

PACIFIC SALMON COMMISSION
SELECTIVE FISHERIES EVALUATION COMMITTEE

REVIEW OF 2009 MASS MARKING AND
MARK SELECTIVE FISHERY PROPOSALS
REPORT SFEC (09)-1

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Acronyms

ADFG	Alaska Department of Fish and Game
BC	British Columbia
CDFG	California Department of Fish and Game
CDFO	Canadian Department of Fisheries and Oceans
CTC	Chinook Technical Committee
CoTC	Coho Technical Committee
CWT	Coded Wire Tag
DIT	Double Index Tagging
ETD	Electronic Tag Detection
IDFG	Idaho Department of Fish and Game
MM	Mass Marking
MOU	Memorandum of Understanding
MSF	Mark Selective Fishery
NSF	Non-Selective Fishery
ODFW	Oregon Department of Fish and Wildlife
PSC	Pacific Salmon Commission
PST	Pacific Salmon Treaty
SFEC	Selective Fishery Evaluation Committee
SFEC-AWG	SFEC- Analytical Work Group
SFEC-RCWG	SFEC- Regional Coordination Work Group
WCVI	West Coast Vancouver Island
WDFW	Washington Department of Fish and Wildlife

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Executive Summary

Throughout this report a mass marked (MM) fish refers to a fish with an adipose fin clip and a double index tag (DIT) group includes two CWT groups, one marked and one unmarked. The terms ‘marked’ and ‘clipped’, and likewise ‘unmarked’ and ‘unclipped’, are used interchangeably.

Summary of 2009 Mass Marking Proposals

Marking Programs

Seventeen proposals (8 coho and 9 Chinook) were received for MM in 2009 (Appendix D). The Selective Fishery Evaluation Committee (SFEC) believes these proposals cover all but one MM program with international PSC implications.

Approximately 38 million coho are proposed to be MM coast wide in 2009 (Table 1; Figure 1A), a level comparable to that proposed in 2008. The vast majority of hatchery coho production intended for harvest, from southern BC and southern US hatcheries is now MM. Currently there are 19 coho salmon DIT groups (Table 1), of which the majority is released from Puget Sound or Washington coastal facilities. Two are released in BC and three from in the Columbia River basin.

Approximately 101 million Chinook are proposed to be MM in 2009 from southern US Chinook hatcheries (Table 1; Figure 1B), a level comparable to that proposed for 2008. Essentially all hatchery Chinook production from southern US hatcheries intended for harvest is now MM. The one exception is 6.7 million Up-river Brights (URBs) from the Columbia Basin. This Priest Rapids group is scheduled to be MM next year. Currently there are 16 Chinook salmon DIT groups (Table 1), of which nine are released from Puget Sound facilities, with three spring stock releases and four fall stock releases in the Columbia River.

Sampling and DIT Programs

Assuming recent exploitation rates and sampling programs, the SFEC estimates the proposed mass marking of southern US Chinook stocks in 2009 will result in annual encounters of untagged marked Chinook in sampling program of approximately 10,000 untagged and MM Chinook in Alaska and 25,400 untagged MM Chinook in Canada, and 9,300 untagged MM Chinook in California. These estimates do not include expected encounters of the 6.7 million URBs that may be MM at Priest Rapids next year. Approximately 1,800 untagged and MM coho are projected to be encountered in Alaska and 13,800 untagged MM coho in Canadian sampling programs (Table 4).

Prior to MM, the adipose fin clip was employed as a visual indicator for fish containing a CWT. Consequently, sampling programs were designed which collected heads from fish with missing adipose fins to locate and extract CWTs. With MM, a large number of marked fish do not contain CWTs; further, CWTs must be recovered from both marked and unmarked fish to obtain data for DIT releases to estimate fishery impacts. Electronic tag detection (ETD) equipment has been developed as a means to efficiently identify marked and unmarked fish containing CWTs.

However, ETD is not employed coast wide because of continuing reservations by some agencies regarding the cost and practical feasibility of incorporating this technology into their sampling programs. ADF&G, CDFO, ODFW, and CDFG all conduct sampling programs which will not recover the unclipped component of DIT programs required to assess impacts of MSFs.

Washington State (WA) continues to adequately sample and report CWT recoveries of unmarked DIT releases in marine MSFs and some freshwater MSFs. Starting in 2008, Canada also committed to full electronic sampling in all commercial fisheries for Chinook and reporting of all DIT CWTs. Coho in all commercial fisheries have also been electronically sampled with the exception of the coho landed by the Northern BC 'ice boat' fleet. Visual sampling only is used to recover CWTs in that fishery. Canada continues to rely on the Voluntary Head Recovery Program to recover CWTs from non-selective recreational fisheries and thus, no unmarked DIT recoveries are available from them.

Issues and Concerns

Proposals.

Timeliness: MM proposals were submitted within the required timeframe. MSF proposals have not been consistently submitted to the PSC as required. CDFO submitted proposals for MSFs within the Fraser River and approach areas as required but did not submit any proposals for South Coast marine area fisheries until January of 2009. These included a first-time proposal for a recreational Chinook MSF on the West Coast of Vancouver Island (WCVI). Oregon has never submitted a proposal for coho MSFs in their coastal area. The SFEC recommends that agencies prioritize the task of developing proposals and have them submitted by the due date for any planned MSF in marine or freshwater.

Completeness: In general all information requested was supplied for MM proposals. The agencies did an improved job of submitting proposals for MSFs in 2009. However, some proposals were incomplete and some were never submitted. Table 6 summarizes the information missing from the proposals submitted.

Templates: An alternative template has been provided for MSF proposals, modeled on the CDFO proposals submitted in January of 2009 for 2010 fisheries. This is a spreadsheet template that provides the same information as the original MSF template.

Post Season Reports

Every year the SFEC has requested that agencies send post-season reports with information necessary for analysis of CWT data for each MSF prosecuted. In general, the agencies have not complied with this PSC requirement to provide these reports. In order to reduce duplicative reporting, the SFEC recommended that preliminary information on the conduct of MSFs be included as a component of the PST requirement for exchange of post-season fishery reports. Although some information may be available in agency reports issued at a later date, the failure to provide information requested in post-season reports interferes with SFEC's capacity to assess impacts on the viability of the CWT program and the ability to assess total mortality under PSC regimes for Chinook and Southern coho. It is recommended that agencies prioritize this task and

work with their SFEC representatives to develop and provide these reports annually to the PSC in the required time frame.

New Chinook MSFs

New MSFs are proposed by WDFW in ocean fisheries in Washington Statistical Areas 1 and 2, and by WDFW and ODFW in the Columbia River on fall Chinook. CDFO provided new proposals for a Chinook MSF in the Strait of Juan de Fuca (SJDF) that was prosecuted for the first time in 2008 and for new fisheries in areas off the WCVI coast (Table 5 and Table 6). The PSC indicator stocks expected to be encountered in the Washington Statistical areas 1 and 2 and the Columbia River MSFs targeting fall Chinook are shown in Table 12. Some of these stocks are currently DIT stocks, but the SFEC recommends that further stocks be considered for inclusion as DITs.

As MSFs are now proposed for fisheries off WCVI and WA Statistical Areas 1 and 2, fish taken in non-selective fisheries (NSFs) in all coastal areas can soon be expected to have been subject to prior MSFs. The SFEC recommends that agencies review their sampling methods with respect to the capacity to recover fish from marked and unmarked DIT groups in order to provide data for estimation of the impact of MSFs on wild stocks of interest

Mixed Bag Regulations

Regulations to implement MSF are becoming increasingly complex. Different types of mixed bag regulations are part of the MSFs proposed by Canada, Washington and Oregon for recreational fisheries. In most cases this is a mixed bag, where only marked adults may be kept but marked and unmarked juveniles may be retained, but as MSFs expand a variety of types of mixed bag regulations are being proposed (Table 13). The SFEC is not aware of adequate methods for estimating impacts on marked and unmarked fish under mixed bag regulations and the agencies proposing these mixed bag regulations should assist in developing the analytical tools to measure the impacts of these fisheries.

Recommendations and Issues Requiring PSC Direction

Proposal Review Process

It is recommended that the PSC request agencies to submit proposals for all potential 2010 MM and MSFs, and for agencies to provide both preliminary and final post-season reports on the conduct of MSFs within the timeframe adopted by the PSC. Agencies need to prioritize these tasks so that proposals and post MSF reports are completed and submitted in a timely manner.

Interagency Coordination and Cooperation

MM, DIT, and CWT sampling programs are not sufficiently coordinated to support analysis by PSC technical committees. It is also not clear that agencies are collecting adequate and necessary data to permit appropriate estimation of unmarked CWTs recoveries in fisheries and escapements so that cohort reconstructions can be carried out on unmarked DIT releases. With the expansion of Chinook marine fisheries, the geographical range of electronic CWT sampling needs to be expanded and the number of DIT stocks needs to be increased. The PSC should continue to support technical and policy processes to develop agreements to clarify responsibilities for maintaining a functional CWT system; these processes should build upon

recommendations presented by the CWT Work Group in 2008. Encounters of large numbers of MM Chinook are impacting catch sampling programs in northern fisheries; for example, approximately 30% of the Chinook caught in the troll fishery with a missing adipose fin do not contain a CWT. The increased costs to deal with the additional marked fish are not quantified, but will impact the program.

1 Introduction

The Selective Fisheries Evaluation Committee (SFEC) is charged with evaluating potential impacts of Mass Marking (MM) and Mark-Selective Fisheries (MSFs) on the viability of the Coded Wire Tag (CWT) system (Appendix A). The SFEC serves as a clearing house to facilitate coordination and reporting on MM and MSF programs among the Parties, affected agencies, and existing coast wide and regional committees established to monitor activities related to the CWT program. The SFEC continues to review procedures and protocols for MM, sampling, and evaluation developed by the proponent(s) and, if appropriate, develop and recommend alternative procedures in consultation with relevant technical committees of the Pacific Salmon Commission (PSC).

In addition, the SFEC has a role in developing and evaluating methods for analyses of CWT data in the presence of MM and MSFs, establishing database requirements, and developing tools for agency use in developing proposals and analyzing data. The SFEC includes two working groups: the Regional Coordination Work Group (RCWG) and the Analytical Work Group (AWG). The RCWG is tasked with reviewing MM proposals, and the AWG is tasked with reviewing MSF proposals and evaluating post-facto impacts of MSFs.

Beginning in 2002, agencies that intended to engage in MM or MSFs were requested to provide specific information on an annual schedule that would permit the SFEC to provide timely advice to the PSC. Agency proposals for mass marking plans were requested for all hatchery Chinook and coho stocks expected to be encountered in fisheries affected by PSC regimes. As stated in the *Understanding of the PSC concerning Mass Marking and Selective Fisheries* (Appendix A), proposals for continuing programs are requested no later than November 1 of the year prior to implementation. Proposals for new or substantially changed MM proposals are requested by June 1 of the year prior to implementation. Templates for MM and MSF proposals were developed in 2002, and agencies have been annually requested to provide their information to the SFEC in this format (Appendices B and C).

The SFEC reviewed proposals for MM activities and MSFs that would occur in 2009. This report summarizes the results of the review of MM and MSF proposals received between October and December 2008, identifies issues and concerns, and provides recommendations.

Throughout this report a MM fish refers to a fish with an adipose fin clip and a double index tag (DIT) group includes two CWT groups, one marked and one unmarked. The terms ‘marked’ and ‘clipped’, and likewise ‘unmarked and ‘unclipped’, are used interchangeably.

2 RCWG Review of Mass Marking Proposals

2.1 Review Process for Mass Mark Proposals

A total of 17 MM proposals (8 coho and 9 Chinook) were received by the PSC for 2009 activities (Appendix D). The proposals are summarized in Table 1 and represent all but one MM program with international ramifications and/or sampling impacts on other agencies. No proposal was submitted for the possible marking of Snake River fall Chinook from the Oxbow facility by IDFG. Proposals were not requested for spring and summer Chinook stocks from the upper Columbia and Snake River Basins, given the lack of marine CWT recoveries from these groups as identified in previous reviews.

In order to evaluate the impacts of MM proposals on coast-wide sampling programs, marking agencies were requested to provide projected fishery encounters of MM fish in the proposals. A standardized method of estimating fishery encounters was provided to the agencies and this method is described in the MM proposal template in Appendix B.

2.2 Results of Review

2.2.1 Mass Marking Levels

Approximately 38 million coho are proposed to be MM in 2009 coast wide (Table 1). Although there has been a gradual decline in coastwide coho production, there have been no significant changes to proposed marking levels from BY 2001 to BY 2008. The total BY 2008 coho hatchery production from Southern BC, Washington, and Oregon, the area and stocks covered by the 2009 proposals, is projected at approximately 44.5 million released fish. Trends in marking from BYs 1997 to 2008 in the geographical distribution and the total level of the actual (1997 to 2005 and proposed (2006 to 2008) mass marking are shown in Figure 1A. Geographical details of the proposed releases by mark and tag status for BY 2008 are displayed in Figure 2A. A vast majority of the coho production and essentially all coho intended for harvest, from Southern BC and Southern US hatcheries is MM. For the production that is not MM, approximately 1.2 million are tagged and unmarked (i.e., DIT groups), and approximately 2.3 million are intentionally left unmarked for restoration or supplementation programs (Figure 2A). The majority of these unmarked fish are Columbia River stocks.

The total BY 2008 southern US Chinook hatchery production from Washington and Oregon, for the area and stocks covered by the 2009 proposals, is projected at approximately 135 million released fish. Temporal trends for BYs 1997 to 2008 in the geographical distribution and total level of the actual (1997 to 2005) and proposed (2006 to 2008) MM are shown in Figure 1B. Geographical details of the proposed releases by mark and tag status for BY 2008 are displayed in Figure 2B.

Approximately 101 million Chinook are proposed to be MM from southern US Chinook hatcheries in 2009 (Table 1). This is comparable to the number proposed in the 2008 proposals. This represents most of the production intended for harvest, with the exception of 6.7 million Upriver Brights (URBs) from Priest Rapids (Columbia River) which are intended to be MM next

year. For the production that is not MM, approximately 16.5 million are both CWT and marked, approximately 5.8 million are tagged and unmarked, and approximately 4.8 million are intentionally left unmarked for restoration programs (Figure 2B). No MM of Chinook is anticipated for hatchery production by California, British Columbia, or Alaska.

2.2.2 DIT Groups

DIT groups provide information necessary for estimation of total MSF impacts on unmarked fish. Appendices F and G list the coho and Chinook salmon PSC indicator stocks, including those that are DITs. WDFW has maintained DIT groups for both species, but the number of DITs outside Washington has declined (Table 1, Appendix F and G). Based on their own analysis and cost concerns, ODFW has decided to discontinue all of their DIT groups, and CDFO maintains only one Chinook DIT group (Appendix G). As new MSFs are being proposed both in BC and in areas off the Washington coast and in the Columbia River for fall Chinook, an evaluation of the DIT programs is necessary.

Table 1. Proposed mass marking (MM) of coho and Chinook salmon in 2008 and 2009.

Species	Area	Run	Agency	DIT Groups	Mass Marking (millions)		Significant Changes from 2008
					2008	2009	
Coho	Southern BC		CDFO	2	7.1	7.2	
	Puget Sound		WDFW/Tribal	7	10.6	10.9	
			USFWS	1	0.5	0.3	
	WA Coast		USFWS	2	0.5	0.7	
			WDFW/Tribal	4	5.2	5.5	
Columbia Basin		USFWS	1	0.3	0.3		
		WDFW	2	8.7	8.5		
		ODFW	0	4.2	4.2	DIT dropped 2009	
OR Coast		ODFW	0	0.5	0.4	DIT dropped 2008	
Total Coho					37.6	38.0	
Chinook	Puget Sound	Spring	WDFW	2	0.4	0.4	
		Summer	WDFW	1	2.0	2.0	
		Fall	WDFW & Tribal WDFW/Tribal	6	29.9	30.9	
	WA Coast	Spring	WDFW	0	0.4	0.4	
		Fall	USFWS	0	2.3	0.5	Production shortfall
			WDFW/Tribal	1	9.3	8.0	
	N. OR Coast	Spring	ODFW	0	0.3	0.5	
	S. OR Coast	Spring	ODFW	0	2.0	2.0	DIT dropped 2008
	Columbia Basin	Spring	ODFW	2	5.3	4.3	Spring Creek Hat. reduction DIT to be added in 2009
			WDFW	1	3.0	2.7	
USFWS			2	14.2	10.4		
Fall		Tule	WDFW	1	18.0	23.5	
		URB	ODFW	1	5.3	5.5	
			ODFW	0	7.7	7.7	
Snake R. Fall	USFWS	0	1.6	1.6			
		IDFG	0	NA	NA		
Total Chinook					101.7	101.3	

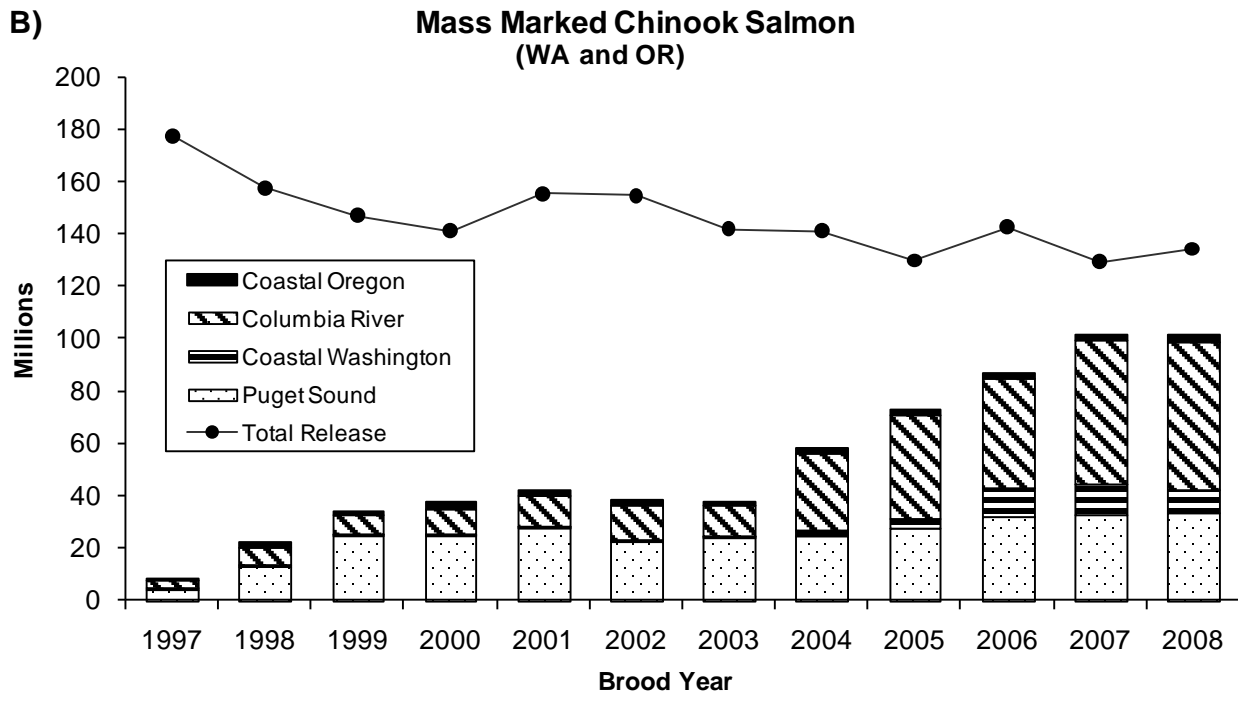
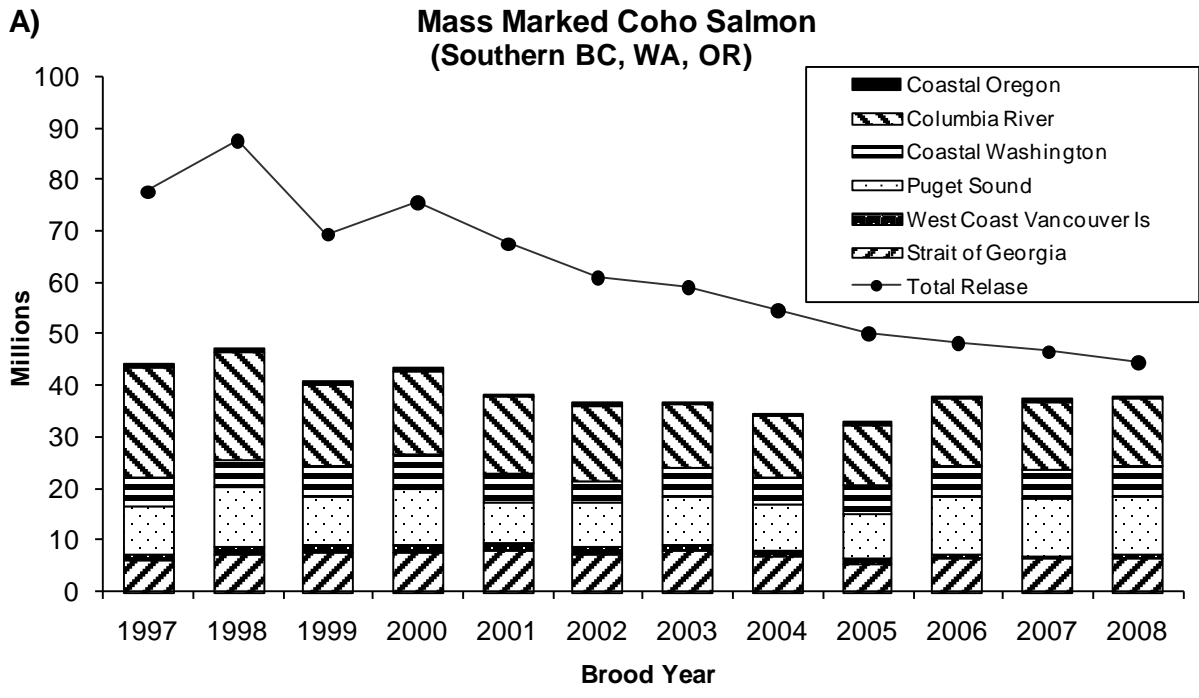


Figure 1. Number of coho and Chinook salmon mass marked (ad clip only) and released, by regions and brood year; 2006-2008 broods are proposed numbers. The solid line represents total hatchery releases, by brood year (proposed release numbers for 2006-2008).

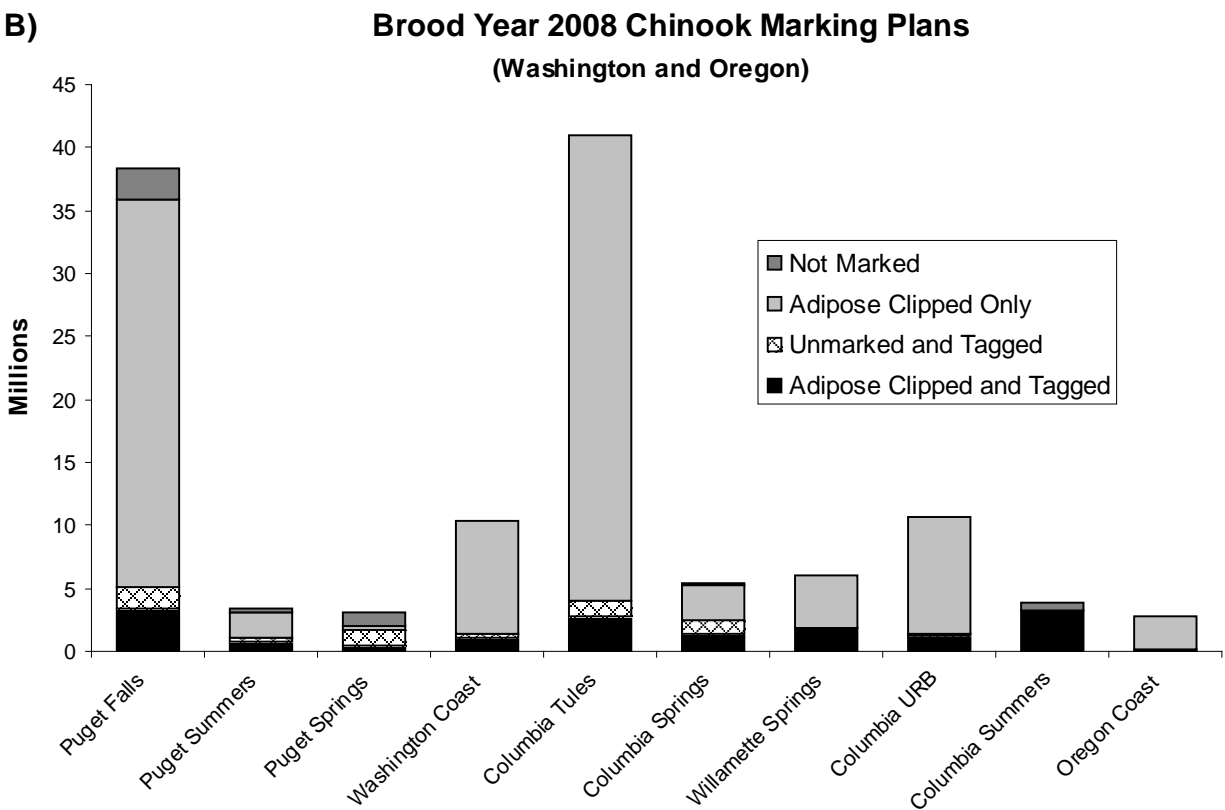
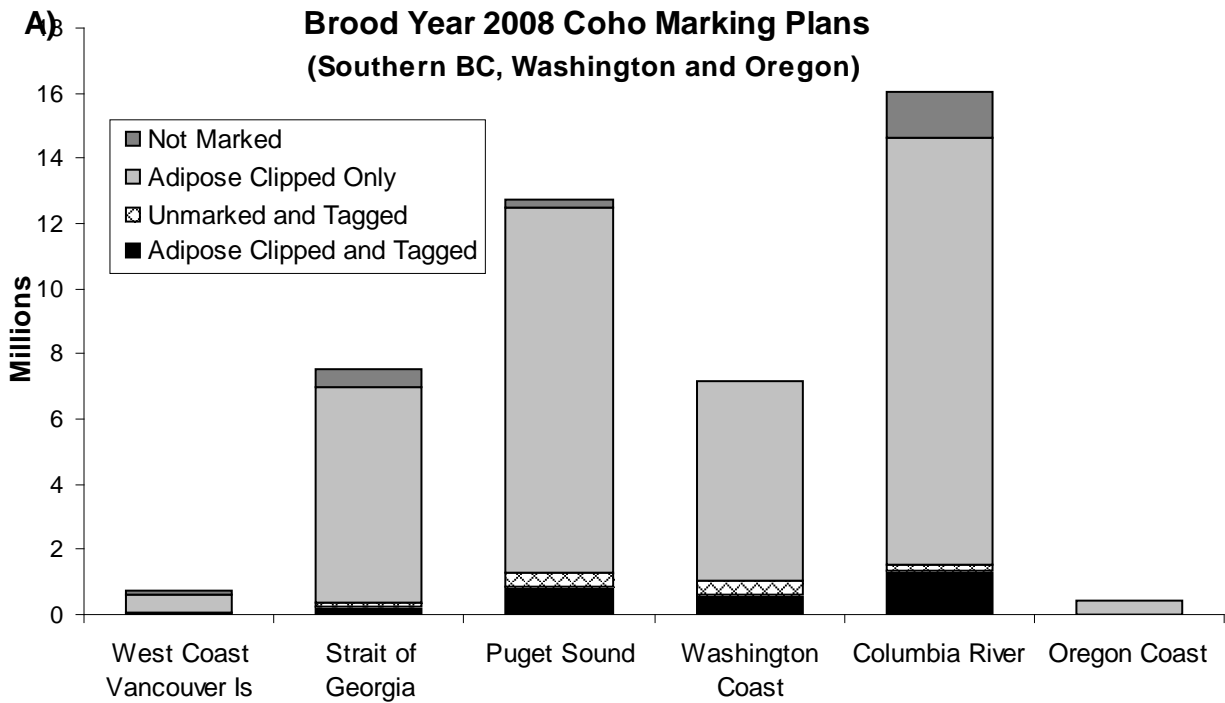


Figure 2. Projected coho and Chinook releases for brood year 2008, by region and mark status.

2.2.3 Current Agency Sampling Methods

Two methods are currently used to detect fish containing CWTs. The traditional visual sampling relies upon the adipose fin clip as a visual indicator for a CWT. When visual sampling is used, only CWTs from clipped fish will be detected. Electronic tag detection (ETD) uses electronic gear (wand or tube) to detect CWTs in marked and unmarked fish. It should be noted that when clipped fish are first visually separated in the sample and electronic gear is then used to detect tags in the clipped fish, this is considered visual sampling because tags are only recovered from clipped and tagged fish.

ETD has not been implemented for all fisheries encountering MM fish. CWT sampling methods for coho and Chinook are summarized in Table 2 and Table 3, respectively. In general, ETD has become the standard CWT sampling method in Washington, Idaho, and Oregon (except for Columbia River and Oregon coast fall Chinook fisheries, where fish are sampled visually). Visual CWT sampling (using the adipose fin clip as an external sign of the presence of a tag) remains the standard method in Alaska and California. In BC the situation is more complex, where sampling methods depend on species, location, and the type of fishery.

Alaska has no plans to convert to ETD sampling and is concerned about the large numbers of adipose-clipped fish without tags in their sampling programs. There has been an increase from approximately 7% to 30% of marked and untagged Chinook caught in the troll fishery since the implementation of mass marking. The increased costs to deal with the additional marked fish are not quantified, but will impact the program.

Canada relies on voluntary recoveries of marked coho and Chinook in recreational fisheries, while the current restricted commercial fisheries are electronically or visually sampled depending on species and location. As in Alaska, the program has seen an increase in the submission of heads without tags as well as a decrease in the rate of head returns as fewer anglers turn in heads. Since 2008, only coho landed by 'ice' or 'day' boats' in the northern BC troll fishery are not subject to electronic sampling and recovery of unmarked DIT CWTs. In that fishery, coho are sampled visually and CWTs from marked fish only are recovered. South of Cape Caution located just northward of the northern tip of Vancouver Island on the mainland coastline, electronic sampling is being used for both species in commercial fisheries.

California does not employ ETD. However, approximately 363 MM coho and 9,281 Chinook are projected to be encountered in California (Table 4), which could impact California's sampling program.

Some controversy remains regarding the reliability of wands for detecting CWTs in Chinook. CDFO has adopted a policy of not using wands in either fishery or escapement sampling except in exceptional circumstances: 1) a tube detector fails or breaks down, or 2) a Chinook is too large to pass through the tube detector. A blind study carried out by CDFO over two years in the Albion Chinook test fishery with trained staff using hand-held wands found that CWTs were missed when actually present and detected when not present at a rate significantly greater than expected by chance (Parken and Riddell 2007). Most importantly, missed detections and false detections occurred at higher rates in unmarked fish compared to marked fish. The results of the

Canadian study contradict all other previous blind studies of Chinook wandling, where detection rates exceeded > 91% (Olson 2007).

Prior to 2008, agencies used a technique called “mouth wandling” on larger Chinook. This combined technique involved wandling the fish both externally (on the snout) and inside the mouth (on the palate). The manufacturer of the wands now has the ability to test and increase the detection range of wands to a new standard. Wands that meet this new standard are marked with a silver battery cap. It is believed that wandling inside the mouth is no longer needed on Chinook with these “improved” wands. However, it is suggested that agencies conduct new field tests with these “improved” wands to measure their detection rates.

Estimated Sampling Encounters

A summary of projected MM Coho that may occur in agency sampling programs is provided in Table 4. This will result in estimated encounters of approximately 1,835 untagged and marked recoveries in Alaska and approximately 363 encounters of untagged and marked coho salmon in California – the two geographical areas where coho are not MM or electronically sampled. It is also projected that approximately 12,206 untagged and MM coho recoveries will occur in Canadian fisheries that rely on visual sampling methods.

A summary of projected MM Chinook that may occur in agency sampling programs is provided in Table 4. The proposed MM of southern US Chinook stocks will result in estimated encounters of approximately 10,000 untagged and MM Chinook in Alaska, 25,400 untagged MM Chinook in Canada, and 9,300 untagged MM Chinook in California, assuming recent exploitation rates and sampling programs. We emphasize these regions because agencies in these areas rely partially or completely on visual sampling to recover CWTs. These increases are due to the migratory patterns of stocks added to MM proposals in recent years – Washington Coast and Columbia River fall Chinook. Some of these stocks are classified as “far-north” migrating (Washington coast fall Chinook and Columbia River Up-River Brights) and contribute heavily to both Alaskan and Canadian fisheries (Table 4). Expected increases in California recoveries are due to Columbia River fall Chinook.

Table 2. Fishery sampling methods for tagged coho in 2008.

Region	Fishery	Type of Sampling	Comments
Alaska	Commercial Sport	Visual Visual	Marked fish are then wanded
Northern BC	Commercial Sport	Visual Voluntary (Visual)	Some terminal areas are unsampled Anglers are encouraged to turn in heads from marked coho only; therefore tag recoveries of unmarked coho are not expected.
West Coast Vancouver Island	Commercial Sport	Electronic Voluntary (Visual)	Incidental recoveries in fisheries on other species; non-retention of unmarked coho Anglers are encouraged to turn in heads from marked coho only; therefore tag recoveries of unmarked coho are not expected.
Strait of Georgia	Commercial Sport	Electronic Voluntary (Visual)	Incidental recoveries in fisheries on other species; non-retention of unmarked coho Anglers are encouraged to turn in heads from marked coho only; therefore tag recoveries of unmarked coho are not expected.
Puget Sound	Commercial Sport	Electronic Electronic	
Washington Coast	Commercial Sport	Electronic Electronic	
Oregon Coast	Commercial Sport	Electronic Electronic	
Columbia River	Commercial Sport	Electronic Electronic	
California	Commercial Sport	Visual Visual	

Table 3. Fishery sampling methods for tagged Chinook in 2008.

Region	Fishery	Type of Sampling	Comments
Alaska	Commercial Sport	Visual Visual	
Northern BC	Commercial Sport	Electronic Voluntary (Visual)	All Chinook are now electronically sampled and all tags are decoded (this has been the case since 2007). Anglers encouraged are to turn in heads from marked Chinook only; therefore tag recoveries of unmarked Chinook are not expected.
West Coast Vancouver Island	Commercial Sport	Electronic Voluntary (Visual)	Anglers are encouraged to turn in heads from marked Chinook only; therefore tag recoveries of unmarked Chinook are not expected.
Strait of Georgia	Commercial Sport	Electronic 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 Sport	Electronic Electronic	
Washington Coast	Commercial Sport	Electronic Electronic	
Oregon Coast	Commercial Sport	Visual Visual	Marine fisheries target fall Chinook, which are not MM in Oregon. CWTs from unmarked Chinook from other regions will not be recovered.
Columbia River	Commercial Sport	Electronic Electronic	Fall Chinook visually sampled Fall Chinook visually sampled
California	Commercial Sport	Visual Visual	

Table 4. Projected numbers of sampled fish in fishery CWT sampling programs assuming the number of releases for brood year 2008 MM coho and Chinook releases (actual number of fish encountered in samples will depend upon sampling rates). For this analysis the following brood years were used: 2001-2003 coho; 1999-2001 Chinook..

Species	Area/Run	Agency	DIT Group	2009 MM (BY 2008)	Projected Encounters in Future Fisheries														
					Alaska		NBC		SBC		WA (CST/PS)		Columbia River		OR Coast		California		
					Com	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Spt	
Coho	Southern BC	CDFO	2	7,185,000	766	21	265	129	946	8,406	3,569	4,703	0	0	0	48	0	0	
	Puget Sound	WDFW	9	10,905,000	697	0	304	340	346	1,259	44,533	22,956	0	372	2,761	0	0	0	
		USFWS	1	320,000	encounters included with USFWS WA Coast														
	WA Coast	USFWS	2	660,000	28	4	62	16	28	379	15,154	5,748	0	8	100	839	0	0	
		WDFW	4	5,470,000	305	0	214	103	129	331	5,214	4,853	76	76	294	1,151	0	0	
	Columbia R	USFWS	1	300,000	0	0	0	0	0	0	0	66	54	24	0	24	0	0	
		WDFW	2	8,548,754	0	0	0	0	137	218	1,320	16,767	14,782	2,210	587	6,978	0	186	
ODFW		1	4,222,000	0	0	0	0	0	165	242	1,990	9,467	872	234	1,739	0	159		
OR. Coast	ODFW	1	375,000	14	0	0	0	0	15	22	115	15	19	24	156	0	18		
Total				37,985,754	1,835		1,433		12,359		127,252		27,975		14,935		363		
Chinook	Puget Sound	Spring	WDFW	1	350,000	encounters included with WDFW falls													
		Summer	WDFW	1	2,010,000	encounters included with WDFW falls													
		Fall	WDFW	7	30,850,000	201	16	136	1	4,799	1,490	17,933	4,331	10	0	447	0	0	0
	A Coast	Spring	WDFW	0	400,000	17	0	40	2	7	7	37	5	0	0	7	0	0	0
		Fall	USFWS	0	540,000	683	132	638	57	100	28	1,255	30	0	0	0	0	0	2
	Columbia	WDFW	2	7,950,000	1,721	96	785	73	0	24	799	469	24	11	0	12	0	0	
		Spring	ODFW	0	498,000	138	19	113	20	229	20	135	66	0	0	244	62	0	0
	S. OR. Coast	Spring	ODFW	1	2,024,000	137	0	95	0	174	0	225	192	83	0	2,838	248	2,715	203
	Columbia	Spring	ODFW	2	4,287,000	846	180	490	171	954	143	321	190	1,603	1,378	205	189	0	0
			WDFW	1	2,740,000	224	21	147	0	184	20	71	143	200	441	54	21	0	0
		Fall Tules	USFWS	2	11,340,000	388	32	80	12	3,142	277	2,264	1,279	9,220	535	1,311	264	13	0
			WDFW	2	23,484,600	2,108	359	1,133	275	2,114	344	1,925	1,399	1,363	739	1,003	340	0	0
		ODFW	1	5,500,000	1,186	1,467	558	355	5,269	884	3,174	2,658	7,917	1,601	3,741	700	5,864	484	
URBs ¹	ODFW	0	7,694,000	encounters included with ODFW fall Tules															
USFWS	0	1,600,000	encounters included with USFWS fall Tules																
Total				101,268,139	9,971		5,181		20,209		38,901		25,125		11,686		9,281		

¹ This estimate does not include 6.7 million URBs that may be mass marked at Priest Rapids in 2010.

3 AWG Review of the Mark Selective Fisheries Proposals

In 2006, the SFEC simplified the format of the template for MSF proposals to focus on the description of the fishery and the sampling plan and to identify the stocks impacted by the fishery (Appendix C). The information to be provided in the proposal template is required to estimate mortalities of unmarked fish from DITs.

3.1 2009 MSF Proposals

MSFs have been prosecuted for coho since 1998 and for Chinook since 2003. For 2009, 31 proposals were received for 33 MSFs (Table 5). Proposals for coho and Chinook salmon MSFs for 2009 were received for CDFO, WDFW and ODFW fisheries; these are summarized in Table 6. The due date for MSF proposals is November 1 (Appendix A).

3.1.1 Coho MSFs

Nine proposals were received for coho salmon MSFs to occur during 2009 (Table 6). These proposals provide details on ongoing WDFW marine recreational MSFs in Puget Sound, along the Washington Coast and commercial MSFs for coho also along the Washington Coast. WDFW has also submitted MSF proposals for two freshwater recreational MSFs; one in the Nooksack River and one in the Yakima River. One joint proposal was submitted by ODFW and WDFW for a coho sport MSF in the lower Columbia River. No proposals were received for ongoing coho MSFs in Oregon. Proposals were received for ongoing coho MSFs in marine and freshwaters in BC. The proposal template was not used for these BC proposals. A spreadsheet format was used which was in general accessible. MSFs were proposed for the Fraser River Area, and coho caught in chum fisheries were also to be released. Continuing coho MSFs were proposed for WCVI, Johnstone and Georgia Straits, and the Strait of Juan de Fuca.

3.1.2 Chinook MSFs

Twenty-two proposals were received for Chinook salmon MSFs for 2009 (Table 5). Five proposals from WDFW are ongoing MSFs in freshwater areas around Puget Sound. Two additional freshwater recreational MSFs were proposed; one for the Skokomish River in Puget Sound and one for the lower Snake River near upstream of its confluence with the Columbia River. Three proposals were received from WDFW for ongoing Puget Sound MSFs in marine areas; these include both summer and winter fisheries in all areas of Puget Sound. Two new proposals were received from WDFW for both recreational and commercial Chinook salmon MSFs along the Washington Coast in Marine Areas 1 and 2.

ODFW submitted a proposal for a MSF on Willamette spring Chinook (Table 5). In 2008 Oregon implemented a Chinook sport MSF in terminal areas along coastal Oregon and submitted a proposal for this fishery in 2009.

Six proposals were submitted by ODFW and/or WDFW for Columbia River Chinook MSFs, both recreational and commercial. Four proposals were for ongoing spring/summer Chinook MSFs; two were for new fisheries on fall Chinook (Table 5).

In 2008, Canada implemented a MSF for Chinook salmon in the Strait of Juan de Fuca during the period March to May. In January 2009 Canada submitted proposals for MSFs for Chinook in

the Strait of Juan de Fuca, and for new fisheries in statistical areas 24-26 in inside areas of WCVI and area 124 and the near shore area of 125 in outside areas of WCVI. Two possible types of regulations are being considered for the Juan de Fuca fishery: 1) standard MSF regulations where 2 marked Chinook > 45 cm can be retained per day or 2) a type of mixed bag regulations where 2 Chinook per day can be retained which may be marked or unmarked between 45 to 67 cm but marked only above 67 cm. The latter regulations were employed in the 2008 fishery. The regulations considered for the WCVI areas are a variation of mixed bag regulations where 2 Chinook per day > 45 cm can be retained, one of which can be unmarked but it must be < 77 cm. These CDFO proposals were not submitted in the template format, but in a table format which provided the information requested in the template. The SFEC has accepted this alternative table format but has made some revisions to the format and content (Appendix E).

Table 5. MSF proposals (P) received, occurrence of fishery (F), and post season report (R) received for MSFs that occurred 2003-2008 or are expected to occur in 2009. A “√” indicates that a proposal or report was submitted or a fishery occurred and a “x” that no fishery occurred or no proposal or report was received as of November 2008. A “N” indicates a new proposal was received for a MSF. A “L” indicates that a proposal was submitted late for the current year (after November, 2008) and so was not reviewed. Blank cells indicate that no MSF was planned. A * indicates that a description was received of the fishery in a format other than the proposal template

Fishery and Location	Proposal ID assigned by PSC	2003			2004			2005			2006			2007			2008			2009		
		P	F	R	P	F	R	P	F	R	P	F	R	P	F	R	P	F	R	P	F	R
Targeting Hatchery Coho																						
Sport, Southern BC	MSF-FOC-02	√	√	√	√	√	√	√	√	√	√	√	√	√	x	√	√	x	L*			
Commercial, Southern BC	MSF-FOC-05				√	x		√	√	√	√	√	√	x	√	x	√	√	x	L*		
Sport, Lower Fraser freshwater	MSF-FOC-06	x	√	√	x	√	√	x	√	√	√	√	√	√	x	√	√	x	√*			
FSC, Lower Fraser freshwater	MSF-FOC-03										√	√	√	√	√	x	√	√	x	√*		
Sport, Washington coast	MSF-WDFW-06	√	√	x	√	√	x	√	√	x	√	√	x	x	√	x	√	√	x	√		
Commercial, WA areas 1-4	MSF-WDFW-15	x	√	x	x	√	x	x	√	x	x	√	x	x	√	x	√	√	x	√		
Sport, Puget Sound	MSF-WDFW-07	x	√	x	√	√	x	√	√	x	√	√	x	x	√	x	√	√	x	√		
Sport, Nooksack R	MSF-WDFW-18	x	√	x	x	√	x	x	√	x	x	√	x	x	√	x	x	√	x	N		
Sport, Lower Columbia R (since 1999)	MSF-ODFW/WDFW-04	x	√	√	x	√	√	x	√	x	x	√	x	x	√	x	L	√	x	√		
Commercial troll, Oregon coast (since 1999)		x	√	√	x	√	√	x	√	x	x	√	x	x	√	x	x	√	x	x		
Sport, Oregon coast		x	√	√	x	√	√	x	√	x	x	√	x	x	√	x	x	√	x	x		
Targeting Hatchery Chinook																						
Strait of Juan de Fuca, BC, selected subareas																		√	L*			
WCVI sport, selected subareas, mainly inside																				N & L*		
Sport summer, WA area 5&6	MSF-WDFW-02	√	√		√	√	x	√	√	x	√	√	x	√	√	x	√	√		√		
Sport summer, WA area 9,10,11,13	MSF-WDFW-11													√	√	x	√	√		√		
Sport winter, WA area 5-13, (actual areas vary with year)	MSF-WDFW-16 replaces 08							√	√	x	√	√	x	√	√	x	√	√				
Sport, Nooksack R	MSF-WDFW-13				√ ¹	√	x	√	√	x	√	√	x	√	√	x	√	√		√		
Sport, Skykomish R	MSF-WDFW-01	√	√	x	√	√	x	x	√	x	x	√	x	√	√	x	√	√		√		
Sport, Carbon & Puyallup R	MSF-WDFW-09	x	√	x	x	√	x	√	√	x	√	√	x	√	√	x	√	√		√		

Table 5. MSF proposals (P) received, occurrence of fishery (F), and post season report (R) received for MSFs that occurred 2003-2008 or are expected to occur in 2009. A “√” indicates that a proposal or report was submitted or a fishery occurred and a “x” that no fishery occurred or no proposal or report was received as of November 2008. A “N” indicates a new proposal was received for a MSF. A “L” indicates that a proposal was submitted late for the current year (after November, 2008) and so was not reviewed. Blank cells indicate that no MSF was planned. A * indicates that a description was received of the fishery in a format other than the proposal template

Fishery and Location	Proposal ID assigned by PSC	2003			2004			2005			2006			2007			2008			2009		
		P	F	R	P	F	R	P	F	R	P	F	R	P	F	R	P	F	R	P	F	R
Sport, Upper Skagit R	MSF-WDFW-12							x	√	x	x	√	x	√	√	x	√	√			√	
Sport, Nisqually R, Jul-Jan	MSF-WDFW-14							x	√	x	x	√	x	√	√	x	√	√			√	
Sport, Skokomish Chinook	MSF-WDFW-20																				N	
Sport, Columbia R (on summer run)	MSF-ODFW/WDFW-02	√	√	x	√ ¹	√	x	√	√	x	x	√	x	x	√	x	L	√			√	
Sport, Lower Columbia R (on spring run)	MSF-ODFW/WDFW-01	√	√	x	√ ¹	√	x	√	√	x	x	√	x	x	√	x	L	√			√	
Commercial, Lower Columbia R (on spring run with tangle net)	MSF-ODFW/WDFW-03	√	√	x	√ ¹	√	x	√	√	x	x	√	x	x	√	x	L	√			√	
Commercial, Lower Columbia R (on spring run with large net)	MSF-ODFW/WDFW-03	x	√	x	x	√	x	x	√	x	x	√	x	x	√	x	L	√			√	
Sport, Yakima R (on spring run)	MSF-WDFW-03-2008				√	√	x	x	x		x	x		x	x		L	√	√		√	
Sport, WA Coast Chinook, Areas 1-2	MSF-WDFW-19																				N	
Troll, WA Coast Chinook Areas 1-2	MSF-WDFW-21																				N	
Sport, Col. R. fall Chinook	MSF-ODFW/WDFW-05																				N	
Sport, Lower Snake R fall Chinook	MSF-WDFW-5																				N	
Sport, Willamette R on spring run)	MSF-ODFW-01	√	√	√	√	√	√	√	√	x	√	√	x	x	√	x	√	√	√		√	
Sport, Oregon coast	MSF-ODFW-02																x	√			N	

1 Submitted in 2004 as a multi-year proposal for fisheries. Continuing fisheries, since 2006, are required to have annual proposals.

Table 6. Summary description of MSFs proposed for 2009-2010 for which proposals were submitted in 2008 by agencies or for fisheries that have occurred in past but no proposal has been submitted in 2008..

Location	Agency & Proposal No.	Fishery Type and Period	Regulation	Sampling	Indicator stocks impacted	Comments and Concerns
Coho salmon						
BC statistical areas 11-29, outer areas of 121-127.	FOC-02	Recreational Coastal waters June 1-December 31. Fraser River Mid-October to December 31.	Daily bag limit of 2 (may be up to 4) marked coho greater than 30 cm fork length. Barbless hooks Further regulations depend on maximum ER for interior Fraser River coho. May have mixed bags.	Voluntary recovery programs will not provide recoveries of unmarked and tagged fish in any fishery. If there is wild coho retention, any unmarked tagged fish landed will not be sampled.	Lists tagged coho recoveries in 1986-1991. Good table provided in this proposal, but could benefit from indication of DIT groups.	<i>Late proposal (January 2009).</i> ✓ Information provided is from 2008 proposal
BC statistical areas 23-27 outer areas of 121-127.	FOC-05	Commercial September-October	Retention of marked coho allowed in a Chinook targeted fishery.		Tagged stocks and DIT groups listed	<i>Late proposal (January 2009).</i> ✓ Information provided is from 2008 proposal
Fraser River	FOC-03	First Nations October-November	Gillnet and beach seines. Chum and pink targeted fishery. Viable wild coho must be released.		List of tagged stocks. Inch Creek is a DIT	✓ No sampling for CWTs is planned. Numbers of clipped and unclipped coho are reported in some fisheries. Visual identification only.
Fraser River	FOC-06	Recreational Table provided showing periods by specific area	Table provided showing bag limits by specific area. Two (2) coho per day or four (4) coho per day, only	Voluntary and creel	List of tagged stocks. Inch Creek is a DIT Coldwater, Salmon (Thompson), Dunn/Louis/Lemieux, Inch Creek, Salmon River, other South	✓ Creel surveys conducted in some times and areas, but there is no CWT sampling. Awareness factors are estimated if there is a creel survey. Voluntary

Table 6. Summary description of MSFs proposed for 2009-2010 for which proposals were submitted in 2008 by agencies or for fisheries that have occurred in past but no proposal has been submitted in 2008..

Location	Agency & Proposal No.	Fishery Type and Period	Regulation	Sampling	Indicator stocks impacted	Comments and Concerns
			two (2) >35 cm.		Coast and US stocks are encountered	returns of CWTs. ✓ Inch Creek is a DIT program. There should be an analysis evaluating how many marked DIT fish are taken in these fisheries. This analysis would provide information on impacts on Inch Creek DIT in the sport and First Nations fisheries.
Washington ocean coho sport fishery	WDFW-06	Recreational July-September	Table provided showing bag limits by specific area. Two (2) salmon per day, Release wild (unmarked) coho, minimum size 16 inches total length for coho salmon.	See WDFW 2009 Ocean Sampling Program Operating Plan for detailed description of sampling program for this fishery.	Most CWT indicator stocks listed in Appendix F are likely to be encountered	✓ Ocean sampling monitoring plan is attached to proposal. Indicates that sampling uses ETD.
Washington Puget Sound Areas 5,6, 7 and 13	WDFW-07	Recreational July-September	Release unmarked coho, no minimum size limit		All CWT indicator stocks from Puget Sound and southern BC	✓ Sampling program described in monitoring programs for Puget Sound Chinook. This includes ETD sampling for CWTs.
Washington Ocean Areas 1-4	WDFW-15	Commercial July-September	Release unmarked coho, minimum size 16 inches.		All CWT indicator stocks from Washington and southern BC are likely to be encountered in this fishery.	✓ Sampling program is described in monitoring plan for recreational fishery in WDFW-06.
Nooksack coho	WDFW – 18	Sep 1 to Dec 31	2 marked adults	No creel survey or	Kendall Creek is a coho	✓ Intent is to use

Table 6. Summary description of MSFs proposed for 2009-2010 for which proposals were submitted in 2008 by agencies or for fisheries that have occurred in past but no proposal has been submitted in 2008..

Location	Agency & Proposal No.	Fishery Type and Period	Regulation	Sampling	Indicator stocks impacted	Comments and Concerns
		Recreational		CWT sampling. There is sampling of CWTs in escapement	DIT stock	hatchery tag rates and apply to Nooksack sport harvest.
Lower River Columbia River sport	ODFW/WDFW-4	Recreational	Washington sport daily limit is six salmon of which only two may be adults (adipose fin-clipped only) per day, minimum size is 12 inches. Oregon sport daily limit is two adipose fin-clipped adult Chinook (>24" total length) and five adipose fin-clipped jack Chinook (15"-24" total length). The daily limit for adult Chinook is the same between the states, but the daily limit on jack Chinook is different.	Creel survey with sampling for CWTs	Big Creek, Grays River, Elochoman River, Cowlitz River, Kalama River, Toutle River, Lewis River, Washougal River, Sandy River, Klickitat River, Eagle Creek and Bonneville Hatchery	✓ There will be a problem in estimating CWT composition of unmarked mortalities due to mixed bag
Chinook salmon						
BC Strait of Juan de Fuca, Areas 19-1 to 6, 18-4 and 20-5	CDFO. New Proposal. Submitted late to PSC, no proposal number	Recreational hook and line (barbless hooks). March 1-May 15	Either 1) 2/day, marked or unmarked between 45-67 cm but marked only	Voluntary CWT recovery program. Creel survey used to estimate encounters by mark	No information provided	✓ There will be a problem in estimating CWT composition of unmarked mortalities due to mixed bag (slot

Table 6. Summary description of MSFs proposed for 2009-2010 for which proposals were submitted in 2008 by agencies or for fisheries that have occurred in past but no proposal has been submitted in 2008..

Location	Agency & Proposal No.	Fishery Type and Period	Regulation	Sampling	Indicator stocks impacted	Comments and Concerns
			> 67 cm, or 2) 2/day, marked only > 45 cm	and size category		limit type) regulations
BC WCVI, Areas 24-2, 6, 8 and 9, all of 124, 25-6,7,13,14, nearshore area of 125	CDFO. New Proposal. Submitted late to PSC, no proposal number	Recreational hook and line (barbless hooks) Area 24-8, Aug 1-Oct 31 Other subareas in 24 and 124, Aug 1-Oct 15 Subareas in 25, 125 Jul 1-Oct 15.	2/day > 45 cm, one of which can be unmarked but it must be < 77 cm	Voluntary CWT recovery program. Creel survey used to estimate encounters by mark and size category. No sampling after Sep 30.	No information provided	✓ There will be a problem in estimating CWT composition of unmarked mortalities due to mixed bag (slot limit type) regulations
BC WCVI, Areas 26-1, 6-11	CDFO. New Proposal. Submitted late to PSC, no proposal number	Recreational hook and line (barbless hooks) Jul 1-Oct15	2/day > 45 cm, one of which can be unmarked but it must be < 77 cm	Voluntary CWT recovery program. Voluntary lodge log books are to be used to estimate encounters by mark and size category	No information provided	✓ There will be a problem in estimating CWT composition of unmarked mortalities due to mixed bag (slot limit type) regulations
Washington Areas 7, 8-1, 8-2, 9 and 10.	WDFW-16. Replaces previous proposal WDFW-08	Recreational October 2008 to April 2009	Daily bag limit of 2 marked salmon. Chinook minimum size limit of 22 inches, 18-20 inches being considered. Other species follow normal structure for areas/months.	PS sampling program operational plan is provided	Table of all PS DIT stocks is included. But this is not based on any review of tagged stocks encountered in fishery in past. See section 3.2 below.	✓ This fishery will impact CTC indicator stocks of concern that are not clipped or DIT: White River tag groups being the main concern. ✓ All tagged stocks likely to be impacted should be reviewed and listed. ✓ Sampling plans for Areas 7, 9 and 10 are attached to proposal. Assume 8.1 and 8.2 sampling will be similar.

Table 6. Summary description of MSFs proposed for 2009-2010 for which proposals were submitted in 2008 by agencies or for fisheries that have occurred in past but no proposal has been submitted in 2008..

Location	Agency & Proposal No.	Fishery Type and Period	Regulation	Sampling	Indicator stocks impacted	Comments and Concerns
Washington Areas 5 and 6	WDFW-02	Recreational July-August 2008	Daily bag limit of 2 marked salmon. Chinook minimum size limit of 22 inches, 18-20 inches being considered.	PS sampling program operational plan is provided	Table in the proposal includes stocks from Puget Sound, BC and Columbia River	<ul style="list-style-type: none"> ✓ Sample plan is attached to proposal. ✓ Table of impacted indicator stocks also includes DIT groups that are not indicator stocks, e.g., Skykomish Summer Fingerlings
Puget Sound areas 9, 10, 11 and 13	WDFW-11	Recreational May to September	No change to current 2-salmon daily bag; alternatives to current 22-inch minimum size (e.g., 20-inch) are being considered..	PS sampling program operational plan is provided	Table of all PS DIT stocks is included. But this is not based on any review of tagged stocks encountered in fishery in past. See section 3.2 below.	<ul style="list-style-type: none"> ✓ Sampling plan is attached to proposal.
Nooksack River	WDFW-13	Recreational September 1 - December 31, 2008	2 marked adults. Complete regulation for the 2009 season will probably be: Daily bag limit of 2 marked adults. Daily limit six, no more than 2 adults, which must be marked. Minimum size 12 inches.	Estimate number of Samish fall Chinook using % hatchery from spawning grounds and tag rate from hatchery	Table 9 from report SFEC 2008 indicates that Nooksack, Samish and Skagit DIT groups are caught in this fishery.	<ul style="list-style-type: none"> ✓ At the time the proposal was written WDFW sport regulations had not been finalized. ✓ The proposal would benefit from the following; <ul style="list-style-type: none"> • More detail regarding DIT groups and indicator stocks encountered. • Clarification on CWT sampling or planned method of estimating tagged fish impacted.
Skykomish River	WDFW-01	Recreational	Marked (adipose clipped only)	2009 proposal refers to sampling	2009 proposal refers to information in 2003	<ul style="list-style-type: none"> ✓ The proposal is inadequate in describing

Table 6. Summary description of MSFs proposed for 2009-2010 for which proposals were submitted in 2008 by agencies or for fisheries that have occurred in past but no proposal has been submitted in 2008..

Location	Agency & Proposal No.	Fishery Type and Period	Regulation	Sampling	Indicator stocks impacted	Comments and Concerns
		June 1 – July 31	Chinook salmon retention only, daily limit is 2 fish per day, minimum size is 12 inches, and a non-bouyant lure restriction and night closure are in effect.	methods in 2003 proposal	proposal	what sampling, if any, is planned and what fish are likely to be impacted.
Upper Skagit River	WDFW -12	Upper Skagit River, from the Highway 530 bridge at Rockport to the mouth of the Cascade River (RM 67.1-78.1), and the lower Cascade river, from the mouth to the Rockport – Cascade road bridge (RM 0.0-0.9). June 1, 2009 to July 15, 2009	No change to current daily bag (4, no more than 2 adults over 24”).	New method is proposed, using CRC estimates of catch , tag fractions at release, and observed age structure in hatchery returns.	Skagit Spring Chinook Skagit Summer Chinook NF Nooksack Spring Chinook	<i>New proposal, but fishery has occurred since 2005</i> ✓ The proposal would benefit from the following; <ul style="list-style-type: none"> • A complete listing of the tagged indicator stocks likely to be encountered. (See Table 9) • The tagged strays likely to be encountered. (See Table 9) • An example of the proposed method for estimating the number of tags recovered in the fishery.
Washington Puyallup & Carbon Rivers	WDFW 09	Recreational Puyallup River, from 11th St. Bridge to Carbon River	No change from previous regulation of two (2) marked Chinook adults (WDFW sport	Sample for CWTs. Use CRCs for total catch.	There is a tagged Voights River group, but it is not a CTC indicator.	✓ The proposal would benefit from a clarification of the mixed bag regulations, the sampling for CWTs and the impacted

Table 6. Summary description of MSFs proposed for 2009-2010 for which proposals were submitted in 2008 by agencies or for fisheries that have occurred in past but no proposal has been submitted in 2008..

Location	Agency & Proposal No.	Fishery Type and Period	Regulation	Sampling	Indicator stocks impacted	Comments and Concerns
		and Carbon River (tributary to Puyallup River), from mouth to Voight Creek Puyallup River: August 1 – December 31 Carbon River: August 1 or September 1 – November 30	regulations defines freshwater adults as being >24") Mixed bag for Chinook jacks (fish between 12" and 24") - can retain marked or unmarked.			indicator stocks, i.e., ✓ Puyallup: "Daily bag limit of 6 salmon, 2 adult salmon, release unmarked adult Chinook" – Limit is 2 adults, 4 jacks ✓ Carbon River: "Daily bag limit of 6 salmon, 4 adults, no more than 2 marked Chinook. Release chum and wild adult Chinook" ✓ Table 9, SFEC 2008 - CTC indicator stocks from Grovers, Soos and White River and George Adams.
Nisqually River	WDFW-14	Recreational Jul 1, 2008 to Jan 31, 2009	Daily bag limit of 2 marked (adult) Chinook. Daily 6 fish bag, with up to 2 marked adults may be retained.	Creel survey is proposed to estimate Chinook mark rate, sample for CWTs using ETD methods and to provide catch and effort information.	Clear Creek Hatchery fall Chinook (DIT)	✓ Proposal would benefit from the following <ul style="list-style-type: none"> • A more complete description of the mixed bag fishery. • A more complete list of tagged stocks encountered in sampling in the river. (Table 9, SFEC 2008)

Table 6. Summary description of MSFs proposed for 2009-2010 for which proposals were submitted in 2008 by agencies or for fisheries that have occurred in past but no proposal has been submitted in 2008..

Location	Agency & Proposal No.	Fishery Type and Period	Regulation	Sampling	Indicator stocks impacted	Comments and Concerns
Sport, Skokomish Chinook	WDFW-20	Fall Chinook, August 1-September 30.	Daily bag limit 6 fish of which may be 4 marked adults. Release unmarked adults.	Proposals is for a survey with ETD for CWTs, not for estimation of total catch.	DIT George Adams	<ul style="list-style-type: none"> ✓ Catch will be available by November of 2010 from CRCs. ✓ Proposal would benefit by verifying whether the regulations are a change from 2008. WDFW sport regs state one (1) adult salmon from Aug 15 – Sept 5.
Sport, Ocean Areas 1 and 2	WDFW-19	<p>Pacific Ocean waters north of Cape Falcon, Oregon to the the mouth of the Queets River, Washington (Catch reporting Areas 1 and 2)</p> <p>July 2009 – Sept 2009</p>	2 salmon per day, Release wild (unmarked) Chinook, minimum size 24 inches total length	Sampling Program for Ocean sport fisheries was attached, however, this appeared to be the 2007 coho sampling plan. Creel survey program will provide estimates of total catch, and CWTs will be sampled. Charter ride alongs and test fishery are proposed for estimation of total encounters by mark and size category	All indicator stocks listed in table in Appendix G are expected to be encountered	<p><i>New Proposal</i></p> <ul style="list-style-type: none"> ✓ This is a new fishery and will encounter indicator stocks from the Columbia River and Oregon in particular which have not previously been exploited significantly in MSFs. See text for discussion of this issue.

Table 6. Summary description of MSFs proposed for 2009-2010 for which proposals were submitted in 2008 by agencies or for fisheries that have occurred in past but no proposal has been submitted in 2008..

Location	Agency & Proposal No.	Fishery Type and Period	Regulation	Sampling	Indicator stocks impacted	Comments and Concerns
Troll, Ocean Areas 1 and 2	WDFW-21	Pacific Ocean waters north of Cape Falcon, Oregon to the the mouth of the Queets River, Washington (Catch reporting Areas 1 and 2) July 2009 – Sept 2009	Release wild (unmarked) coho, minimum size 16 inches total length for coho salmon	Refers to 2009 Ocean sampling plan which is not provided. The sampling plan provided with MSF-WDFW-19 (above) indicates that the program will provide estimates of total catch and sampling of CWTs. WDFW staff will ride-along on troll boats and volunteer log books will be collected from trollers for the estimation of total encounters.	All indicator stocks listed in table in Appendix G are expected to be encountered	<i>New Proposal</i> ✓ This is a new fishery and will encounter indicator stocks from the Columbia River and Oregon in particular which have not previously been exploited significantly in MSFs. See text for discussion of this issue.
Columbia River Spring Chinook recreational fishery. Columbia River from the mouth upstream to McNary Dam and near the Ringold hatchery.	ODFW/WDFW-01	January through June 15, 2009	Washington sport daily limit is six salmon of which only two may be adults (adipose fin-clipped only) per day, minimum size is 12 inches. Oregon sport daily limit is two adipose fin-clipped adult Chinook (>24" total length) and five adipose fin-clipped jack	Sport fisheries in the Columbia River are sampled to provide catch estimates, recover CWTs, and collect age specific biological data	CWT stocks likely to be encountered include the following: Willamette, Cowlitz, Kalama, Lewis, Carson, Little White Salmon, Klickitat, Deschutes, Umatilla, Yakima, Leavenworth, Entiat, Methow, Wenatchee, and all Snake River stocks of spring Chinook. Willamette Spring Chinook, an indicator stock may be encountered	<i>New Proposal</i> ✓ Creel census occurs below McNary but fishery extends upstream to Priest Rapids. Does not over the whole fishery; effort estimate will underestimate total effort. ✓ CWT sampling below McNary adequate as long as stock/CWT composition is similar below and above McNary.

Table 6. Summary description of MSFs proposed for 2009-2010 for which proposals were submitted in 2008 by agencies or for fisheries that have occurred in past but no proposal has been submitted in 2008..

Location	Agency & Proposal No.	Fishery Type and Period	Regulation	Sampling	Indicator stocks impacted	Comments and Concerns
			Chinook (15"-24" total length). The daily limit for adult Chinook is the same between the states, but the daily limit on jack Chinook is different.			
Sport, Columbia River Summer Chinook From Mouth to Priest Rapids Dam	ODFW/WDFW-02	Summer Chinook, June 16 through July 31	Washington sport daily limit is six salmon of which only two may be adults (adipose fin-clipped only) per day, minimum size is 12 inches. Oregon sport daily limit is two adipose fin-clipped adult Chinook (>24" total length) and five adipose fin-clipped jack Chinook (15"-24" total length). The daily limit for adult Chinook is the same between the states, but the daily limit on jack Chinook is different.	ETD for CWTs and creel census for catch estimation	Upper Columbia summer Chinook	<ul style="list-style-type: none"> ✓ Creel census occurs below McNary but fishery extends upstream to Priest Rapids. Does not over the whole fishery; effort estimate will underestimate total effort. ✓ CWT sampling below McNary adequate as long as stock/CWT composition is similar below and above McNary. ✓ The summer Chinook indicator will be impacted but is not DIT. ✓ Pit tags could be used for stock composition. ✓ Fishery proposed but may not occur.

Table 6. Summary description of MSFs proposed for 2009-2010 for which proposals were submitted in 2008 by agencies or for fisheries that have occurred in past but no proposal has been submitted in 2008..

Location	Agency & Proposal No.	Fishery Type and Period	Regulation	Sampling	Indicator stocks impacted	Comments and Concerns
<p>Columbia River spring Chinook commercial</p> <p>Columbia River from mouth upstream to Bonneville Dam (Zones 1 – 5)</p>	ODFW/WDFW-03	January through June 15	Commercial fishery will be limited to 8-9 inch minimum mesh gill net or 4¼ inch maximum mesh tangle net. Total net length restrictions will be in place and the duration of “soak times” of the net will also be restricted. Use of recovery boxes are required during Chinook-directed fisheries.	<p>Commercial harvest sampled at buying stations for CWTs using ETD</p> <p>Observers monitor incidental catch of unmarked Chinook and calculate a marked/unmarked ratio that is applied to landed catch to determine unmarked mortalities.</p>	<p>Willamette Spring</p> <p>Other Spring Chinook stocks impacted include Cowlitz, Kalama, Lewis, Carson, Little White Salmon, Klickitat, Deschutes, Umatilla, Yakima, Leavenworth, Entiat, Methow, Wenatchee, and all Snake River stocks.</p>	<p>✓ Willamette Springs DIT will occur in fishery in 2009 except age 3 but no DIT available after 2009.</p>
Sport, Yakima River spring Chinook	WDFW-03	<p>Middle” Yakima River from the Hwy. 223 bridge at Granger, WA (RM 83) to Roza Dam (RM 127) in the Yakima Canyon north of Selah, WA.</p> <p>Late April to mid-June, 2008, and annually thereafter provided total run size and the proportion of hatchery fish is sufficient to justify a selective fishery,</p>	<p>Only marked (adipose-clipped) fish may be retained; 2 fish per day. Open to bank and boat fishing. Fishery will be open seven days/week (night closure in effect) until estimated sport harvest is equivalent to approximately a 7.5% exploitation rate (WDFW’s share of the 20% tribal + non-tribal</p>	Creel survey to estimate total catch, with ETD	Cle Elum Hatchery has 100% clipped and tagged	<p>✓ Indicator stocks not encountered.</p> <p>✓ The description of the sampling program is quite detailed and would benefit by verifying the following concerning the sampling program,</p> <ul style="list-style-type: none"> • If fish will be wanded for the presence of CWTs, i.e., (ETD). • Whether encounters or incidental mortalities will be monitored.

Table 6. Summary description of MSFs proposed for 2009-2010 for which proposals were submitted in 2008 by agencies or for fisheries that have occurred in past but no proposal has been submitted in 2008..

Location	Agency & Proposal No.	Fishery Type and Period	Regulation	Sampling	Indicator stocks impacted	Comments and Concerns
		while minimizing handling/hooksing mortality to unmarked natural/wild fish.	management objective) based on the in-season total river mouth run size estimate.			
Sport, Col. R. fall Chinook	ODFW/WDFW-05	Columbia River mouth upstream to McNary Dam August through December	Washington sport daily limit is six salmon of which only two may be adults (adipose fin-clipped only) per day, minimum size is 12 inches. Adults are ≥ 24 inches. Oregon sport daily limit is two adipose fin-clipped adult Chinook (≥ 24 " total length) and five adipose fin-clipped jack Chinook (15"-24" total length). The daily limit for adult Chinook is the same between the states, but the daily limit on jack Chinook is different.	Creel Survey for estimation of catch and CWT sampled with ETD	Lower River has a WA (Cowlitz) and OR (Big Creek) Tule production which have diff. distributions. Spring Creek (mid CR Tule), Lower (Lewis River wild bright) and upriver bright populations (Priest Rapids and Hanford). Upper Col. Summers represented by Similkameen, Wells and Turtle Rock indicator tag groups. Lyons Ferry fall fingerlings are the CTC indicator stock; but yearlings comprise the DIT stock .	<i>New proposal</i> <ul style="list-style-type: none"> ✓ Creel census occurs below McNary but fishery extends upstream to Priest Rapids. Does not over the whole fishery; effort estimate will underestimate total effort. ✓ CWT sampling below McNary adequate under the assumption that stock/CWT composition is similar below and above McNary. ✓ Fishery is mixed bag ✓ See Table xx for recommendations on DIT groups

Table 6. Summary description of MSFs proposed for 2009-2010 for which proposals were submitted in 2008 by agencies or for fisheries that have occurred in past but no proposal has been submitted in 2008..

Location	Agency & Proposal No.	Fishery Type and Period	Regulation	Sampling	Indicator stocks impacted	Comments and Concerns
Sport, Lower Snake River fall Chinook	WDFW-5	Snake River, September 1 to October 31 Recreational fishery	Daily bag limit of 2 marked adult Chinook, plus jacks. Release wild (unmarked) adult Chinook. No night fishing for salmon. Barbless hooks	Creel survey to estimate the mark rate and for CWT sampling. Use ETD.	Lyons Ferry and Nez Perce Tribal Hatchery fall Chinook. Lyons Ferry fall fingerlings are the CTC indicator stock; but yearlings comprise the DIT stock.	<i>New proposal</i> ✓ The CTC ERA uses the fingerling tag group, but it is not a DIT stock. ✓ The proposal would benefit by verifying if the three agencies, IDFG, ODFW and WDFW, are coordinating on sampling in this fishery.
Willamette River and tributaries	ODFW -01	Recreational Jan-Dec	Daily bag limit of 2 marked Chinook (>24 inches total length) and 5 marked jack Chinook (15-24 inches). Must stop fishing once catch and keep two adult fish.	Creel survey with CWT sampling and ETD. Mark rate estimated from angler interviews	Proposal lists tagged hatchery fish with tag codes for broods 1997-2002, DIT status and number released. Willamette tagged fish are the only tagged fish encountered in this fishery.	✓ Evaluation of the Willamette MSF using the Willamette DIT groups by CTC in 2006 revealed that escapement of unmarked and tagged fish was not properly sampled. ✓ It would be helpful to the SFEC and a benefit to the proposal if this were clearly addressed in the proposal.
Oregon coastal Chinook	ODFW – 02	Recreational Aug 1-Dec 31	Fall Chinook Anglers may retain 1	Tillamook, Elk and Chetco terminal bay fisheries are	Salmon and Elk River Chinook are CTC indicator stocks, but not	<i>New proposal, fishery took place last year.</i> ✓ Salmon and Elk

Table 6. Summary description of MSFs proposed for 2009-2010 for which proposals were submitted in 2008 by agencies or for fisheries that have occurred in past but no proposal has been submitted in 2008..

Location	Agency & Proposal No.	Fishery Type and Period	Regulation	Sampling	Indicator stocks impacted	Comments and Concerns
Ocean terminal areas (within 3 miles of the river mouth) of the Tillamook, Elk, and Chetco Rivers.			salmon/steelhead and one additional clipped fish (steelhead and coho > 20 inches and Chinook > 24 inches. In addition up to five jacks (15-24 inches) may be retained as long as adult limit has not been reached. There is a seasonal limit of five unclipped adult Chinook coast wide, see Oregon regulations.	sampled visually by the marine program. The Elk and Salmon River have creel surveys that sample for tags visually.	DIT, and are caught in significant numbers in the in-river fishery (Table below).	River should be DIT stocks. Currently, there will be no data available for estimation of impacts on these stocks should there be MSFs in ocean fisheries or terminal areas. ✓ DITs would provide escapement information for monitoring the differential impact on marked and unmarked fish of MSFs ✓ This is a mixed bag regulation.

3.2 Expected impacts.

Multiple MSFs are expected to occur in 2009 in British Columbia (BC), Washington (WA) and Oregon (OR). Table 7 to Table 12 were constructed using historical information on encounters of tagged fish in the fishery areas and time periods of the MSFs to identify coho and Chinook tagged stocks that can be expected in these areas with MSFs.

All tagged coho stocks expected to be encountered are included in Table 7, as all are used by the PSC CoTC for their analyses. MSFs in Puget Sound and Hood Canal largely exploit local stocks. However, tagged fish from all regions are encountered in MSFs in the Strait of Juan de Fuca, Southern BC and Washington and Oregon coastal areas.

Until 2008, Chinook MSFs were largely restricted to Puget Sound and Columbia River spring Chinook. In 2009, additional MSFs are proposed for marine waters in BC, WA Puget Sound and ocean areas, and freshwater areas in Puget Sound and Columbia River (Table 5). Prior to 2008 the indicator stocks encountered in MSFs have largely been of Puget Sound origin (Table 8 and Table 9) or Columbia River spring stocks (Table 10). With the additional fisheries now proposed for Canadian waters, WA ocean areas 1 and 2, and Columbia River fall Chinook fisheries, a larger number of indicator stocks are now vulnerable to MSFs. In addition, MSFs have expanded substantially in Puget Sound, both geographically and temporally, particularly since 2007, with a concomitant increases in catch in MSFs for Chinook salmon in 2007 and 2008 (Figure 3). MSFs proposed in Puget Sound by WDFW for 2009-2010 are a further expansion from fisheries prosecuted in 2008. In order to monitor the impacts of these expanding MSFs the DIT program must be expanded to represent the new stocks that will be encountered and agencies should reconsider discontinuing DIT programs.

Table 7. Coho salmon representative tag groups that are expected to be present in MSFs proposed for 2009, based on presence of tag groups in MSFs in fishery years 2001-2007. A * indicates that an estimated 1-9 tagged fish were recovered annually on average, while indicates that 10 or more tagged fish were on average recovered in the MSFs.

Release Region	Hatchery	Wild Tagging	DIT	MSF Areas					
				SBC	JDF	PS	WaCST	ColR	OR
GST/JNST	H-BIG QUALICUM R				X		*		
	H-CAPILANO R				*	*	*		
	H-FANNY BAY/GSVI				*	*	*		*
	H-GOLDSTREAM R			*	*	*	*		*
	H-PUNTLEDGE R				*	*	*		*
	H-QUINSAM R		√				*		
	R-BLACK CR						*		
R-KEOGH R						*			
WCVI	H-ROBERTSON CR			*	*		*		*
	H-SOOKE R			*	*		*		*
FR/TH	H-CHILLIWACK R				*		*		*
	H-INCH CR		√	*	X		*		*
	H-KANAKA CR				*		*		*
	H-SPIUS CR				X		*		*
	H-THOMPSON R N				*		*		*
JDF	LOWER ELWHA HATCHERY				X		*		*
PS	AGATE PASS SEA PENS			X	X		X		X
	BERNIE GOBIN HATCH			X	X		X		X
	COWSKL & RUSHWTR PDS			*	X		*		*
	COWSKULL ACCLIM POND			*	X		*		*
	CRISP CR REARING PON			X	X		X		X
	ELLIOTT BAY TRIBAL NP			X	X		*		*
	GLENWOOD SPRINGS				*		*		*
	ISSAQUAH HATCHERY			*	X		*		*
	KALAMA CR HATCHERY			X	X	X	*		*
	KENDALL CR HATCHERY		√		X	X	*		*
	LUMMI SEA PONDS			*	X	X	X		X
	MANCHESTER FUEL DEPT				X	X	X		X
	MARBLEMOUNT HATCHERY		√	*	X	X	*		X
	MINTER HATCHERY			*	X	*	*		*
	NISQUALLY HATCHERY		√			X	X	*	*
	PORTAGE BAY HATCHERY					*	*		*
	RUSHINGWATER AC POND					X	*		*
	SKOOKUM CR HATCHERY				X	X	X	*	X
	SOOS CREEK HATCHERY		√	*	*	X	*	*	*
	SOUTH SOUND NET PENS			*	*	X	X	*	*
VOIGHTS CR HATCHERY			*	*	X	*	*	*	
WALLACE R HATCHERY		√	*	*	X	*	*	*	
BIG SOOS CR 09.0072					X	*	*	*	
MINTER CR 15.0048					*	*	*	*	
DESCHUTES R 13.0028						*	*	*	
BAKER R 03.0435		√			X	*	*	*	
HOOD	GEORGE ADAMS HATCHRY		√	*	X	*	*		*
	PORT GAMBLE BAY PENS			*	X	*	*		*
	QUILCENE BAY SEA PENS			*	X	*	*		*
	QUILCENE NFH		√	*	X	*	*		*
	BIG BEEF CR 15.0389		√			X	*		*
WACST	BINGHAM CR HATCHERY		√		*		*		X
	EIGHT CR PROJECT						*		X

Release Region	Hatchery	Wild Tagging	DIT	MSF Areas					
				SBC	JDF	PS	WaCST	ColR	OR
	FORKS CREEK HATCHERY			*	*		X		X
	FRIENDS LANDING NP					*	X		X
	LK ABERDEEN HATCHERY						*		*
	MAKAH NFH ON SOOES R				*		*		*
	NAHCOTTA NET PENS				*		*		*
	NASELLE HATCHERY			*	*		*		X
	NEMAH HATCHERY				*		*		*
	QUINAULT NFH -COOK C			*	*		*		*
	SALMON R FISH CULTUR		√		X		X		X
	SATSOP SPRINGS PONDS						*		*
	SOLDUC HATCHERY			*	*		*		*
	FORK CR 24.0356			*	*		*		*
	SATSOP R -EF 22.0360				*		*		*
	CHEHALIS R 22.0190				*		*		*
	BINGHAM CR 22.0465	√			*		*		*
	CHEHALIS-UPR 23.0190	√			*		*		*
	TIEMEYER'S POND (21)						X		*
	CLEARWATER R 21.0024						*		X
ORCST	BANDON HATCHERY						*		*
	BUTTE FALLS HATCHERY						*		*
	COLE RIVERS HATCHERY						*		*
	NEHALEM HATCHERY						*		*
	ROCK CR HATCHERY				*		*		*
	SALMON R HATCHERY						*		*
	TRASK R HATCHERY						*		*
COLR	BEAVER CR HATCHERY						X		X
	BIG CR HATCHERY			*	*		*		X
	BONNEVILLE HATCHERY				*		*		X
	CASCADE HATCHERY				*		*		*
	CEDC YOUNGS BAY NET				*		*		*
	COWLITZ SALMON HATCH				X		X	X	X
	DEEP R NP - LOWER						*		X
	DEEP R NP - UPPER						*		X
	EAGLE CR NFH		√	*	*		*		*
	ELOCHOMAN HATCHERY				*		*		X
	FALLERT CR HATCHERY						*	X	*
	GRAYS RIVER HATCHERY			*	*		*		*
	KALAMA FALLS HATCHRY				X		*		X
	KLASKANINE S FK POND				*		*		*
	KLICKITAT HATCHERY (YKFP)			*	*		*		X
	LEAVENWORTH HATCHERY						*		*
	LEWIS RIVER HATCHERY			*	X		X	X	X
	LTL WHITE SALMON NFH						*		*
	NORTH TOUTLE HATCHRY			X	*		X	X	X
	OXBOW HATCHERY				*		*		*
	PROSSER HATCHERY						*		*
	SANDY HATCHERY				*		*	*	*
	STEAMBOAT SL NETPENS				X		X	*	X
	WASHOUGAL HATCHERY			*	*		*		*
	WELLS HATCHERY						*		*
	WILLAMETTE HATCHERY						*		*
	WILLARD NFH		√				X		X
	WINTHROP NFH						*		*
	CEDAR CR 27.0339						*		*
	COWLITZ R @ MAYFIELD						*		*
	MILL CR 25.0284						*		*

Table 8. Chinook indicator stocks expected to be encountered in Chinook MSFs proposed for marine waters in 2009-2010. Recoveries in MSF area-periods for recovery year 2003-2007 were used to construct the table. A * indicates that at least one tagged fish was sampled, a x indicates two or more tagged fish. Note that ff= fall fingerling, fy=fall yearling, sf= summer fingerling, spf=spring fingerling, spy=spring yearling

Region	Chinook Indicator Stocks	DIT	Proposed MSFs						
			BC WCVI	BC SJDF	WA Coast Area 1/2	PS Area 5/6	PS 7/8/9/10/11/12	PS 9/10/11/13	OR Coast
			Jul-Oct	Mar-May	Jul-Sep	Jul-Aug	Oct-Apr	May-Sep	Aug-Dec
WCVI	Robertson ff Robertson fy		x *		*				
Strait of Georgia	Nanaimo ff Puntledge ff Puntledge sf Big Qualicum ff Cowichan ff		* * * *		* * * *	* x	* *	* *	
Fraser River	Chilliwack ff Nicola spy Shuswap sf	√	x	* *	x	x	x	x	*
Juan de Fuca	Hoko ff		*			*			
No Puget Sound	Nooksack spf Samish ff Skagit ff Skagit spf Skagit spy	√ √ √	* x x x x	x * x	x	x * x x	x x x x	x x x	*
Cen Puget Sound	Skykomish sf Stillaguamish sf	√	* *	* *	*	x *	x x	x x	
So Puget Sound	Nisqually ff So PS ff So PS fy White R spf White R spy	√ √	* x	* *	x x	x * * *	x x * *	x x * x	* *
Hood Canal	George Adams ff	√	* *	* *	x	x	x	x	*
WA Coast	Forks Creek ff Queets ff Quinalt ff Sooes ff	√	* * *		x * *				*
Willamette R	Willamette spy				x		x	x	*
Lower Col R	Cowlitz ff Lewis R spy Lewis R wild ff	√ √	* *		x x x	*			x * *

Region	Chinook Indicator Stocks	DIT	Proposed MSFs						
			BC WCVI	BC SJDF	WA Coast Area 1/2	PS Area 5/6	PS 7/8/9/10/11/12	PS 9/10/11/13	OR Coast
			Jul-Oct	Mar-May	Jul-Sep	Jul-Aug	Oct-Apr	May-Sep	Aug-Dec
	Spring Ck Tule	√	x		x	x	x		x
Upper Col R	Col Upriver B	√	*		x	*			*
	Hanford Wild ff		*		*				*
	Wells sf		*		*				*
	Wells sy	√	x		x	x			x
Snake River	Lyons Ferry ff		*		x	*			*
	Lyons Ferry fy	√	*	*	x	x		x	x
Oregon Coast	Elk ff		*		x				x
	Salmon R ff		*		x				x

Table 9. Chinook indicator stocks expected to be encountered in Chinook MSFs in Puget Sound freshwater areas proposed for 2009-2010. Recoveries in MSF area-periods for recovery year 2003-2007 were used to construct the table. Note that no sampling has been reported for the Skykomish MSF. A * indicates that on average one tagged fish was encountered in samples, a x indicates two or more tagged fish. Note that ff= fall fingerling, fy=fall yearling, sf= summer fingerling, spf=spring fingerling and spy=spring yearling

Region	Chinook Indicator stocks	DIT	Proposed MSFs				
			Nooksack	Skagit	Puyallup	Nisqually	Skokomish
Strait of Georgia	Cowichan ff		*			*	
No Puget Sound	Nooksack spf	√		x			
	Samish ff	√	x	*			
	Skagit ff			*			
	Skagit spf			x			
	Skagit spy	√	*	x			
Cen Puget Sound	Stillaguamish sf			*			
So Puget Sound	Nisqually ff	√				x	
	So PS ff	√			*	*	
	White R spf				x		
	White R spy				x		
Hood Canal	George Adams ff	√			*	x	x
Willamette R	Willamette spy					*	

Table 10. Chinook indicator stocks expected to be encountered in Chinook MSFs in Columbia River areas for 2009-2010. Recoveries in MSF area-periods for recovery year 2003-2007 were used to construct the table. A * indicates that on average one tagged fish was encountered in samples, a x indicates two or more tagged fish. Note that ff= fall fingerling, fy=fall yearling, sf= summer fingerling, spf=spring fingerling and spy=spring yearling.

Region	Chinook Indicator stocks	DIT?	Columbia R WA			Columbia R OR			Willamette
			Jan-May	Jun-Jul	Aug-Dec	Jan-May	Jun-Jul	Aug-Dec	Jan-Dec
Fraser River	Chilliwack ff	√						*	
No Puget Sound	Samish ff	√						*	
WA Coast	Forks Creek ff							*	
Willamette R	Willamette spf					x	*		x
	Willamette spy					x	x	x	x
Lower Col R	Cowlitz ff	√			*			x	
	Lewis R spy	√	x	*		x	*	*	*
	Lewis R wild ff				x			x	
	Lewis R wild fy							*	
	Spring Ck Tule	√						x	
Umatilla spy					x				
Upper Col R	Col URB (PRH)	√			x			x	
	Hanford Wild ff				x			x	
	Little White fy					*			
	Wells sf		*	x	x	x	x	*	
Wells sy	√	x	x	x	x	x	x		
Snake River	Lyons Ferry ff				*		*	x	
	Lyons Ferry fy							x	

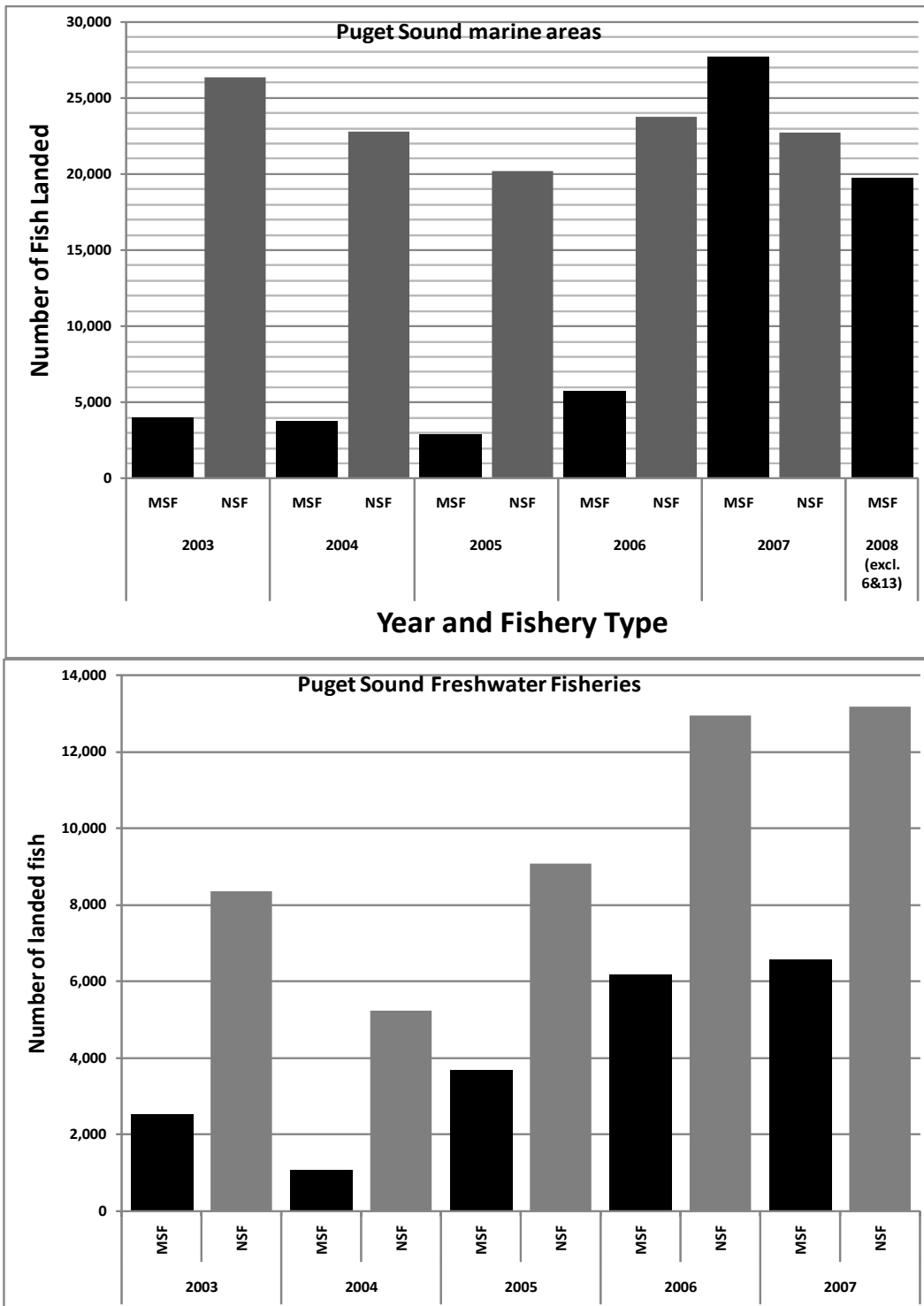


Figure 3. Total landed catch of (marked and unmarked) Chinook salmon in MSFs and NSFs in Puget Sound marine and freshwater areas for 2003-2008. Catch in 2008 is only available for MSFs in marine areas where creel surveys were carried out. Catch information are taken from PSMFC RMPC catch and sample data base and preliminary WDFW reports for creel surveys in 2008.

4 Issues, Concerns and Recommendations

4.1 *MSF proposals*

Proposals are due by November 1 of the year before the fishery being proposed, e.g., November 2008 for fisheries in 2009-2010. Although final decisions on fisheries are generally not made until after this time period (e.g. January-April of 2009 for 2009 fisheries), MSF proposals should be submitted for any fisheries that are planned. Proposals have not been consistently submitted to the PSC as required. Three proposals were not received from CDFO until January of 2009. These included a Chinook MSF on the WCVI, which raises numerous technical questions. Oregon has never submitted a proposal for coho MSFs in their coastal area. The SFEC recommends that agencies prioritize the task of developing proposals and have them submitted by the due date for any planned MSF in marine or freshwater. Timely submission of proposals allows for timely identification of issues which can be conveyed to the PSC and to agencies while the annual fishery planning activities are occurring.

4.1.1 **MSF proposal template**

The MSF template is fairly simple, requesting information on location and time of proposed MSF, regulations for the MSF, the indicator stocks that may be impacted and sampling plans. In 2008 CDFO submitted proposals in a spreadsheet format that, although it was different from the template provided, did provide the information requested by the SFEC. The SFEC suggests that this spreadsheet format can be used if desired instead of the template provided and provides an example of the spreadsheet in Appendix E.

4.2 *MSF reports*

The PSC has requested that management agencies provide SFEC with three reports on MSFs. Two of these would be provided by the post-season meeting following the fishery year for and included in the PSC post-season annual report. The first table (Appendix Table H1) is a sample method report and provides information on CWTs sampling in **all fisheries and escapement** locations not just the MSFs. This is needed as the estimation of impacts in NSFs for the unmarked group depends on the method of sampling (electronic or visual) and the processing protocol (i.e., are all tagged fish sampled also processed). The second table (Appendix Table H2) is a post-fishery report and provides information on MSFs that have occurred, where and when they occurred, what the regulations were and what sampling occurred. This table provides information on whether fisheries that were proposed did actually occur and how these fisheries were sampled. These first two tables should be completed by the PSC post-season meeting of the year following the fishery year. For instance, reports on fisheries occurring in 2007-2008 should be available by the post-season meeting in 2009.

The third table (Appendix Table H3) is intended to provide final results on total mortalities and mark rates in MSFs that have been prosecuted. This information is required for evaluation of the fishery. For Chinook salmon the PSC Chinook Technical Committee (CTC) requires that total fish retained and total mortalities be reported for MSFs for use in the PSC Chinook Model. The template used through 2007 is not adequate for this purpose and a new template is provided for reporting mortalities in MSFs as of 2007. Table 11 shows this template with an example for the

summer MSFs in Washington Areas 5/6 with estimates taken from the WDFW draft multi-year reports.

Table 11. New template for third post-season report providing estimates of fish retained in MSFs by mark status and total mortalities by mark and size category. Data are taken from draft multi-year report for Washington Area 5/6 (Strait of Juan de Fuca) for 2003-2007.

Region	Fishery	Year	Retained Marked Fish	Retained Unmarked fish	Encounters Marked	Encounters Unmarked	% Marked	Legal-sized Marked fish Landed & Release Mortalities	Legal-sized Unmarked fish Landed & Release Mortalities	Sub-Legal-sized Marked fish Landed & Release Mortalities	Sub-Legal-sized Unmarked fish Landed & Release Mortalities
WA	Area 5/6	2003	3,417	76	5,327	8,626	38%	3,287	140	225	0
WA	Area 5/6	2004	3,571	5	5,102	6,365	44%	3,476	477	366	385
WA	Area 5/6	2005	2,024	53	3,412	3,237	51%	1,981	373	351	237
WA	Area 5/6	2006	3,641	25	5,008	5,095	50%	3,546	63	199	15
WA	Area 5/6	2007	3,971	124	5,784	3,839	60%	3,794	432	540	301

Agencies have generally not provided these reports. CDFO has provided the requested information for 2003-2006 but information for 2007 is outstanding. Although the information may be available in larger agency reports, this does not provide access to the summarized information required by the SFEC and the CTC. It is recommended that agencies prioritize this task and work with their SFEC representatives to develop these reports annually and provide them to the PSC in the required time frame.

4.3 Chinook salmon MSFs and DITs

In order to evaluate the impacts of MSFs on natural stocks represented by PSC indicator stocks (Appendix G), a DIT group is necessary. Comparison of the escapement of the unmarked and marked DIT groups provides a measure of the total impact of MSFs, and estimates of unmarked mortalities in MSFs depend on the relationship between marked and unmarked DIT groups.

New MSFs are proposed by WDFW in ocean fisheries in Areas 1 and 2, and by WDFW and ODFW in the Columbia River on fall Chinook. CDFO provided new proposals for a Chinook MSF in the Strait of Juan de Fuca that was prosecuted for the first time in 2008 and for new fisheries in areas of the WCVI coast (Table 5 and Table 6). The PSC indicator stocks expected to be encountered in the WA Ocean Areas 1 and 2 and the Columbia River MSFs targeting fall Chinook are shown in Table 12. Some of these stocks are currently DIT stocks, but the SFEC recommends that further stocks be considered for inclusion as DITs.

Table 12. PSC Indicator stocks for Chinook salmon falls expected to be encountered in MSFs in WA Ocean Areas 1 and 2 and in Columbia River. The table indicates recommended DITs and which are currently DIT and the age groups that will be DIT in 2009-2010.

Indicator stocks		DIT		DIT in 2009/2010 by age					
				2	3	4	5	6	
Stock	Release Hatchery	Recommended	Current						
Columbia River springs	Lewis River	Yes	Yes	x	x	x	x	x	x
Lower River Tules	Big Creek	Yes	Yes	x	x				
	Cowlitz	Yes	No						
Mid Columbia Tules	Spring Cr. NFH	Yes	Yes	x	x	x	x		
Summer Chinook	Wells	Yes	No						
Upper Columbia River summers	Simalkameen								
Upriver Brights	Priest Rapids	Yes	No						
Snake River yearlings	Lyons Ferry		Yes	x	x	x	x	x	x
Snake River fingerling		Yes	No						
Oregon coast	Elk River	Yes	No						
	Salmon River	Yes	No						

The tagged indicator stocks that can be expected to be encountered in the proposed BC fisheries in WCVI and SJDF are shown in Table 8. Of these only one BC stock is a DIT and two of the Columbia River stocks, while a larger number of Puget Sound stocks are DITs.

It is recommended that agencies review their indicator stock programs in light of these new MSFs and any other new MSFs likely to be proposed in future years and evaluate the need for including additional DITs. This should be part of the MSF proposal. It is recommended that agencies add or resume the DIT groups recommended in Table 12.

4.4 Chinook MSFs and Sampling Method

Electronic tag detection (ETD) is necessary for sampling fisheries and escapement where unmarked and tagged fish are present in the samples. In order to carry out the exploitation rate analysis for unmarked stocks, aside from estimation of unmarked mortalities in MSFs, it is necessary to have estimates of harvest of unmarked and tagged DIT groups in NSF. This requires ETD be used in NSF, where unmarked and tagged fish are present, in particular if the stock has been subjected to MSFs in other areas or periods. Until 2008, MSFs for Chinook salmon were largely prosecuted in Puget Sound where ETD is used for all fisheries. ETD has not been used consistently by CDFO in northern fisheries until 2007 and has not been used at all by ADFG. As Puget Sound DIT groups taken in these fisheries were unlikely to have been previously subject to MSFs, indirect methods (other than direct sampling with ETD) could be used for achieving unbiased estimates of unmarked encounters from marked landings. However, with MSFs now proposed for fisheries off of WCVI and WA ocean areas 1 and 2 and MM of far-north migrating Chinook, it is no longer reasonable to assume that fish taken in NSF in all northern coastal areas have not been subject to prior MSFs. The SFEC recommends that

agencies review their sampling methods with respect to the current expansion of MSFs into coastal fisheries.

4.5 Mixed Bag Regulations in MSFs

Regulations to implement MSFs for recreational fisheries are becoming increasingly complex. Different types of mixed bag regulations are part of the MSFs proposed by Canada, Washington and Oregon. In most cases this is a mixed bag, where only marked adults may be kept but marked and unmarked juveniles may be retained (Table 13). In addition, in 2009 BC has proposed two variations of the ‘standard’ mixed bag. For the SJDF fishery, both marked and unmarked fish may be retained within a slot limit (45 – 67 cm). For the WCVI fishery, marked fish of any size above 45 cm can be retained but the daily bag limit of 2 Chinook can include one unmarked fish between 45 and 77 cm. In Oregon there is a seasonal limit on unmarked Chinook salmon. These mixed bag regulations present a problem in estimating mortalities of unmarked DIT groups and associated wild stocks. The agencies proposing these mixed regulations should assist in developing the analytical tools to measure the impacts of these fisheries or provide documentation if methods have been developed and employed.

Table 13. Mixed bag regulations proposed for Chinook MSFs. Details on regulations are found in Table 6

Regulation Type	Examples	Location
Mixed bag, marked only above maximum size.	2/day, keep all between 45-67 cm, only marked over 67 cm	BC Strait of Juan de Fuca (SJF)
Mixed bag, marked within size range.	2/day either only those fish that are hatchery marked regardless of size or one wild >77cm. A combination is allowed	BC WCVI
Mixed bag, adults only marked and juveniles marked or unmarked	Daily limit six, no more than 2 adults, which must be marked. Minimum size 12 inches.	Puget Sound, Snake River fall Chinook and Oregon coastal
Differing mixed bag, adults and juveniles between state regulations	<i>Washington</i> sport daily limit is six salmon of which only two may be adults (adipose fin-clipped only) per day, minimum size is 12 inches. <i>Oregon</i> sport daily limit is two adipose fin-clipped adult Chinook (>24" total length) and five adipose fin-clipped jack Chinook (15"-24" total length). The daily limit for adult Chinook is the same between the states, but the daily limit on jack Chinook is different.	Columbia River Chinook recreational fisheries
Seasonal limit on unmarked fish	There is a seasonal limit of five unclipped adult Chinook coast wide, see Oregon regulations.	Oregon coastal Chinook

5 References

Olson, R. 2007. Logistics and Technology of Mass Marking and Electronic CWT Recovery in Pacific Salmon. Presentation at AFS Annual Meeting. Available: www.rmpec.org/mass-marking-and-selective-fisheries-presentations.html. (May 2008).

Parke, C. and B. Ridell. 2007. Operational issues with mass marking and mark selective fisheries. Presentation at AFS Annual Meeting. Available: www.rmpec.org/mass-marking-and-selective-fisheries-presentations.html. (May 2008).

Appendix A. Understanding of the Pacific Salmon Commission Concerning Mass Marking and Selective Fisheries (Revised February 2004).

Understanding of the Pacific Salmon Commission concerning Mass Marking and Mark Selective Fisheries

February 2004 Policy Statement

The Pacific Salmon Treaty's Memorandum of Understanding (MOU) obliges the Parties to, among other things, "maintain a coded-wire-tag and recapture program designed to provide statistically reliable data for stock assessment and fishery evaluation." The Pacific Salmon Commission (PSC) recognizes that the selective fisheries for marked hatchery coho and chinook salmon can impact the coast wide coded-wire-tag (CWT) program. For the sole purpose of fulfilling this MOU obligation, the PSC has established the following policies and procedures. This policy does not preclude the PSC from evaluating the impacts of, and making recommendations concerning, mass marking or selective fishery plans as they affect the negotiation and establishment of Treaty annex provisions.

It shall be the policy of the PSC to review proposals for mass marking and selective fisheries to determine consistency with the Parties' commitment to the MOU provisions regarding the reliability of data needed for management of salmon fisheries within the jurisdiction and management area of the Treaty, including whether they impose substantial cost increases for agencies to conduct required data collecting programs.

The PSC shall establish a Selective Fishery Evaluation Committee (SFEC) to perform the activities set forth in the attached Terms of Reference.

To facilitate the SFEC review, the Parties shall do their utmost to ensure that their domestic managers submit all proposals for mass marking (MM) and mark selective fisheries (MSF) which could potentially affect stocks or fisheries of concern to the PSC in accordance with the following schedule:

1. Not later than June 1 of each year. Provide early notice containing the agency's plans to consider conducting MSFs over the next 3-5 years.
2. Not later than June 1 of the year prior to implementation. Provide new or substantially changed MM or MSF project proposals.
3. Not later than November 1 of the year prior to implementation. Provide proposals for MM or MSF programs that are anticipated to continue annually without substantive change.

4. Upon completion of domestic fishery planning processes, agencies conducting MSFs are to provide final selective fishery plans.
 5. Upon completion of MM programs, agencies are to report the number of fish that were actually mass marked and the extent to which releases are (single and double index) tagged for assessment.
 6. Agencies shall report results of MSFs conducted during a season in the annual post-season report provided, using a format specified by the SFEC.
 7. Not later than November 30 of the year following conduct of MSFs. Agencies are to report fishery and stock-age-specific estimates of mortalities for unmarked fish impacted by MSFs to the PSC technical committees
- The PSC shall consider, by the annual February PSC meeting, the SFEC reviews of proposals for MM and MSFs and discuss potential actions to address concerns related to any MM or MSF proposals that the SFEC determines will significantly and adversely affect the CWT program.
 - The Parties will do their utmost to ensure that MM and MSF proposals are developed in consultation with domestic co-management agencies or processes, and that proposing agencies or entities provide information required by the SFEC and adhere to reporting requirements to enable the PSC technical committees to complete their assignments in a timely manner.

After the occurrence of a selective fishery and when the data are available, the PSC shall review the management agency report on the actual conduct of the fishery with respect to its impact on the CWT program, and recommend changes and improvements.

Terms of Reference for the Selective Fishery Evaluation Committee

- I. **Reporting and Committee Structure: The Selective Fishery Evaluation Committee (SFEC) will report to the PSC and will be comprised of a Steering Committee and two working groups: the Regional Coordination Working Group (RCWG) and the Analytical Working Group (AWG). All official members of the Steering Committee and working groups will be considered members of the SFEC.**
 - A. **Steering Committee: The Steering Committee will be comprised of:**
 1. **the co-chairs of the PSC Coho Technical Committee, Chinook Technical Committee, and Data Sharing Technical Committee;**
 2. **the co-chairs of the two working groups;**
 3. **agency mass-marking/selective-fishery coordinators; and**
 4. **additional agency representatives approved by the responsible Party.**

- B. Regional Coordination Working Group (RCWG): The RCWG may be comprised of members of the Steering Committee and other PSC technical committees and of the agency representatives approved by the responsible Party. All RCWG members should contribute actively to the work of this group.**
- C. Selective Fishery Analysis Working Group (SFAWG): The SFAWG may be comprised of members of the Steering Committee and other PSC technical committees and of the agency representatives approved by the responsible Party. All SFAWG members should contribute actively to the work of this group.**

II. Duties of the SFEC

- A. Serve as a coast wide clearinghouse to facilitate the appropriate level of coordination and reporting on MM and MSF programs among the Parties, affected agencies, and existing coast wide and regional committees established to monitor activities related to the coast wide CWT program;**
- B. Provide advice to the PSC regarding potential adverse impacts of MM and MSFs on the CWT program;**
- C. Assess and monitor the cumulative impacts of MSFs on stocks of concern to the PSC;**
- D. Provide MM or MSF project proponents with information regarding concerns for potential impacts of their projects on the CWT program.**
- E. Receive and review MM and MSF proposals from the proponent(s) as early in the planning process as possible to identify potential issues and concerns regarding impacts on the CWT program.**
- F. Establish a technical evaluation process that will:**
 - 1. Review proposed mass-marking/selective-fisheries initiatives developed by the proponent(s) and identify potential impacts on other jurisdictions and the CWT program;**
 - 2. Review, in consultation with relevant PSC technical committees, procedures and protocols for marking, sampling, and evaluation developed by the proponent(s) and, if appropriate, develop and recommend alternative procedures to address potential concerns or measures that could be taken to mitigate for adverse impacts on the CWT program;**

- 3. Establish standard formats and reporting requirements for agencies conducting MSFs to use when providing post-season information. Review post-season agency evaluations of the performance of MSFs and their estimates of mortalities on stocks of concern to the PSC;**
 - 4. Identify information needs or request modifications of proposals to meet concerns regarding impacts on the CWT program; and**
 - 5. Conduct, at agreed intervals, technical evaluations of mass marking and selective fishery programs in order to assist the Parties to maintain the integrity of the CWT program.**
- G. Work with PSC Technical Committees to establish formal standards and objectives for a viable CWT program to enable more precise evaluation of potential impacts of MM and MSFs on the viability of the coastwide CWT program and to guide the development of mitigation measures.**
- H. Specific duties of the Steering Committee include being responsible for overall coordination and prioritization of the activities for the working groups and being the focal point for reporting to the PSC. The agency mass-marking/selective-fishery coordinators should ensure that mass marking and selective fishery proposals are provided to the SFEC in a timely manner.**

III. Specific duties of the RCWG, among other related activities, include:

- A. Coordinate and report on continuing research on electronic detection and mass marking technologies;**
- B. Collate and share information on CWT sampling procedures and programs; suggest modifications to sampling and monitoring programs to proponents;**
- C. Review MM proposals to determine potential impacts on sampling and tagging programs;**
- D. Provide agencies with a list of MM and MSF proposals received by the SFEC;**
- E. Provide the necessary liaison with the Data Standards Working Group of the Data Sharing Technical Committee to ensure that necessary modifications are made to PSC data exchange formats to maintain the integrity of the CWT system; and**
- F. Prepare an annual report summarizing mass marking statistics, index tag groups, and sampling programs for marks and CWTs.**

IV. Specific duties of the SFAWG, among other related activities, include:

- A. Design marking and sampling strategies that will achieve desired precision for CWT-based estimates;**
- B. Develop analytical tools for the evaluation, by the SFEC and MSF proponents, of MM programs and MSFs and their potential impacts on the coastwide CWT program;**
- C. Provide the necessary technical liaison with agencies and other coastwide committees working on selective fishery evaluation models;**
- D. Review and recommend parameter values for assessing impacts of MSFs;**
- E. Develop analytical tools for estimating the impacts of MSFs on escapements and exploitation rates for naturally spawning coho and Chinook stocks based on post-season information;**
- F. Review MSF proposals and provide advice to the proponents regarding the design of MSFs and the conduct of sampling and monitoring programs; and**
- G. Recommend guidelines, procedures, and/or time frames necessary to evaluate the success of MSFs in conserving naturally spawning stocks.**

**L. Cassidy
Chair**

**J. Davis
Chair**

Appendix B. Mass Marking Proposal Template

Mass Marking Proposal ID # _____
Date Received _____

TEMPLATE FOR ADIPOSE FIN MASS MARKING PROPOSALS

This template is intended for proposals to mass mark any release group of more than 100,000 fish from a hatchery complex or area that involves the following:

- 1) Chinook or coho salmon,
- 2) mass marked with an adipose clip, but untagged, and
- 3) expected to be intercepted in Pacific Salmon Commission fisheries.

PROPOSAL TITLE:

Contact information

Proposing Agency:	
Contact Person:	
Mailing Address:	
Phone Number:	
Fax:	
Email:	

Is the proposal:

new _____
 substantially changed _____
 or a continuation of a previous proposal _____

Proposed Marking and Tagging

1. Purpose of mass marking:

- a. Provide a brief description of the goals and objectives of the proposal (e.g. to obtain more information on hatchery straying to wild spawning grounds, to increase fishing opportunities, or to identify hatchery/wild compositions in fisheries).
- b. If the proposal is not a new proposal, list the Mass Marking Proposal ID number(s) (assigned by the PSC Executive Secretary) corresponding to the previous proposal. In addition, describe any significant differences from previous proposals (i.e., additions or deletions of mass marked stocks or DIT groups).
- c. Identify potential mark-selective fisheries targeting the proposed mass marked stocks that your agency might pursue in the future.

- List all proposed mass marking and DIT plans (see example format below), including the following fields: area/region, hatchery, stock, number of fish to be tagged with and without fin clip, number of fish to be untagged with and without fin clip, and prior marking status.

Example format for proposed mass marking and tagging plans. DIT groups identified with an asterisk ().*

Species:

Brood:

Release Year:

Area or Region	Hatchery	Stock	Number to be Tagged		Number Untagged		Proposed to be Marked This Brood Year (Y/N)	Marked Last Brood Year (Y/N)
			Ad Clipped	Unclipped	Ad Clipped	Unclipped		
		Total						

- List any known reviews of the mass marking proposal that have been conducted (e.g., by the Mark Committee) and the outcome of those reviews. List any marking programs/agreements that this proposal may conflict with and briefly describe the possible conflict.
- List any issues of concern previously identified by the SFEC related to this mass marking proposal and describe how those concerns have been addressed.

FISHERY DISTRIBUTION AND CWT SAMPLING

- Provide estimates of the anticipated number of mass marked fish that will be encountered in fishery CWT sampling programs using the format below. In order to standardize estimates between agencies, we would prefer the following methods be used:
 - Use actual CWT recoveries from representative CWT groups (e.g. key or indicator stocks from each region) as basis of estimate
 - Calculate the average recovery rate of tags (# recoveries / # releases), using the following three brood years: Coho = BYs 2001-2003, Chinook = BYs 1999-2001
 - Multiply the # of proposed MM fish, by production region, by this recovery rate, for the appropriate indicator stock
 - Apportion the MM fish to the region/fisheries (see table below) based on the average distribution for the indicator codes
 - The PSMFC RMIS will provide a standardized report that summarizes recoveries in the requested region/fisheries. Simply provide them with a vertical text listing of the tag codes.

Region	Fishery	Estimated number of marked fish that will be encountered in fishery sampling programs.	Electronic sampling currently in place Y/N?
Alaska	Commercial		
	Sport		
Northern BC	Commercial		
	Sport		
Southern BC	Commercial		
	Sport		
Washington (Coast & PS)	Commercial		
	Sport		
Columbia Basin	Commercial		
	Sport		
Oregon Coast	Commercial		
	Sport		
California	Commercial		
	Sport		

Describe the source/data and methods used to make the estimates – if different than the preferred method. Provide other information, if relevant, on the distribution, run timing and migration routes of the stocks proposed for marking and/or tagging.

Appendix C. Template for mark-selective fishery proposals.

Mark-Selective Fishery Proposal ID #
Date Received _____

TITLE FOR MARK-SELECTIVE FISHERY PROPOSALS

Contact information

Proposing Agency:	
Contact Person:	
Mailing Address:	
Phone Number:	
Fax:	
Email:	

Is the proposal:

new or not yet reviewed by PSC-SFEC _____
substantially changed _____

Purpose/management objective

Describe the management objective of the proposed mark-selective fishery.

Location and time of the proposed mark-selective fishery

Please include any information when there are breaks or changes in regulations that might impact sampling stratification (see Question 7b below)

1. Location of the fishery:
2. Year and month(s) when the fishery is proposed to occur:

Other information about the fishery:

3. Target species/stocks (including nontarget PSC species/stocks of concern):
4. Gear to be used:
5. Other regulation details (e.g., size restrictions, bag limits, mixed bag information):

Projected impacts BY the fishery

6. Identify all (coast wide) CWT stocks likely to be encountered in this fishery (including individual tag codes if available), whether those stocks were Double Index Tagged (DIT). Appendices F and G provide tables of tagged indicator stocks for coho and chinook for your convenience. Please note we are interested in tagged impacts alone, untagged hatchery production should not be included.

In-season management

7. Describe your sampling program for sampling for: CWTs, marks and estimation of total catch. Attach your sampling plan if available. At a minimum, include descriptions for the following:
 - a. CWT recoveries.
 - i. Will there be *random* sampling of CWTs (i.e., fishers exiting fisheries contacted for biological sampling of harvest) or will you be using voluntary programs?
 - ii. If *random* will there be ETD or visual identification of tagged fish?
 - iii. If ETD in *random* samples, will all tagged fish (marked and unmarked) be processed?
 - iv. If *random* what is the expected sample rate for CWTs?
 - v. If voluntary programs are used, how is the awareness factor estimated?
 - b. Monitoring for retained catch by sample strata for sample expansions. The sample strata and the strata of catch estimation must match the location/time/regulation strata (i.e., whenever there is a change in regulation such as from MSF to non-selective, or change in bag limits, the sampling strata should also change).
 - c. Monitoring of mark rate in the MSF (this is the total mark rate, percent marked in the harvest from the fishery).
 - d. Other information, e.g., retained unmarked fish (mixed bag fisheries, or mark recognition error in MSF)

Other information.

8. Please include any other information that will be useful for estimation of unmarked tagged mortalities in your MSF. For instance, sources of estimates of unmarked to marked ratios for DIT tagged groups (e.g., in a test fishery, nearby hatchery, non-selective fishery). Please provide any input you wish on approach to estimate the unmarked tagged mortalities for DIT groups, or for appropriate release mortality rates to be used.

Appendix D. Status of Mass Marking Proposals Received in 2008 for Mass Marking to Occur in 2009.

Description of Proposal and Agency	New¹ or Continuation Proposal	SFEC Proposal Number
Coho		
Southern BC Coho - CDFO	Continuation	MM-FOC-01-2008
Puget Sound Coho – WDFW/Tribal	Continuation	MM-WDFW-04-2008
Washington Coast Coho – WDFW/Tribal	Continuation	MM-WDFW-01-2008
Washington Columbia River Coho - WDFW	Continuation	MM-WDFW-05-2008
Makah, Quilcene, Quinault NFH Coho - USFWS	Continuation	MM-USFWS-018-2008
Eagle Creek NFH Coho - USFWS	Continuation	MM-USFWS-04-2008
Columbia River Coho - ODFW	Continuation	MM-ODFW-04-2008
Oregon Coast Coho - ODFW	Continuation	MM-ODFW-05-2008
Chinook		
L. White Salmon R. and Spring Cr. NFH Fall Chinook - USFWS	Continuation	MM-USFWS-17-2008
Makah and Quinault NFH Fall Chinook – USFWS	Continuation	MM-USFWS-19-2008
Willamette Spring Chinook - ODFW	Continuation	MM-ODFW-01-2008
Oregon North Coast Spring Chinook - ODFW	Continuation	MM-ODFW-02-2008
Oregon South Coast Spring Chinook - ODFW	Continuation	MM-ODFW-03-2008
Oregon Columbia River Fall Chinook - ODFW	Continuation	MM-ODFW-06-2008
Puget Sound Spring, Summer, Fall Chinook – WDFW/Tribal	Continuation	MM-WDFW-02-2008
Columbia R. Spring, Summer, Fall Chinook - WDFW	Continuation	MM-WDFW-03-2008
Washington Coast, Fall, Spring Chinook – WDFW/Tribal	Continuation	MM-WDFW-06-2008

¹ First time mass marking program proposal has been submitted for SFEC review

Appendix E. Spreadsheet template for MSF proposals

Agency and Contact Information:													
Fishery Information				Other regulations			CWT stocks		Sampling program				Other sources of info for estimation of unmarked mortalities and mark ratios
Region and Fishery Area	Period (Yr/Mon)	Fishery type (EO, FSC, Com, Rec) and Gear	Species (Target and Mark-selective)	Bag limits adult and juvenile by mark status	Lower Size Limit	Other regulations comments (e.g., upper limits, gear restrictions, mesh size)	Hatchery and Stock Name	Indicator or DIT	CWT sampling method (e.g., random /direct or voluntary)	Tag Detection Method	Are All Tags Processed?	Other sampling (mark rate, release mortality rate, compliance)	

Appendix F. Current PSC Coho CWT exploitation rate indicator stocks and DIT groups.

Region	Exploitation Rate Indicator Stocks	Natural/Unmarked Stock Representation	DIT²
BC North Coast	Lachmach Toboggan	North Coast Wild Skeena	
Interior Fraser	Coldwater Salmon Lemieux	Thompson River Thompson River Thompson River	
Georgia Basin	Big Qualicum Goldstream River Black Creek Inch Creek Salmon River Quinsam River	East Coast Vancouver Island East Coast Vancouver Island East Coast Vancouver Island Wild Lower Fraser Lower Fraser Wild North Vancouver Island	√ √
West Coast Van Is.	Robertson Creek	West Coast Vancouver Island	
Puget Sound	Nooksack (Kendall Creek) Skookum Creek Lummi Bay Ponds Skagit (Marblemount) Skykomish (Wallace River) Bernie Gobin Green River (Soos) Puyallup (Voights) Puyallup Tribal (Rushing) Squaxin Net Pens Kalama Creek (Nisqually) Quilcene Quilcene Quilcene George Adams Dungeness Lower Elwha	Nooksack Nooksack Nooksack Skagit Stillaguamish/Snohomish Stillaguamish/Snohomish Mid Puget Sound South Puget Sound South Puget Sound South Puget Sound South Puget Sound North Hood Canal Quilcene Net Pens (Hood Canal) Port Gamble Net Pens (Hood Canal) South Hood Canal Dungeness Strait of Juan de Fuca	√ √ √ √ √ √ √ √ √
Washington Coast	Makah Solduc (falls) Queets Wild ³ Quinault Satsop Springs Satsop (late) Satsop (Bingham) Forks Creek (late) Forks Creek Nasell	North Coast North Coast North Central Coast Quinault Grays Harbor Grays Harbor Grays Harbor Willapa Bay Willapa Bay Willapa Bay	√ √ √ √ √ √
Columbia Basin	Lewis River (Type N and S) Eagle Creek Sandy River	Lower Columbia River Lower Columbia River Lower Columbia River	√ √
Oregon Coast	Salmon River Rogue River (Cole Rivers)	Oregon North Coast Oregon South Coast	

² Proposed for 2009

³ Stock released from Salmon River Hatchery.

Appendix G. Current PSC Chinook CWT exploitation rate indicator stocks and DIT groups.

Area	Exploitation Rate Indicator Stocks	Natural/Unmarked Stock Representation	Run Type	DIT
S.E. Alaska	Alaska Spring	Southeast Alaska	Spring	
British Columbia	Kitsumkalum Robertson Creek Quinsam Puntledge Big Qualicum Cowichan Chehalis (Harrison Stock) ¹ Chilliwack (Harrison Stock)	North/Central BC West Coast Vancouver Is Georgia Strait Georgia Strait Georgia Strait Georgia Strait Lower Fraser River Lower Fraser River	Summer Fall Fall Summer Fall Fall Fall Fall	√
Puget Sound	Skagit Spring Fingerling Skagit Spring Yearling Nooksack Spring Fingerling White River Spring Yearling ³ Skagit Summer Fingerling Skykomish Summer Fingerlings ² Stillaguamish Summer/Fall Fingerling George Adams Fall Fingerling Samish Fall Fingerling Green River Fall Fingerling Grover Creek Fall Fingerling Nisqually Fall Fingerling South Puget Sound Fall Yearling Hoko Fall Fingerling	Central Puget Sound Central Puget Sound North Puget Sound South Puget Sound Central Puget Sound Central Puget Sound Central Puget Sound Hood Canal North Puget Sound South Puget Sound South Puget Sound South Puget Sound South Puget Sound South Puget Sound Strait of Juan de Fuca	Spring Spring Spring Spring Summer Fall Fall Fall Fall Fall Fall Fall Fall Fall	√ √ √ √ √ √ √ √ √ √ √ √ √ √
Washington Coast	Sooes Fall Fingerling Queets Fall Fingerling Quinault Lake Fall Fingerling ² Forks Creek Fall Fingerlings ²	North Wash. Coast North Wash. Coast North Wash. Coast Willapa Bay	Fall Fall Fall Fall	√ √ √
Columbia River	Cowlitz Tule Spring Creek Tule Little White Salmon ² Columbia Lower River Hatchery Columbia Upriver Bright Hanford Wild Lewis River Wild Lyons Ferry Willamette Spring Lewis River Spring ² Columbia Summers	Columbia R. (WA) Columbia R. (WA) Columbia R. (WA) Columbia River (OR) Upper Columbia R. Upper Columbia R. Lower Columbia R. Snake River Lower Columbia R. Lower Columbia R. Columbia R. (WA)	Fall Tule Fall Tule Fall Bright Fall Tule Fall Bright Fall Bright Fall Bright Fall Bright Spring Spring Summer	√ √ √ √ √ √ √ √ √ √ (dropped) √
Oregon Coast	Salmon River	North Oregon Coast	Fall	

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

² DIT group not currently an indicator stock.

³ No longer adipose fin clipped.

Appendix H. Post season Report Templates

Templates with examples are provided below in Appendix Tables H1, H2 and H3.

Appendix Table H1. Sampling methods and processing of tags in all fisheries and escapement locations. Required for choice of estimation of impacts on unmarked fish.

Region	Sampling Location	CWT Sample Method	Detection Method	Tags Processed
North	Net	Direct	Electronic	All
	Troll	Direct	Electronic	All
	Sport	Voluntary	Visual	All
Outside	Net	Direct	Electronic	All
	Troll	Direct	Electronic	All
	Sport	Voluntary	Visual	All
Inside	Net	Direct	Electronic	All
	Troll	Direct	Electronic	All
	Sport	Voluntary	Visual	All

Appendix Table H2. Information on MSFs that have occurred, locations, periods and locations and what sampling and monitoring was conducted to recover CWTs and estimate total encounters and unmarked mortality and compliance in these MSFs. Compliance includes estimation of mark recognition error (marked fish released) and unmarked retention error (unmarked fish retained and landed). Provides information on actual implementation of MSFs proposed for season.

Region	Fishery Area	Fishery Period	Regulations	Sampling and Monitoring Conducted to Estimate:			
				CWTs	Encounters	Unmarked Mortality	Compliance
Species							
Alaska	No MSF						
Canada	St of Georgia Sport						
	WCVI sport			Creel & voluntary	Creel, guide logbook, test fishing	No	No
Puget Sound	Area 5,6 sport coho			Creel & voluntary	Creel, guide logbook, test fishing	No	No
	Area 7 sport coho			Creel @ 22.6%	Creel, test fishing	no	yes
	Area 7 Reefnet coho			Creel @ 15.2%	Creel	no	yes
	Area 13 sport coho			Creel @ 0%	No	no	yes
Coastal Washington	Area 1 sport coho			Creel @ 11.3%	Creel	no	yes

	Area 2 sport coho			Creel @47%	Creel, observers	no	yes
	Area 3 sport coho			Creel @45%	Creel, observers	no	yes
	Area 4 sport coho			Creel @73%	Creel, logbooks	no	yes
	Area 1 troll coho			Creel #42%	Creel, test fishing, observers	no	yes
Coastal Oregon	Sport Troll			Creel @42%	Creel	no	yes
Columbia R	Columbia R			Electronic Electronic	Observer & Creel	yes no	yes no
Columbia River	Buoy 10 sport coho			Electronic	Creel	yes	yes
				Creel @38%	Creel , observer	no	yes

Appendix Table H3. Estimated catch, encounters and mortalities by size and mark status in MSF.

Region	Fishery	Year	Retained Marked Fish	Retained Unmarked fish	Encounters Marked	Encounters Unmarked	% Marked	Legal-sized Marked fish Landed & Release Mortalities	Legal-sized Unmarked fish Landed & Release Mortalities	Sub-Legal-sized Marked fish Landed & Release Mortalities	Sub-Legal-sized Unmarked fish Landed & Release Mortalities
WA	Area 5/6	2003	3,417	76	5,327	8,626	38%	3,287	140	225	0
WA	Area 5/6	2004	3,571	5	5,102	6,365	44%	3,476	477	366	385
WA	Area 5/6	2005	2,024	53	3,412	3,237	51%	1,981	373	351	237
WA	Area 5/6	2006	3,641	25	5,008	5,095	50%	3,546	63	199	15
WA	Area 5/6	2007	3,971	124	5,784	3,839	60%	3,794	432	540	301

* mark rate from total legal sized coho encountered