PACIFIC SALMON COMMISSION
SELECTIVE FISHERY EVALUATION COMMITTEE

REVIEW OF MASS MARKING AND MARK-SELECTIVE FISHERY ACTIVITIES PROPOSED TO OCCUR IN 2012

REPORT SFEC (13)-2

May 2013

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LIST OF ACRONYMS WITH DEFINITIONS

ADFG	Alaska Department of Fish and Game	**MU**	Management Unit
AK	Alaska	**NSF**	Non-Selective Fishery
BC	British Columbia	**ODFW**	Oregon Department of Fish and Wildlife
BY	Brood Year	**OR**	Oregon
CA	California	**PS**	Puget Sound
CDFG	California Department of Fish and Game	**PSC**	Pacific Salmon Commission
CDFO	Canadian Department of Fisheries and Oceans	**PSMFC**	Pacific States Marine Fisheries Commission
COLR	Columbia River	**PST**	Pacific Salmon Treaty
CoTC	Coho Technical Committee	**RMIS**	Regional Mark Information System
CST	Coast	**SFAWG**	SFEC- Analytical Work Group
CTC	Chinook Technical Committee	**SFEC**	Selective Fishery Evaluation Committee
CWT	Coded-Wire Tag	**SFEC-RCWG**	SFEC- Regional Coordination Work Group
DIT	Double-Index Tag	**SHRP**	Sport Head Recovery Program
ER	Exploitation Rate	**SJDF**	Strait of Juan de Fuca
ETD	Electronic Tag Detection	**URB**	Upriver Bright (Fall Chinook)
ID	Idaho	**US**	United States
IDFG	Idaho Department of Fish and Game	**VTR**	Voluntary Trip Report
MM	Mass Marking	**WA**	Washington
MOU	Memorandum of Understanding	**WCVI**	West Coast Vancouver Island
MSF	Mark-Selective Fishery	**WDFW**	Washington Department of Fish and Wildlife

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EXECUTIVE SUMMARY

This report provides a summary of the proposed coastwide plans for mass marking (MM) of Coho and Chinook salmon and the conduct of mark-selective fisheries (MSFs) in 2012. Issues with implications for maintaining the coastwide coded-wire tag program are identified and recommendations are proposed.

Summary of 2012 Mass Marking Proposals

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

Mass Marking and DIT Programs

Twenty-two proposals (8 for Coho and 14 for Chinook) were received for mass marking (MM) occurring in 2012 (Appendix E). The Selective Fishery Evaluation Committee (SFEC) believes these proposals cover all MM programs of relevance to the Pacific Salmon Commission (PSC).

Approximately 35 million Coho are proposed to be mass-marked coastwide in 2012 (Table 2.1; Figure 2.1A), a level comparable to that proposed for 2011. Essentially all hatchery Coho production intended for harvest from southern British Columbia (BC) and southern United States (US) hatcheries will be mass marked. Currently, there are 19 proposed Coho salmon DIT groups (Table 2.1), of which two will be released from southern BC, seven from Puget Sound (PS), six from the Washington (WA) coast, and four from the Columbia River Basin.

Approximately 113 million Chinook are proposed to be mass marked in 2012 from southern US Chinook hatcheries (Table 2.1; Figure 2.1B). This is approximately 7 million more than were proposed for 2011. Most all hatchery Chinook production from southern US hatcheries intended for harvest will be mass marked. Currently there are 16 proposed Chinook salmon DIT groups (Table 2.1, Appendix H), of which one will be released from the Fraser River, eight from Puget Sound facilities, two from WA coastal facilities, and five from Columbia River facilities.

Sampling Programs

Assuming recent exploitation rates and sampling programs, the SFEC estimates the proposed MM of Coho stocks in 2012 will result in annual encounters of untagged marked Coho in sampling programs of approximately 1,400 Coho in Alaska (AK) and 7,800 Coho in Canada (Table 2.4). For southern US Chinook stocks, annual encounters of untagged marked Chinook in sampling programs are projected to be approximately 6,500 Chinook in AK, 22,000 Chinook in Canada, and 1,900 Chinook in California (Table 2.4).

Prior to MM, the adipose-fin clip was employed as a visual indicator for fish containing a CWT. Consequently, sampling programs which were designed to collect heads from fish with missing adipose fins resulted in samples of heads, all which contained 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 coastwide because of continuing reservations by some agencies regarding the cost, accuracy, and practical feasibility of incorporating this technology into their sampling programs. The Alaska Department of Fish and Game (ADFG), Canadian Department of Fisheries and Oceans (CDFO), Oregon Department of Fish and Wildlife (ODFW), and California Department of Fish and Game (CDFG) all conduct sampling programs which will not recover the unclipped component of DIT programs that are required to assess impacts of MSFs.

Considering sampling programs coastwide, some agencies already implement comprehensive electronic sampling strategies to recover CWTs from sport and commercial fisheries, while other agencies are still working to increase their use of ETD methods. Washington State continues to fully implement electronic sampling statewide and consistently reports CWT recoveries of unmarked DIT releases in sport marine and some freshwater MSFs, as well as in non-selective fisheries (NSFs). 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 Canadian commercial fisheries have also been electronically sampled with the exception of the Coho landed by the northern BC 'ice boat' fleet, where visual sampling is used to recover CWTs. In sport fisheries, Canada continues to rely on the Sport Head Recovery Program (SHRP) to recover CWTs from NSFs and MSFs alike and thus, no unmarked DIT recoveries are available from them. Oregon Department of Fish and Wildlife continues to use visual sampling of fall Chinook in the Columbia River and the Oregon (OR) coast fisheries, also resulting in no recoveries of unmarked DIT groups. However, beginning in 2011, ODFW initiated electronic sampling of the ocean sport and commercial salmon fisheries off the coast of OR. Fisheries from which unmarked DIT recoveries should have been observed create gaps in analyses of fishery impacts on unmarked (wild) fish.

Encounters of large numbers of mass-marked Chinook are increasingly impacting catch sampling programs in northern fisheries; for example, approximately 70% of the Chinook caught in 2011 in the southeast Alaskan troll fishery with a missing adipose fin did not contain a CWT. The increased costs to deal with the additional marked fish (e.g., storage, and shipping to and sorting of heads in the dissection laboratories) are not quantified, but will impact the programs.

Summary of 2012 Mark-Selective Fishery Proposals

MSFs have been prosecuted for Coho since 1998 and for Chinook since 2003. For 2012, the SFEC received 39 MSF proposals for Coho and Chinook salmon in CDFO, WDFW, ODFW, and IDFG fisheries. Fourteen proposals were received for Coho salmon MSFs occurring in 2012 and twenty-five proposals were received for Chinook salmon MSFs. A new proposal from IDFG was received this year for an existing fishery on Snake River fall Chinook. This fishery began in 2009. Otherwise, no new MSFs that had not occurred previously were proposed for 2012. Agencies provided the majority of the requested information in each of the proposals and the proposals were submitted before SFEC met to review the proposals. The SFEC believes these proposals cover all MSFs planned for 2012 of relevance to the PSC. The proposals submitted to the SFEC for review are provided in Table 3.1. Further details describing the proposed MSFs and comments by the SFEC are provided in Table 3.2 and Table 3.3 (also see Appendix F)

Up until 2008, Chinook MSFs were largely restricted to Puget Sound and in the Columbia River. Since then, Chinook MSFs have expanded substantially in marine and freshwater areas. In 2007, 12 Chinook MSFs were prosecuted; in 2010, that number doubled to 24 Chinook MSFs, resulting in a much larger number of indicator stocks vulnerable to being encountered in MSFs.

The majority of current MSF proposals are for terminal marine or freshwater areas, each of which will impact mature fish of one to several stocks. Multiple MSFs for both Coho and Chinook are also expected to occur in ocean areas in BC, WA (WA ocean areas 1 through 4 and the Columbia River), and OR in 2012. These fisheries will impact many stocks and also multiple broods of Chinook. Historical information on encounters of tagged and marked fish in mark-selective fisheries for the run years 2006-2009 for Coho and 2006-2010 for Chinook is provided in Table 3.4 and Table 3.5. In addition, Table 2.4 provides estimates of projected encounters of fish to be mass marked in 2012 in future regional fishery sampling programs. These estimates are based on the number of mass-marked fish proposed to be released by each participating agency.

Issues and Concerns

Timeliness of Proposals

All requested MM and MSF proposals were submitted prior to the annual meeting of the SFEC in early December, but most of these were not submitted by the deadline of November 1. Receiving the proposals by November 1 would allow the SFEC members time to review them prior to the meeting, enabling members more time during the meeting to prepare timely commentary back to MSF proponents.

Absence of Post-Season Reports

Post-season reports on MSFs are required for each MSF prosecuted. One of the basic functions of these reports is to provide a record of how fisheries were actually prosecuted (whether they took place) and whether there were any changes relative to the proposal in the way the fisheries and sampling programs were conducted. These reports are to be submitted in the form of three tables (Appendix I). The first two tables should be submitted by the annual PSC post-season meeting following the year of the fishery. No SFEC MSF post-season report/tables were found in the US or Canadian post-season reports (January 2012). Although these SFEC tables are not included in the PSC post-season reports, CDFO and WDFW do provide fishery regulations and preliminary landed catch estimates for mark-selective fisheries in these reports.

Mixed-Bag Regulations

Regulations to implement MSFs are increasingly complex, making analyses to estimate impacts challenging in a number of ways. Different types of mixed bag regulations are part of the sport MSFs proposed by Canada, Washington, and Oregon. As MSFs expand, a variety of types of mixed bag regulations are being proposed. The regulations include a range of rules that specify when and how anglers may retain various combinations of adult and juvenile marked and unmarked fish in their daily bag limits. The SFEC is not aware of reliable 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 2013 MM and MSFs by the first of November 2012, 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 MSF post-season reports are completed and submitted in a timely manner.

Interagency Coordination and Cooperation

Mass marking, double-index tagging, and CWT sampling programs are not sufficiently coordinated to support analysis by PSC technical committees. It is also not clear that agencies are collecting adequate data needed to permit estimation of unmarked CWT recoveries in fisheries and escapements so that cohort reconstructions can be carried out on unmarked DIT releases. With the expansion of Chinook marine MSFs, the geographical range of electronic CWT sampling needs to be expanded and the number of DIT stocks needs to be increased. Specifically, electronic tag detection needs to be implemented by ODFW for OR Columbia River fall Chinook fisheries and escapement to recover DITs for Chinook indicator stocks. In addition, DIT groups should be added for the following stocks:

Chinook stocks proposed for DIT releases:

- Columbia River summers (Wells Hatchery);
- Lower Columbia River tule fall Chinook (possibly Washougal);
- Snake River fall subyearlings (Lyons Ferry Hatchery);
- Willamette Spring (reinstate DIT program with electronic terminal sampling);
- North Oregon Coast (Salmon River); and,
- Mid Oregon Coast.

Proposed changes in Coho DIT releases:

- USFWS Eagle Creek – increase DIT release group size from 25,000 to the standard 50,000.

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.

1 INTRODUCTION

The Selective Fishery 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 to the Pacific Salmon Treaty (PST), affected agencies, and existing coastwide and regional committees established to monitor activities related to the CWT program. The SFEC continues to review procedures and protocols for MM, fishery sampling plans, and the evaluation programs developed by the proponents. Where appropriate, the SFEC develops and recommends 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 analyzing 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 (SFAWG). The RCWG is tasked with reviewing MM proposals, and the SFAWG 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 MM 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. Agencies have been requested to provide their information to the SFEC in provided templates (Appendices B and C). In addition, a Microsoft Excel™ format has been developed as an alternative format for submitting MSF proposals (Appendix D).

The SFEC reviewed proposals for MM activities and MSFs anticipated by agencies to occur in 2012. This report summarizes the results of the review of MM and MSF proposals received between November and December 2011. Issues and concerns identified during the review and recommended further actions are provided in this report.

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

2 REVIEW OF MASS MARKING PROPOSALS

2.1 Mass Marking Proposals Received

A total of 22 MM proposals (8 Coho and 14 Chinook) were received by the PSC for 2012 marking activities (Appendix E). This includes three new ODFW proposals for continuing programs, which describe the proposed marking of Columbia River upriver spring Chinook and Snake River spring and fall Chinook. In addition, Idaho (ID) submitted a proposal for continuing to mass mark Snake River fall Chinook. This marking was proposed in previous years, but not proposed last year. All proposals are summarized in Table 2.1. They represent all known MM programs that have international ramifications and/or sampling impacts on other agencies. Proposals were not requested for spring and summer Chinook stocks from the upper Columbia and Snake River Basins, because, as identified in previous reviews, there is a lack of marine recoveries from these groups.

In order to evaluate the impacts of MM proposals on coastwide sampling programs, marking agencies were requested to provide projected fishery encounters of mass marked 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 Mass Marking Levels

Approximately 35 million Coho are proposed to be mass marked in 2012 from southern BC, WA, and OR, the region and stocks covered by the 2012 proposals (Table 2.1). Although there has been a gradual decline in coastwide Coho production, there have been no significant changes to proposed marking levels from brood year (BY) 2001 to 2011. The total BY 2011 Coho hatchery production from stocks covered by the 2012 proposals, is projected to be approximately 41.4 million fish. Annual trends in Coho MM and total production, for BYs 1997 to 2011, are shown in Figure 2.1A. Geographical details of the fish to be released in 2012, by mark and tag status, are displayed in Figure 2.2A. The vast majority of the coastwide Coho production, and essentially all Coho intended for harvest, will be mass marked. For the production that will not be mass marked, approximately 2.1 million will be tagged and unmarked.

The total BY 2011 southern US Chinook hatchery production from WA and OR, for the area and stocks covered by the 2012 proposals, is projected at approximately 145 million released fish. Annual trends in Chinook MM and total production, for BYs 1997 to 2011, are shown in Figure 2.1B. Approximately 113 million Chinook are proposed to be mass marked from southern US Chinook hatcheries in 2012 (Table 2.1). This is approximately 7 million more than the number proposed to be marked in 2011. Geographical details of the proposed BY 2011 releases, by mark and tag status, are displayed in Figure 2.2B. The WA proposal for Columbia River includes 3.8 million Priest Rapids Hatchery Upriver Bright (URB) fall Chinook. Marking of these fish is still under discussion with co-managers. These fish were also proposed for marking last year, but the marking did not occur. For the production that will not be mass marked, approximately 20.6 million will be both tagged and marked, approximately 7.4 million will be tagged and unmarked, and approximately 3.8 million will be intentionally left unmarked for restoration programs (Figure 2.2B). No MM of Chinook is anticipated for hatchery production in CA, BC, or AK.

2.3 Double-Index-Tag Groups

DIT groups provide information necessary for direct estimation of total MSF impacts on unmarked fish. Appendix G and Appendix H list the Coho and Chinook salmon PSC indicator stocks, including those that are DITs. Currently, there are 19 proposed Coho salmon DIT groups (Table 2.1), of which two will be released from southern BC, seven from Puget Sound (PS), six from the Washington (WA) coast, and four from the Columbia River Basin. Chinook salmon DIT groups currently total 16 (Table 2.1, Appendix H), of which one will be released southern BC, eight from Puget Sound facilities, two from WA coastal facilities, and one spring and four fall stocks from Columbia River facilities. WDFW has maintained DIT groups for both species, but the number of DITs outside WA has declined in recent years. With the expansion of Chinook marine MSFs, DIT groups should be added for the following stocks:

Chinook stocks proposed for DIT releases:

- Columbia River summers (Wells Hatchery);
- Lower Columbia River tule fall Chinook (possibly Washougal);
- Snake River fall subyearlings (Lyons Ferry Hatchery);
- Willamette spring (reinstate DIT program with electronic terminal sampling);
- North Oregon Coast (Salmon River); and,
- Mid Oregon Coast.

Proposed changes in Coho DIT releases:

- USFWS Eagle Creek – increase DIT release group size from 25,000 to the standard 50,000.

Table 2.1. Mass marking of Coho and Chinook salmon and number of DIT groups proposed for 2011 and 2012.

Species	Area	Run	Agency	DIT Groups	Mass Marking (millions) 2011	2012	Significant Changes from 2011
Coho	Southern BC		CDFO	2	6.0	5.9	
	Puget Sound		WDFW/Tribal	6	11.1	10.5	Minor reductions
			USFWS	1	0.3	0.3	
	WA Coast		USFWS	2	0.7	0.8	
			WDFW/Tribal	4	4.4	4.5	
	OR Coast		ODFW	0	0.4	0.5	
	Columbia Basin		USFWS	1	0.3	0.3	
			WDFW	2	8.5	7.6	Reduction at Cowlitz Hatchery
			ODFW	1	4.9	4.9	
Total Coho				**19**	**36.7**	**35.3**	
Chinook	BC	Lower Fraser R	CDFO	1	-	-	
	Puget Sound	Spring	WDFW/ Tribal	2	0.4	0.4	
		Summer	WDFW/ Tribal	1	2.4	2.4	
		Fall	WDFW/ Tribal	5	30.7	28.9	Reductions at Voights Creek and Rick's Pond and slight reductions elsewhere
	WA Coast	Spr./Sum.	WDFW/Tribal	0	0.3	0.2	
		Fall	USFWS	0	1.9	2.3	
			WDFW/Tribal	2	8.1	7.9	
	OR Coast	N. Spring	ODFW	0	0.5	0.4	25K reduction in Cedar Creek
		S. Spring	ODFW	0	2.0	2.1	
		Fall	ODFW	0	1.6	1.4	
	Columbia Basin	Spring	ODFW (Willamette)	0	4.5	4.2	
			ODFW (Columbia R)	0	0.5	0.5	New proposal for continuing program
			WDFW	1	2.6	3.9	Increased marking at Fallert Cr. H. Increased production at Cowlitz H. and Lewis R.
		Fall Tule	USFWS	1	11.3	11.2	
			WDFW	0	20.6	20.0	Reduction at Cowlitz Hatchery
			ODFW	1	7.9	7.9	
		Fall URB	WDFW	1	8.4	8.8	3.8 million are under discussion
			ODFW	0	4.3	7.6	
			USFWS	1	1.6	1.6	
		Snake R. Fall	IDFG	0		0.6	New proposal for continuing program
			ODFW	0		0.6	New proposal for continuing program: Released in Grande Ronde River
		Snake R. Spring	ODFW	0		0.5	New proposal for continuing program
Total Chinook				**16**	**106.3**	**113.3**	

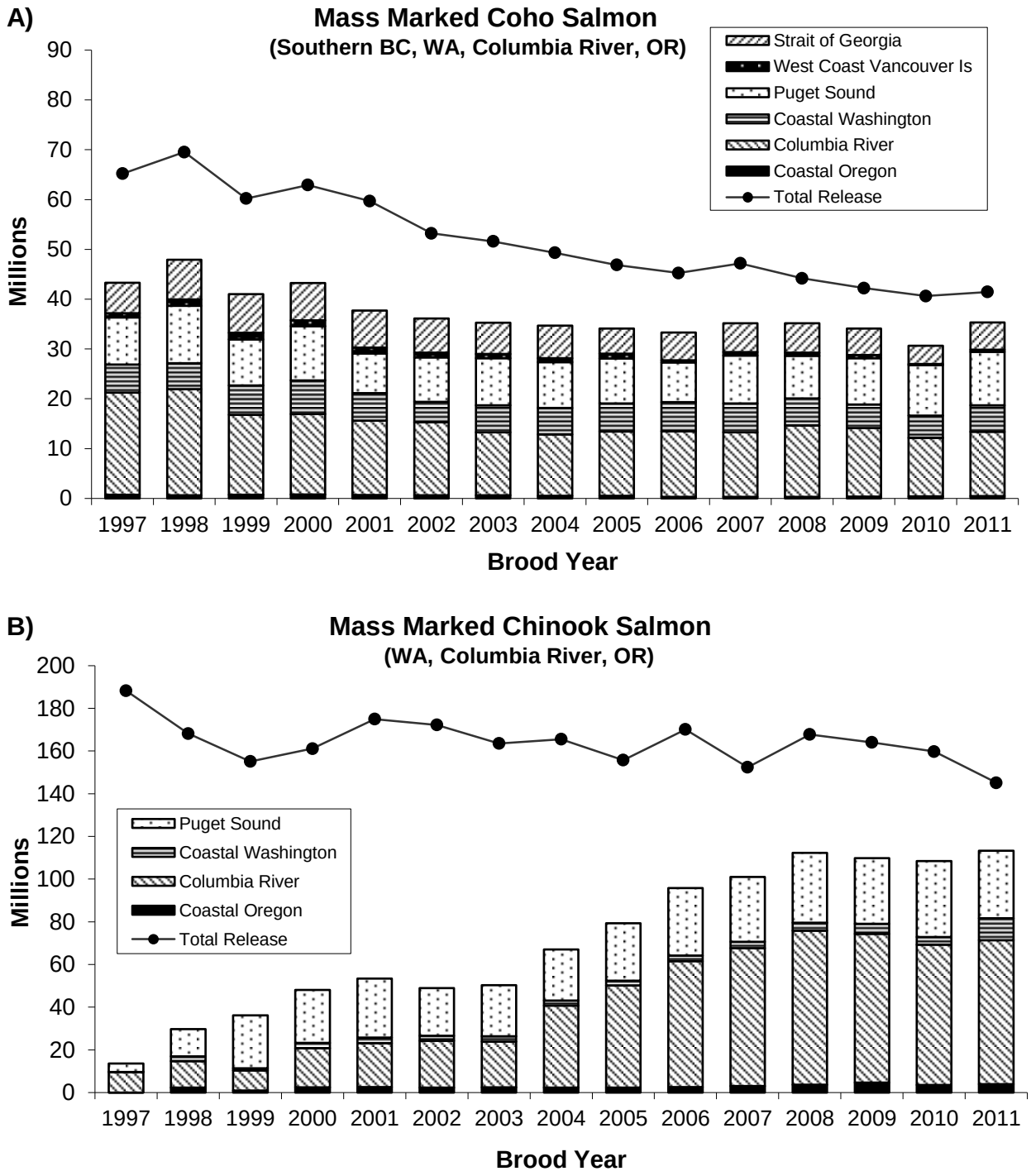

Figure 2.1 Number of mass marked Coho (panel A) and Chinook salmon (panel B) released by region and brood year, 1997-2011. The solid line represents total hatchery releases by brood year with the exception that fry releases of Coho are not included. Values used for brood years 1997-2010 are actual release sizes; values for brood year 2011 are proposed release sizes.

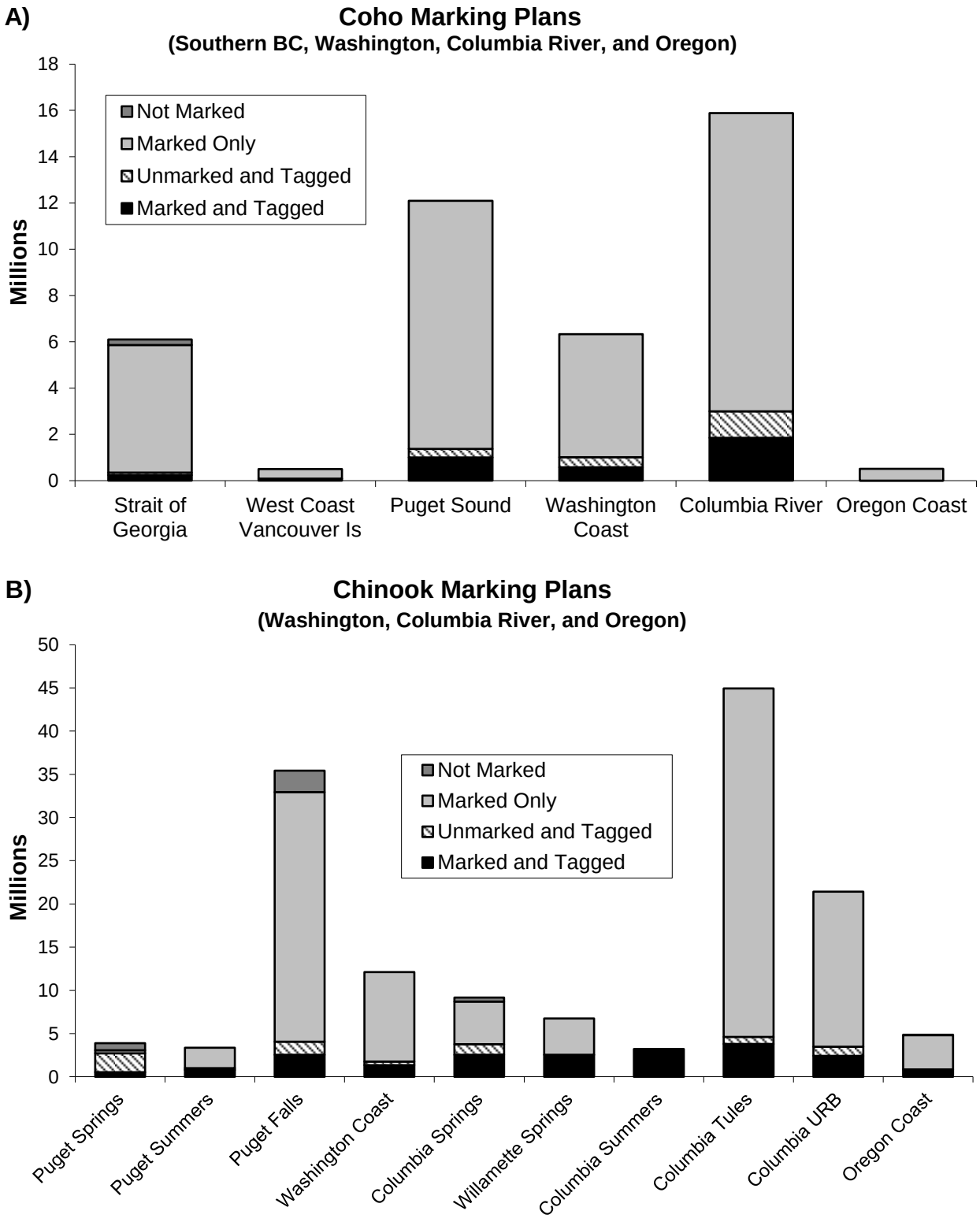

Figure 2.2. Projected Coho (panel A) and Chinook (panel B) salmon releases for brood year 2011, by region and mark status.

2.4 Fishery and Escapement Sampling Methods

2.4.1 Current Agency Sampling Methods

Two methods are currently used to detect fish containing CWTs. The traditional visual sampling method relies upon the adipose-fin clip as a visual indicator for a CWT. When visual sampling is used, only CWTs from marked fish will be detected. Electronic tag detection (ETD) uses electronic gear (hand-held wand or fixed-position tube) to detect CWTs in marked and unmarked fish. When marked fish are first visually separated in the sample and electronic gear is then used to detect tags in the marked fish, this is considered visual sampling because tags are only recovered from marked and tagged fish. Visual sampling results in a lack of recovery of the unmarked component of DIT release groups, creating data gaps in the analysis of CWT data and increased uncertainty in the estimated impacts on unmarked (wild) fish. These gaps also require indirect estimation procedures to complete them thus making analyses more time consuming and the results more uncertain.

Current coded-wire-tag sampling methods for Coho and Chinook are summarized in Table 2.2 and Table 2.3, respectively. Electronic tag detection has not been implemented for all fisheries encountering mass-marked fish. In general, ETD has become the standard CWT sampling method in WA and ID. Visual CWT sampling remains the standard method in AK and CA. In BC and OR the situation is more complex, where sampling methods depend on species, location, and the type of fishery.

Alaska Department of Fish and Game has no plans to convert to ETD sampling although concerns remain about the large numbers of clipped fish without CWTs encountered in sampling programs. Of the marked Chinook caught in Alaska's troll fishery since the implementation of MM, the proportion of fish with no tags has increased from approximately 7% to 70% (Figure 2.3). The increased cost to deal with the additional marked fish is not quantified, but impacts the program. Costs to ship all the heads, including those with no CWTs, from sampling locations to the dissection lab are substantial.

California does not employ ETD. However, approximately 270 mass-marked Coho and 1,900 mass-marked Chinook are projected to be encountered in CA (Table 2.4) sampling programs, which could negatively impact their programs.

Canada relies on voluntary recoveries (SHRP) of marked Coho and Chinook in sport fisheries (regardless of whether mark-selective or non-selective regulations are used), while the current restricted commercial fisheries are electronically or visually sampled depending on species and location. As in AK, Canada's SHRP has seen an increase in the submission of heads without tags. In addition, they have seen a decrease in the submission rate of heads as fewer anglers turn in heads. Since 2008, Coho landed by 'ice' or 'day boats' in the northern BC troll fishery are not subject to electronic sampling. In that fishery, Coho are sampled visually and CWTs from marked fish only are recovered. Electronic sampling is being used for both species in commercial fisheries South of Cape Caution, located just northward of the northern tip of Vancouver Island on the mainland coastline.

Coded-wire-tag sampling in Oregon hatcheries is predominantly electronic; however CWT sampling at most freshwater traps and on spawning grounds remains visual. Since 2011, ETD has been used to CWT sample both the sport and commercial troll Chinook and Coho fisheries that occur off the coast of Oregon. However, the impacts of large abundances forecasted for Sacramento and Klamath River fall Chinook combined with the 25% fractional marking program in CA could affect proposed electronic sampling of the commercial troll fisheries when high-volume loads are encountered by samplers.

The Oregon ocean sport Chinook fishery is non-selective with the exception of a small area adjacent to Tillamook Bay which is mark-selective prior to August 1. The majority of the sport Coho fishery is mark-selective; however a limited non-selective quota fishery occurs in September from Cape Falcon to Humbug Mountain. Oregon's ocean commercial troll fishery is non-selective for Chinook and mark-selective for Coho North of Cape Falcon. From Cape Falcon southward to the OR/CA border, the commercial Chinook fishery is non-selective with the exception of a small area adjacent to Tillamook Bay which is mark-selective prior to August 1. Coho retention in the commercial troll fishery is prohibited from Cape Falcon to the OR/CA border.

Columbia River sport and commercial fisheries are electronically sampled for spring and summer Chinook (January-July) and also Coho. Fall Chinook (August-October) fisheries (commercial and sport) are visually sampled (only adipose-clipped fish are wanded to determine if CWT present), except for the Buoy 10 sport fishery in the estuary where electronic sampling has been used in recent years.

Table 2.2. Proposed fishery sampling methods for tagged Coho salmon in 2012.

Region	Fishery	Type of Sampling	Comments
Alaska	Commercial Sport	Visual Visual	
Northern BC	Commercial Sport	Visual Voluntary (Visual)	Some terminal areas are not sampled. Coho catches on ice boats are only sampled if Chinook are in the catch (most of the time). Anglers are encouraged to turn in heads from marked Coho only; therefore, tag recoveries of unmarked Coho are not expected (fisheries are non-selective).
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 (fisheries are mostly mark-selective).
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 (fisheries are mostly mark-selective).
Puget Sound	Commercial Sport	Electronic Electronic	
Washington Coast	Commercial Sport	Electronic Electronic	
Oregon Coast	Commercial Sport	Electronic Electronic	The only commercial Coho fishery on the Oregon coast proposed to occur is North of Cape Falcon and is mark-selective; therefore, recoveries of unmarked Coho are not expected. The ocean sport fishery is mark-selective except for a non-selective season during the first few weeks of September. Tag recoveries from unmarked Coho are anticipated in September.
Columbia River	Commercial Sport	Electronic Electronic	
California	Commercial Sport	Visual Visual	

Table 2.3. Proposed fishery sampling methods for tagged Chinook salmon in 2012.

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 are encouraged 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	Electronic Electronic	
Columbia River	Commercial Sport	Electronic/Visual Electronic/Visual	Spring and Summer Chinook fisheries are electronically sampled. Fall Chinook are visually sampled. CWTs from unmarked Chinook from other regions will not be recovered. Spring and Summer Chinook fisheries are electronically sampled. Fall Chinook are visually sampled, except for the Buoy 10 fishery which is electronically sampled. CWTs from unmarked Chinook from other regions will not be recovered, except for the Buoy 10 fishery
California	Commercial Sport	Visual Visual	

Some controversy remains regarding the reliability of wands for detecting CWTs in Chinook. Canadian Department of Fisheries and Oceans has adopted a policy of not using wands in either fishery or escapement sampling except when a tube detector fails or a Chinook is too large to pass through the tube detector. Canadian Department of Fisheries and Oceans carried out a blind study over a 2-year period in the Fraser River Albion Chinook test fishery with trained staff using hand-held wands and 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. However, the results of the Canadian study contradict all other previous blind studies testing the efficacy of wands in detecting CWTs in Chinook, where detection rates ranged from 91 to 99% (Olson 2007). The difference in the results of these studies is disconcerting, and it has yet to be determined whether this difference is due to sampling technique or equipment.

The manufacturer of the wands (Northwest Marine Technology, Inc.) has the ability to test and increase the detection range of wands to a new minimum standard (3.2 cm). Wands that meet this new standard are marked with a silver battery cap. The Northwest Indian Fish Commission (NWIFC) conducted a field test of these newer wands on returning Chinook at three hatcheries in the fall of 2010. The study found high detection rates (99% for all samples combined) with just external wanding of the fish. In addition, some of the missed tags were detected with subsequent wanding in the mouth. Therefore, the technique of "mouth wanding" (wanding the fish both externally on the snout and inside the mouth on the palate) is still recommended when using these wands. In November of 2011 NMT announced the development of a new type of wand, the "T wand". These wands are even more sensitive with a detection range of 5.5 cm. These wands are now being produced and should eliminate the need for mouth wanding.

2.4.2 Estimated Sampling Encounters

A summary of projected mass-marked Coho and Chinook salmon that may occur in agency CWT sampling programs is provided in Table 2.4.

Coho Salmon

Planned MM in 2012 will likely result in estimated future encounters of approximately 1,400 untagged and marked recoveries in AK and approximately 270 encounters of untagged and marked Coho salmon in CA – the two geographical areas where Coho are not mass marked or electronically sampled. It is also projected that approximately 6,600 untagged and mass-marked Coho recoveries will occur in Canadian fisheries that rely on visual sampling methods.

Chinook Salmon

Planned MM of southern US Chinook stocks will result in estimated mass-marked encounters of approximately 6,500 Chinook in AK, 22,000 Chinook in Canada, and 1,900 Chinook in CA, 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 (Table 2.3). For example, in Alaskan troll fisheries where visual sampling is employed the proportion of marked Chinook salmon encountered that is untagged has been much greater in recent years (Figure 2.3).

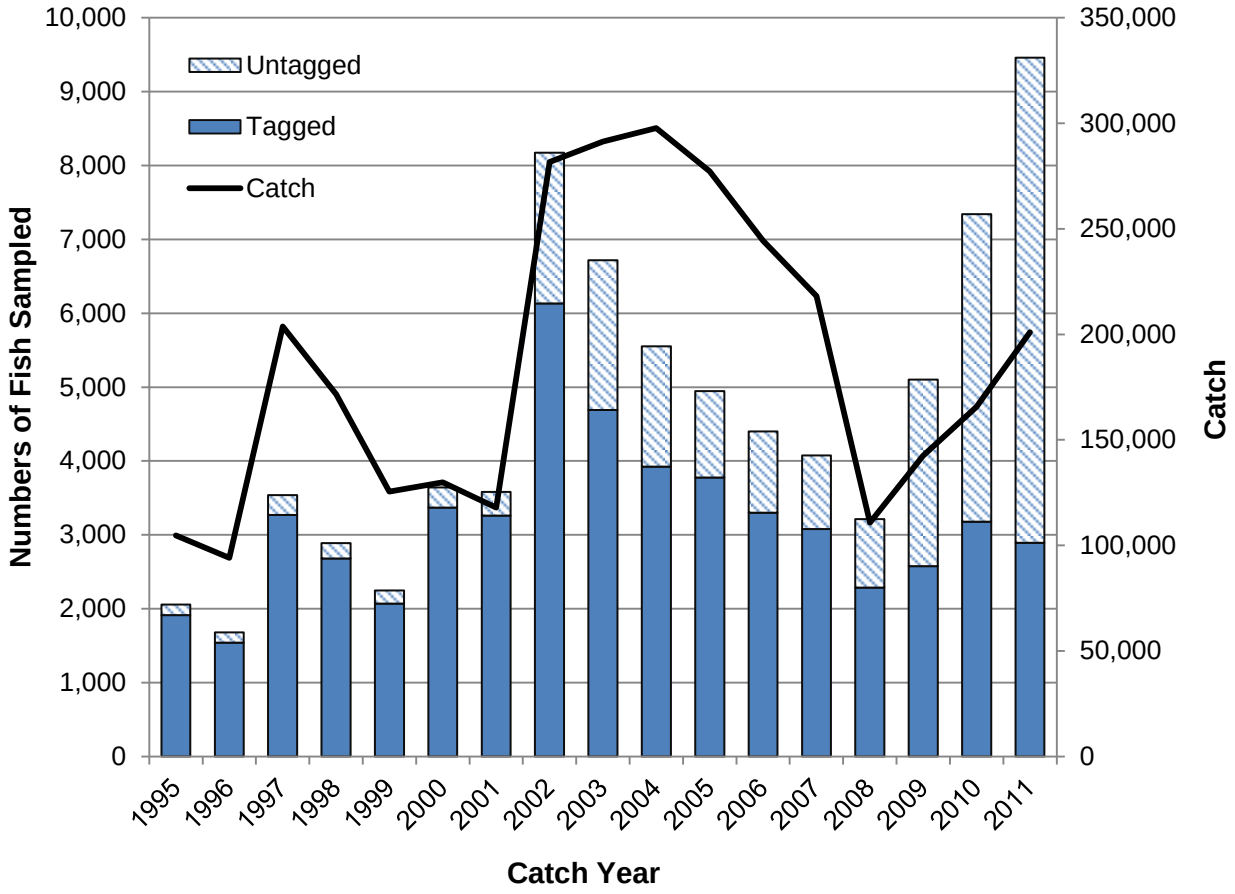

Figure 2.3. Numbers of marked Chinook salmon sampled in Alaska's troll fishery by untagged and tagged status, with catch numbers, catch years 1995-2011.

Table 2.4. Numbers of mass-marked Coho and Chinook projected to be encountered in future CWT sampling programs (actual number of fish encountered in samples will depend on survival rates, exploitation rates, and sampling rates). For this analysis, CWT recoveries from the following brood years were used: 2003-2005 for Coho and 2001-2003 for Chinook. Tribal hatchery mass-marked production in WA is included in the WDFW numbers.

Species	Area/Run		Agency	2012 MM	Estimated Encounters in Future Fishery Sampling Programs													
					Alaska		NBC		SBC		WA (CST/PS)		Columbia R.		OR Coast		California	
					Com	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Spt
Coho	Strait of Georgia		CDFO	5,511,000	1,091	0	456	896	75	1,248	2,596	2,877	0	0	0	226	0	0
	W. Coast of Vanc. Island		CDFO	410,000	113	107	60	50	1,079	1,880	148	264	0	0	0	11	0	0
	Puget Sound		WDFW	10,467,992	27	0	52	0	13	1,163	31,517	9,355	0	0	39	430	0	0
			USFWS	256,000	0	0	0	0	0	31	1,378	247	0	0	0	4	0	0
	WA Coast		USFWS	810,000	7	0	23	2	5	48	2,836	760	0	2	32	239	0	0
			WDFW	4,510,000	69	0	62	13	27	223	3,204	2,895	7	41	162	825	0	0
	OR Coast		ODFW	490,000	0	0	0	0	0	20	18	72	19	19	35	94	0	26
	Columbia River		USFWS	300,000	0	0	0	0	0	4	8	190	74	74	21	177	0	0
			WDFW	7,649,330	0	0	0	0	20	183	1,315	12,329	8,575	2,106	436	6,729	0	55
			ODFW	4,942,000	0	0	0	0	0	185	288	1,725	8,723	1,208	449	1,684	0	185
			Total	**35,346,322**	**1,414**		**1,614**		**6,204**		**74,022**		**20,848**		**11,593**		**266**	
Chinook	Puget Sound	Spring	WDFW	350,000	12	1	4	1	115	20	21	9	0	0	0	0	0	0
		Summer	WDFW	2,360,000	30	0	8	2	489	232	209	341	0	0	0	0	0	0
		Fall	WDFW	28,885,000	199	0	205	36	5,080	1,395	25,154	4,433	0	0	339	0	0	0
	WA Coast	Spr/Sum	WDFW	220,000	2	0	6	0	1	1	5	1	0	0	1	0	0	0
		Fall	USFWS	2,300,000	140	22	255	16	6	25	44	19	0	0	0	0	0	0
			WDFW	7,850,000	1,466	170	2,004	214	39	35	811	208	0	0	0	0	0	0
	OR Coast	N. Spr.	ODFW	438,000	97	16	58	33	86	17	75	17	0	0	112	68	0	0
		S. Spr.	ODFW	2,124,000	91	0	135	0	206	0	191	103	88	0	1,760	160	979	154
		Fall	ODFW	1,412,600	790	88	849	106	201	39	147	65	7	26	437	673	375	135
	Columbia River	Spring	ODFW	4,736,000	200	10	47	10	167	6	5	6	1,950	544	22	4	0	0
			WDFW	3,932,849	473	18	342	18	165	18	82	82	230	676	27	9	9	0
		Fall-Tule	USFWS	11,240,000	0	0	0	0	3,453	367	1,707	784	8,613	447	873	258	10	10
			WDFW	19,959,500	806	37	965	85	977	220	414	440	647	427	232	85	0	0
			ODFW	7,900,000	206	0	138	20	776	206	501	481	5,168	501	1,749	226	197	20
		URB	ODFW	7,600,000	encounters included with ODFW tule fall													
			USFWS	1,600,000	211	14	91	8	11	0	5	8	217	33	0	0	0	0
			WDFW	8,750,000	1,156	127	1,426	117	139	70	82	111	1,902	391	29	12	0	0
	Snake River	Fall	ODFW	600,000	31	8	23	18	17	7	23	38	61	33	9	9	0	0
			IDFG	600,000	30	0	32	0	70	35	64	70	164	41	5	10	0	0
		Spring	ODFW	492,000	17	0	22	13	18	0	18	0	74	147	22	21	0	0
			Total	**113,349,949**	**6,468**		**7,307**		**14,709**		**36,774**		**22,387**		**7,152**		**1,889**	

3 REVIEW OF MARK-SELECTIVE FISHERY 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 likely to be impacted by the fishery (see templates in Appendix C and Appendix D). The information to be provided in the proposal template is required to estimate mortalities of unmarked fish.

3.1 Mark-Selective Fishery Proposals Received

Mark-selective fisheries have been prosecuted for Coho since 1998 and for Chinook since 2003 (Table 3.1; Appendix F). For the 2012 fishery season, the SFEC received a total of 39 MSF proposals for Coho and Chinook salmon in CDFO, WDFW, ODFW, and IDFG fisheries; these are summarized in Table 3.2 and Table 3.3. Agencies provided the majority of the requested information in each of the proposals and the proposals were submitted in time for the annual review meeting by the SFEC. There was complete submission of MSF proposals for the third time, and it appears that the process established by the PSC for obtaining proposals is now working as intended. The number of MSFs appears to be reaching a plateau; two former Coho MSF proposals were dropped in 2012 (one sport MSF on the Nooksack River of Puget Sound and a commercial MSF in Grays Harbor), and there was only one new proposal for a Chinook MSF, which was the first proposal SFEC has received from IDFG for a Snake River fall Chinook salmon MSF. Mixed bag regulations were again proposed for several of the MSFs (e.g., Oregon sport marine and freshwater fisheries and Canadian marine sport fisheries).

3.1.1 Coho Salmon MSFs

Fourteen proposals were received for Coho salmon MSFs occurring in 2012 (Table 3.1; Table 3.2). The SFEC received four proposals from CDFO for ongoing Coho MSFs in Canadian waters, including two in the lower Fraser River and two in southern BC; each proposal contained a variety of fishery openings distinguished by regulation variations. There were eight MSF proposals from WA, all from ongoing fisheries. Of the eight proposals, three were for freshwater locations and five for marine waters. SFEC believes that proposals have now been submitted for all ongoing Coho MSFs in WA. Six of the fisheries have been occurring since 1999, and two since 2010. Further, SFEC received one ODFW/WDFW joint Coho MSF proposal for the Columbia River; this is an ongoing sport fishery in the lower river that began in 1999. Additionally, one Coho MSF proposal was received from ODFW for the OR coast, an ongoing fishery since 2003.

3.1.2 Chinook Salmon MSFs

Twenty-five proposals were received for Chinook salmon MSFs to occur in 2012 (Table 3.1; Table 3.3). These included one proposal from Canada (CDFO), 17 from Washington (WDFW), four submitted jointly by Oregon and Washington (ODFW and WDFW), two from Oregon (ODFW), and for the first time, one from Idaho (IDFG). The proposed Canadian fishery is located in the Strait of Juan de Fuca subareas. Of the 17 WDFW proposals, the number of proposals per WA location were as follows: six in the freshwater systems of Puget Sound; two in Puget Sound marine waters; one in the marine waters off the WA coast; three in Willapa Bay or its tributaries; two in WA coastal river systems; two in the Snake River; and one in the Yakima River. Starting in 2012, WDFW's proposals for Chinook sport MSFs in Puget Sound (marine areas 5-13) were consolidated into one overall summer MSF proposal (MSF-WDFW-35;

combines former proposals 02 and 11; see Table 3.1) and one overall winter MSF proposal (MSF-WDFW-36; replaces proposal 16; see Table 3.1). In addition, four Chinook MSF proposals were submitted jointly by WDFW and ODFW for fisheries planned in the Columbia River; of these, three proposals were for ongoing MSFs that have occurred since 2003. The fourth joint ODFW-WDFW proposal was for a sport MSF on fall Chinook (proposal received each year since 2009) that was actually implemented for the first time in 2011. It is not clear to the SFEC whether there are additional MSFs planned in the Columbia River for which proposals were not received. Also, Oregon submitted two proposals for ongoing Chinook MSFs − one in the Willamette River (started in 2003) and one off the Oregon coast (started in 2008). Lastly, for the first time Idaho submitted one proposal for a sport MSF on the Snake River targeting hatchery fall Chinook.

Table 3.1. Status of mark-selective fishery (MSF) proposals, fishery implementation, and post-fishery reporting for years 2003 through 2012.

"P" indicates the MSF proposal was submitted to the PSC-SFEC by the requested deadline. "F" indicates the MSF was conducted. "R" indicates the post-season report summarizing MSF results was submitted successfully to the PSC-SFEC. An "O" (third character) indicates that the post-season MSF report is still outstanding (i.e., SFEC has not yet received the report). An "X" indicates that a MSF proposal was not submitted to SFEC (first character) or the MSF was not conducted (second character). Finally, "-" indicates the MSF was neither proposed nor conducted in a given year.

Fishery Name	**Catch Year**[1]									
(SFEC Proposal ID)	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Targeting Marked Coho										
Sport, Southern BC marine and freshwater (MSF-FOC-02)	PFR	PFR	PFR	PFR	PFO	PFO	PFO	PFO	PFO	P
Commercial, Southern BC marine (MSF-FOC-05)	-	PX	PFR	PFR	XFO	PFO	PX	PFO	PFO	P
FSC, Lower Fraser R (MSF-FOC-03)	-	-	-	PFR	PFO	PFO	PFO	PFO	PFO	P
Sport, Lower Fraser R (MSF-FOC-06)	XFR	XFR	XFR	PFR	PFO	PFO	PFO	PFO	PFO	P
Sport, Nooksack R (MSF-WDFW-18)	XFO	XFO	XFO	XFO	XFO	XFO	PFR	PFO	PFO	-
Sport, Puget Sound areas 5-13 (MSF-WDFW-07)	XFR	PFR	PFR	PFR	XFR	PFR	PFR	PFR	PFR	P
Sport, WA areas 1-4 and Buoy 10 (MSF-WDFW-06)	PFR	PFR	PFR	PFR	XFR	PFR	PFR	PFR	PFR	P
Commercial, WA areas 1-4 (MSF-WDFW-15)	XFO	XFO	XFO	XFO	XFO	PFO	PFO	PFO	PFO	P
Sport Quillayute R (MSF-WDFW-31)	XFO	XFO	XFO	XFO	XFO	XFO	XFO	XFO	PFO	P

[1] Catch year 2003 was the first year that SFEC began requesting proposals from agencies. Some Coho mark-selective fisheries began as early as 1998.

Table 3.1. (Continued) Status of mark-selective fishery (MSF) proposals, fishery implementation, and post-fishery reporting for years 2003 through 2012.

Fishery Name	**Catch Year[1]**									
(SFEC Proposal ID)	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Targeting Marked Coho (continued)										
Sport, Grays Harbor Area 2.2 (MSF-WDFW-23)	-	-	-	-	-	-	-	PFO	PFO	P
Sport, Grays Harbor tributaries (MSF-WDFW-24)	XFO	XFO	XFO	XFO	XFO	XFO	XFO	PFO	PFO	P
Commercial, Grays Harbor Area 2C (MSF-WDFW-30)	-	-	-	-	-	-	XFO	XFO	PXO	-
Sport, Willapa tributaries (MSF-WDFW-22)	XFO	XFO	XFO	XFO	XFO	XFO	XFO	PFO	PFO	P
Sport, Willapa Bay Area 2.1 (MSF-WDFW-29)	-	-	-	-	-	-	-	PFO	PFO	P
Sport, Lower Columbia R (MSF-ODFW/WDFW-04)	XFR	XFR	XFO	XFO	XFO	PFO	PFO	PFR	PFO	P
Sport, Oregon coast (MSF-ODFW-03)	XFR	XFR	XFO	XFO	XFO	XFO	XFO	PFO	PFO	P
Targeting Marked Chinook										
Sport, Strait of Juan de Fuca subareas, BC (MSF-FOC-07)	-	-	-	-	-	XFO	PFO	PFR	PFO	P
Sport, WCVI subareas, mainly inside (MSF-FOC-08)	-	-	-	-	-	-	PX	-	PX	-
Sport, Nooksack R (fall run) (MSF-WDFW-13)	-	PFO	PFO	PFO	PFO	PFO	PFR	PFR	PFO	P
Sport, Upper Skagit R (spring run) (MSF-WDFW-12)	-	-	XFO	XFO	PFO	PFO	PFO	PFR	PFO	P
Sport, Skykomish R (summer run) (MSF-WDFW-01)	PFO	PFO	XFO	XFO	PFO	PFO	PFR	PFR	PFO	P
Sport, Puget Sound areas 5&6, summer (MSF-WDFW-02)	PFR	PFR	PFR	PFR	PFR	PFR	PFR	PFR	PFR	-
Sport, Puget Sound areas 9-13, summer (MSF-WDFW-11)	-	-	-	-	PFR	PFR	PFR	PFR	PFR	-
Sport, Puget Sound areas 5-13, summer (MSF-WDFW-35; combines proposals 02 and 11 as of 2012)	-	-	-	-	-	-	-	-	-	P
Sport, Puget Sound areas 5-13, winter (MSF-WDFW-36, replaces 16 as of 2012; old proposal 08 [Areas 8-1/8-2 Winter MSF] combined into 16 in 2007)	-	-	PFR	PFR	PFR	PFR	PFR	PFR	PFR	P

[1] Catch year 2003 was the first year that SFEC began requesting proposals from agencies. Some Coho mark-selective fisheries began as early as 1998.

Table 3.1. (Continued) Status of mark-selective fishery (MSF) proposals, fishery implementation, and post-fishery reporting for years 2003 through 2012.

Fishery Name (SFEC Proposal ID)	Catch Year									
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Targeting Marked Chinook (continued)										
Sport, Carbon & Puyallup R (fall run) (MSF-WDFW-09)	XFO	XFO	PFO	PFO	PFO	PFO	PFO	PFO	PFO	P
Sport, Nisqually R (fall run) (MSF-WDFW-14)	-	-	XFO	XFO	PFO	PFO	PFO	PFO	PFO	P
Sport, Skokomish R (fall run) (MSF-WDFW-20)	-	-	-	-	-	-	PX	PFO	PFO	P
Sport, WA areas 1-4 (MSF-WDFW-19)	-	-	-	-	-	-	PX	PFR	PFR	P
Troll, WA areas 1-4 (MSF-WDFW-21)	-	-	-	-	-	-	PX	PX	-	-
Sport, Quillayute R (spring/summer run) (MSF-WDFW-32)	XFO	XFO	XFO	XFO	XFO	XFO	XFO	XFO	PFO	P
Sport, Hoh R (MSF-WDFW-33)	-	-	-	-	-	XFO	XFO	XFO	PFO	P
Commercial, Willapa Bay (MSF-WDFW-25)	-	-	-	-	-	-	-	PFO	PFO	P
Sport, Willapa Bay Area 2.1 (MSF-WDFW-26)	-	-	-	-	-	-	-	PFO	PFO	P
Sport, Willapa Bay tributaries (fall run) (MSF-WDFW-27)	-	-	-	-	-	-	-	PFO	PFO	P
Sport, Snake R (fall run) (MSF-IDFG-04)	-	-	-	-	-	-	XFO	XFO	XFO	P
Sport, Snake R (spring run) (MSF-WDFW-28)	-	-	-	-	-	-	-	PFO	PFO	P
Sport, Lower Snake R (fall run) (MSF-WDFW-05)	-	-	-	-	-	XFO	PFR	PFO	PFO	P
Sport, Yakima R (spring run) (MSF-WDFW-03)	-	PFO	-	-	-	PFR	PX	PFR	PFO	P
Sport, Columbia R (fall run) (MSF-ODFW/WDFW-05)	-	-	-	-	-	-	PX	PX	PFO	P
Sport, Columbia R (summer run) (MSF-ODFW/WDFW-02)	PFO	PFO	PX	XFO	-	PFO	PX	PFO	PFO	P
Sport, Lower Columbia R (spring run) (MSF-ODFW/WDFW-01)	PFO	PFO	PFO	XFO	XFO	PFO	PFR	PFO	PFO	P
Commercial, Lower Columbia R (spring run) (MSF-ODFW/WDFW-03)	PFO	PFO	PFO	XFO	XFO	PFO	PFR	PFO	PFO	P
Sport, Willamette R (spring run) (MSF-ODFW-01)	PFR	PFR	PFO	PFO	XFO	PFR	PFR	PFR	PFO	P
Sport, Oregon coast (MSF-ODFW-02)	-	-	-	-	-	XFO	PFO	PFO	PFO	P

Table 3.2. Summary description of Coho mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

Location (Proposal ID)	Fishery Type and Period	Regulation	Sampling	Stocks Impacted	Comments and Concerns	Methods of Estimation
BC Management Areas 11-29, outer areas of 121-127. (MSF-FOC-02)	Sport Coastal waters June 1 to December 31. Fraser River Mid-October to December 31.	Daily bag limit of 2 (up to 4) marked Coho greater than 30 cm fork length. Barbless hooks. More regulations depend on maximum ER for interior Fraser River Coho. May have mixed bags.	CWTs obtained through voluntary sport head recovery program	Lists tagged Coho recoveries in 2000-2008. DIT stocks indicated.	Voluntary recovery program will not provide recoveries of unmarked and tagged fish; these would be few, as unmarked fish would only be retained in error (non-compliance) except for fisheries with mixed bag limits.	Total catch using creel surveys and log books from lodges. Expansions are completed for areas/times not sampled. CWT estimates depend on awareness factors.
BC Management Areas 23-27 121-127. (MSF-FOC-05)	Commercial September to October	Retention of marked Coho allowed in a Chinook targeted fishery.	Sampled electronically for CWTs	Tagged stocks and DIT groups listed.		Total catch is from logbooks.
Fraser River (MSF-FOC-03)	First Nations October to November	Gillnet and beach seines. Chum and Pink targeted fishery. Live wild Coho must be released.	No sampling	List of tagged stocks. Inch Creek is a DIT.	No sampling for CWTs is planned. Numbers of marked and unmarked are reported in some fisheries. Visual sampling only. 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.	Catch estimate method unknown. CWT estimates cannot be made

Table 3.2. (Continued) Summary description of Coho mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

Location (Proposal ID)	Fishery Type and Period	Regulation	Sampling	Stocks Impacted	Comments and Concerns	Methods of Estimation
Fraser River (MSF-FOC-06)	Sport Table shows periods by specific area.	Daily limit varies by time and area. Two per day or 4 per day, only two marked >35 cm.	Voluntary and creel	Coldwater, Salmon (Thompson), Dunn /Louis /Lemieux, Inch Cr. (DIT), Salmon R., other South Coast and US stocks.	Creel surveys and awareness factors for some times and areas, but no CWT sampling. Voluntary returns of CWTs. Need an analysis to evaluate how many marked DIT fish taken.	Creel survey is a roving survey, with incomplete trip angler interviews. CWT estimates require awareness factor.
Washington Puget Sound Areas 5,6, 7, and 13 (MSF-WDFW-07)	Sport July to September	Release unmarked Coho, no minimum size limit.	Dockside sampling for CWTs, with ETD. Visual for mark rates.	All CWT indicator stocks from Puget Sound and southern BC.		Catch estimates from catch record cards available November of following year. In-season creel estimates are available for Area 5.
Washington Ocean Areas 1-4 (MSF-WDFW-06)	Sport July to September	Two per day, Release unmarked Coho. Minimum size limit 16" total length.	See WDFW Ocean Sampling Program Operating Plan.	All PSC CWT indicator stocks, primarily Columbia R.		Effort-CPUE from angler interviews, stratified by charter/private and weekday/ weekend. Mark rates from charter ride-alongs.
Washington Ocean Areas 1-4 (MSF-WDFW-15)	Commercial July to September	Release unmarked Coho, minimum size 16".	Dockside sampling for CWTs.	All CWT indicator stocks from Washington and southern BC.	Need information comparing mark rates between troll and sport fishery.	Catch estimates from fish tickets. Mark rates from sport fishery used for troll fishery.

Table 3.2. (Continued) Summary description of Coho mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

Location (Proposal ID)	Fishery Type and Period	Regulation	Sampling	Stocks Impacted	Comments and Concerns	Methods of Estimation
Quillayute River (MSF-WDFW-31)	Sport February 1 to December 31	Minimum size limit of 12". Bag limit of 6 salmon. Feb 1-Aug 31: up to 2 adult marked. Sep 1-Dec 31: up to 2 adult unmarked and 2 adult marked.	CWT sampling of escapement, but not fishery.	Sol Duc Hatchery (DIT)	Mixed bag will cause problem in estimating CWT composition of mortalities.	Catch is estimated using catch record cards. Mark rate from commercial fishery. CWTs estimated using tag ratios from tribal net fishery.
Grays Harbor Area 2.2 (MSF-WDFW-23)	Sport September 16 to October 7	Daily limit 3, of which only 1 may be Chinook and 2 may be unmarked Coho. Release Chum. Minimum size limit of 12".	Dockside sampling for CWTs.	Skookumchuck Bingham Creek (DIT), Satsop Springs (DIT), Lake Aberdeen, Mayr Bros, and Humptulips hatcheries.	Mixed bag will cause problem in estimating CWT composition of mortalities.	Total catch is estimated from catch record cards. Estimate mark rate from VTRs and commercial fishery. CWT estimates depend on tag ratios from commercial fishery.
Grays Harbor Tributaries (MSF-WDFW-24)	Sport October 1 to January 31	Daily limit of 6. Up to 2 adults may be retained; of which only 1 may be unmarked Coho. Release Chinook and Chum. Minimum size limit of 12".	No sampling for CWTs.	Skookumchuck, Bingham Creek (DIT), Satsop Springs (DIT), Lake Aberdeen, Mayr Bros, and Humptulips hatcheries.	Mixed bag will cause problem in estimating CWT composition of mortalities.	Total catch is estimated using catch cards. Mark rates from estimates of total escapement. CWT estimates depend on tag ratios and total escapement estimates.

Table 3.2. (Continued) Summary description of Coho mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

Location (Proposal ID)	Fishery Type and Period	Regulation	Sampling	Stocks Impacted	Comments and Concerns	Methods of Estimation
Willapa Bay Tributaries (MSF-WDFW-22)	Sport August 1 to January 31	Daily limit of 6, of which 3 adults may be retained. Release unmarked Chinook, unmarked Coho, and Chum. Minimum size limit of 12".	Sept: Dockside sampling for CWTs.	Willapa (Forks Cr), Nemah, Naselle	Willapa (Forks Cr), Nemah, Naselle	Catch estimates from catch record cards. Mark rates from estimates of escapement. CWT estimates depend on tag ratios and escapement estimate.
Willapa Bay MA 2.1 (MSF-WDFW-29)	Sport August 1 to January 31	Daily limit of 6. Up to 3 adults may be retained. Release Chum and unmarked Chinook. Minimum size limit of 12". From June 9-July 31, regulations concurrent with the ocean fishery (Area 2).	Dockside sampling for CWTs and VTRs.	Willapa (Forks Creek), Nemah, Naselle	Mixed bag will cause problems in estimating CWT composition of mortalities.	Catch estimates from catch record cards. Mark rates from VTRs and commercial fishery. CWT estimates depend on tag ratios from commercial fishery.
Lower Columbia River (MSF-ODFW / WDFW-04)	Sport August 1 through December 31	Marked only. August 1-31: Bag limit of 1. September 1-30: Bag limit of 2. October 1-December 31: Bag limit of 6, up to 2 adults. Minimum size limit of 16" for August-September, 12" for October-December.	Creel survey with CWT sampling.	Big Creek, Grays, Elochoman, Cowlitz, Kalama, Toutle, Lewis, Washougal, Sandy, and Klickitat Rivers, Eagle Creek, and Bonneville Hatchery	Mixed bag will cause problem in estimating CWT composition of mortalities.	Total catch is estimated using creel survey. Effort is estimated with aerial surveys, CPUE is estimated from angler interviews.
Oregon coast from Leadbetter Pt to California (MSF-ODFW-03)	Sport June 20 to December 31	Mixed bag; 1-3 salmon/steelhead (depending on area) per day (Chinook>24 in., Coho >16 in., steelhead > 20 in.). Only marked Coho, with no seasonal limit. Up to 2 adult Chinook depending on date and area. Regulations do not apply to Chinook jacks (15-24").	Creel survey. Visual tag detection.	Stocks from BC, Puget Sound, Washington, Columbia R, and Oregon coast are all taken.	No VTR, test fishery or onboard observers for mark rates.	Effort estimated using boat counts and CPUE estimates from angler interviews.

Table 3.3. Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

Location	Fishery Type and Period	Regulation	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
BC Strait of Juan de Fuca and WCVI, Areas 19-1 to 6, 18-4 and 20-5 (MSF-FOC-07) (Note: Juan de Fuca only proposed fishery location in 2012.)	Sport (barbless hooks). June 3 to18	Daily limit of 2 marked or unmarked between 45-67 cm or 2 marked > 67 cm	Voluntary CWT recovery program. Creel survey and lodge log books for catch data.	Table provided of tagged groups impacted.	There will be a problem in estimating CWT composition of unmarked mortalities due to mixed bag (slot limit type) regulations.	Total catch and mark rates by size category estimated from creel surveys and lodge log books. Effort/CPUE estimate. Effort is estimated from aerial surveys and CPUE is derived from complete-trip (or exit) interviews.
Nooksack River (MSF-WDFW-13)	Sport September 1 to December 31 (Chinook MSF: Sept 1-31)	Daily bag limit of 2 salmon plus 2 additional Coho; release unmarked Chinook, Sept 1-31. Minimum size 12".	No sampling	Samish tagged fall Chinook are taken in this fishery.		Estimate number of Samish fall Chinook using % hatchery from spawning grounds and tag rate from hatchery.
Upper Skagit River (MSF-WDFW-12)	Sport June 1 to July 15 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 to the Cascade road bridge (RM 0.0-0.9).	Minimum size limit of 12". Daily bag limit of 4 marked Chinook only; up to 2 may be adults (>24"). Night closure and anti-snagging rule.	Creel survey with CWT sampling and ETD.	Skagit Spring Chinook (DIT), Skagit Summer Chinook, NF Nooksack Spring Chinook		Catch estimate from creel survey and CWTs. Effort/CPUE using effort from trailer and boat counts and CPUE from angler interviews. Auxiliary boat surveys used to expand trailer and boat counts for effort.

Table 3.3. (Continued) Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

Location	Fishery Type and Period	Regulation	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
Skykomish River (MSF-WDFW-01)	Sport June 1 to July 31	Minimum size limit of 12". Bag limit of 2 salmon per day, marked Chinook only. Night closure and anti-snagging rule.	Creel survey, depending on funding, including CWT sampling with ETD	Skykomish DIT (Wallace R. Hatchery).		Catch estimated from creel survey. Effort/CPUE survey. Effort estimated from trailer and boat counts and complete trip angler interviews used for CPUE. Auxiliary boat surveys used to expand trailer and boat counts for effort.
Puget Sound WA area 5-13 (MSF-WDFW-35; replaces proposal #s 02 and 11)	Sport May to September	Daily bag limit of 2 marked salmon. Chinook minimum size limit of 22".	Dockside angler interviews (in-season creel survey estimates in some areas); on-water encounters data from test fisheries and/or VTRs.	All Puget Sound, South BC, Columbia River	This fishery will impact CTC indicator stocks of concern that are not clipped or DIT; e.g., White River spring Chinook.	Catch estimated from creel surveys and CRCs. VTR or test fisheries provide estimates of encounters by size and mark status
Puget Sound WA Areas 5-13 (MSF-WDFW-36; replaces proposal # 16)	Sport October to April	Daily bag limit of 2 marked salmon. Chinook minimum size limit of 22".	Dockside angler interviews (in-season creel survey estimates in some areas); on-water encounters data from test fisheries and/or VTRs.	All Puget Sound, South BC, Columbia River	This fishery will impact CTC indicator stocks of concern that are not clipped or DIT; e.g., White River spring Chinook.	Catch estimated from creel surveys and catch record cards. VTR or test fisheries provide estimates of encounters by size and mark status.

Table 3.3. (Continued) Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

Location	Fishery Type and Period	Regulation	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
Washington Puyallup & Carbon Rivers (MSF-WDFW-09) Puyallup R. from 11th St. Bridge to Carbon R., and Carbon R. from mouth to Voights Creek.	Sport Puyallup River: August 16 to December 31 Carbon River: September 1 to November 30.	Minimum size limit of 12". Daily bag limit of 6 salmon. Puyallup: up to 2 adults may be retained; release unmarked adult Chinook. Carbon: up to 4 adults may be retained, of which up to 2 marked Chinook. Release Chum and unmarked adult Chinook.	No sampling	Voights Creek tag group is not a CTC indicator at this time. Grovers Creek, Soos Creek, and White River springs are also encountered.	Need to compare estimates of mark rates and CWTs from creel survey and tribal net fishery.	Catch estimates from catch record cards. Mark rate and tag ratios estimate from tribal net fishery.
Nisqually River (MSF-WDFW-14)	Sport July 1 to January 31	Minimum size limit of 12". Daily bag limit of 6 salmon. Release unmarked Chinook. July 1 – Oct. 31: Up to 3 adults may be retained, of which only 2 may be any combination of Coho and Chum. Nov. 1 – Jan. 31: Up to 2 adults may be retained.	Creel survey with ETD for CWTs	Clear Creek Hatchery fall Chinook (DIT)		Catch estimates from creel surveys. Effort/CPUE using effort from trailer and boat counts and CPUE from angler interviews.
Skokomish Chinook (MSF-WDFW-20)	Sport August 10-September 5	Minimum size 12". Daily bag limit 2 salmon. Release Chum and all unmarked Chinook. Must retain first two salmon legally caught. Night closure, anti-snagging rule, and barbless hooks required.	Creel survey with ETD for CWTs.	George Adams (DIT)		Catch estimates from creel surveys. Effort/CPUE using effort from trailer and boat counts and CPUE from angler interviews.

Table 3.3. (Continued) Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

Location	Fishery Type and Period	Regulation	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
Ocean Areas 1-4 (MSF-WDFW-19)	Sport May through June	Daily bag limit of 2 salmon per day. Release unmarked Chinook. Minimum size of 24" total length.	Creel survey and charter boat observers (mainly in Areas 1 and 2) and VTRs	All indicator stocks listed in the Appendix H table are expected to be encountered.		Creel survey is an effort/CPUE survey with boat exit counts and exit interviews. Stratified by boat type (private or charter boats) and day type (weekend or weekdays).
Quillayute River system (Bogachiel R., Calawah R., Dickey R., Quillayute R., Sol Duc R.) (MSF-WDFW-32)	Sport February 1 through December 31	Daily bag limit of 6. Up to 2 adults may be retained. Release unmarked adult Chinook. Minimum size limit of 12".	No sampling	Sol Duc Hatchery - WDFW/Salmon River Hatchery - QIN Queets is a DIT.	Lack of direct sampling. Tribal CWT data needs to be brought up to date.	Catch from catch record cards and CWTs. Tag ratios and mark rates from tribal net fishery.
Hoh River (MSF-WDFW-33)	Sport May 1 through August 31	Daily bag limit 6, of which only 1 adult may be retained. Release unmarked adult Chinook. Minimum size limit of 12".	No sampling	Sol Duc Hatchery - WDFW/Salmon River Hatchery - QIN Queets is a DIT	Lack of direct sampling.	Catch from catch record cards and CWTs. Tag ratios and mark rates from tribal net fishery.
Willapa Bay Areas 2G, 2H, 2K, 2J, 2M (MSF-WDFW-25)	Commercial August through November	Gill net, with recovery boxes.	Dockside sampling and onboard observers.	Forks Creek is a DIT.		Catch from fish tickets. Standard CWT estimates.

Table 3.3. (Continued) Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

Location	Fishery Type and Period	Regulation	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
Willapa Bay Area 2.1 (MSF-WDFW-26)	Sport July through January	Daily bag limit of 6, of which up to 3 adults may be retained. Release Chum and unmarked Chinook. Minimum size limit of 12". July regulations concurrent with ocean fishery.	No sampling for CWTs. VTR program.	Forks Creek is a DIT.	Lack of sampling.	Catch from catch record cards. Mark rate and tag ratios from commercial fishery.
Willapa Bay Tributaries (MSF-WDFW-27)	Sport July through January	Daily bag limit of 6, of which up to 3 adults may be retained. Release Chum and unmarked Chinook. Minimum size limit of 12".	No sampling for CWTs. VTR program.	Forks Creek is a DIT.	Lack of sampling.	Catch from catch record cards. Mark rates and tag ratios from hatchery and spawning ground data.
Snake River Fall Chinook (MSF-IDFG-04) Snake River, from the Idaho/ Washington border upstream to the base of Hells Canyon Dam, and in the lower 1.7 miles of the Clearwater River.	Sport September 1 to October 31	Expected bag limit is 6 adults per day and 18 in possession with no limits on jacks. (Adults are 24 or more inches total length and jacks are less than 24 inches total length.) There are no sub-legal encounters in this fishery.	Visual sampling for CWTs	There is no DIT group among the hatchery releases of fall Chinook. Encounters are expected on Chinook from several acclimation facilities in the Snake and Clearwater rivers (e.g., Nez Perce Tribal Hatchery, Lyon's Ferry Hatchery, Umatilla Hatchery, Irrigon Hatchery).		Angler effort, numbers of adult and jack adipose-fin clipped caught and retained and numbers of adipose-fin clipped and unclipped adults and jacks released in this fishery are estimated from data collected in a temporally and spatially stratified roving creel program. IDFG assumes a 10% hook and release mortality for Chinook encountered and released in the fall Chinook salmon fishery.

Table 3.3. (Continued) Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

Location	Fishery Type and Period	Regulation	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
Lower Snake River Spring/Summer Chinook (MSF-WDFW-28)	Sport April to June	Daily bag limit of 2 marked adult Chinook, plus jacks. Release wild (unmarked) adult Chinook. No night fishing for salmon. Barbless hooks only.	Creel survey to estimate mark rate. Sampling for CWTs using ETD.	Spring Chinook salmon returning to Idaho and Oregon. No indicators, no DITs.	No DITs.	Creel survey for total catch and standard CWT methods.
Lower Snake River Fall Chinook (MSF-WDFW-05)	Sport September 1 to October 31	Daily bag limit of 2 marked adult Chinook, plus jacks. Release wild (unmarked) adult Chinook. No night fishing for salmon. Barbless hooks only.	Creel survey to estimate mark rate. Sampling for CWTs using 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.	Need DIT group. Need to coordinate sampling by IDFG, ODFW and WDFW.	Creel survey for total catch and standard CWT methods.
Yakima River (MSF-WDFW-03) Yakima River from Hwy 223 bridge at Granger (RM 83) to Roza Dam (RM 127) north of Selah.	Sport April through June, if total run size and proportion of hatchery fish is sufficient for a MSF, while minimizing mortality of unmarked fish.	Retain marked Chinook only. Bag limit of 2/day. Open to bank and boat fishing, 7 days / week (night closure) until reaching a 7.5% ER based on the in-season total river mouth run size estimate.	Creel survey to estimate total catch, with direct sampling and ETD.	Cle Elum, upper Yakima Spring Chinook. 100% CWT for hatchery supplementation research.		Catch is estimated using creel survey information and standard methods used for CWTs.

Table 3.3. (Continued) Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

Location	Fishery Type and Period	Regulation	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
Columbia River Fall Chinook (MSF-ODFW / WDFW-05) Columbia River mouth upstream to McNary Dam	Sport August through December	Retain marked Chinook only. Buoy 10: Bag limit of 2 adults (≥24") per day. Other areas in Washington: Bag limit of 6 salmon, up to 2 adults. Minimum size limit of 12". Other Oregon areas: Bag limit of 2 adults (≥24") and 5 jacks (15"-24").	Creel Survey CWT sampled with ETD	Big Creek (DIT); Elochoman, Cowlitz, Kalama, Toutle, Washougal, Sandy, Klickitat, and Umatilla R; Spring Creek, Ringold, Priest Rapids, Oxbow, Nez Perce, Lyons Ferry, and Bonneville hatcheries. Naturally spawning fall Chinook in the area of Hanford Reach are also CWTd. Net pen reared fall Chinook returning to the Select Areas may be encountered (Deep River, Youngs Bay, Tongue Point and Blind slough). Lyons Ferry fall fingerlings are the CTC indicator stock; but yearlings comprise the DIT stock.	Creel surveys implemented below McNary Dam, but fishery extends upstream to Priest Rapids. Creel does not cover the whole fishery; therefore, 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. Recommend more DIT groups. Mark rates are observed at Bonneville, after the lower river fishery. Should use VTRs.	Creel survey and catch record cards provide catch estimates and standard methods used for CWTs.

Table 3.3. (Continued) Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

Location	Fishery Type and Period	Regulation	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
Columbia River Summer Chinook (MSF-ODFW / WDFW-02) From the mouth to Priest Rapids Dam	Sport June 16 through July 31	Retain only marked salmon; release all unmarked salmon. Washington: Daily limit of 6 marked salmon, of which only 2 may be adults. Minimum size of 12". Oregon: Daily limit of 2 marked adult (>24" total length) Chinook and 5 marked jack Chinook (15"-24" total length).	Creel survey with ETD	Upper Columbia summer Chinook: Methow, Wells, Okanogan, Wenatchee.	The summer Chinook indicator will be impacted but is not DIT. Creel census below McNary does not cover the whole fishery, which extends to Priest Rapids; therefore, effort estimate will be underestimated. CWT sampling below McNary is adequate if stock/CWT composition is similar below and above McNary. PIT tags could be used to estimate stock composition.	Creel survey and catch record cards provide estimates of catch. Aerial surveys provide effort counts. Mark rates observed at Bonneville Dam for upriver stocks.
Columbia River Spring Chinook Columbia River from the mouth upstream to McNary Dam and near the Ringold hatchery. (MSF-ODFW / WDFW-01)	Sport January 13 through June	Retain only marked salmon; release all unmarked. Washington: Daily limit of 6 marked salmon, of which only 2 may be adults. Minimum size of 12". Oregon: Daily limit of 2 marked adult (>24" total length) Chinook and 5 marked jack Chinook (15"-24" total length).	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, Lewis, and Sandy River Chinook are indicator stocks.	Creel census below McNary does not cover the whole fishery, which extends to Priest Rapids; therefore, effort estimate will be underestimated. CWT sampling below McNary is adequate if stock/CWT composition is similar below and above McNary.	Creel survey and catch record cards provide estimates of catch. Aerial surveys provide effort counts. Standard methods used for CWT estimates.

Table 3.3. (Continued) Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

Location	Fishery Type and Period	Regulation	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
Columbia River Spring Chinook Columbia River from mouth upstream to Bonneville Dam (Zones 1 – 5) (MSF-ODFW / WDFW-03)	Sport January through June 15	Limited to 8-9" minimum mesh gill net or 4¼" maximum mesh tangle net. Total net length restrictions. Duration of "soak times" of the net also restricted. Use of recovery boxes required during Chinook-directed fisheries.	Commercial harvest sampled at buying stations for CWTs using ETD	Willamette Spring. 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. Lewis R. are DITs	Willamette Springs are no longer a DIT group.	Total catch comes from fish tickets. Observers monitor incidental catch of unmarked Chinook and calculate a marked/unmarked ratio that is applied to landed catch to determine unmarked mortalities.
Willamette River and tributaries (MSF-ODFW-01)	Sport January through December	Retain marked Chinook only. Daily bag limit of 2 adults (>24") and 5 jacks (15-24"). Must stop fishing once 2 adults are retained.	Creel survey downstream of Willamette Falls with ETD, but not above falls.	Willamette Spring Chinook. Other hatchery stocks include McKenzie, Clackamas, Marion Forks, and S. Santiam. DIT for BY 2006 from Willamette and McKenzie.	Need a current DIT group. Willamette DIT was discontinued. No description of how mark rate will be obtained.	Creel survey (below falls) and catch record cards (above falls) for catch estimation.

Table 3.3. (Continued) Summary description of Chinook mark-selective fisheries proposed for the 2012 fishery season, for which proposals were submitted by agencies in 2011.

Location	Fishery Type and Period	Regulation	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
Oregon Coastal (MSF-ODFW-02) Ocean terminal areas (within 3 miles of the river mouth) of the Tillamook, Elk, and Chetco Rivers.	Sport August through December	Mixed bag fishery whereby anglers may retain 1-2 unmarked salmon (depending on the run forecast) and one additional marked fish (Chinook >24") per day (2 fish maximum per day regardless of type). These regulations do not apply to Chinook jacks (15"-24"). Seasonal limits for unmarked fish may range from 1-10 unmarked Chinook depending on the river system. The catch of marked Chinook has no seasonal limit.	•In the ocean terminal fisheries, ETD is used to detect CWTs in all sampled (unmarked and marked) salmon. •Whereas, in the Salmon, Coos, and Elk river fisheries, sampling is "visual"; i.e., ad-clipped fish are identified visually and CWTs are detected electronically (in ad-clipped fish only).	Salmon and Elk River Chinook are CTC indicator stocks, but not DIT (see Appendix H), and are caught in significant numbers in the in-river fishery.	Salmon and Elk River should be DIT stocks. Currently, limited data will be available for estimation of impacts on these stocks in ocean or terminal areas MSFs. Other concerns for MSF evaluation needs include the mixed bag regulation and the lack of full ETD except in ocean and terminal area fisheries.	Catch is estimated from creel surveys in Elk, Coos Bay, and Salmon River and from catch record cards otherwise.

3.2 Expected Encounters of CWT Indicator Stocks in MSFs

Multiple MSFs are expected to occur during 2012 in BC, WA, and OR. Table 3.4 and Table 3.5 were constructed using historical information on encounters of tagged and marked fish to identify tagged stocks of Coho (brood years 2003-08; Table 3.4) and Chinook (brood years 2001-6; Table 3.5) that can be expected to be encountered in these areas with MSFs.

Tagged Coho stocks expected to be encountered are included in Table 3.4, all of which are used by the CoTC for their analyses. Mark-selective fisheries in Puget Sound (PS) and Hood Canal largely exploit local stocks. However, tagged fish from all regions are encountered in MSFs in the Strait of Juan de Fuca (SJDF), throughout southern BC, and WA and OR coastal areas.

In 2007, there were 12 Chinook MSFs that occurred and they were largely restricted to PS and to the Columbia River with spring Chinook as the targeted group. Since then, Chinook MSFs have expanded substantially in marine and freshwater areas, with the number of Chinook MSFs doubling to 24 (Table 3.1). In 2010 and 2011, additional Chinook MSFs occurred and have been proposed in the marine waters of BC, PS, WA ocean areas, and freshwater areas in PS and the Columbia River. Further, Chinook MSFs that target later run fish have been added. Prior to 2008, the indicator stocks encountered in MSFs were largely of PS origin or were Columbia River spring stocks. With the additional fisheries now proposed for Canadian waters, WA ocean areas, and in the Columbia River, a larger number of indicator stocks will likely contribute to MSFs (Table 3.5). In addition, MSFs have expanded substantially in PS, both geographically and temporally, with concomitant increases in catch in MSFs for Chinook salmon (Figure 3.1).

In order to monitor the impacts of these expanding MSFs, Chinook DIT programs must be expanded to represent the new stocks that will be encountered. Agencies, however, have been discontinuing rather than expanding their DIT programs. Agencies should reevaluate their DIT programs and consider expanding DIT releases, not discontinuing programs. The CTC is now struggling to analyze the fishing mortalities attributed to Chinook MSFs because more DIT groups are needed.

Table 3.4. Number of tagged and marked Coho salmon sampled (Obs) and percent of total estimated tags (%Est; expanded for the sample rate) in fisheries or in escapement, averaged over brood years 2003-2008. Some estimates are based on less than six years of data because some stocks were not tagged in all years. Coho salmon escapements are not available in the Regional Mark Information System (RMIS) database of the Pacific States Marine Fisheries Commission (PSMFC), so the percentages shown for BC are only for fisheries.

Region		Hatchery / Release Location	# Years Tagged	Mark-Selective Fisheries										Non-Selective Fisheries				Escapement		Total	
				BC		Puget Sound		WA Coast		Columbia R		OR Coast		Commercial		Sport					
				Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	Est
BC	Nass R - Skeena	Toboggan Creek H	6	10	17%	-	-	-	-	-	-	-	-	152	67%	16	16%	-	-	177	672
	Coastal BC	Snootli Creek H	4	1	2%	-	-	-	-	-	-	-	-	84	61%	15	37%	-	-	99	367
		McLaughlin Bay SP	1	-	-	-	-	-	-	-	-	-	-	23	23%	6	77%	-	-	29	306
	Johnstone Strait	Quinsam River H	6	6	47%	-	-	1	1%	-	-	-	-	9	23%	2	28%	-	-	18	120
		Johnston Est Seapen	2	1	1%	-	-	-	-	-	-	-	-	29	25%	23	74%	-	-	52	220
	Georgia Strait	Big Qualicum River H	6	1	35%	1	8%	1	4%	-	-	-	-	4	31%	<1	22%	-	-	7	36
		Goldstream River H	6	3	34%	4	17%	4	13%	-	-	-	-	6	19%	1	15%	-	-	17	74
		Lang Creek H	2	24	50%	4	4%	3	2%	-	-	-	-	22	13%	11	30%	-	-	64	310
	W Vancouver Isl	Robertson Creek H	6	44	83%	2	1%	7	3%	-	-	-	-	22	11%	1	1%	-	-	76	578
	Fraser R -	Inch Creek H	6	13	66%	4	8%	6	6%	-	-	1	1%	11	15%	1	4%	-	-	36	227
	Thompson R	Spius Creek H	6	4	26%	5	21%	11	24%	-	-	2	6%	9	22%	<1	1%	-	-	31	105
WA	Strait of Juan de Fuca	Dungeness H	4	7	15%	2	2%	5	2%	-	-	-	-	53	32%	2	1%	192	47%	260	432
		Lower Elwha H	6	2	9%	2	3%	4	4%	-	-	-	-	11	25%	1	1%	94	56%	113	182
	Puget Sound North	Bernie Gobin H	6	4	5%	18	6%	22	4%	-	-	3	1%	230	71%	18	8%	38	4%	333	1106
		Glenwood Springs	1	-	-	-	-	-	-	-	-	-	-	2	100%	-	-	-	-	2	7
		Kendall Creek H	5	4	4%	5	2%	8	2%	-	-	-	-	171	72%	1	<1%	101	18%	289	735
		Lummi Sea Ponds	4	7	12%	4	2%	8	3%	-	-	2	1%	170	69%	3	6%	44	7%	237	613
		Skookum Creek H	6	6	4%	10	3%	17	3%	-	-	3	<1%	340	77%	2	<1%	183	13%	560	1,403
		Wallace R H	6	8	5%	13	3%	21	3%	-	-	4	1%	39	8%	13	4%	860	76%	959	1,661
		Marblemount H	6	8	5%	15	3%	23	3%	-	-	2	<1%	177	21%	39	6%	642	62%	906	1,793
	Puget Sound Mid	Elliott Bay TR NP	4	9	3%	31	4%	33	3%	-	-	3	<1%	597	79%	42	9%	53	2%	768	2,795
		Voights Creek H	6	9	8%	23	6%	17	3%	-	-	1	<1%	191	45%	26	11%	187	27%	454	1,288
		Keta Creek	3	13	4%	39	4%	36	3%	-	-	4	<1%	397	41%	62	9%	847	39%	1,399	3,292
		Soos Creek H	6	6	4%	16	3%	15	2%	-	-	3	<1%	171	38%	16	4%	524	48%	750	1,715
		Cowskull	3	5	4%	25	10%	14	3%	-	-	1	<1%	211	68%	35	13%	62	2%	353	1,114
		Crisp Creek Rearing	3	11	3%	40	4%	34	2%	-	-	4	<1%	413	41%	30	4%	1,690	47%	2,222	4,172

Table 3.4. (Continued) Number of tagged and marked Coho salmon sampled (Obs) and percent of total estimated tags (%Est; expanded for the sample rate) in fisheries or in escapement, averaged over brood years 2003-2008.

Region		Hatchery / Release Location	# Years Tagged	Mark-Selective Fisheries										Non-Selective Fisheries				Escapement		Total	
				BC		Puget Sound		WA Coast		Columbia R		OR Coast		Commercial		Sport					
				Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	Est
WA	Puget Sound South	Minter Creek H	2	2	4%	3	4%	6	4%	-	-	1	<1%	30	28%	4	4%	186	55%	230	337
		Clear Creek H	1	2	16%	2	4%	5	5%	-	-	-	-	50	63%	2	2%	19	10%	80	188
		Kalama Creek H	6	1	3%	7	9%	3	2%	-	-	1	<1%	41	39%	5	7%	122	40%	178	311
		South Sound Net Pens	6	4	4%	10	5%	13	4%	-	-	1	<1%	211	79%	16	8%	2	<1%	257	864
	Hood Canal	George Adams H	6	4	3%	9	3%	13	3%	-	-	1	<1%	74	23%	9	4%	662	65%	771	1,206
		Quilcene Bay Sea Pen	6	10	5%	23	4%	21	2%	-	-	2	<1%	219	52%	14	5%	425	31%	713	1,901
		Quilcene NFH	6	6	4%	20	4%	17	3%	-	-	2	<1%	186	53%	7	4%	375	31%	613	1,501
		Port Gamble Bay Pens	6	4	6%	13	7%	11	4%	-	-	1	<1%	123	76%	7	6%	11	2%	169	650
	N. WA Coast	Makah NFH	6	3	3%	3	1%	22	6%	-	-	6	2%	26	3%	2	1%	309	84%	370	961
		Quinault NFH	6	8	2%	5	<1%	120	6%	-	-	27	2%	606	53%	1	<1%	479	37%	1,246	4,632
		Salmon R Fish Culture	6	2	1%	2	<1%	50	8%	-	-	12	2%	263	57%	1	<1%	204	31%	534	1,573
		Solduc H	6	9	3%	5	1%	124	10%	-	-	30	3%	61	6%	6	1%	1,206	76%	1,440	2,796
	Grays Harbor	Bingham Creek H	6	2	1%	1	<1%	41	5%	-	-	7	1%	51	7%	12	3%	939	83%	1,052	2,362
		Friends Landing NP	3	1	2%	1	<1%	49	17%	-	-	6	2%	102	51%	16	10%	129	18%	304	940
		Satsop Springs Ponds	5	<1	1%	1	1%	8	9%	-	-	3	2%	11	8%	2	1%	209	78%	234	402
		Humptulips H	1	3	2%	1	<1%	53	13%	-	-	11	3%	161	48%	4	2%	320	31%	553	1,086
		Skookumchuck H	3	1	1%	3	<1%	64	11%	-	-	9	1%	87	13%	15	5%	1,093	69%	1,271	1,869
	Willapa	Forks Creek H	6	3	2%	1	<1%	56	7%	1	<1%	21	3%	126	27%	6	2%	652	59%	865	1,879
		Naselle H	6	2	2%	1	<1%	46	12%	-	-	14	4%	131	73%	2	1%	84	9%	279	994
		Nemah H	4	3	2%	2	<1%	76	14%	-	-	28	7%	110	41%	1	1%	412	35%	632	1,278
CR	Mid and Upper	Oxbow H	4	-	-	-	-	8	3%	5	2%	6	3%	36	18%	1	<1%	445	73%	500	610
		Klickitat H	6	1	1%	1	1%	90	40%	8	4%	42	21%	61	26%	4	5%	2	<1%	208	510
		Cascade H	5	-	-	-	-	27	9%	14	5%	21	8%	198	65%	1	<1%	102	13%	362	819
		Washougal H	6	2	1%	2	1%	89	24%	10	5%	43	14%	64	19%	2	1%	286	35%	498	840
		Wells H	2	-	-	-	-	3	1%	1	<1%	-	-	103	95%	1	<1%	26	4%	133	622

Table 3.4. (Continued) Number of tagged and marked Coho salmon sampled (Obs) and percent of total estimated tags (%Est; expanded for the sample rate) in fisheries or in escapement, averaged over brood years 2003-2008.

Region		Hatchery / Release Location	# Years Tagged	Mark-Selective Fisheries										Non-Selective Fisheries				Escapement		Total	
				BC		Puget Sound		WA Coast		Columbia R		OR Coast		Commercial		Sport					
				Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	Est
CR	Lower CR	Big Creek H	6	-	-	-	-	18	6%	5	3%	15	7%	70	32%	1	1%	317	51%	424	632
		Bonneville H	5	-	-	-	-	47	7%	16	3%	46	8%	26	5%	2	<1%	1418	77%	1,555	1,856
		CEDC Youngs Bay Net	4	-	-	-	-	32	8%	11	4%	27	8%	293	80%	1	<1%	16	1%	379	1,118
		Cowlitz Salmon H	6	8	2%	4	<1%	374	28%	40	6%	163	15%	178	13%	19	2%	792	34%	1,578	2,893
		Deep River NP	6	-	-	-	-	16	6%	5	2%	15	6%	225	83%	-	-	20	2%	281	728
		Eagle Creek NFH	6	-	-	-	-	15	7%	6	4%	17	11%	22	27%	-	-	104	51%	165	481
		Elochoman H	5	<1	2%	-	-	23	14%	3	2%	18	14%	38	22%	1	1%	159	44%	243	369
		Faller Creek H	6	-	-	-	-	22	12%	7	8%	18	12%	11	10%	-	-	252	57%	310	431
		Grays River H	6	1	1%	1	<1%	34	18%	8	5%	31	18%	44	26%	1	<1%	180	31%	298	495
		Kalama Falls H	6	1	2%	1	<1%	40	13%	5	7%	23	9%	51	16%	1	1%	351	52%	472	694
		Klaskanine H	3	-	-	-	-	7	6%	2	2%	5	5%	42	56%	-	-	95	31%	151	312
		Klaskanine S FK Pond	3	-	-	-	-	28	9%	10	4%	21	7%	140	63%	1	<1%	141	16%	341	908
		Lewis River H	6	3	1%	6	<1%	261	12%	61	9%	148	8%	174	8%	4	<1%	2,507	62%	3,164	5,055
		North Toutle H	6	-	-	-	-	34	11%	15	11%	30	12%	14	6%	1	<1%	414	60%	508	810
		Sandy H	6	1	<1%	1	<1%	49	11%	16	5%	38	10%	75	16%	2	<1%	665	58%	845	1,174
OR	OR Coast North	Nehalem H	4	1	<1%	-	-	12	2%	-	-	20	5%	3	1%	1	<1%	1,023	91%	1,060	1,129
		Salmon River H	3	-	-	-	-	4	5%	-	-	5	11%	1	1%	1	3%	110	80%	121	139
		Trask River H	2	-	-	2	<1%	18	4%	-	-	65	14%	4	1%	1	<1%	1,102	81%	1,191	1,379
	OR Coast South	Butte Falls H	1	-	-	1	2%	8	13%	-	-	11	24%	5	21%	2	15%	23	24%	50	98
		Cole Rivers H	6	-	-	-	-	-	-	-	-	1	2%	-	-	1	1%	182	97%	185	187
		Rock Creek H	3	-	-	-	-	4	9%	-	-	32	76%	1	5%	2	7%	2	2%	42	113

Table 3.5. Number of tagged and marked Chinook salmon sampled (Obs) and percent of total estimated CWTs (%Est; expanded for the sample rate) in fisheries or in escapement, averaged over brood years 2001-2006.

		Mark-Selective Fisheries										Non-Selective Fisheries							
		PS		WA CST		COLR		OR		Total		Commercial		Sport		Escapement		Total	
Region	Stock	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	Est
British Columbia	Kitsumkalum Summer	-	-	-	-	-	-	-	-	-	-	41	16%	27	17%	43	67%	111	563
	Atnarko Summer	-	-	-	-	-	-	-	-	-	-	100	23%	19	12%	114	65%	233	859
	Robertson Creek	-	-	-	-	-	-	-	-	-	-	245	36%	104	26%	421	39%	770	2,065
	Quinsam Fall	-	-	-	-	-	-	-	-	-	-	45	19%	20	18%	258	63%	323	538
	Puntledge Summer	-	-	-	-	-	-	-	-	-	-	12	10%	9	16%	149	73%	170	236
	Big Qualicum	1	1%	-	-	-	-	-	-	1	1%	28	13%	21	20%	222	66%	271	499
	Cowichan Fall	-	-	-	-	-	-	-	-	-	-	32	30%	18	32%	39	38%	89	305
	Nanaimo River Fall	1	<1%	-	-	-	-	-	-	1	<1%	28	6%	43	18%	112	76%	184	1190
	Chilliwack (Harrison Fall Stock)	5	1%	-	-	-	-	-	-	5	1%	135	14%	56	14%	432	71%	628	2680
	Harrison Fall Stock (Chehalis)	2	1%	-	-	-	-	-	-	2	1%	79	21%	20	10%	38	68%	140	994
	Lower Shuswap River Summers	-	-	-	-	-	-	-	-	-	-	103	25%	50	21%	246	54%	400	1149
	Nicola River Spring	1	<1%	-	-	-	-	-	-	1	<1%	12	6%	16	8%	114	86%	142	649
	Dome Creek Spring	-	-	-	-	-	-	-	-	-	-	5	38%	3	18%	12	44%	20	96
WA Puget Sound	Skagit Spring Fingerling	88	14%	-	-	-	-	-	-	88	14%	139	15%	39	14%	727	57%	993	1,517
	Skagit Spring Yearling	60	20%	-	-	-	-	-	-	60	20%	50	10%	25	17%	346	53%	481	767
	Skagit Summer Fingerling	3	1%	-	-	-	-	-	-	3	1%	136	24%	17	9%	71	66%	226	995
	Nooksack Spring Fingerling	4	2%	-	-	-	-	-	-	4	2%	77	29%	22	21%	179	48%	281	714
	Samish Fall Fingerling	14	4%	-	-	-	-	-	-	14	4%	274	52%	40	19%	168	25%	496	1,234
	Skykomish Fall Fingerling	6	4%	-	-	-	-	-	-	6	4%	33	16%	16	14%	360	67%	416	614
	Stillaguamish Fall Fingerling	8	4%	-	-	-	-	-	-	8	4%	47	15%	18	15%	166	67%	239	727
	Grovers Creek Fall Fingerling	26	5%	-	-	-	-	-	-	26	5%	133	22%	39	13%	872	60%	1,070	1,547
	Green River Fall Fingerling	17	5%	-	-	-	-	-	-	17	5%	187	38%	26	12%	426	45%	655	1,024
	South Puget Sound Fall Yearling	11	20%	-	-	-	-	-	-	11	20%	22	20%	14	28%	77	32%	124	247
	White River Spring Fingerling	28	17%	-	-	-	-	-	-	28	17%	88	34%	24	17%	197	32%	337	626
	Nisqually Fall Fingerling	25	5%	-	-	-	-	-	-	25	5%	285	47%	30	8%	633	39%	972	1,727
	George Adams Fall Fingerling	18	5%	-	-	-	-	-	-	18	5%	91	25%	37	19%	605	51%	750	1,260

Table 3.5. (Continued) Number of tagged and marked Chinook salmon sampled (Obs) and percent of total estimated CWTs (%Est; expanded for the sample rate) in fisheries or in escapement, averaged over brood years 2001-2006.

		Mark-Selective Fisheries										Non-Selective Fisheries				Escapement		Total	
		PS		WA CST		COLR		OR		Total		Commercial		Sport					
Region	Stock	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	%Est	Obs	Est
WA Coast	Hoko Fall Fingerling	1	1%	-	-	-	-	-	-	1	1%	49	23%	10	10%	89	67%	148	448
	Sooes Fall Fingerling	1	1%	-	-	-	-	-	-	1	1%	34	35%	7	13%	71	51%	112	222
	Queets Fall Fingerling	-	-	-	-	-	-	-	-	-	-	265	79%	40	14%	16	6%	321	841
Columbia R	Lyons Ferry Yearling	17	1%	3	<1%	9	1%	-	-	29	2%	611	40%	219	16%	1,633	42%	2,491	4,449
	Lyons Ferry	1	1%	-	-	1	<1%	-	-	1	1%	63	44%	20	16%	148	40%	231	408
	Columbia Summers	3	<1%	2	<1%	12	2%	-	-	16	2%	610	43%	147	16%	852	38%	1,626	4,117
	Upriver Brights	1	<1%	-	-	-	-	-	-	1	<1%	191	43%	42	19%	302	38%	536	1,128
	Hanford Wild	-	-	-	-	-	-	-	-	-	-	61	50%	13	21%	12	28%	86	320
	Willamette Spring	1	<1%	1	<1%	174	31%	-	-	176	31%	231	16%	32	5%	1,271	48%	1,709	2,692
	Cowlitz Fall Tule	1	1%	-	-	-	-	-	-	1	1%	18	21%	8	13%	129	64%	157	226
	Spring Creek Tule	4	1%	-	-	-	-	-	-	4	1%	356	49%	53	10%	261	41%	674	1,906
	Lewis River Wild	-	-	-	-	-	-	-	-	-	-	35	31%	7	18%	55	51%	98	257
	Columbia L R Hatchery	1	1%	-	-	-	-	-	-	1	1%	52	45%	13	16%	111	38%	177	309
OR Coast	Salmon River	-	-	-	-	-	-	22	4%	22	4%	250	30%	152	29%	179	37%	603	1,967
	Elk River	-	-	<1	<1%	<1	<1%	3	<1%	4	<1%	282	25%	149	17%	861	58%	1,295	2,977

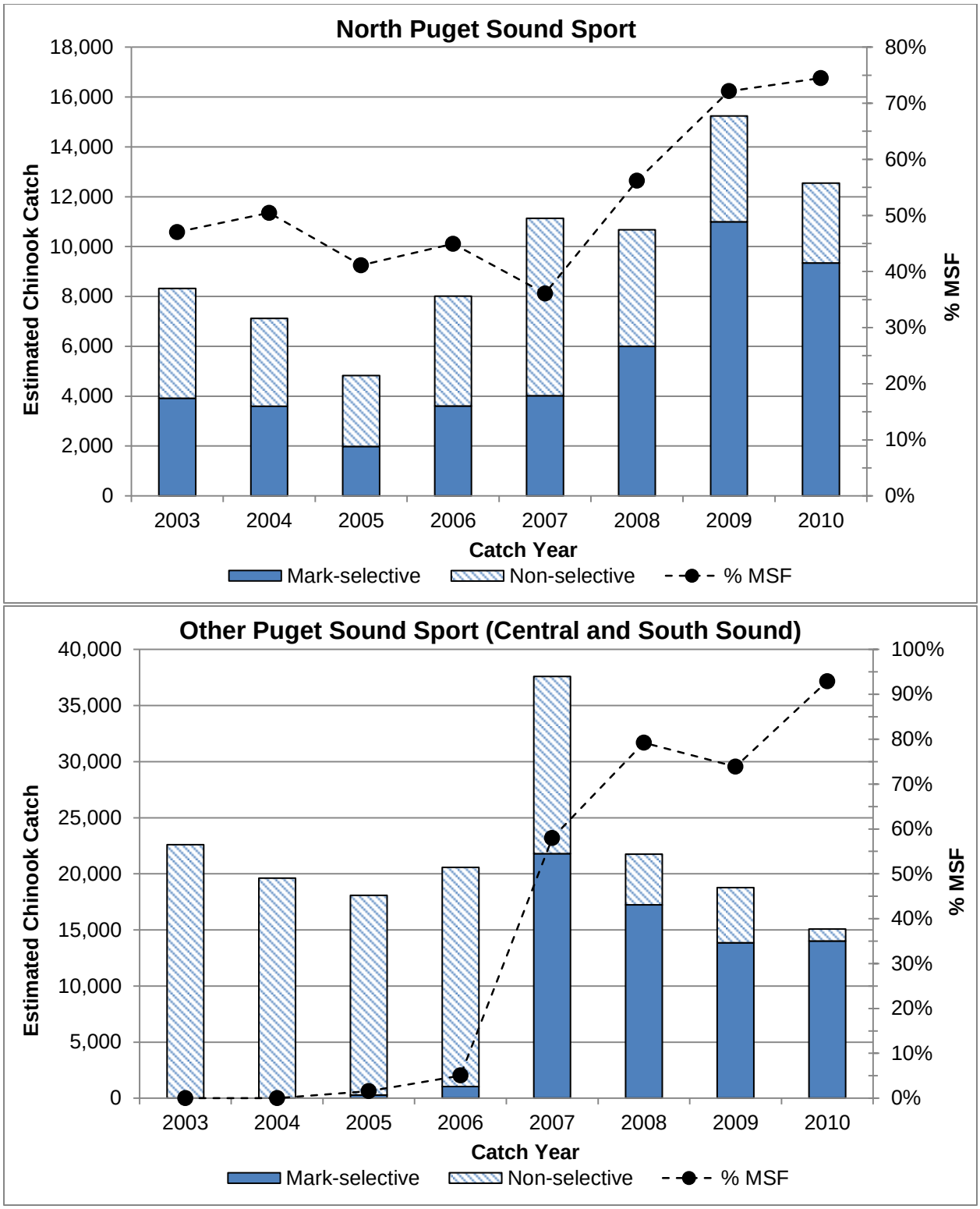

Figure 3.1. Total landed catch in MSFs and NSFs in Puget Sound and the percent of catch in MSFs for catch years 2003-2010.

4 ISSUES, CONCERNS, AND RECOMMENDATIONS

4.1 Timeliness of Mark-Selective Fishery Proposals

Proposals are due by November 1 of the year prior to the MSF being proposed; e.g., November 1, 2011 for fisheries proposed to occur in 2012-2013. Although final decisions on fisheries are generally made by agencies after this time period (e.g., January-April of 2012 for 2012 fisheries), MSF proposals should be submitted for any fisheries that are planned and should include information or options known at that point in time. SFEC believes that most MSFs now being implemented are represented by proposals, although some Columbia River MSFs may not be represented. The SFEC recommends that agencies prioritize the task of developing proposals in a timely manner 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.

4.2 Status of Mark-Selective Fishery Reports

The PSC has requested that management agencies provide SFEC with three post-season reports on MSFs. The first is a table (Appendix Table I.1) that provides information on sampling methods used to recover CWTs in all fisheries and escapement locations, not just in the MSFs. Information on sampling procedures is needed because estimating impacts for the unmarked fish encountered in MSFs depends on the method of sampling (electronic or visual) and the CWT processing protocol (i.e., are all tagged fish sampled also processed for CWT extraction in the lab). The second post-season report requested is a table (Appendix Table I.2) providing post-fishery information on MSFs that have occurred, including where and when the fisheries took place, fishery regulations, and what sampling was implemented. This table provides the information on whether MSFs that were proposed did actually occur and how these fisheries were sampled. These first two tables should be completed prior to the PSC post-season meeting of the year following the fishery year. For instance, reports on fisheries occurring in 2010-2011 should be available by the post-season meeting in 2012. The post-season annual reports produced by the U.S. and Canadian sections for PSC's 2011 post-season review meeting did not include this information for most MSFs.

The third report requested from agencies is also in table format (Appendix Table I.3) and is intended to provide final results on the estimated total mortalities and mark rates in MSFs that have been prosecuted. This information is required for evaluation of fishery impacts. For Chinook salmon, the PSC Chinook Technical Committee (CTC) requires that total fish retained and total mortalities are reported for MSFs for use in the PSC Chinook Model. The template provided in Appendix Table I.3 was new in 2007, and the previous template should not be used as it was inadequate for CTC needs. Using estimates from the WDFW draft multi-year report for the summer MSFs in Washington Areas 5/6, an example of this report template is provided in Table 4.1.

Table 4.1. Completed template for the 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 WA Area 5/6 (Strait of Juan de Fuca) for catch years 2003-2007.

Region	Fishery	Catch 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 in the format requested by SFEC, and by the requested deadline; however, SFEC representatives have been stepping up efforts in recent years to coordinate with key staff within the agencies in order to acquire these post-season reports. Although the information may be available in larger agency reports, the SFEC needs agencies to submit the post-season MSF information directly to SFEC using the report templates provided (Appendix I), which will enable more efficient dissemination of post-season data to PSC's technical committees such as the CTC and CoTC. 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 Incomplete Representation of CWT Indicators by DIT Groups

A DIT group is needed for each PSC indicator stock in order to evaluate the impacts of MSFs on each natural stock represented by an indicator stock (Appendices G and H). Comparison of the escapement of the unmarked and marked DIT groups provides a measure of the total impact of MSFs. Mark-selective fisheries have doubled in number since 2007; new areas and more stocks are now being fished under mark-selective regulations. 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. Also, in an effort to improve the CWT system, Northwest Marine Technology offered agencies free tags. Analyses of tagging programs are underway and agencies are considering this offer.

4.3.1 Coho Salmon Double-Index-Tag Groups

At present, the utility of the DIT program and the CWT program in general for Coho is reduced due to low tagging rates, insufficient Management Unit (MU) representation, low recovery rates, and incomplete coastwide coverage of electronic sampling programs (PSC-CWTW 2008; CoTC 2013). Several MUs do not have DIT groups to permit independent estimation of impacts of MSFs. For example, Canada currently has two DIT programs for the four MUs in the treaty

(Inch Creek and Quinsam River). Even where DITs have been implemented, the reliability of results is affected by the lack of electronic tag detection throughout the migratory ranges of the MUs (CoTC 2013). In addition, DIT tagging levels are not high enough to provide sufficient numbers of recoveries for statistically-robust estimates of non-landed mortalities in MSFs. Estimation of ERs or effects of MSFs on natural stocks requires the collection of CWTs from marked and unmarked DIT groups. The lack of direct sampling and electronic tag detection in intercepting fisheries throughout the stock migration results in biased estimates of ERs.

4.3.2 Chinook Salmon Double-Index-Tag Groups

Indicator stocks that have been encountered in WA mark-selective fisheries are listed in Table 3.5. Some of these stocks are currently double-index tagged (Appendix H), but many are not. The SFEC recommends that consideration be given to implementing more DIT programs.

4.4 Incomplete or Inadequate Sampling Methods

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 exploitation rate analyses 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 NSFs. This requires ETD be used in NSFs, where unmarked and tagged fish are present, in particular if the stock has been subjected to MSFs in other areas or time periods. Until 2008, MSFs for Chinook salmon were largely prosecuted in Puget Sound where ETD is used for all fisheries. Electronic tag detection was not used consistently by CDFO in northern fisheries until 2007 and has not been used at all by ADFG. As Puget Sound DIT groups harvested in these fisheries were unlikely to have been subject to preceding MSFs (either the same year or at younger ages), indirect methods (other than direct sampling with ETD) could be used for achieving unbiased estimates of unmarked encounters from marked landings. However, with the mass marking of far-north migrating Chinook and MSFs now proposed for fisheries off of WCVI and WA Ocean Areas 1 and 2, it is no longer reasonable to assume that fish taken in NSFs 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. It is specifically recommended that ETD be implemented by ODFW in 2012 for Oregon coastal Chinook and Columbia River fall Chinook to recover DITs for Chinook exploitation rate indicator stocks.

4.5 Mixed-Bag Regulations in MSFs

Regulations to implement MSFs for sport fisheries are becoming increasingly complex. At this time we are concerned about monitoring, sampling, and estimation methods keeping pace with increases in regulation complexity. MSFs are being proposed for much finer time/area strata than are being used for CWT expansions which will result in an inability to separate impacts in MSFs and NSFs.

Different types of mixed bag regulations have been 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 4.2). In addition, in 2009 BC proposed two variations of the ‘standard’ mixed bag. For the SJDF fishery, both marked and unmarked Chinook could be retained within slot limits (45-67 cm) but marked only at sizes

above the upper limit of the slot. For the WCVI fishery, marked fish of any size above 45 cm can be retained but the daily bag limit of two 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 4.2. Mixed bag regulations proposed for Chinook MSFs. Details on regulations are provided in Table 3.3.

Regulation Type	Examples	Location
Mixed bag, marked only above maximum size.	2 per day, keep all between 45-67 cm, keep only marked over 67 cm	BC Strait of Juan de Fuca
Mixed bag, adults only marked and juveniles marked or unmarked	Bag limit of 6, up to 2 adults (≥24"), which must be marked. Minimum size limit of 12". *OR Coast*: May retain 1-2 unmarked salmon (depending on the run forecast) and one additional marked fish (Chinook >24") per day (2 fish maximum per day regardless of type). These regulations do not apply to Chinook jacks (15"-24").	Puget Sound, Snake River fall Chinook, and Oregon coastal
Regulations differ between states in mixed bags of adults and juveniles	The daily limit for adult Chinook is the same between the states, but the daily limit on jack Chinook is different. *Washington*: sport daily limit of 6 salmon, of which only 2 may be adults (marked only), minimum size limit of 12". *Oregon:* sport daily limit is 2 marked only adult Chinook (>24" total length) and 5 marked jacks (15"-24" total length).	Columbia River Chinook sport fisheries
Seasonal limit on unmarked fish	Seasonal limits for unmarked fish may range from 1-10 unmarked Chinook depending on the river system. The catch of marked Chinook has no seasonal limit.	Oregon coastal Chinook

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APPENDICES

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 coastwide 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 (SFAWG). 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 coastwide clearinghouse to facilitate the appropriate level of coordination and reporting on MM and MSF programs among the Parties, affected agencies, and existing coastwide and regional committees established to monitor activities related to the coastwide 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	J. Davis
Chair	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.

2. 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						

3. 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.

4. 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

5. 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 2003-2005, Chinook = BYs 2000-2003
   - Multiply the # of proposed mass marked fish, by production region, by this recovery rate, for the appropriate indictor stock
   - Apportion the mass marked 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. Mark-Selective Fishery Proposal Template.

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 (coastwide) 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. Mark-Selective Fishery Proposal Spreadsheet Template.

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 E. Status of Mass Marking Proposals Received in 2011 for Mass Marking to Occur in 2012.

Description of Proposal and Agency	New or Continuation Proposal	SFEC Proposal Number
Coho Salmon		
Southern BC Coho – CDFO	Continuation	MM-FOC-01
Puget Sound Coho – WDFW/Tribal	Continuation	MM-WDFW-01
Washington Coast Coho – WDFW/Tribal	Continuation	MM-WDFW-04
Washington Columbia River Coho – WDFW	Continuation	MM-WDFW-05
Eagle Creek NFH Coho – USFWS	Continuation	MM-USFWS-04
Makah, Quilcene, Quinault NFH Coho – USFWS	Continuation	MM-USFWS-18
Columbia River Coho – ODFW	Continuation	MM-ODFW-04
Oregon Coast Coho – ODFW	Continuation	MM-ODFW-05
Chinook Salmon		
L. White Salmon R. and Spring Cr. NFH Fall Chinook – USFWS	Continuation	MM-USFWS-17
Makah NFH Fall Chinook – USFWS	Continuation	MM-USFWS-19
Willamette River Spring Chinook – ODFW	Continuation	MM-ODFW-01
OR North Coast Spring Chinook – ODFW	Continuation	MM-ODFW-02
OR South Coast Spring Chinook – ODFW	Continuation	MM-ODFW-03
Columbia River Fall Chinook – ODFW	Continuation	MM-ODFW-06
OR Coast Fall Chinook – ODFW	Continuation	MM-ODFW-07
Mid-Columbia R Spring Chinook – ODFW	**New**	MM-ODFW-08
Snake River Fall Chinook – ODFW	**New**	MM-ODFW-09
Snake River Spring Chinook – ODFW	**New**	MM-ODFW-10
Puget Sound Chinook – WDFW/Tribal	Continuation	MM-WDFW-02
Columbia R. Chinook – WDFW/CRITFC	Continuation	MM-WDFW-03
Washington Coastal Chinook – WDFW/Tribal	Continuation	MM-WDFW-06
Snake River Fall Chinook – IDFG	Continuation	MM-IDFG-05

Appendix F. Mark-Selective Fishery Proposals Received in 2011 for Fisheries Occurring in 2012.

Table lists all MSF proposal numbers assigned by SFEC and current status of each proposal (√ = Submitted; **X** = Discontinued).

Unique ID	Fishery and Location	Target Species	2012 Status	First Yr. Proposal	First Yr. Fishery[1]
	Fisheries and Oceans Canada				
MSF-FOC-01	*Subdivided into other proposals*				
MSF-FOC-02	Sport, Southern BC	Coho	√	2003	2003
MSF-FOC-03	FSC, Lower Fraser freshwater	Coho	√	2006	2006
MSF-FOC-04	*code no longer used*				
MSF-FOC-05	Commercial, Southern BC	Coho	√	2004	2005
MSF-FOC-06	Sport, Lower Fraser freshwater	Coho	√	2006	2003
MSF-FOC-07	Sport, Strait of Juan de Fuca, BC, selected subareas	Chinook	√	2009	2008
MSF-FOC-08	Sport, WCVI, selected subareas, mainly inside	Chinook	**X**	2009	none
	Oregon Department of Fish and Wildlife				
MSF-ODFW-01	Sport, Willamette R.	Chinook	√	2003	2003
MSF-ODFW-02	Sport, Oregon coast	Chinook	√	2009	2008
MSF-ODFW-03	Sport, Oregon coast	Coho	√	2010	2003
	Oregon and Washington Departments of Fish and Wildlife				
MSF-ODFW / WDFW-01	Sport, Lower Columbia R.	Chinook	√	2003	2003
MSF-ODFW / WDFW-02	Sport, Columbia R.	Chinook	√	2003	2003
MSF-ODFW / WDFW-03	Commercial, Lower Columbia R.	Chinook	√	2003	2003
MSF-ODFW / WDFW-04	Sport, Lower Columbia R.	Coho	√	2008	2003
MSF-ODFW / WDFW-05	Sport, Columbia R.	Chinook	√	2009	2011
	Washington Department of Fish and Wildlife				
MSF-WDFW-01	Sport, Skykomish R	Chinook	√	2003	2003
MSF-WDFW-02	Sport summer, WA area 5&6; *Included in proposal #35 in 2012*	Chinook	**X**	2003	2003
MSF-WDFW-03	Sport, Yakima R	Chinook	√	2004	2004
MSF-WDFW-04	*code no longer used*				
MSF-WDFW-05	Sport, Lower Snake R	Chinook	√	2009	2008
MSF-WDFW-06	Sport, WA Areas 1-4 & Buoy 10	Coho	√	2003	2003

[1] This is the first year in which the fishery occurred after 2002, the year that SFEC began requesting proposals from agencies. Some Coho mark-selective fisheries began as early as 1998.

Unique ID	Fishery and Location	Target Species	2012 Status	First Yr. Proposal	First Yr. Fishery[1]
	Washington Department of Fish and Wildlife (cont.)				
MSF-WDFW-07	Sport, Puget Sound	Coho	√	2004	2003
MSF-WDFW-08	*old proposal Area 5&6*	Chinook	**X**		
MSF-WDFW-09	Sport, Carbon & Puyallup R	Chinook	√	2005	2003
MSF-WDFW-10	*code no longer used*				
MSF-WDFW-11	Sport summer, WA Areas 5-13; *Included in proposal #35 in 2012*	Chinook	**X**	2007	2007
MSF-WDFW-12	Sport, Upper Skagit R	Chinook	√	2007	2005
MSF-WDFW-13	Sport, Nooksack R	Chinook	√	2004	2004
MSF-WDFW-14	Sport, Nisqually R, Jul-Jan	Chinook	√	2007	2005
MSF-WDFW-15	Commercial, WA Areas 1-4	Coho	√	2008	2003
MSF-WDFW-16	Sport winter, WA Areas 6-10 *Included in proposal #36 in 2012*	Chinook	**X**	2005	2005
MSF-WDFW-17	*code no longer used*				
MSF-WDFW-18	Sport, Nooksack R	Coho	**X**	2009	2003
MSF-WDFW-19	Sport, WA Coast Areas 1-4	Chinook	√	2009	2010
MSF-WDFW-20	Sport, Skokomish	Chinook	√	2009	2010
MSF-WDFW-21	Troll, WA Coast Areas 1-4	Chinook	**X**	2009	None
MSF-WDFW-22	Sport, Willapa tributaries	Coho	√	2010	2003
MSF-WDFW-23	Sport, Grays Harbor, Area 2.2	Coho	√	2010	2007
MSF-WDFW-24	Sport, Grays Harbor tributaries	Coho	√	2010	2003
MSF-WDFW-25	Commercial, Willapa Bay	Chinook	√	2010	2010
MSF-WDFW-26	Sport, Willapa Bay, Area 2.1	Chinook	√	2010	2010
MSF-WDFW-27	Sport, Willapa Bay tributaries	Chinook	√	2010	2010
MSF-WDFW-28	Sport, Snake River	Chinook	√	2010	2010
MSF-WDFW-29	Sport, Willapa Bay MA 2.1	Coho	√	2010	2010
MSF-WDFW-30	Commercial, Grays H Area 2C	Coho	**X**	2011	2009
MSF-WDFW-31	Sport, Quillayute River	Coho	√	2011	2003
MSF-WDFW-32	Sport, Quillayute River	Chinook	√	2011	2003
MSF-WDFW-33	Sport, Hoh River	Chinook	√	2011	2008
MSF-WDFW-35	Sport summer, WA areas 5-13; *Incorporates former proposals # 02 & # 11*	Chinook	√	2012	n/a[2]
MSF-WDFW-36	Sport winter, WA areas 5-13; *Incorporates former proposal #16*	Chinook	√	2012	n/a[3]

[1] This is the first year in which the fishery occurred after 2002, the year that SFEC began requesting proposals from agencies. Some Coho mark-selective fisheries began as early as 1998.
[2] See proposal numbers MSF-WDFW-02 and MSF-WDFW-11.
[3] See proposal number MSF-WDFW-16.

Appendix G. Current PSC Coho CWT Exploitation Rate Indicator Stocks and DIT Groups.

Region	Stock Representation	Indicator Stocks	DIT
BC North Coast	North Coast Wild	Lachmach	
	Skeena	Toboggan	
Interior Fraser	Thompson River	Coldwater (Spius Hatchery) Salmon Lemieux	
Georgia Basin	East Coast Vancouver Island	Big Qualicum Goldstream River	
	East Coast Vancouver Island Wild	Black Creek	
	Lower Fraser	Inch Creek	√
	Lower Fraser Wild	Salmon River	
	North Vancouver Island	Quinsam River	√
West Coast Van Is.	West Coast Vancouver Island	Robertson Creek	
Puget Sound	Nooksack	Skookum Creek H. Lummi Bay Ponds	
	Skagit	Skagit (Marblemount H.) Baker River Wild	√
	Stillaguamish/Snohomish	Skykomish (Wallace River) Tulalip Bay (Bernie Gobin)	√
	Mid Puget Sound	Green River (Soos Creek H.)	√
	South Puget Sound	Puyallup (Voights Creek H.) Peale Pass (Squaxin Net Pens) Nisqually (Kalama Creek H.)	√
	Hood Canal Wild	Big Beef Creek	
	North Hood Canal	Quilcene NFH Quilcene Net Pens Port Gamble Net Pens	√
	South Hood Canal	George Adams H.	√
	Dungeness	Dungeness H.	
	Strait of Juan de Fuca	Lower Elwha H.	√
Washington Coast	North Coast	Makah NFH Solduc (fall run)	√ √
	North Central Coast	Queets Wild (Salmon River H.) Queets (Salmon R. Fish Culture)	 √
	Quinault	Quinault NFH	√
	Grays Harbor	Chehalis R. Wild Satsop Springs Ponds Satsop (Bingham Cr. H, late) Satsop (Bingham Cr. H., early)	 √
	Willapa Bay	Forks Creek H. (late fall run) Forks Creek H. Nemah R. H. Naselle H.	 √
Columbia Basin	Lower Columbia River	Lewis River (Type N and S) Eagle Creek Sandy River Tanner Cr.	√ √ **(dropped)** **√ new**
Oregon Coast	Oregon South Coast	Rogue River (Cole Rivers)	

Appendix H. Current PSC Chinook CWT Exploitation Rate Indicator Stocks and DIT Groups.

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

Templates with examples are provided below in Appendix Tables I.1, I.2, and I.3.

Appendix Table I.1. 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 I.2. 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 Reef net 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

Region	Fishery Area	Fishery Period	Regulations	Sampling and Monitoring Conducted to Estimate:			
				CWTs	Encounters	Unmarked Mortality	Compliance
	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 I.3. 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