

PACIFIC SALMON COMMISSION
SELECTIVE FISHERIES EVALUATION COMMITTEE
REGIONAL COORDINATION WORK GROUP

SUMMARY OF MASS MARKING ACTIVITIES AND MARK
SELECTIVE FISHERIES CONDUCTED BY CANADA AND
THE UNITED STATES, 2005-2009

REPORT SFEC (12)-1

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LIST OF ACRONYMS

ADFG	Alaska Department of Fish and Game
BC	British Columbia
BON	Bonneville Dam
CDFO	Canadian Department of Fisheries and Oceans
CRITFC	Columbia River Intertribal Fish Commission
CWT	Coded-wire Tag
DIT	Double Index Tag
ETD	Electronic Tag Detection
IDFG	Idaho Department of Fish and Game
MB	Mixed Bag
MM	Mass Marking
MSF	Mark-selective Fishery
NA	Not Available
NFH	National Fish Hatchery
NMT	Northwest Marine Technology
NSF	Non-selective Fishery
NWIFC	Northwest Indian Fisheries Commission
ODFW	Oregon Department of Fish and Wildlife
OR	Oregon
PSC	Pacific Salmon Commission
PSMFC	Pacific States Marine Fisheries Commission
RMIS	Regional Mark Information System
SFEC	Selective Fishery Evaluation Committee
SFEC-AWG	SFEC- Analytical Work Group
SFEC-RCWG	SFEC- Regional Coordination Work Group
SHRP	Sport Head Recovery Program (CDFO)
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
VTR	Voluntary Trip Report
WA	Washington
WDFW	Washington Department of Fish and Wildlife

TABLE OF CONTENTS

REGIONAL COORDINATION WORK GROUP MEMBERS	i
LIST OF ACRONYMS	ii
LIST OF TABLES	iv
LIST OF FIGURES	v
EXECUTIVE SUMMARY	vi
1 INTRODUCTION	1
2 HATCHERY RELEASES	1
2.1 Coho Salmon	1
2.1.1 Coho Mass-marked Releases	1
2.1.2 Coho Salmon DIT Release Groups	8
2.2 Chinook Salmon	10
2.2.1 Chinook Mass-marked Releases	10
2.2.2 Chinook DIT Release Groups	18
3 CWT SAMPLING	20
3.1 Fishery Sampling	20
3.1.1 Alaska	22
3.1.2 Canada	23
3.1.3 Washington	23
3.1.4 Oregon	24
3.2 Escapement Sampling	24
3.2.1 Coho DIT Stocks	24
3.2.2 Chinook DIT Stocks	27
4 SUMMARY OF MARK-SELECTIVE FISHERIES	29
4.1 Coho Salmon	29
4.1.1 Alaska	29
4.1.2 Canada	29
4.1.3 Puget Sound	29
4.1.4 Coastal Washington	30
4.1.5 Columbia River	30
4.1.6 Coastal Oregon	31
4.2 Chinook Salmon	68
4.2.1 Alaska	68
4.2.2 Canada 2005-2009	68
4.2.3 Puget Sound	68
4.2.3.1 Puget Sound 2005	68
4.2.3.2 Puget Sound 2006	68
4.2.3.3 Puget Sound 2007	68
4.2.3.4 Puget Sound 2008	69
4.2.3.5 Puget Sound 2009	69
4.2.4 Coastal Washington 2005-2009	69
4.2.5 Columbia River 2005-2009	69
4.2.6 Coastal Oregon	70
4.2.6.1 Coastal Oregon 2005-2007	70

4.2.6.2	Coastal Oregon 2008-2009	70
5	MASS MARKING DEVELOPMENTS	85
6	ELECTRONIC TAG DETECTION	85
7	DATA QUALITY CONTROL / QUALITY ASSURANCE ISSUES	87
8	ISSUES AND RECOMMENDATIONS	88
8.1	Post-Season Reports on Mark-Selective Fisheries	88
8.2	Regulation Database	89
8.3	Double Index Tag (DIT) Programs	89
8.4	Fishery Sampling	89
8.5	Escapement Sampling	89
9	REFERENCES	90
	APPENDIX A. Double Index Tag (DIT) Groups Released in 2005-2009	91
	APPENDIX B. Coded-wire-tag Exploitation Rate Indicator Stocks	95
	APPENDIX C. Maps of Fishery Management Areas	98

LIST OF TABLES

Table 2-1.	Regional summary of total hatchery Coho Salmon released in 2005	3
Table 2-2.	Regional summary of total hatchery Coho Salmon released in 2006	3
Table 2-3.	Regional summary of total hatchery Coho Salmon released in 2007	4
Table 2-4.	Regional summary of total hatchery Coho Salmon released in 2008	4
Table 2-5.	Regional summary of total hatchery Coho Salmon released in 2009	5
Table 2-6.	Coho Salmon fry and smolt releases by the Canadian Department of Fisheries and Oceans	8
Table 2-7.	Coho double index tag (DIT) groups by stock and region released	9
Table 2-8.	Regional summary of total hatchery Chinook Salmon released in 2005	11
Table 2-9.	Regional summary of total hatchery Chinook Salmon released in 2006	12
Table 2-10.	Regional summary of total hatchery Chinook Salmon released in 2007	13
Table 2-11.	Regional summary of total hatchery Chinook Salmon released in 2008	14
Table 2-12.	Regional summary of total hatchery Chinook Salmon released in 2009	15
Table 2-13.	Chinook double index tag (DIT) groups by stock and region released	19
Table 3-1.	Coded-wire-tag detection and sampling methods for Coho Salmon, by area and fishery, 2005-2009	21
Table 3-2.	Coho DIT escapement sampling methods for return years 2005-2009	25
Table 3-3.	Chinook DIT escapement sampling methods for return years 2005-2009	27
Table 4-1.	Summary of 2005 Coho mark-selective fisheries	32
Table 4-2.	Summary of 2006 Coho mark-selective fisheries	38
Table 4-3.	Summary of 2007 Coho mark-selective fisheries	45
Table 4-4.	Summary of 2008 Coho mark-selective fisheries	53

Table 4-5.	Summary of 2009 Coho mark-selective fisheries.....	61
Table 4-6.	Summary of 2005 Chinook mark-selective fisheries.....	71
Table 4-7.	Summary of 2006 Chinook mark-selective fisheries.....	74
Table 4-8.	Summary of 2007 Chinook mark-selective fisheries.....	76
Table 4-9.	Summary of 2008 Chinook mark-selective fisheries.....	79
Table 4-10.	Summary of 2009 Chinook mark-selective fisheries.....	82
Table 6-1.	Results of field tests for electronic tag detection on Chinook Salmon.....	86

LIST OF FIGURES

Figure 2-1.	Number of Coho Salmon mass-marked (adipose fin clip only) and released, by regions and release year.....	2
Figure 2-2.	Hatchery Coho Salmon released in 2005, by region and mark status.....	5
Figure 2-3.	Hatchery Coho Salmon released in 2006, by region and mark status.....	6
Figure 2-4.	Hatchery Coho Salmon released in 2007, by region and mark status.....	6
Figure 2-5.	Hatchery Coho Salmon released in 2008, by region and mark status.....	7
Figure 2-6.	Hatchery Coho Salmon released in 2009, by region and mark status.....	7
Figure 2-7.	Number of Chinook Salmon mass-marked (adipose clip only) and released, by regions and release year.....	10
Figure 2-8.	Hatchery Chinook Salmon released in 2005, by region, run type, and mark status.....	16
Figure 2-9.	Hatchery Chinook Salmon released in 2006, by region, run type, and mark status.....	16
Figure 2-10.	Hatchery Chinook Salmon released in 2007, by region, run type, and mark status.....	17
Figure 2-11.	Hatchery Chinook Salmon released in 2008, by region, run type, and mark status.....	17
Figure 2-12.	Hatchery Chinook Salmon released in 2009, by region, run type, and mark status.....	18
Figure 3-1.	Numbers of marked Chinook Salmon sampled in Alaska’s troll fishery, by tag status, with total catch (1995-2009).....	23

EXECUTIVE SUMMARY

This report provides information on mass marking (MM) of hatchery Coho Salmon (*Oncorhynchus kisutch*) and Chinook Salmon (*O. tshawytscha*), coded-wire tag (CWT) sampling programs, and mark-selective fisheries (MSFs) conducted during 2005-2009. The information includes numbers of mass-marked fish released, double index tagging, electronic tag detection (ETD) capabilities, and implementation of MSFs. The geographical areas covered include Alaska, British Columbia (BC), Washington, Oregon, and Idaho.

Mass Marking (MM) and Double Index Tagging

Mass marking varies by species and location throughout the Pacific Northwest. There was no MM of Coho in Alaska, north/central BC, or California from 2005 to 2009. In addition, there was no MM of Chinook in Alaska, Canada, or California in the same time period.

Essentially all hatchery Coho smolt production intended for harvest from southern BC, Washington, and Oregon has been mass-marked or tagged since 2005. Participating facilities extend from the Oregon Coast to the north end of Vancouver Island. The annual release of mass-marked Coho smolts has remained at approximately 35 million throughout the timeframe of this report. Coho fingerling releases and Coho produced for wild stock recovery programs are generally not mass marked.

The level of Chinook MM increased from 66 million in 2005 to 114 million in 2009. This increase was due to initiating MM of fall Chinook stocks from the coast of Washington and the Columbia River. By 2009, most all hatchery Chinook production intended for harvest was mass-marked or tagged in Washington, Oregon, and Idaho. Chinook produced for wild stock recovery programs are generally not mass marked.

Double index tagging of indicator stocks is required for assessing the impacts of MSFs on unmarked wild stocks. A subset of the Coho and Chinook indicator stocks have been double index tagged over the period of this report. However, some double index tag groups were discontinued before and during these years. As the geographical scope of Chinook MSFs expands, additional indicator stocks have been recommended by the Selective Fishery Evaluation Committee (SFEC) to be double index tagged.

Electronic Tag Detection

Electronic tag detection to recover coded-wire tags has not been employed coast wide because of continuing reservations by some agencies regarding the cost, accuracy, and practical feasibility of incorporating this technology into their sampling programs. Alaska Department of Fish and Game, Canadian Department of Fisheries and Oceans, Oregon Department of Fish and Wildlife, and California Department of Fish and Game all conduct visual sampling programs which will not recover the unmarked component of double index tag (DIT) programs required to assess impacts of MSFs.

Coast Wide Coordination of CWT Program

Mass-marking, double index tagging, and CWT sampling programs are not sufficiently coordinated to support analysis by PSC technical committees. It is also not clear if agencies are collecting adequate and necessary data to permit estimation of unmarked CWT recoveries in fisheries and escapements so that cohort reconstructions can be carried out on unmarked double index tag releases (SFEC 2010). With the expansion of Chinook marine fisheries, the geographical range of electronic CWT sampling needs to be expanded and more stocks need to be double index tagged.

Mark-Selective Fisheries

Coho Salmon

There were no directed commercial MSFs in Canadian waters during the years 2005 through 2009. However, retention of marked Coho was permitted in some commercial troll openings off the west coast of Vancouver Island in 2008 and 2009 with Chinook Salmon as the target species. These fisheries took place between the months of October and March. Recreational Coho MSFs were implemented in most of southern BC, including Johnstone Strait, the Strait of Georgia, Juan de Fuca Strait, and the West Coast of Vancouver Island. Non-selective fisheries (NSFs) were implemented mostly in terminal areas where local wild stocks are showing improvement, as well as in northern British Columbia.

In Washington and Oregon, multiple Coho MSFs occurred during the years 2005-2009. These included commercial troll and recreational fisheries in marine waters. In all years, mark-selective commercial non-treaty troll and recreational fisheries for Coho occurred in the marine waters from the United States/Canada Border to Cape Falcon, Oregon during July through September. Recreational Coho MSFs occurred during 2005-2009 in the marine areas of coastal Oregon from mid-June through August. In addition, recreational Coho MSFs occurred in Willapa Bay (Area 2-1) during the July-September period and in Grays Harbor (Area 2-2) during July (2007) and from September 16 through November 30 (years 2007-2009). Also, in 2009, a non-treaty commercial MSF for Coho occurred in Grays Harbor (Area 2C) during the month of September.

Additionally, recreational Coho MSFs occurred in several Washington coastal freshwater systems in 2005-2009. These Coho MSFs occurred in the Quillayute River Basin (February through August), Willapa Bay tributaries (August through January), and Grays Harbor tributaries (September through February).

In Puget Sound, recreational Coho MSFs occurred in four marine areas (Areas 5, 6, 7, and 13) during the months of July through October in years 2005-2009. Recreational Coho MSFs also occurred in several freshwater systems of Puget Sound, including the Nooksack River in northern Puget Sound during the months of September through December (years 2005-2009), Chambers Creek Estuary (July-November, 2006-2008), Kennedy Creek (October-November, 2007-2009), and McLane Creek (September-November, 2007 only).

In the Columbia River, recreational Coho MSFs occurred during years 2005-2009 (generally during the period from August 1 through December 31), including the Buoy 10 and lower river (below Bonneville Dam) recreational fisheries. Recreational Coho MSFs also occurred in some Oregon coastal rivers in years 2005-2009.

Chinook

There were no commercial MSFs for Chinook in Canadian waters during the years 2005 through 2009. However, from March through May in 2008 and 2009, a recreational mixed-bag Chinook MSF occurred in the Canadian marine waters of the Juan de Fuca Strait. In this mixed-bag fishery, retention of both marked and unmarked Chinook Salmon was permitted between the minimum size limit of 45 cm and up to 67 cm in length (measured as the nose-to-fork length), but retention of marked Chinook only was permitted above 67 cm for a total daily limit of two Chinook Salmon.

There were no recreational Chinook MSFs in Washington coastal marine waters during the 2005 through 2009 seasons. However, recreational Chinook MSFs did occur in Washington coastal freshwater systems, such as the Quillayute River (February through August, years 2005-2009) and the Hoh River (May through August, years 2008-2009). Several recreational Chinook MSFs occurred in the marine waters of Puget Sound, Washington in both the summer and winter seasons. Summer recreational Chinook MSFs occurred in Areas 5 and 6 within the Strait of Juan de Fuca (July-August, years 2005-2009), Areas 9 and 10 (July-August, years 2007-2009), Area 11 (June-September, years 2007-2009) and Area 13 (May-September, years 2007-2009). Winter recreational Chinook MSFs occurred in Area 7 (February 2008, February-April 2009, December 2009-April 2010), Areas 8-1 and 8-2 (October-April in years 2005-2006 and 2006-2007; November-April in 2007-2008; January-April in 2009; and November-April in 2009-2010), Area 9 (January-April in 2008 and 2009; November 2009), and Area 10 (December-January 2007-2008 and 2008-2009; October-January 2009-2010). In addition, freshwater Chinook MSFs in rivers surrounding Puget Sound occurred during years 2005-2009 in the Nooksack River (September-December), Skagit River (June-July), Skykomish River (June-July), Puyallup River (August-December), Carbon River (September-November), and the Nisqually River (July-January).

In Oregon, coastal recreational MSFs for spring Chinook Salmon occurred in a limited area adjacent to Tillamook Bay during the months of March through July in years 2005-2009. Additionally, in-stream MSFs for spring Chinook Salmon occurred in the Tillamook Basin (including the Kilchis, Miami, Tillamook, Trask, and Wilson rivers), and Nestucca River and Bay (including Little Nestucca River and Three Rivers) during years 2005-2009. During 2008 and 2009, recreational MSFs for fall Chinook in coastal Oregon waters occurred in the Tillamook Terminal Area (September-November, 2008; September-October, 2009) and the Elk River Terminal Area (November only in 2008; October-November, 2009). No MSFs for fall Chinook occurred in any coastal Oregon streams during 2005-2009.

The only commercial Chinook MSFs occurring in Washington and Oregon during 2005-2009 were implemented in the Columbia River mainstem. The states of Washington and Oregon implemented mark-selective commercial fisheries for spring Chinook using both large-mesh ($\geq 8''$ mesh) and tangle-net (or tooth-net) gear ($\leq 4.25''$ mesh). These commercial MSFs occurred

downstream of Bonneville Dam during approximately late February through mid/late March (and through late May and mid-June in years 2006 and 2007, respectively).

The states of Washington and Oregon also implemented recreational Chinook MSFs in the Columbia River during 2005-2009. Mark-selective fisheries for spring Chinook occurred in the mainstem from the mouth upstream to McNary Dam (open retention periods varied during the January through mid-June timeframe). Recreational summer Chinook MSFs also occurred during mid-June through July of 2005 in the mainstem Columbia River, upstream of Tongue Point to the Oregon/Washington border above McNary Dam. In addition, recreational Chinook MSFs occurred in several Columbia River tributaries, including the Willamette River (January-June), the Cowlitz, Kalama, Lewis, and Sandy rivers (January-July), and Snake River (mid-May through June). Terminal recreational Chinook MSFs have occurred in the Snake River Basin of Idaho but are not covered in this document.

As the number of returning mass-marked Chinook increases, an expansion of Chinook MSFs is expected in coastal and Columbia River areas.

Issues and Recommendations

Several issues and recommendations are identified in Section 8 at the end of the report. Marking, tagging, and sampling programs are not adequately coordinated within and between agencies. In addition, reporting of data required to evaluate MSFs is lacking. It is important that agency leaders become aware of the data collection and reporting requirements to the PSC and work with their SFEC representatives to fulfil these obligations.

1 INTRODUCTION

This report provides information on mass marking (MM) of hatchery Coho Salmon (*Oncorhynchus kisutch*) and Chinook Salmon (*O. tshawytscha*) during 2005 to 2009 (2003 to 2008 broods), coded-wire tag (CWT) sampling programs, and mark-selective fisheries (MSFs) conducted during 2005 to 2009. The information includes numbers of mass-marked fish released, double index tag (DIT) programs, agency CWT sampling methods, electronic tag detection (ETD) capabilities, and implementation of MSFs. Information relating to issues around DIT programs and MSFs are also discussed.

Mass marking refers to clipping the adipose fin from hatchery produced salmon. Double index tagging is a method of tagging representative release groups of fish to enable stock assessment analyses in the presence of MSFs. Electronic tag detection is a sampling method for CWT recovery using electronic tag detectors. Mark-selective fisheries are any fishery where a regulation specifies retention of marked only (clipped adipose fin) fish and release of unmarked fish.

Information is included for Alaska Department of Fish and Game (ADFG), Canadian Department of Fisheries and Oceans (CDFO), Washington Department of Fish and Wildlife (WDFW), Member Tribes of the Northwest Indian Fisheries Commission (NWIFC), U.S. Fish and Wildlife Service (USFWS), Member Tribes of Columbia River Intertribal Fish Commission (CRITFC), Oregon Department of Fish and Wildlife (ODFW), and Idaho Department of Fish and Game (IDFG).

Information is provided by Area, a generic geographic classification which rolls up multiple Regions as reported in the Regional Mark Information System (RMIS). Maps showing Fishery Management Areas for British Columbia (BC), Washington (WA) and Oregon (OR) are included in Appendix C.

2 HATCHERY RELEASES

2.1 Coho Salmon

2.1.1 Coho Mass-marked Releases

Total Coho production and mass-marked releases from Canadian and United States hatcheries have been relatively constant throughout the years of this report. Annual mass-marked releases, combined for all agencies, ranged from a high of 35.8 million in 2005 to a low of 34 million in 2007 (Figure 2-1). Coho smolt releases, by agency and mark/tag status, are summarized in Tables 2-1 through 2-5 and depicted in Figures 2-2 through 2-6. Mass-marked numbers do not include adipose-clipped coded-wire-tagged releases. There was only one release of blank-wire tagged Coho reported during this time period (Table 2-1). Details of individual releases can be found in the Regional Mark Information System (RMIS) database maintained by the Pacific States Marine Fisheries Commission (PSMFC) (Regional Mark Processing Center).

Essentially all Coho smolt production intended for harvest from southern BC and southern U.S. hatcheries is mass-marked or coded-wire-tagged. Participating facilities extend from the coast of Oregon to the north end of Vancouver Island. There was no MM in California, north/central BC, or Alaska. Coho fry production is usually not mass-marked. Coho fry releases comprise a substantial component of Canadian Coho releases (Table 2-6), but a minimal component of U.S. hatchery releases.

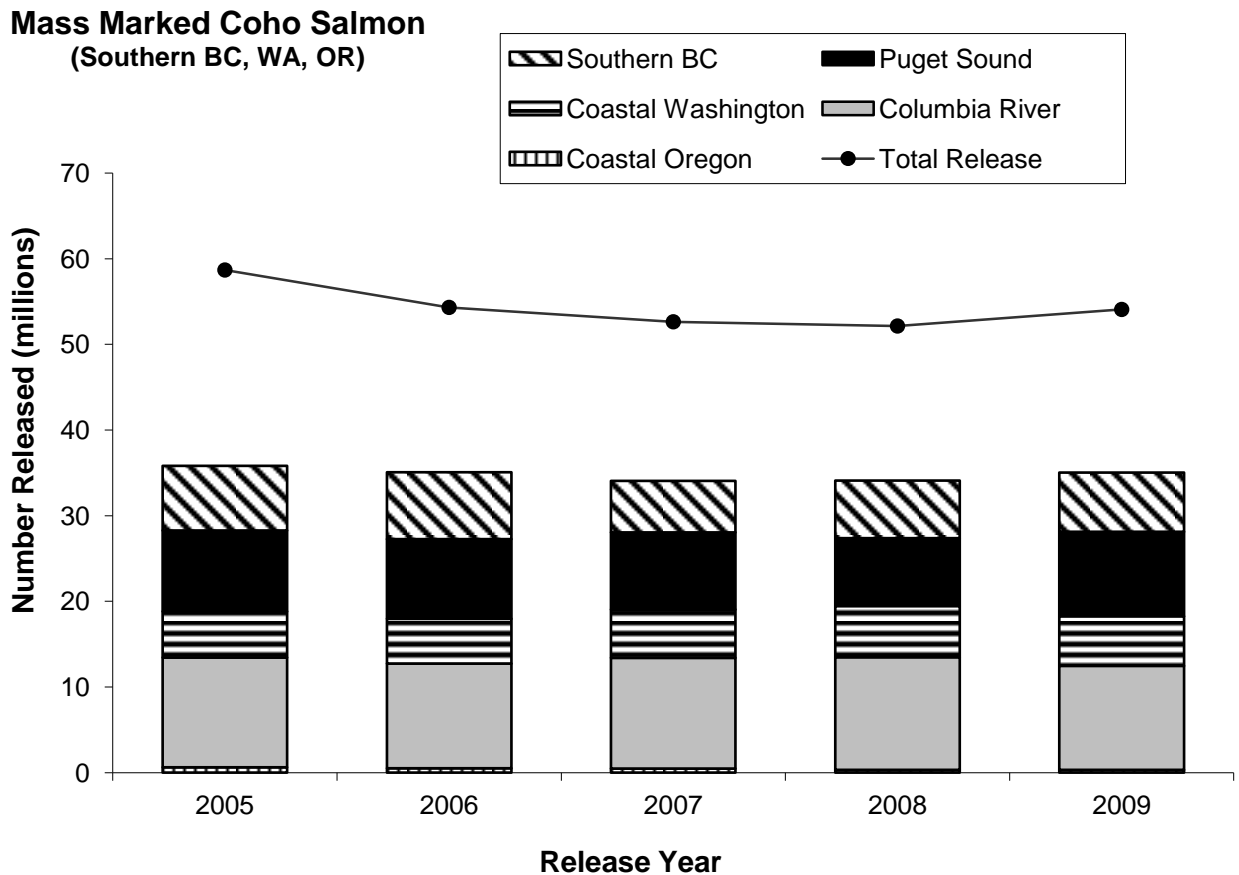


Figure 2-1. Number of Coho Salmon mass-marked (adipose fin clip only) and released, by regions and release year. The solid line represents total hatchery releases, by release year.

Table 2-1. Regional summary of total hatchery Coho Salmon released in 2005.

Area	Agency	DIT	CWT		Non-CWT		Total Released
		Prog.	Marked	Unmarked	Marked	Unmarked	
Southern BC	CDFO	2	222,341	162,525	7,525,109	7,144,303	15,054,278
Puget Sound	USFWS	1	41,007	38,577	280,114	2,193	361,891
	NWIFC	2	548,137	98,886	3,214,246	2,096,042	5,957,311
	WDFW ^a	6	439,492	439,970	5,988,279	900,259	7,768,000
WA Coast	NWIFC	1	70,869	125,948	39,195	368,661	604,673
	USFWS	2	112,429	115,562	577,482	9,882	815,355
	WDFW	3	435,118	279,974	4,744,161	1,635,672	7,094,925
Upper Columbia Basin	CRITFC	0	0	926,370	0	21,031	947,401
	ODFW	0	80,205	50	145	1,479,516	1,559,916
	USFWS	0	0	281,331	0	2,364	283,695
	WDFW	0	96,575	76	957,552	2,445,944	3,500,147
Snake River Basin	CRITFC	0	0	263,106	0	319,005	582,111
Lower Columbia Basin	ODFW	1	266,180	29,530	3,949,513	39,489	4,284,712
	USFWS	1	24,661	24,702	474,645	348	524,356
	WDFW	2	474,212	163,683	7,451,038	198,247	8,287,180
N. OR Coast	ODFW	0	122,863	525	313,921	1,887	439,196
S. OR Coast	ODFW	1	138,606	27,144	295,136	160,469	621,355
	Total	22	3,072,695	2,977,959	35,810,536	16,825,312	58,686,502

^a WDFW released 8,839 Coho with agency-only wire in the Strait of Juan de Fuca.

Table 2-2. Regional summary of total hatchery Coho Salmon released in 2006.

Area	Agency	DIT	CWT		Non-CWT		Total Released
		Prog.	Marked	Unmarked	Marked	Unmarked	
Southern BC	CDFO	2	348,651	121,628	7,777,111	3,433,795	11,681,185
Puget Sound	NWIFC	1	577,930	92,998	3,387,611	860,176	4,918,715
	USFWS	1	47,794	49,091	331,772	59,423	488,080
	WDFW	6	304,661	357,262	5,603,528	619,970	6,885,421
WA Coast	NWIFC	0	79,912	103,479	30,601	525,398	739,390
	USFWS	2	120,148	125,735	567,583	17,363	830,829
	WDFW	2	578,909	276,701	4,639,636	1,217,121	6,712,367
Upper Columbia Basin	ODFW	0	67,716	0	0	1,426,100	1,493,816
	USFWS	0	0	288,085	0	22,906	310,991
	WDFW	0	193,974	106	3,590	2,373,250	2,570,920
	CRITFC	0	46,126	1,058,914	876,394	11,625	1,993,059
Snake River Basin	CRITFC	0	100,019	260,645	0	652,413	1,013,077
Lower Columbia Basin	ODFW	1	268,011	26,129	3,503,776	298,918	4,096,834
	USFWS	1	23,732	23,753	411,165	836	459,486
	WDFW	1	461,334	170,122	7,402,694	1,059,617	9,093,767
N. OR Coast	ODFW	0	128,604	206	291,489	0	420,299
S. OR Coast	ODFW	1	113,767	26,025	226,360	244,612	610,764
	Total	18	3,461,288	2,980,879	35,053,310	12,823,523	54,319,000

Table 2-3. Regional summary of total hatchery Coho Salmon released in 2007.

Area	Agency	DIT	CWT		Non-CWT		Total Released
		Prog.	Marked	Unmarked	Marked	Unmarked	
Southern BC	CDFO	2	257,791	210,204	6,013,172	3,693,188	10,174,355
Puget Sound	NWIFC	1	505,827	87,843	3,946,619	498,630	5,038,919
	USFWS	1	41,580	40,529	179,699	1,919	263,727
	WDFW	6	352,232	371,464	4,866,504	419,927	6,010,127
WA Coast	NWIFC	1	73,041	126,492	296,329	48,355	544,217
	USFWS	2	119,303	117,208	525,330	46,679	808,520
	WDFW	3	457,533	292,954	4,831,957	1,935,864	7,518,308
Upper Columbia Basin	ODFW	0	82,292	149	396	1,427,377	1,510,214
	USFWS	0	0	327,952	0	9,579	337,531
	WDFW	0	193,362	1,776	0	2,347,684	2,542,822
	CRITFC	0	42,940	1,184,500	1,028,060	0	2,255,500
Snake River Basin	CRITFC	0	60,622	180,884	0	618,651	860,157
Lower Columbia Basin	ODFW	1	297,275	27,271	3,812,959	8,578	4,146,083
	USFWS	1	24,295	24,290	479,261	700	528,546
	WDFW	2	484,698	212,750	7,600,033	1,111,983	9,409,464
N. OR Coast	ODFW	0	134,594	0	279,292	0	413,886
S. OR Coast	ODFW	1	55,745	26,666	188,814	4,568	275,793
	Total	21	3,183,130	3,232,932	34,048,425	12,173,682	52,638,169

Table 2-4. Regional summary of total hatchery Coho Salmon released in 2008.

Area	Agency	DIT	CWT		Non-CWT		Total Released
		Prog.	Marked	Unmarked	Marked	Unmarked	
Southern BC	CDFO	2	323,599	117,716	6,738,897	3,067,318	10,247,530
Puget Sound	NWIFC	1	425,572	85,910	3,206,243	250,517	3,968,242
	USFWS	1	34,139	34,347	286,526	3,119	358,131
	WDFW	6	441,042	366,834	4,413,979	958,378	6,180,233
WA Coast	NWIFC	0	72,133	132,713	538,258	115,397	858,501
	USFWS	2	117,726	118,145	592,430	208,711	1,037,012
	WDFW	3	652,669	252,511	4,844,907	2,600,586	8,350,673
Upper Columbia Basin	ODFW	0	80,695	0	0	1,433,739	1,514,434
	USFWS	0	0	307,559	0	1,649	309,208
	WDFW	0	58,416	206,217	122	2,570,671	2,835,426
	CRITFC	0	46,226	978,057	1,051,686	11,451	2,087,420
Snake River Basin	CRITFC	0	0	155,137	0	211,353	366,490
Lower Columbia Basin	ODFW	1	328,492	27,668	4,338,492	15,994	4,710,646
	USFWS	1	17,825	18,733	468,444	6,340	511,342
	WDFW	2	450,021	190,761	7,327,464	379,348	8,347,594
N. OR Coast	ODFW	0	101,812	0	103,977	0	205,789
S. OR Coast	ODFW	0	41,825	0	197,401	19,910	259,136
	Total	19	3,192,192	2,992,308	34,108,826	11,854,481	52,147,807

Table 2-5. Regional summary of total hatchery Coho Salmon released in 2009.

Area	Agency	DIT Prog.	CWT		Non-CWT		Total Released
			Marked	Unmarked	Marked	Unmarked	
Southern BC	CDFO	2	362,934	154,974	6,916,805	4,719,622	12,154,335
Puget Sound	NWIFC	1	477,129	87,288	3,961,815	274,521	4,800,753
	USFWS	1	36,467	38,948	281,501	1,051	357,967
	WDFW	6	399,726	387,613	5,607,179	1,684,418	8,078,936
WA Coast	NWIFC	1	68,967	126,398	460,336	33,324	689,025
	USFWS	2	121,412	122,758	556,383	5,381	805,934
	WDFW	3	411,251	270,998	4,785,956	1,460,147	6,928,352
Upper Columbia Basin	ODFW	0	83,304	226	752,701	727,273	1,563,504
	USFWS	0	0	460,699	0	2,009	462,708
	WDFW	0	60,054	242	0	2,443,003	2,503,299
	CRITFC	0	0	1,050,871	0	16,216	1,067,087
Snake River Basin	CRITFC	0	0	121,338	0	198,251	319,589
Lower Columbia Basin	ODFW	1	318,356	28,841	5,008,995	9,743	5,365,935
	USFWS	1	25,069	24,925	265,813	9,137	324,944
	WDFW	2	807,948	227,339	6,107,487	1,032,227	8,175,001
N. OR Coast	ODFW	0	0	0	210,513	0	210,513
S. OR Coast	ODFW	0	26,581	2,036	124,300	119,458	272,375
Total		20	3,199,198	3,105,494	35,039,784	12,735,781	54,080,257

Release Year 2005

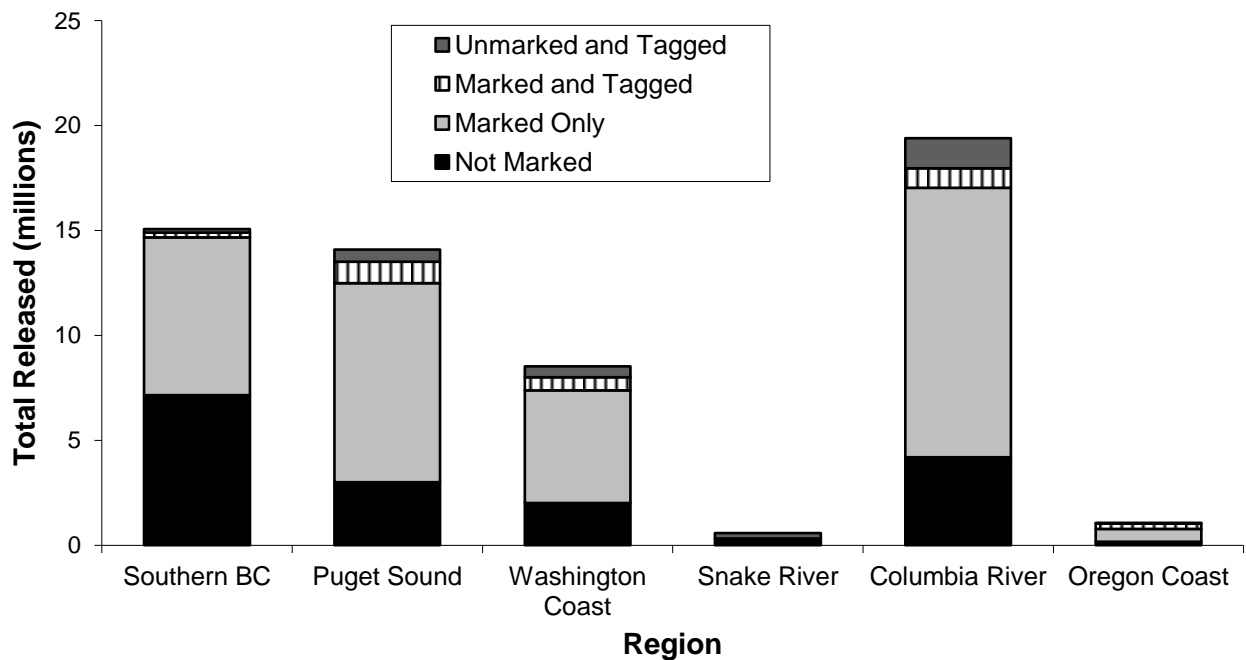


Figure 2-2. Hatchery Coho Salmon released in 2005, by region and mark status.

Release Year 2006

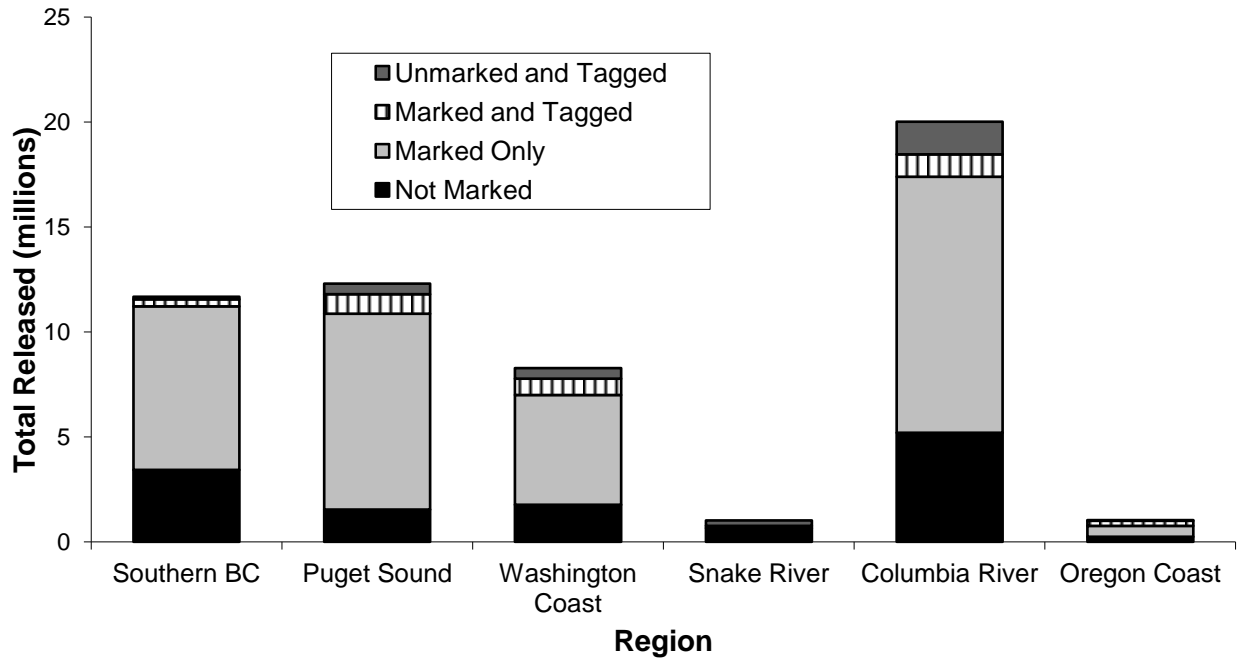


Figure 2-3. Hatchery Coho Salmon released in 2006, by region and mark status.

Release Year 2007

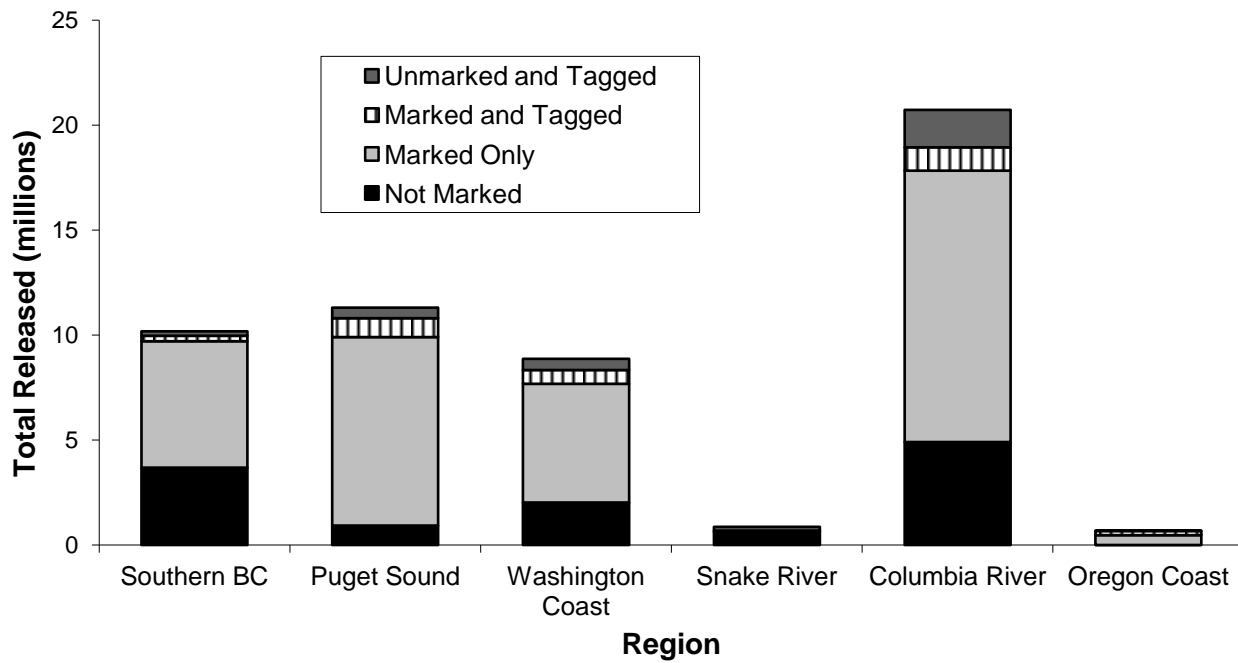


Figure 2-4. Hatchery Coho Salmon released in 2007, by region and mark status.

Release Year 2008

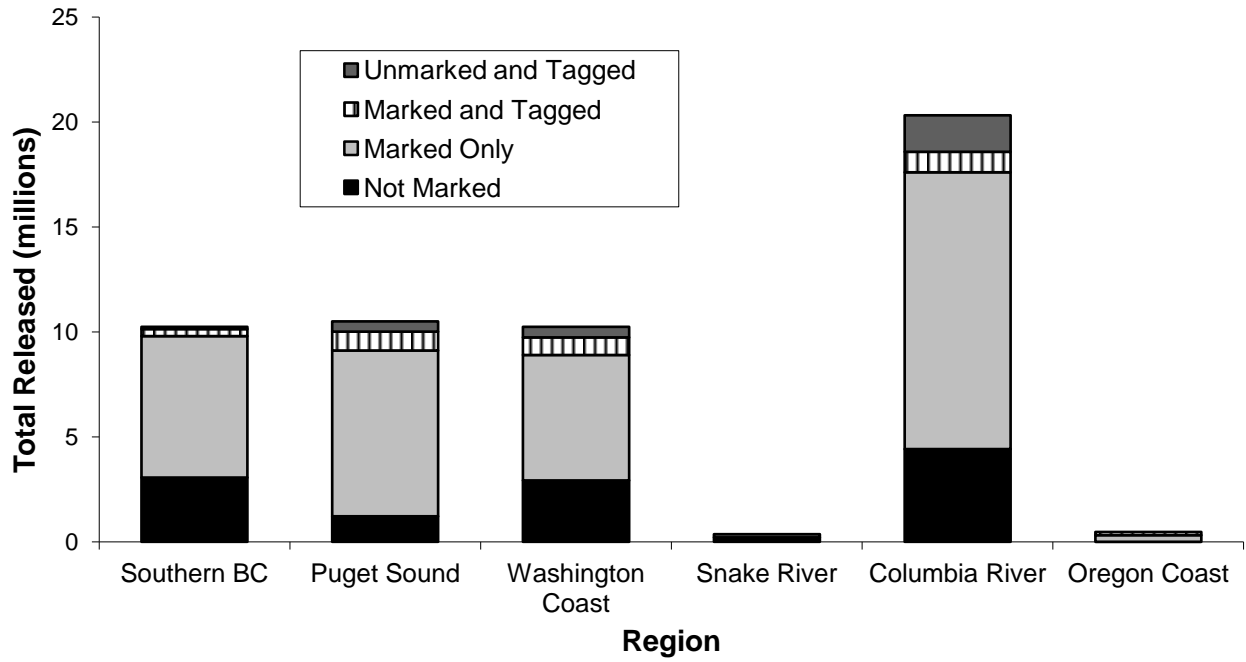


Figure 2-5. Hatchery Coho Salmon released in 2008, by region and mark status.

Release Year 2009

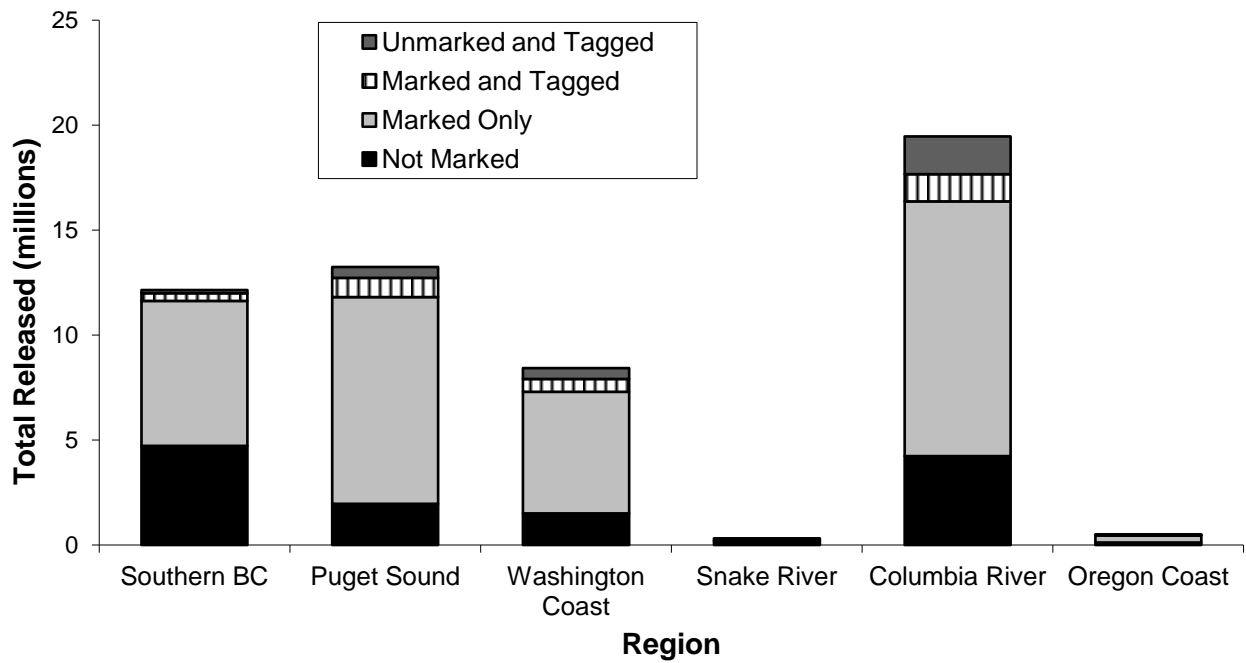


Figure 2-6. Hatchery Coho Salmon released in 2009, by region and mark status.

Table 2-6. Coho Salmon fry and smolt releases by the Canadian Department of Fisheries and Oceans.

Release Year	Fry	Smolt	Total	% Fry
2005	5,145,761	10,201,052	15,346,813	34%
2006	2,713,500	8,378,385	11,091,885	24%
2007	2,839,642	7,502,476	10,342,118	27%
2008	3,079,007	7,167,324	10,246,331	30%
2009	4,282,312	7,618,457	11,900,769	36%

2.1.2 **Coho Salmon DIT Release Groups**

In the years 2005 through 2009, two Coho Salmon DIT groups were tagged in Canada, eight groups were tagged in Puget Sound, six groups were tagged on the Washington Coast, and three groups were tagged on the Columbia River (Table 2-7). The Rogue River DIT group on the Oregon Coast was discontinued after 2007. Canadian Department of Fisheries and Oceans discontinued five DITs in 2005 under the assumption that the remaining DITs sufficiently represented the stocks being harvested in MSFs. Two DIT groups were also discontinued in the Lower Columbia River from 2004 to 2005.

Table 2-7. Coho double index tag (DIT) groups by stock and region released. (See Appendix A for the list of DIT codes and Appendix B for the list of stocks used as indicators).

Region	Natural/Unmarked Stock Represented	DIT Stock	Hatchery	Release Years With DIT	
Georgia Strait	East Coast	Big Qualicum R	Big Qualicum R	98-04 ^a	
	Vancouver Island	Goldstream R	Goldstream R	98-04 ^a	
Johnstone Strait	North Vancouver Island	Quinsam R	Quinsam R	98-09	
Fraser/ Thompson River	Lower Fraser	Chilliwack R	Chilliwack R	98-04 ^a	
		Inch Cr	Inch Cr	98-09	
	Thompson River	Coldwater R	Spilus Cr	01-04 ^a	
Western Vancouver Island	West Coast	Robertson Cr	Robertson Cr	98-04 ^a	
	Vancouver Island	Sooke R	Sooke R	98	
Puget Sound	Nooksack	Nooksack	Kendall Cr	98-09	
	Skagit	Skagit	Marblemount	97-09	
	Stillaguamish/ Snohomish	Skykomish	Wallace R	98, 00-09	
	Mid Puget Sound	Green R	Soos Cr	98-09	
	South Puget Sound	Puyallup	Voights Cr	98, 00-09	
	North Hood Canal		Quilcene	Quilcene NFH	98-09
				Quilcene Net Pens	98-04 ^a
	South Hood Canal	George Adams	George Adams	97, 99-09	
	Strait of Juan de Fuca	Elwha	Lower Elwha Tribal	97-09	
Washington Coast	North Coast	Makah	Makah NFH	98-09	
		Sol Duc	WDFW Sol Duc	98-09	
	North Central Coast	Queets (wild)	Quinalt Salmon R	97-09	
		Quinalt	Quinalt NFH	98-09	
	Grays Harbor	Satsop	WDFW Bingham Cr	98-09	
Willapa Bay	Forks Cr	WDFW Forks Cr	97, 99, 01-09		
Columbia River	Lower Columbia R Type N	Lewis R	WDFW Lewis R	97-09	
	Lower Columbia R Type S	Lewis R	WDFW Lewis R	99-09	
		Little White Salmon	Willard NFH	98-01, 04 ^a	
		Eagle Cr	Eagle Creek NFH	97-09	
		Sandy R	ODFW Sandy R	97-09	
		Blind Slough	ODFW Sandy/CEDC	01-03 ^a	
Oregon Coast	Oregon South Coast	Rogue River	Cole M. Rivers	97-07 ^a	

^a Program discontinued.

2.2 Chinook Salmon

2.2.1 Chinook Mass-marked Releases

Beginning with 2006 releases, Chinook MM significantly increased over previous levels (Figure 2-7). The level of Chinook MM increased from 66 million in 2005 to 114 million in 2009. This was due to the addition of Columbia River and Coastal Washington fall Chinook stocks. Chinook releases, by agency and mark/ tag status, are summarized in Table 2-8 through Table 2-12 and depicted in Figure 2-8 through Figure 2-12. Chinook releases include both fingerling (sub-yearling) and yearling fish. Mass-marked numbers do not include adipose-clipped coded-wire-tagged releases. The number of Chinook released with blank-wire tags ranged from 385,889 in 2005 to 844,815 in 2009 (Tables 2-8 through 2-12). Chinook produced for wild stock recovery programs are generally not mass-marked. Details of individual releases can be found in the Regional Mark Information System (RMIS) database maintained by the Pacific States Marine Fisheries Commission (PSMFC) (Regional Mark Processing Center).

By 2009, most all hatchery Chinook production intended for harvest was mass-marked or coded-wire-tagged in Washington, Oregon, and Idaho. There is no MM of Chinook Salmon in California, British Columbia, or Alaska.

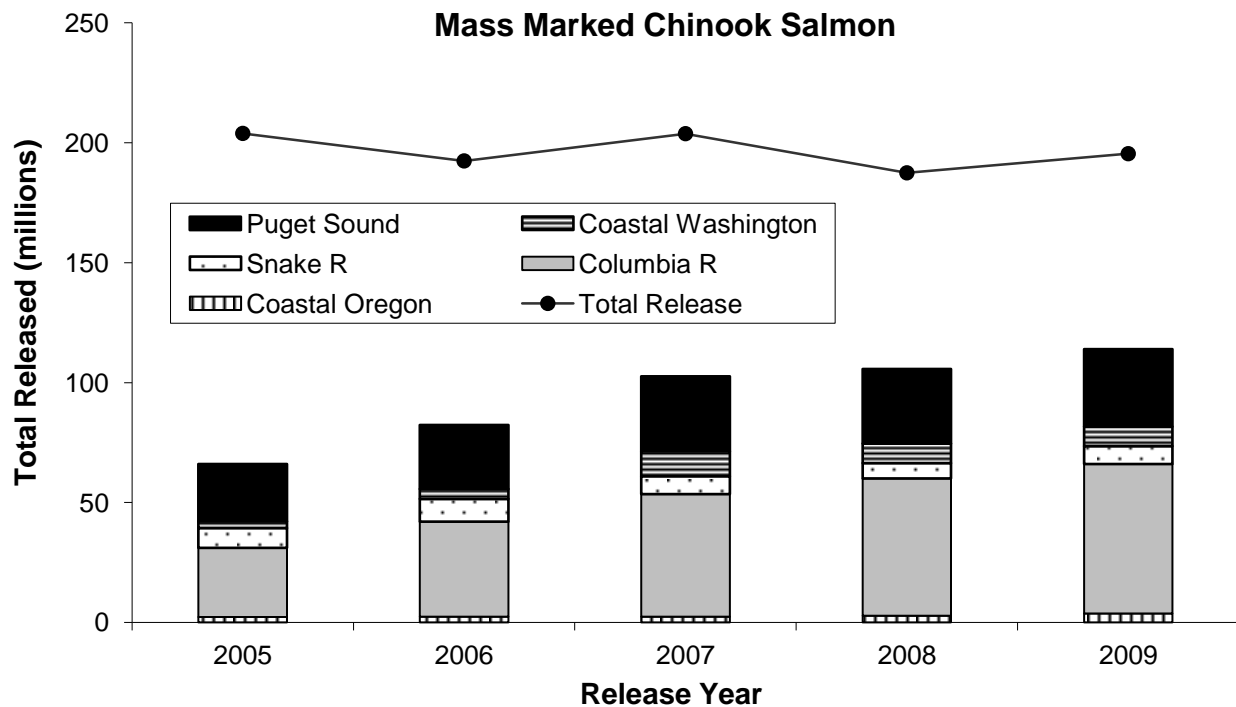


Figure 2-7. Number of Chinook Salmon mass-marked (adipose clip only) and released, by regions and release year. The solid line represents total hatchery releases, by release year.

Table 2-8. Regional summary of total hatchery Chinook Salmon released in 2005.

Area	Run	Agency	DIT	CWT		Non-CWT		Total Released
			Groups	Marked	UnMarked	Marked	UnMarked	
Southern BC	Fall	CDFO	1	1,223,442	100,557	10,052	34,605,228	35,939,279
	Spring	CDFO	0	173,699	0	648	293,563	467,910
	Summer	CDFO	0	259,232	0	2,931	3,635,469	3,897,632
Puget Sound	Fall	NWIFC	2	790,154	353,462	4,750,687	983,254	6,877,557
		WDFW	3	2,791,249	963,255	17,240,294	6,905,793	27,900,591
	Spring	NWIFC	0	0	353,041	0	944,216	1,297,257
		WDFW	2	508,396	631,905	397,869	7,468	1,545,638
	Summer	NWIFC	0	233,491	9,407	770,727	386,131	1,399,756
		WDFW	1	444,392	200,342	775,234	4,575	1,424,543
WA Coast	Fall	NWIFC	1	343,805	174,839	154,912	28,846	702,402
		USFWS	0	407,010	0	2,424,330	25,388	2,856,728
		WDFW	0	1,019,550	406,221	14,901	7,898,421	9,339,093
	Spring	WDFW	0	0	0	197,235	5,765	203,000
	Summer	NWIFC	0	0	42,306	0	2,419	44,725
	Upper Columbia Basin	Fall	ODFW	0	666,022	3,718	321,605	385,033
USFWS			3	627,011	622,280	15,179,028	7,910	16,436,229
WDFW			0	1,053,694	6,961	17,823	12,412,352	13,490,830
CRITFC			0	163,884	200,134	1,574	1,712,542	2,078,134
Spring		ODFW	0	632,428	598	293,732	295,966	1,222,724
		RMPC	0	50,850	0	199	0	51,049
		USFWS	0	2,300,768	374,496	3,216,326	10,107	5,901,697
		WDFW	0	399,775	401,663	456,517	16,150	1,274,105
		CRITFC	0	783,302	0	39,050	2,340	824,692
Summer		WDFW	0	2,971,855	50,754	59,465	387,025	3,469,099
Snake River Basin		Fall	CRITFC	0	757,137	700,988	408	326,385
	IDFG		0	173,976	0	15,352	0	189,328
	ODFW		0	246,160	823	165,463	206	412,652
	WDFW		1	621,549	219,727	12,033	516,580	1,369,889
	Spring	CRITFC	0	0	604,394	0	17,524	621,918
		IDFG	0	365,944	0	4,750,086	436,297	5,552,327
		ODFW	0	572,444	114,451	263,294	8,261	958,450
		USFWS	0	239,032	0	1,448,179	0	1,687,211
		WDFW	0	0	195,135	0	6,083	201,218
	Summer	IDFG	0	370,738	102,074	1,652,043	3,156	2,128,011
Lower Columbia Basin	Fall	ODFW	0	577,241	1,294	839,378	10,591,439	12,009,352
		WDFW	0	595,071	1,498	150,228	16,888,381	17,635,178
	Spring	ODFW	2	1,067,238	110,100	6,036,759	290,256	7,504,353
		WDFW	1	1,172,598	161,131	2,095,870	300,828	3,730,427
N. OR Coast	Fall	ODFW	0	231,129	2,386	250,657	410,998	895,170
	Spring	ODFW	0	105,211	53,893	236,464	814,136	1,209,704
S. OR Coast	Fall	ODFW	1	414,449	63	98,687	3,574,964	4,088,163
	Spring	ODFW	1	167,069	297	1,742,235	10,249	1,919,850
Total			19	25,520,995	7,164,193	66,082,275	105,151,704	203,919,167

Note: In 2005 there were two agency-only wire releases reported in central Columbia River (ODFW: 184,559 unmarked + 199,384 unmarked) and one in upper Columbia River (WDFW: 1,946 marked), not included in the above totals.

Table 2-9. Regional summary of total hatchery Chinook Salmon released in 2006.

Area	Run	Agency	DIT	CWT		Non-CWT		Total Released	
			Groups	Marked	UnMarked	Marked	UnMarked		
Southern BC	Fall	CDFO	1	1,431,990	89,159	17,641	31,890,134	33,428,924	
	Spring	CDFO	0	132,917	0	1,944	364,730	499,591	
	Summer	CDFO	0	378,325	0	6,849	3,328,183	3,713,357	
Puget Sound	Fall	NWIFC	2	437,827	323,595	4,464,516	987,595	6,213,533	
		WDFW	3	2,446,871	1,165,538	20,626,214	4,887,499	29,126,122	
	Spring	NWIFC	0	0	434,086	0	601,231	1,035,317	
		WDFW	2	527,259	832,978	443,086	18,311	1,821,634	
	Summer	NWIFC	0	310,515	14,228	534,176	314,443	1,173,362	
		WDFW	1	460,933	208,974	659,044	4,380	1,333,331	
WA Coast	Fall	NWIFC	1	378,447	201,381	14,194	39,222	633,244	
		USFWS	0	459,269	0	2,025,605	5,980	2,490,854	
		WDFW	0	977,071	6,506	1,841,894	5,857,633	8,683,104	
	Spring	WDFW	0	0	0	208,128	8,672	216,800	
	Summer	NWIFC	0	0	34,360	0	953	35,313	
	Upper Columbia Basin	Fall	CRITFC	0	832,176	199,664	3,929,057	1,683,664	6,644,561
WDFW			0	203,961	0	1,628,614	5,113,617	6,946,192	
ODFW			0	568,841	606	174,794	416,156	1,160,397	
USFWS			4	671,884	665,585	15,701,408	2,351	17,041,228	
Spring		ODFW	0	635,842	5,077	637,509	1,669	1,280,097	
		USFWS	0	1,554,877	457,074	2,514,743	186,261	4,712,955	
		WDFW	0	542,528	338,189	411,279	47,306	1,339,302	
		CRITFC	0	930,471	0	791,419	2,748	1,724,638	
Summer		WDFW	0	3,199,591	62,974	86,047	565,596	3,914,208	
Snake River Basin		Fall	CRITFC	6	718,426	827,403	11,155	966,264	2,523,248
	IDFG		0	173,679	0	17,460	0	191,139	
	ODFW		0	27,075	1,297	451	0	28,823	
	WDFW		0	1,023,457	224,903	11,086	285,258	1,544,704	
	Spring	CRITFC	0	0	99,722	0	1,145	100,867	
		IDFG	0	602,273	104,314	5,887,238	3,226	6,597,051	
		ODFW	0	595,729	27,208	253,073	6,759	882,769	
		USFWS	0	231,466	0	1,410,273	0	1,641,739	
	Summer	WDFW	0	0	198,609	0	1,245	199,854	
	Lower Columbia Basin	Fall	ODFW	0	462,274	1,399	422,121	11,024,905	11,910,699
WDFW			0	689,632	116,894	5,461,096	5,709,637	11,977,259	
Spring		ODFW	2	1,033,863	84,955	6,203,983	163,639	7,486,440	
		WDFW	1	828,908	180,279	1,641,623	299,195	2,950,005	
N. OR Coast		Fall	ODFW	0	287,777	2,618	73,759	402,661	766,815
		Spring	ODFW	0	80,063	355	326,248	110,296	516,962
S. OR Coast	Fall	ODFW	0	301,887	18,804	98,362	2,820,434	3,239,487	
	Spring	ODFW	1	143,400	55,047	1,858,526	35,366	2,092,339	
Total			24	24,687,279	7,241,269	82,345,474	78,166,328	192,440,350	

Note: In 2006 there were three agency-only wire releases reported, all unmarked, two in central Columbia River (ODFW: 217,597 + 197,951) and one in the Strait of Juan de Fuca (WDFW: 3,800), not included in the above totals.

Table 2-10. Regional summary of total hatchery Chinook Salmon released in 2007.

Area	Run	Agency	DIT	CWT		Non-CWT		Total Released
			Groups	Marked	UnMarked	Marked	UnMarked	
Southern BC	Fall	CDFO	1	1,762,664	96,305	8,540	33,434,316	35,301,825
	Spring	CDFO	0	138,728	0	1,510	571,823	712,061
	Summer	CDFO	0	578,135	0	6,887	3,730,953	4,315,975
Puget Sound	Fall	NWIFC	2	640,444	400,380	6,881,852	318,880	8,241,556
		WDFW	3	2,099,761	1,210,414	21,475,634	3,509,552	28,295,361
	Spring	NWIFC	0	0	401,476	0	612,345	1,013,821
		WDFW	2	473,213	638,521	520,722	52,067	1,684,523
	Summer	NWIFC	0	218,642	11,838	1,453,318	399,655	2,083,453
		WDFW	1	516,425	207,973	908,952	20,069	1,653,419
WA Coast	Fall	NWIFC	1	416,933	209,135	184,376	81,718	892,162
		USFWS	0	291,658	0	1,488,850	259	1,780,767
		WDFW	0	927,021	5,027	8,481,332	462,395	9,875,775
	Spring	NWIFC	0	0	0	0	207,870	207,870
		WDFW	0	0	0	218,680	66,620	285,300
	Summer	NWIFC	0	0	31,531	0	1,493	33,024
Upper Columbia Basin	Fall	CRITFC	0	873,964	200,084	2,254	1,499,916	2,576,218
		ODFW	0	924,586	1486	175,643	679,111	1,780,826
		USFWS	6	446,377	446,241	14,575,980	3,963	15,472,561
		WDFW	0	208,300	0	0	6,541,101	6,749,401
	Spring	ODFW	0	463,274	0	522,124	2,736	988,134
		USFWS	0	1,703,816	368,184	2,842,665	733	4,915,398
		WDFW	0	542,083	417,083	224,738	3,787	1,187,691
		CRITFC	0	1,003,682	0	471,039	5,275	1,479,996
Summer	WDFW	0	2,436,712	30,052	28,383	543,921	3,039,068	
Snake River Basin	Fall	CRITFC	7	747,059	770,758	5,802	1,063,955	2,587,574
		IDFG	0	104,506	0	13,187	0	117,693
		WDFW	0	417,878	222,635	6,000	57,340	703,853
	Spring	CRITFC	0	0	349,257	0	11,359	360,616
		IDFG	0	565,826	87,219	5,399,099	306,724	6,358,868
		ODFW	0	482,937	123,146	259,375	17,841	883,299
		USFWS	0	292,759	0	65,457	0	358,216
		WDFW	0	0	237,757	0	1,765	239,522
Summer	IDFG	0	313,135	0	1,752,498	0	2,065,633	
Lower Columbia Basin	Fall	ODFW	1	404,932	225,542	5,370,258	5,389,827	11,390,559
		WDFW	0	946,108	49,331	16,855,622	3,583,491	21,434,552
	Spring	ODFW	2	919,329	103,797	6,308,662	66,443	7,398,231
		WDFW	1	497,441	156,830	2,037,145	278,467	2,969,883
N. OR Coast	Fall	ODFW	0	283,902	1,690	60,162	337,665	683,419
	Spring	ODFW	0	77,876	0	353,515	28,980	460,371
S. OR Coast	Fall	ODFW	0	622,898	67,893	1,645,477	2,651,107	4,987,375
	Spring	ODFW	0	57,255	297	370,879	11,802	440,233
Total			27	23,400,259	7,071,882	100,976,617	66,557,324	198,006,082

Note: In 2007 there were four agency-only wire releases reported, two in central Columbia River (ODFW: 209,707 unmarked + 166,369 marked), one in the Skagit Basin (WDFW: 126,446 marked) and one in Snake River Basin (FWS: 4,525 marked), not included in the above totals.

Table 2-11. Regional summary of total hatchery Chinook Salmon released in 2008.

Area	Run	Agency	DIT	CWT		Non-CWT		Total Released
			Groups	Marked	UnMarked	Marked	UnMarked	
Southern BC	Fall	CDFO	1	2,033,920	99,632	8,513	28,262,020	30,404,085
	Spring	CDFO	0	188,797	0	3,145	251,336	443,278
	Summer	CDFO	0	563,856	0	10,328	2,855,653	3,429,837
Puget Sound	Fall	NWIFC	2	745,890	381,968	4,687,254	694,136	6,509,248
		WDFW	3	2,020,012	1,145,727	23,709,426	2,404,169	29,279,334
	Spring	NWIFC	0	0	387,287	0	1,284,826	1,672,113
		WDFW	3	497,735	838,724	444,206	564,498	2,345,163
	Summer	NWIFC	0	321,719	3,779	1,372,602	330,518	2,028,618
		WDFW	1	499,083	201,314	824,332	6,029	1,530,758
WA Coast	Fall	NWIFC	1	392,389	202,032	13,569	9,536	617,526
		USFWS	0	442,198	0	316,914	1,520	760,632
		WDFW	1	201,838	202,242	7,555,392	489,578	8,449,050
	Spring	WDFW	0	0	0	224,490	2,400	226,890
	Summer	NWIFC	0	0	70,299	0	617	70,916
	Upper Columbia Basin	Fall	CRITFC	0	605,68	199,810	1,087,071	2,547,151
ODFW			0	395,359	748	378	442,292	838,777
USFWS			5	645,627	645,328	15,605,465	5,410	16,901,830
WDFW			0	202,568	0	813	4,344,925	4,548,306
Spring		CRITFC	0	799,285	0	467,896	4,735	1,271,916
		ODFW	0	373,274	763	907,175	7,147	1,288,359
		USFWS	0	954,584	636,536	3,229,811	14,542	4,835,473
		WDFW	0	631,033	413,024	368,902	12,538	1,425,497
Summer		WDFW	0	3,153,882	26,138	40,824	543,200	3,764,044
Snake River Basin		Fall	CRITFC	0	702,203	957,130	5,099	1,088,077
	IDFG		0	174,357	0	18,114	0	192,471
	ODFW		0	223,250	0	57,850	0	281,100
	WDFW		0	621,391	416,965	6,662	149,019	1,194,037
	Spring	CRITFC	0	45,474	354,303	409	5,935	406,121
		IDFG	0	433,382	269,514	4,313,647	605,760	5,622,303
		ODFW	2	518,592	146,862	368,046	63,337	1,096,837
		USFWS	0	225,859	0	5,055	0	230,914
	Summer	WDFW	0	0	179,387	0	5,319	184,706
	Lower Columbia Basin	Fall	ODFW	2	383,631	288,810	8,521,261	41,068
WDFW			0	943,143	72,055	19,246,936	205,214	20,467,348
Spring		ODFW	1	1,014,568	54,659	6,136,457	466,638	7,672,322
		WDFW	1	469,375	148,460	1,639,788	304,189	2,561,812
N. OR Coast	Fall	ODFW	0	28,032	210,237	145,564	110,310	494,143
	Spring	ODFW	0	71,186	379	332,134	74,991	478,690
S. OR Coast	Fall	ODFW	0	281,008	113	718,678	2,440,420	3,440,219
	Spring	ODFW	0	144,234	178	1,552,727	124,308	1,821,447
Total			23	21,747,541	8,639,843	105,640,440	50,766,006	186,793,830

Note: In 2008 there were three agency-only wire releases reported, all marked, two in central Columbia River (ODFW: 232,224 + 505 + 210,068), and one in the lower Columbia River Basin (ODFW: 251,775), not included in the above totals.

Table 2-12. Regional summary of total hatchery Chinook Salmon released in 2009.

Area	Run	Agency	DIT	CWT		Non-CWT		Total
			Groups	Marked	UnMarked	Marked	UnMarked	
Southern BC	Fall	CDFO	1	2,308,941	99,944	11,561	31,238,177	33,658,623
	Spring	CDFO	0	143,178	0	3,442	348,298	494,918
	Summer	CDFO	0	529,157	0	13,018	2,850,427	3,392,602
Puget Sound	Fall	NWIFC	2	701,659	416,815	6,323,525	1,054,853	8,496,852
		WDFW	3	1,652,351	1,064,671	23,481,728	2,120,601	28,319,351
	Spring	NWIFC	0	109,704	403,934	0	1,534,978	2,048,616
		WDFW	2	483,578	756,613	403,802	36,057	1,680,050
	Summer	NWIFC	0	296,252	1,808	1,159,888	347,966	1,805,914
		WDFW	1	395,246	203,294	931,480	9,052	1,539,072
WA Coast	Fall	NWIFC	1	375,960	208,768	3,166	81,736	669,630
		USFWS	0	436,361	0	330,315	2,374	769,050
		WDFW	1	402,630	201,867	7,520,702	177,151	8,302,350
	Summer	NWIFC	0	124,064	55,700	52,296	420	232,480
		WDFW	0	0	0	264,523	118,510	383,033
	Upper Columbia Basin	Fall	CRITFC	0	238,971	0	414,402	1,033,572
ODFW			0	747,446	7,400	423,321	602,816	1,780,983
USFWS			2	871,394	637,846	16,341,710	2032	17,852,982
WDFW			0	353,646	1,875	5,008,938	4,927,930	10,292,389
Spring		ODFW	0	344,119	2,165	435,571	549,250	1,331,105
		USFWS	0	1,065,887	274,887	3,506,445	22,195	4,869,414
		WDFW	0	289,252	433,272	1,401	2,499	726,424
		CRITFC	0	753,633	0	17,002	630	771,265
Summer		WDFW	0	2,703,510	21,206	385,274	11,930	3,121,920
		CRITFC	0	0	115,280	0	30,045	145,325
Snake River Basin	Fall	CRITFC	0	892,997	1,087,493	40,733	1,376,316	3,397,539
		IDFG	0	182,356	0	20,484	0	202,840
		ODFW	0	273,010	2,940	604,018	374	880,342
		WDFW	0	958,856	248,827	19,055	258,520	1,485,258
	Spring	CRITFC	0	0	515,617	0	15,625	531,242
		IDFG	0	818,993	96,563	4,707,291	318,239	5,941,086
		ODFW	0	645,418	105,054	210,716	151,406	1,112,594
		USFWS	0	244,054	0	49,545	0	293,599
	Summer	WDFW	0	0	106,594	0	8,087	114,681
		IDFG	0	309,691	88,347	1,847,851	2,733	2,248,622
Lower Columbia Basin	Fall	ODFW	0	579,577	1,205	11,355,591	211,035	12,147,408
		WDFW	0	659,082	14,319	16,033,098	193,583	16,900,082
	Spring	ODFW	0	797,305	9,204	6,195,588	124,970	7,127,067
		WDFW	1	505,952	154,417	2,078,027	332,469	3,070,865
N. OR Coast	Fall	ODFW	0	182,474	1,500	152,977	265,910	602,861
	Spring	ODFW	0	76,800	432	450,134	0	527,366
S. OR Coast	Fall	ODFW	0	163,723	1,916	1,378,424	973,646	2,517,709
	Spring	ODFW	0	147,056	260	1,810,412	23,778	1,981,506
Total			15	22,764,283	7,342,033	113,987,454	51,360,190	195,453,960

Note: In 2009 there were three agency-only wire releases reported, all marked, in the lower Columbia River Basin (ODFW: 309,324 + 620 + 173,738 + 356,406), and one in Snake River Basin (FWS: 47,277), not included in the above totals.

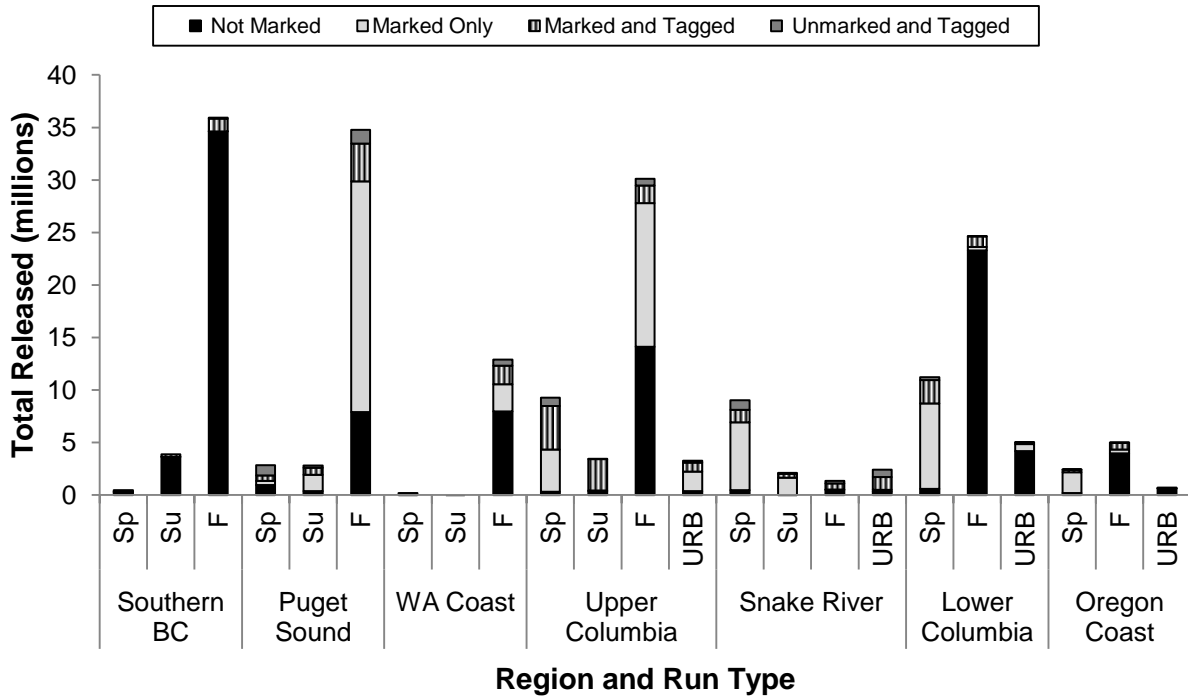


Figure 2-8. Hatchery Chinook Salmon released in 2005, by region, run type, and mark status.

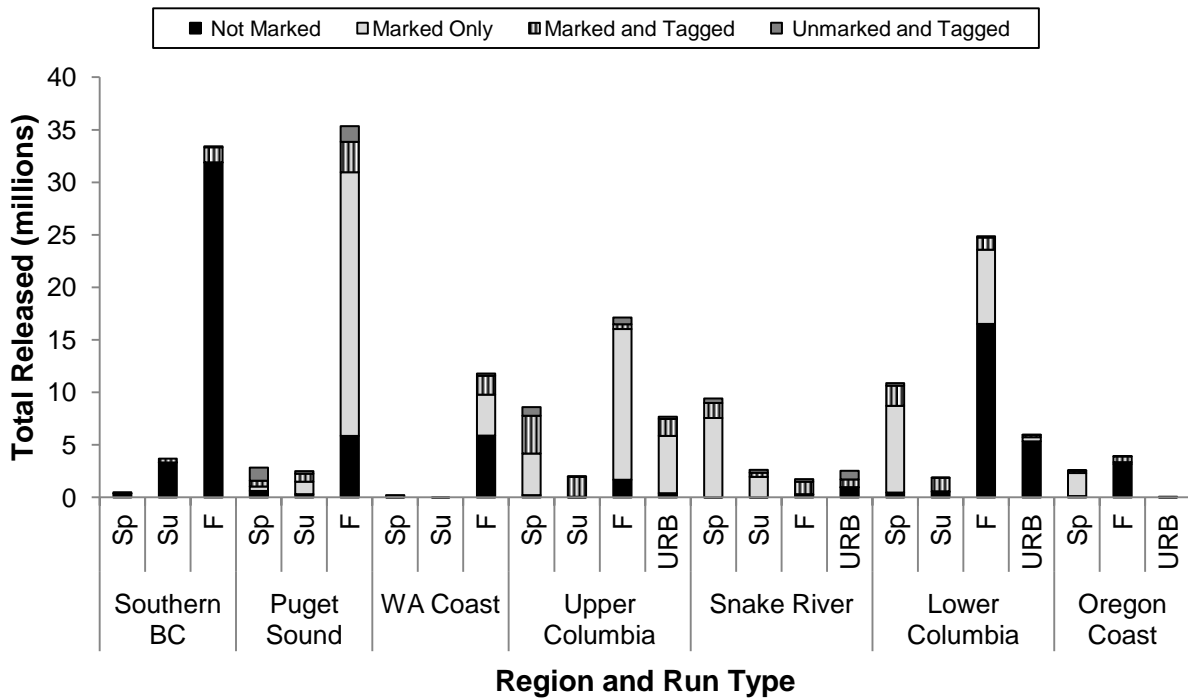


Figure 2-9. Hatchery Chinook Salmon released in 2006, by region, run type, and mark status.

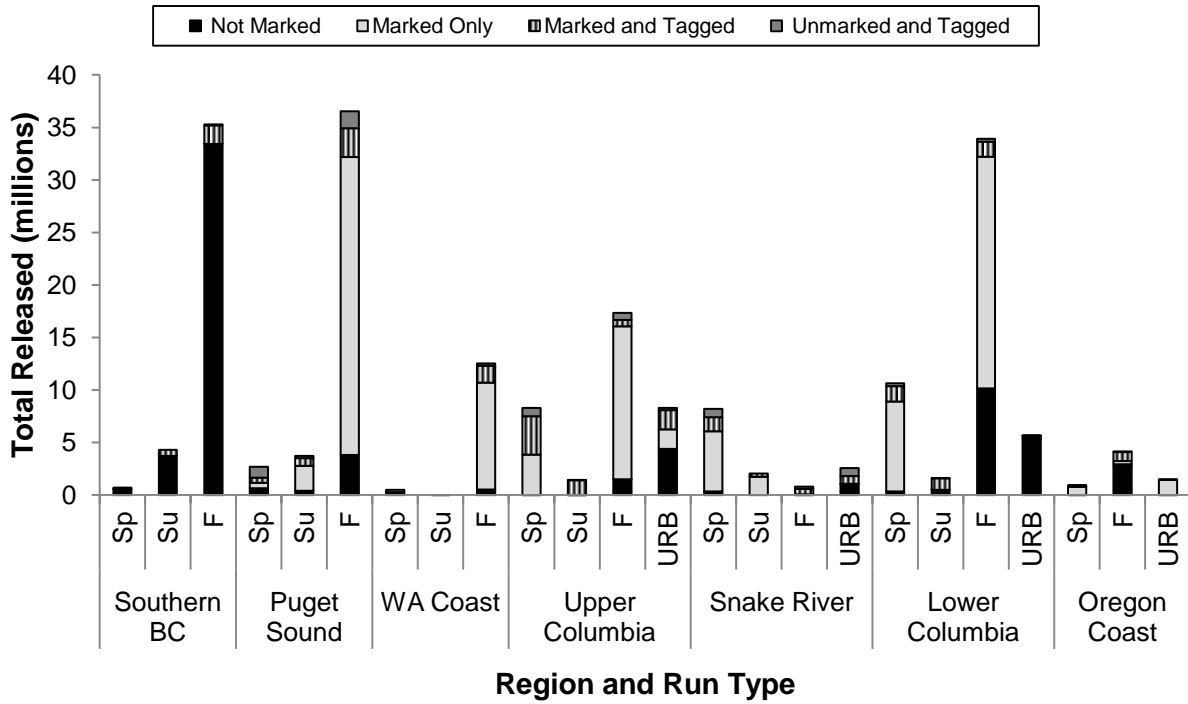


Figure 2-10. Hatchery Chinook Salmon released in 2007, by region, run type, and mark status.

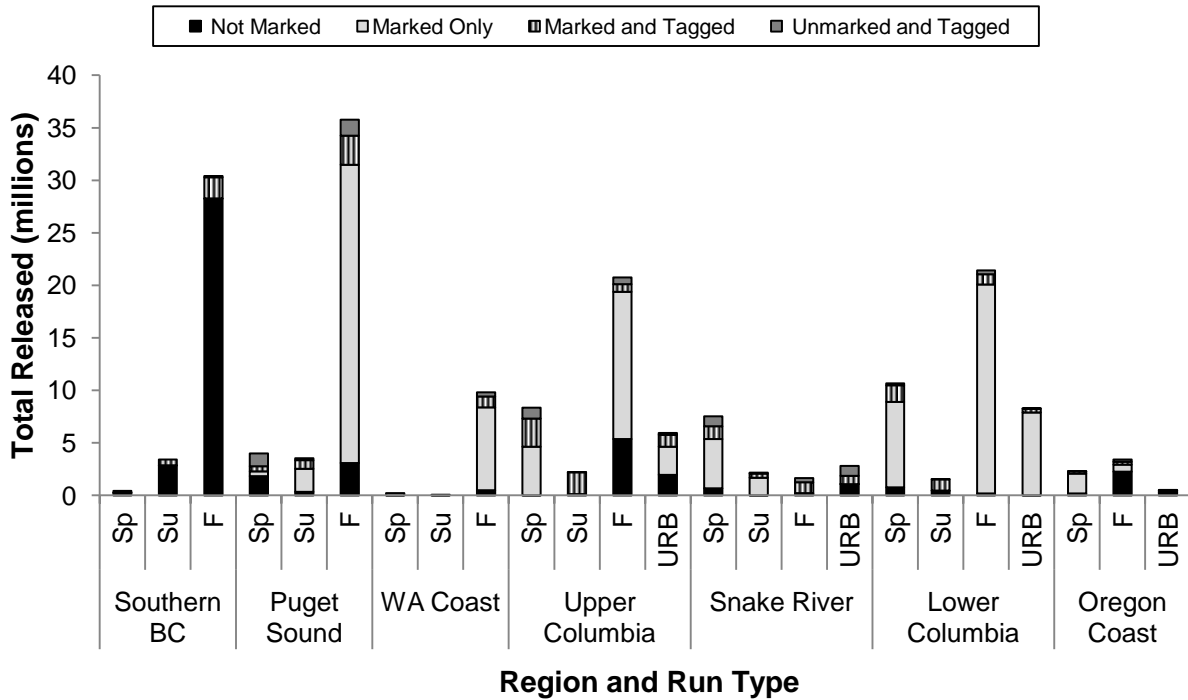


Figure 2-11. Hatchery Chinook Salmon released in 2008, by region, run type, and mark status.

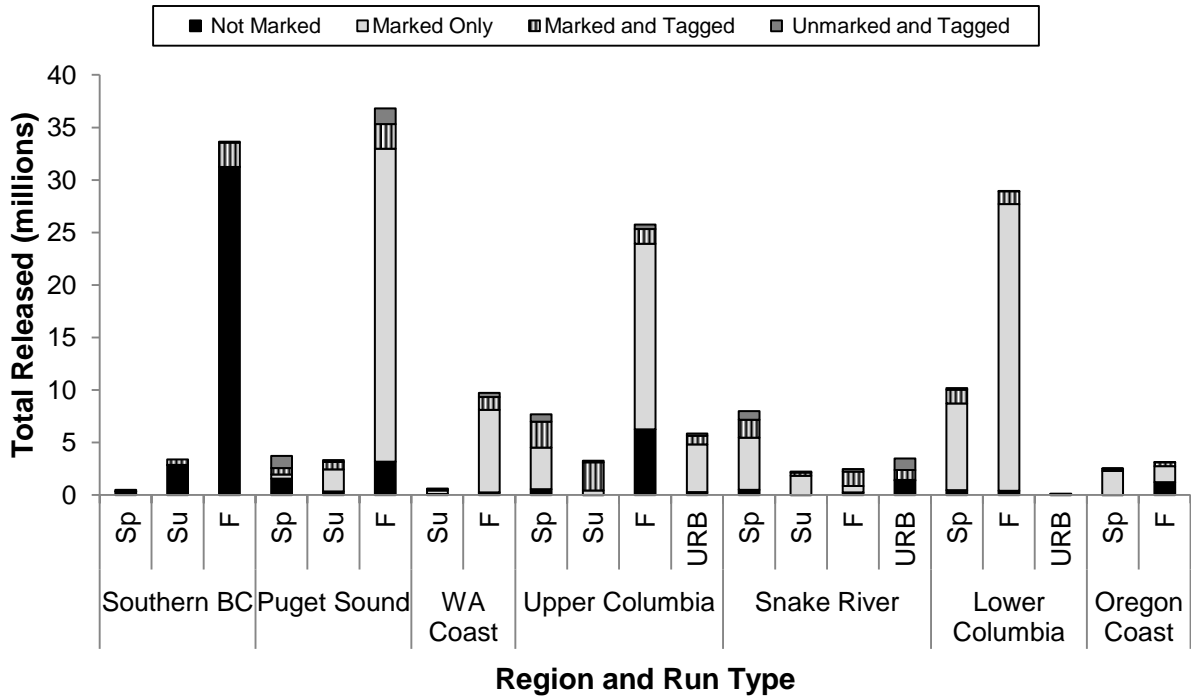


Figure 2-12. Hatchery Chinook Salmon released in 2009, by region, run type, and mark status.

2.2.2 Chinook DIT Release Groups

In the years 2005 through 2009, there were generally 16 Chinook DIT groups released annually. These typically included one group from southern BC, nine groups from Puget Sound, one group from Washington Coast, and four groups from the Columbia River. There was also one group from the Oregon Coast which was discontinued after 2006. There were some changes in the stocks tagged for these areas during the time period, especially in the Columbia River. The release history of these Chinook DIT groups is found in Table 2-13, and specific tag codes are listed in Appendix Table A2.

Table 2-13. Chinook double index tag (DIT) groups by stock and region released. (See Appendix A for the list of DIT codes and Appendix B for the list of stocks used as indicators).

Area	Natural/Unmarked Stock Representation	DIT Stock	Hatchery	Release Years With DIT
Southern BC	Lower Fraser fall	Chilliwack late fall	Chilliwack R	99-09
	Interior Fraser summer	Lower Shuswap summer	Shuswap R	99-03
	East Vancouver Island fall	Cowichan R	Cowichan R	98
Puget Sound	Nooksack River spring	Nooksack spring	WDFW Kendall Cr	04-09
	Skagit River springs	Skagit spring yearlings	WDFW Marblemount	00-09
	North Puget Sound summer/fall	Skykomish summer fingerlings	WDFW Wallace R	01-09
	North Puget Sound fall	Samish fall fingerlings	WDFW Samish	99-09
	Mid Puget Sound fall	Grovers Cr	Suquamish Grovers Cr	00-09
			WDFW Soos Cr	98-09
			08, 09	
	South Puget Sound fall	Fall fingerlings	Nisqually Hatchery at Clear Cr	99-09
	Hood Canal fall	Fall fingerlings	George Adams	99-09
Washington Coast	Washington Coast fall fingerling	Quinault Lake fall fingerlings	Quinault Lake Hatchery	05-09
Columbia River	Lower Columbia spring	Lewis R spring yearlings	WDFW Lewis R	00-09
	Willamette River spring	Clackamas R spring yearlings	ODFW Clackamas R	99-05
		McKenzie R spring yearlings	ODFW McKenzie R Willamette Hatchery	99-08 07, 08
	Lower Columbia fall Tule	Spring Cr	Spring Creek NFH	05-09
		Columbia Lower R	ODFW Big Cr	07-08
	Lower Columbia fall URB	Little White Salmon	Little White Salmon NFH	06-09
Snake R.	Snake River fall	Lyons Ferry	WDFW Lyons Ferry	98, 05-08
Oregon Coast	South Oregon Coast	Rogue River sub-yearlings	ODFW Cole M. Rivers	99-06

3 CWT SAMPLING

This section summarises the coded-wire tag sampling programs for all fisheries (MSFs and NSFs) and escapement (Table 3-1 and 3-2). It should be noted that when marked fish are first visually separated in the sample and electronic gear is then used to detect tags in the marked fish, this is considered visual sampling because tags are only recovered from marked fish.

In Alaska, all Coho and Chinook fisheries were visually sampled from 2005 through 2009. There are no DIT groups expected in Alaskan escapement for either Coho or Chinook.

In Canada, southern BC fisheries and escapements were sampled electronically; however, some Native fisheries in terminal areas were unsampled. Northern BC troll fisheries were visually sampled (or were electronically sampled when Chinook were part of the same landing, but only heads from marked Coho were removed) because there were relatively few northern migrating Coho DIT groups. Escapement was sampled electronically for all Coho and Chinook DITs, but in years with strong returning numbers, escapement was subsampled if necessary.

In Washington, sampling programs for Coho and Chinook fisheries conducted electronic sampling to recover CWTs, except for fall Chinook caught in Columbia River fisheries. On the Washington side of the Columbia River, mainstem spring and summer Chinook fisheries were sampled electronically, while fall Chinook fisheries were sampled visually. All other Coho and Chinook fisheries and escapement were sampled electronically.

In Oregon, sampling programs for fisheries utilized both electronic and visual sampling for CWT recoveries. On the Oregon side of the Columbia River, mainstem spring and summer Chinook fisheries were sampled electronically, while fall Chinook fisheries were sampled visually. Columbia Basin escapement sampling is electronic at Columbia River hatcheries and, by 2008, on all spawning grounds where surveys were conducted. Coastal fisheries were visually sampled as was the majority of Oregon coastal escapement sampling. Cole Rivers Hatchery was the only coastal hatchery where the rack returns were sampled electronically for CWTs.

3.1 Fishery Sampling

As noted above, in Alaska, all Coho and Chinook fisheries were visually sampled from 2005 through 2009. In Canada, southern BC fisheries were sampled electronically, however some native fisheries in terminal areas were unsampled and northern BC troll fisheries were visually sampled (or were electronically sampled when Chinook were part of the same landing, but only heads from marked Coho were removed) because there were relatively few northern migrating Coho DIT groups.

In Washington, all Coho and Chinook fisheries were sampled electronically, except for fall Chinook on the Washington side of the Columbia River, which were sampled visually.

In Oregon, electronic sampling was conducted for spring and summer Chinook fisheries on the Columbia River mainstem. All other fisheries, including those in Coastal Oregon, were sampled visually.

Table 3-1. Coded-wire-tag detection and sampling methods for Coho Salmon, by area and fishery, 2005-2009.

Area	Fishery	Type of Sampling	Comments
Alaska	Commercial	Visual	
	Recreational	Visual	
Northern BC	Commercial	Visual	Ice boats 2005-2009 were sampled visually for Coho, or electronically when Chinook were included in catch. Other gears were sampled electronically for Coho caught incidentally.
	Recreational	Voluntary (Visual)	Anglers are encouraged to turn in heads from marked Coho only; therefore, tag recoveries of unmarked Coho are not expected.
Southern BC	Commercial	Electronic	Incidental recoveries in fisheries on other species; non-retention of unmarked Coho
	Recreational	Voluntary (Visual)	Anglers are encouraged to turn in heads from marked Coho only; therefore tag recoveries of unmarked Coho are not expected.
Puget Sound	Commercial	Electronic	
	Recreational	Electronic	
Washington Coast	Commercial	Electronic	
	Recreational	Electronic	
Oregon Coast	Commercial	Visual	As a result of visual sampling, tag recoveries from unmarked Coho in NSFs are not expected.
	Recreational	Visual	All recreational fisheries are MSF; therefore recoveries of unmarked Coho are not expected.
Columbia River	Commercial	Electronic	
	Recreational	Electronic	
California	Commercial	Visual	
	Recreational	Visual	

Table 3-2. CWT detection and sampling methods for Chinook Salmon, by area and fishery 2005-2009.

Area	Fishery	Type of Sampling	Comments
Alaska	Commercial	Visual	
	Recreational	Visual	
Northern BC	Commercial	Electronic	All Chinook electronically sampled and all tags decoded from 2007-2009. From 2005-2006 only tags from marked fish were decoded.
	Recreational	Voluntary (Visual)	Anglers encouraged are to turn in heads from marked Chinook only; therefore tag recoveries of unmarked Chinook are not expected.
Southern BC	Commercial	Electronic	
	Recreational	Voluntary (Visual)	Anglers are encouraged to turn in heads from marked Chinook only; therefore tag recoveries of unmarked Chinook are not expected.
Puget Sound	Commercial	Electronic	
	Recreational	Electronic	
Washington Coast	Commercial	Electronic	
	Recreational	Electronic	
Oregon Coast	Commercial	Visual	CWTs from unmarked Chinook from other regions will not be recovered.
	Recreational	Visual	
Columbia River	Commercial	Electronic/ Visual	Spring and Summer Chinook electronically sampled. Fall Chinook visually sampled. CWTs from unmarked fall Chinook will not be recovered.
	Recreational	Electronic/ Visual	Washington-electronic for spring and summer runs, visual for fall Chinook. Oregon-electronic for spring and summer runs, visual for fall Chinook.
California	Commercial	Visual	
	Recreational	Visual	

3.1.1 Alaska

Alaska Department of Fish and Game (ADFG) continued traditional visual detection (adipose-clipped fish) of CWTs with direct sampling of the catch from 2005-2009. However, ADFG intends to utilize the new T wands being produced by Northwest Marine Technology Inc. to help sort heads in future Chinook fisheries because of the increased number of heads without tags being encountered and the cost for shipping and processing of these heads (Figure 3-1).

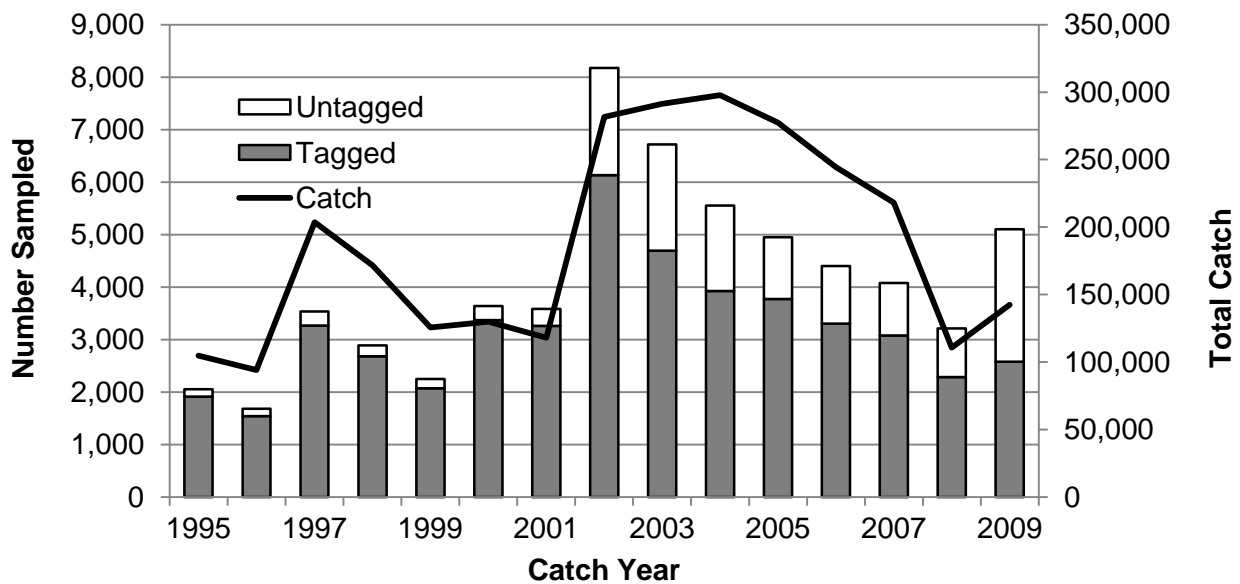


Figure 3-1. Numbers of marked Chinook Salmon sampled in Alaska’s troll fishery, by tag status, with total catch (1995-2009).

3.1.2 Canada

In Canada, hand-held wands are used to sample non-retention fish that are mistakenly landed in commercial fisheries during non-retention periods. In 2005 and 2006, both West Coast Vancouver Island and northern BC troll fisheries were sampled electronically for CWTs; however, only the tags from the marked Chinook were recovered and decoded. From 2007 to 2009, external funding was obtained to recover all tags, regardless of mark status.

Recreational anglers are requested to submit heads from marked fish to the voluntary Salmon Sport Head Recovery Program (SHRP) for all areas of BC. Creel surveys were used, not to obtain samples of heads for CWT dissection, but to obtain effort and mark rate information from 2005 to 2009. There were problems in previous years with regard to direct sampling of the recreational fishery, including very low sample rates and anecdotal reports of unreliable wands. The majority of the tags recovered did not come from creel surveys, but from heads turned in by anglers to the SHRP. The SHRP in BC has been found to be more cost effective and provide more recoveries than creel surveys. Creel samplers concentrated on obtaining effort and mark rate data and did not collect heads, while CWTs were obtained via the SHRP. Recreational head submission rates will continue to be used to expand submitted CWTs to estimated recoveries in the recreational catch.

3.1.3 Washington

Coded-wire-tag sampling by all agencies in Washington for most all commercial and recreational fisheries is done electronically. The only exception is where WDFW visually samples fall Chinook on the Washington side of the Columbia River. Fishery sampling in Washington is comprehensive, with the exception of some river recreational fisheries.

3.1.4 **Oregon**

Ocean Fisheries

All adopted Coho Salmon fisheries in ocean waters off Oregon for the fishing seasons in 2005 through 2009 were mark-selective, with the exception of a commercial troll non-selective fishery from Cape Falcon to Humbug Mt. with a weekly landing and possession limit of 50 Coho. Concurrent Chinook fisheries were non-selective for the commercial troll fishery and a combination of non-selective and mark-selective for the recreational Chinook fisheries, dependent on regulations adopted for terminal area fisheries in state waters.

Catches in the 2005-2009 ocean recreational and commercial troll fisheries were visually sampled for marks (adipose-fin clips), followed by electronic detection for CWTs for those fish with an adipose-fin clip. Recreational fishery sampling is conducted at the time of landing. All marked Coho and Chinook on each sampled boat are inspected using wands to recover snouts testing positive for the presence of a CWT. Commercial fishery sampling occurs at the time of transfer of salmon from the fisherman to the fish buyer. Trip information is gathered by interviewing the fisherman. All marked salmon are then tested for CWT presence following purchase by the buyer. Snouts from all Coho testing positive for the presence of a CWT are collected at this time.

Columbia River

Wands were used to detect CWTs in marked Coho and Chinook caught in the Columbia River Estuary (Buoy 10) and the Columbia River mainstem recreational fisheries since mark-selective regulations were adopted in 1998. The only exception was sampling of fall Chinook fisheries in the mainstem Columbia River; both Oregon and Washington sampled fall Chinook using visual sampling methods.

3.2 Escapement Sampling

The method used to sample for CWTs in spawning ground surveys varied by river from 2005 to 2009. Washington Department of Fish and Wildlife and tribal staff surveyed using ETD equipment on all Chinook and Coho carcasses encountered during index and supplemental surveys. Canadian Department of Fisheries and Oceans similarly electronically sampled all encountered carcasses on spawning grounds for their DIT stocks. Oregon Department of Fish and Wildlife escapement sampling varied by river and program. Historically, snouts were collected from marked carcasses encountered during spawning ground surveys. However, the number of Oregon sampling programs employing electronic tag detection methods on all fish encountered is increasing every year.

3.2.1 **Coho DIT Stocks**

Coho DIT stocks, the methods used to detect tags and the fraction at which the tags were processed at the rack or in the river, and other associated tag data are listed in Table 3-2. Other indicator stocks which are not double index tagged are included in Appendix B. Coded-wire tag escapement estimates for these stocks may be generated using CWT expansions from in-river sampling, as per the latter columns of Table 3-2. When sampling for CWTs did not occur for an escapement stratum, expansions may be determined from other representative strata. These

indirectly estimated CWT recoveries are not stored in RMIS because they are not based on observed CWTs.

Table 3-2. Coho DIT escapement sampling methods for return years 2005-2009.

Area	Stock Representation	DIT Stock	Hatchery	Location	Detection Method	Tags Processed	Rack Count	CWT Expanded	In RMIS
							Escapement Estimate ¹		
Southern BC ²	North Vancouver Island	Quinsam R	Quinsam R	Rack	Electronic	Subsample	Y	Y	N
				River	Electronic	Subsample	Y	Y	N
	Lower Fraser	Inch Cr	Inch Cr	Rack	Electronic	Subsample	Y	Y	N
				River	Electronic	All	Y	Y	N
Puget Sound	Nooksack	Nooksack	Kendall Cr	Rack	Electronic	All	Y	Y	Y
				River	Electronic	All	Y	Y	Y
	Skagit	Skagit	Marble-mount	Rack	Electronic	All	Y	Y	Y
				River	Electronic	All	Y	Y	Y
	Stillaguamish/Snohomish	Skykomish	Wallace R	Rack	Electronic	All	Y	Y	Y
				River	Electronic	All	Y	Y	Y
	Mid Puget Sound	Green River	WDFW Soos Cr	Rack	Electronic	All	Y	Y	Y
				River	Electronic	All	Y	Y	Y
	South Puget Sound	Puyallup	Voights Cr	Rack	Electronic	All	Y	Y	Y
				River	Electronic	All	Y	Y	Y
	North Hood Canal	Quilcene	Quilcene NFH	Rack	Electronic	Subsample	Y	Y	Y
				River	Electronic	All	Y	Y	Y
Quilcene (no rack) Net Pens ³				Local streams	Electronic	All	N	Y	Y
South Hood Canal	George Adams	George Adams	Rack	Electronic	Subsample ⁴	Y	Y	Y	
			River	Electronic	All	Y	Y	Y	
Strait of Juan de Fuca	Elwha	Lower Elwha Tribal	Rack	Electronic	All	Y	Y	Y	
			River	Electronic	All	N	N	N	

¹ WDFW escapement estimates were done annually where noted with a Y, but river estimates may be incomplete or missing in some years.

² CDFO subsamples (portion of total heads) to not swamp head lab.

³ DIT was discontinued after 2004.

⁴ WDFW subsampled Coho some years at some facilities, changes year to year.

Table 3-2. (Continued) Coho DIT escapement sampling methods for return years 2005-2009.

Area	Stock Representation	DIT Stock	Hatchery Location	Location	Detection Method	Tags Processed	Rack Count or Escapement		CWT Expanded	In RMIS
							Estimate	Y		
WA Coast	North Coast	Makah (Sooes)	Makah NFH	Rack	Electronic	Subsample	Y	Y	Y	
				River	Electronic	none	Y	N	N	
		Sol Duc	WDFW Sol Duc	Rack	Electronic	All	Y	Y	Y	
				River	Electronic	All	Y	Y	Y	
	North Central Coast	Queets	Salmon R	Rack	Electronic	All	Y	Y	N	
				River	Electronic	All	Y	Y	N	
		Quinault	Quinault NFH	Rack	Electronic	Subsample	Y	Y	Y	
				River	Electronic	All	Y	N	N	
	Grays Harbor	Satsop	Bingham Cr	Rack	Electronic	All	Y	Y	Y	
				River	Electronic	All	Y	Y	Y	
Willapa Bay	Forks Creek	Forks Cr	Rack	Electronic	All	Y	Y	Y		
			River	Electronic	All	Y	Y	Y		
Columbia River	Lower Columbia R – Type N	Lewis R	Lewis R	Rack	Electronic	All ⁵	Y	Y	Y	
				River	Electronic	All	N	N	Y	
	Lower Columbia R – Type S	Lewis R	Lewis R	Rack	Electronic	All ⁵	Y	Y	Y	
				River	Electronic	All	N	N	Y	
	Lower Columbia River ⁶	Little White Salmon R	Willard NFH	Rack	Electronic	All	Y	Y	Y	
				River	Electronic	All	N	N	Y	
		Eagle Cr	Eagle Cr NFH	Rack	Electronic	All	Y	Y	Y	
				River	Visual	All	Y	N	Y	
		Sandy R	ODFW Sandy R	Rack	Electronic	All	Y	Y	Y	
				River	Electronic	All	Y	N	Y	
	Blind Slough	ODFW Sandy R/CEDC	(no rack) River	Electronic	All	Y	N	Y		
Oregon Coast	Oregon South Coast	Rogue R ⁷	Cole M. Rivers	Rack	Electronic	All	Y	Y	Y	
				River	Visual	All	Y	N	Y	

⁵ Subsampled in large return years.

⁶ ODFW does make abundance estimates of naturally spawning hatchery and wild Coho in all Oregon populations of the Lower Columbia River Coho ESU, but has not taken the additional steps to expand the CWTs and then report the escapement sampling data to RMIS.

⁷ Coast Rogue River DIT discontinued in release year 2008.

3.2.2 Chinook DIT Stocks

Chinook DIT stocks and the sampling methods employed at escapement are listed in Table 3-3. Other indicators which are not double index tagged are included in Appendix B. Coded-wire tag escapement estimates for these stocks may be generated using CWT expansions from in-river sampling, as per the latter columns of Table 3-3. When sampling for CWTs did not occur for an escapement stratum, expansions may be determined from other representative strata. These indirectly estimated CWT recoveries are not stored in RMIS because they are not based on observed CWTs.

Table 3-3. Chinook DIT escapement sampling methods for return years 2005-2009.
Footnotes following the table describe variations in the standard annual protocols.

Area	Stock Representation	DIT Stock	Hatchery	Location	Detection Method	Tags Processed	Rack Count or Escapement		In RMIS
							Estimate ¹	CWT Expanded	
Southern BC	Lower Fraser late fall	Chilliwack R	Chilliwack R	Rack	Electronic	All	Y	Y	N
				River	Electronic	All	Y	Y	N
Puget Sound	Nooksack River spring	Nooksack spring	WDFW Kendall Cr	Rack	Electronic	All	Y	Y	Y
				River	Electronic	All	Y	Y	Y
	Skagit River springs	Skagit spring yearlings	WDFW Marble-mount	Rack	Electronic	All	Y	Y	Y
				River	Electronic	All	Y	Y	Y
	North Puget Sound summer/fall	Skykomish summer	WDFW Wallace R	Rack	Electronic	All	Y	Y	Y
				River	Electronic	All	Y	Y	Y
	North Puget Sound fall	Samish fall fingerlings	WDFW Samish	Rack	Electronic	All	Y	Y	Y
				River	Electronic	All	Y	Y	Y
	Mid Puget Sound fall	Grovers Cr	Suquamish Grovers Cr	Rack	Electronic	All	Y	Y	Y
				River	Electronic	All	Y	Y	Y
		Green R.	WDFW Soos Cr	Rack	Electronic	All	Y	Y	Y
				River	Electronic	All	Y	Y	Y
	South Puget Sound fall	Nisqually fall fingerlings	Nisqually H. Clear Cr	Rack	Electronic	All	Y	Y	Y
				River	Electronic	All	Y	Y	Y
Hood Canal fall	George Adams fall fingerlings	WDFW George Adams	Rack	Electronic	All	Y	Y	Y	
			River	Electronic	All	Y	Y	Y	
WA Coast	Washington Coast fall fingerling	Quinalt fall fingerlings	Quinalt Lake	Rack	Electronic	All	Y	Y	Y
				River	Electronic	All	Y	Y	N

¹ WDFW escapement estimates were done annually where noted with a Y, but river estimates may be incomplete or missing in some years. When river escapement estimates were provided by regional staff, CWTs were expanded and provided to RMIS.

Table 3-3. (Continued) Chinook DIT escapement sampling methods for return years 2005-2009. Footnotes following the table describe variations in the standard annual protocols.

Area	Stock Representation	DIT Stock	Hatchery	Location	Detection Method	Tags Processed	Rack Count or		In RMIS
							Escapement Estimate ¹	CWT Expanded	
Columbia River	Lower Columbia spring	Lewis R spring yearlings	WDFW Lewis R	Rack River	Electronic	All	Y	Y	Y
	Willamette River spring	Clackamas spring yearlings	ODFW Clackamas R	Rack River	Electronic	All	Y	Y	Y
			ODFW Clackamas R	River	Electronic	All	Y	N	Y
		McKenzie spring yearlings	ODFW McKenzie R	Rack River	Electronic	All	Y	Y	Y
			ODFW McKenzie R	River	Electronic	All	Y	N	Y
	Lower Columbia fall	Spring Creek fingerlings	USFWS Spring Cr	Rack River ³	Electronic	All ²	Y	Y	Y
				River	Electronic ⁴	All	Y	Y	Y
		Little White Salmon fingerlings	Little White Salmon	Rack River	Electronic	All ²	Y	Y	Y
				River	Electronic ⁴	All	Y	Y	Y
	Lower River fingerlings	ODFW Big Cr	Rack River	Visual (2005-07)	Electronic (2008-09)	All	Y	Y	Y
Visual (2005-08)				Electronic (2009)	All	N	N	Y	
Snake River fall	Lyons Ferry	WDFW Lyons Ferry	Rack River	Electronic	All	Y	Y	Y	
			River	Electronic	All	Y	Y	Y	
Oregon Coast	South OR Coast spring	Rogue R.	ODFW Cole M Rivers ⁵	Rack River (2007-09)	Electronic	All	Y	Y	Y
			River	Visual	All	N	N	Y	

¹ WDFW escapement estimates were done annually where noted with a Y, but river estimates may be incomplete or missing in some years. When river escapement estimates were provided by regional staff, CWTs were expanded and provided to RMIS.

² Subsampled in large return years.

³ Adjacent spawning ground areas, not Spring Creek itself.

⁴ 2011 is the first year all natural spawners were electronically sampled. Previous years were visual only.

⁵ Oregon Coast Rogue River DIT discontinued in 2007 release year. No Rogue River spawning surveys were conducted in 2005 or 2006.

4 SUMMARY OF MARK-SELECTIVE FISHERIES

4.1 Coho Salmon

This section summarizes sampling and monitoring conducted for Coho MSFs. Specific results for Coho MSFs are listed in Tables 4-1 to 4-5. Sampling information for NSF is not included in these tables, except where there were in-season variations within a MSF.

4.1.1 Alaska

Mark selective fishery regulations were not implemented in any Alaskan salmon fisheries between 2005 and 2009.

4.1.2 Canada

There were no commercial MSFs in Canadian waters from 2005 to 2009. For recreational fisheries, Coho MSFs were implemented in most of southern BC, including Johnstone Strait, the Strait of Georgia, Juan de Fuca Strait, and the West Coast of Vancouver Island. Non-selective fisheries or mixed bag regulations were often implemented in terminal areas where local wild stock abundance allowed harvest. Effective June 1, in all years, retention of two Coho (marked or unmarked) was permitted in terminal areas of Port San Juan (Area 20-2) and inner portions of Areas 23-25 and 27. Regulations and catch in fisheries subject to mark-selective regulations are summarized in Tables 4-1 through 4-5. Non-selective fisheries are listed when they occurred as in-season changes to MSF regulations. Although there is no estimate of release mortality there is an estimate of fish released, which is not included in the Estimated Catch (retention) column.

The mark rate includes estimates of marked and unmarked fish for both kept and released. The estimated catch is for the period of the creel survey and is not expanded to the entire period of the fishery or to areas not covered by the creel survey program.

4.1.3 Puget Sound

In Puget Sound, recreational Coho MSFs occurred in four marine areas (Areas 5, 6, 7, and 13) during the months of July through October in years 2005-2009. Recreational Coho MSFs also occurred in several freshwater systems of Puget Sound, including the Nooksack River in northern Puget Sound during the months of September through December (years 2005-2009), Chambers Creek Estuary (July – November, 2006-2008), Kennedy Creek (October – November, 2007-2009), and McLane Creek (September – November, 2007 only).

All coded-wire tags were sampled electronically during dockside creel sampling. Estimates of catch and mark rates resulting from sampling each Coho MSF in Puget Sound are provided in Tables 4-1 through 4-5.

4.1.4 Coastal Washington

In coastal Washington marine waters, multiple Coho MSFs occurred in 2005-2009, including commercial troll fisheries. From 2005 through 2009, recreational Coho MSFs occurred in four marine areas of coastal Washington (Areas 1, 2, 3, and 4) during the July through September period (specific MSF dates per year are shown in the Coho MSF tables below). Mark-selective commercial troll fisheries for Coho occurred in Areas 1-4 during the same time period. Also, in years 2007-2009, recreational Coho MSFs occurred in Willapa Bay (Area 2-1) during the July – September period and in Grays Harbor (Area 2-2) during July (2007) and from September 16 through November 30 (years 2007-2009). Also, in 2009 only, a non-treaty commercial MSF for Coho occurred in Grays Harbor (Area 2C) during the month of September.

Additionally, recreational Coho MSFs also occurred in several Washington coastal freshwater systems in 2005-2009. These included the Quillayute River (March 1 – August 31, 2005; February 1 – August 31, 2006-2009 and September 1 – October 31, 2007-2008), Willapa Bay tributaries (August 1 – January 31, 2005-2009; September 1 start in 2008), and Grays Harbor tributaries (December 1 – February 28, 2005-2007; November 1 start in 2008; September 1 start in 2009). Estimates of Coho retained catch in these MSFs based on Catch Record Card estimates are provided in Tables 4-1 through 4-5.

All CWTs were sampled electronically during dockside sampling. In this report, WDFW has provided estimates of catch and mark rates resulting from sampling each Coho MSF in Washington coastal areas (Tables 4-1 through 4-5). Direct on-water observation of salmon encounters was the primary method used in Washington coastal Areas 1 and 2 to estimate Coho mark rates. Observers from WDFW rode along on charter vessels to collect encounter rate data from the recreational fisheries. Recreational anglers were also solicited to use voluntary trip reports while fishing to record the above information. Due to the lack of availability of charter vessels fishing in Areas 3 and 4, the primary method used to gather selective fishery encounter statistics was voluntary trip reports. Whenever possible, ride-along trips on charter vessels was the method used to obtain encounter data in Neah Bay.

4.1.5 Columbia River

From 2005 through 2009, recreational Coho MSFs occurred in the Columbia River each year during the August 1 through December 31 time period. In the Buoy 10 recreational Coho fishery, anglers were allowed to keep two adult salmon, of which only one could be a Chinook, and they had to release all unmarked Coho. In the lower Columbia River recreational Coho fishery (i.e., below Bonneville Dam), anglers were allowed to keep up to six salmon per day, of which they could keep no more than two adults, and all unmarked Coho had to be released. All CWTs were sampled electronically during creel sampling. In this report, WDFW and ODFW jointly provided estimates of catch and mark rates resulting from sampling each Coho MSF in the Columbia River.

4.1.6 Coastal Oregon

Ocean mark selective recreational Coho fisheries occurred in all ocean areas from Leadbetter Point, Washington, to the Oregon/California Border in 2005-2009. Ocean commercial troll Coho fisheries from Leadbetter Point, Washington to Cape Falcon, Oregon (catch Area 2) were mark-selective during this time period also. All CWT sampling from 2005-2009 for Oregon ocean Coho fisheries was visual. Mark rates in the recreational Coho fishery were determined from responses collected during dockside angler interviews. Anglers were asked how many Coho were released and the information was recorded along with catch data. Mark rate calculations were based on the assumption that all released Coho in the recreational MSF are not marked. In 2005, 2006, and 2009, observers rode along on charter vessels to collect encounter rate data from the recreational fisheries occurring in ocean Area 4. These on-water observations of salmon encounters were used to ground truth mark rate estimates calculated from angler interviews. Observers documented that less than 1% of the released fish on these trips were marked fish.

Table 4-1. Summary of 2005 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period ¹	Regulations (per day) ²	Fishery Monitoring Conducted			
				Estimated Catch ³	Estimated Mark Rate ⁴	CWT Sampling ⁵	Encounter Estimation ⁶
West Coast Vancouver Island	Area 21, outer portions of Area 23, outer portion of 24, Areas 25-27, 121, 123-127	Jun 1-Sep 14	2 marked	see below	see below	see below	see below
	Subareas 23-1 to 23-6, 23-9, 23- 10 and portions of 23-7, 23-8 and 23-11	Jun 1-Sep 14	2 per day	see below	see below	see below	see below
	Subareas 23-1, 23-2, 23-3	Aug 1-Dec 31	4 per day	see below	see below	see below	see below
	Portions of 23-7, 23-8, 23-11	Sep 15-Dec 31	4 marked	see below	see below	see below	see below
	Subarea 24-9 and portions of 24-6, 24-8, 24-10 and 24-11	Jun 1-Sep 14	2 per day	see below	see below	see below	see below
		Sep 15-Dec 31	Mixed Bag (MB): max 4 of which 2 may be unmarked	see below	see below	see below	see below
	Portions of 24-2, 24-6, 24-8	Sep 15-Dec 31	4 marked	see below	see below	see below	see below
	Subareas 25-1 to 25-5, 25-8 to 25-12, 25-14 to 25-16	Jun 1-Sep 14	2 per day	see below	see below	see below	see below
	Portion of 25-4	Jun 1-Jul 31	2 per day	see below	see below	see below	see below
	Portions of 25-4, 25-6, 25-13, and subarea 25-14	Jun 1-Sep 14	2 per day	see below	see below	see below	see below
	Portions of 25-7 and 25-13	Sep 15-Dec 31	4 marked	see below	see below	see below	see below
	Subareas 25-1 to 25-5, 25-8 to 25-12, 25-14 to 25-16, and portions of 25-6, 25-13	Sep 15-Dec 31	MB: max 4 of which 2 may be unmarked	see below	see below	see below	see below
		Portions of 25-4 and 25-5	Aug 1-Dec 31	4 per day	see below	see below	see below

¹ Beginning and ending dates within which the fishery occurred. Fishery may have contained multiple open periods within this range.

² Bag limits and size restrictions.

³ Total number of fish retained.

⁴ Estimated mark rate from total legal sized Coho encountered.

⁵ Method used to collect tag rate information and obtain CWTs from catch.

⁶ Program used to estimate total landed catch and number of fish released.

Table 4-1. (Continued) Summary of 2005 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted					
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation		
West Coast Vancouver Island (cont.)	Subareas 27-2 and 27-3,	Jun 1-Sep 14	2 per day	see below	see below	see below	see below		
	27-7 to 27-11	Sep 15-Dec 31	MB: max 4 of which 2 may be unmarked	see below	see below	see below	see below		
	Subareas 27-1, 27-4, 27-5, 27-6, Area 127	Sep 15-Dec 31	4 marked	see below	see below	see below	see below		
	Area 21	Jun 1-Sep 30		1,685	100%	10% Creel Jun- mid Sep and SHRP	Creel, Guide Logbook		
	Area 23			19,660	40%				
	Area 24			2,834	8%				
	Area 25			3,474	20%				
	Area 26			14	0%				
	Area 27			3,213	0%				
	Area 121			8,787	85%				
	Area 123			16,268	37%				
	Area 124			1,975	27%				
	Area 125			252	25%				
	Area 126			9	0%				
Area 127			0	0%					
East Coast Vancouver Island	Areas 11-20	Jun 1-Dec 31	2 marked	see below	see below			see below	see below
	Queen Charlotte Sd, Queen Charlotte St, Johnstone St (11-1,11-2, 12-14 and 111)	Jun 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below			see below	see below
	Subareas 11-3 to 11-10	Apr 1-Dec 31	4 per day	see below	see below	see below	see below		
	Subareas 12-3 to 12-13, 12-15 to 12-19 and 12-21 to 12-48	Jun 1-Aug 1	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below		
	Subareas 12-26 to 12-48	Aug 2-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below		
	Subarea 12-16	Aug 13-Dec 31	4 marked	see below	see below	see below	see below		
	Portions of 12-4 and 12-19	Aug 15-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below		
Bute Inlet (subareas 13-20, 13-21)	Aug 15-Sep 15	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below			

Table 4-1. (Continued) Summary of 2005 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
East Coast Vancouver Island (cont.)	Subarea 14-11	Sep 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Sechelt Inlet and Porpoise Bay (Subarea 16-5, portion of 16-6)	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Strait of Georgia South (Areas 28, 29)	Jul 1-Dec 31	2 marked	see below	see below	see below	see below
	Area 19	Oct 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subareas 20-1 to 20-2	Sep 6-Dec 31	MB: max 4 of which 2 may be unmarked	see below	see below	see below	see below
	Portions of 20-1, and Subareas 20-3 to 20-7	Oct 1-Dec 31	MB: max 4 of which 1 may be unmarked	see below	see below	10% Creel Jun- mid Sep and SHRP	see below
	Terminal (portions of 14, 16, 19, 29)	Jun 1-Dec 31	2 marked	see below	see below	see below	see below
	Area 11	Jun 1-Sep 30		3	0%	10% Creel Jun- Aug and SHRP	Creel, Guide Logbook
	Area 12			12,182	10%		
	Area 13	Jun 1-Sep 30		1,283	5%	10% Creel May-Oct and SHRP	Creel, Guide Logbook
	Area 14			0	0%		
	Area 15			7	33%		
	Area 16			16	86%		
	Area 18			78	78%		
Area 28			1,025	73%			
Areas 17+29			85	88%			
Area 19	Jun 1-Sep 30		283	23%	10% Creel Jan- Oct, Dec and SHRP, except portions of subareas as above	Creel, Guide Logbook	
Area 20			9,731	28%			

Table 4-1. (Continued) Summary of 2005 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted				
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation	
Lower Fraser Freshwater	Portions of Fraser River – non-tidal	Oct 15-Dec 31	2 marked	0	0%	Creel May- Sep and SHRP	Creel	
	Alouette R	Oct 1-Dec 31	1 marked	No	No	SHRP	No	
	Chehalis R	Jul 1-Mar 31	4 marked	No	No	SHRP	No	
	Chilliwack/Veddar R	Jul 1-Mar 31	4 marked	777	100%	Creel Sep- Nov and SHRP	Creel	
	Cogburn Cr	Sep 1-Mar 31	2 marked	No	No	SHRP	No	
	Coquitlam R	Oct 1-Dec 31	1 marked	No	No	SHRP	No	
	Harrison R	Sep 1-Mar 31	4 marked	No	No	SHRP	No	
	Kanaka Cr	Nov 1-30	1 marked	No	No	SHRP	No	
	Little Campbell R	Oct 1-Dec 31	1 marked	No	No	SHRP	No	
	Nicomel R	Oct 1-Dec 31	1 marked	No	No	SHRP	No	
	Nicomel Slough / Norrish Cr	Jan 1-Dec 31	4 marked, only 2 over 35 cm	555	100%	Creel Oct 8- Nov 30 and SHRP	Creel	
	Serpentine R	Oct 1-Dec 31	1 marked	No	No	SHRP	No	
	Stave R	Jan 1-Dec 31	4 marked	No	No	SHRP	No	
	West Coast Vancouver Isl. Freshwater	Conuma R	Sep 1-Dec 31	2 per day	No	No	SHRP	No
		Nitinat R	Oct 15-Dec 31	2 per day	No	No	SHRP	No
Somass and Stamp Rivers		Aug 25-Dec 31	2 per day	No	No	SHRP	No	
East Coast Vancouver Island Freshwater	Campbell R / Quinsam R	Oct 1-Dec 31	4 total, 2 marked and over 35 cm	No	No	SHRP	No	
	Cluxewe R	Jan 1-Dec 31	2 marked	No	No	SHRP	No	
Southern BC Freshwater	Quatse R	Jun 15-Mar 31	2 marked	No	No	SHRP	No	
	Other FW recreational	Jun 1-Dec 31	2 marked	No	No	SHRP	No	
	Capilano R	Jan 1-Aug 31	4 marked, only 2 over 30 cm	No	No	SHRP	No	
		Sep 1-Dec 31	4 marked	No	No	SHRP	No	
	Chapman Cr	Jul 1-Mar 31	4 marked, 2 over 35 cm	No	No	SHRP	No	
Seymour R	Oct 1-Dec 31	1 marked	No	No	SHRP	No		

Table 4-1. (Continued) Summary of 2005 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Southern BC Freshwater (cont.)	Squamish River	Oct 1-Dec 31	1 marked	No	No	SHRP	No
Puget Sound Marine	Area 5 Recreational ⁷	Jul 1-Sep 30	2 marked Coho	26,284	45%	Creel at 27%	Creel, test fishing
	Area 6 Recreational ⁷	Jul 1-Sep 30	2 marked Coho	905	35%	Creel at 33%	Creel, test fishing
	Area 7 Recreational ⁸	Aug 1-Sep 30	2 marked Coho	458	31%	Creel at 15%	Creel
	Area 13 Recreational ⁸	Jul 1-Oct 31	2 marked Coho	1,353	85%	Creel at 21%	Creel
Puget Sound Freshwater	Nooksack River Recreational	Sep 1-Dec 31	2 marked Coho	724	NA	NA	None
WA Coast	Area 1 Recreational	Jul 3-Sep 30	2 marked Coho	38,693	61%	Creel at 50%	Creel, observers
	Area 2 Recreational	Jun 26-Sep 18	2 marked Coho	10,508	46%	Creel at 41%	Creel, observers
	Area 3 Recreational	Jul 1-Oct 9	2 marked Coho	2,320	31%	Creel at 66%	Creel, logbooks
	Area 4 Recreational	Jul 1-Sep 18	2 marked Coho	10,218	30%	Creel at 44%	Creel, observers
	Area 1-4 Troll	Jul 7-Aug 22	marked Coho	4,064	40%	Dockside at 9%	Creel, observers
WA Coast freshwater	Quillayute River Basin	Mar 1-Aug 31	6 salmon with up to 2 adults. Release unmarked adult Chinook and Coho	487	85.5% =Proportions in Escapement	None	NA
	Willapa Bay Tributaries	Aug 1-Jan 31	2 one may be wild Coho	3,219	NA	None	NA

⁷ For Area 5 and 6 selective Coho fishery, the retained catch was estimated via creel surveys and the mark rate was estimated from the test fishery encounter data.

⁸ For Area 7 and 13 selective Coho fisheries, the retained catch was estimated via Catch Record Card estimates and the mark rate was estimated from in-sample encounter data obtained during angler interviews.

Table 4-1. (Continued) Summary of 2005 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
WA Coast freshwater (cont.)	Grays Harbor Tributaries	Dec 1-Feb 28	2 one may be wild Coho	9,067	28%	Creel	NA
OR Coast	Area 2 (Columbia) Recreational	Jul 3-Sep 30	2 marked Coho	9,966	52%	Creel at 42%	Creel, observers
	Area 3 (Tillamook) Recreational	Jun 18-Jul 31	2 marked Coho	1,058	50%	Creel at 59%	Creel
	Area 4 (Newport) Recreational	Jun 18-Jul 31	2 marked Coho	1,137	52%	Creel at 44%	Creel, observers
	Area 5 (Coos Bay) Recreational	Jun 18-Jul 31	2 marked Coho	1,435	52%	Creel at 46%	Creel, observers
	Area 6 (Brookings) Recreational	Jun 13-Jul 4	2 marked Coho	110	28%	Creel at 49%	Creel
	Area 2 (Columbia) Troll	Jul 7-Aug 21	2 marked Coho	2,618	NA	Dockside at 37%	No
Columbia R	Lower River Recreational	Aug 1-Dec 31	6 salmon/day, of which retain up to 2 adults; no more than 1 Chinook; release unmarked Coho.	586 adults, 21 jacks	65%	Creel	Creel
	Buoy 10 Recreational	Aug 1-Dec 31	8/1-9/30: 2 salmon/day; no more than 1 Chinook; release unmarked Coho. 10/1-12/31: 6 salmon/day, of which retain up to 2 adults; no more than 1 Chinook; release unmarked Coho.	6,878 adults	65%	Creel	Creel

Table 4-2. Summary of 2006 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period ¹	Regulations (per day) ²	Fishery Monitoring Conducted			
				Estimated Catch ³	Estimated Mark Rate ⁴	CWT Sampling ⁵	Encounter Estimation ⁶
West Coast Vancouver Island	Areas 21, 23-26, 121, 123-127	Jun 1-Dec 31	2 marked	see below	see below	see below	see below
	Areas 121 and 123-127	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Area 22	Aug 1-Dec 31	4 per day	No	No	No	No
	Areas 23, 24, 25	Sep 1-Dec 31	Mixed Bag (MB):max 4 of which 2 may be unmarked	see below	see below	see below	see below
	Subareas 23-1 to 23-6, 23-9, 23-10 and portions of 23-7, 23-8, and 23-11	Jun 1-Aug 31	2 per day	see below	see below	see below	see below
	Portions of subareas 23-1, 23-2, 23-3	Aug 1-Dec 31	4 per day	see below	see below	see below	see below
	Portions of 23-7, 23-8, 23-11	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Subarea 24-9 and portions of 24-6, 24-8, 24-10, and 24-11	Jun 1-Aug 31	2 per day	see below	see below	see below	see below
		Sep 1-Dec 31	MB: max 4 of which 2 may be unmarked	see below	see below	see below	see below
	Portions of 24-2, 24-6, 24-8	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Subareas 25-1 to 25-5, 25-8 to 25-12, 25-14 to 25-16, and portions of 25-6 and 25-13	Jun 1-Aug 31	2 per day	see below	see below	see below	see below
	Portions of 25-4 and 25-5	Aug 1-Dec 31	4 per day	see below	see below	see below	see below
	Portions of 25-7 and 25-13	Sep 1-Dec 31	4 marked	see below	see below	see below	see below

¹ Beginning and ending dates within which the fishery occurred. Fishery may have contained multiple open periods within this range.

² Bag limits and size restrictions.

³ Total number of fish retained.

⁴ Estimated mark rate from total legal sized Coho encountered.

⁵ Method used to collect tag rate information and obtain CWTs from catch.

⁶ Program used to estimate total landed catch and number of fish released.

Table 4–2. (Continued) Summary of 2006 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted					
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation		
West Coast Vancouver Island (cont.)	Subareas 25-1 to 25-5, 25-8 to 25-12, 25-14 to 25-16 and portions of 25-6, 25-13	Sep 1-Dec 31	MB: max 4 of which 2 may be unmarked	see below	see below	see below	see below		
	Subarea 26-1 to 26-11	Sep 1-Dec 31	4 marked	see below	see below	see below	see below		
	Subareas 27-2 and 27-3, 27-7 to 27-11	Jun 1-Sep 14	2 per day	see below	see below	see below	see below		
		Sep 15-Dec 31	MB: max 4 of which 2 may be unmarked	see below	see below	see below	see below		
	Subareas 27-1, 27-4, 27-5, 27-6, Area 127	Sep 15-Dec 31	4 marked	see below	see below	see below	see below		
	Area 21	Jun 1-Sep 30		0	0%	10% Creel Jun-mid Sep and SHRP	Creel, Guide Logbook		
	Area 23			3,761	30%				
	Area 24			871	4%				
	Area 25			1,156	6%				
	Area 26			1,087	5%				
	Area 27			1,831	8%				
	Area 121			3,614	99%				
	Area 123			6,731	34%				
	Area 124			620	31%				
Area 125	175			48%					
Area 126	1,864			7%					
Area 127	2,331			0%					
East Coast Vancouver Island	Areas 11-20			Jun 1-Dec 31	2 marked	see below	see below	see below	see below
	Queen Charlotte Sd, Queen Charlotte St, Johnstone St (11-1,11-2, 12-14 and 111)			Jun 1-Jul 31	2 per day	see below	see below	see below	see below
		Aug 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below		
	Subareas 11-3 to 11-10	Apr 1-Dec 31	4 per day	see below	see below	see below	see below		
	Subareas 12-3 to 12-13, 12-15 to 12-19 and 12-21 to 12-48	Jun 1-Aug 1	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below		
	Subareas 12-26 to 12-48	Aug 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below		

Table 4–2. (Continued) Summary of 2006 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted				
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation	
East Coast	Subarea 12-16	Aug 15-Dec 31	4 marked	see below	see below	see below	see below	
Vancouver Island (cont.)	Portions of 12-4 and 12-19	Aug 15-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below	
	Bute Inlet (subareas 13-20, 13-21)	Aug 15-Sep 15	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below	
	Subarea 14-11	Sep 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below	
	Sechelt Inlet and Porpoise Bay (Subarea 16-5 and portion of 16-6)	Jun 1-Dec 31	4 marked	see below	see below	see below	see below	
	Subareas 28-1 to 28-7 and 28-9	Jan 1-Dec 31	2 marked	see below	see below	see below	see below	
	Subareas 28-8 and 28-10	Jun 1-Dec 31	2 marked	see below	see below	see below	see below	
	Subareas 28-11 to 28-14	Apr 1-Sep 30	2 marked	see below	see below	see below	see below	
	Portion of 29-3	Jan 1-Dec 31	2 marked	see below	see below	see below	see below	
	Area 29 other than 29-3	Jun 1-Dec 31	2 marked	see below	see below	see below	see below	
	Area 19	Oct 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below	
	Portions of subareas 20-1 to 20-2	Sep 5-Dec 31	MB: max 4 of which 2 may be unmarked	see below	see below	see below	see below	
	Portions of 20-1, and subareas 20-3 to 20-7	Oct 1-Dec 31	MB: max 4 of which 1 may be unmarked	see below	see below	10% Creel Jun-mid Sep and SHRP	Creel, Guide Logbook	
	Terminal (portions of 14, 16, 19, 29)	Jun 1-Dec 31	2 marked	see below	see below	see below	see below	
	Area 11 Area 12	Jun 1-Sep 30			0 3,691	0% 9%	10% Creel Jun-Aug and SHRP	Creel, Guide Logbook

Table 4–2. (Continued) Summary of 2006 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
East Coast	Area 13	Jun 1-Sep 30		890	12%	10% Creel	Creel, Guide
Vancouver	Area 14			0	0%	May-Oct	Logbook
Island (cont.)	Area 15			0	0%	and SHRP	
	Area 16			0	0%		
	Area 18			21	86%		
	Area 28			766	87%		
	Areas 17+29			365	89%		
	Area 19	Jun 1-Sep 30		264	0%		10% Creel
Area 20			3,292	46%	Jan, Feb, Apr-Oct and SHRP, except as above	Logbook	
Lower Fraser Freshwater	Portions of Fraser River – non-tidal	Oct 15-Dec 31	2 marked	0	0%	Creel May 1 -Oct 9 and SHRP	Creel
	Fraser River – tidal waters	Oct 7-Dec 31	2 marked	See above	See above	SHRP	No
	Alouette R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Chehalis R	Jul 1-Mar 31	4 marked	No	No	SHRP	No
	Chilliwack/Veddar R	Jul 1-Mar 31	4 marked	2,408	97%	Creel Sep 15 -Nov 15 and SHRP	Creel
	Cogburn Cr	Sep 1-Mar 31	2 marked	No	No	SHRP	No
	Coquitlam R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Harrison R	Sep 1-Mar 31	4 marked	No	No	SHRP	No
	Kanaka Cr	Nov 1-30	1 marked	No	No	SHRP	No
	Little Campbell R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Nicomekl R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Nicomen Slough / Norrish Cr	Jan 1-Dec 31	4 marked, only 2 over 35 cm	179	100%	Creel Oct 9- Nov 30 and SHRP	Creel

Table 4–2. (Continued) Summary of 2006 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Lower Fraser Freshwater (cont.)	Serpentine R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Stave R	Jan 1-Dec 31	4 marked	No	No	SHRP	No
West Coast	Conuma R	Sep 1-Dec 31	2 per day	No	No	SHRP	No
Vancouver Island	Nitinat R	Oct 15-Dec 31	2 per day	No	No	SHRP	No
Freshwater	Somass and Stamp Rivers	Aug 25-Dec 31	2 per day	No	No	SHRP	No
East Coast	Campbell R /	Aug 31-Sep 30	8 total, 1 over 35 cm	No	No	SHRP	No
Vancouver Is Freshwater	Quinsam R	Oct 1-Dec 31	4 total, 2 marked and over 35 cm	No	No	SHRP	No
	Cluxewe R	Jan 1-Dec 31	2 marked	No	No	SHRP	No
	Cowichan R	Nov 16-Nov 30	1 less than 35 cm	No	No	SHRP	No
	Quatse R	Jun 15-Mar 31	2 marked	No	No	SHRP	No
	Southern BC Freshwater	Other FW Recreational	Jun 1-Dec 31	2 marked	No	No	SHRP
Capilano R	Jan 1-Aug 31	4 marked, only 2 over 30 cm	No	No	SHRP	No	
	Sep 1-Dec 31	4 marked	No	No	SHRP	No	
	Chapman Cr	Jul 1-Mar 31	4 marked, 2 over 35 cm	No	No	SHRP	No
	Seymour R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Squamish River and Tributaries	Sep 15-Dec 31	1 marked	No	No	SHRP	No
Puget Sound Marine	Area 5 Recreational ⁷	Jul 1-Sep 30	2 marked Coho	9,478	39%	Creel at 19%	Creel, test fishing
	Area 6 Recreational ⁷	Jul 1-Sep 30	2 marked Coho	253	27%	Creel at 28%	Creel, test fishing
	Area 7 Recreational ⁸	Aug 1-Sep 30	2 marked Coho	148	66%	Creel at 13%	Creel
	Area 13 Recreational ⁸	Jul 1-Oct 31	2 marked Coho	421	77%	Creel at 12%	Creel
	Chambers Cr Estuary	Jul 1-Nov 15	2 marked Coho	43	NA	NA	None

⁷ For Area 5 and 6 selective Coho fishery, the retained catch was estimated via creel surveys and the mark rate was estimated from the test fishery encounter data.

⁸ For Area 7 and 13 selective Coho fisheries, the retained catch was estimated via Catch Record Card estimates and the mark rate was estimated from in-sample encounter data obtained during angler interviews.

Table 4–2. (Continued) Summary of 2006 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Puget Sound Freshwater	Nooksack River Recreational	Sep 1–Dec 31	2 marked Coho	227	NA	NA	None
Coastal Washington	Area 1 Recreational	Jul 3-Sep 30	2 marked Coho	19,401	65%	Creel at 61%	Creel, observers
	Area 2 Recreational	Jul 3-Sep 17	2 marked Coho	8,779	55%	Creel at 44%	Creel, observers
	Area 3 Recreational	Jun 30-Oct 8	2 marked Coho	1,884	43%	Creel at 64%	Creel, logbooks
	Area 4 Recreational	Jun 30-Sep 17	2 marked Coho	6,023	40%	Creel at 37%	Creel, observers
	Area 1-4 troll	Jul 15-Sep 15	2 marked Coho only	2,679	37%	Dockside at 49%	Creel, observers
Coastal Washington freshwater	Quillayute River Basin	Feb 1-Aug 31	6 marked with up to 2 adults	141	75.2% =Proportions in Escapement	NA	NA
	Willapa Bay Tributaries	Aug 1-Jan 31	2 one may be unmarked Coho	574	NA	None	NA
	Grays Harbor Tributaries	Dec 1-Feb 28	2 one may be unmarked Coho	1,399	NA	None	NA
OR Coast	Area 2 (Columbia) Recreational	Jul 3-Sep 30	2 marked Coho	5,411	58%	Creel at 38%	Creel and spot check observations
	Area 3 (Tillamook) Recreational	Jun 17-Jul 31, Sep 1-6	2 marked Coho	1,358	49%	Creel at 50%	Creel
	Area 4 (Newport) Recreational	Jun 17-Jul 31, Sep 1-6	2 marked Coho	4,554	42%	Creel at 39%	Creel and spot check observations
	Area 5 (Coos Bay) Recreational	Jun 17-Jul 31, Sep 1-6	2 marked Coho	3,573	47%	Creel at 28%	Creel, observers
	Area 6 (Brookings) Recreational	Jun 17-Jul 4, Sep 1-6	2 marked Coho	681	41%	Creel at 47%	Creel

Table 4–2. (Continued) Summary of 2006 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
OR Coast (cont.)	Area 2 (Columbia) Troll	Jul 15-Sep 15	2 marked Coho	1,414	NA	Dockside at 25%	No
Columbia River	Lower River Recreational	Aug 1-Dec 31	6 salmon/day, of which retain up to 2 adults; no more than 1 Chinook; release unmarked Coho.	1,173 adults; 38 jacks	69%	Creel	Creel
	Buoy 10 Recreational	Aug 1-Dec 31	8/1-9/30: 2 salmon/day; no more than 1 Chinook; release unmarked Coho. 10/1-12/31: 6 salmon/day, of which retain up to 2 adults; no more than 1 Chinook; release unmarked Coho.	3,683 adults	69%	Creel	Creel

Table 4-3. Summary of 2007 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period ¹	Regulations (per day) ²	Fishery Monitoring Conducted			
				Estimated Catch ³	Estimated Mark Rate ⁴	CWT Sampling ⁵	Encounter Estimation ⁶
West Coast Vancouver Island	Areas 21, portions of 23-7, 23-8, 23-11, 24-2, 24-6, 24-8, 25-6, Subarea 25-7, portion of 25-13, Subareas 26-1 to 26-11, Subareas 27-1, 27-4 to 27-6 121, 123-127	Jun 1-Aug 31	2 marked	see below	see below	see below	see below
	Areas 21, portions of 24-2, 24-6, 24-8, Subareas 26-1 to 26-11, Subareas 27-1, 27-4 to 27-6 121, 123-127	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Area 22	Aug 1-Dec 31	4 per day	No	No	No	No
	Subareas 23-1 to 23-6, 23-9, 23-10 and portions of 23-7, 23-8, and 23-11	Jun 1-Sep 14	2 per day	see below	see below	see below	see below
	Subareas 23-1, 23-2, 23-3	Aug 1-Dec 31	4 per day	see below	see below	see below	see below
	Subareas 23-1 to 23-6, 23-9, 23-10 and portions of 23-7, 23-8, and 23-11	Sep 1-Dec 31	4 per day	see below	see below	see below	see below
	Subarea 24-9 and portions of 24-6, 24-8, 24-10, and 24-11	Jun 1-Aug 31	2 per day	see below	see below	see below	see below
		Sep 1-Dec 31	4 per day	see below	see below	see below	see below
	Portions of 24-2, 24-6, 24-8	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Subareas 25-1 to 25-5, 25-8 to 25-12, 25-14 to 25-16, and portions of 25-6 and 25-13	Jun 1-Aug 31	2 per day	see below	see below	see below	see below
Portion of 25-4 and 25-5	Aug 1-Dec 31	4 per day	see below	see below	see below	see below	

¹ Beginning and ending dates within which the fishery occurred. Fishery may have contained multiple open periods within this range.

² Bag limits and size restrictions.

³ Total number of fish retained.

⁴ Estimated mark rate from total legal sized Coho encountered.

⁵ Method used to collect tag rate information and obtain CWTs from catch.

⁶ Program used to estimate total landed catch and number of fish released.

Table 4–3. (Continued) Summary of 2007 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
West Coast Vancouver Island	Portions of 25-6, 25-7, and 25-13	Jun 1-Aug 31	2 marked	see below	see below	see below	see below
	Portions of 25-7 and 25-13	Sep 15-Dec 31	4 marked	see below	see below	see below	see below
	Subareas 25-1 to 25-5, 25-8 to 25-12, 25-14 to 25-16, and portions of 25-6, 25-13	Sep 1-Dec 31	4 per day	see below	see below	see below	see below
	Portions of 25-5 and 25-6, subareas 25-7, 25-13, and 25-14	Sep 21-Dec 31	4 per day	see below	see below	see below	see below
	Subareas 26-1 to 26-11	Jun 1-Aug 31	2 marked	see below	see below	see below	see below
		Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Subareas 27-2 and 27-3, 27-7 to 27-11	Jun 1-Aug 31	2 per day	see below	see below	see below	see below
		Sep 1-Dec 31	Mixed Bag (MB): max 4 of which 2 may be unmarked	see below	see below	see below	see below
	Subareas 27-1, 27-4, 27-5, 27-6	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Area 21	Jun 1-Sep 30		254	100%	10% Creel	Creel, Guide
	Area 23			11,852	38%	Jun – mid	Logbook
	Area 24			3,211	8%	Sep and	
	Area 25			6,721	6%	SHRP	
	Area 26			2,062	0%		
	Area 27			6,677	6%		
	Area 121			8,557	57%		
	Area 123			14,433	33%		
	Area 124			711	30%		
	Area 125			746	12%		
	Area 126			90	0%		
	Area 127			1,621	2%		
East Coast Vancouver Island	Areas 11-20	Jun 1-Dec 31	2 marked	see below	see below	see below	see below
	Subareas 11-1,11-2, 12-14	Jun 1-Jul 31	2 per day	see below	see below	see below	see below
	Subareas 11-3 to 11-10	Jul 12-Dec 31	2 per day	see below	see below	see below	see below

Table 4–3. (Continued) Summary of 2007 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
East Coast Vancouver Island (cont.)	Subareas 11-1,11-2, 12-14 and 111	Aug 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subareas 12-3 to 12-13, 12-15 to 12-19 and 12-21 to 12-48	Jun 1-Jul 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subareas 12-26 to 12-48	Aug 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Areas 12-16	Jun 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subarea 12-16	Aug 15-Dec 31	4 marked	see below	see below	see below	see below
	Portions of 12-4	Aug 15-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Bute Inlet (subareas 13-20, 13-21)	Aug 15-Sep 15	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subarea 14-11	Sep 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Sechelt Inlet and Porpoise Bay (Subarea 16-5 and portion of 16-6)	Jun 1-Dec 31	4 marked	see below	see below	see below	see below
	Subarea 18-8, portion of 18-7	Nov 1-Dec 31	2 per day	see below	see below	see below	see below
	Strait of Georgia South (Areas 28, 29)	Jul 1-Dec 31	2 marked	see below	see below	see below	see below
	Area 19	Oct 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Portions of 20-1 to 20-2	Sep 6-Dec 31	MB: max 4 of which 2 may be unmarked	see below	see below	see below	see below
	Portions of 20-1, and subareas 20-3 to 20-7	Oct 1-Dec 31	MB: max 4 of which 1 may be unmarked	see below	see below	10% Creel Jun to mid-Sep and SHRP	Creel, Guide Logbook
	Subareas 28-1 to 28-7, and 28-9	Jan 1-Dec 31	2 marked	see below	see below	see below	see below
Subareas 28-8 and 28-10	Jun 1-Dec 31	2 marked	see below	see below	see below	see below	

Table 4–3. (Continued) Summary of 2007 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
East Coast Vancouver Island (cont.)	Subareas 28-11 to 28-14	Apr 1-Sep 30	2 marked	see below	see below	see below	see below
	Area 29 (tidal)	Oct 15-Dec 31	2 marked	see below	see below	see below	see below
	Area 29 other than 29-3	Jun 1-Dec 31	2 marked	see below	see below	see below	see below
	Terminal (portions of 14, 16, 19, 29)	Jun 1-Dec 31	2 marked	see below	see below	see below	see below
	Area 11	Jun 1-Sep 30		733	2%	10% Creel	Creel, Guide Logbook
	Area 12			7,424	11%	Jun-Aug and SHRP	
	Area 13	Jun 1-Sep 30		1,886	8%	10% Creel	Creel, Guide Logbook
	Area 14			488	32%	May-Oct and SHRP	
	Area 15			0	0%		
	Area 16			19	97%		
	Area 18			46	0%		
	Area 28			385	66%		
	Areas 17+29			102	22%		
	Area 19	Jun 1-Sep 30		171	30%	10% Creel	Creel, Guide Logbook
Area 20	8,658			30%	Jan-Dec and SHRP, except as above		
Lower Fraser Freshwater	Portions of Fraser River – non-tidal	Oct 15-Dec 31	2 marked	0	0%	Creel May 1-Nov 30 and SHRP	Creel
	Fraser River – Tidal Waters	Jun 1-Dec 31	2 marked	See above	See above	SHRP	No
	Alouette R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Chehalis R	Jul 1-Mar 31	4 marked	No	No	SHRP	No
	Chilliwack/Veddar R	Jul 1-Mar 31	4 marked	7,607	98%	Creel Sep 15-Nov 15 and SHRP	Creel
	Cogburn Cr	Sep 1-Mar 31	2 marked	No	No	SHRP	No
	Coquitlam R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Harrison R	Sep 1-Mar 31	4 marked	No	No	SHRP	No

Table 4–3. (Continued) Summary of 2007 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Lower Fraser Freshwater (cont.)	Kanaka Cr	Nov 1-30	1 marked	No	No	SHRP	No
	Little Campbell R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Nicomekl R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Nicomen Slough / Norrish Cr	Jan 1-Dec 31	4 marked, only 2 over 35 cm	346	99%	Creel Oct 9-Nov 30 and SHRP	Creel
	Serpentine R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Stave R	Jan 1-Dec 31	4 marked	No	No	SHRP	No
West Coast Vancouver Island Freshwater	Conuma R	Sep 1-Dec 31	2 per day	No	No	SHRP	No
	Nitinat R	Oct 15-Dec 31	2 per day	No	No	SHRP	No
	Somass and Stamp Rivers	Aug 25-Dec 31	2 per day	No	No	SHRP	No
East Coast Vancouver Island Freshwater	Campbell R / Quinsam R	Oct 1-Dec 31	4 total, 2 marked and over 35 cm	34	40%	Creel full month of October, 4- 6 days per week, and SHRP	No
	Cluxewe R	Jan 1-Dec 31	2 marked	No	No	SHRP	No
	Cowichan R	Oct 19-Dec 31	1 per day over 35 cm	No	No	SHRP	No
	Quatse R	Jun 15-Mar 31	2 marked	No	No	SHRP	No
Southern BC Freshwater	Other FW Recreational	Jun 1-Dec 31	2 marked	No	No	SHRP	No
	Capilano R	Jan 1-Aug 31	4 marked, only 2 over 30 cm	No	No	SHRP	No
		Sep 1-Dec 31	4 marked	No	No	SHRP	No
	Chapman Cr	Jul 1-Mar 31	4 marked, 2 over 35 cm	No	No	SHRP	No
	Seymour R	Oct 1-Dec 31	1 marked	No	No	SHRP	No

Table 4–3. (Continued) Summary of 2007 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Southern BC Freshwater (cont.)	Squamish River and Tributaries	Sep 15-Dec 31	1 marked	No	No	SHRP	No
Puget Sound Marine	Area 5 Recreational ⁷	Jul 1-Sep 15	2 marked Coho	14,868	35%	Creel at 29%	Creel, test fishing
	Area 6 Recreational ⁷	Jul 1-Sep 30	2 marked Coho	855	28%	Creel at 24%	Creel, test fishing
	Area 7 Recreational ⁸	Aug 1-Sep 30	2 marked Coho	314	26%	Creel at 12%	Creel
	Area 13 Recreational ⁸	Jul 1-Oct 31	2 marked Coho	742	64%	Creel at 10%	Creel
Puget Sound Freshwater	Nooksack River Recreational	Sep 1–Dec 31	2 marked Coho	768	NA	NA	None
	Chambers Cr Estuary	Jul 1-Nov 15	2 marked Coho	23	NA	NA	None
	Kennedy Cr	Oct 1-Nov 30	2 marked Coho	31	NA	NA	None
	McLane Cr	Sep 1-Nov 30	2 marked Coho	0	NA	NA	None
Coastal Washington	Area 1 Recreational	Jul 1-Sep 30	2 marked Coho	47,418	63%	Creel at 49%	Creel, observers
	Area 2 Recreational	Jul 1-Sep 16	2 marked Coho	22,992	48%	Creel at 43%	Creel, observers
	Willapa Bay Marine (Area 2-1 Recreational)	Jul 1-31	3 marked Coho	244	57%	Creel	None
	Grays Harbor Marine West of Buoy 13 (Area 2-2 Recreational)	Jul 1-31	2 marked Coho	669	20%	Creel	None
	Grays Harbor Marine (Area 2-2) Recreational	Sep 16-Nov 30	MB: max. 2, of which 1 may be unmarked	See row above	See row above	See row above	See row above

⁷ For Area 5 and 6 selective Coho fishery, the retained catch was estimated via creel surveys, and the mark rate was estimated from the test fishery encounter data.

⁸ For Area 7 and 13 selective Coho fisheries, the retained catch was estimated via Catch Record Card estimates, and the mark rate was estimated from in-sample encounter data obtained during angler interviews.

Table 4–3. (Continued) Summary of 2007 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Coastal Washington (cont.)	Area 3 Recreational	Jul 3-Oct 7	2 marked Coho	2,769	29%	Creel at 65%	Creel, logbooks
	Area 4 Recreational	Jul 3-Sep 15	2 marked Coho	10,609	39%	Creel at 35%	Creel, observers
	Area 1-4 troll	Jul 1-Sep 16	2 marked Coho	17,441	NA	Dockside at 42%	Creel
Coastal Washington freshwater	Quillayute River Basin	Feb 1-Aug 31	6 salmon with up to 2 adults. Release unmarked adult Chinook and Coho	200	85.8% =Proportions in Escapement	NA	NA
	Quillayute River Basin	Sep 1-Oct 31	6 salmon with up to 3 adults. Release unmarked adult Coho. Selective Gear	826	46.5% =Proportions in Escapement	NA	NA
	Willapa Bay Tributaries	Aug 1-Jan 31	2, one may be wild Coho	711	NA	None	NA
	Grays Harbor Tributaries	Dec 1-Feb 28	2, one may be wild Coho	3,787	15%	Creel	NA
	OR Coast	Area 2 (Columbia) Recreational	Jul 1-Aug 25, and Sep 2-30	2 marked Coho	18,397	52%	Creel at 41%
	Area 3 (Tillamook) Recreational	Jun 23-Sep 16	2 marked Coho	12,563	54%	Creel at 43%	Creel
	Area 4 (Newport) Recreational	Jun 23-Sep 16	2 marked Coho	15,388	55%	Creel at 31%	Creel
	Area 5 (Coos Bay) Recreational	Jun 23-Sep 16	2 marked Coho	12,736	49%	Creel at 35%	Creel
	Area 6 (Brookings) Recreational	Jun 23-Sep 4	2 marked Coho	1,569	37%	Creel at 24%	Creel
	Area 2 (Columbia) Troll	Jul 1-Sep 16	2 marked Coho	11,553	NA	Dockside at 15%	No

Table 4–3. (Continued) Summary of 2007 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Columbia R	Lower River Recreational	Aug 1-Dec 31	6 salmon/day, of which retain up to 2 adults; no more than 1 Chinook; release unmarked Coho	881 adults, 28 jacks	69%	Creel	Creel
	Buoy 10 Recreational	Aug 1-Dec 31	8/1-9/30: 2 salmon/day; for 8/22-9/3, no more than 1 Chinook; release unmarked Coho. 10/1-12/31: 6 salmon/day, of which retain up to 2 adults; no more than 1 Chinook; release unmarked Coho.	8,356	69%	Creel	Creel

Table 4-4. Summary of 2008 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period ¹	Regulations (per day) ²	Fishery Monitoring Conducted			
				Estimated Catch ³	Estimated Mark Rate ⁴	CWT Sampling ⁵	Encounter Estimation ⁶
West Coast Vancouver Island	Areas 21, 23-27, 121, 123-127	Jun 1-Aug 31	2 marked	see below	see below	see below	see below
	Areas 121, 123-127	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Area 21	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Portion of area 22	Jun 1-Dec 31	4 marked	see below	see below	see below	see below
	Subareas 23-1, 23-2, 23-3	Aug 1-Dec 31	4 per day	see below	see below	see below	see below
	Portions of 23-7, 23-8, 23-11	Sep 15-Dec 31	4 marked	see below	see below	see below	see below
	Portions of subareas 23-4 to 23-11	Jun 1-Aug 31	2 per day	see below	see below	see below	see below
		Sep 1-Dec 31	4 per day	see below	see below	see below	see below
	Subarea 24-9 and portions of 24-6, 24-8, 24-10 and 24-11	Jun 1-Aug 31	2 per day	see below	see below	see below	see below
		Sep 1-Dec 31	Mixed Bag (MB): max 4 of which 2 may be unmarked	see below	see below	see below	see below
	Portions of 24-2, 24-6, 24-8	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Subareas 25-1 to 25-3, portions of 25-4, 25-6, 25-9, 25-11, 25-12,	Jun 1-Jul 14	2 per day	see below	see below	see below	see below
	Portion of 25-4, 25-5	Jun 1-Jul 31	2 per day	see below	see below	see below	see below

¹ Beginning and ending dates within which the fishery occurs. Fishery may have contained multiple open periods within this range.

² Bag limits and size restrictions.

³ Total number of fish retained.

⁴ Estimated mark rate from total legal sized Coho encountered.

⁵ Method used to collect tag rate information and obtain CWTs from catch.

⁶ Program used to estimate total landed catch and number of fish released.

Table 4-4. (Continued) Summary of 2008 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
West Coast Vancouver Island (cont.)	Portions of 25-4, 25-6, 25-13, and subarea 25-14	Jun 1-Aug 31	2 per day	see below	see below	see below	see below
	Subareas 25-1 to 25-3, portions of 25-4, 25-6, 25-7, 25-9, 25-11, 25-12, 25-14	Oct 16-Dec 31	MB: max 4 of which 2 may be unmarked	see below	see below	see below	see below
	Portions of 25-4, 25-6, 25-13 and subarea 25-7	Sep 1-Dec 31	4 per day	see below	see below	see below	see below
	Subareas 26-1 to 26-11	Jun 1-Aug 31	2 marked	see below	see below	see below	see below
	Portions of 26-1, 26-6, 26-7 to 26-11	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Portions of 27-1, 27-2, 27-7 to 27-11	Jun 1-Aug 31	2 per day	see below	see below	see below	see below
	Subareas 27-4, 27-5, 27-6	Sep 15-Dec 31	4 marked	see below	see below	see below	see below
	Sub areas 27-2, 27-3, 27-7 to 27-1	Sep 1-Dec 31	Mixed Bag (MB): max 4 of which 2 may be unmarked	see below	see below	see below	see below
	Area 21	Jun 1-Sep 30		86	84%	10% Creel Jun- mid Sep and SHRP	Creel, Guide Logbook
	Area 23			4,291	40%		
	Area 24			698	18%		
	Area 25			5,130	17%		
	Area 26			435	0%		
	Area 27			6,298	10%		
	Area 121			2,048	37%		
	Area 123			6,424	39%		
	Area 124			1,577	32%		
	Area 125			2,482	22%		
	Area 126			1,407	62%		
	Area 127			2,054	19%		

Table 4-4. (Continued) Summary of 2008 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
East Coast Vancouver Island	Areas 11-20, 28, 29 and 111	Jun 1-Dec 31	2 marked	see below	see below	see below	see below
	Queen Charlotte Sd, Queen Charlotte St, Johnstone St (11-1,11-2, 12-14 and 111)	Jun 1-Jul 31	2 per day	see below	see below	see below	see below
		Aug 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subareas 11-3 to 11-10	May 30-Dec 31	2 per day	see below	see below	see below	see below
	Strait of Georgia North (Areas 12-16)	Jun 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subareas 12-3 to 12-13, 12-15 to 12-19 and 12-21 to 12-48	Jun 1-Jul 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subareas 12-26 to 12-48, portions of 12-4 and 12-19	Aug 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subarea 12-16	Aug 1-Dec 31	4 marked	see below	see below	see below	see below
	Portions of 12-4 and 12-19	Aug 15-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Bute Inlet (subareas 13-20, 13-21 and a portion of 13-22)	Aug 15-Sep 15	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subarea 14-11	Sep 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Sechelt Inlet and Porpoise Bay (Subarea 16-5 and portion of 16-6)	Jun 27-Dec 31	4 marked > 30 cm	see below	see below	see below	see below
	Portions of 18-7 and 18-8	Nov 1-Dec 31	2 per day	see below	see below	see below	see below
	Subareas 28-11 to 28-14	Apr 1-Sep 30	2 marked	see below	see below	see below	see below
	Area 29 (tidal)	Oct 4-Dec 31	2 marked	see below	see below	see below	see below
	Area 29 other than 29-3	Jun 1-Dec 31	2 marked	see below	see below	see below	see below
	Area 19	Oct 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
Subareas 20-1 to 20-2	Sep 2-Dec 31	MB: max 4 of which 2 may be unmarked	see below	see below	see below	see below	

Table 4-4. (Continued) Summary of 2008 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
East Coast Vancouver Island (cont.)	Portions of 20-1, and subareas 20-3 to 20-7	Oct 1-Dec 31	MB: max 4 of which 1 may be unmarked	see below	see below	10% Creel Jun- mid Sep and SHRP	Creel, Guide Logbook
	Terminal (portions of 14, 16, 19, 29)	Jun 1-Dec 31	2 marked	see below	see below	see below	see below
	Area 11	Jun 1-Sep 30		821	21%	10% Creel Jun- Aug and SHRP	Creel, Guide Logbook
	Area 12			717	14%		
	Area 13	Jun 1-Sep 30		310	5%	10% Creel	Creel, Guide
	Area 14			296	6%	May-Oct and SHRP	Logbook
	Area 15			0	0%		
	Area 16			0	0%		
	Area 18			0	0%		
	Area 28			184	82%		
	Areas 17+29			47	81%		
	Area 19	Jun 1-Sep 30		50	26%	10% Creel Jan- Dec and SHRP, except as above	Creel, Guide
	Area 20			1,758	35%		Logbook
Lower Fraser Freshwater	Portions of Fraser River – non-tidal	Oct 10-Dec 31	2 marked	0	0%	Creel May 1- Oct 15 and SHRP	Creel
	Alouette R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Chehalis R	Jul 1-Mar 31	4 marked	No	No	SHRP	No
	Chilliwack/Veddar R	Jul 1-Mar 31	4 marked	2,577	95%	Creel Sep 15- Nov 15 and SHRP	Creel
	Cogburn Cr	Sep 1-Mar 31	2 marked	No	No	SHRP	No
	Coquitlam R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Harrison R	Sep 1-Mar 31	4 marked	No	No	SHRP	No
	Kanaka Cr	Nov 1-30	1 marked	No	No	SHRP	No
	Little Campbell R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Nicomekl R	Oct 1-Dec 31	1 marked	No	No	SHRP	No

Table 4-4. (Continued) Summary of 2008 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Lower Fraser Freshwater (cont.)	Nicomen Slough / Norrish Cr	Jan 1-Dec 31	4 marked, only 2 over 35 cm	209	99%	Creel Oct 13- Nov 30 and SHRP	Creel
	Serpentine R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Stave R	Jan 1-Dec 31	4 marked	No	No	SHRP	No
West Coast Vancouver Island Freshwater	Conuma R	Sep 2-Dec 31	2 per day	No	No	SHRP	No
	Nitinat R	Aug 15-Sep 30, Oct 15-Dec 31	2 per day	No	No	SHRP	No
	Somass and Stamp Rivers	Aug 25-Dec 31	2 per day	No	No	SHRP	No
East Coast Vancouver Island Freshwater	Campbell R / Quinsam R	Oct 1-Dec 31	4 total, 2 marked and over 35 cm	121	60%	Creel full month of October, 4-6 days per week, and SHRP	Creel
	Cluxewe R	Jan 1-Dec 31	2 marked	No	No	SHRP	No
	Cowichan R	Nov 25-Dec 31	1 per day over 35 cm	No	No	SHRP	No
	Quatse R	Jun 15-Mar 31	2 marked	No	No	SHRP	No
Southern BC Freshwater	Other FW Recreational	Jun 1-Dec 31	2 marked	No	No	SHRP	No
	Capilano R	Jan 1-Aug 31	4 marked, only 2 over 30 cm	No	No	SHRP	No
		Sep 1-Dec 31	4 marked	No	No	SHRP	No
	Chapman Cr	Jul 1-Mar 31	4 marked, 2 over 35 cm	No	No	SHRP	No
			1 marked	No	No	SHRP	No
	Squamish River and Tributaries	Sep 15-Dec 31	1 marked	No	No	SHRP	No

Table 4-4. (Continued) Summary of 2008 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Puget Sound Marine	Area 5 Recreational ⁷	Jul 1-Sep 15	2 marked Coho	6,406	37%	Creel at 36%	Creel, Voluntary Trip Reports
	Area 6 Recreational ⁷	Jul 1-Sep 30	2 marked Coho	202	48%	Creel at 24%	Creel, Voluntary Trip Reports
	Area 7 Recreational ⁸	Aug 1-Oct 31	2 marked Coho	638	52%	Creel at 21%	Creel
	Area 13 Recreational ⁸	Jul 1-Oct 31	2 marked Coho	642	86%	Creel at 13%	Creel
Puget Sound Freshwater	Nooksack River Recreational	Sep 1–Dec 31	2 marked Coho	297	NA	NA	None
	Chambers Cr Estuary	Jul 1-Nov 15	2 marked Coho	16	NA	NA	None
	Kennedy Cr	Oct 1-Nov 30	2 marked Coho	0	NA	NA	None
Coastal Washington Marine	Area 1 Recreational	Jun 29-Aug 17	2 marked Coho	10,832	60%	Creel at 68%	Creel, observers
	Area 2 Recreational	Jun 29-Sep 13	2 marked Coho	7,528	58%	Creel at 47%	Creel, observers
	Area 2-1 Recreational	Jul 1-Sep 31	2 marked Coho	593	75%	Creel	
	Area 2-2 Recreational	Sep 16-Nov 30	MB: max 2 of which 1 may be unmarked	874	50%	Creel	
	Area 3 Recreational	Jul 1-Oct 5	2 marked Coho	541	37%	Creel at 72%	Creel, logbooks
	Area 4 Recreational	Jul 1-Sep 13	2 marked Coho	2,161	51%	Creel at 43%	Creel, observers
	Area 1-4 Troll	Jul 1-Sep 16	2 marked Coho	2,084	NA	Dockside at 42%	Creel

⁷ For Area 5 and 6 selective Coho fishery, the retained catch was estimated via creel surveys, and the mark rate was estimated from the test fishery encounter data.

⁸ For Area 7 and 13 selective Coho fisheries, the retained catch was estimated via Catch Record Card estimates, and the mark rate was estimated from in-sample encounter data obtained during angler interviews.

Table 4-4. (Continued) Summary of 2008 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Coastal Washington freshwater	Quillayute River Basin	Feb 1-Aug 31	6 salmon with up to 2 adults. Release unmarked adult Chinook and Coho	198	90.1% =Proportions in Escapement	NA	NA
		Sep1-Oct 31	6 salmon with up to 3 adults. Release unmarked adult Coho. Selective Gear	478	63.5% =Proportions in Escapement	NA	NA
	Willapa Bay Tributaries	Sep 1-Jan 31	2 marked, one may be unmarked Coho	634	NA	None	NA
	Grays Harbor Tributaries	Nov 1-Feb 28	2 marked, one may be unmarked Coho	2,379	37%	Creel	NA
OR Coast	Area 2 (Columbia) Recreational	Jun 29-Aug 17 (Sun-Thurs.)	2 marked Coho	2,191	51%	Creel at 66%	Creel
	Area 3 (Tillamook) Recreational	Jun 22-Aug 14	2 marked Coho	1,241	50%	Creel at 49%	Creel
	Area 4 (Newport) Recreational	Jun 22-Aug 14	2 marked Coho	2,791	58%	Creel at 39%	Creel
	Area 5 (Coos Bay) Recreational	Jun 22-Aug 14	2 marked Coho	3,728	53%	Creel at 40%	Creel
	Area 6 (Brookings) Recreational	Jun 22-Aug 14	2 marked Coho	2,134	48%	Creel at 29%	Creel
	Area 2 (Columbia) Troll	Jul 1-Sep 16	2 marked Coho	435	NA	Dockside at 51%	No
	Columbia River	Lower River Recreational	Aug 1-Dec 31	8/1-8/31 and 9/17-12/31: 6 marked Coho/day only, of which retain up to 2 adults.. 9/1-9/16: 6 marked salmon/day, of which retain up to 2 adults; only 1 adult may be a Chinook.	2,248	70%	Creel

Table 4-4. (Continued) Summary of 2008 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Columbia River (cont.)	Buoy 10 Recreational	Aug 1-Dec 31	8/1-9/1: 2 adult salmon/day, only 1 of which may be Chinook; release unmarked Coho. 9/2-9/30: 2 marked Coho/day only. 10/1- 12/31: 6 marked Coho/day only, of which retain up to 2 adults.	8,573	70%	Creel	Creel

Table 4-5. Summary of 2009 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period ¹	Regulations (per day) ²	Fishery Monitoring Conducted			
				Estimated Catch ³	Estimated Mark Rate ⁴	CWT Sampling ⁵	Encounter Estimation ⁶
West Coast	Areas 21, 23-27, 121, 123-127	Jun 1-Aug 31	2 marked	see below	see below	see below	see below
Vancouver	Areas 121, 123-127	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
Island	Area 21 Nitinat	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Area 22 Nitinat Lake	Jun 1-Jul 31	2 marked	No	No	SHRP	No
	Area 22 Nitinat Lake	Aug 1-Dec 31	4 marked	No	No	SHRP	No
	Portions of subareas 23-4 to 23-11	Jun 1-Aug 31	2 per day	see below	see below	see below	see below
	Subareas 23-1, 23-2, 23-3	Aug 1-Dec 31	4 per day	see below	see below	see below	see below
	Portions of 23-7, 23-8, 23-11	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Subarea 24-9 and portions of 24-6, 24-8, 24-10 and 24-11	Jun 1-Aug 31	2 per day	see below	see below	see below	see below
		Sep 1-Dec 31	Mixed Bag (MB): max 4 of which 2 may be unmarked	see below	see below	see below	see below
	Portions of 24-2, 24-6, 24-8	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Subareas 25-1 to 25-3, 25-16 portions of 25-4, 25-6, 25-8, 25-9, 25-11, 25-12	Jun 1-Jul 14	2 per day	see below	see below	see below	see below
	Portions of 25-4, 25-5	Jun 1-Jul 31	2 per day	see below	see below	see below	see below
		Aug 1-Dec 31	4 per day	see below	see below	see below	see below
	Portions of 25-4, 25-6, 25-13, and subarea 25-14	Jun 1-Aug 31	2 per day	see below	see below	see below	see below
	Portions of 25-4, 25-6, 25-13, subarea 25-7	Sep 1-Dec 31	4 per day	see below	see below	see below	see below

¹ Beginning and ending dates within which the fishery occurred. Fishery may have contained multiple open periods within this range.

² Bag limits and size restrictions.

³ Total number of fish retained.

⁴ Estimated mark rate from total legal sized Coho encountered.

⁵ Method used to collect tag rate information and obtain CWTs from catch.

⁶ Program used to estimate total landed catch and number of fish released.

Table 4–5. (Continued) Summary of 2009 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
West Coast Vancouver Island (cont.)	Subareas 25-1 to 25-5, 25-8 to 25-12, 25-14 to 25-16 and portions of 25-6, 25-13	Oct 16-Dec 31	MB: max 4 of which 2 may be unmarked	see below	see below	see below	see below
	Portions of 26-1, 26-6, 26-7 to 26-11	Sep 1-Dec 31	4 marked	see below	see below	see below	see below
	Subareas 27-1 and 27-2, 27-7 to 27-11	Jun 1-Aug 31	2 per day	see below	see below	see below	see below
	Subareas 27-1 and 27-2, 27-7 to 27-11	Sep 1-Dec 31	MB: max 4 of which 2 may be unmarked	see below	see below	see below	see below
	Subareas 27-4, 27-5, 27-6	Sep 15-Dec 31	4 marked	see below	see below	see below	see below
	Area 21			560	48%	10% Creel	Creel, Guide
	Area 23			22,634	40%	Jun to mid-	Logbook
	Area 24			3,568	6%	Sep	
	Area 25			10,096	11%	andSHRP	
	Area 26			633	0%		
	Area 27			17,420	5%		
	Area 121			10,167	51%		
	Area 123			24,628	34%		
	Area 124			7,206	27%		
Area 125			3,052	19%			
Area 126			2,275	0%			
Area 127			1,940	7%			
East Coast Vancouver Island	Areas 11-20, 111	Jun 1-Dec 31	2 marked	see below	see below	see below	see below
	Queen Charlotte Sd, Queen Charlotte St, Johnstone St	Jun 1-Dec 31	2 per day	see below	see below	see below	see below
	(11-1,11-2, 12-14 and 111)	Aug 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subareas 11-3 to 11-10	May 21-Dec 31	2 per day	see below	see below	see below	see below
	Strait of Georgia North (Areas 12-16)	Jun 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subareas 12-3 to 12-13, 12-15 to 12-19 and 12-21 to 12-48	Jun 1-Aug 1	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below

Table 4–5. (Continued) Summary of 2009 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
East Coast Vancouver Island (cont.)	Subareas 12-26 to 12-48	Aug 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subarea 12-16	Aug 15-Dec 31	4 marked	see below	see below	see below	see below
	Portions of 12-4 and 12-19	Aug 11-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Bute Inlet (subareas 13-20, 13-21)	Aug 15-Sep 15	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subarea 14-11	Sep 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Sechelt Inlet and Porpoise Bay (Subarea 16-5 and portion of 16-6)	Jun 1-Dec 31	4 marked	see below	see below	see below	see below
	Portion of subarea 18-8	Nov 1-Dec 31	2 per day	see below	see below	see below	see below
	Strait of Georgia South (Areas 28, 29)	Jul 1-Dec 31	2 marked	see below	see below	see below	see below
	Subareas 28-1 to 28-7 and 28-9	May 21-Dec 31	2 marked	see below	see below	see below	see below
	Subareas 28-11 to 28-14	May 21-Sep 30	2 marked	see below	see below	see below	see below
	Area 29 (tidal)	Oct 10-Dec 31	2 marked	see below	see below	see below	see below
	Portion of 29-3	May 21-Dec 31	2 marked	see below	see below	see below	see below
	Terminal (portions of 14, 16, 19, 29)	Jun 1-Dec 31	2 marked	see below	see below	see below	see below
	Area 19	Oct 1-Dec 31	MB: max 2 of which 1 may be unmarked	see below	see below	see below	see below
	Subareas 20-1 to 20-2	Sep 8-Dec 31	MB: max 4 of which 2 may be unmarked	see below	see below	see below	see below
	Portions of 20-1, and subareas 20-3 to 20-7	Oct 1-Dec 31	MB: max 4 of which 1 may be unmarked	see below	see below	10% Creel Jun-mid Sep and SHRP	Creel, Guide Logbook

Table 4–5. (Continued) Summary of 2009 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
East Coast Vancouver Island (cont.)	Area 11	Jun 1-Sep 30		1,462	19%	10% Creel	Creel, Guide
	Area 12			9,027	7%	Jun-Aug and SHRP	Logbook
	Area 13	Jun 1-Sep 30		2,273	11%	10% Creel	Creel, Guide
	Area 14			302	10%	May-Oct and SHRP	Logbook
	Area 15			0	0%		
	Area 16			0	0%		
	Area 18			0	0%		
	Area 28			456	79%		
	Areas 17+29			85	43%		
	Area 19	Jun 1-Sep 30		253	15%	10% Creel	Creel, Guide
Area 20			15,868	27%	Jan-Oct and SHRP, except as above	Logbook	
Lower Fraser Freshwater	Portions of Fraser River – non-tidal	Oct 15-Dec 31	2 marked	190	NA	Creel May 1- Oct 15 and SHRP	Creel
	Alouette R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Chehalis R	Jul 1-Mar 31	4 marked	No	No	SHRP	No
	Chilliwack/Veddar R	Jul 1-Mar 31	4 marked	6,847	NA	Creel Sep 15-Nov 15 and SHRP	Creel
	Cogburn Cr	Sep 1-Mar 31	2 marked	No	No	SHRP	No
	Coquitlam R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Harrison R	Sep 1-Mar 31	4 marked	89	NA	Creel Sep 1- Dec 15 and SHRP	Creel
	Kanaka Cr	Nov 1-30	1 marked	No	No	SHRP	No
	Little Campbell R	Oct 1-Dec 31	1 marked	No	No	SHRP	No
	Nicomekl R	Oct 1-Dec 31	1 marked	No	No	SHRP	No

Table 4–5. (Continued) Summary of 2009 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted				
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation	
Lower Fraser Freshwater (cont.)	Nicomen Slough / Norrish Cr	Jan 1-Dec 1	4 marked, only 2 over 35 cm	390	NA	Creel Oct 10- Nov 30 and SHRP	Creel	
	Serpentine R	Oct 1-Dec 31	1 marked	No	No	SHRP	No	
	Stave R	Jan 1-Dec 31	4 marked	No	No	SHRP	No	
West Coast Vancouver Island Freshwater	Conuma R	Sep 2-Dec 31	2 per day	No	No	SHRP	No	
	Nitinat R	Aug 25-Dec 31	2 per day	No	No	SHRP	No	
	San Juan R and tributaries	Nov 2-Dec 31	1 per day	No	No	SHRP	No	
	Somass and Stamp Rivers	Aug 25-Oct 1	2 per day	No	No	SHRP	No	
		Oct 2-Dec 31	2 per day	No	No	SHRP	No	
East Coast Vancouver Is Freshwater	Campbell R / Quinsam R	Oct 1-Dec 31	4 total, 2 marked and over 35 cm	236	52%	Creel full month of October, 4-6 days per week, and SHRP	Creel	
	Cluxewe R	Jan 1-Dec 31	2 marked	No	No	SHRP	No	
	Cowichan R	Nov 16-Dec 31	1 per day	No	No	SHRP	No	
	Puntledge/Courtenay R	Oct 22-Nov 30	2 per day, only 1 >35 cm	No	No	SHRP	No	
	Quatse R	Jun 15-Mar 31	2 marked	No	No	SHRP	No	
	Southern BC Freshwater	Other FW Recreational	Jun 1-Dec 31	2 marked	No	No	SHRP	No
		Capilano R	Jan 1-Aug 31	4 marked, only 2 over 30 cm	No	No	SHRP	No
		Sep 1-Dec 31	4 marked	No	No	SHRP	No	
Chapman Cr		Jul 1-Mar 31	4 marked, 2 over 35 cm	No	No	SHRP	No	
Seymour R		Oct 1-Dec 31	1 marked	No	No	SHRP	No	
	Squamish River and Tributaries	Sep 15-Dec 31	1 marked	No	No	SHRP	No	

Table 4–5. (Continued) Summary of 2009 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Puget Sound Marine	Area 5 Recreational ⁷	Jul 1-Sep 18	2 marked Coho	18,695	34%	Creel	Creel, Voluntary Trip Reports
	Area 6 Recreational ⁷	Jul 1-Sep 30	2 marked Coho	2,987	36%	Creel	Creel, VTR
	Area 7 Recreational ⁸	Aug 1-Sep 30	2 marked Coho	640	35%	Creel	Creel
	Area 13 Recreational ⁸	Jul 1-Oct 31	2 marked Coho	272	69%	Creel	Creel
Puget Sound Freshwater	Nooksack R. Recreational	Sep 1–Dec 31	2 marked Coho	324	NA	NA	None
	Kennedy Cr	Oct 1-Nov 30	2 marked Coho	0	NA	NA	None
Coastal Washington	Area 1 Recreational	Jun 28-Sep 30	2 marked Coho	83,811	62%	Creel at 43%	Creel, observers
	Area 2 Recreational	Jun 28-Sep 20	2 marked Coho	53,868	54%	Creel at 34%	Creel, observers
	Area 2-1 Recreational	Jul 1-Sep 11	2 marked Coho	2,934	65%	Creel	None
	Area 2-2 Recreational	Sep 16-Nov 30	MB: max. 2 of which 1 may be unmarked.	5,604	46%	Creel	None
	Area 3 Recreational	Jun 27-Oct 11	2 marked Coho	6,896	48%	Creel at 67%	Creel, logbooks
	Area 4 Recreational	Jun 27-Sep 20	2 marked Coho	13,336	39%	Creel at 40%	Creel, observers
	Area 1-4 Troll	Jul 1-Sep 15	2 marked Coho	32,743	NA	Dockside at 37%	Creel
	Grays Harbor, Non-tribal Commercial Gillnet	Sep 3-30	2 marked Coho	561	80%	On-board observers	On-board observers
Coastal Washington Freshwater	Quillayute River Basin	Feb 1-Aug 31	6 salmon with up to 2 adults. Release unmarked adult Chinook and Coho	233	85.8% =Proportions in Escapement	NA	NA

⁷ For Area 5 and 6 selective Coho fishery, the retained catch was estimated via creel surveys, and the mark rate was estimated from the test fishery encounter data.

⁸ For Area 7 and 13 selective Coho fisheries, the retained catch was estimated via Catch Record Card estimates, and the mark rate was estimated from in-sample encounter data obtained during angler interviews.

Table 4-5. (Continued) Summary of 2009 Coho mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Coastal Washington	Willapa Bay tributaries	Aug 1-Jan 31	2 Marked, one may be unmarked Coho	3,366	NA	None	NA
Freshwater (cont.)	Grays Harbor tributaries	Sep 1-Feb 28	2 Marked, one may be unmarked Coho	10,624	44%	Creel	NA
Coastal Oregon	Area 2 (Columbia) Recreational	Jun 28-Aug 31, Sep 7-30	2 marked Coho	19,419	52%	Creel at 52%	Creel
	Area 3 (Tillamook) Recreational	Jun 20-Sep 30	3 marked Coho through Aug 31, then 2 marked Coho in Sep	23,585	46%	Creel at 28%	Creel
	Area 4 (Newport) Recreational	Jun 20-Sep 30	3 marked Coho through Aug 31, then 2 marked Coho in Sep	35,438	42%	Creel at 28%	Creel
	Area 5 (Coos Bay) Recreational	Jun 20-Sep 30	3 marked Coho through Aug 31, then 2 marked Coho in Sep	9,967	31%	Creel at 34%	Creel
	Area 6 (Brookings) Recreational	Jun 20-Aug 31	2 marked Coho	1,197	34%	Creel at 38%	Creel
	Area 2 (Columbia) Troll	Jul 1-Sep 15	Marked Coho only	12,688	NA	Dockside at 15.7%	No
Columbia R	Lower River Recreational	Aug 1-Dec 31	2 adult salmon/day, only 1 of which may be Chinook.	3,989	60%	Creel	Creel
	Buoy 10 Recreational	Aug 1-Dec 31	8/1-8/31: 2 salmon/day, only 1 of which may be Chinook. 9/1-9/30: 3 Coho/day. 10/1-12/31:3 adult salmon.	48,127	57%	Creel	Creel

4.2 Chinook Salmon

This section summarizes sampling and monitoring conducted for Chinook MSFs. Specific results of MSFs are listed in Tables 4–6 to 4–10. Sampling information for NSFs is not included in these tables.

4.2.1 Alaska

No MSF regulations for Chinook Salmon were implemented in Alaska from 2005 through 2009.

4.2.2 Canada 2005-2009

There were no commercial MSFs in Canadian waters. There was a mixed bag Chinook recreational MSF in Juan de Fuca Strait in 2008 and 2009, allowing fishers to retain two fish marked or unmarked between 45 cm and 67 cm in length, or marked only if greater than 67 cm in length (as measured from the tip of the nose to the fork of the tail). This fishery operated between March and May in each year, and tags were recovered visually through the voluntary Sport Head Recovery Program (SHRP).

4.2.3 Puget Sound

4.2.3.1 *Puget Sound 2005*

Mark-selective Chinook fisheries occurred in four Puget Sound marine areas during 2005, including Areas 5 and 6 during the summer season (July 1 – August 10, 2005) and the first-ever winter selective Chinook fishery in Areas 8-1 and 8-2 (October 1, 2005 through April 30, 2006). In addition, in-stream Chinook MSFs occurred in the Nooksack River (September 1 – December 31), Skagit River (June 1 – July 8), Skykomish River (June 1 – July 31), Puyallup River (August 1 – December 31), and the Carbon River (September 1 – November 30). In each of these Chinook MSFs, CWTs were sampled electronically.

4.2.3.2 *Puget Sound 2006*

Mark-selective Chinook fisheries occurred in four Puget Sound marine areas during 2006, including Areas 5 and 6 during the summer (July 1 – August 21, 2006) and Areas 8-1 and 8-2 during the winter season (October 1, 2006 through April 30, 2007). In addition, in-stream Chinook MSFs occurred in the Nooksack River (September 1 – December 31), Skagit River (June 1 – July 9), Skykomish River (June 1 – July 31), Puyallup River (August 1 – December 31), Carbon River (September 1 – November 30), and the Nisqually River (July 1, 2006 – January 31, 2007). In each of these Chinook MSFs, CWTs were sampled electronically.

4.2.3.3 *Puget Sound 2007*

A total of eleven mark-selective Chinook fisheries occurred in Puget Sound during summer 2007 and winter 2007-2008. Summer mark-selective Chinook fisheries occurred in Areas 5 and 6 (July 1 – August 9, 2007), Areas 9 and 10 (July 16 – 31 in Area 9 and July 16 – 28 in Area 10), Area 11 (June 1 through September 30), and Area 13 (May 1 through September 30). During the 2007-2008 winter season, mark-selective Chinook fisheries occurred in Area 7 (February 1 – 29, 2008), Areas 8-1 and 8-2 (November 1, 2007 through April 30, 2008), Area 9 (January 16 through April 15, 2008), and Area 10 (December 1, 2007 through January 31, 2008). In

addition, in-stream Chinook MSFs occurred in the Nooksack River (September 1 – December 31), Skagit River (June 1 – July 8), Skykomish River (June 1 – July 31), Puyallup River (September 1 – December 31), Carbon River (September 1 – November 30), and the Nisqually River (July 1, 2007 – January 31, 2008). In each of these Chinook MSFs, CWTs were sampled electronically.

4.2.3.4 *Puget Sound 2008*

A total of eleven mark-selective Chinook fisheries (MSF) occurred in Puget Sound marine areas during summer 2008 and winter 2008-2009, with expanded MSF time frames in some areas compared to 2007. Summer mark-selective Chinook fisheries occurred in Areas 5 and 6 (July 1 – August 9, 2008), Areas 9 and 10 (July 16 – August 15), Area 11 (June 1 through September 30), and Area 13 (May 1 through September 30). During the 2008-2009 winter season, mark-selective Chinook fisheries occurred in Area 7 (February 1 – April 15, 2009), Areas 8-1 and 8-2 (January 1 through April 30, 2009), Area 9 (November 1 – 30, 2008 and January 16 through April 15, 2009), and Area 10 (December 1, 2008 through January 31, 2009). In addition, in-stream Chinook MSFs occurred in the Nooksack River (September 1 – December 31), Skagit River (June 1 – July 15), Skykomish River (June 1 – July 31), Puyallup River (August 16– December 31), Carbon River (September 1 – November 30), and the Nisqually River (July 1, 2008 – January 31, 2009). In each of these Chinook MSFs, CWTs were sampled electronically.

4.2.3.5 *Puget Sound 2009*

A total of thirteen mark-selective Chinook fisheries occurred in Puget Sound marine areas during summer 2009 and winter 2009-10, with expanded MSF time frames in some areas compared to 2008. Summer mark-selective Chinook fisheries occurred in Areas 5 and 6 (July 1 – August 6, 2009), Areas 9 and 10 (July 16 – August 31), Area 11 (June 1 through September 30), and Area 13 (May 1 through September 30). During the 2009-10 winter season, mark-selective Chinook fisheries occurred in Area 7 (December 1 – April 30, 2010), Areas 8-1 and 8-2 (November 1, 2009 through April 30, 2010), Area 9 (November 1 – 30, 2009 and January 16 through April 15, 2010), and Area 10 (October 1, 2009 through January 31, 2010). In addition, in-stream Chinook MSFs occurred in the Nooksack River (September 1 – December 31), Skagit River (June 1 – July 15), Skykomish River (June 1 – July 31), Puyallup River (August 24 – December 31), Carbon River (September 1 – November 30), and the Nisqually River (July 1, 2009 – January 31, 2010). In each of these Chinook MSFs, CWTs were sampled electronically.

4.2.4 **Coastal Washington 2005-2009**

There were no recreational or commercial mark-selective Chinook fisheries in Washington coastal marine waters during the 2005 through 2009 seasons. However, recreational Chinook MSFs occurred in Washington coastal freshwater systems, such as in the Quillayute River (February through August, years 2005-2009) and the Hoh River (May through August, years 2008-2009).

4.2.5 **Columbia River 2005-2009**

In the Columbia River during years 2005-2009, the states of Washington and Oregon implemented mark-selective commercial fisheries for spring Chinook using both large-mesh ($\geq 8''$ mesh) and tangle-net (or tooth-net) gear ($\leq 4.25''$ mesh). These commercial MSFs occurred

downstream of Bonneville Dam during approximately late February through mid/late March (and through late May and mid-June in years 2006 and 2007, respectively). The states of Washington and Oregon also implemented recreational MSFs for spring run Chinook in the mainstem Columbia River from the mouth upstream to McNary Dam (open retention periods varied during the January through mid-June time frame). In addition, recreational summer Chinook MSFs occurred during mid-June through July of 2005 only, in the mainstem Columbia River upstream of Tongue Point to the Oregon/Washington border above the McNary Dam.

Additionally, recreational Chinook MSFs occurred in several Columbia River tributaries during years 2005-2009. These Chinook MSFs occurred in the Willamette River (January – June), the Cowlitz, Kalama, Lewis, and Sandy rivers (January – July), and Snake River (mid-May through June).

4.2.6 **Coastal Oregon**

4.2.6.1 *Coastal Oregon 2005-2007*

With the exception of a very limited area adjacent to Tillamook Bay with adipose-fin clip (mark) only restrictions from March through July to provide added protection for local natural spring Chinook Salmon runs, there were no other MSFs for Chinook in ocean waters off of Oregon between 2005 and 2007. The estimated catch and mark rate in the fishery were unable to be determined, as this small area's catch is mixed with adjacent ocean area catches before sampling.

In-stream MSF for spring Chinook Salmon occurred in the Tillamook Basin (including the Kilchis, Miami, Tillamook, Trask, and Wilson rivers), and Nestucca River and Bay (including Little Nestucca River and Three Rivers).

No MSFs for fall Chinook occurred in any coastal Oregon streams.

4.2.6.2 *Coastal Oregon 2008-2009*

In 2008 and 2009, in order to provide added protection for natural spring Chinook Salmon runs, a mark restriction remained in place for a small section adjacent to Tillamook Bay. The estimated catch and mark rate for this fishery could not be determined, as this fishery is part of the general ocean area and catches are mixed before sampling.

Ocean recreational MSFs for fall-run Chinook in Oregon waters included the Tillamook Terminal Area (September – November, 2008; September – October, 2009) and the Elk River Terminal Area (November only in 2008; October – November, 2009). Both fisheries had modified marked-only restrictions which incorporated an unmarked seasonal limit. The estimated catch and mark rate for the fall Tillamook Terminal area fishery could not be determined because the fishery is part of the general ocean area and catches are mixed before sampling. No sampling of the Elk River Terminal Area fishery was conducted either year. In-stream MSFs for spring Chinook Salmon occurred in the Tillamook Basin (including the Kilchis, Miami, Tillamook, Trask, and Wilson rivers), and Nestucca River and Bay (including Little Nestucca River and Three Rivers).

No MSFs for fall Chinook occurred in any coastal Oregon streams.

Table 4-6. Summary of 2005 Chinook mark-selective fisheries.

Area	Fishery Area	Fishery Period ¹	Regulations (per day) ²	Fishery Monitoring Conducted			
				Estimated Catch ³	Estimated Mark Rate ⁴	CWT Sampling ⁵	Encounter Estimation ⁶
Puget Sound Freshwater	Nooksack River Recreational	Sep 1-Dec 31	2 marked Chinook	205	NA	NA	NA
	Skagit River Recreational	Jun 1-Jul 8	2 marked Chinook	173	46%	Creel	Creel
	Skykomish River Recreational	Jun 1-Jul 31	2 marked Chinook	76	54%	Creel	Creel
	Puyallup River Recreational	Aug 1-Dec 31	6 salmon/day, of which no more than 4 adults may be retained (of these, only 2 may be Chinook); release unmarked Chinook	842	80%	Creel	Creel
	Carbon River- (Puyallup R.) Recreational	Sep 1-Nov 30	6 salmon/day, of which 4 may be adults; up to 2 may be adult marked Chinook	748	75%	Creel	Creel
Puget Sound: Marine	Areas 5 and 6 Recreational ⁷	Jul 1-Aug 10	2 marked Chinook	2,078	50%	Creel at 31%	Creel, Test fishery
	Areas 8-1 and 8-2 Recreational ⁷	Oct 1-Apr 30(2005-06)	2 marked Chinook	1,152	60%	Creel at 46%	Creel, Test fishery
Coastal Washington	Quillayute River	Mar 1-Aug 31	6 salmon with up to 2 adults. Release unmarked Chinook and Coho	479	58.7% =Proportion of Terminal Run Size	NA	NA

¹ Beginning and ending dates within which the fishery occurred. Fishery may have contained multiple open periods within this range.

² Bag limits and size restrictions.

³ Total number of fish retained.

⁴ Estimated mark rate from total legal sized Chinook encountered.

⁵ Method used to collect tag rate information and obtain CWTs from catch.

⁶ Program used to estimate total landed catch and number of fish released.

⁷ For the Areas 5, 6, 8-1, and 8-2 selective Chinook fisheries, the retained catch was estimated via creel surveys and the mark rate was estimated from the test fishery encounter data.

Table 4–6. (Continued) Summary of 2005 Chinook mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Coastal Oregon	Tillamook Terminal Area Spring Chinook Recreational ⁸	Mar 15-Jul 31	2 marked Chinook	NA	NA	NA	NA
Columbia River	Below Bonneville - Spring Chinook Recreational	Jan 1-Apr 20, Jun 4-5, below I-5; Mar 16-Apr 20, Jun 4-5, I-5 to BON	6 salmon/day, of which 2 may be adults; except, 1 adult only between Rooster Rock and Bonneville Dam; release unmarked Chinook	11,315	76%	Creel	Creel
	Above Bonneville - Spring Chinook Recreational	Mar 16-Apr 20; Jun 4-15	2 marked Chinook	419	76%	Creel	Creel
	Above and Below Bonneville - Summer Chinook Recreational	Jun 16-Jul 31	MSF Jun 16-30: retain 2 marked adult Chinook; NSF Jul 1-31	1,709	77%	Creel	Creel
	Spring Chinook Commercial Gill Net and Tangle Net	Gill Net: Mar 1-2, 3-4, 8-9, 10-11, 15-16; Tangle Net: Mar 29-30, 31-Apr 1	Marked Chinook	5,190	75%	Creel, Observers	Creel, Observers
	Cowlitz River - Spring Chinook Recreational	Jan 1-May 15	2 marked Chinook	1,301	89% ⁹	Creel	Creel
Columbia River Tributaries	Kalama River - Spring Chinook Recreational	Jan 1-May 15	2 marked Chinook	1,051	89% ⁹	Creel	Creel
	Lewis River - Spring Chinook Recreational	Jan 1-May 15	2 marked Chinook	1,557	89% ⁹	Creel	Creel
	Sandy River - Spring Chinook Recreational	Jan 1-May 15	2 marked Chinook	1,844	89% ⁹	No	No

⁸ The estimated catch and mark rate in the fishery was unable to be determined, as this small area's catch is mixed with adjacent ocean area catches before sampling.

⁹ Combined mark rate for Cowlitz, Kalama, Lewis, and Sandy rivers.

Table 4–6. (Continued) Summary of 2005 Chinook mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Columbia River Tributaries	Willamette River ¹⁰ Spring Chinook Recreational	Jan 1-May 15	2 marked Chinook	11,133	66%	Creel	Creel
(cont.)	Snake River (WA) - Spring/ Summer Chinook Recreational	Jun 11-30	2 marked Chinook (upstream of Little Goose Dam)	76	46%	Creel	Creel

¹⁰ Includes upper and lower Willamette and Clackamas River.

Table 4-7. Summary of 2006 Chinook mark-selective fisheries.

Area	Fishery Area	Fishery Period ¹	Regulations (per day) ²	Fishery Monitoring Conducted			
				Estimated Catch ³	Estimated Mark Rate ⁴	CWT Sampling ⁵	Encounter Estimation ⁶
Puget Sound Freshwater	Nooksack River Recreational	Sep 1-Dec 31	2 marked Chinook	107	NA	NA	NA
	Skagit River Recreational	Jun 1-Jul 9	2 marked Chinook	458	60%	Creel	Creel
	Skykomish River Recreational	Jun 1-Jul 31	2 marked Chinook	78	53%	Creel	Creel
	Puyallup River Recreational	Sep 1-Dec 31	6 salmon/day, of which 2 may be adults; release unmarked Chinook	520	89%	Creel	Creel
	Carbon River (Puyallup R.) Recreational	Sep 1-Nov 30	6 salmon/day, of which 4 may be adults; up to 2 may be adult fin-marked Chinook	1,216	94%	Creel	Creel
	Nisqually River Recreational	Jul 1-Jan 31	6 salmon/day, of which 2 may be adults; release unmarked adult Chinook	3,669	NA	Creel	NA
Puget Sound Marine	Areas 5 and 6 Recreational ⁷	Jul 1-Aug 21	2 marked Chinook	3,666	47%	Creel at 24%	Creel, Test fishery
	Areas 8-1 and 8-2	Oct 1-Apr 30 (2006-07) ⁸	2 marked Chinook	1,209	65%	Creel at 39%	Creel, Test fishery
Coastal Oregon	Tillamook Terminal Area Spring Chinook Recreational ⁸	Mar 15-Jul 31	2 marked Chinook	NA	NA	NA	NA

¹ Beginning and ending dates within which the fishery occurred. Fishery may have contained multiple open periods within this range.

² Bag limits and size restrictions.

³ Total number of fish retained.

⁴ Estimated mark rate from total legal sized Chinook encountered.

⁵ Method used to collect tag rate information and obtain CWTs from catch.

⁶ Program used to estimate total landed catch and number of fish released.

⁷ For the Areas 5, 6, 8-1, and 8-2 selective Chinook fisheries, the retained catch was estimated via creel surveys and the mark rate was estimated from the test fishery encounter data.

⁸ The estimated catch and mark rate in the fishery was unable to be determined, as this small area's catch is mixed with adjacent ocean area catches before sampling.

Table 4-7. (Continued) Summary of 2006 Chinook mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Columbia River	Below Bonneville - Spring Chinook Recreational	Jan 1-Apr 13, May 17-Jun 15	2 marked Chinook	6,985	74%	Creel	Creel
	Above Bonneville - Spring Chinook Recreational	Mar 16-Apr 30, May 13-Jun 15	2 marked Chinook	1,030	82%	Creel	Creel
	Commercial Tangle Net	Feb 23-24; Mar 2-3, 7-8, 9-10, 14-15; May 16, 18-19, 23-24, 25-26	Marked Chinook	4,389	65%	Creel, Observers	Creel, Observers
Columbia River	Cowlitz River - Spring Chinook Recreational	Jan 1-Jul 31	2 marked Chinook	842	88% ⁹	Creel	Creel
Tributaries	Kalama River - Spring Chinook Recreational	Jan 1-Jul 31	2 marked Chinook	1,395	88% ⁹	Creel	Creel
	Lewis River - Spring Chinook Recreational	Jan 1-Jul 31	2 marked Chinook	2,737	88% ⁹	Creel	Creel
	Sandy River - Spring Chinook Recreational	Jan 1-Jul 31	2 marked Chinook	903	88% ⁹	No	No
	Willamette River ¹⁰ Spring Chinook Recreational	Jan 1-Jul 31	2 marked Chinook	13,173	79%	Creel	Creel
	Snake River (WA waters) - Spring/Summer Chinook Recreational	May 17-Jun 30	2 marked Chinook (upstream of Little Goose Dam)	190	63%	Creel	Creel

⁹ Combined mark rate for Cowlitz, Kalama, Lewis, and Sandy rivers.

¹⁰ Includes upper and lower Willamette and Clackamas River.

Table 4-8. Summary of 2007 Chinook mark-selective fisheries.

Area	Fishery Area	Fishery Period ¹	Regulations (per day) ²	Fishery Monitoring Conducted			
				Estimated Catch ³	Estimated Mark Rate ⁴	CWT Sampling ⁵	Encounter Estimation ⁶
Puget Sound: Freshwater	Nooksack River Recreational	Sep 1-Dec 31	2 marked Chinook	150	NA	NA	NA
	Skagit River Recreational	Jun 1-Jul 8	2 marked Chinook	724	64%	Creel	Creel
	Skykomish River Recreational	Jun 1-Jul 31	2 marked Chinook	637	56%	Creel	Creel
	Puyallup River Recreational	Sep 1-Dec 31	6 salmon/day, of which 2 may be adults; release unmarked Chinook	1,290	79%	Creel	Creel
	Carbon River (Puyallup R.) Recreational	Sep 1-Nov 30	6 salmon/day, of which 4 may be adults; up to 2 may be adult marked Chinook	1,235	92%	Creel	Creel
	Nisqually River Recreational	Jul 1-Jan 31	6 salmon/day, of which 2 may be adults; release unmarked adult Chinook	4,302	NA	Creel	NA
	Puget Sound: Marine	Areas 5 and 6 Recreational ⁷	Jul 1-Aug 9	2 marked Chinook	4,096	62%	Creel at 26%
Area 7 Recreational ⁸		Feb 1-Feb 29 (2008)	2 marked Chinook	1,326	60%	Creel at 33%	Creel, Test fishery, VTRs
Areas 8-1 – 8-2 Recreational ⁷		Nov 1-Apr 30 (2007-08)	2 marked Chinook	1,566	73%	Creel at 46%	Creel, Test fishery, VTRs

¹ Beginning and ending dates within which the fishery occurred. Fishery may have contained multiple open periods within this range.

² Bag limits and size restrictions.

³ Total number of fish retained.

⁴ Estimated mark rate from total legal sized Chinook encountered.

⁵ Method used to collect tag rate information and obtain CWTs from catch.

⁶ Program used to estimate total landed catch and number of fish released.

⁷ For the Areas 5, 6, 8-1, 8-2, 9, 10, and 11 selective Chinook fisheries in Puget Sound, the retained catch was estimated via creel surveys and the mark rate was estimated from the test fishery encounter data.

⁸ For the Area 7 winter selective Chinook fishery, the retained catch was estimated via creel surveys and the mark rate was estimated from the pooled encounter data obtained from the test fishery, voluntary trip reports, as well as charter boat and derby census results.

Table 4–8. (Continued) Summary of 2007 Chinook mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Puget Sound: Marine (cont.)	Area 9 Recreational ⁷	Jul 16-Aug 15	2 marked Chinook	5,271	79%	Creel at 19%	Creel, Test fishery, VTRs
		Jan 16-Apr 15 (2008)	2 marked Chinook	1,412	81%	Creel at 16%	Creel, Test fishery, VTRs
	Area 10 Recreational ⁷	Jul 16-Aug 15	2 marked Chinook	1,577	81%	Creel at 24%	Creel, Test fishery, VTRs
		Dec 1-Jan 31 (2007-08)	2 marked Chinook	656	83%	Creel at 23%	Creel, Test fishery, VTRs
	Area 11 Recreational ⁷	Jun 1-Sep 30	2 marked Chinook	10,615	79%	Creel at 27%	Creel, Test fishery, VTRs
Area 13 Recreational ⁹	May 1-Sep 30	2 marked Chinook	3,003	78%	Creel at 16%	Creel	
Coastal Washington	Quillayute River system	Feb 1-Aug 31	6 salmon with up to 2 adults. Release unmarked Chinook	318	76.7% =Proportion of Terminal Run Size	NA	NA
Coastal Oregon	Tillamook Terminal Area Spring Chinook Recreational ¹⁰	Mar 15-Jul 31	2 marked Chinook	NA	NA	NA	NA
Columbia River	Below Bonneville - Spring Chinook Recreational	Jan 1-Apr 15, May 16-Jun 15, below I-5; Jun 6-15, I-5 to Bonneville	2 marked Chinook	6,476	80%	Creel	Creel

⁹ For the Area 13 selective Chinook fishery, the retained catch was estimated via preliminary Catch Record Card estimates and the mark rate was estimated from in-sample dockside angler interview data for retained and released Chinook.

¹⁰ The estimated catch and mark rates in the fishery was unable to be determined, as this small area's catch is mixed with adjacent ocean area catches before sampling.

Table 4–8. (Continued) Summary of 2007 Chinook mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Columbia River (cont.)	Above Bonneville - Spring Chinook Recreational	Mar 16-May 3, Jun 6-15	2 marked Chinook	596	80%	Creel	Creel
	Commercial Tangle Net	Mar 6, 21-23; Jun 14-15	Marked Chinook	2,877	80%	Creel, Observers	Creel, Observers
Columbia River Tributaries	Cowlitz River - Spring Chinook Recreational	Jan 1-Jul 31	2 marked Chinook	746	89% ¹¹	Creel	Creel
	Kalama River - Spring Chinook Recreational	Jan 1-Jul 31	2 marked Chinook	2,056	89% ¹¹	Creel	Creel
	Lewis River - Spring Chinook Recreational	Jan 1-Jul 31	2 marked Chinook	3,521	89% ¹¹	Creel	Creel
	Sandy River - Spring Chinook Recreational	Jan 1-Jul 31	2 marked Chinook	850	89% ¹¹	No	No
	Willamette River ¹² Spring Chinook Recreational	Jan 1-Jul 31	2 marked Chinook	8,383	68%	Creel	Creel
	Snake River (WA waters) - Spring/Summer Chinook Recreational	May 9-Jun 30	2 marked Chinook (upstream of Little Goose Dam)	287	78%	Creel	Creel

¹¹ Combined mark rate for Cowlitz, Kalama, Lewis, and Sandy rivers.

¹² Includes upper and lower Willamette and Clackamas River.

Table 4-9. Summary of 2008 Chinook mark-selective fisheries.

Area	Fishery Area	Fishery Period ¹	Regulations (per day) ²	Fishery Monitoring Conducted			
				Estimated Catch ³	Estimated Mark Rate ⁴	CWT Sampling ⁵	Encounter Estimation ⁶
West Coast Vancouver Island	Subareas 19-1 to 19-4 and Subarea 20-5 (those waters near Victoria between Cadboro Pt to Sheringham Pt)	Apr 1-May 15	2 wild or hatchery marked Chinook between 45 cm and 67 cm in length or hatchery marked only that are greater than 67 cm in length	122	64%	SHRP	Creel
Puget Sound: Freshwater	Nooksack River Recreational	Sep 1-Dec 31	2 marked Chinook	14	NA	NA	NA
	Skagit River Recreational	Jun 1-Jul 15	4 marked Chinook/day; up to 2 adults	508	59%	Creel	Creel
	Skykomish River Recreational	Jun 1-Jul 31	2 marked Chinook	572	74%	Creel	Creel
	Puyallup River Recreational	Aug 16-Dec 31	6 salmon/day, of which 2 may be adults; release unmarked Chinook	820	77%	Creel	Creel
	Carbon River (Puyallup R.) Recreational	Sep 1-Nov 30	6 salmon/day, of which 4 may be adults; up to 2 may be adult marked Chinook	740	82%	Creel	Creel
	Nisqually River Recreational	Jul 1-Jan 31	6 salmon/day, of which 2 may be adults; release unmarked adult Chinook	2,133	NA	Creel	NA
	Puget Sound: Marine	Area 5 Recreational ⁷	Jul 1-Aug 9	2 marked Chinook	2,819	60%	Creel at 36%

¹ Beginning and ending dates within which the fishery occurred. Fishery may have contained multiple open periods within this range.

² Bag limits and size restrictions.

³ Total number of fish retained.

⁴ Estimated mark rate from total legal sized Chinook encountered.

⁵ Method used to collect tag rate information and obtain CWTs from catch.

⁶ Program used to estimate total landed catch and number of fish released.

⁷ For the Areas 5, 8-1, 8-2, 9, 10, and 11 selective Chinook fisheries in Puget Sound, the retained catch was estimated via creel surveys, and the mark rate was estimated from the test fishery encounter data.

Table 4–9. (Continued) Summary of 2008 Chinook mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Puget Sound: Marine (cont.)	Area 6 Recreational ⁸	Jul 1-Aug 9	2 marked Chinook	531	58%	Creel at 66%	Creel, VTRs
	Area 7 Recreational ⁹	Feb 1-Apr 15 (2009)	2 marked Chinook	1,429	65%	Creel at 50%	Creel, Test fishery, VTRs
	Areas 8-1 – 8-2 Recreational ⁷	Jan 1-Apr 30 (2009)	2 marked Chinook	938	73%	Creel at 42%	Creel, Test fishery, VTRs
	Area 9 Recreational ⁷	Jul 16-Aug 15	2 marked Chinook	4,048	59%	Creel at 20%	Creel, Test fishery, VTRs
		Nov 1-30, 2008 and Jan 16-Apr 15, 2009	2 marked Chinook	899	84%	Creel at 33%	Creel, Test fishery, VTRs
	Area 10 Recreational ⁷	Jul 16-Aug 15	2 marked Chinook	1,034	60%	Creel at 23%	Creel, Test fishery, VTRs
		Dec 1-Jan 31 (2008-09)	2 marked Chinook	251	72%	Creel at 26%	Creel, Test fishery, VTRs
	Area 11 Recreational ⁷	Jun 1-Sep 30	2 marked Chinook	7,400	82%	Creel at 28%	Creel, Test fishery, VTRs
	Area 13 Recreational ⁸	May 1-Sep 30	2 marked Chinook	1,418	84%	Creel at 13%	Creel, VTRs
	Coastal Washington	Quillayute River	Feb 1-Aug 31	6 salmon with up to 2 adults. Release unmarked Chinook and Coho	223	64.0% =proportion of terminal run size	NA
Hoh River		May 16-Aug 31	6 salmon with up to 1 adult. Release unmarked Chinook	7	NA	NA	NA

⁸ For the Areas 6 and 13 selective Chinook fisheries, the retained catch was estimated via preliminary Catch Record Card estimates and the mark rate was estimated from in-sample dockside angler interview data for retained and released Chinook.

⁹ For the Area 7 winter selective Chinook fishery, the retained catch was estimated via creel surveys and the mark rate was estimated based on the pooled encounter data obtained from the test fishery, voluntary trip reports, as well as charter boat and derby census results.

Table 4–9. (Continued) Summary of 2008 Chinook mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Coastal Oregon	Tillamook Terminal Area Recreational ¹⁰	Sep1-Nov 15	2 Chinook/day of which 1 may be non-marked	NA	NA	NA	NA
	Elk River Terminal Area Recreational	Nov 1-30	2 Chinook/day of which 1 may be unmarked	0	NA	NA	NA
Columbia River	Below Bonneville - Spring Chinook Recreational	Jan 1-Feb 24	2 marked adult Chinook	20,040	86%	Creel	Creel
		Mar 24-Apr 4	1 marked adult Chinook				
	Above Bonneville - Spring Chinook Recreational	Mar 16-May 10	2 marked adult Chinook	1,763	86%	Creel	Creel
	Below Bonneville - Spring Chinook Commercial Tangle Net	Apr 1, 8, and 15	Marked Chinook	5,672	78%	Creel, Observers	Creel, Observers
Columbia River Tributaries	Cowlitz River - Spring Chinook Recreational	Jan 1-May 16, Jun 25-Jul 31	2 marked Chinook	604	90% ¹¹	Creel	Creel
	Kalama River - Spring Chinook Recreational	Jan 1-May 16, Jun 25-Jul 31	2 marked Chinook	243	90% ¹¹	Creel	Creel
	Lewis River - Spring Chinook Recreational	Jan 1-Jun 5, Jun 25-Jul 31	2 marked Chinook	850	90% ¹¹	Creel	Creel
	Sandy River - Spring Chinook Recreational	Jan 1-Jul 31	2 marked Chinook	346	90% ¹¹	No	No
	Willamette River ¹² Spring Chinook Recreational	Jan 1-Feb 28	2 marked Chinook	5,618	59%	Creel	Creel
		Mar 1-May 11	1 marked Chinook				
	Snake River (WA Waters) - Spring/Summer Chinook Recreational	Apr 22/24-May 11	2 marked Chinook (Ice Harbor/Little Goose Dam)	511	78%	Creel	Creel

¹⁰ The estimated catch and mark rates in the fishery was unable to be determined, as this small area’s catch is mixed with adjacent ocean area catches before sampling. 171 Chinook were caught during October after the regular ocean season ended. No sampling of the Elk River fishery was conducted; however, expanded Catch Record Card estimates indicate 10 Chinook were caught.

¹¹ Combined mark rate for Cowlitz, Kalama, Lewis, and Sandy rivers.

¹² Includes upper and lower Willamette and Clackamas River.

Table 4-10. Summary of 2009 Chinook mark-selective fisheries.

Area	Fishery Area	Fishery Period ¹	Regulations (per day) ²	Fishery Monitoring Conducted			
				Estimated Catch ³	Mark Rate ⁴	CWT Sampling ⁵	Encounter Estimation ⁶
West Coast Vancouver Island	Subareas 19-1 to 19-4 and Subarea 20-5	Mar 2-May 14	2 Chinook per day which may be wild or hatchery marked between the size limit of 45 cm and 67 cm or hatchery marked only Chinook over 67 cm in length.	152	59%	SHRP	Creel
Puget Sound:	Nooksack River Recreational	Sep 1-Dec 31	2 marked Chinook	42	NA	NA	NA
Freshwater	Skagit River Recreational	Jun 1-Jul 15	4 marked Chinook/day; up to 2 adults	NA	76%	Creel	Creel
	Skykomish River Recreational	Jun 1-Jul 31	2 marked Chinook	NA	NA	Creel	Creel
	Puyallup R	Aug 16-Oct 31	6 salmon/day, of which 4 may be adults; up to 2 may be adult marked Chinook	NA	77%	Creel	Creel
	Carbon River (Puyallup R.)	Sep 1-Nov 30	6 salmon/day, of which 4 may be adults; up to 2 may be adult marked Chinook	NA	91%	Creel	Creel
	Nisqually River Recreational	Jul 1-Jan 31	6 salmon/day, of which 2 may be adults; release unmarked adult Chinook	2,789	NA	Creel	NA
Puget Sound:	Area 5 Recreational ⁷	Jul 1-Aug 6	2 marked Chinook	6,397	47%	Creel at 27%	Creel, VTRs
Marine	Area 6 Recreational ⁸	Jul 1-Aug 6	2 marked Chinook	2,293	66%	Creel at 24%	Creel, VTRs

¹ Beginning and ending dates within which the fishery occurred. Fishery may have contained multiple open periods within this range.

² Bag limits and size restrictions.

³ Total number of fish retained.

⁴ Estimated mark rate from total legal sized Chinook encountered.

⁵ Method used to collect tag rate information and obtain CWTs from catch.

⁶ Program used to estimate total landed catch and number of fish released.

⁷ For the Areas 5, 7, 8-1, 8-2, 9, 10, and 11 selective Chinook fisheries in Puget Sound, the retained catch was estimated via creel surveys and the mark rate was estimated from the test fishery or voluntary-trip report encounter data.

⁸ For the Areas 6, 12, and 13 selective Chinook fisheries, the retained catch was estimated via preliminary Catch Record Card estimates and the mark rate was estimated from in-sample dockside angler interview data for retained and released Chinook.

Table 4–10. (Continued) Summary of 2009 Chinook mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Puget Sound: Marine (cont.)	Area 7 Recreational ⁷	Dec 1-Apr 30 (2009-10)	2 marked Chinook	1,418	70%	Creel at 43%	Creel, Test fishery, VTRs
	Areas 8-1 – 8-2 Recreational ⁷	Nov 1-Apr 30 (2009-10)	2 marked Chinook	1,113	77%	Creel at 47%	Creel, VTRs
	Area 9 Recreational ⁷	Jul 16-Aug 31 (2009)	2 marked Chinook	3,248	74%	Creel at 22%	Creel, Test fishery, VTRs
		Nov 1-30, 2009 and Jan 16-Apr 15, 2010	2 marked Chinook	1,585	80%	Creel at 22%	Creel, Test fishery, VTRs
	Area 10 Recreational ⁷	Jul 16-Aug 31	2 marked Chinook	1,643	79%	Creel at 31%	Creel, Test fishery, VTRs
		Oct 1-Jan 31 (2009-10)	2 marked Chinook	398	75%	Creel at 24%	Creel, Test fishery, VTRs
	Area 11 Recreational ⁷	Jun 1-Sep 30 (2009)	2 marked Chinook	3,314	62%	Creel at 26%	Creel, Test fishery, VTRs
		Feb 1-Apr 30 (2010)	2 marked Chinook	329	84%	Creel at 28%	Creel, VTRs
	Area 12 Recreational ⁸	Feb 1-Apr 30 (2010)	2 marked Chinook	300	50%	Creel at 41%	Creel, VTRs
	Area 13 Recreational ⁸	May 1-Sep 30	2 marked Chinook	1,340	86%	Creel at 5%	Creel, VTRs
Coastal Washington	Quillayute River	Feb 1-Aug 31	6 salmon with up to 2 adults. Release unmarked Chinook and Coho	192	65.6%	NA	NA
	Hoh River	May 16-Aug 31	6 salmon with up to 1 adult. Release unmarked Chinook	12	NA	NA	NA
Coastal Oregon	Tillamook Terminal Area Recreational ⁹	Sep1-Oct 31	2 Chinook/day of which 1 may be unmarked	NA	NA	NA	NA

⁹ The estimated catch and mark rates in the fishery were unable to be determined, as this small area's catch is mixed with adjacent ocean area catches before sampling. 186 Chinook were caught and landed in the Tillamook area during October after the regular ocean season ended. No sampling of the Elk River fishery was conducted; however, expanded Catch Record Card estimates indicate 215 Chinook were caught.

Table 4-10. (Continued) Summary of 2009 Chinook mark-selective fisheries.

Area	Fishery Area	Fishery Period	Regulations (per day)	Fishery Monitoring Conducted			
				Estimated Catch	Estimated Mark Rate	CWT Sampling	Encounter Estimation
Coastal Oregon (cont.)	Elk River Terminal Area Recreational	Oct 15-Nov 30	2 Chinook/day of which 1 may be unmarked	NA	NA	NA	NA
Columbia River	Below Bonneville - Spring Chinook Recreational	Jan 1-Feb 28	2 marked adult Chinook	16,923	86%	Creel	Creel
		Mar 1-15, 19-21, 26-28; Apr 2-4, 9-11, 16-18	1 marked adult Chinook				
	Above Bonneville - Spring Chinook Recreational	Mar 16-Apr 30	2 marked adult Chinook	284	86%	Creel	Creel
	Below Bonneville - Spring Chinook Commercial Tangle Net	Mar 29, Apr 7, Apr 14	Marked Chinook	4,168	82%	Creel, Observers	Creel, Observers
Columbia River Tributaries	Cowlitz River - Spring Chinook Recreational	Jan 1-Jul 31	2 marked Chinook	1,823	86% ¹⁰	Creel	Creel
	Kalama and Lewis Rivers - Spring Chinook Recreational	Jan 1-Feb 28	2 marked Chinook	507	86% ¹⁰	Creel	Creel
		Mar 1-May 11	1 marked Chinook				
	Sandy River - Spring Chinook	Jan 1-Jul 31	2 marked Chinook	897	86% ¹⁰	No	No
	Willamette River ¹¹ Spring Chinook Recreational	Jan 1-Feb 28	2 marked Chinook	5,535	76%	Creel	Creel
		Mar 1-Apr 30	1 marked Chinook (lower river)				
Snake River (WA Waters) - Spring/Summer Chinook Recreational	Apr 24-May 17 (Little Goose Dam area)	2 marked Chinook	508	84%	Creel	Creel	

¹⁰ Combined mark rate for Cowlitz, Kalama, Lewis, and Sandy rivers.

¹¹ Includes upper and lower Willamette and Clackamas River.

5 MASS MARKING DEVELOPMENTS

After ten years of development, Northwest Marine Technology (NMT) began marketing their Auto Fish Systems in the early 2000s. These are commonly referred to as “automatic trailers” and can be used for both marking and tagging fish. These high-tech computerized trailers are run by a specially trained operator. Once the fish are loaded into the trailer the fish are automatically sorted by size, and then marked and/or tagged, counted, and transported out of the trailer without anesthesia or handling. The trailers can also provide as good or better tagging and clipping quality than manual crews (Hand et al. 2007). Agencies have found them particularly useful for tagging DIT groups where consistency is essential. Trailers are available in two sizes, with five or six processing lines. The newer trailers have six lines, have a clipping station in the back for crews to process additional fish, and can process 7,500 fish per hour (Vander Haegen and Blankenship 2010). These new trailers sell for approximately US\$1,300,000 (2010). Agencies in the USA now own 22 of these trailers and they are widely used in Washington, Oregon, California, and Idaho, where there are large numbers of uniformly sized juvenile fish ready to be processed in a short period of time. Manual tagging is still widely used by some agencies and was the only approach used by CDFO from 2005 to 2009.

6 ELECTRONIC TAG DETECTION

There are two primary pieces of equipment used in electronic tag detection (ETD), both manufactured by NMT. These include the hand held wand, and the semi-mobile tube or tunnel detector (Olson 2007; Vander Haegen and Blankenship 2010). The wand is used by holding the fish in one hand and rubbing the wand across the snout in an up-and-down motion. The wand is the instrument of choice in situations with low fish numbers or undeveloped sites. It may be the only feasible detection method in small, remote off-loading sites and where fish occur that are too large to be passed through a tube detector. No calibration of the equipment is required and the wands are very portable. The cost of a wand is approximately US\$5,000 and 800 of these have been purchased by agencies. The tube detector is a rectangular piece of equipment, set at an angle, and a fish is slid downward through a central tunnel. Fish are automatically counted then separated by tag status through a terminal sorting gate. Pre-sampling calibration is required for this highly sensitive device. Tube detectors are the desired equipment when sampling high numbers of fish; however, its practical use is limited to sites with level ground and clean fish. Staging adaptations (e.g., tote lifts and custom tables) are often employed to reduce time and labor at large hatcheries. At processing plants, fabrication of site-specific structures may be required to insert the equipment into the processing operations. The cost for a tube with a sorting gate is approximately US\$29,700 and 114 of these units have been purchased by agencies. To increase the detectability of tags, the manufacturer (NMT) subsequently increased their quality control to ensure the wire they purchased met a higher standard for magnetic moment.

The accuracy of the ETD equipment is critical to the implementation of mass-marking and has been an issue of concern. In 1996, three agencies conducted field tests to measure the detection rate of the wand and the tube on Coho Salmon (ASFEC 1997). The results of these tests showed tag detection rates >99% for both types of equipment. These tests were conducted on returning

adult Coho tagged with standard length (1.1 mm) CWT wire. Based on these relatively high detection rates, ETD appears to be more accurate than visual sampling, due to its objectivity and the requirements of processing each fish individually. Training and continuing use of proper sampling techniques is key to achieving acceptable results with either electronic sampling method.

Preliminary wand tests indicated lower detection rates on the larger Chinook Salmon. Subsequently, experiments were conducted by wanding individual fish both externally (on the snout) and inside the mouth (on the palate). This combined method demonstrated a higher level of tag detection (Table 6-1). The detection capability of the tube was also examined in two of these tests, resulting in the detection of 100% of the tags (Table 6-1).

Table 6-1. Results of field tests for electronic tag detection on Chinook Salmon.

Agency	Fish Sampled	Number of CWTs	Detection Rate (%)		
			Standard Wanding	Combined Wanding	Tube Detector
WDFW ¹	2,838	1,332	90.5	99.3	100
NWIFC ²	479	368	99.7	99.7	100
ADFG ³	964	547	95.4	99.6	NA

¹ Washington Department of Fish and Wildlife (Vander Haegen et al. 2002).

² Northwest Indian Fisheries Commission (Olson and Schmitt 2001).

³ Alaska Department of Fish and Game (Josephson 2004).

In 2001, based on the results of these studies, the PSMFC Mark Committee recommended that the combined wanding technique (also called mouth wanding) become the standard sampling method for adult Chinook. Unfortunately, one problem resulting from using the combined method was abrasion to the surface of the wand from rubbing against the teeth of the fish. Implementation of mouth wanding was therefore delayed until the abrasion problem was resolved. Northwest Marine Technology addressed the issue by developing a titanium shield for the wand. By 2003, most agencies had retrofitted their wands for use on Chinook and the combined method became the standard for sampling adult Chinook.

Contrary to the above studies, several blind studies in the northern BC troll fishery and Albion Chinook gillnet test fishery by CDFO (Parken and Riddell 2007) showed highly variable tag detection rates when using the wand on Chinook. They found that detection rates varied by sampler, fish size, equipment, sampling environment, and adipose-mark status of the fish. Most importantly, missed detections occurred at higher rates in unmarked fish when compared to marked fish (19% and 9%, 55% and 24%, 76% and 0%, respectively in the troll study and two gillnet studies). However, the highest rates of missed tags occurred where there was a high percentage of unmarked fish in the sample, indicating a pragmatic issue more confounded with sampling technique than equipment capabilities.

Wand sensitivity again improved in 2008 when NMT developed the ability to test and increase the detection range of wands to a new standard (3.2 mm). Wands that meet this new standard are

marked with a silver battery cap. It was hoped that wanding inside the mouth would no longer be needed on Chinook with these more sensitive wands. The Northwest Indian Fisheries Commission conducted a field study of these tuned up wands on returning Chinook at three hatcheries in the fall of 2009. Preliminary results indicate that 99.1% of the tags (1,628 tags out of 3,158 samples) were detected when only sampling on the surface of the heads. However, some of the missed tags were detected with subsequent mouth wanding. Using these upgraded wands to sample Chinook carcasses on the Chilliwack River in 2009, Parken and Brown (CDFO, personal communication) found that missed detections occurred at a higher rate in unmarked fish (29%) than marked fish (3%) and the rate of missed detections for marked fish remained within the range of rates measured in 2004 (15%) and 2005 (<1%).

Because of the disparate results of the field studies, controversy remains regarding the reliability of wands for detecting CWTs in Chinook. Agencies in the USA make extensive use of the wands and believe they have satisfactory high detection rates. Conversely, CDFO has adopted a policy of not using wands in either fishery or escapement sampling, except in the following circumstances: 1) a tube detector fails or breaks down; or 2) a Chinook is too large to pass through the tube detector.

In 2010, NMT announced their intent to produce a new type of wand that is more sensitive than the ones in current usage. This development may have potential for resolving the controversial use of wands on Chinook.

7 DATA QUALITY CONTROL / QUALITY ASSURANCE ISSUES

During the time period covered in this report (2005-2009), a number of quality control and quality assurance issues were identified and continue to be addressed. These issues were succinctly stated in the *Report of the Expert Panel on the Future of the Coded Wire Tag Recovery Program for Pacific Salmon* (Hankin et al. 2005). The report stated:

“... problems with the accuracy of data continue to persist. For example, instances have been encountered where fish are reported as being recovered prior to release, estimates of catch have been reported with leading values truncated resulting in erroneous sampling fractions, unique identifiers for catch samples are not required sometimes making it impossible to associate recoveries with specific sampling strata. Although individual records have unique identifiers, those identifiers are not permanent, making it difficult to construct audit trails and trace sources of discrepancies between different versions of databases. Lastly, agency interpretations of reporting field content and recording are sometimes inconsistent between agencies and over time.”

In June of 2008, the PSC Working Group on Data Standards met to address these issues. As a result, database changes were implemented and validation procedures were strengthened by upgrading the RMIS database to Version 4.1 in 2009. Stronger validation was added for release field 12 for Related Group ID. Recovery field 6 (Recovery ID) is now permanent, which will help identify data changes made by the reporting agencies over time. Also, data validation now

does not allow recoveries to be reported with a date prior to the reported release date. The new version also requires identification of fisheries as selective, mixed selective, or not selective in return years 2008 and beyond. More details on these changes are available at:

http://www.rmpc.org/files/PSC_V041_FinalSummary_2008.pdf

The specifications for each reporting field have been written so as to be as unambiguous as possible in order to avoid misinterpretations of those fields. Data integrity reports are compiled regularly to identify data problems in RMIS, allowing these problems to be corrected promptly. As data users identify quality control issues, the validation procedure is updated to protect the database from recording data errors.

A shared database of fishery regulations is another identified need. Analysts need to know applicable fishery regulations and distinct data reporting for each regulatory stratum. A table with time periods, areas, and regulations for each fishery could be shared between agencies informally until a standardized reporting format is established by the PSC Working Group on Data Standards. At that point, PSMFC could then incorporate the new database into RMIS for coast wide assessment requirements. Analysts require area, time period, retention regulations, gear restrictions, and bag limits, including mixed bag specifications (e.g., jack/adult or marked/unmarked and slot limit/size limits), and anything which may affect vulnerability to fishing gear due to specific regulations. Washington Department of Fish and Wildlife is building a draft fisheries regulations database which could become a model for such a regional regulations database.

A five-year funding program headed by the Coded-Wire Tag Implementation Team began in 2009 and has helped address some of the problems identified by the CWT Expert Panel. Items addressed include increasing tagging rates, improvements in sampling effort and equipment, and improving CWT database systems. This program ends after 2013, so long-term solutions need to be developed prior to the program's conclusion.

8 ISSUES AND RECOMMENDATIONS

The following issues and recommendations were identified by the SFEC during the time period of this report:

8.1 Post-Season Reports on Mark-Selective Fisheries

- Post-season reports on MSFs are required for each MSF prosecuted to document which fisheries actually took place and whether there were any changes in the way the fisheries and sampling programs were conducted relative to the proposal. Post-season fishery information is requested from fishery managers for inclusion in the PSC post-season reports. Templates for post-season reporting of MSFs have been developed and provided to fishery managers since 2006; however, much of this information has been provided only in recent years, and not for all MSFs.
- In the Understanding of the PSC Concerning Mass Marking and Mark-Selective Fisheries “Agencies are to report fishery and stock-age-specific estimates of mortalities for unmarked fish impacted by MSFs to the PSC technical committees.” There is confusion on

how encounters and incidental mortalities, including catch and release mortalities, should be reported and who should be reporting them, as estimates have not been provided by any agency. The SFEC should coordinate with the PSC Chinook and Coho Technical committees and develop a template for agencies to report these estimates.

8.2 Regulation Database

- Compilation of regulation data will facilitate estimates of MSF mortalities; however, no official format has been developed for sharing this data. The SFEC recommends that a standard format be developed.

8.3 Double Index Tag (DIT) Programs

- Mark-selective fisheries have increased and are now impacting more indicator stocks. Indicator stocks that are likely to be encountered in MSFs should have a DIT group. However, there are gaps in DIT coverage representing wild stocks. Therefore, the SFEC has identified additional stocks for consideration to be double index tagged.

8.4 Fishery Sampling

- Mass marking programs, DIT programs, and CWT sampling programs are not adequately coordinated between agencies. Examples of this include the following: 1) mark-selective fisheries have been implemented without coordination with sampling programs, resulting in information needed for evaluation not being collected; and 2) mass marking by some agencies has increased the costs of sampling fisheries and escapements by other agencies, particularly where visual sampling occurs and significant numbers of mass marked fish are encountered.
- Estimates of unmarked CWT recoveries in fisheries and escapements are needed so that cohort reconstructions can be carried out on unmarked DIT releases. Electronic sampling is necessary to recover the DITs; however, visual sampling in the presence of DITs still occurs. For example, fall Chinook fisheries are currently visually sampled in the Columbia River and on the Oregon Coast. In addition, with the expansion of Chinook marine MSFs where more indicator stocks are now being impacted in these fisheries, electronic CWT sampling needs to be expanded to include all fisheries impacting DIT stocks.
- To estimate CWT recoveries, sampling strata should be defined such that there are not different regulations within an individual stratum. Currently, CWT sampling programs are not adequately synchronized within agencies and multiple regulations do exist within strata. This reduces the ability to estimate catch and CWT recoveries by fishery area and time stratum at which the fishery was prosecuted.

8.5 Escapement Sampling

- In more recent years, a greater proportion of the estimated CWT recoveries are occurring in terminal area fisheries and escapement where sampling programs often provide more imprecise estimates than compared to other fisheries. Hatchery sampling for DIT groups appears to be fairly comprehensive, but expanded estimates of recoveries from stream surveys are missing for some of the indicator stocks.

9 REFERENCES

- ASFEC (Ad-hoc Selective Fishery Evaluation Committee). 1997. Pacific Salmon Commission, Joint Ad-hoc Selective Fishery Evaluation Committee Report, Reliability and feasibility of using electronic detection for recovery of coded wire tags in coho salmon. Ad-hoc Selective Fishery Evaluation Committee report to the Pacific Salmon Commission TCASFEC (97)-1, February 1997.
- Hand, D.M., W.R. Brignon, J. Rivera, and D.E. Olson. 2007. Comparative tag retention, clip quality, and injuries of juvenile spring Chinook salmon marked by an automated marking trailer and manual marking trailer at Warm Springs NFH. United States Fish and Wildlife Service, Columbia River Fisheries Program Office, Vancouver Washington.
- Hankin, D.G., J.H. Clark, R.B. Deriso, J.C. Garza, G.S. Morishima, B.E. Riddell, C. Schwarz, and J.B. Scott. 2005. Report of the expert panel on the future of the coded wire tag program for Pacific salmon. PSC Tech. Rep. No. 18, November 2005. 300 p (includes agency responses as appendices). Online at: <http://www.psc.org/pubs/CWT/EPfinalreport.pdf> (November 2005).
- Josephson, R. 2004. Attachment 11, 2004 Mark Meeting Minutes, Pacific States Marine Fisheries Commission, Portland, Oregon.
- Olson, R., and D. Schmitt. 2001. Electronic detection of coded-wire tags in Chinook salmon: a comparison of two techniques using a “wand” detector. 2001 Mark Meeting Minutes, Pacific States Marine Fisheries Commission, Portland, Oregon.
- Olson, R. 2007. Logistics and technology of MM and electronic CWT recovery in Pacific salmon. Presentation at AFS Annual Meeting. Available: http://www.rmpec.org/files/mass-mkt-n-select-fisheries/OLSON_Sept%20120_Mark%20selective%20fishing.pdf (May 2008).
- Parken, C., and B. Riddell. 2007. Operational issues with MM and mark-selective fisheries. Presentation at AFS Annual Meeting. Available: http://www.rmpec.org/files/mass-mkt-n-select-fisheries/Parken_Sep5_920_MarkSelectiveFishing.pdf (May 2008).
- Vander Haegen, G., and L. Blankenship. 2010. Advances in coded wire tag technology: Meeting changing fish management objectives. Pages 127-140 in Wolf, K.S, and J.S. O’Neal, editors. PNAMP Special Publication: tagging, telemetry, and marking measures for monitoring fish populations – a compendium of new and recent science for use in informing technique and decision modalities: Pacific Northwest Aquatic Monitoring Partnership Special Publication 2010-002. Available: http://www.rmpec.org/files/TTM_Compndium_2010.pdf (April 2010)
- Vander Haegen, G.E., A.M. Swanson, and H.L. Blankenship. 2002. Detecting coded wire tags with handheld wands: effectiveness of two wand techniques. North American Journal of Fisheries Management 22:1260-1265.

APPENDIX A. Double Index Tag (DIT) Groups Released in 2005-2009

Table A1. Coho double index tag (DIT) groups by stock and area released in 2005-2009 (2003-2007 Broods).

Area	Natural/Unmarked Stock Representation	DIT Stock	Hatchery	Tag Code by Release Year									
				2005		2006		2007		2008		2009	
				Marked	Unmarked	Marked	Unmarked	Marked	Unmarked	Marked	Unmarked	Marked	Unmarked
Strait of Georgia	East Coast	Big	Big	No longer a DIT– last release year was 2004									
	Vancouver Island	Qualicum R	Qualicum R	No longer a DIT– last release year was 2004									
		Goldstream R	Goldstream R	No longer a DIT– last release year was 2004									
	Lower Fraser	Chilliwack R	Chilliwack R	No longer a DIT– last release year was 2004									
		Inch Cr	Inch Cr	185525	185526	185218	184835	185922	185923	185930	185931	180178	180179
Johnstone Strait	North Vancouver Island	Quinsam R	Quinsam R	184153	184154	184220	184314	185843	185847	185851	185862	186119	186124
				184141	184142	181663	184315	185842	185848	185901	185855	186118	186123
				184139	184140	184401	185333	185944	185846	185852	185854	186117	186122
				184115	182709			185853	185863	186120	186121		
						182710							
				184138									
Thompson River	Thompson River	Coldwater R	Spilus Cr	No longer DIT– last release year was 2004									
West Coast Vancouver Island	West Coast Vancouver Island	Robertson Cr	Robertson Cr	No longer DIT– last release year was 2004									
Puget Sound	Nooksack	Nooksack	Kendall Cr	632671	632670	633095	632695	633575	633576	634170	634169	634491	634492
	Skagit	Skagit	Marblemount	632273	632274	633099	633197	633571	633572	633691	633690	634484	634485
	Stillaguamish/Snohomish	Skykomish	Wallace R	632679	632678	633266	633267	633680	633681	634176	634175	634493	634494
	Mid Puget Sound	Green R.	Soos Cr	632673	632674	633199	633269	633684	633685	634173	634174	634488	644489
	South Puget Sound	Puyallup	Voights Cr.	632684	632690	633098	633097	633574	633573	633692	633693	634483	634482
	North Hood Canal	Quilcene	Quilcene NFH	052296	052297	052765	052764	053278	053279	053965	053966	054473	054474
				052298	052299	052767	052766	053280	053281	053972	053973	054475	054476
				052364	052365	052769	052768	053282	053283	053974	053975	054477	054478
				052366	052367	052699	052770	053284	053285	053976	053977	054479	054480

Table A1. (Continued) Coho double index tag (DIT) groups by stock and area released in 2005-2009 (2003-2007 Broods).

Area	Natural/Unmarked Stock Representation	DIT Stock	Hatchery	Tag Code by Release Year									
				2005		2006		2007		2008		2009	
				Marked	Unmarked	Marked	Unmarked	Marked	Unmarked	Marked	Unmarked	Marked	Unmarked
Puget Sound (cont.)	North Hood Canal (cont.)	Quilcene	Quilcene Net Pens	No longer DIT									
		Port Gamble	Port Gamble Net Pens	210554	632675								
	South Hood Canal	George Adams	George Adams	632290	632672	633265	633264	633679	633678	634168	634167	634486	634487
	Strait of Juan de Fuca	Elwha	Lower Elwha Tribal	210549	632680	210587	632692	210676	633187	633980	210747	210785	634375
WA Coast	North Coast	Makah	Makah NFH	052397	052468	052469	052880	053299	053364	053893	053894	054494	054495
				052399	082398	052881	052882	053365	053366	053895	053896	054496	054497
				052465	052464	052883	052884	053367	053368	053897	053898	054498	054499
				052467	052466	052885	052886	053369	053370	053899	053964	054564	054565
		Sol Duc	Sol Duc	632684	632690	633190	633189	633677	633676	634091	634090	633184	633183
	North Central Coast	Queets	Quinault Salmon R.	210572	632691	210635	633191	633175	210692	633481	210731	210772	634181
				051071	051072	050368	051074	053290	053291	053979	053980	054485	054486
				051069	051070	051073	051499	053292	053293	053981	053982	054487	054488
				051065	051066	051075	051565	053294	053295	053983	053984	054489	054490
				051067	051068	051564	052470	053296	053297	053985	053986	054491	054492
	Grays Harbor	Satsop	Bingham Cr.	632480	632481	633092	633091	633193	633192	633675	633674	634571	634572
	Willapa Bay	Forks Creek	Forks Creek	632682	632681	633092	633091	633193	633192	633673	633672	634579	634580
Columbia River	Lower Columbia R - Type N	Lewis River	Lewis River	631983	631985	633087	633088	633580	633581	633669	633668	634578	634577
								633565	633566	633671	633670	634576	634575
	Lower Columbia River	Eagle Creek	Eagle Creek NFH	054860	053353	050484	050483	052586	052587	053774	053775	054182	054183
				Sandy	Sandy	094116	094117	094308	094309	094503	094420	094637	094638
Oregon Coast	Oregon South Coast	Rogue River	ODFW Cole M. Rivers	094051	094050	094250	092963	094457	094456	No longer DIT			

Table A2. Chinook double index tag (DIT) groups by stock and region released in 2005-2009 (2003-2008 Broods).

Area	Natural/ Unmarked Stock Representation	DIT Stock	Hatchery	Tag Code by Release Year									
				2005		2006		2007		2008		2009	
				Marked	Unmarked	Marked	Unmarked	Marked	Unmarked	Marked	Unmarked	Marked	Unmarked
Southern BC	Lower Fraser	Chilliwack	Chilliwack	185026	185027	185030	185241	185710	185659	186240	186243		
				185028	185029	185032	185154	185658	185609	186242	186241	180480	180481
				185042	185041	185240	185239	185706	185607			180482	180483
				185044	185043	185238	185031	185708	185657				
	Interior Fraser	Lower Shuswap	Shuswap	No longer DIT– last release year was 2004									
Puget Sound	Nooksack River spring	Nooksack spring	Kendall Creek	632785	632784	633172	633171	633387	633388	634274	634275	634799	634798
				632273	632274	632889	632888	633176	633480	633486	633489	634373	634374
	Skagit River springs	Skagit spring yearlings	WDFW Marble- mount							633487	633491		
										633488	633490		
	North Puget Sound summer/fall	Skykomish summer fingerlings	WDFW Wallace River	632789	632788	633381	633380	633887	633888	634281	634282	634844	634845
	North Puget Sound fall	Samish fall fingerlings	WDFW Samish	632794	632795	633369	633368	633389	633390	634272	634273	634841	634842
	Mid Puget Sound fall	Grovers Cr.	Suquamish Grovers Cr	210592	632790	633285	210682	633579	210737	210790	634276	210822	634796
632967				632966	633372	633371	633882	633883	634286	634285	634864	634865	
South Puget Sound fall	Nisqually fall fingerlings	Nisqually Hatchery at Clear Cr.	632783	210589	633286	210681	633391	210736	210788	634277	210824	634795	
Hood Canal fall	George Adams fall fingerlings	WDFW George Adams	632897	632796	633366	633365	633875	633876	634271	634270	634873	634872	
WA Coast	Washington Coast fall fingerling	Quinault Lake fall fingerlings	Quinault Lake Hatchery	210596	210597	210680	210683	210732	210734	210746	210792	210844	210845
											634185	634189	634870

Table A2. (Continued) Chinook double index tag (DIT) groups by stock and region released in 2005-2009 (2003-2008 Broods).

Area	Natural/ Unmarked Stock	Representation	DIT Stock	Hatchery	Tag Code by Release Year									
					2005		2006		2007		2008		2009	
					Marked	Unmarked	Marked	Unmarked	Marked	Unmarked	Marked	Unmarked	Marked	Unmarked
Columbia River	Lower Columbia spring	Lewis R spring yearlings	WDFW Lewis River	631792	631892	632394	632393	632866	633394	633397	633396	634388	634387	
	Willamette River spring	Clackamas	ODFW	094914	094015									
		McKenzie spring yearlings	ODFW McKenzie River	093927	093928	094138	094221	094333	094019	094616	094617			
Lower Columbia Fall	Cowlitz Spring Creek	WDFW USFWS	This is the indicator stock; however, double index tagging is not possible due to tagged and unmarked upriver restoration program											
			052266	051578	052874	052872	052577	053484	054294	054275	054864	054865		
		052267	051796	052971	052969	052570	052584	054276	054277	054866	054867			
		051794	052264	052972	052970	052588	052589	050685	050686					
		051795	052265	052873	052871	052897	052898	053767	053766					
						054336	054335	052978	053768					
						052895	052896	053782	053783					
						054318	054334	053776	053777					
						053592	053485	053778	053779					
									053780	053781				
								053874	053875					
	Little White	USFWS			052876	052875	053886	053888	054191	054193	053890	054970		
							053887	053889	054192	054194	054366	054971		
	Columbia Lower R.	ODFW Big Creek					094526	094548	094646	094662	No DIT in 2009			
Oregon Coast	South Oregon Coast	Rogue River Sub-yearlings	ODFW Cole M Rivers	092043	092045	094337	094336							

APPENDIX B. Coded-wire-tag Exploitation Rate Indicator Stocks

Table B1. PSC Coho CWT exploitation rate indicator stocks and DIT groups.

Area	Natural/Unmarked Stock Representation	Exploitation Rate Indicator Stocks	DIT	
BC North Coast	North Coast Wild	Lachmach		
	Skeena	Toboggan		
Interior Fraser	Thompson River	Coldwater		
		Salmon Lemieux		
Georgia Basin	East Coast Vancouver Island	Big Qualicum Goldstream River		
	East Coast Vancouver Island Wild	Black Creek		
	Lower Fraser	Inch Creek	√	
	Lower Fraser Wild	Salmon River		
	North Vancouver Island	Quinsam River	√	
West Coast Van Is.	West Coast Vancouver Island	Robertson Creek		
Puget Sound	Nooksack	Skookum Creek		
		Lummi SeaPonds		
		Kendall Creek	√	
	Skagit	Skagit (Marblemount)	Baker River (Wild)	√
		Stillaguamish ¹ /Snohomish	Skykomish (Wallace River) Tulalip Bay (Bernie Gobin)	√
	Mid Puget Sound	Green River (Soos)	√	
	South Puget Sound	Puyallup (Voights)	Kalama Creek H.	√
South Sound Net Pens				
Kalama Creek (Nisqually)				
Hood Canal	North Hood Canal	Quilcene NFH	√	
		Quilcene Net Pens		
		Port Gamble Net Pens ²		
South Hood Canal	George Adams		√	
Strait of Juan de Fuca	Dungeness	Dungeness		
	Strait of Juan de Fuca	Lower Elwha	√	

¹ No tagging occurred within the basin.

² Double index tagging discontinued after 2005 release (2003 broodyear).

Table B1. (Continued) PSC Coho CWT exploitation rate indicator stocks and DIT groups.

Area	Natural/Unmarked Stock Representation	Exploitation Rate Indicator Stocks	DIT	
Washington Coast	North Coast	Makah	√	
		Sol Duc (falls)	√	
	North Central Coast	Queets Wild ³		
		Salmon River Fish Culture ⁴	√	
	Quinault	Quinault	√	
	Grays Harbor		Satsop Springs Ponds	
			Bingham Creek (late)	
			Bingham Creek (early)	√
			Friend's Landing	
			Humpulips R. H.	
			Skookumchuck H.	
			Bingham Creek Wild	
	Willapa Bay		Chehalis River Wild	
Forks Creek H. (late)				
Forks Creek H.			√	
Nemah H.				
Columbia Basin	Lower Columbia River	Nasell H.		
		Lewis River (Type N)	√	
		Lewis River (Type S)	√	
		Big Creek H.		
		Cowlitz River H. (Type N)		
		Clackamas R.		
		(Eagle Creek NFH)		
		Green R. (Type S)		
		(North Toutle H.)		
		Elochoman (fall)		
		Elochoman (late fall)		
		Grays R. (Type S)		
		Fallert Creek (Type S)		
		Eagle Creek	√	
		Sandy River H.	(dropped)	
		Tanner Cr. (BON H.)	√ new	
		Deep River Net Pens		
Washougal R.				
Kalama R. Falls (Type N)				
Blind Slough (CEDC Youngs Bay, Sandy H.)				
Youngs River and Bay				
Oregon Coast	Oregon South Coast	Rogue River (Cole Rivers) ⁵		

³ DIT stock released from Salmon River Hatchery.

⁴ DIT group not currently an indicator stock.

⁵ DIT discontinued after 2007 release (2005 brood year).

Table B2. PSC Chinook CWT exploitation rate indicator stocks and DIT groups.

Area	Natural/Unmarked Stock Representation	Run Type	Exploitation Rate		
			Indicator Stocks	DIT	
S.E. Alaska	Southeast Alaska	Spring	Alaska Spring		
British Columbia	North/Central BC	Summer	Kitsumkalum		
	West Coast Vancouver Is	Fall	Robertson Creek		
		Georgia Strait	Summer	Puntledge	
	Fall		Quinsam		
	Fall	Big Qualicum			
		Fall	Cowichan		
Puget Sound	North Puget Sound	Spring	Nooksack Spring Fingerling	√	
		Fall	Samish Fall Fingerling	√	
	Central Puget Sound	Spring	Skagit Spring Yearling	√	
			Skagit Spring Fingerling		
		Summer	Skagit Summer Fingerling		
		Fall	Skykomish Summer Fingerling ²	√	
			Fall	Stillaguamish Summer/Fall	
	Hood Canal	Fall	George Adams Fall Fingerling	√	
	South Puget Sound	Spring	White River Spring Yearling ³		
			Fall	Green River Fall Fingerling	√
			Grover Creek Fall Fingerling	√	
			Nisqually Fall Fingerling	√	
			South Puget Sound Fall Yearling		
	Strait of Juan de Fuca	Fall	Hoko Fall Fingerling		
	Washington Coast	North Wash. Coast		Sooes Fall Fingerling	
			Queets Fall Fingerling		
			Quinault Lake Fall Fingerling ²	√	
	Willapa Bay	Fall	Forks Creek Fall Fingerling ²	√	
Columbia Basin	Columbia River (WA)	Fall Tule	Cowlitz Tule	(dropped)	
			Spring Creek Tule	√	
		Fall Bright	Little White Salmon ²	√	
		Summer	Columbia Summers ⁵		
	Columbia River (OR)	Fall Tule	Columbia Lower River Big Creek	√	
	Upper Columbia R.	Fall Bright	Columbia Upriver Bright		
			Hanford Wild		
			Fall	Priest Rapids ⁴	√
Lower Columbia R.	Fall Bright	Lewis River Wild			
	Spring	Willamette Spring ⁵	(dropped)		
		Spring	Lewis River Spring ²	√	
	Snake River	Fall Bright	Lyons Ferry ⁵		
Oregon Coast	North Oregon Coast	Fall	Salmon River ⁵		

¹ These stocks are coded-wire tagged, but there is no quantitative CWT escapement data, useful for distribution only.

² DIT group not currently an indicator stock.

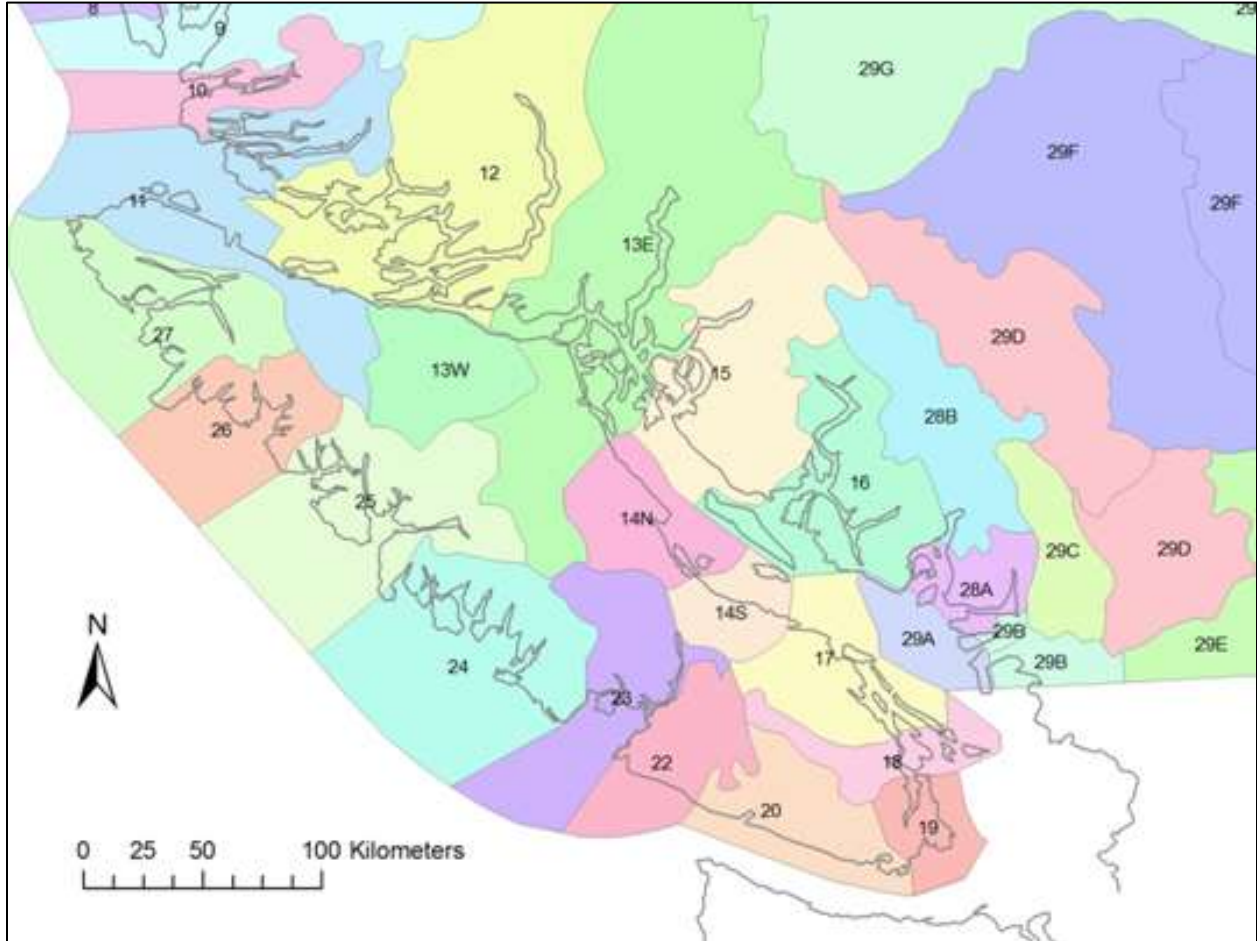
³ No longer marked.

⁴ New in 2010.

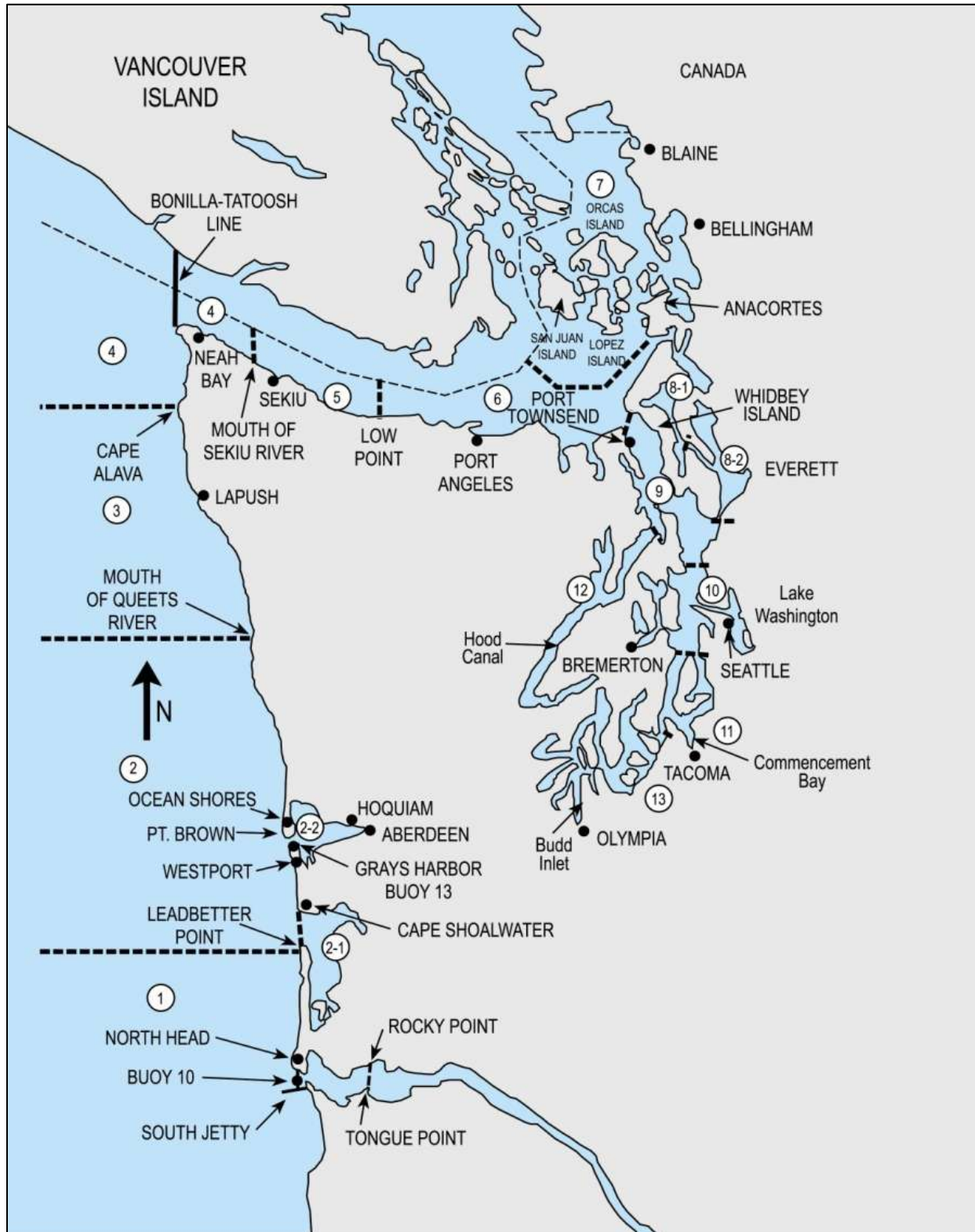
⁵ Recommended for DIT group.

APPENDIX C. Maps of Fishery Management Areas

Canadian DFO Southern BC Fishery Areas



Washington Coast and Puget Sound Marine Fishery Areas



Oregon Ocean Salmon Management Areas and Major Port Locations

