

1.0 INTRODUCTION

This document has been prepared by the staff of the Pacific Fishery Management Council (Council) and the Salmon Technical Team (STT) to describe the Council's proposed ocean salmon management options for 2010 and characterize their expected impacts on ocean salmon fisheries and the stocks which support them. The Council solicits public comments on the proposed management options in preparation for adopting final management recommendations at its April meeting. This report is analogous to a draft National Environmental Policy Act (NEPA) analysis of a range of alternatives for 2010 ocean salmon management measures.

Oral and written comments may be presented at public hearings at the times and locations displayed on the inside front cover of this report. Additional comment will be accepted at the April Council meeting at the Sheraton Portland Airport Hotel, 8235 NE Airport Way, Portland, OR 97220, 503-281-2500. Written comments received at the Council office by April 1, 2010 will be copied and distributed to all Council members (Council staff cannot assure distribution of comments received after April 1).

2.0 SELECTION OF FINAL MANAGEMENT MEASURES

The Council's final ocean salmon season recommendations will be based on the range of options presented in this report and guidance received from deliberations at management fora such as the north of Cape Falcon planning process - sponsored by the States of Washington and Oregon and the treaty Indian tribes in that area, and from public hearings sponsored by the Council and the States of Washington, Oregon, and California. Final recommendations concerning season dates, catch quotas, and exploitation rates may vary from the range of options presented in this report depending upon determination of allocations, allowable harvest levels, public comment, or the final impact analyses completed by the STT. Elements of the options may be recombined to alter season patterns and quotas, or measures such as bag limits, days of fishing per week, special landing restrictions, and other specific regulatory details may also change. In addition, inseason modification of management measures may be used to ensure achievement of the Council's management objectives.

Specific details pertaining to season structure and special regulations for the treaty Indian troll fishery north of Cape Falcon are established in tribal regulations. Chinook and coho quota levels for the treaty Indian troll fishery may be adjusted if significant changes in incidental fishing mortality result from tribal regulations, preseason or inseason.

The impact analyses presented in this document reflect uncertainties and limitations of information available at the time of the March 2010 Council meeting. At this point in the planning cycle, the STT's impact assessments reflect four key assumptions relative to stocks impacted by Canadian and Alaskan fisheries: (1) abundance levels for Canadian Chinook and coho stocks identical to 2009 forecasts; (2) catch levels for southeast Alaskan, north-central British Columbia, and West Coast Vancouver Island (WCVI) fisheries equal to 2009 catch ceilings established under the aggregate abundance based management (AABM) provisions of the Pacific Salmon Treaty (PST) 2008 Agreement (WCVI outside sport catch assumed to equal the 2009 observed level), with minimum size limits identical to those in place for 2009; (3) 2009 observed catch levels and size limits for Canadian fisheries operating under individual stock based management (ISBM) regimes pursuant to the 2008 PST Agreement; and (4) base packages for management of Southern U.S. inside fisheries. In mid-March, U.S. and Canadian fishery managers will exchange information regarding preseason expectations for fisheries and the status of Chinook and coho stocks. Following this exchange, the Pacific Salmon Commission's (PSC's) Chinook model will be calibrated by the PSC Chinook Technical Committee to determine the allowable catch ceilings under the 2008 PST Agreement. Abundances and fishery expectations will be adjusted in the Council's fishery planning models, and inside fisheries will be shaped by state and tribal co-managers. The adjustments of stock abundances and fishery expectations, and the shaping of inside fisheries, may

result in estimated stock impacts that differ from those presented in this report. The final regulations adopted by the Council in April are intended to be consistent with Council's salmon fishery management plan (FMP) objectives, guidance provided by the National Marine Fisheries Service (NMFS), obligations under the PST, and other applicable law.

3.0 SALMON TECHNICAL TEAM CONCERNS

3.1 Need for Landing Requirements

The STT recommends that landing restrictions be employed to require landings within the area where the fish are caught. Unless such restrictions are adopted, fleet mobility increases the difficulty of inseason management, catch accountability, and collection of biological data such as genetic stock identification (GSI) samples or coded-wire-tag (CWT) recoveries.

4.0 SALMON FISHERY MANAGEMENT PLAN REQUIREMENTS

The Council's Salmon FMP includes objectives for setting annual management measures to regulate ocean salmon fisheries between the U.S./Canada border and the U.S./Mexico border. The objectives include biological, administrative, and allocation requirements. In recommending final management measures, the Council attempts to meet all objectives in a fair and balanced manner, while maintaining established priorities.

Biological objectives for stocks originating in the Council area or impacted by Council area ocean fisheries are listed in Table 3-1 of the Salmon FMP. The objectives generally consist of meeting spawning escapement numbers associated with maximum sustainable yield (MSY), or exploitation rate limits designed to support recovery of depressed stocks while encompassing a long term average harvest approximating MSY.

Biological objectives can be modified through formal plan amendment, technical amendment, or regulatory amendment. For 2008-2010 management measures, an additional management objective for KRFC has been proposed by regulatory amendment. The current KRFC conservation objective requires a spawner reduction rate of no more than 67 percent and a minimum of 35,000 adults spawning in natural areas. The proposed regulatory amendment would require a minimum natural area spawning escapement of 40,700 adult KRFC as a preseason management objective in 2010 and possibly beyond. This proposal resulted from a rebuilding plan adopted by the Council after KRFC triggered an Overfishing Concern by failing to meet the 35,000 natural area adult spawner objective in 2004, 2005, and 2006.

Administrative objectives are requirements for meeting other applicable law outside of the Salmon FMP. These requirements include ESA consultation standards, international treaties, and tribal trust responsibilities. The Salmon FMP defers to NMFS consultation standards for salmon stocks listed under the ESA in regards to biological conservation objectives. The Council considers the ESA requirements sufficient to meet the intent of FMP conservation objectives for the annual management measures as well as the Magnuson-Stevens Act (MSA) overfishing provisions requiring rebuilding of depressed stocks to MSY levels. Section 5.0 of this document provides greater detail on ESA listed stocks, while impacts of the Council adopted salmon management measures on ESA listed stocks are included in Table 5.

The Salmon FMP requires compliance with relevant terms of the PST. Section 6.0 of this document provides greater detail on PST provisions and stocks, while impacts of the Council adopted salmon management measures on those stocks are included in Table 5.

Treaty trust responsibilities of the Salmon FMP require the Council to abide by Court orders in the U.S. v Washington (Puget Sound), Hoh v. Baldrige (Washington coast), and U.S. v. Oregon (Columbia River)

cases, and the Solicitor General opinion (Klamath River) governing allocation and management of shared salmon resources. Much of the North of Falcon forum is dedicated to annual negotiations establishing allocation among the tribes, non-Indian fishing sectors, and ocean and inside interests. The results of these negotiations allow the Council to complete final management measure recommendations while meeting its biological, administrative, and allocation objectives. Among the annual agreements reached by the co-managers in the North of Falcon forum are conservation objectives for Puget Sound and Washington coastal stocks. These objectives can supersede the Salmon FMP conservation objectives for annual management measures and for Council action when a Conservation Alert is triggered; however, they cannot be used in place of the FMP objectives for determination of an Overfishing Concern; nor can they supersede ESA consultation standards. In recent years, the annual agreed to conservation objectives for Puget Sound coho have been based on the Comprehensive Coho Agreement. In November 2009, the Council adopted permanent FMP conservation objectives for Puget Sound coho consistent with the Comprehensive Coho Agreement

The Columbia River treaty tribes establish periodic management agreements with the state co-managers and Federal agencies. These agreements are approved pursuant to provisions of U.S. v. Oregon procedures. Recent agreements have included an entitlement for the treaty tribes of 50 percent of the coho return destined for areas upstream from Bonneville Dam. Council area fisheries are shaped in order to meet this requirement in some years.

The Yurok and Hoopa Valley tribes are entitled to up to 50 percent of the total KRFC harvest, which is calculated as a harvest of KRFC equal to that taken in all non-Indian fisheries. The Council must account for all harvest impacts when assessing the achievement of KRFC conservation objectives.

In addition to the allocation objectives associated with sharing between treaty Indian and non-Indian sectors, the Salmon FMP includes formulas for sharing Chinook and coho quotas north of Cape Falcon between commercial and recreational sectors, and among recreational port areas, and for coho south of Cape Falcon between commercial and recreational sectors. Options for the 2010 salmon management measures adopted by the Council meet the allocation requirements for fisheries north of Cape Falcon in the Salmon FMP.

5.0 SPECIES LISTED UNDER THE ENDANGERED SPECIES ACT

Since 1989, NMFS listed the following 17 Evolutionarily Significant Units (ESUs) of salmon under the ESA:

Species	ESU	Status	Federal Register Notice			
			Most Recent		Original Listing	
Chinook Salmon (<i>O. tshawytscha</i>)	Sacramento River Winter	Endangered	70 FR 37160	6/28/2005	54 FR 32085	8/1/1989
	Snake River Fall	Threatened	70 FR 37160	6/28/2005	57 FR 14653	4/22/1992
	Snake River Spring/Summer	Threatened	70 FR 37160	6/28/2005	57 FR 14653	4/22/1992
	Puget Sound	Threatened	70 FR 37160	6/28/2005	64 FR 14308	3/24/1999
	Lower Columbia River	Threatened	70 FR 37160	6/28/2005	64 FR 14308	3/24/1999
	Upper Willamette River	Threatened	70 FR 37160	6/28/2005	64 FR 14308	3/24/1999
	Upper Columbia River Spring	Threatened	70 FR 37160	6/28/2005	64 FR 14308	3/24/1999
	Central Valley Spring	Threatened	70 FR 37160	6/28/2005	64 FR 50394	9/16/1999
Chum Salmon (<i>O. keta</i>)	California Coastal	Threatened	70 FR 37160	6/28/2005	64 FR 50394	9/16/1999
	Hood Canal Summer-Run	Threatened	70 FR 37160	6/28/2005	64 FR 14508	3/25/1999
Coho Salmon (<i>O. kisutch</i>)	Columbia River	Threatened	70 FR 37160	6/28/2005	64 FR 14508	3/25/1999
	Central California Coastal	Endangered	70 FR 37160	6/28/2005	61 FR 56138	10/31/1996
	S. Oregon/ N. California Coastal	Threatened	70 FR 37160	6/28/2005	62 FR 24588	5/6/1997
	Oregon Coastal	Threatened	73 FR 7816	2/11/2008	63 FR 42587	8/10/1998
Sockeye Salmon (<i>O. nerka</i>)	Lower Columbia River	Threatened	70 FR 37160	6/28/2005		
	Snake River	Endangered	70 FR 37160	6/28/2005	56 FR 58619	11/20/1991
	Ozette Lake	Threatened	70 FR 37160	6/28/2005	64 FR 14528	3/25/1999

As the listings have occurred, NMFS has initiated formal consultations and issued biological opinions (BOs) that consider the impacts resulting from implementation of the Salmon FMP, or from annual management measures, to listed salmonid species. NMFS has also reinitiated consultation on certain ESUs when new information has become available on the status of the stocks or on the impacts of the Salmon FMP on the stocks. The consultation standards referred to in this document include (1) reasonable and prudent alternatives, (2) conservation objectives for which NMFS conducted Section 7 consultations and arrived at a no-jeopardy conclusion, and (3) NMFS requirements under Section 4(d) determinations. A list of current BOs in effect, the species they apply to, and their duration follows:

Date	Evolutionarily Significant Unit covered and effective period
8-Mar-96	Snake River Chinook and sockeye (until reinitiated)
28-Apr-99	Oregon Coastal natural coho, Southern Oregon/ Northern California coastal coho, Central California coastal coho (until reinitiated)
28-Apr-00	Central Valley spring Chinook (until reinitiated)
27-Apr-01	Hood Canal summer chum 4(d) limit (until reinitiated)
30-Apr-01	Upper Willamette Chinook, Upper Columbia spring Chinook, Lake Ozette sockeye, ten steelhead ESUs and Columbia River chum (until reinitiated)
Expected prior to May 1, 2010	Sacramento River winter Chinook (April 30, 2010)
Expected prior to May 1, 2010	Puget Sound Chinook (April 30, 2010)
13-Jun-05	California coastal Chinook (until reinitiated)
Expected prior to May 1, 2010	Lower Columbia River natural coho, Lower Columbia River Chinook

Amendment 12 to the Salmon FMP added the generic category “species listed under the ESA” to the list of stocks in the salmon management unit and modified respective escapement goals to include “manage consistent with NMFS jeopardy standards or recovery plans to meet immediate conservation needs and long-term recovery of the species”. Amendment 14 specified those listed ESUs and clarified which stocks in the FMP management unit were representative of the ESUs.

NMFS, in a letter received by the Council on March 2, 2010, provided guidance on protective measures for species listed under the ESA during the 2010 fishing season. The letter summarized the requirements of NMFS’ BOs on the effects of potential actions under the salmon FMP on listed salmon and provided the anticipated consultation standards of the BOs in preparation for the 2010 management season, as well as further guidance and recommendations for the 2010 management season.

The ESA consultation standards, exploitation rates, and other criteria in place for the 2010 management season are presented in Table 5. Some listed stocks are either rarely caught in Council fisheries (e.g., spring Chinook from the upper Columbia River) or already receive sufficient protection from other salmon FMP and ESA standards (e.g., Central Valley spring Chinook). NMFS has determined that management actions designed to limit catch from these ESUs, beyond what will be provided by harvest constraints for other stocks, are not necessary.

Of the listed Chinook and coho, Council-managed fisheries have a significant impact on Sacramento River winter Chinook, Central Valley spring Chinook, California coastal Chinook, Snake River wild (SRW) fall Chinook, lower Columbia River (LCR) fall Chinook, and all of the coho stocks. Additional listed salmonid ESUs found within the Council area, but not significantly impacted by Council managed fisheries, include:

Chinook	
Snake River spring/summer (threatened)	Puget Sound (threatened)
Upper Willamette (threatened)	Upper Columbia River spring (endangered)
Sockeye	
Snake River (endangered)	Ozette Lake Sockeye (threatened)
Chum	
Columbia River (threatened)	Hood Canal summer (threatened)
Steelhead	
Southern California (endangered)	Central Valley, California (threatened)
South-central California coast (threatened)	Central California coast (threatened)
Upper Columbia River (endangered)	Upper Willamette River (threatened)
Middle Columbia River (threatened)	Lower Columbia River (threatened)
Snake River Basin (threatened)	Northern California (threatened)
Puget Sound (threatened)	Northern California (threatened)

6.0 OBLIGATIONS UNDER THE PACIFIC SALMON TREATY

6.1 *Chinook Salmon Management*

A new agreement under the PST was negotiated in 2008 and formally accepted by both the U.S. and Canada in December of 2008. This new agreement took effect on January 1, 2009, and includes 30 percent reductions in the catch ceilings for aggregate abundance based management (AABM) fisheries off the West Coast Vancouver Island and a 15 percent reduction in the catch ceilings for AABM fisheries in Southeast Alaska Chinook relative to the catch ceilings in effect for these fisheries since 1999. Under the terms of the 2008 PST Agreement, Council fisheries for Chinook salmon continue to be subject to the individual stock based management (ISBM) provisions of Annex 4, Chapter 3, adopted in 1999. These provisions require the adult equivalent (AEQ) exploitation rate by all U.S. fisheries south of the U.S./Canada border be reduced by 40 percent from the 1979-1982 base period for Chinook stocks failing to achieve escapement goals adopted by the PSC.

Many Chinook stocks of concern to the Council are affected by fisheries off Canada and Alaska. Maximum allowable catches by AABM fishery complexes off the WCVI, Northern British Columbia, and Southeast Alaska are determined through the annual calibration of the PSC Chinook Model. Canadian fisheries that are not included in AABM complexes are managed under ISBM constraints, which require a 36.5 percent reduction in AEQ exploitation rates relative to the 1979-1982 base period on Chinook stocks that are not expected to achieve agreed MSY spawning escapement goals. Expectations for Canadian and Alaskan fisheries harvest and stock abundance forecasts are incorporated into the Chinook Fishery Regulation Assessment Model (FRAM) to estimate total exploitation rate impacts from all marine fisheries (Table 5).

Key considerations for Canadian domestic fishery management for Chinook in 2010 include, (1) meeting domestic conservation obligations for WCVI, Strait of Georgia, and Fraser River stocks; (2) Chinook harvests by native fisheries; and (3) incidental impacts during commercial and native fisheries directed at sockeye and chum salmon. It is anticipated that the details of the fishery regulatory package off WCVI

will be driven by levels of allowable impact on WCVI, Lower Strait of Georgia, and Fraser River Chinook and Interior Fraser (Thompson River) coho.

6.2 *Coho Salmon Management*

In 2002, the PSC adopted a management plan for coho salmon originating in Washington and Southern British Columbia river systems. The plan is directed at the conservation of key management units, four from Southern British Columbia (Interior Fraser, Lower Fraser, Strait of Georgia Mainland, and Strait of Georgia Vancouver Island) and nine from Washington (Skagit, Stillaguamish, Snohomish, Hood Canal, Strait of Juan de Fuca, Quillayute, Hoh, Queets, and Grays Harbor). Exploitation rate limits for intercepting fisheries are established for individual management units through formulas specified in the 2002 PST Southern Coho Management Plan, and are based on total allowable fishery exploitation rates. Based on preseason abundance forecasts, total allowable exploitation rates for U.S. management units in 2010 are summarized in the table below.

The categorical status of U.S. coho management units is reported to comply with obligations pursuant to the 2002 PST Southern Coho Management Plan. Categorical status is employed by the PSC under the 2002 PST Southern Coho Management Plan to indicate general ranges of allowable total exploitation rates for U.S. and Canadian coho management units. Three categories are employed: low (total exploitation rate less than 20 percent), moderate (total exploitation rate 20 percent to 40 percent), and abundant (total exploitation rate greater than 40 percent). For the Puget Sound management units, the 2002 PST Southern Coho Management Plan uses the thresholds and stepped harvest rate goals from the Comprehensive Coho Agreement, developed by Washington and the Puget Sound tribes, and adopted by the Council as FMP conservation objectives in November 2009. Actual exploitation rate constraints for Canadian fisheries on U.S. coho management units are determined by formulas that specify sharing of allowable exploitation rates and a “composite rule.” The composite rule adjusts constraints for Canadian fishery exploitation rates based on the number of U.S. management units which fall in a given category. For example, if only one Washington coastal coho management unit is in low status, Canadian fisheries are constrained to a total exploitation rate on that unit of 12 percent; if two or more Washington coastal management units are in low status, the constraint becomes 10 percent. The most restrictive exploitation rate limit for Canadian fishery impacts on U.S. coho management units is 10 percent.

Some confusion may arise from the methods employed to report the categorical status for Washington coastal coho management units. For these units, a range is reported for the allowable exploitation rates based on the relationship between the pre-season abundance forecast and the upper and lower values of the spawning escapement ranges corresponding to MSY production. Maximum exploitation rates are computed using the lower end of the escapement range and minimum exploitation rates are computed using the upper end of the escapement range. For purposes of reporting the categorical status, an allowable exploitation rate is computed using the mid-point of the MSY escapement range. For 2010, Puget Sound and Washington coast coho constraints are as follows:

U.S. Management Unit	Total Exploitation Rate Constraint ^{a/}	Categorical Status ^{b/}
Skagit	60%	Abundant
Stillaguamish	50%	Abundant
Snohomish	40%	Moderate
Hood Canal	45%	Moderate
Strait of Juan de Fuca	20% [10% SUS]	Low
Quillayute Fall ^{c/}	28%-71% (50%)	Abundant
Hoh ^{c/}	34%-74% (54%)	Abundant
Queets ^{c/}	33%-73% (53%)	Abundant
Grays Harbor	48%	Abundant

a/ Preliminary, total mortality exploitation rate ceilings. Constraints will ultimately be determined through preseason planning processes. For Puget Sound management units, the exploitation rate constraints reflect application of Comprehensive Coho Agreement rules. For the Quillayute, Hoh, and Queets management units, exploitation rate constraints represent the potential range associated with escapement goal ranges (the values in parentheses reflect the exploitation rate associated with the mid-point of the spawning escapement goal range).

b/ Category titles correspond to the general exploitation rate ranges depicted in paragraph 3(a) of the 2002 PST Southern Coho Management Plan or the exploitation rate status determinations exchanged during the negotiations that culminated in the 2002 Southern Coho Agreement. For Puget Sound management units, the categorical status categories reflect application of Comprehensive Coho Agreement rules. No formal status classification system has yet been developed for Washington coastal management units; the categorical status levels are based on exploitation rate values depicted in parentheses.

c/ For Washington Coastal coho management units, spawning escapement ranges correspond to estimates for MSY escapements. The exploitation rate ranges for these management units are based on preseason abundance forecasts and the upper and lower ends of the ranges. Maximum exploitation rates are computed using the lower end of the escapement range; minimum exploitation rates are computed using the upper end of the escapement range. The categorical status is determined based on the mid-point of the escapement range. Note that the exploitation rates used to report categorical status do not represent maximum allowable rates for the management units.

Key considerations for Canadian fishery management for coho in 2010 are expected to include, (1) meeting domestic conservation obligations for Interior Fraser (including Thompson River) coho; (2) coho harvests by First Nations fisheries; (3) incidental impacts during commercial and First Nations fisheries directed at Chinook, sockeye, pink, and chum salmon; and (4) the desire to provide increased opportunity for sport fisheries through mark-selective retention regulations. The Canadian fishery regimes affecting coho will be driven by Canadian domestic allowable impacts on the Thompson River component of the Interior Fraser management unit (in previous years, Canadian fisheries were managed so as not to exceed a three percent maximum exploitation rate).

The projected status of Canadian coho management units in 2010 indicates continuing concerns for the condition of Interior Fraser coho. The Interior Fraser coho management unit is anticipated to remain in low status, resulting in a requirement to constrain the total mortality fishery exploitation rate for 2010 Southern U.S. fisheries to a maximum of 10.0 percent.

7.0 CHINOOK SALMON MANAGEMENT

7.1 *South of Cape Falcon*

The 2010 abundance projections relevant to Chinook harvest management south of Cape Falcon are:

- SRFC. The SI forecast is 245,500 SRFC adults. When compared to post-season estimated values of the SI, the forecast value is ranked the third lowest, with only the 2008 and 2009 values being lower.
- KRFC. The age-3 forecast is 223,400 KRFC, which is below average for the years 1985-2009. The age-4 forecast is 106,300 fish, which slightly above average. The age-5 forecast is 1,800 fish. The 2009 preseason forecast was 474,900 age-3, 25,200 age-4, and 5,600 age-5 fish.

7.1.1 Objectives

Key Chinook salmon management objectives shaping the options south of Cape Falcon are:

- NMFS consultation standards and annual guidance for ESA listed stocks as provided in Section 5.0 above. Relevant stocks for the area south of Cape Falcon include Sacramento River winter Chinook, California Coastal Chinook, SRW fall Chinook, and LCR natural tule Chinook.
- SRFC hatchery and natural-area spawner escapement goal of 122,000 to 180,000 adults (FMP conservation objective). NMFS also provided guidance that management options for 2010 should, at a minimum, target a spawner escapement around the upper end of the FMP conservation objective in response to the stock falling below the lower end of the conservation objective for three consecutive years.
- KRFC natural area spawning escapement of at least 40,700 adults (2010 Council guidance) and spawner reduction rate not to exceed 66.7 percent (FMP conservation objective), 50:50 tribal-non-tribal sharing of adult harvest (Department of Interior Solicitor Opinion).

7.1.2 Achievement of Objectives

Fishery quotas under the options are presented in Table 4. Stock-specific management criteria and their forecast values under the options are provided in Table 5. Projected fishery landings, bycatch, and bycatch mortality under the options are summarized in Table 6. Table 7 provides a breakdown of impacts by fishery and area for LCR tule Chinook. Appendix A and B presents tables of SRFC and KRFC impacts, respectively, by fishery/time/area under the three options. Descriptions pertaining to the achievement of key objectives for Chinook salmon management south of Cape Falcon are found below.

- The SRFC conservation objective of 122,000 to 180,000 natural and hatchery adult spawners is met by each of the three options. The options are projected to achieve adult spawner escapement levels of approximately 150,000, 180,000, and 230,000 to comply with the 2010 NMFS guidance.
- The KRFC natural-area escapement of at least 40,700 adults (2010 Council guidance), as well as the maximum spawner reduction rate conservation objective of 66.7 percent, is met by each of the three options.

All of the options for Chinook fisheries south of Cape Falcon satisfy NMFS ESA consultation standards and guidance, FMP conservation objectives, and all other objectives for other relevant Chinook stocks listed in Table 5.

7.2 North of Cape Falcon

Abundance projections relevant to Chinook harvest management north of Cape Falcon are:

- *Columbia River hatchery tules.* Combined production of Lower River Hatchery (LRH) and Spring Creek Hatchery (SCH) stocks is predicted to be 259,600 which is a substantial increase over the 2009 preseason expectation of 148,100. The 2010 LRH forecast abundance is 90,600 up slightly from 88,800 in 2009. The 2010 SCH forecast abundance is 169,000, which is nearly three times last year's forecast of 59,300 and is the highest forecast in 26 years.

7.2.1 Objectives

The key Chinook salmon management objectives shaping the options are:

- NMFS consultation standards and annual guidance for ESA listed stocks as provided in Section 5.0 above. Relevant stocks for the area north of Cape Falcon include Columbia Lower River wild fall Chinook, LCR natural tule Chinook, SRW fall Chinook, and Puget Sound natural Chinook.

7.2.2 Achievement of Objectives

Fishery quotas under the options are presented in Table 4. Stock-specific management criteria and their forecast values under the options are provided in Table 5. Projected fishery landings, bycatch, and bycatch mortality under the options are summarized in Table 6. Table 7 provides a breakdown of impacts by fishery and area for LCR tule Chinook.

- *LCR natural tule fall Chinook.* The Option 1 exploitation rate of 38.3 percent slightly exceeds 38.0 percent NMFS consultation standard maximum. The exploitation rates in the other two options are less than the maximum. LCR tules are the constraining Chinook stock for fisheries north of Cape Falcon in 2010.
- *SRW fall Chinook.* SRW Chinook will not constrain ocean fisheries north of Cape Falcon in 2010.
- *Puget Sound Chinook.* Council-area fisheries have a minor impact on ESA-listed Puget Sound Chinook and negligible impacts on most Chinook stocks subject to the 2008 PST Agreement. At this point there appears to be sufficient flexibility within Council and inside area fisheries as a whole to achieve compliance with NMFS consultation standards for the Puget Sound Chinook ESU.

All of the options for Chinook fisheries north of Cape Falcon satisfy NMFS ESA consultation standards and guidance, FMP conservation objectives, and all other objectives for other relevant Chinook stocks listed in Table 5.

8.0 COHO SALMON MANAGEMENT

Abundance projections relevant to coho harvest management in Council area fisheries:

- *Oregon Production Index (OPI) Hatchery coho.* The 2010 forecast for hatchery coho from the Columbia River and the coast south of Cape Falcon of 408,000 is 62 percent lower than the 2009 forecast of 1,073,100. The Columbia River early coho forecast is 245,300 compared to the 2009 forecast of 672,700 and the Columbia River late coho forecast is 144,200 compared to the 2009 forecast of 369,700.
- *Oregon Coastal Natural (OCN) coho.* The OCN forecast of 148,000 is about 30 percent lower than the 2009 preseason forecast of 211,600.
- *Lower Columbia River Natural (LCN) coho.* The 2010 LCN forecast is 15,100 adults returning to the mouth of the Columbia River, compared to a forecast of 32,700 in 2009.
- *Puget Sound coho.* The Strait of Juan de Fuca coho stock ocean age-3 abundance forecast is 8,463, below the 11,679 threshold for Critical status category under the FMP (Low category in the 2002 PST Southern Coho Management Plan). Other Puget Sound natural stocks are in higher abundance categories and will be limited to higher exploitation rate ceilings.

- *Interior Fraser (Thompson River) coho.* This Canadian stock continues to be depressed, and will continue to constrain 2010 ocean coho fisheries north of Cape Falcon.

8.1 Objectives

Key coho salmon management objectives shaping the options are:

- NMFS consultation standards and annual guidance for ESA listed stocks as provided in Section 5.0 above. Relevant stocks include Central California Coast coho (south of the Oregon/California border), Southern Oregon/Northern California Coastal (SONCC) coho, OCN coho, and LCN coho. Based on this guidance, the maximum allowable exploitation rates for 2010 are: a combined marine/freshwater exploitation rate not to exceed 15.0 percent for OCN coho, a combined exploitation rate in marine-area and mainstem Columbia River fisheries not to exceed 15.0 percent for LCN coho, and a marine exploitation rate not to exceed 13.0 percent for Rogue/Klamath hatchery coho, used as a surrogate for the SONCC coho ESU.
- Salmon FMP conservation objectives and obligations under the 2002 PST Southern Coho Management Plan for stocks originating along the Washington coast, Puget Sound, and British Columbia as provided in Section 6.2 above. Key management stocks for the area north of Cape Falcon in 2010 include Strait of Juan de Fuca, Hood Canal, and Upper Fraser coho. Because of their abundance status, Strait of Juan de Fuca coho are subject to a total exploitation rate ceiling of 20 percent under the FMP and an exploitation rate ceiling of 10 percent in southern U.S. fisheries under the 2002 PST Southern Coho Management Plan.
- Minimum escapement of 50 percent of Upper Columbia coho above Bonneville Dam (*U.S. v. Oregon* annual management agreement).
- Providing sufficient escapement of Columbia River early and late coho to meet hatchery egg take goals and inriver harvest objectives.

8.2 Achievement of Objectives

Fishery quotas under the options are presented in Table 4. Stock-specific management criteria and their forecast values under the options are provided in Table 5. Projected fishery landings, bycatch, and bycatch mortality under the options are summarized in Table 6. Table 7 provides a breakdown of impacts by fishery and area for LCN, OCN, and RK coho. Table 8 provides expected coho mark rates for west coast fisheries by month.

- *LCN coho.* All options satisfy the maximum 15.0 percent exploitation rate for combined marine and mainstem Columbia River fisheries, with marine exploitation rates ranging from 14.9 percent to 9.5 percent. However, marine exploitation rates greater than 10 percent are unlikely to provide sufficient impacts to meet the needs of mainstem Columbia River fisheries, and will likely require further shaping before final management measures are adopted.
- *Strait of Juan de Fuca coho.* Total exploitation rates in all three options are below 20 percent required by the FMP; however, all options exceed the PST Southern Coho Management Plan 10 percent exploitation rate ceiling for Southern U.S. fisheries.
- *Hood Canal coho.* Total exploitation rates in all three options exceed the 45 percent maximum required by the FMP and the PST Southern Coho Management Plan.

- *Interior Fraser coho.* Southern U.S. exploitation rates in Option I exceed the 10.0 percent maximum required by the PST Southern Coho Management Plan. Options II and III are less than the 10.0 percent maximum.

All of the options for all fisheries satisfy NMFS ESA consultation standards and guidance, FMP conservation objectives, and all other objectives for other relevant coho stocks listed in Table 5.

9.0 IMPORTANT FEATURES OF THE OPTIONS

Significant changes from recent seasons are highlighted below, but this section is not intended to be a comprehensive description of the options. For detailed information on the proposed ocean salmon season options see Tables 1 (non-Indian Commercial), 2 (recreational), and 3 (Treaty Indian).

9.1 Commercial

In contrast to 2008 and 2009, commercial fishing opportunity exists in each of the three options for Oregon fishing areas south of Cape Falcon. Commercial fishing opportunity in California is primarily constrained by the status of SRFC, with Options I and II featuring limited commercial fisheries and Option III consisting only of a non-retention genetic stock identification study.

For Option I, the Cape Falcon to Humbug Mountain Chinook directed fishery would begin on May 1 and extend through August 25. The month of September would also be open in this region with a landing restriction of 100 Chinook per vessel per calendar week. In the Oregon portion of the Klamath Management Zone (KMZ), the season would begin on May 1 and includes quotas of 1,000 Chinook for the months of June, July and August with daily and weekly landing limits. The California portion of the KMZ would be open for two weeks at the end of September, with a 7,500 Chinook quota. California areas south of Horse Mountain, including Fort Bragg, San Francisco, and Monterey port areas, would be open continuously from July 15 through August 29, as well as the month of September. The Monterey port area would also be open from May 9-31, and a late season October fishery is proposed for a portion of the San Francisco port area.

Option II is similar in structure to Option I, but with reduced quotas and reduced landing limits for Oregon areas. The Cape Falcon to Humbug Mountain season has reduced days and does not include September. In both the Oregon and California portions of the KMZ, the season structures remain the same, but the Chinook quotas are reduced to 600 in Oregon and 3,000 in California. South of Horse Mountain, the Fort Bragg area commercial opportunity is limited to the month of September. The San Francisco and Monterey areas would be open continuously from July 5 through August 29, and the month of September would be open in San Francisco only.

Option III is similar in structure to Option II for the areas between Cape Falcon to Humbug Mountain, but with reduced days. The Oregon KMZ would be limited to Chinook quotas of 600 in June and July. All areas south of the Oregon/California border would be closed to the retention of Chinook. During the closed times between May and September, which includes all of California, an experimental genetic stock identification study will be conducted. All salmon must be released in good condition after collection of biological samples.

Options for the area north of Cape Falcon reflect the overall reverse in relative abundance from 2009 of high abundance of OPI hatchery coho and lower abundance of tule fall Chinook. In 2010, allowable catch of Chinook was substantially increased due to the strong abundance of tule Chinook from Spring Creek Hatchery. Coho catch quotas were reduced relative to 2009 due to reduced abundance of OPI hatchery coho and the lower ceiling exploitation rate of 15 percent for LCN coho.

Option I north of Cape Falcon assigns three-fourths of the troll Chinook quota to the May-June time period to increase access when Chinook are more available to the fishery. In Options II and III, two-thirds of the troll Chinook quota is assigned to the May-June time period.

A mandatory yelloweye rockfish conservation area closure was added in 2007 to the permanent salmon regulations (50 CFR 660.405) as part of NMFS regulations to implement Amendment 16-4 to the Groundfish FMP (71 FR 78638, December 29, 2006.). The closure prohibits commercial salmon trolling in Washington Marine Catch Area 3 from 48°00.00' N. lat.; 125°14.00' W. long. to 48°02.00' N. lat.; 125°14.00' W. long. to 48°02.00' N. lat.; 125°16.50' W. long. to 48°00.00' N. lat.; 125°16.50' W. long. and connecting back to 48°00.00' N. lat.; 125°14.00' W. long. The area also overlaps part of the “C-Shaped” yelloweye rockfish conservation area (YRCA), designated as an area for salmon trollers to voluntarily avoid, which has been in place since 2003.

9.2 *Recreational*

For Oregon areas south of Cape Falcon, all three recreational options contain coho and Chinook fishing opportunity in Oregon. For California, Options I and II contain Chinook fishing opportunity in all major port areas, while Option III opportunity is limited to the KMZ. Options reflect the forecasts of lower abundance of coho, the constraining low abundance of SRFC, and in areas south of Point Arena, NMFS guidance intended to reduce impacts on Sacramento River winter Chinook.

For Option I, the area between Cape Falcon and Humbug Mountain would also be open to Chinook retention continuously from May 1 through October 31. A mark-selective coho fishery would be open from June 26 through September 6, or upon the attainment of a 35,000 marked coho quota. Both the Oregon and California portions of the KMZ would be open for Chinook from May 22 through September 6, with marked coho retention allowed in the Oregon portion of the KMZ as described for the Falcon to Humbug region. Recreational salmon fisheries south of Horse Mountain would open on April 3, with a 20 inch minimum size limit, and close on November 14, with the exception of the Monterey area which would close on October 3. On May 1, the minimum size limit in the San Francisco and Monterey areas would increase to 24 inches.

Option II resembles Option I in Oregon areas, but with fewer days of Chinook opportunity and the marked coho quota reduced to 30,000. For the area between Cape Falcon and Humbug Mountain, Chinook fishing would begin on June 1 and end on September 6. In the KMZ, Chinook fishing would be allowed from June 16 through September 6. South of the KMZ, the Fort Bragg area opportunity is identical to Option I. The San Francisco area would be open from April 3 through 30, closed for May and June, then open again from July 1 through November 14, and the minimum size limit would be 20 inches. The Monterey area regulations would be the same as the San Francisco area, except that the season would end on October 3.

For the area between Cape Falcon and Humbug Mountain under Option III, Chinook fishing would be allowed from June 26 through August 31. The mark-selective coho fishery for Oregon areas south of Cape Falcon would have the same season dates as the Chinook regulations, but with a marked coho quota of 25,000. The KMZ Chinook fishery would be open from July 3 through September 6, with coho fishing allowed in the Oregon portion of the KMZ as described above. All California areas south of Horse Mountain would close after April 30 in Option III.

In the area between the U.S. Canada Border and Cape Falcon, Options I and II include Chinook recreational fisheries in June. The June fishery in Option I is mark-selective for Chinook to maximize access to abundant hatchery Chinook stocks while meeting the constraints on ESA listed LCR tule

Chinook; this fishery would operate under a quota of 19,000 marked Chinook. In Option II, the June Chinook fishery is non-mark-selective with a quota of 7,000 landed Chinook.

Start dates for the all-species recreational fishery in all subareas north of Cape Falcon are delayed compared to 2009 in Options I and II. All four subareas north of Cape Falcon have options for seven and five days per week. These start dates and five day per week options are intended to provide recreational fishing opportunity through at least Labor Day.

There is an area 4B add-on fishery in Option III to help provide the Neah Bay subarea additional opportunity under the reduced coho quota.

9.3 *Treaty Indian*

Options are generally similar in structure as in recent years, although Chinook quotas are generally higher and coho quotas lower reflecting both the increased abundance of Columbia River hatchery tule Chinook and lower abundance of OPI hatchery coho and the more restrictive standard for LCN coho specified in the NMFS guidance for 2010.

10.0 SOCIOECONOMIC IMPACTS OF PROPOSED OPTIONS

The short-term economic effects of the proposed options for non-Indian fisheries are shown in Tables 9 and 10. Table 9 shows troll impacts expressed in terms of estimates of potential exvessel value. Table 10 shows recreational impacts in terms of trips generated and community personal income impacts associated with the recreational fishery under each option. The exvessel values provided for the troll fishery options in Table 9 and income impact values provided for the recreational fishery options in Table 10 are not directly comparable. Long-term social and economic effects are dependent on the impacts of this year's harvest on future production. In general the Council manages to meet escapement objectives for salmon that are expected to achieve optimum yields and rebuild depressed stocks.

Fishing effort estimates for the recreational fishery south of Cape Falcon are based on the effort estimates developed by the STT for modeling of biological impacts. STT estimates for this area use multi-year averages to predict effort for the coming year. If the multi-year average effort for a particular time period and area is higher than effort for the previous year in that time period and area then the result may be an estimate that forecasts an increase in effort for the coming year even though the fishery regulations may be more constrained than the previous year, or *vice-versa*. North of Cape Falcon, recreational fishery average catch per unit effort (CPUE) is applied to quotas to estimate total effort. For the summer mark-selective coho fishery, 2009 CPUE was applied to the available coho quotas. For the June Chinook fisheries in Options I and II, CPUE for the 2002 fishery was used. In Option I, the CPUE was adjusted for the increased effort required to reach a bag limit under mark-selective restrictions. The expected harvests used to estimate effects on the commercial fishery are taken from Table 6. Additionally, last year's prices were assumed to be the best estimator of prices expected in the coming season. The 2009 commercial Chinook prices were at relatively high levels. To the degree that these prices were driven by the limited local supply and there is an increase in harvest this year, there may be a decline in price in 2010; therefore, the estimates provided may overstate expected salmon exvessel revenue. For southern areas where the commercial fishery was closed in 2009, per-fish weights and per-pound prices were projected using observed ratios between these areas and more northern areas from previous years.

Figures 1 and 2 show estimated community income impacts for the commercial troll and recreational options, respectively, compared to historic impacts in real (inflation adjusted) dollars. In general, income impact estimates provide information on the amount of income associated with a particular activity. Reductions in income impacts may, but do not necessarily, reflect net losses to a community but likely correlate with losses to those businesses and individuals with income dependence on the activity.

Additionally, in some cases, reductions in ocean harvest may result in either greater inside fishing opportunity or escapement, which may contribute to future production, depending on the carrying capacity of the system to which the stocks escape.