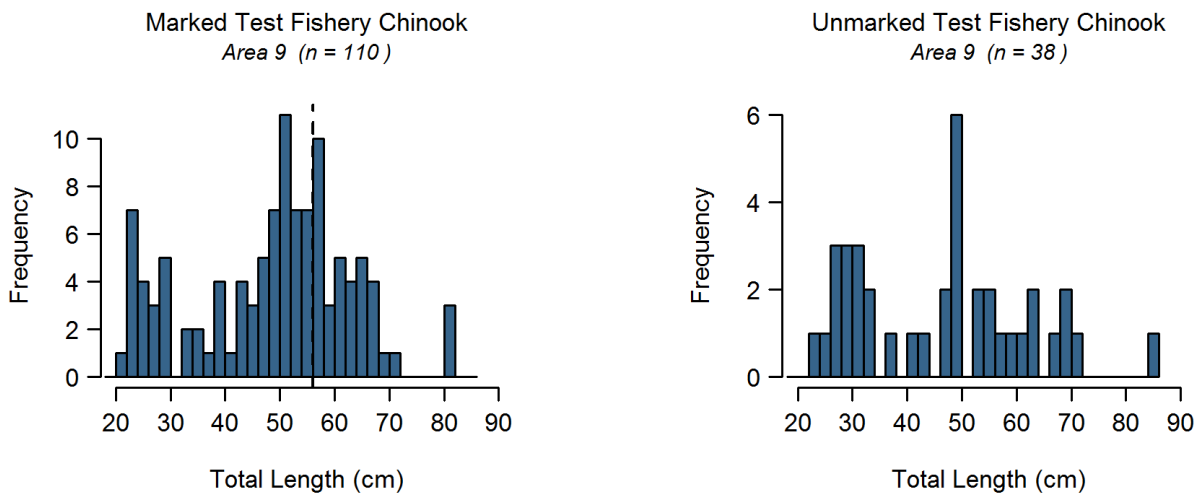


Figure 3.5 Length-frequency distributions of marked (*left panel*) and unmarked (*right panel*) Chinook encountered by test fishers during the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012. The vertical dashed line in the left panel corresponds to the legal size limit (22 in or 56 cm).

Table 3.5 Composition of test fishery Chinook encounters and associated mark-rate and size/mark-status proportion estimates for the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012. AD = marked (i.e., adipose-clipped), UM = unmarked. Variances associated with size/mark-status proportions and mark rates are provided in parentheses.

Month	Stat Week	Fishing Effort		Legal		Sublegal		Total	
		Days	Hours Fished	AD	UM	AD	UM		
Nov	45	4	20.9	5	0	16	8	29	
	46	3	10.5	1	0	8	2	11	
	47	3	15.3	5	3	16	3	27	
	48	2	5.8	0	0	19	7	26	
	49	2	10.3	2	1	7	4	14	
	Total	14	62.8	13	4	66	24	107	
	Size/mark-status composition:		0.12 (0.0010)		0.04 (0.0003)		0.62 (0.0022)		0.22 (0.0016)
Legal size mark rate:		0.76 (0.0112)							
Overall mark rate:		0.74 (0.0018)							
Jan - Apr	4	1	4.4	0	0	3	1	4	
	5	4	16.5	4	0	6	2	12	
	6	5	24.7	5	1	10	7	23	
	7	7	35.1	1	1	16	4	22	
	8	3	16.3	1	1	4	1	7	
	9	4	18.1	2	2	5	1	10	
	10	2	8.8	2	0	1	1	4	
	11	2	10.5	0	0	0	0	0	
	12	2	6.7	1	1	0	0	2	
	13	6	24.5	9	0	11	2	22	
	14	2	11.8	0	1	1	1	3	
	15	4	21.7	2	2	3	4	11	
	16	6	31.7	5	0	4	1	10	
	Total	48	230.7	32	9	64	25	130	
Size/mark-status composition:		0.25 (0.0014)		0.07 (0.0005)		0.49 (0.0019)		0.19 (0.0012)	
Legal size mark rate:		0.78 (0.0043)							
Overall mark rate:		0.74 (0.0015)							
Season Total	Grand Total	62	293.5	45	13	130	49	237	
	Size/mark-status composition¹:		0.19 (0.0007)		0.05 (0.0002)		0.55 (0.0010)		0.21 (0.0007)
	Legal size mark rate:		0.78 (0.0031)						
Overall mark rate:		0.74 (0.0008)							

^{1/} Note: Results of a Chi-Square test between Nov and Jan-Apr size/mark-status proportions suggest that the data should not be combined. Therefore, season total proportions were not used to estimate total Chinook encounters and associated impacts. Rather, estimates were calculated separately for the Nov and Jan-Apr time strata, using each stratum's respective proportions.

Table 3.6 Total Chinook encountered (retained and released) by private-boat anglers logging their trips on voluntary trip reports (VTRs) compared to test fishing encounter data, with estimates of legal-size and overall (legal and sublegal) mark rates during the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012. AD = marked (i.e., 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
November 1-30, 2011								
Charter Boat VTR	0 1-trip VTRs, 0 Angler Trips	0	0	0	0	0	-	-
Private Boat VTR	14 1-trip VTRs, 25 Angler Trips	3	2	28	27	60	0.52	0.60
Test Fishery	14 Days, 28 Angler Trips	13	4	66	24	107	0.74	0.76
November size/mark-status composition:		0.12	0.04	0.62	0.22			
Variance:		(0.0010)	(0.0003)	(0.0022)	(0.0016)			
January 16 - April 15, 2012								
Charter Boat VTR	7 1-trip VTRs, 21 Angler Trips	8	6	28	4	46	0.78	0.57
Private Boat VTR	33 1-trip VTRs, 56 Angler Trips	18	5	55	19	97	0.75	0.78
Test Fishery	48 Days, 96 Angler Trips	32	9	64	25	130	0.74	0.78
Jan-April size/mark-status composition:		0.25	0.07	0.49	0.19			
Variance:		(0.0014)	(0.0005)	(0.0019)	(0.0012)			

We used Pearson's chi-square test to compare size/mark-status proportions in the test fishery between two separate time periods during the Area 9 winter MSF season (Nov. 1-30 vs. Jan 16-Apr 15). Results indicated a significant difference in proportions between the two time strata ($\chi^2=7.84$, $df=3$, $p\text{-value}=0.049$), suggesting that they should not be combined. We next compared private fleet VTR data and test fishery data within each time stratum. Results of the Pearson chi-square analysis indicated a significant difference between the VTR and test fishery proportions within the Nov time stratum ($\chi^2=10.02$, $df=3$, $p\text{-value}=0.018$), but no difference between the two data sets within the Jan-Apr time stratum ($\chi^2=1.80$, $df=3$, $p\text{-value}=0.614$). Given these mixed results, we elected to use stratum-specific test fishery data only to estimate the size/mark status proportions needed to produce the Area 9 Chinook encounter and mortality estimates.

Table 3.7 Summary of season-wide fishery impact estimates for the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012. 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 (i.e., adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	484	421	63	9	430	4,988	71	292 - 569	16
Legal UM	140	0	140	21	21	49	7	0 - 16	33
Sublegal AD	1,467	34	1,433	287	321	4,448	67	190 - 451	21
Sublegal UM	551	3	548	110	113	747	27	59 - 166	24
Total	2,642	458	2,184	427	885	10,232	101	686 - 1083	11

Table 3.8 Comparison of modeled (FRAM model run 1811) and estimated total Chinook encounters for the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012. Values may not add up perfectly due to rounding error. AD = marked (i.e., adipose-clipped) and UM = unmarked.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	1,322	322	1,000	16
	AD	5,885	1,375	4,510	1,196
	Total	7,207	1,697	5,510	1,212
	% Marked	82	81	82	99
Estimated (Creel) Encounters	UM	691	140	551	3
	AD	1,951	484	1,467	455
	Total	2,642	624	2,018	458
	% Marked	74	78	73	99

Table 3.9 Comparison of modeled (FRAM model run 1811) and estimated total Chinook mortalities for the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012. Values may not add up perfectly due to rounding error. AD = marked (i.e., adipose-clipped) and UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	263	2,185	2,448	134	751	885
Released Legal	47	87	134	21	9	30
Released Sublegal	200	902	1,102	110	287	396
Landed Only	16	1,196	1,212	3	455	458

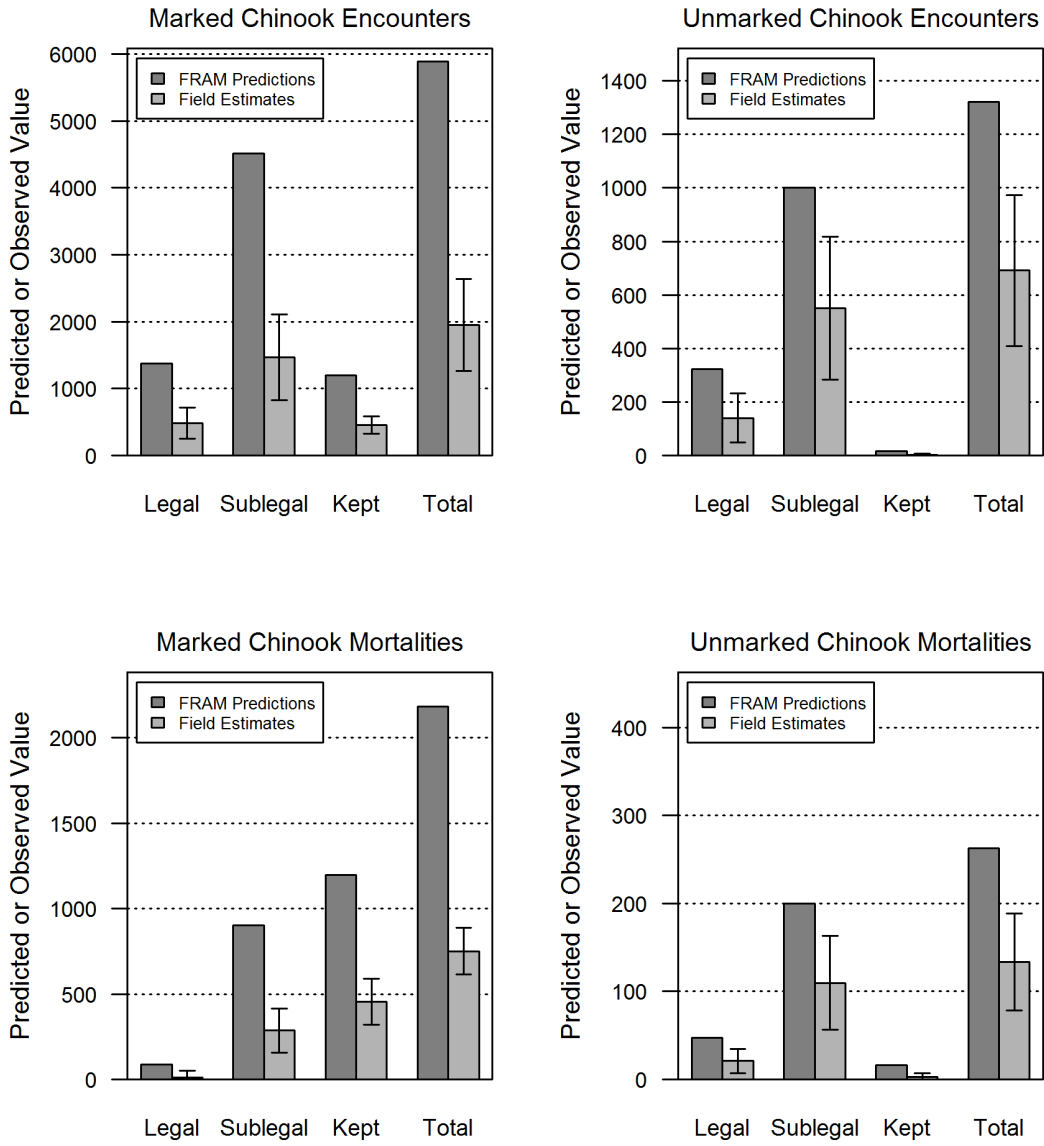


Figure 3.6 Comparison of modeled (FRAM model run 1811) and estimated total Chinook encounters and mortalities for the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012. Error bars represent approximate 95% confidence intervals for field estimates.

Table 3.10 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 Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012. AD = marked (i.e., adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs'd	AD DIT Harvest		UM DIT Enc.	UM DIT Mortality		
			Est.	var(Est.)		Est.	var(Est.)	SE(Est.)
George Adams Hatchery	2009	1	2.7	4.8	2.7	0.3	0.05	0.2
Grovers Creek Hatchery	2009	1	2.7	4.8	2.6	0.3	0.05	0.2
Marblemount Hatchery	2008	3	8.2	14.3	8.1	0.8	0.10	0.6
Samish Hatchery	2009	1	2.7	4.8	2.8	0.3	0.05	0.2
Soos Creek Hatchery	2008	1	2.7	4.8	2.9	0.3	0.10	0.2
Soos Creek Hatchery	2009	1	2.7	4.8	2.9	0.3	0.10	0.2
Wallace River Hatchery	2008	2	5.5	9.6	5.5	0.6	0.10	0.4
Wallace River Hatchery	2009	1	2.7	4.8	2.7	0.3	0.05	0.2
Total		11	30.2	52.6	30.3	3.0	0.50	2.4

Table 3.11 Monthly sample rates (Total retained Chinook sampled¹ / Estimated retained Chinook) in the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
November	45-49	1 Nov - 30 Nov	149	0	149	36	0	36	24.1%
January	4-5	16 Jan - 29 Jan	42	0	42	14	0	14	33.4%
February	6-9	30 Jan - 26 Feb	117	0	117	51	0	51	43.7%
March	10-14	27 Feb - 1 Apr	34	0	34	10	0	10	29.5%
April	15-16	2 Apr - 15 Apr	113	3	116	56	0	56	48.4%
Season Total			455	3	458	167	0	167	36.5%

^{1/} Number of retained Chinook sampled includes all retained Chinook inspected for CWT's, from all sites sampled during the winter 2011-12 Area 9 mark-selective Chinook fishery (i.e., the sample-frame sites included in the creel estimates and the fish sampled as part of baseline sampling in the Area).

Table 3.12 Summary of aerial survey and dockside data used to estimate the fraction of Area 9 effort captured in the four-site sample frame during the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012. 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}	Total Boats, Sy_{ijk}	Fishing Boats	Active Boats, X_{ij}	
05-Nov	Weekend	10:35	11:05	62	94	35	23	0.371
06-Nov	Weekend	12:17	12:41	44	111	58	23	0.523
08-Nov	Weekday	10:31	11:01	5	18	7	2	0.400
13-Nov	Weekend	10:23	10:55	21	42	10	5	0.238
17-Nov	Weekday	10:16	10:39	17	17	1	1	0.059
20-Nov	Weekend	10:28	11:00	37	65	14	8	0.216
November Summary Statistics		Totals		186	347	125	62	
		Mean		31	58	21	10	0.301
		St Dev		21	39	22	10	0.163
		CV(%)		66.7%	68.2%	103.6%	97.9%	54.3%
27-Jan	Weekend	11:45	12:01	32	54	22	13	0.406
28-Jan	Weekend	10:58	11:16	14	23	18	11	0.786
04-Feb	Weekend	10:45	11:00	100	133	65	49	0.490
08-Feb	Weekday	10:30	10:50	3	3	4	4	1.333
19-Feb	Weekend	10:44	11:01	85	116	41	30	0.353
03-Mar	Weekend	12:03	12:24	18	24	8	6	0.333
08-Mar	Weekday	10:22	10:38	26	35	20	15	0.577
11-Mar	Weekend	10:51	11:06	9	9	2	2	0.222
21-Mar	Weekday	10:34	10:50	7	7	2	2	0.286
07-Apr	Weekend	10:44	11:03	65	84	35	27	0.415
10-Apr	Weekday	10:27	10:46	14	30	13	6	0.429
14-Apr	Weekend	10:38	11:05	100	111	42	38	0.380
Jan - Apr Summary Statistics		Totals		473	629	272	203	
		Mean		39	52	23	17	0.501
		St Dev		37	46	20	16	0.300
		CV(%)		94.8%	88.7%	86.2%	91.8%	59.9%

Table 3.13 Fishery-total estimates of retained and released salmon (*other than Chinook*) in the Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012. Values may not add exactly due to rounding error. AD = marked (i.e., adipose-clipped), UM = unmarked, UK = unknown mark-status.

Week	Start Date	End Date	Retained Salmon			Released Salmon				
			Coho AD	Coho UM	Chum	Coho AD	Coho UM	Coho UK	Chum	Unk Salmon
45	1-Nov	6-Nov	5	10	60	5	15	0	5	274
46	7-Nov	13-Nov	7	0	13	0	20	0	0	60
47	14-Nov	20-Nov	0	0	0	0	0	0	0	30
48	21-Nov	27-Nov	0	0	0	0	0	10	0	10
49	28-Nov	30-Nov	0	0	0	0	0	0	0	0
4	16-Jan	22-Jan	0	0	0	0	0	0	0	0
5	23-Jan	29-Jan	0	0	0	0	0	0	0	0
6	30-Jan	5-Feb	0	0	0	0	0	0	0	0
7	6-Feb	12-Feb	0	0	0	0	0	0	0	0
8	13-Feb	19-Feb	0	0	0	0	0	0	0	0
9	20-Feb	26-Feb	0	0	0	0	0	0	0	0
10	27-Feb	4-Mar	0	0	0	0	0	0	0	0
11	5-Mar	11-Mar	0	0	0	0	0	0	0	0
12	12-Mar	18-Mar	0	0	0	0	0	0	0	0
13	19-Mar	25-Mar	0	0	0	0	0	0	0	0
14	26-Mar	1-Apr	0	0	0	0	0	0	0	0
15	2-Apr	8-Apr	0	0	0	0	0	0	0	0
16	9-Apr	15-Apr	0	0	0	0	0	0	0	0
Area 9 Season Total:			12	10	73	5	35	10	5	374
Variance:			106	8	627	12	954	49	12	16,718
Standard Error:			10	3	25	4	31	7	4	129
CV (%):			88.6%	28.6%	34.3%	70.5%	88.6%	70.5%	70.2%	34.6%
95% CI:			0-32	4-16	24-122	0-12	0-95	0-24	0-12	120-627

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 Area 9 winter mark-selective Chinook fishery. 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	
Jan 16 - Apr 15, 2008	6,887	1,333	3	72	0	195	304	1,288	375	3,570
Nov 1-30, 2008 & Jan 16 - Apr 15, 2009	7,064	871	14	14	0	130	158	3,520	2,837	7,545
Nov 1-30, 2009 & Jan 16 - Apr 15, 2010	6,823	1,450	18	106	10	217	353	2,166	615	4,934
Nov 1-30, 2010 & Jan 16 - Apr 15, 2011	4,425	428	0	3	0	64	117	583	422	1,618
Nov 1-30, 2011 & Jan 16 - Apr 15, 2012	4,361	421	0	34	3	63	140	1,433	548	2,642

4) Marine Area 10 Winter Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a fifth consecutive winter mark-selective Chinook fishery (MSF) in Marine Area 10 from October 1, 2011 through January 31, 2012. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program in Area 10 throughout the season in order to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included dockside creel sampling, on-the-water effort surveys, test fishing and collection of voluntary trip reports (VTRs) from the angling public. **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 the following section we present results from our monitoring activities during the Area 10 winter mark-selective Chinook fishery from October 1, 2011 through January 31, 2012.

Table 4.1 Sampling/estimation details on target parameters associated with the overall Area 10 winter 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 ¹ ; 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.
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 10 boat surveys were conducted during the four-month fishery.
Test Fishing	Size (legal/sublegal) and mark-status composition (marked, unmarked) of encountered Chinook	Chinook length, age, and DNA-based ² stock composition; species composition of non-Chinook encounters	Fish encounter	Season (4 months)	Season-total test fishery data were combined with pooled (charter and private) VTR data to provide a single estimate of size/mark-status proportions for use in the estimation of total Chinook encounters and associated impacts; LM=6%, LU=4%, SM=63%, SU=27%. (See Tables 4.5 and 4.6).
Voluntary Trip Reports (VTRs)	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 VTR form	Fish encounter	Season (4 months)	Size/mark-status composition was compared between charter and private fleet VTR data using Pearson’s chi-square test. Results indicated no significant difference; thus, we combined the two VTR datasets for comparison with test fishing data (see above; Tables 4.5 and 4.6).
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 (4 months)	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 (4 months)	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

¹The length and CWT composition of landed catch was assessed on a season-wide basis for impact estimation.²Though 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 Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012. Values may not add exactly due to rounding error. AD = marked (i.e., 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	
Oct	40	1-Oct	2-Oct	526	999	26	5	309	147	486
	41	3-Oct	9-Oct	502	896	9	4	105	47	165
	42	10-Oct	16-Oct	285	463	0	0	0	0	0
	43	17-Oct	23-Oct	115	217	8	0	100	49	158
	44	24-Oct	30-Oct	116	232	5	0	56	28	89
Nov	45	31-Oct	6-Nov	103	184	2	0	22	11	35
	46	7-Nov	13-Nov	65	116	2	0	22	11	35
	47	14-Nov	20-Nov	61	112	2	0	22	11	35
	48	21-Nov	27-Nov	47	97	2	0	22	11	35
Dec	49	28-Nov	4-Dec	164	245	54	0	651	320	1,025
	50	5-Dec	11-Dec	124	176	48	0	581	285	914
	51	12-Dec	18-Dec	166	289	36	0	430	211	677
	52	19-Dec	25-Dec	117	197	0	0	0	0	0
	53	26-Dec	1-Jan	58	103	6	0	77	38	122
Jan	2	2-Jan	8-Jan	77	123	27	0	320	157	504
	3	9-Jan	15-Jan	42	89	5	5	60	24	94
	4	16-Jan	22-Jan	7	14	0	0	0	0	0
	5	23-Jan	29-Jan	49	65	10	0	126	62	199
	6	30-Jan	31-Jan	0	0	0	0	0	0	0
Area 10 Season Total:				2,624	4,615	242	14	2,904	1,413	4,573
Variance:				47,790	124,208	5,992	31	1,206,399	232,455	2,962,879
SE:				219	352	77	6	1,098	482	1,721
CV (%):				8%	8%	32%	40%	38%	34%	38%
95% CI:				2,196-3,053	3,925-5,306	90-393	3-25	751-5,057	468-2,358	1,199-7,947

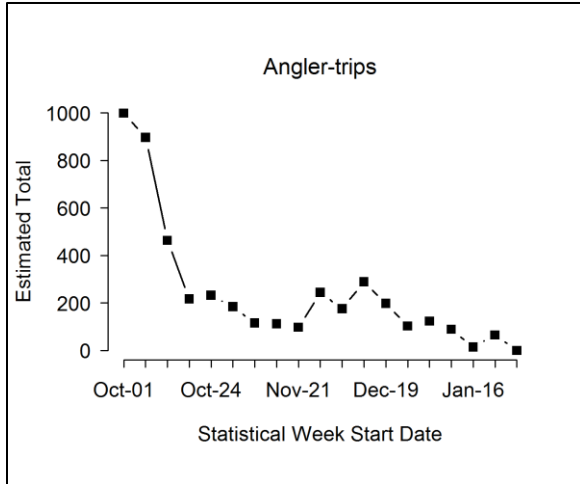


Figure 4.1 Temporal patterns in fishing effort during the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012.

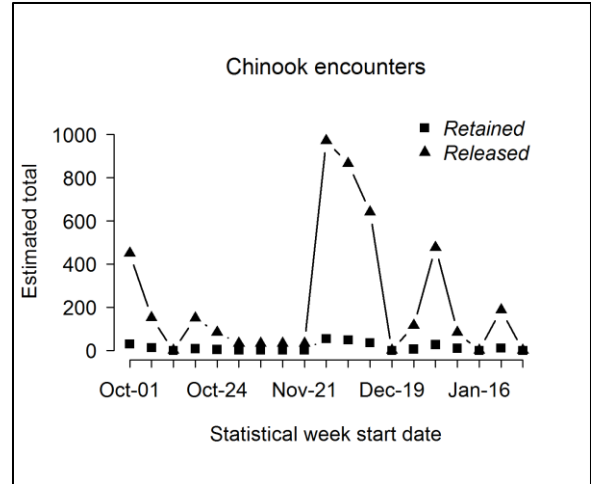


Figure 4.3 Temporal patterns in Chinook encounters (number retained and released) during the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012.

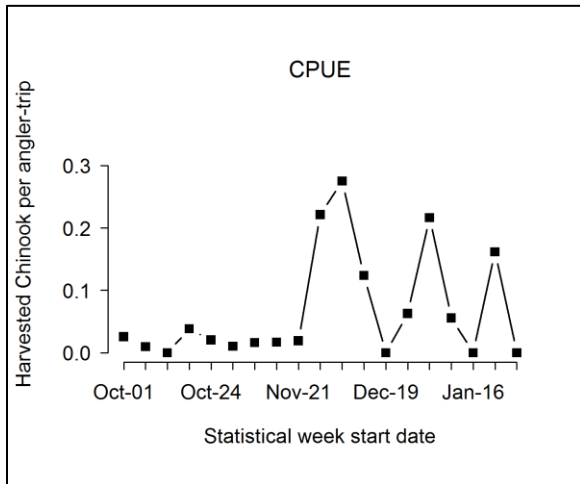


Figure 4.2 Temporal patterns in CPUE (number of Chinook landed per angler trip) during the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012.

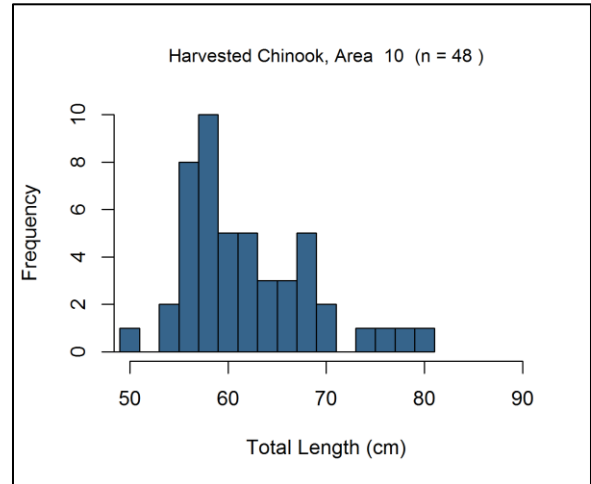


Figure 4.4 Length-frequency distribution of retained marked Chinook sampled in dockside angler interviews during the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012.

Table 4.3 Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012.

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	45	3	48
Unmarked	1	2	3
Total	46	5	51

Table 4.4 Summary of coded-wire tags recovered from Chinook salmon harvested during the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012. The field “Number DITs” corresponds to the number of recovered CWTs that belonged to double-index tag groups.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	Number DITs
British Columbia (12.5%)	Fraser R – Thompson R (12.5%)	Chilliwack River	Chilliwack River	1 (12.5%)	1
Washington (87.5%)	Northern Puget Sound (25%)	Wallace River 07.0940	Wallace River	2 (25%)	0
	Skagit River (37.5%)	Cascade River 03.1411	Marblemount	3 (37.5%)	2
	Mid Puget Sound (12.5%)	White River 10.0031	White River	1 (12.5%)	0
	Southern Puget Sound (12.5%)	Minter Creek 15.0048	Minter Creek	1 (12.5%)	0
Total				8	3

Table 4.5 Composition of test fishery Chinook encounters and associated mark-rate and size/mark-status proportion estimates for the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012. AD = marked (i.e., 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
	Days	Hours Fished	AD	UM	AD	UM	
40	1	1.7	0	0	1	0	1
41	5	19.5	1	2	3	11	17
42	5	21.2	1	0	11	14	26
43	4	13.7	1	1	3	6	11
44	5	18.1	3	1	4	5	13
45	3	11.4	0	0	14	4	18
46	1	1.6	0	0	2	0	2
47	4	13.6	0	0	0	2	2
48	1	5.2	0	0	2	0	2
49	5	22.3	1	1	21	11	34
50	5	18.4	1	2	16	3	22
51	6	26.6	1	2	25	10	38
52	4	17.0	2	0	12	2	16
53/1	1	5.5	0	0	9	0	9
2	4	9.8	0	0	7	2	9
3	4	13.0	1	0	13	3	17
4	0	0.0	0	0	0	0	0
5	2	7.2	0	0	0	0	0
6	0	0.0	0	0	0	0	0
Total	60	225.5	12	9	143	73	237
Size/mark-status composition:			0.05 (0.0002)	0.04 (0.0002)	0.60 (0.0010)	0.31 (0.0009)	
Legal size mark rate:			0.57 (0.0122)				
Overall mark rate:			0.65 (0.0010)				

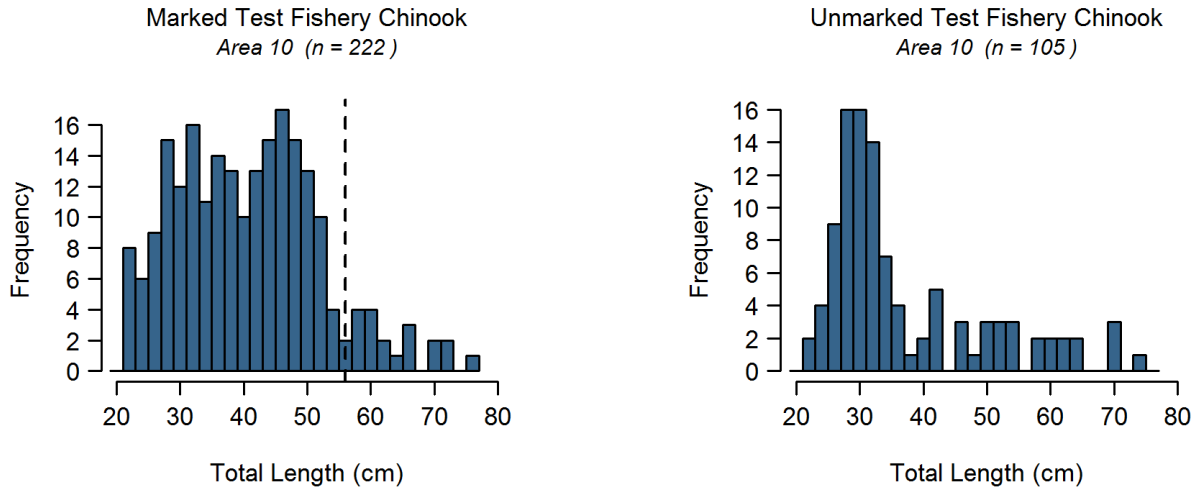


Figure 4.5 Length-frequency distributions of marked (*left panel*) and unmarked (*right panel*) Chinook encountered by test fishers during the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012. The vertical dashed line in the left panel corresponds to the legal size limit (22 in or 56 cm).

Table 4.6 Total Chinook encountered (retained and released) by private-boat and charter boat anglers logging their trips on voluntary trip reports (VTRs) compared to test fishing encounter data, with estimates of legal-size and overall (legal and sublegal) mark rates during the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012. AD = marked (i.e., 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
Charter VTR	2 1-trip VTRs, 4 Angler Trips	2	3	32	6	43	0.79	0.40
Private VTR	31 1-trip VTRs, 48 Angler Trips	11	6	102	40	159	0.71	0.65
Pooled VTR	52 Angler Trips	13	9	134	46	202	0.73	0.59
Test Fishery	60 Days, 120 Angler Trips	12	9	143	73	237	0.65	0.57
Pooled Totals	172 Angler Trips	25	18	277	119	439	0.69	0.58
Size/mark-status composition:		0.06	0.04	0.63	0.27			
Variance:		(0.0001)	(0.0001)	(0.0005)	(0.0005)			

To first determine whether charter and private fleet VTR datasets could be combined, we compared the size/mark-status composition using Pearson’s chi-square test. Results were not significant ($\chi^2 = 3.45$, $df = 3$, p -value = 0.327), suggesting that the two datasets can be combined into one “pooled VTR” dataset. We next used Pearson’s chi-square test to compare the size/mark-status composition of the pooled VTR and test fishery datasets. Results were not significant ($\chi^2 = 3.69$, $df = 3$, p -value = 0.297), suggesting that the two datasets can be combined

into one pooled season-total estimate of size/mark-status proportions. Based on these results, we elected to use the pooled totals of the VTR and test fishery data to estimate the size/mark status proportions needed to produce the Chinook encounter and mortality estimates in the Area 10 winter mark-selective fishery.

Table 4.7 Summary of season-wide fishery impact estimates for the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012. 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 (i.e., adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	260	227	34	5	232	5,718	76	83 - 380	33
Legal UM	188	5	183	27	32	171	13	6 - 58	41
Sublegal AD	2,886	15	2,870	574	589	47,659	218	161 - 1017	37
Sublegal UM	1,240	9	1,230	246	255	9,066	95	69 - 442	37
Total	4,573	256	4,317	853	1,108	62,613	250	618 - 1599	23

Table 4.8 Comparison of modeled (FRAM model run 1811) and estimated total Chinook encounters for the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012. Values may not add up perfectly due to rounding error. AD = marked (i.e., adipose-clipped) and UM = unmarked.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	3,791	736	3,055	37
	AD	10,717	2,172	8,545	1,889
	Total	14,508	2,908	11,600	1,926
	% Marked	74	75	74	98
Estimated (Creel) Encounters	UM	1,427	188	1,240	14
	AD	3,146	260	2,886	242
	Total	4,573	448	4,125	256
	% Marked	69	58	70	95

Table 4.9 Comparison of modeled (FRAM model run 1811) and estimated total Chinook mortalities for the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012. Values may not add up perfectly due to rounding error. AD = marked (i.e., adipose-clipped) and UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	755	3,735	4,490	288	821	1,108
Released Legal	107	137	244	27	5	33
Released Sublegal	611	1,709	2,320	246	574	820
Landed Only	37	1,889	1,926	14	242	256

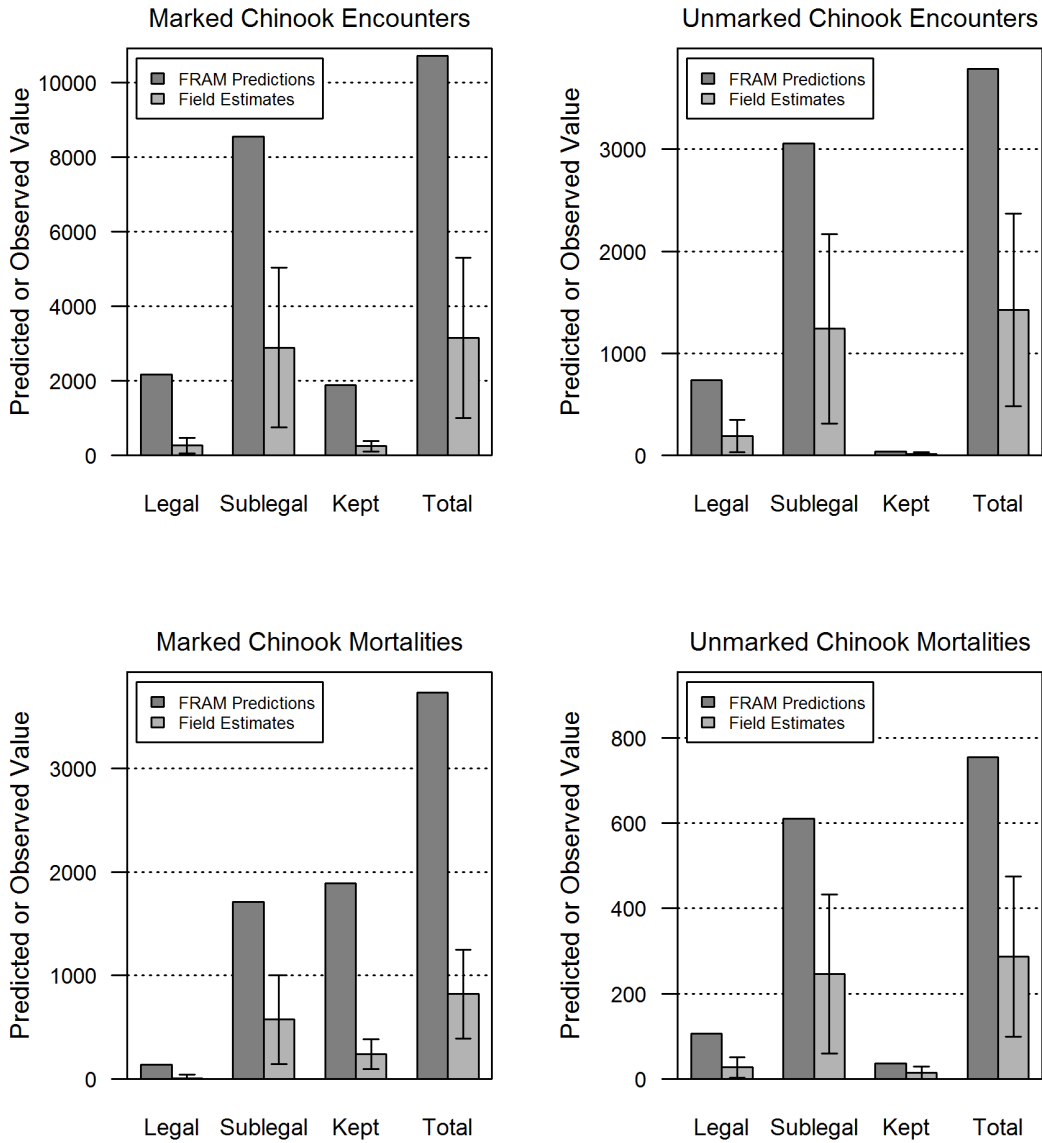


Figure 4.6 Comparison of modeled (FRAM model run 1811) and estimated total Chinook encounters and mortalities for the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012. Error bars represent approximate 95% confidence intervals for field estimates.

Table 4.10 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 Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012. AD = marked (i.e., adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs'd	AD DIT Harvest		UM DIT Enc.	UM DIT Mortality		
			Est.	var(Est.)		Est.	var(Est.)	SE(Est.)
Chilliwack River Hatchery	2009	1	5	20.1	2.6	0.3	0.1	0.2
Marblemount Hatchery	2008	2	10	40.3	9.9	1	0.4	0.9
Total		3	15	60.4	12.5	1.2	0.4	1.1

Table 4.11 Monthly sample rates (Total retained Chinook sampled¹ / Estimated retained Chinook) in the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012.

Time period			Estimated Retained Chinook			Number of Chinook sampled			Sample Rate
Month	Stat Weeks	Dates	AD	UM	Total	AD	UM	Total	
October	40-44	1 Oct - 30 Oct	47	9	56	16	2	18	31.9%
November	45-48	31 Oct - 27 Nov	7	0	7	4	0	4	53.6%
December	49-53/1	28 Nov - 1 Jan	145	0	145	22	0	22	15.2%
January	2-6	2 Jan - 31 Jan	42	5	47	6	1	7	14.8%
Season Total			242	14	256	48	3	51	19.9%

¹ Number of retained Chinook sampled includes all retained Chinook inspected for CWT's, from all sites sampled during the four-month winter Area 10 fishery (i.e., the two selected sites per sampling day for creel [Murthy] estimates, plus the fish sampled as part of baseline [non-Murthy] sampling in the Area).

Table 4.12 Fishery-total estimates of retained and released salmon (*other than Chinook*) in the Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012. Values may not add exactly due to rounding error. AD = marked (i.e., adipose-clipped), UM = unmarked, UK = unknown mark-status.

Stat Week	Start Date	End Date	Retained Salmon				Released Salmon						
			Coho AD	Coho UM	Pink	Chum	Coho AD	Coho UM	Coho UK	Pink	Chum	Cutthroat Trout	Unk Salmon
40	1-Oct	2-Oct	131	88	2	0	2	7	16	0	0	0	1,587
41	3-Oct	9-Oct	72	95	0	6	49	18	37	5	0	0	950
42	10-Oct	16-Oct	15	4	0	11	14	9	4	5	0	45	854
43	17-Oct	23-Oct	3	0	0	0	9	0	0	0	0	0	35
44	24-Oct	30-Oct	0	0	0	0	0	0	0	0	218	0	0
45	31-Oct	6-Nov	0	0	0	3	0	0	6	0	0	4	77
46	7-Nov	13-Nov	0	0	0	0	0	0	0	0	0	0	63
47	14-Nov	20-Nov	0	0	0	0	0	0	0	0	0	0	45
48	21-Nov	27-Nov	0	0	0	0	0	0	0	0	0	0	28
49	28-Nov	4-Dec	0	4	0	4	0	2	0	0	0	0	0
50	5-Dec	11-Dec	0	0	0	0	0	0	0	0	0	0	6
51	12-Dec	18-Dec	0	0	0	2	0	0	0	0	0	0	15
52	19-Dec	25-Dec	0	0	0	0	0	0	0	0	0	0	15
53	26-Dec	1-Jan	0	0	0	0	0	0	0	0	0	0	0
2	2-Jan	8-Jan	0	0	0	0	0	0	0	0	0	0	0
3	9-Jan	15-Jan	0	0	0	0	0	0	0	0	0	0	10
4	16-Jan	22-Jan	0	0	0	0	0	0	0	0	0	0	0
5	23-Jan	29-Jan	0	0	0	0	0	0	0	0	0	0	0
6	30-Jan	31-Jan	0	0	0	0	0	0	0	0	0	0	0
Area 10 Season Total:			221	191	2	26	74	36	62	9	218	49	3,687
Variance:			1,245	1,008	1	90	1,130	314	333	72	44,462	616	252,879
Standard Error:			32	35	32	1	9	34	18	18	8	211	25
CV (%):			16%	17%	51%	37%	46%	49%	29%	90%	97%	51%	14%
95% CI:			152-290	128-253	0-5	7-44	8-140	2-71	27-98	0-26	0-631	0-97	2,701-4,672

Table 4.13 Summary of the total number of anglers intercepted in Area 10 during on-the-water surveys conducted from October 1, 2011 - January 31, 2012. Sites in bold represent those included in the dockside sample frame.

Site Name	Total Anglers (less 'Tengu' Derby anglers) ¹	Season Total (unadjusted) Size Measure	Total Anglers (with 'Tengu' Derby anglers) ¹	Season Total (unadjusted) Size Measure
Armeni Public Ramp	69	0.110	123	0.178
Bremerton Yacht Club	10	0.016	10	0.014
Browns Point Ramp	2	0.003	2	0.003
Brownsville Marina	22	0.035	22	0.032
Des Moines Marina	2	0.003	2	0.003
Eagle Harbor Marina	4	0.006	4	0.006
Edmonds Boat Sling	34	0.054	34	0.049
Edmonds Dry Storage	51	0.081	51	0.074
Edmonds Guest Dock	5	0.008	5	0.007
Edmonds Marina	96	0.152	96	0.139
Edmonds Marine Beach	2	0.003	2	0.003
Elliott Bay Marine	21	0.033	21	0.030
Everett Ramp	3	0.005	3	0.004
First Ave South Public Ramp	2	0.003	2	0.003
Harbor Island Marina	5	0.008	9	0.013
Jim Clark Marina	4	0.006	4	0.006
Kingston Marina	8	0.013	8	0.012
Kingston Ramp	32	0.051	32	0.046
Manchester Ramp	19	0.030	19	0.027
Point Defiance Boathouse	1	0.002	1	0.001
Point Defiance Ramp	1	0.002	1	0.001
Port Madison Marina	2	0.003	2	0.003
Port Orchard Marina	2	0.003	2	0.003
Port Orchard Public Ramp	1	0.002	1	0.001
Poulsbo Ramp/Marina	1	0.002	1	0.001
Private	24	0.038	24	0.035
Seacrest Boathouse (Lloyds)	3	0.005	6	0.009
Shilshole Marina	46	0.073	46	0.067
Shilshole Public Ramp	154	0.244	154	0.223
Tyee Marina	2	0.003	2	0.003
Winslow City Ramp	2	0.003	2	0.003
Area 10 Total Anglers	630	1.000	691	1.000

^{1/} See WDFW 2012a for detailed methods descriptions on calculating Area 10 site size measures during the Tengu Derby period (Tengu Derby occurs on Sundays only, extending from the middle of October through late December).

Table 4.14 Season-total estimates of Chinook encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Area 10 winter mark-selective Chinook fishery. 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	
Dec 1, 2007 - Jan 31, 2008	2,544	539	21	96	0	80	163	1,860	361	3,120
Dec 1, 2008 - Jan 31, 2009	2,029	247	0	4	0	37	36	1,010	462	1,796
Oct 1, 2009 - Jan 31 2010	5,560	354	2	42	0	53	83	2,531	898	3,962
Oct 1, 2010 - Jan 31, 2011	4,461	150	0	13	0	22	53	814	740	1,792
Oct 1, 2011 - Jan 31, 2012	4,615	227	5	15	9	34	183	2,870	1,230	4,573

5) Marine Area 11 Winter Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a third consecutive winter mark-selective Chinook fishery (MSF) in Marine Area 11 from February 1 through April 30, 2012. WDFW's Puget Sound Sampling Unit (PSSU) implemented an intensive monitoring program in Area 11 throughout the season in order to collect the data needed to estimate key parameters characterizing the fishery and its impacts on unmarked salmon. Sampling activities included dockside creel sampling, on-the-water effort surveys, and collection of voluntary trip reports (VTRs) from the angling public. **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 Area 11 winter mark-selective Chinook fishery from February 1 through April 30, 2012.

Table 5.1 Sampling/estimation details on target parameters associated with the overall Area 11 winter 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 ¹ ; 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.
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 were conducted during the three-month fishery.
Voluntary Trip Reports (VTRs)	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 VTR form	Fish encounter	Season (3 months)	VTR data were used in the estimation of total Area 11 Chinook encounters by size/mark group (LM=17%, LU=12%, SM=55%, SU=16%) and associated impacts (see Table 5.5).
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 (3 months)	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 (3 months)	The temporal resolution of DIT impacts is constrained by the total number of tags recovered.

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

Table 5.2 Estimates of total fishing effort and total salmon catch (harvest and releases) during the Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012. Values may not add exactly due to rounding error. AD = marked (i.e., 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	
Feb	6	1-Feb	5-Feb	134	208	22	0	81	40	143
	7	6-Feb	12-Feb	92	143	16	0	59	29	104
	8	13-Feb	19-Feb	71	109	18	0	67	33	118
	9	20-Feb	26-Feb	71	104	7	0	25	12	44
Mar	10	27-Feb	4-Mar	146	213	8	0	29	14	51
	11	5-Mar	11-Mar	124	162	8	0	29	14	51
	12	12-Mar	18-Mar	63	90	4	0	17	8	29
	13	19-Mar	25-Mar	103	147	4	0	17	8	29
	14	26-Mar	1-Apr	51	70	0	0	0	0	0
Apr	15	2-Apr	8-Apr	71	136	0	0	0	0	0
	16	9-Apr	15-Apr	88	139	21	0	77	38	136
	17	16-Apr	22-Apr	90	154	17	0	65	32	114
	18	23-Apr	29-Apr	151	247	46	0	174	86	307
	19	30-Apr	30-Apr	12	14	4	0	15	7	26
Area 11 Season Total:				1,265	1,937	174	0	656	324	1,153
Variance:				22,264	50,995	1,101	0	32,820	5,253	87,328
SE:				149	226	33	0	181	72	296
CV (%):				11.8%	11.7%	19.1%	-	27.6%	22.4%	25.6%
95% CI:				973-1,558	1,495-2,380	109-239	-	300-1,011	182-466	574-1,732

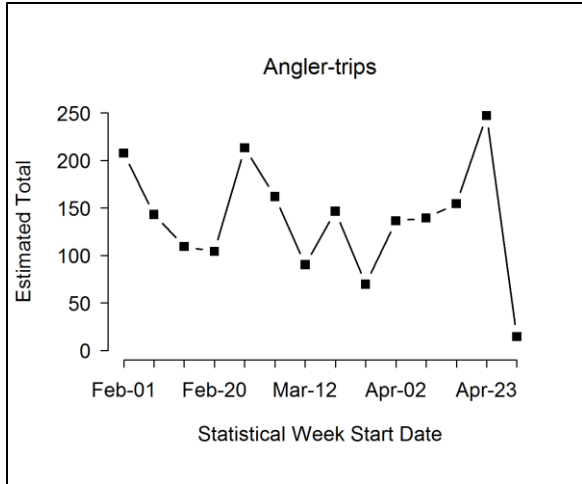


Figure 5.1 Temporal patterns in fishing effort during the Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012.

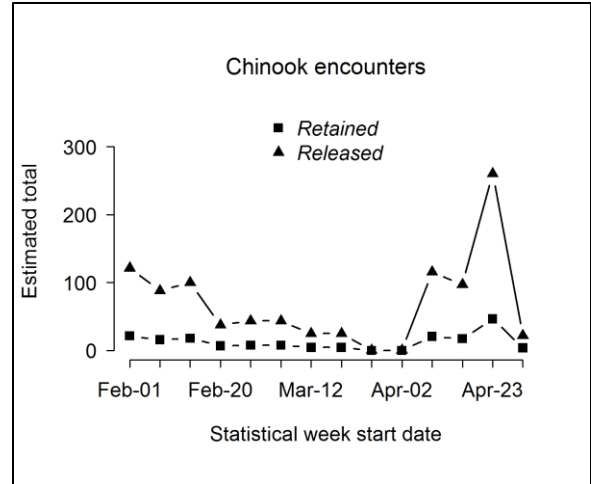


Figure 5.3 Temporal patterns in Chinook encounters (number retained and released) during the Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012.

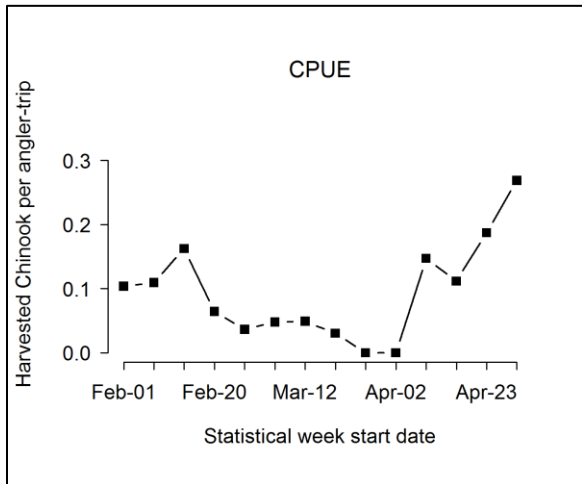


Figure 5.2 Temporal patterns in CPUE (number of Chinook landed per angler trip) during the Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012.

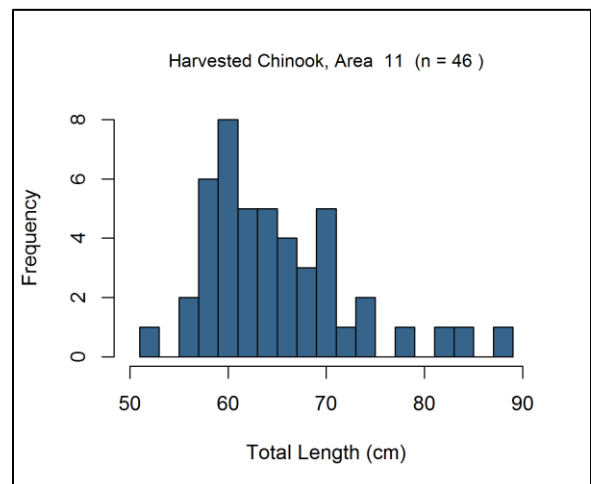


Figure 5.4 Length-frequency distributions of retained marked Chinook sampled in dockside angler interviews during the Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012.

Table 5.3 Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012.

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	45	1	46
Unmarked	0	0	0
Total	45	1	46

Table 5.4 Summary of coded-wire tags recovered from Chinook salmon harvested during the Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012. The field “Number DITs” corresponds to the number of tags that belonged to double-index tag groups.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	Number DITs
Washington (100%)	Northern Washington (25%)	Samish River 03.0005	Samish	1 (25%)	1
	Hood Canal (25%)	Finch Creek 16.0222	Hoodspport	1 (25%)	0
	Northern Puget Sound (25%)	Wallace River 07.0940	Wallace River	1 (25%)	0
	Southern Puget Sound (25%)	Lakewood Hatchery	Lakewood	1 (25%)	0
Total				4	1

Table 5.5 Total Chinook encountered (retained and released) by private-boat anglers logging their trips on voluntary trip reports (VTRs) during the Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012, with estimates of legal-size and overall (legal and sublegal) mark rates. AD = marked (i.e., 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	69 1-trip VTRs, 103 Angler Trips	29	21	94	27	171	0.72	0.58
Size/mark-status composition:		0.17	0.12	0.55	0.16			
Variance:		(0.0008)	(0.0006)	(0.0015)	(0.0008)			

Table 5.6 Summary of season-wide fishery impact estimates for the Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012. 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 (i.e., adipose-clipped), UM = unmarked.

Size/mark group	Encounters	Retained	Released	Release Mortality	Total Mortality	Var	SE	95% CI	CV (%)
Legal AD	196	170	25	4	174	1,171	34	107 - 241	20
Legal UM	142	0	142	21	21	47	7	8 - 35	32
Sublegal AD	634	4	630	126	130	1,143	34	64 - 196	26
Sublegal UM	182	0	182	36	36	126	11	14 - 58	31
Total	1,153	174	979	187	361	2,487	50	264 - 459	14

Table 5.7 Comparison of modeled (FRAM model run 1811) and estimated total Chinook encounters for the Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012. Values may not add up perfectly due to rounding error. AD = marked (i.e., adipose-clipped), UM = unmarked.

Data Source	Group	Total Encounters	Legal	Sublegal	Landed Only
FRAM Encounters	UM	552	117	435	3
	AD	2,044	389	1,655	339
	Total	2,596	506	2,090	342
	% Marked	79	77	79	99
Estimated (Creel) Encounters	UM	324	142	182	0
	AD	829	196	634	174
	Total	1,153	337	816	174
	% Marked	72	58	78	100

Table 5.8 Comparison of modeled (FRAM model run 1811) and estimated total Chinook mortalities for the Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012. Values may not add up perfectly due to rounding error. AD = marked (i.e., adipose-clipped), UM = unmarked.

Mortality Category	FRAM Chinook Mortalities			Estimated Chinook Mortalities		
	UM	AD	Total	UM	AD	Total
Total (Landed + Released)	107	694	801	58	304	361
Released Legal	17	24	41	21	4	25
Released Sublegal	87	331	418	36	126	162
Landed Only	3	339	342	0	174	174

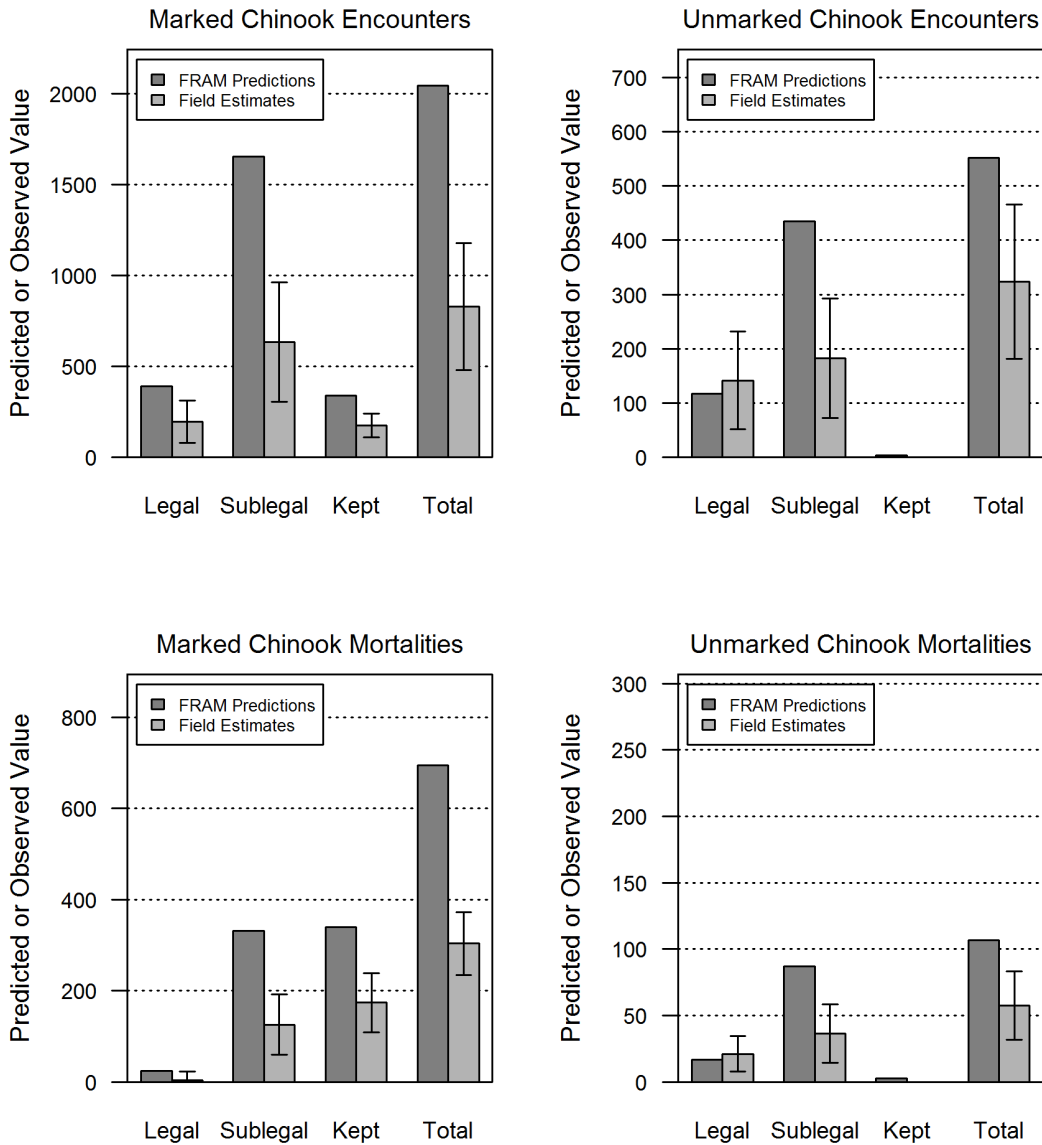


Figure 5.5 Comparison of modeled (FRAM model run 1811) and estimated total Chinook encounters and mortalities for the Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012. Error bars represent approximate 95% confidence intervals for field estimates.

Table 5.9 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 Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012. AD = marked (i.e., adipose-clipped), UM = unmarked.

Hatchery	Brood Year	DITs Obs'd	AD DIT Harvest		UM DIT Enc.	UM DIT Mortality		
			Est.	var(Est.)		Est.	var(Est.)	SE(Est.)
Samish Hatchery	2009	1	3.8	10.5	3.8	0.4	0.10	0.3
Total		1	3.8	10.5	3.8	0.4	0.10	0.3

Table 5.10 Monthly sample rates (Total retained Chinook sampled / Estimated retained Chinook) in the Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012. AD = marked (i.e., 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	
February	6-9	1 Feb - 26 Feb	62	0	62	17	0	17	27.6%
March	10-14	27 Feb - 1 Apr	24	0	24	4	0	4	16.4%
April	15-19	2 Apr - 30 Apr	88	0	88	25	0	25	28.4%
Season Total			174	0	174	46	0	46	26.4%

Table 5.11 Fishery total estimates of retained and released salmon (*other than Chinook salmon*) for the area 11 mark-selective Chinook fishery from February 1 – April 30, 2012. AD = marked (i.e., adipose-clipped), UM = unmarked, UK = unknown mark-status. Values may not add exactly due to rounding error.

Month	Week	Start Date	End Date	Released Salmon			
				Coho AD	Coho UM	Coho UK	Cutthroat Trout
Feb	6	1-Feb	5-Feb	2	0	0	0
	7	6-Feb	12-Feb	0	0	0	0
	8	13-Feb	19-Feb	0	0	0	0
	9	20-Feb	26-Feb	0	0	0	0
Mar	10	27-Feb	4-Mar	0	0	0	0
	11	5-Mar	11-Mar	0	0	0	0
	12	12-Mar	18-Mar	0	0	3	0
	13	19-Mar	25-Mar	0	0	0	0
	14	26-Mar	1-Apr	0	0	0	0
Apr	15	2-Apr	8-Apr	0	0	0	0
	16	9-Apr	15-Apr	0	0	0	0
	17	16-Apr	22-Apr	0	0	0	0
	18	23-Apr	29-Apr	0	0	0	5
	19	30-Apr	30-Apr	0	0	0	0
Area 11 Season Total:				2	0	3	5
Variance:				2	0	3	11
Standard Error:				2	1	0	2
CV (%):				60%	-	61%	67%
95% CI:				0-5	-	0-6	0-11

Table 5.12 Summary of the total number of anglers intercepted in Area 11 during on-the-water surveys conducted from February 1 – April 30, 2012. Sites in bold represent those included in the dockside sample frame.

Site Name	Total Anglers	Season Total (unadjusted) Size Measure
Armeni Public Ramp	3	0.033
Breakwater Marina	2	0.022
Day Island Marina	2	0.022
Dockton Ramp	2	0.022
Elliott Bay Marina	2	0.022
Foss Harbor Marina	8	0.088
Fox Island Ramp	2	0.022
Gig Harbor Marina	3	0.033
Gig Harbor Ramp	1	0.011
Manchester Ramp	2	0.022
Narrows Marina	4	0.044
Point Defiance Boathouse	17	0.187
Point Defiance Public Ramp	38	0.418
Private	5	0.055
Total Anglers	91	1.000

Table 5.13 Season-total estimates of Chinook encounters by size/mark-status and total estimates of angler effort, summarized for all seasons to date of the Area 11 winter mark-selective Chinook fishery. 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	
Feb 1 - Apr 30, 2010	3,096	315	3	11	0	47	80	114	10	580
Feb 1 - Apr 30, 2011	1,515	78	3	9	0	12	87	322	241	752
Feb 1 - Apr 30, 2012	1,937	170	0	4	0	25	142	630	182	1,153

6) Marine Area 12 Winter Mark-Selective Chinook Fishery

The Washington Department of Fish and Wildlife (WDFW) implemented a third consecutive winter mark-selective Chinook fishery (MSF) in Marine Area 12 from February 1 through April 30, 2012. Data collection methods used to monitor the Area 12 mark-selective Chinook fishery included dockside angler interviews (with catch sampling) and voluntary trip reports provided by private anglers. From these activities, we were able to estimate catch rates (i.e., CPUE), mark rates (based on VTRs), and landed-catch composition (age, length, and CWT). Additionally, we described relative catch and effort patterns over the three-month (February 1 – April 30, 2012) season based on the assumption that baseline-sampling observations of these parameters are good indicators of associated fishery-wide trends.

WDFW dockside samplers conducted “Baseline Sampling” at selected Area 12 access sites during the 2012 winter mark-selective Chinook fishery in Area 12. Complete details of the Baseline Sampling methods are presented in a separate Methods Report (WDFW 2012a). Briefly, Baseline Sampling is opportunistic in nature, with overall sampling effort allocated across space and time in a manner that maximizes the number of angler interviews obtained per sample effort. The Area 12 baseline sample frame included 11 different access sites (**Table 6.1**), and a total of 154 site visits during the three-month season. Site visits ranged from short (e.g., “no effort” samples) to full-day (8+ hours) sampling events. When present, samplers interviewed all anglers exiting the Area 12 fishery at the selected access site. The interview and catch-sampling procedures employed in Area 12 were identical to those used in other mark-selective fisheries. Thus, Area 12 samplers acquired information about: 1) angling effort (boat and angler trips, trip length), 2) encounters composition (retained and/or released) by species and mark status (marked vs. unmarked, Chinook and coho salmon only), and 3) landed Chinook size (fork and total length) and age (scales were collected and ultimately read) composition. Samplers also inspected landed Chinook and coho salmon for CWTs using wand detectors and acquired snouts when tags were present; resulting tag data were used to estimate the CWT-based composition (unexpanded) of landed catch.

In contrast to the intensive survey design (i.e., the “Murthy” design) employed in other areas, Area 12 sampling results could not be used to produce fishery-total estimates of effort, encounters (retained catch + releases), and unmarked-DIT Chinook impacts. It should be noted, however, that Area 12 baseline sampling observations will ultimately (one to two years from the close of the fishery) be combined with Catch Record Card (CRC) data to estimate catch and effort at the fishery-total level, by month. Thus, while these descriptors of MSF impacts are not presented in the present document, they will be available at a future time.

In this section we report results from monitoring the Area 12 winter mark-selective Chinook fishery based on our efficient, streamlined reporting format agreed-to between state and tribal technical representatives (in July 2010), which is focused on presenting data tables and figures rather than interpretive text. Results are presented in a series of tables and figures according to the following sequence: *i*) the intensity (i.e., spatial and temporal coverage) of sampling efforts is described; and *ii*) observed data on fishery characteristics obtained from the dockside baseline sampling efforts are reviewed, including catch and effort observations, Chinook length-frequency data, and CWT recovery results.

Table 6.1 List of sites sampled with the number of sampling events (site-days) during the Area 12 mark-selective Chinook fishery from February 1 - April 30, 2012.

Location	Number of Site-Days Sampled per Month			Total Site-Days	% of Total
	February	March	April		
Saltwater Park Ramp	7	2	5	14	9.1%
Misery Point Ramp	20	20	17	57	37.0%
Pleasant Harbor Boat Ramp (WDFW)	7	4	8	19	12.3%
Point Whitney Ramp	0	0	1	1	0.6%
Quilcene Bay Ramp	6	1	8	15	9.7%
Salisbury County Park Ramp	10	16	7	33	21.4%
Seabeck Marina	1	0	0	1	0.6%
Tahuya Ramp	1	0	0	1	0.6%
Union Ramp	2	0	0	2	1.3%
Edmonds Dry Storage	1	0	0	1	0.6%
Triton Cove State Park	3	1	6	10	6.5%
Grand Total	58	44	52	154	100%

Table 6.2 Observations of fishing effort, salmon harvest, and reported salmon releases, by week, for the Area 12 mark-selective Chinook fishery from February 1 - April 30, 2012. Note: displayed values are sample observations (i.e., summed across sampled sites) and not fishery-total estimates. AD = marked (i.e., adipose-clipped), UM = unmarked, UK = unknown mark-status.

Month	Stat Week	Start Date	End Date	Effort		Retained Fish		Released Fish					
				Boats	Anglers	Chinook		Chinook			Coho		
						AD	UM	AD	UM	UK	AD	UM	UK
Feb	6	1-Feb	5-Feb	41	77	19	0	52	14	24	0	0	0
	7	6-Feb	12-Feb	29	51	9	0	11	1	6	2	0	4
	8	13-Feb	19-Feb	46	95	15	0	1	6	23	0	0	0
	9	20-Feb	26-Feb	9	17	3	0	1	1	6	0	0	0
Mar	10	27-Feb	4-Mar	36	73	13	0	19	15	28	0	0	0
	11	5-Mar	11-Mar	5	8	2	0	7	1	0	0	0	0
	12	12-Mar	18-Mar	2	4	0	0	2	0	0	0	0	0
	13	19-Mar	25-Mar	7	13	3	0	5	1	0	0	0	0
	14	26-Mar	1-Apr	0	0	0	0	0	0	0	0	0	0
Apr	15	2-Apr	8-Apr	15	28	6	0	20	1	4	0	0	0
	16	9-Apr	15-Apr	7	12	0	0	4	2	0	0	0	0
	17	16-Apr	22-Apr	20	41	7	0	7	2	0	0	0	0
	18	23-Apr	29-Apr	15	32	3	0	8	1	2	0	0	0
	19	30-Apr	30-Apr	0	0	0	0	0	0	0	0	0	0
Season Total:				232	451	80	0	137	45	93	2	0	4

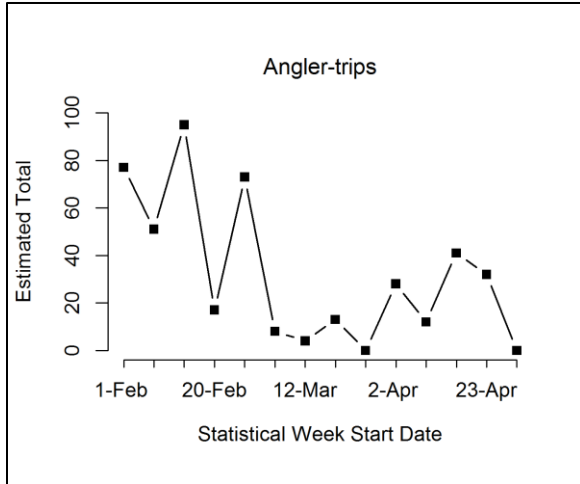


Figure 6.1 Temporal patterns in fishing effort during the Area 12 mark-selective Chinook fishery from February 1 - April 30, 2012. Note: displayed values are sample observations (i.e., summed across sampled sites) and not fishery-total estimates.

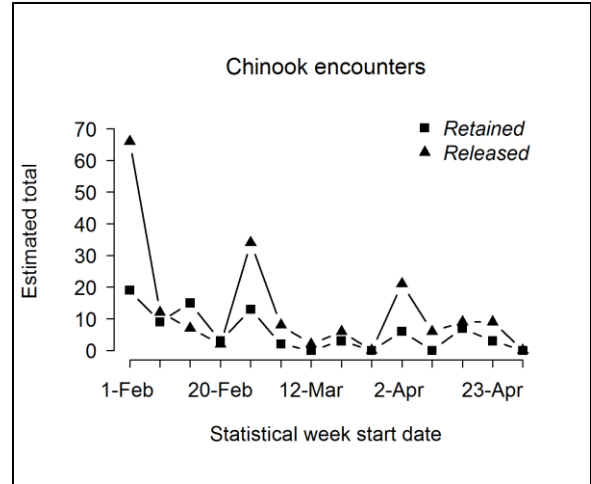


Figure 6.3 Temporal patterns in Chinook encounters (number retained and released) during the Area 12 mark-selective Chinook fishery from February 1 - April 30, 2012. Note: displayed values are sample observations (i.e., summed across sampled sites) and not fishery-total estimates.

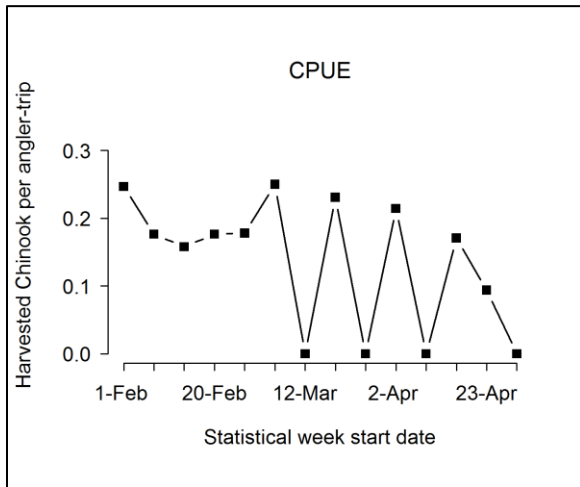


Figure 6.2 Temporal patterns in CPUE (number of Chinook landed per angler trip) during the Area 12 mark-selective Chinook fishery from February 1 - April 30, 2012. Note: displayed values are sample observations (i.e., summed across sampled sites) and not fishery-total estimates.

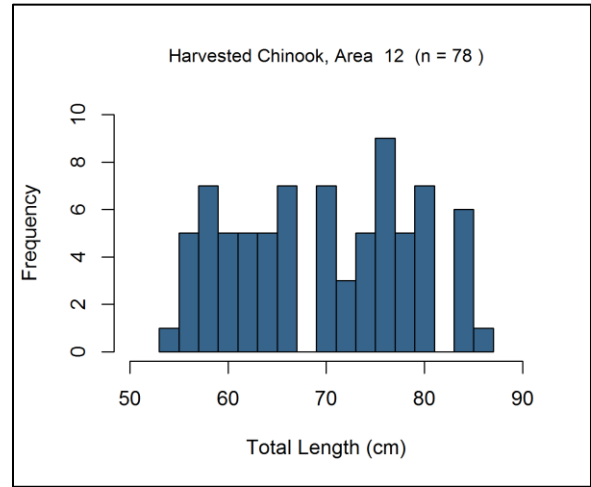


Figure 6.4 Length-frequency distributions of retained marked Chinook sampled in dockside angler interviews during the Area 12 mark-selective Chinook fishery from February 1 - April 30, 2012.

Table 6.3 Summary of total length samples from retained Chinook salmon collected during dockside angler interviews in the Area 12 mark-selective Chinook fishery from February 1 - April 30, 2012.

Mark Type	Number Sampled		
	Legal-size	Sublegal-size	Total
Marked	77	1	78
Unmarked	0	0	0
Total	77	1	78

Table 6.4 Summary of coded-wire tags recovered from Chinook salmon harvested during the Area 12 mark-selective Chinook fishery from February 1 - April 30, 2012. The field “Number DITs” corresponds to tags that belonged to double-index tag groups.

Release Domain	Release Region	Release Site	Rearing Location	CWTs Recovered	Number DITs
British Columbia (7.1%)	Fraser R – Thompson R (7.1%)	Chilliwack River	Chilliwack River	1 (7.1%)	1
Washington (92.9%)	Hood Canal (64.3%)	Finch Creek 16.0222	Hoodspport	9 (64.3%)	0
	Northern Puget Sound (7.1%)	Wallace River 07.0940	Wallace River	1 (7.1%)	1
	Mid Puget Sound (7.1%)	Icy Creek 09.0125	Icy Creek	1 (7.1%)	0
	Southern Puget Sound (14.3%)	Lakewood Hatchery	Lakewood	2 (14.3%)	0
Total				4	1

Table 6.5 Total Chinook encountered (retained and released) by private-boat anglers logging their trips on voluntary trip reports (VTRs) during the Area 12 mark-selective Chinook fishery from February 1 - April 30, 2012, with estimates of legal-size and overall (legal and sublegal) mark rates. AD = marked (i.e., 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	23 1-trip VTRs, 38 Angler Trips	22	4	41	7	74	0.85	0.85
Size/mark-status composition:		0.30	0.05	0.55	0.09			
Variance:		(0.0029)	(0.0007)	(0.0034)	(0.0012)			

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APPENDICES

Appendix A.1 Size measures by sample date, for sites sampled during dockside creel surveys in the Area 8-1 mark-selective Chinook fishery from November 1, 2011 through April 30, 2012.

Sample Date	Week	Site Size	Location	Sample Date	Week	Site Size	Location
11/1/2011	45	0.269	Maple Grove Ramp; Camano Is	11/27/2011	48	0.229	Camano Island State Park Public Ramp
11/1/2011	45	0.229	Camano Island State Park Public Ramp	11/27/2011	48	0.269	Maple Grove Ramp; Camano Is
11/5/2011	45	0.229	Camano Island State Park Public Ramp	12/1/2011	49	0.151	Camano Island State Park Public Ramp
11/5/2011	45	0.111	Norton Street (Everett) Ramp	12/1/2011	49	0.244	Norton Street (Everett) Ramp
11/6/2011	45	0.229	Camano Island State Park Public Ramp	12/3/2011	49	0.151	Camano Island State Park Public Ramp
11/6/2011	45	0.269	Maple Grove Ramp; Camano Is	12/3/2011	49	0.181	Maple Grove Ramp; Camano Is
11/8/2011	46	0.082	Coupeville Public Ramp	12/4/2011	49	0.151	Camano Island State Park Public Ramp
11/8/2011	46	0.229	Camano Island State Park Public Ramp	12/4/2011	49	0.271	Oak Harbor Marina & Public Ramp
11/12/2011	46	0.229	Camano Island State Park Public Ramp	12/8/2011	50	0.271	Oak Harbor Marina & Public Ramp
11/12/2011	46	0.285	Oak Harbor Marina & Public Ramp	12/8/2011	50	0.151	Camano Island State Park Public Ramp
11/13/2011	46	0.229	Camano Island State Park Public Ramp	12/9/2011	50	0.271	Oak Harbor Marina & Public Ramp
11/13/2011	46	0.111	Norton Street (Everett) Ramp	12/9/2011	50	0.151	Camano Island State Park Public Ramp
11/17/2011	47	0.229	Camano Island State Park Public Ramp	12/11/2011	50	0.151	Camano Island State Park Public Ramp
11/17/2011	47	0.269	Maple Grove Ramp; Camano Is	12/11/2011	50	0.181	Maple Grove Ramp; Camano Is
11/19/2011	47	0.229	Camano Island State Park Public Ramp	12/12/2011	51	0.244	Norton Street (Everett) Ramp
11/19/2011	47	0.285	Oak Harbor Marina & Public Ramp	12/12/2011	51	0.151	Camano Island State Park Public Ramp
11/20/2011	47	0.229	Camano Island State Park Public Ramp	12/17/2011	51	0.271	Oak Harbor Marina & Public Ramp
11/20/2011	47	0.111	Norton Street (Everett) Ramp	12/17/2011	51	0.151	Camano Island State Park Public Ramp
11/21/2011	48	0.082	Coupeville Public Ramp	12/18/2011	51	0.151	Camano Island State Park Public Ramp
11/21/2011	48	0.229	Camano Island State Park Public Ramp	12/18/2011	51	0.244	Norton Street (Everett) Ramp
11/26/2011	48	0.285	Oak Harbor Marina & Public Ramp	12/21/2011	52	0.151	Camano Island State Park Public Ramp
11/26/2011	48	0.229	Camano Island State Park Public Ramp	12/21/2011	52	0.181	Maple Grove Ramp; Camano Is

Sample Date	Week	Site Size	Location	Sample Date	Week	Site Size	Location
12/23/2011	52	0.244	Norton Street (Everett) Ramp	1/21/2012	4	0.117	Norton Street (Everett) Ramp
12/23/2011	52	0.151	Camano Island State Park Public Ramp	1/22/2012	4	0.468	Camano Island State Park Public Ramp
12/24/2011	52	0.151	Camano Island State Park Public Ramp	1/22/2012	4	0.117	Norton Street (Everett) Ramp
12/24/2011	52	0.181	Maple Grove Ramp; Camano Is	1/26/2012	5	0.468	Camano Island State Park Public Ramp
12/27/2011	53	0.151	Camano Island State Park Public Ramp	1/26/2012	5	0.168	Maple Grove Ramp; Camano Is
12/27/2011	53	0.271	Oak Harbor Marina & Public Ramp	1/27/2012	5	0.051	Coupeville Public Ramp
12/30/2011	53	0.151	Camano Island State Park Public Ramp	1/27/2012	5	0.468	Camano Island State Park Public Ramp
12/30/2011	53	0.244	Norton Street (Everett) Ramp	1/28/2012	5	0.468	Camano Island State Park Public Ramp
12/31/2011	53	0.244	Norton Street (Everett) Ramp	1/28/2012	5	0.129	Oak Harbor Marina & Public Ramp
12/31/2011	53	0.151	Camano Island State Park Public Ramp	2/1/2012	6	0.443	Camano Island State Park Public Ramp
1/4/2012	2	0.117	Norton Street (Everett) Ramp	2/1/2012	6	0.136	Oak Harbor Marina & Public Ramp
1/4/2012	2	0.468	Camano Island State Park Public Ramp	2/3/2012	6	0.443	Camano Island State Park Public Ramp
1/6/2012	2	0.168	Maple Grove Ramp; Camano Is	2/3/2012	6	0.079	Norton Street (Everett) Ramp
1/6/2012	2	0.468	Camano Island State Park Public Ramp	2/4/2012	6	0.443	Camano Island State Park Public Ramp
1/7/2012	2	0.468	Camano Island State Park Public Ramp	2/4/2012	6	0.043	Coupeville Public Ramp
1/7/2012	2	0.168	Maple Grove Ramp; Camano Is	2/8/2012	7	0.443	Camano Island State Park Public Ramp
1/10/2012	3	0.468	Camano Island State Park Public Ramp	2/8/2012	7	0.043	Coupeville Public Ramp
1/10/2012	3	0.129	Oak Harbor Marina & Public Ramp	2/11/2012	7	0.443	Camano Island State Park Public Ramp
1/14/2012	3	0.468	Camano Island State Park Public Ramp	2/11/2012	7	0.136	Oak Harbor Marina & Public Ramp
1/14/2012	3	0.129	Oak Harbor Marina & Public Ramp	2/12/2012	7	0.079	Norton Street (Everett) Ramp
1/15/2012	3	0.468	Camano Island State Park Public Ramp	2/12/2012	7	0.443	Camano Island State Park Public Ramp
1/15/2012	3	0.168	Maple Grove Ramp; Camano Is	2/15/2012	8	0.226	Maple Grove Ramp; Camano Is
1/17/2012	4	0.168	Maple Grove Ramp; Camano Is	2/15/2012	8	0.443	Camano Island State Park Public Ramp
1/17/2012	4	0.468	Camano Island State Park Public Ramp	2/18/2012	8	0.443	Camano Island State Park Public Ramp
1/21/2012	4	0.468	Camano Island State Park Public Ramp	2/18/2012	8	0.079	Norton Street (Everett) Ramp

Sample Date	Week	Site Size	Location	Sample Date	Week	Site Size	Location
2/19/2012	8	0.226	Maple Grove Ramp; Camano Is	3/17/2012	12	0.200	Maple Grove Ramp; Camano Is
2/19/2012	8	0.443	Camano Island State Park Public Ramp	3/21/2012	13	0.482	Camano Island State Park Public Ramp
2/21/2012	9	0.443	Camano Island State Park Public Ramp	3/21/2012	13	0.200	Maple Grove Ramp; Camano Is
2/21/2012	9	0.073	Utsalady Ramp; Camano Is	3/23/2012	13	0.482	Camano Island State Park Public Ramp
2/25/2012	9	0.443	Camano Island State Park Public Ramp	3/23/2012	13	0.200	Maple Grove Ramp; Camano Is
2/25/2012	9	0.136	Oak Harbor Marina & Public Ramp	3/25/2012	13	0.065	Oak Harbor Marina & Public Ramp
2/26/2012	9	0.443	Camano Island State Park Public Ramp	3/25/2012	13	0.482	Camano Island State Park Public Ramp
2/26/2012	9	0.226	Maple Grove Ramp; Camano Is	3/27/2012	14	0.482	Camano Island State Park Public Ramp
2/28/2012	10	0.226	Maple Grove Ramp; Camano Is	3/27/2012	14	0.200	Maple Grove Ramp; Camano Is
2/28/2012	10	0.443	Camano Island State Park Public Ramp	3/30/2012	14	0.200	Maple Grove Ramp; Camano Is
3/2/2012	10	0.200	Maple Grove Ramp; Camano Is	3/30/2012	14	0.482	Camano Island State Park Public Ramp
3/2/2012	10	0.482	Camano Island State Park Public Ramp	3/31/2012	14	0.482	Camano Island State Park Public Ramp
3/3/2012	10	0.200	Maple Grove Ramp; Camano Is	3/31/2012	14	0.200	Maple Grove Ramp; Camano Is
3/3/2012	10	0.482	Camano Island State Park Public Ramp	4/2/2012	15	0.482	Camano Island State Park Public Ramp
3/8/2012	11	0.065	Oak Harbor Marina & Public Ramp	4/2/2012	15	0.169	Norton Street (Everett) Ramp
3/8/2012	11	0.482	Camano Island State Park Public Ramp	4/6/2012	15	0.482	Camano Island State Park Public Ramp
3/10/2012	11	0.482	Camano Island State Park Public Ramp	4/6/2012	15	0.200	Maple Grove Ramp; Camano Is
3/10/2012	11	0.200	Maple Grove Ramp; Camano Is	4/7/2012	15	0.482	Camano Island State Park Public Ramp
3/11/2012	11	0.482	Camano Island State Park Public Ramp	4/7/2012	15	0.200	Maple Grove Ramp; Camano Is
3/11/2012	11	0.200	Maple Grove Ramp; Camano Is	4/10/2012	16	0.482	Camano Island State Park Public Ramp
3/13/2012	12	0.482	Camano Island State Park Public Ramp	4/10/2012	16	0.200	Maple Grove Ramp; Camano Is
3/13/2012	12	0.200	Maple Grove Ramp; Camano Is	4/13/2012	16	0.482	Camano Island State Park Public Ramp
3/16/2012	12	0.482	Camano Island State Park Public Ramp	4/13/2012	16	0.200	Maple Grove Ramp; Camano Is
3/16/2012	12	0.169	Norton Street (Everett) Ramp	4/14/2012	16	0.482	Camano Island State Park Public Ramp
3/17/2012	12	0.482	Camano Island State Park Public Ramp	4/14/2012	16	0.200	Maple Grove Ramp; Camano Is

Sample Date	Week	Site Size	Location	Sample Date	Week	Site Size	Location
4/19/2012	17	0.482	Camano Island State Park Public Ramp	4/24/2012	18	0.169	Norton Street (Everett) Ramp
4/19/2012	17	0.169	Norton Street (Everett) Ramp	4/24/2012	18	0.482	Camano Island State Park Public Ramp
4/20/2012	17	0.482	Camano Island State Park Public Ramp	4/27/2012	18	0.482	Camano Island State Park Public Ramp
4/20/2012	17	0.200	Maple Grove Ramp; Camano Is	4/27/2012	18	0.200	Maple Grove Ramp; Camano Is
4/22/2012	17	0.482	Camano Island State Park Public Ramp	4/29/2012	18	0.200	Maple Grove Ramp; Camano Is
4/22/2012	17	0.200	Maple Grove Ramp; Camano Is	4/29/2012	18	0.482	Camano Island State Park Public Ramp

Appendix A.2 Size measures by sample date, for sites sampled during dockside creel surveys in the Area 8-2 mark-selective Chinook fishery from November 1, 2011 through April 30, 2012.

Sample Date	Week	Site Size	Location	Sample Date	Week	Site Size	Location
11/1/2011	45	0.311	Camano Island State Park Public Ramp	11/27/2011	48	0.081	Dagmar's Landing; Forklift Launch
11/1/2011	45	0.566	Norton Street (Everett) Ramp	12/1/2011	49	0.661	Norton Street (Everett) Ramp
11/5/2011	45	0.566	Norton Street (Everett) Ramp	12/1/2011	49	0.101	Camano Island State Park Public Ramp
11/5/2011	45	0.311	Camano Island State Park Public Ramp	12/3/2011	49	0.083	Bayside Marine
11/6/2011	45	0.566	Norton Street (Everett) Ramp	12/3/2011	49	0.661	Norton Street (Everett) Ramp
11/6/2011	45	0.311	Camano Island State Park Public Ramp	12/4/2011	49	0.661	Norton Street (Everett) Ramp
11/8/2011	46	0.566	Norton Street (Everett) Ramp	12/4/2011	49	0.101	Camano Island State Park Public Ramp
11/8/2011	46	0.311	Camano Island State Park Public Ramp	12/8/2011	50	0.661	Norton Street (Everett) Ramp
11/12/2011	46	0.566	Norton Street (Everett) Ramp	12/8/2011	50	0.104	Dagmar's Landing; Forklift Launch
11/12/2011	46	0.311	Camano Island State Park Public Ramp	12/9/2011	50	0.101	Camano Island State Park Public Ramp
11/13/2011	46	0.566	Norton Street (Everett) Ramp	12/9/2011	50	0.661	Norton Street (Everett) Ramp
11/13/2011	46	0.081	Dagmar's Landing; Forklift Launch	12/11/2011	50	0.104	Dagmar's Landing; Forklift Launch
11/17/2011	47	0.566	Norton Street (Everett) Ramp	12/11/2011	50	0.661	Norton Street (Everett) Ramp
11/17/2011	47	0.311	Camano Island State Park Public Ramp	12/12/2011	51	0.661	Norton Street (Everett) Ramp
11/19/2011	47	0.566	Norton Street (Everett) Ramp	12/12/2011	51	0.101	Camano Island State Park Public Ramp
11/19/2011	47	0.081	Dagmar's Landing; Forklift Launch	12/17/2011	51	0.101	Camano Island State Park Public Ramp
11/20/2011	47	0.566	Norton Street (Everett) Ramp	12/17/2011	51	0.661	Norton Street (Everett) Ramp
11/20/2011	47	0.081	Dagmar's Landing; Forklift Launch	12/18/2011	51	0.104	Dagmar's Landing; Forklift Launch
11/21/2011	48	0.566	Norton Street (Everett) Ramp	12/18/2011	51	0.661	Norton Street (Everett) Ramp
11/21/2011	48	0.311	Camano Island State Park Public Ramp	12/21/2011	52	0.661	Norton Street (Everett) Ramp
11/26/2011	48	0.311	Camano Island State Park Public Ramp	12/21/2011	52	0.101	Camano Island State Park Public Ramp
11/26/2011	48	0.566	Norton Street (Everett) Ramp	12/23/2011	52	0.661	Norton Street (Everett) Ramp
11/27/2011	48	0.566	Norton Street (Everett) Ramp	12/23/2011	52	0.104	Dagmar's Landing; Forklift Launch

Sample Date	Week	Site Size	Location	Sample Date	Week	Site Size	Location
12/24/2011	52	0.661	Norton Street (Everett) Ramp	1/22/2012	4	0.188	Camano Island State Park Public Ramp
12/24/2011	52	0.101	Camano Island State Park Public Ramp	1/26/2012	5	0.188	Camano Island State Park Public Ramp
12/27/2011	53	0.101	Camano Island State Park Public Ramp	1/26/2012	5	0.732	Norton Street (Everett) Ramp
12/27/2011	53	0.661	Norton Street (Everett) Ramp	1/27/2012	5	0.047	Dagmar's Landing; Forklift Launch
12/30/2011	53	0.104	Dagmar's Landing; Forklift Launch	1/27/2012	5	0.732	Norton Street (Everett) Ramp
12/30/2011	53	0.661	Norton Street (Everett) Ramp	1/28/2012	5	0.732	Norton Street (Everett) Ramp
12/31/2011	53	0.104	Dagmar's Landing; Forklift Launch	1/28/2012	5	0.188	Camano Island State Park Public Ramp
12/31/2011	53	0.661	Norton Street (Everett) Ramp	2/1/2012	6	0.530	Norton Street (Everett) Ramp
1/4/2012	2	0.732	Norton Street (Everett) Ramp	2/1/2012	6	0.161	Camano Island State Park Public Ramp
1/4/2012	2	0.188	Camano Island State Park Public Ramp	2/3/2012	6	0.161	Camano Island State Park Public Ramp
1/6/2012	2	0.047	Dagmar's Landing; Forklift Launch	2/3/2012	6	0.530	Norton Street (Everett) Ramp
1/6/2012	2	0.732	Norton Street (Everett) Ramp	2/4/2012	6	0.062	Dagmar's Landing; Forklift Launch
1/7/2012	2	0.732	Norton Street (Everett) Ramp	2/4/2012	6	0.530	Norton Street (Everett) Ramp
1/7/2012	2	0.188	Camano Island State Park Public Ramp	2/8/2012	7	0.530	Norton Street (Everett) Ramp
1/10/2012	3	0.188	Camano Island State Park Public Ramp	2/8/2012	7	0.062	Dagmar's Landing; Forklift Launch
1/10/2012	3	0.732	Norton Street (Everett) Ramp	2/11/2012	7	0.161	Camano Island State Park Public Ramp
1/14/2012	3	0.188	Camano Island State Park Public Ramp	2/11/2012	7	0.530	Norton Street (Everett) Ramp
1/14/2012	3	0.732	Norton Street (Everett) Ramp	2/12/2012	7	0.530	Norton Street (Everett) Ramp
1/15/2012	3	0.188	Camano Island State Park Public Ramp	2/12/2012	7	0.161	Camano Island State Park Public Ramp
1/15/2012	3	0.732	Norton Street (Everett) Ramp	2/15/2012	8	0.161	Camano Island State Park Public Ramp
1/17/2012	4	0.188	Camano Island State Park Public Ramp	2/15/2012	8	0.530	Norton Street (Everett) Ramp
1/17/2012	4	0.732	Norton Street (Everett) Ramp	2/18/2012	8	0.530	Norton Street (Everett) Ramp
1/21/2012	4	0.188	Camano Island State Park Public Ramp	2/18/2012	8	0.062	Dagmar's Landing; Forklift Launch
1/21/2012	4	0.732	Norton Street (Everett) Ramp	2/19/2012	8	0.530	Norton Street (Everett) Ramp
1/22/2012	4	0.732	Norton Street (Everett) Ramp	2/19/2012	8	0.161	Camano Island State Park Public Ramp

Sample Date	Week	Site Size	Location	Sample Date	Week	Site Size	Location
2/21/2012	9	0.530	Norton Street (Everett) Ramp	3/21/2012	13	0.219	Camano Island State Park Public Ramp
2/21/2012	9	0.161	Camano Island State Park Public Ramp	3/23/2012	13	0.598	Norton Street (Everett) Ramp
2/25/2012	9	0.062	Dagmar's Landing; Forklift Launch	3/23/2012	13	0.219	Camano Island State Park Public Ramp
2/25/2012	9	0.530	Norton Street (Everett) Ramp	3/25/2012	13	0.598	Norton Street (Everett) Ramp
2/26/2012	9	0.530	Norton Street (Everett) Ramp	3/25/2012	13	0.059	Dagmar's Landing; Forklift Launch
2/26/2012	9	0.161	Camano Island State Park Public Ramp	3/27/2012	14	0.219	Camano Island State Park Public Ramp
2/28/2012	10	0.530	Norton Street (Everett) Ramp	3/27/2012	14	0.598	Norton Street (Everett) Ramp
2/28/2012	10	0.161	Camano Island State Park Public Ramp	3/30/2012	14	0.219	Camano Island State Park Public Ramp
3/2/2012	10	0.219	Camano Island State Park Public Ramp	3/30/2012	14	0.598	Norton Street (Everett) Ramp
3/2/2012	10	0.598	Norton Street (Everett) Ramp	3/31/2012	14	0.598	Norton Street (Everett) Ramp
3/3/2012	10	0.598	Norton Street (Everett) Ramp	3/31/2012	14	0.219	Camano Island State Park Public Ramp
3/3/2012	10	0.219	Camano Island State Park Public Ramp	4/2/2012	15	0.598	Norton Street (Everett) Ramp
3/8/2012	11	0.598	Norton Street (Everett) Ramp	4/2/2012	15	0.219	Camano Island State Park Public Ramp
3/8/2012	11	0.219	Camano Island State Park Public Ramp	4/6/2012	15	0.598	Norton Street (Everett) Ramp
3/10/2012	11	0.598	Norton Street (Everett) Ramp	4/6/2012	15	0.059	Dagmar's Landing; Forklift Launch
3/10/2012	11	0.059	Dagmar's Landing; Forklift Launch	4/7/2012	15	0.219	Camano Island State Park Public Ramp
3/11/2012	11	0.219	Camano Island State Park Public Ramp	4/7/2012	15	0.598	Norton Street (Everett) Ramp
3/11/2012	11	0.598	Norton Street (Everett) Ramp	4/10/2012	16	0.219	Camano Island State Park Public Ramp
3/13/2012	12	0.598	Norton Street (Everett) Ramp	4/10/2012	16	0.598	Norton Street (Everett) Ramp
3/13/2012	12	0.059	Dagmar's Landing; Forklift Launch	4/13/2012	16	0.598	Norton Street (Everett) Ramp
3/16/2012	12	0.598	Norton Street (Everett) Ramp	4/13/2012	16	0.219	Camano Island State Park Public Ramp
3/16/2012	12	0.219	Camano Island State Park Public Ramp	4/14/2012	16	0.598	Norton Street (Everett) Ramp
3/17/2012	12	0.598	Norton Street (Everett) Ramp	4/14/2012	16	0.059	Dagmar's Landing; Forklift Launch
3/17/2012	12	0.219	Camano Island State Park Public Ramp	4/19/2012	17	0.219	Camano Island State Park Public Ramp
3/21/2012	13	0.598	Norton Street (Everett) Ramp	4/19/2012	17	0.598	Norton Street (Everett) Ramp

Sample Date	Week	Site Size	Location	Sample Date	Week	Site Size	Location
4/20/2012	17	0.598	Norton Street (Everett) Ramp	4/24/2012	18	0.059	Dagmar's Landing; Forklift Launch
4/20/2012	17	0.219	Camano Island State Park Public Ramp	4/27/2012	18	0.598	Norton Street (Everett) Ramp
4/22/2012	17	0.598	Norton Street (Everett) Ramp	4/27/2012	18	0.219	Camano Island State Park Public Ramp
4/22/2012	17	0.059	Dagmar's Landing; Forklift Launch	4/29/2012	18	0.047	Bayside Marine
4/24/2012	18	0.598	Norton Street (Everett) Ramp	4/29/2012	18	0.598	Norton Street (Everett) Ramp

Appendix A.3 Size measures by sample date, for sites sampled during dockside creel surveys in the Area 10 mark-selective Chinook fishery from October 1, 2011 through January 31, 2012.

Sample Date	Week	Site Size	Location	Sample Date	Week	Site Size	Location
10/1/2011	40	0.4575	Shilshole Public Ramp	10/27/2011	44	0.4575	Shilshole Public Ramp
10/1/2011	40	0.2514	Armeni Public Ramp	10/28/2011	44	0.126	Edmonds Boat Loft (Priv. fork lift)
10/2/2011	40	0.4575	Shilshole Public Ramp	10/28/2011	44	0.4575	Shilshole Public Ramp
10/2/2011	40	0.1204	Kingston Public Ramp	10/29/2011	44	0.042	Manchester Public Ramp
10/4/2011	41	0.4575	Shilshole Public Ramp	10/29/2011	44	0.2514	Armeni Public Ramp
10/4/2011	41	0.1204	Kingston Public Ramp	11/1/2011	45	0.6957	Shilshole Public Ramp
10/7/2011	41	0.2514	Armeni Public Ramp	11/1/2011	45	0.087	Manchester Public Ramp
10/7/2011	41	0.4575	Shilshole Public Ramp	11/5/2011	45	0.6957	Shilshole Public Ramp
10/8/2011	41	0.2514	Armeni Public Ramp	11/5/2011	45	0.1957	Armeni Public Ramp
10/8/2011	41	0.126	Edmonds Boat Loft (Priv. fork lift)	11/6/2011	45	0.0543	Shilshole Public Ramp
10/12/2011	42	0.1204	Kingston Public Ramp	11/6/2011	45	0.8261	Armeni Public Ramp
10/12/2011	42	0.2514	Armeni Public Ramp	11/8/2011	46	0.087	Manchester Public Ramp
10/14/2011	42	0.2514	Armeni Public Ramp	11/8/2011	46	0.1957	Armeni Public Ramp
10/14/2011	42	0.4575	Shilshole Public Ramp	11/12/2011	46	0.1957	Armeni Public Ramp
10/15/2011	42	0.4575	Shilshole Public Ramp	11/12/2011	46	0.6957	Shilshole Public Ramp
10/15/2011	42	0.126	Edmonds Boat Loft (Priv. fork lift)	11/13/2011	46	0.8261	Armeni Public Ramp
10/20/2011	43	0.4575	Shilshole Public Ramp	11/13/2011	46	0.0543	Shilshole Public Ramp
10/20/2011	43	0.126	Edmonds Boat Loft (Priv. fork lift)	11/17/2011	47	0.6957	Shilshole Public Ramp
10/21/2011	43	0.4575	Shilshole Public Ramp	11/17/2011	47	0.1957	Armeni Public Ramp
10/21/2011	43	0.042	Manchester Public Ramp	11/19/2011	47	0.087	Manchester Public Ramp
10/23/2011	43	0.8898	Armeni Public Ramp	11/19/2011	47	0.1957	Armeni Public Ramp
10/23/2011	43	0.0678	Shilshole Public Ramp	11/20/2011	47	0.8261	Armeni Public Ramp
10/27/2011	44	0.2514	Armeni Public Ramp	11/20/2011	47	0.0543	Shilshole Public Ramp

Sample Date	Week	Site Size	Location	Sample Date	Week	Site Size	Location
11/21/2011	48	0.0217	Kingston Public Ramp	12/21/2011	52	0.223	Kingston Public Ramp
11/21/2011	48	0.1957	Armeni Public Ramp	12/23/2011	52	0.2269	Edmonds Boat Loft (Priv. fork lift)
11/26/2011	48	0.0217	Kingston Public Ramp	12/23/2011	52	0.0932	Armeni Public Ramp
11/26/2011	48	0.1957	Armeni Public Ramp	12/24/2011	52	0.3522	Shilshole Public Ramp
11/27/2011	48	0.0543	Shilshole Public Ramp	12/24/2011	52	0.1047	Manchester Public Ramp
11/27/2011	48	0.8261	Armeni Public Ramp	12/27/2011	53	0.0932	Armeni Public Ramp
12/1/2011	49	0.3522	Shilshole Public Ramp	12/27/2011	53	0.3522	Shilshole Public Ramp
12/1/2011	49	0.223	Kingston Public Ramp	12/30/2011	53	0.2269	Edmonds Boat Loft (Priv. fork lift)
12/3/2011	49	0.3522	Shilshole Public Ramp	12/30/2011	53	0.0932	Armeni Public Ramp
12/3/2011	49	0.2269	Edmonds Boat Loft (Priv. fork lift)	12/31/2011	53	0.2269	Edmonds Boat Loft (Priv. fork lift)
12/4/2011	49	0.095	Manchester Public Ramp	12/31/2011	53	0.223	Kingston Public Ramp
12/4/2011	49	0.7019	Armeni Public Ramp	1/4/2012	2	0.2597	Shilshole Public Ramp
12/8/2011	50	0.223	Kingston Public Ramp	1/4/2012	2	0.273	Kingston Public Ramp
12/8/2011	50	0.3522	Shilshole Public Ramp	1/6/2012	2	0.1164	Armeni Public Ramp
12/9/2011	50	0.2269	Edmonds Boat Loft (Priv. fork lift)	1/6/2012	2	0.2597	Shilshole Public Ramp
12/9/2011	50	0.0932	Armeni Public Ramp	1/7/2012	2	0.0942	Edmonds Boat Loft (Priv. fork lift)
12/11/2011	50	0.7019	Armeni Public Ramp	1/7/2012	2	0.2567	Manchester Public Ramp
12/11/2011	50	0.0454	Edmonds Boat Loft (Priv. fork lift)	1/10/2012	3	0.2597	Shilshole Public Ramp
12/12/2011	51	0.3522	Shilshole Public Ramp	1/10/2012	3	0.2567	Manchester Public Ramp
12/12/2011	51	0.1047	Manchester Public Ramp	1/14/2012	3	0.2597	Shilshole Public Ramp
12/17/2011	51	0.3522	Shilshole Public Ramp	1/14/2012	3	0.273	Kingston Public Ramp
12/17/2011	51	0.223	Kingston Public Ramp	1/15/2012	3	0.273	Kingston Public Ramp
12/18/2011	51	0.7019	Armeni Public Ramp	1/15/2012	3	0.2597	Shilshole Public Ramp
12/18/2011	51	0.1169	Shilshole Public Ramp	1/17/2012	4	0.2597	Shilshole Public Ramp
12/21/2011	52	0.3522	Shilshole Public Ramp	1/17/2012	4	0.0942	Edmonds Boat Loft (Priv. fork lift)

Sample Date	Week	Site Size	Location	Sample Date	Week	Site Size	Location
1/21/2012	4	0.1164	Armeni Public Ramp	1/26/2012	5	0.2597	Shilshole Public Ramp
1/21/2012	4	0.2597	Shilshole Public Ramp	1/27/2012	5	0.2597	Shilshole Public Ramp
1/22/2012	4	0.2597	Shilshole Public Ramp	1/27/2012	5	0.1164	Armeni Public Ramp
1/22/2012	4	0.1164	Armeni Public Ramp	1/28/2012	5	0.273	Kingston Public Ramp
1/26/2012	5	0.273	Kingston Public Ramp	1/28/2012	5	0.0942	Edmonds Boat Loft (Priv. fork lift)

Appendix A.4 Size measures by sample date, for sites sampled during dockside creel surveys in the Area 11 mark-selective Chinook fishery from February 1, 2012 through April 30, 2012.

Sample Date	Week	Site Size	Location	Sample Date	Week	Site Size	Location
2/1/2012	6	0.2796	Point Defiance Boathouse	2/26/2012	9	0.649	Point Defiance Public Ramp
2/1/2012	6	0.649	Point Defiance Public Ramp	2/28/2012	10	0.649	Point Defiance Public Ramp
2/3/2012	6	0.2796	Point Defiance Boathouse	2/28/2012	10	0.2796	Point Defiance Boathouse
2/3/2012	6	0.649	Point Defiance Public Ramp	3/2/2012	10	0.289	Point Defiance Boathouse
2/4/2012	6	0.2796	Point Defiance Boathouse	3/2/2012	10	0.5973	Point Defiance Public Ramp
2/4/2012	6	0.649	Point Defiance Public Ramp	3/3/2012	10	0.0414	Gig Harbor Ramp
2/8/2012	7	0.649	Point Defiance Public Ramp	3/3/2012	10	0.5973	Point Defiance Public Ramp
2/8/2012	7	0.0522	Gig Harbor Ramp	3/8/2012	11	0.5973	Point Defiance Public Ramp
2/11/2012	7	0.2796	Point Defiance Boathouse	3/8/2012	11	0.289	Point Defiance Boathouse
2/11/2012	7	0.649	Point Defiance Public Ramp	3/10/2012	11	0.5973	Point Defiance Public Ramp
2/12/2012	7	0.2796	Point Defiance Boathouse	3/10/2012	11	0.289	Point Defiance Boathouse
2/12/2012	7	0.649	Point Defiance Public Ramp	3/11/2012	11	0.5973	Point Defiance Public Ramp
2/15/2012	8	0.2796	Point Defiance Boathouse	3/11/2012	11	0.289	Point Defiance Boathouse
2/15/2012	8	0.649	Point Defiance Public Ramp	3/13/2012	12	0.5973	Point Defiance Public Ramp
2/18/2012	8	0.2796	Point Defiance Boathouse	3/13/2012	12	0.289	Point Defiance Boathouse
2/18/2012	8	0.649	Point Defiance Public Ramp	3/16/2012	12	0.289	Point Defiance Boathouse
2/19/2012	8	0.649	Point Defiance Public Ramp	3/16/2012	12	0.5973	Point Defiance Public Ramp
2/19/2012	8	0.0522	Gig Harbor Ramp	3/17/2012	12	0.5973	Point Defiance Public Ramp
2/21/2012	9	0.2796	Point Defiance Boathouse	3/17/2012	12	0.289	Point Defiance Boathouse
2/21/2012	9	0.649	Point Defiance Public Ramp	3/21/2012	13	0.5973	Point Defiance Public Ramp
2/25/2012	9	0.649	Point Defiance Public Ramp	3/21/2012	13	0.289	Point Defiance Boathouse
2/25/2012	9	0.2796	Point Defiance Boathouse	3/23/2012	13	0.5973	Point Defiance Public Ramp
2/26/2012	9	0.0522	Gig Harbor Ramp	3/23/2012	13	0.289	Point Defiance Boathouse

Sample Date	Week	Site Size	Location	Sample Date	Week	Site Size	Location
3/25/2012	13	0.5973	Point Defiance Public Ramp	4/13/2012	16	0.4957	Point Defiance Public Ramp
3/25/2012	13	0.289	Point Defiance Boathouse	4/13/2012	16	0.2481	Point Defiance Boathouse
3/27/2012	14	0.055	Armeni Public Ramp	4/14/2012	16	0.4957	Point Defiance Public Ramp
3/27/2012	14	0.5973	Point Defiance Public Ramp	4/14/2012	16	0.2481	Point Defiance Boathouse
3/30/2012	14	0.289	Point Defiance Boathouse	4/19/2012	17	0.4957	Point Defiance Public Ramp
3/30/2012	14	0.5973	Point Defiance Public Ramp	4/19/2012	17	0.2481	Point Defiance Boathouse
3/31/2012	14	0.5973	Point Defiance Public Ramp	4/20/2012	17	0.2481	Point Defiance Boathouse
3/31/2012	14	0.289	Point Defiance Boathouse	4/20/2012	17	0.4957	Point Defiance Public Ramp
4/2/2012	15	0.4957	Point Defiance Public Ramp	4/22/2012	17	0.2178	Gig Harbor Ramp
4/2/2012	15	0.2481	Point Defiance Boathouse	4/22/2012	17	0.4957	Point Defiance Public Ramp
4/6/2012	15	0.4957	Point Defiance Public Ramp	4/24/2012	18	0.4957	Point Defiance Public Ramp
4/6/2012	15	0.2178	Gig Harbor Ramp	4/24/2012	18	0.2481	Point Defiance Boathouse
4/7/2012	15	0.4957	Point Defiance Public Ramp	4/27/2012	18	0.2178	Gig Harbor Ramp
4/7/2012	15	0.2481	Point Defiance Boathouse	4/27/2012	18	0.4957	Point Defiance Public Ramp
4/10/2012	16	0.2178	Gig Harbor Ramp	4/29/2012	18	0.4957	Point Defiance Public Ramp
4/10/2012	16	0.4957	Point Defiance Public Ramp	4/29/2012	18	0.2481	Point Defiance Boathouse

Appendix B.1 Coded-wire tag (CWT) recoveries in the winter Area 7 mark-selective Chinook fishery from December 1, 2011 - April 30, 2012.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
07	18-Feb-12	635285	2009	SAMISH R 03.0005	SAMISH H	WDFW	635284		12484	AD
07	18-Feb-12	635366	2009	PURDY CR 16.0005	GEORGE ADAMS H	WDFW	635367		12485	AD
07	18-Feb-12	634797	2008	NOOKSACK R -NF 01.0120	KENDALL CR H	WDFW	634798		12486	AD
07	18-Feb-12	210840	2008	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL			12487	AD
07	18-Feb-12	634794	2009	NOOKSACK R -NF 01.0120	KENDALL CR H	WDFW	634793		12488	AD
07	18-Feb-12	634797	2008	NOOKSACK R -NF 01.0120	KENDALL CR H	WDFW	634798		12489	AD
07	19-Feb-12	210822	2008	GROVERS CR HATCHERY	GROVERS CR H	SUQ	634796		12490	AD
07	07-Jan-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		61	13542	AD
07	21-Apr-12	634797	2008	NOOKSACK R -NF 01.0120	KENDALL CR H	WDFW	634798	75	14805	AD
07	21-Apr-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		80	14806	AD
07	01-Apr-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		76	28872	AD
07	01-Apr-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		69	28873	AD
07	01-Apr-12	634844	2008	WALLACE R 07.0940	WALLACE R H	WDFW	634845	67	28874	AD
07	01-Apr-12	634864	2008	BIG SOOS CR 09.0072	SOOS CREEK H	WDFW	634865	63	28876	AD
07	17-Apr-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		59	28877	AD
07	07-Apr-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		75	28878	AD
07	21-Apr-12	180492	2009	R-COWICHAN R	H-COWICHAN RIVER H	CDFO		56	28883	AD
07	03-Dec-11	634797	2008	NOOKSACK R -NF 01.0120	KENDALL CR H	WDFW	634798	69	42566	AD
07	03-Dec-11	634844	2008	WALLACE R 07.0940	WALLACE R H	WDFW	634845	65	42567	AD
07	04-Dec-11	635285	2009	SAMISH R 03.0005	SAMISH H	WDFW	635284	55	42568	AD
07	04-Dec-11	634373	2007	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	634374	80	42569	AD
07	04-Dec-11	180469	2008	R-COWICHAN R	COWICHAN RIVER H	CDFO		75	42571	AD
07	11-Dec-11	634864	2008	BIG SOOS CR 09.0072	SOOS CREEK H	WDFW	634865	61	42572	AD
07	17-Dec-11	634864	2008	BIG SOOS CR 09.0072	SOOS CREEK H	WDFW	634865	60	42582	AD
07	17-Dec-11	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		69	42583	AD
07	07-Jan-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	64	42584	AD
07	10-Jan-12	634864	2008	BIG SOOS CR 09.0072	SOOS CREEK H	WDFW	634865	62	42585	AD
07	27-Jan-12	180480	2008	R-CHILLIWACK R	CHILLIWACK RIVER H	CDFO	180483,180482,180481	78	42586	AD
07	03-Feb-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	77	42587	AD
07	04-Feb-12	210860	2008	KALAMA CR 11.0017	KALAMA CR H	NISQ		63	42588	AD
07	04-Feb-12	210278	2007	BAKER R 03.0435	MARBLEMOUNT H	WDFW		80	42589	AD
07	05-Feb-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		62	42590	AD
07	11-Feb-12	210842	2008	SKAGIT R 03.0176	MARBLEMOUNT H	WDFW		70	42961	AD
07	27-Mar-12	180889	2009	R-COWICHAN R	COWICHAN RIVER H	CDFO		58	42962	AD
07	13-Apr-12	210905	2009	CLEAR CR 11.0013C	CLEAR CREEK H	NISQ	635096	64	42963	AD
07	14-Apr-12	186046	2009	R-CHEMAINUS R	SEASPRING SALMON	CDFO		63	42964	AD
07	22-Apr-12	634844	2008	WALLACE R 07.0940	WALLACE R H	WDFW	634845	82	42965	AD
07	29-Apr-12	635285	2009	SAMISH R 03.0005	SAMISH H	WDFW	635284	62	42966	AD

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
07	17-Dec-11	180889	2009	R-COWICHAN R	COWICHAN RIVER H	CDFO		60	43001	AD
07	23-Dec-11	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	70	43002	AD
07	03-Mar-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		73	43003	AD
07	17-Mar-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		79	43004	AD
07	23-Mar-12	180888	2009	R-COWICHAN R	COWICHAN RIVER H	CDFO		64	43005	AD
07	30-Mar-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		69	43006	AD
07	21-Apr-12	180492	2009	R-COWICHAN R	COWICHAN RIVER H	CDFO		68	43007	AD
07	16-Dec-11	635366	2009	PURDY CR 16.0005	GEORGE ADAMS H	WDFW	635367	57	43019	AD
07	16-Dec-11	635369	2009	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		57	43020	AD
07	16-Dec-11	634373	2007	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	634374	81	43021	AD
07	06-Jan-12	634298	2007	GREEN R 09.0001	ICY CR H	WDFW		77	43022	AD
07	05-Feb-12	210840	2008	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL		68	43023	AD
07	13-Jan-12	635285	2009	SAMISH R 03.0005	SAMISH H	WDFW	635284	55	43024	AD
07	27-Jan-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	77	43025	AD
07	27-Jan-12	180492	2009	R-COWICHAN R	COWICHAN RIVER H	CDFO		64	43026	AD
07	17-Feb-12	635081	2008	EAST SOUND BAY (SAN)	GLENWOOD SPRINGS	COOP		82	43027	AD
07	26-Feb-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	68	43028	AD
07	06-Apr-12	635292	2009	WALLACE R 07.0940	WALLACE R H	WDFW	635293	60	43029	AD
07	06-Apr-12	634278	2008	CHAMBERS CR 12.0007	GARRISON H	WDFW		65	43030	AD
07	14-Apr-12	635369	2009	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		61	43031	AD
07	07-Apr-12	634271	2007	PURDY CR 16.0005	GEORGE ADAMS H	WDFW	634270	62	43032	AD
07	14-Apr-12	210860	2008	KALAMA CR 11.0017	KALAMA CR H	NISQ		64	43033	AD
07	29-Apr-12	180482	2008	R-CHILLIWACK R	COWICHAN RIVER H	CDFO	180483,180480,180481	64	43036	AD
07	05-Feb-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	67	43050	AD
07	03-Feb-12	635297	2009	BIG SOOS CR 09.0072	SOOS CREEK H	WDFW	635298	57	43078	AD
07	03-Feb-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		70	43079	AD
07	03-Feb-12	634794	2009	NOOKSACK R -NF 01.0120	KENDALL CR H	WDFW	634793	55	43080	AD
07	03-Feb-12	635369	2009	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		55	43081	AD
07	03-Feb-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		69	43082	AD
07	03-Feb-12	180968	2009	R-COWICHAN R	COWICHAN RIVER H	CDFO		60	43083	AD
07	03-Feb-12	210822	2008	GROVERS CR HATCHERY	GROVERS CR H	SUQ	634796	58	43084	AD
07	03-Feb-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		53	43085	AD
07	31-Mar-12	210840	2008	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL		82	43101	AD
07	31-Mar-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	73	43102	AD
07	31-Mar-12	186307	2009	R-COWICHAN R	COWICHAN RIVER H	CDFO		61	43104	AD
07	31-Mar-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	73	43108	AD
07	31-Mar-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		67	43109	AD
07	31-Mar-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		69	43113	AD
07	31-Mar-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		66	43114	AD
07	31-Mar-12	186046	2009	R-CHEMAINUS R	SEASPRING SALMON	CDFO		59	43115	AD

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
07	31-Mar-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		87	43116	AD
07	31-Mar-12	634393	2008	MINTER CR 15.0048	MINTER CR H	WDFW		61	43117	UM
07	31-Mar-12	635366	2009	PURDY CR 16.0005	GEORGE ADAMS H	WDFW	635367	60	43118	AD
07	31-Mar-12	210840	2008	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL		86	43119	AD
07	31-Mar-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		65	43120	AD
07	31-Mar-12	634780	2008	ICY CR 09.0125	ICY CR H	WDFW		67	43121	AD
07	31-Mar-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		80	43122	AD
07	31-Mar-12	210840	2008	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL		69	43124	AD
07	31-Mar-12	635366	2009	PURDY CR 16.0005	GEORGE ADAMS H	WDFW	635367	57	43125	AD
07	31-Mar-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		67	43126	AD
07	31-Mar-12	210840	2008	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL		78	43128	AD
07	31-Mar-12	210840	2008	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL		78	43129	AD
07	31-Mar-12	635366	2009	PURDY CR 16.0005	GEORGE ADAMS H	WDFW	635367	55	43130	AD
07	31-Mar-12	635369	2009	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		64	43131	AD
07	31-Mar-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		74	43133	AD
07	31-Mar-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		75	43134	AD
07	31-Mar-12	180492	2009	R-COWICHAN R	COWICHAN RIVER H	CDFO		68	43135	AD
07	31-Mar-12	634373	2007	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	634374	76	43139	AD
07	31-Mar-12	210822	2008	GROVERS CR HATCHERY	GROVERS CR H	SUQ	634796	58	43140	AD
07	31-Mar-12	186047	2009	R-CHEMAINUS R	SEASPRING SALMON	CDFO		53	43145	AD
07	01-Apr-12	634794	2009	NOOKSACK R -NF 01.0120	KENDALL CR H	WDFW	634793	60	43147	AD
07	01-Apr-12	634844	2008	WALLACE R 07.0940	WALLACE R H	WDFW	634845	62	43148	AD
07	01-Apr-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		73	43149	AD
07	01-Apr-12	635369	2009	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		58	43150	AD
07	04-Feb-12	210840	2008	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL		73	43315	AD
07	17-Mar-12	634298	2007	GREEN R 09.0001	ICY CR H	WDFW		70	54790	AD
07	01-Dec-11	635285	2009	SAMISH R 03.0005	SAMISH H	WDFW	635284	54	60275	AD
07	11-Mar-12	210851	2008	WHITE R 10.0031	WHITE RIVER H	MUCK		63	60280	UM
07	16-Mar-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		68	60281	AD
07	25-Mar-12	631427	2008	LAKWOOD HATCHERY	LAKWOOD H	WDFW		64	60282	AD
07	13-Apr-12	210822	2008	GROVERS CR HATCHERY	GROVERS CR H	SUQ	634796	59	60284	AD
07	14-Apr-12	634794	2009	NOOKSACK R -NF 01.0120	KENDALL CR H	WDFW	634793	59	60285	AD
07	14-Apr-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	70	60286	AD
07	22-Apr-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		63	60287	AD
07	21-Apr-12	635285	2009	SAMISH R 03.0005	SAMISH H	WDFW	635284	56	60288	AD
07	22-Apr-12	634844	2008	WALLACE R 07.0940	WALLACE R H	WDFW	634845	71	60289	AD
07	29-Apr-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	70	60290	AD
07	17-Dec-11	634373	2007	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	634374	70	62166	AD
07	23-Dec-11	180493	2009	R-COWICHAN R	COWICHAN RIVER H	CDFO		60	62167	AD
07	01-Dec-11	634844	2008	WALLACE R 07.0940	WALLACE R H	WDFW	634845	67	62183	AD

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
07	18-Dec-11	180888	2009	R-COWICHAN R	COWICHAN RIVER H	CDFO		71	62235	AD
07	13-Jan-12	634873	2008	PURDY CR 16.0005	GEORGE ADAMS H	WDFW	634872	59	62236	AD
07	13-Jan-12	210856	2008	GORST CR 15.0216	GORST CR REARING PND	SUQ		62	62237	AD
07	24-Mar-12	186047	2009	R-CHEMAINUS R	SEASPRING SALMON	CDFO		60	62240	AD
07	25-Mar-12	635285	2009	SAMISH R 03.0005	SAMISH H	WDFW	635284	59	62241	AD
07	25-Mar-12	180492	2009	R-COWICHAN R	COWICHAN RIVER H	CDFO		62	62242	AD
07	25-Mar-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		58	62243	AD
07	25-Mar-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		66	62245	AD
07	04-Feb-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		64	62389	AD
07	04-Feb-12	634844	2008	WALLACE R 07.0940	WALLACE R H	WDFW	634845	68	62390	AD
07	04-Feb-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		75	62391	AD
07	04-Feb-12	180968	2009	R-COWICHAN R	COWICHAN RIVER H	CDFO		60	62392	AD
07	04-Feb-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		54	62393	AD
07	04-Feb-12	181379	2009	R-BIG QUALICUM R	BIG QUALICUM RIVER H	CDFO		59	62394	AD
07	04-Feb-12	210840	2008	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL		71	62395	AD
07	12-Feb-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		68	62462	AD
07	08-Apr-12	634844	2008	WALLACE R 07.0940	WALLACE R H	WDFW	634845	72	63721	AD

Appendix B.2 Coded-wire tag (CWT) recoveries in the winter Areas 8-1 and 8-2 mark-selective Chinook fisheries from November 1, 2011 - April 30, 2012.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
81	13-Apr-12	635573	2009	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635574	53	28879	AD
81	14-Apr-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		73	28880	AD
81	11-Mar-12	634298	2007	GREEN R 09.0001	ICY CR H	WDFW			43316	AD
81	27-Jan-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		60	62015	AD
81	12-Feb-12	210912	2009	GROVERS CR HATCHERY	GROVERS CR H	SUQ	635089	60	62018	AD
81	03-Mar-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	75	62020	AD
81	09-Mar-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		80	62021	AD
81	27-Mar-12	210906	2009	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL		59	62396	AD
81	17-Mar-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	75	66793	AD
81	27-Apr-12	180968	2009	R-COWICHAN R	COWICHAN RIVER H	CDFO		65	66868	AD
82	14-Apr-12	210840	2008	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL		84	28881	AD
82	14-Apr-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	69	54792	AD
82	03-Feb-12	210912	2009	GROVERS CR HATCHERY	GROVERS CR H	SUQ	635089	59	62016	AD
82	11-Feb-12	635081	2008	EAST SOUND BAY (SAN)	GLENWOOD SPRINGS	COOP		73	62017	AD
82	03-Mar-12	210912	2009	GROVERS CR HATCHERY	GROVERS CR H	SUQ	635089	61	62019	AD
82	17-Mar-12	635573	2009	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635574	60	62023	AD
82	01-Dec-11	210840	2008	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL		66	66786	AD
82	13-Dec-11	633869	2007	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		82	66788	AD
82	10-Jan-12	635086	2009	CHAMBERS CR 12.0007	CHAMBERS CR H	WDFW		54	66789	AD
82	10-Jan-12	210915	2009	GORST CR 15.0216	GORST REARING POND	SUQ		54	66790	AD
82	02-Mar-12	635291	2009	FINCH CR 16.0222	HOODSPORT H	WDFW		64	66792	AD
82	10-Apr-12	210915	2009	GORST CR 15.0216	GORST REARING POND	SUQ		58	66794	AD
82	13-Apr-12	635288	2009	VOIGHT CR TR 10.0428	VOIGHTS CR H	WDFW		57	66795	AD
82	14-Apr-12	180485	2008	R-HARRISON R	CHEHALIS RIVER H	CDFO		88	66796	AD
82	14-Apr-12	634844	2008	WALLACE R 07.0940	WALLACE R H	WDFW	634845	77	66797	AD
82	14-Apr-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	73	66798	AD
82	31-Dec-11	180492	2009	R-COWICHAN R	COWICHAN RIVER H	CDFO		53	66859	AD
82	15-Apr-12	210905	2009	CLEAR CR 11.0013C	CLEAR CREEK H	NISQ	635096	55	66865	AD
82	22-Apr-12	631427	2008	LAKWOOD HATCHERY	LAKWOOD H	WDFW		71	66866	AD
82	27-Apr-12	210860	2008	KALAMA CR 11.0017	KALAMA CR H	NISQ		59	66867	AD
82	28-Apr-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		66	66869	AD
82	17-Apr-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		57	67205	AD
82	06-Nov-11	635366	2009	PURDY CR 16.0005	GEORGE ADAMS H	WDFW	635367	58	67428	AD

Appendix B.3 Coded-wire tag (CWT) recoveries in the winter Area 9 mark-selective Chinook fishery from November 1-30, 2011 and January 16 - April 15, 2012.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
09	15-Apr-12	210906	2009	WHITEHORSE SPRINGS	WHITEHORSE POND	STIL		64	58474	AD
09	19-Feb-12	635292	2009	WALLACE R 07.0940	WALLACE R H	WDFW	635293	56	60278	AD
09	28-Jan-12	635285	2009	SAMISH R 03.0005	SAMISH H	WDFW	635284	64	62754	AD
09	04-Feb-12	634780	2008	ICY CR 09.0125	ICY CR H	WDFW		62	62755	AD
09	23-Mar-12	634864	2008	BIG SOOS CR 09.0072	SOOS CREEK H	WDFW	634865	62	62757	AD
09	03-Feb-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		75	63719	AD
09	05-Feb-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	66	63720	AD
09	08-Apr-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		71	63722	AD
09	08-Apr-12	210912	2009	GROVERS CR HATCHERY	GROVERS CR H	SUQ	635089	60	63771	AD
09	05-Nov-11	210916	2009	GORST CR 15.0216	GORST REARING POND	SUQ		53	66783	AD
09	18-Nov-11	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	61	66784	AD
09	04-Feb-12	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		58	66791	AD
09	19-Nov-11	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		64	66857	AD
09	14-Apr-12	635297	2009	BIG SOOS CR 09.0072	SOOS CREEK H	WDFW	635298	56	66861	AD
09	15-Apr-12	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	65	66862	AD
09	15-Apr-12	635366	2009	PURDY CR 16.0005	GEORGE ADAMS H	WDFW	635367	60	66863	AD
09	15-Apr-12	634284	2007	VOIGHT CR 10.0414	VOIGHTS CR H	WDFW		80	66864	AD
09	01-Nov-11	634844	2008	WALLACE R 07.0940	WALLACE R H	WDFW	634845	63	67426	AD
09	06-Nov-11	634844	2008	WALLACE R 07.0940	WALLACE R H	WDFW	634845	59	67427	AD
09	06-Nov-11	210850	2008	WHITE R 10.0031	WHITE RIVER H	MUCK		68	67429	AD
09	15-Nov-11	634781	2008	FINCH CR 16.0222	HOODSPORT H	WDFW		76	67430	AD

Appendix B.4 Coded-wire tag (CWT) recoveries in the winter Area 10 mark-selective Chinook fishery from October 1, 2011 - January 31, 2012.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
10	19-Nov-11	634395	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW		75	54800	AD
10	23-Oct-11	180898	2009	R-CHILLIWACK R	CHILLIWACK RIVER H	CDFO	180895,180896	59	66782	AD
10	03-Dec-11	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	70	66858	AD
10	14-Jan-12	210913	2009	WHITE R 10.0031	WHITE RIVER H	MUCK		47	66860	UM
10	01-Oct-11	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		62	67312	AD
10	01-Oct-11	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		61	67314	AD
10	02-Oct-11	635090	2009	MINTER CR 15.0048	MINTER CR H	WDFW		40	67317	UM
10	04-Dec-11	634769	2008	CASCADE R 03.1411	MARBLEMOUNT H	WDFW	635082	66	67318	AD

Appendix B.5 Coded-wire tag (CWT) recoveries in the winter Area 11 mark-selective Chinook fishery from February 1 - April 30, 2012.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
11	14-Apr-12	634781	2008	FINCH CR 16.0222	HOODSPORT H	WDFW		70	09490	AD
11	14-Apr-12	635284	2009	SAMISH R 03.0005	SAMISH H	WDFW	635285	67	54047	AD
11	24-Apr-12	634782	2008	WALLACE R 07.0940	WALLACE R H	WDFW		70	54048	AD
11	29-Apr-12	631427	2008	LAKWOOD HATCHERY	LAKWOOD H	WDFW		70	54049	AD

Appendix B.6 Coded-wire tag (CWT) recoveries in the winter Area 12 mark-selective Chinook fishery from February 1 - April 30, 2012.

Area	Recovery Date	Tag Code	Brood Year	Release Site	Rearing Hatchery	Release Agency	DIT Codes	FL (cm)	Label	Recovery Mark
12	04-Feb-12	634781	2008	FINCH CR 16.0222	HOODSPORT HATCHERY	WDFW		62	51921	AD
12	06-Feb-12	634781	2008	FINCH CR 16.0222	HOODSPORT HATCHERY	WDFW		77	51922	AD
12	04-Feb-12	634781	2008	FINCH CR 16.0222	HOODSPORT HATCHERY	WDFW		73	51924	AD
12	07-Feb-12	634781	2008	FINCH CR 16.0222	HOODSPORT HATCHERY	WDFW		74	56656	AD
12	07-Feb-12	634781	2008	FINCH CR 16.0222	HOODSPORT HATCHERY	WDFW		73	56657	AD
12	07-Feb-12	634781	2008	FINCH CR 16.0222	HOODSPORT HATCHERY	WDFW		71	56658	AD
12	18-Feb-12	634781	2008	FINCH CR 16.0222	HOODSPORT HATCHERY	WDFW		73	56987	AD
12	26-Feb-12	634781	2008	FINCH CR 16.0222	HOODSPORT HATCHERY	WDFW		76	56989	AD
12	06-Apr-12	634781	2008	FINCH CR 16.0222	HOODSPORT HATCHERY	WDFW		76	56990	AD
12	12-Feb-12	631427	2008	LAKWOOD HATCHERY	LAKWOOD HATCHERY	WDFW		77	60715	AD
12	04-Mar-12	635292	2009	WALLACE R 07.0940	WALLACE R HATCHERY	WDFW	635293	57	62617	AD
12	10-Feb-12	634780	2008	ICY CR 09.0125	ICY CR HATCHERY	WDFW		74	62756	AD
12	21-Apr-12	631427	2008	LAKWOOD HATCHERY	LAKWOOD HATCHERY	WDFW		75	62758	AD
12	27-Apr-12	180896	2009	CHILLIWACK R	CHILLIWACK RIVER H	CDFO	180895,180898	70	62759	AD