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**NORTHWEST INDIAN
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April 14, 2017

Mr. Barry Thom
Regional Administrator
National Marine Fisheries Service, West Coast Region
1201 Northeast Lloyd Boulevard, Suite 100
Portland, Oregon 97232

Dear Barry:

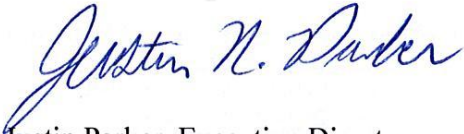
We are providing the following summary and enclosures as the basis for the 2017-2018 Puget Sound Chinook Harvest Plan (Table 1) to the National Marine Fisheries Service (NMFS) to initiate consultation and authorization of fisheries under Section 7 of the Endangered Species Act.

This plan will follow the guidance of the 2010 Puget Sound Chinook Harvest Management Plan and subsequent modifications developed for the 2017-2018 season for selected management units (Nooksack early, Skagit summer-fall, Nisqually, Skokomish, and White River management units). The modified management objectives for 2017-18, are outlined in Attachment 1.

In addition, the co-managers agree to produce a performance report to assess fishery management actions affecting achievement of objectives specified by the Puget Sound Chinook Harvest Plan for the Puyallup and Skokomish management units. The report will update the previous season assessment (PSIT and WDFW 2013 and 2015) with recently available information for the 2013, 2014, and 2015 seasons. This new report will assess forecast error, compare pre-season forecasts of exploitation rates with post-season ('validation') FRAM model runs and examine spawning escapement trends for these management units. The report will explore likely fishery management and other causative factors contributing to failures to achieve management objectives. Per usual practice, the co-managers will address any bias found in this performance review through updates to forecasts and/or FRAM model inputs as necessary. The co-managers intend to produce the report for transmittal to NMFS by mid-February 2018, with a draft of the report exchange between parties in November 2017.

We look forward to successful collaborative efforts with the NMFS in assuring conservation goals of the Endangered Species Act will be achieved.

Sincerely,



Justin Parker, Executive Director
Northwest Indian Fisheries Commission



Jim Unsworth, Director
Washington Department of Fish and
Wildlife

Enclosures:

- (1) Table 1. Exploitation Rates and Management Thresholds for listed Puget Sound Chinook Populations
- (2) Summary of Modification to Management Objectives of the 2010 Puget Sound Chinook Harvest Management Plan for the 2017-2018 Season
- (3) Addendum to the 2014 Plan for 'Management of Fall Chinook in the Skokomish River'
- (4) Summary of the Pacific Salmon Commission Chum Technical Committee 2017 Juan de Fuca Strait Chum Salmon Sampling Program
- (5) The Co-managers' anticipated Steelhead Impacts

Table 1. Exploitation rate ceilings, upper management thresholds, low abundance thresholds, and critical exploitation rate ceilings for Puget Sound Chinook Management Units for the 2017-2018 season.

Management Unit	Exploitation Rate Ceiling	Upper Management Threshold	Low Abundance Threshold	Critical Exploitation Rate Ceiling
Nooksack		4,000		
North Fork		2,000	1,000 ¹	10% SUS
South Fork		2,000	1,000 ¹	
Skagit summer / fall		14,500	4,800	
Upper Skagit	50%		2,200	15% SUS even-years
summer			400	17% SUS odd-years
Sauk summer			900	
Lower Skagit fall				
Skagit spring		2,000	576	
Upper Sauk	38%		130	18% SUS
Upper Cascade			170	
Suiattle			170	
Stillaguamish		900	700 ¹	
North Fork	25%	600	500 ¹	15% SUS
South Fk & MS		300	200 ¹	
Snohomish		4,600	2,800 ¹	
Skykomish	21%	3,600	1,745 ¹	15% SUS
Snoqualmie		1,000	521 ¹	
Lake Washington	20% SUS			10% PT SUS
Cedar River		1,680	200	
Green	15% PT SUS	5,800	1,800	12% PT SUS
White River spring	22%	1,000	200	15% SUS
Puyallup fall	50%	500 (South Prairie Cr.)	500	12% PT SUS
Nisqually	47%		700	50% reduction of SUS ER ³
Skokomish	50%	3,650	1,300 ²	12% PT SUS
Mid-Hood Canal	15% PT SUS	750	400	12% PT SUS
Dungeness	10% SUS	925	500	6% SUS
Elwha	10% SUS	2,900	1,000	6% SUS
Western JDF	10% SUS	850	500	6% SUS

¹ Natural-origin spawners

² Skokomish LAT is escapement of 800 natural spawners and hatchery escapement of 500.

³ 50% reduction in the difference between 52% and the expected northern fishery ER.

Attachment 1

SUMMARY OF MODIFICATIONS TO MANAGEMENT OBJECTIVES OF THE 2010 PUGET SOUND CHINOOK HARVEST MANAGEMENT PLAN FOR THE 2017-2018 SEASON

Following is a summary of modifications to fishery management objectives described in the Co-managers' 2010 Puget Sound Chinook Harvest Management Plan for the Nooksack Early, Skagit Summer-Fall, Nisqually, Skokomish Fall, and Green River management units applying to the 2017-2018 fishery management season. Fishery management objectives for other Puget Sound Chinook management units will not change from those stated in the 2010 Puget Sound Chinook Harvest Management Plan.

Nooksack Early

The management intent is to constrain fishery mortality of South Fork and North/Middle Fork natural origin (NOR) Chinook within a NOR Chinook SUS ER ceiling of 10%. The tribes have identified a minimum C&S requirement of 30 NOR Chinook to meet basic ceremonial and subsistence needs of their communities. Impaired habitat conditions in the watershed are the primary limiting factor for population productivity for the Nooksack populations.

Nooksack River tribal fisheries may take place from April through the end of June, and are managed in-season according to pre-season projections and by monitoring NOR Chinook encounters in the tangle net fishery and a total harvest number, including NOR breakout, in the non-selective fishery. In 2017 the co-managers intend to manage the Nooksack River tribal fisheries as they have in recent years and expect that most or all the allowable impact or harvest of NOR Chinook will be taken before June 15, 2017. The tribe(s) may use tangle-net gear in a selective fishery to increase harvest of surplus hatchery fish. NOR Chinook caught in the selective fishery will be released and mortality accounted based on co-manager agreement on an assumed survival rate.

The total number of allowable NOR Chinook mortalities in the Nooksack River tribal fisheries will be projected during pre-season planning based on forecasted terminal area abundance by stock. Pre-season modeling assumptions will be adjusted using results from the most recent postseason estimates of performance, and on stock abundance and composition data collected from fisheries through 2016.

If information available from monitoring indicates the total allowable NOR Chinook mortalities in the tangle net fishery or the harvest limit in the non-selective fishery is not expected to be taken by June 15th, the co-managers may propose to extend the Nooksack River tribal fisheries through the end of June. However, the co-managers will gain

concurrency from NMFS that the fishery can proceed past June 15th before extending any fisheries. No later than June 7, the co-managers will provide key information necessary to NMFS' determination such as population-specific escapement estimates and fishery stock composition estimates for years through 2016, the assumed release mortality rate and an estimate of anticipated South Fork Nooksack Chinook and summer steelhead encounters anticipated in the proposed fishery extension. Post season, NOR Chinook and wild steelhead encounters and mortalities will be reported by population. This includes apparent summer run steelhead encounters and mortalities, and having tissues taken and analyzed for DNA from the 2017 fisheries. Other wild steelhead will be assumed to be winter runs, and while reported post season, do not require DNA analysis.

In 2017, the original NOR Chinook SUS ER ceiling was adjusted to 10% as part of the shift to a new base period in the Chinook FRAM. This value was derived from comparison of past post-season runs of FRAM utilizing the old and new version of FRAM with an incorporation of buffer as a further conservation measure.

Skagit Summer – Fall

Tribal and WDFW staff updated the cohort reconstruction for Skagit summer – fall Chinook to include brood years 1981 – 2005, to estimate recruitment rates for fitting a production function. The harvest mortality components of cohorts were estimated from CWTs and using exploitation rates from the post-season FRAM runs. Methods for assessing harvest risk were similar to those used previously (Hayman 2008), to compare the probabilities of abundance falling to the critical threshold and increasing to the recovery threshold. These analyses concluded that exploitation rates up to 50% will achieve the jeopardy criteria.

The cohort reconstruction and harvest risk analyses were provided to NMFS' staff. The gaps in age data for some populations, and lack of alternative methods for calculating harvest mortality, precludes reconstructing cohorts for each population, or making a population-specific assessment of harvest risk. Low Abundance Thresholds specified in the Harvest Plan provide additional protection from fishery impacts for each population through implementation of the critical exploitation ceiling when critically low abundance is forecast.

Nisqually

Exploitation Rate Ceiling

The 2010 Puget Sound Chinook Harvest Plan identified a 5-year plan for lowering the Exploitation Rate Ceiling (ERC) on unmarked Nisqually Chinook to 47%. Although the 2010 plan was only approved by NMFS for four years (through April of 2014), the ERC was reduced as scheduled during those 4 years, to a rate of 65% in 2010 and 2011, and to 56% in 2012 and 2013.

Reduction of the total exploitation rate on Nisqually Chinook is one tool being used in the on-going experiment in the Nisqually River. The goal of this experiment is to

establish, over time, a self-sustaining locally adapted fall Chinook population contributing to the recovery of the Puget Sound ESU.

For the 2017-18 fishery management season, Nisqually Chinook will be managed for a 47% ERC with a commitment to develop a new HGMP in 2017 to guide recovery efforts.

The Co-managers are working with NOAA in developing a revised HGMP for the Nisqually River. The intent of the work is to capture the direction the co-managers are taking in the recovery of Nisqually Fall Chinook with the decision to move in a different direction absent the weir as a central tool for achieving local adaptation.

The co-managers have done a tremendous amount of quality work to date in the development of the HGMP, but some additional work is necessary to reach completion. To facilitate the incorporation of the best available science, the Nisqually Indian Tribe will be coordinating a number of workshops over the course of the summer. Topics for these workshops will include freshwater capacity monitoring and assessment, estuary capacity monitoring and assessment, stock productivity monitoring, habitat status and proposed future recovery actions. The schedules are being worked out with critical partners and will be available to all interested parties as they become more certain.

The intent of the co-managers, in close cooperation with NOAA, is to develop a draft HGMP by October 2nd of 2017. Specific elements including monitoring plans and implementation, harvest and habitat modeling and planning will continued to be refined as funding allows and updated through the co-managers annual adaptive management meeting with an intensive data review after 4 years to direct future actions.

Skokomish

A new management plan for Skokomish fall Chinook includes new strategies for managing harvest and hatchery production, and provides an update of the ongoing habitat protection and restoration programs. But recovery efforts will continue to focus on restoration of a spring population, pursuant the Skokomish Chinook Recovery Plan.

Exploitation rate ceilings and escapement thresholds specified in the 2010 Harvest Plan will remain in effect for 2017 and future years. The 50% ER ceiling will continue to achieve the primary objective of maintain adequate natural escapement. Due to dynamic abundance and evolving terminal fishing regimes additional attention will be applied during pre-season planning to improve the accuracy of harvest modeling and reduce the risk of exceeding of the ER ceiling.

In 2014, co-managers began implementing an experimental strategy to improve the potential for recovery of a true fall Chinook population. A portion of production at George Adams Hatchery will utilize the latest returns as broodstock to develop a later timed hatchery component. The multi-phased strategy focuses on developing a late timed hatchery component which returns and mature later (Phase 1), and in subsequent phases,

spawn naturally with theorized higher productivity under more conducive, late season flow conditions (e.g. fall freshets). The 2015 Chinook Harvest Plan and corresponding BiOp identified necessary tasks and checkpoint as part of the Late-timed Strategy. Those tasks and checkpoints were met by the concerned parties and continue to direct implementation of the Late Timed strategy and inform a more recent development aimed to accelerate the potential success of this strategy (Appendix A).

White River spring

The Exploitation Rate Ceiling (ERC) management objective for White River Chinook has been revised to 22% for the 2017 and future years. Cohort run-reconstruction and stock assessment analysis was conducted on this management unit in conjunction with the transition to a new base period for the Chinook FRAM. The cohort reconstruction and harvest risk analyses were provided to NMFS' staff. The new ERC value now represents an estimate derived from current stock-specific productivity and abundance data.

Appendix A

2016 SKOKOMISH FALL CHINOOK LATE-TIMED PROGRAM PLAN

Introduction

As part of a strategy to recover fall Chinook in the Skokomish River, Washington Department of Fish and Wildlife and the Skokomish Tribe have implemented a program at George Adams Hatchery to evaluate the development of a late spawning mode from the extant hatchery Chinook population. We hypothesize that the river entry and sexual maturity timing of this later mode would be more conducive to environmental conditions in the Skokomish River than the current hatchery stock. The late-timed fall Chinook hatchery program currently provides for 220,000 eggs to be taken after October 1 with the peak of the late egg take being approximately five weeks later than the current peak, which is the third week of September. The current release goal is 200,000 fingerlings in May at a size of 70 fish per pound, consistent with release body size and timing of the regular program.

The success of this program will be predicated on achieving Objective 1 of the 2015 Addendum to the 2014 Fall Chinook Management Plan in the Skokomish River, to develop the late-timed mode through consistent hatchery returns. To that end WDFW made the first release of progeny of late-timed spawners in 2015 and secured the program egg take goal of 220k for the upcoming 2016 release.

The contribution of this program to the ultimate goal of recovery will depend on Objective 2, the ability of these fish to colonize natural spawning habitat and produce natural-origin returns at sustainable levels. Importantly, in order to achieve success in the long term, naturally spawning late-timed fish must exhibit population productivity rates that exceed replacement. A detailed discussion of appropriate program size and various strategies for achieving a minimum of 10% natural spawners from the late-timed program are given in the 2015 addendum. The purpose of this document is to describe a plan for putting late-timed returns and their progeny on the natural spawning grounds. Supplementation with both adult and smolt releases provides the most efficient means providing natural spawners from the late-timed program while maintaining a manageable program size.

Production

Reliance on passive colonization through straying would require a program size as high as 550 to 750 thousand eggs (see Task 1-4 of the 2015 Addendum late-timed fall Chinook Program Plan). Such a program would result in large surplus returns of adults to the hatchery with no role in the broodstock program. Moreover, passive colonization would be likely to occur on a timescale inconsistent with objectives for the numerical expansion of the late-timed stock.

The co-Managers are therefore considering a more efficient approach through active supplementation, with a program size of 330,000. This program would bolster hatchery program strays with active seeding of key habitats through a combination of off-station juvenile releases and transport of adult hatchery returns to the spawning grounds (Table 1). The program return to the hatchery would continue to be supported with the original 200,000 release. Additionally, both adult and juvenile releases would be used to recruit more adults to the natural spawning grounds. Adult release groups (ARG) would be derived from excess unripened broodstock at the hatchery.

Table 1. Skokomish late Fall Chinook Program plan.

Program Component	Release location	Supplementation strategy	Release number	Release size	Timing	Mark
Hatchery Late	Purdy Creek	Fingerling (SRG)	200,000	70 fpp	May	Unclipped, GA Late cwt
Natural Late	North Fork (RM 13.3)	Fingerling (SRG)	50,000	80 fpp	April	Unclipped, NF Late cwt
	South Fork (RM 2.2)	Adult (ARG) ^{a/}	200	0.1 fpp	Oct	Site-specific Floy
	Vance Creek (RM 3.0) ^{b/}	Fingerling (SRG)	50,000	80 fpp	April	Unclipped, Vance Late cwt
		Adult (ARG) ^{a/}	200	0.1 fpp	Oct	Site-specific Floy
Total release			300,000			
Egg take goal			330,000			

^{a/} Adult releases are planned from hatchery adult surpluses from late maturing fish and will be dependent on availability

^{b/} Up to three locations have been identified for ARG and SRG releases in Vance Creek below RM 3.0 to distribute spawners

The hatchery late-timed Chinook program goal for release location, timing and size is the same as for the regular timed release into Purdy Creek, at 70fpp in May. Given the volatility of the south fork Skokomish and mainstem, the co-managers had originally identified Vance Creek and the North Fork as the best locations for both adult and smolt releases. However, further consideration of other reintroduction and supplementation programs currently underway in the North Fork led to a decision to focus all adult releases of late-timed fall Chinook into Vance Creek and the South Fork (Figure 1).

Two smolt release groups (SRG) of 50,000 each would be produced for two locations in the Skokomish River basin where environmental conditions are most conducive to successful natural production. These groups would be reared at McKernan on well water in order to reduce their imprinting to Purdy Creek, and maximize imprinting to release sites. These groups would be released just prior to smolting in order to allow some degree of acclimation and imprinting to potential spawning locations. These releases would therefore occur slightly earlier and potentially at smaller size due to their stage of development, which is currently expected to be in April, at approximately 80fpp. All three juvenile release groups would be unclipped and uniquely coded wire tagged.

Program goals must be achieved in the following order. The 200k egg take for the hatchery portion of the program must be met before adults are surplus and transported to release sites. Moreover, the 220k egg take must also be met before eggs can be set aside for smolt releases. As surplus adults and eggs in excess of those needed to produce the 220k are acquired, release sites would be prioritized, 1) South Fork, 2) Vance Creek, 3) North Fork, up to the total program size outlined in Table 1.

The timeline for implementing this program will begin with the currently planned 200k release from Purdy Creek in May (Table 2). If resources permit, the 2016 October the egg would be increased to 330k, and surplus late-timed adults would be floyed tagged and proportionately transported to release sites at Vance Creek and the South Fork. By February of 2017, all three juvenile release groups would be separated and uniquely coded wire tagged, and smolt release groups would be released in April 2017.

Table 2. Timeline for 2016/17 implementation of this program.

Date	Action
May-2016	200k smolt release
Oct-2016	330k egg take surplus adults transported to Vance and SF release sites a/
Feb-2017	Coded wire tag 300k
Apr-2017	50k pre-smolt releases to NF, Vance
May-2017	200k smolt release

a/ Adult releases are planned from hatchery adult surpluses from late maturing fish, and will be dependent on availability

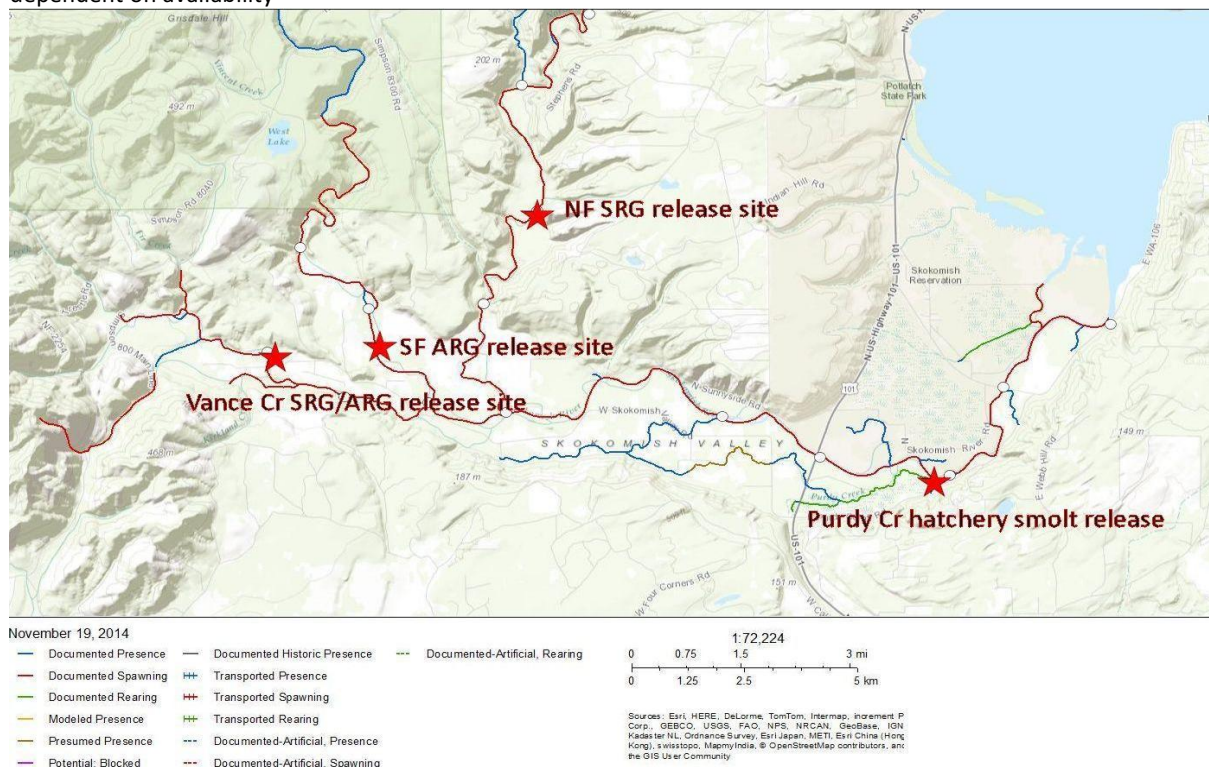


Figure 1. Proposed locations for off-station releases of late-timed fall Chinook in the Skokomish Basin.

Marking and Monitoring

In order to assess the success of late-timed Chinook program returns to George Adams hatchery, WDFW currently coded wire tags (CWT) the 200k hatchery release with a unique code. Assessments of off-station smolt release groups (SRG's) would also be contingent on unique CWT codes. Each of these three groups, in addition to the regular double index tag (DIT) groups, will be recovered at the hatchery, on the spawning grounds, and in fisheries providing critical information on survival, fidelity, and susceptibility to fisheries. In fall of 2015 WDFW added staff to continue spawning surveys in October in the mainstem and south fork and increase the

frequency of carcass surveys. However, we recommend doubling the survey frequency to provide a more thorough schedule for maximizing recoveries.

In order to monitor behavior and distribution of adult releases, an external mark will be necessary; adult releases should be marked with floy tags, color-coded based on release site and uniquely numbered for each individual. Observations of live fish and carcass recoveries will be used to assess the effectiveness of this release strategy. However, existing resources can only provide a cursory assessment.

Additional Resources

In order to implement this program, the co-managers will require additional resources (Table 3). While some of this work can be accomplished with existing staff, additional time and resources will be needed. This budget includes minimal resources outlined in the 2015 Plan, plus additional costs of rearing, marking, and transporting smolt release groups, as well as monitoring adult returns of off-station supplementation fish outlined in this plan. It does not include any of the monitoring costs identified for monitoring productivity for natural spawning fish or for genetic analysis.

An additional three months of hatchery specialist 2 time will be needed in order to conduct broodstocking, sampling and spawning of the late-timed fall Chinook hatchery program and to mark and transport adult release groups (ARG) and smolt release groups (SRG) to release sites. Four months of field technician time and 5,500 in equipment and transportation will be needed to conduct the October/November spawning and carcass surveys. Two months of Biologist 4 time will provide for supervision, analysis, and reporting on the performance of this program. A significant portion of the anticipated budget will be incurred through the cost of coded wire tagging, with \$40,500 needed each year to tag 300,000 Chinook.

Table 3. Budget for the 2016/17 implementation of late-timed Chinook program in the Skokomish River.

	Unit cost	Units	Total
Fish Culture			
Hatchery specialist 2	\$5,000	3	\$15,000
Rearing	\$1,000	3	\$3,000
Tagging	\$125/1000	300,000	\$40,500
Transport			\$2,000
Field Assessment			
Scientific technician 2	\$5,000	4	\$20,000
Sampling equipment and supplies			\$2,500
Vehicle mileage / motor pool			\$3,000
Analysis and Reporting			
Biologist 4	\$8,000	2	\$16,000
GIS analyst (IT Specialist 4)	\$8,506	1.5	\$12,759
Total			\$114,759

References

2015 Addendum to the 2014 Fall Chinook Management Plan in the Skokomish River. Washington Department of Fish and Wildlife and Skokomish Tribe. Olympia, Washington. October 2015.

**Pacific Salmon Commission Chum Technical Committee
2017 Juan de Fuca Strait Chum Salmon Sampling Program**

The Pacific Salmon Commission Southern Panel has again identified the establishment of a chum sampling program for the Strait of Juan de Fuca as a top research priority for proposals through the Southern Endowment Fund for 2017. The Chum Technical Committee submitted a proposal to continue the Strait of Juan de Fuca GSI sampling program which was begun in 2016, and this proposal was once again selected for funding. The sampling program will follow the same methodology as in 2016. Therefore, the analysis of potential impacts to ESA-listed Puget Sound steelhead and Puget Sound Chinook, described below, remains unchanged from 2016. This sampling program resulted in zero encounters with ESA-listed species during 2016.

Sampling Program Objectives:

For stock reconstruction for Southern BC and Washington Chum salmon, one significant data gap is the diversion of chum populations through the Southern Route via Juan de Fuca Strait. This project will work towards addressing that data gap by sampling this migration route in both US and Canadian waters to determine:

- Spatial & temporal stock composition of chum salmon migrating through the Southern Diversion route,
- Provide sampling platform for stock identification, migration rate studies etc.
- Develop time series of Catch per Unit effort data to pair with the Johnstone Strait Test Fishery to determine the diversion rates of various chum populations.

This multi-year program will be broken into 2 phases. Phase 1 (continuing in 2017) will involve assessing the feasibility of a structured sampling program in Juan de Fuca Strait (Canadian Area 20 and US Area 5). This will involve chartering a Purse Seine vessel to fish 4 days/week starting the 1st week of October for 5 weeks (2 vessel-days on each side of the international boundary). Catch per Unit Effort information will be collected as well as biological samples for stock identification purposes. All fish will be released except for the 400 samples/week (a total of 2,000 chum) that will be collected during the program. Phase 2(2018-2019), dependent upon the 1st year of the program, will expand the sampling program to include a tagging component to evaluate the migration rates of chum salmon via migration route, which is a key parameter in the reconstruction model.

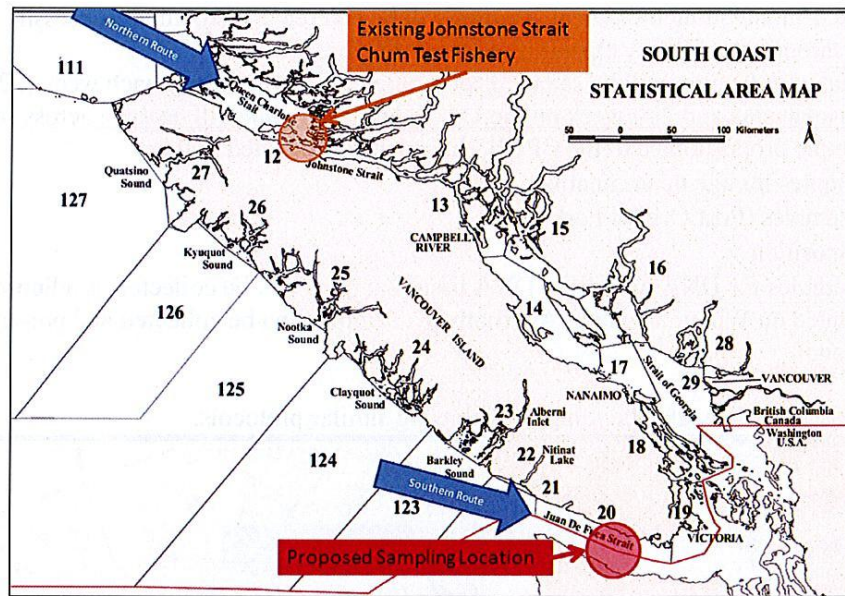


Figure 1. Map of Vancouver Island with migration pathways and proposed sampling location.

Sampling Program Methodology:

Gear: In order to reduce selectivity, a Purse Seine vessel will be chartered to conduct the sampling following a typical Test Fishery pattern (Fig 2). The vessel will fish using a standard WCVI Seine net (300 fathom 6 ½ Strips) that will be constructed for this program.

Timing: The sampling program will cover the main fall chum migration time period through the month of October. The vessel will fish a total of 4 days per week (2 days in Canadian waters and 2 days in U.S. waters) over a 5 week period starting the first week of October.

Location: The 2 days per week of fishing in U.S. waters will occur entire within Catch Area 5. The charter vessel will complete a minimum of 6 sets/day fishing along a North-South line perpendicular to the coast of Vancouver Island across to Washington State. Set locations will be established along that line based on past sockeye samplings conducted by the Pacific Salmon Commission. There will be flexibility in the set location especially during this pilot phase of the program to determine optimum set locations (i.e. the fish maybe predominantly shore-oriented so most of the effective fishing effort would be near-shore).

Monitoring: An observer trained by DFO will be onboard at all times during fishing operations. The observers' duties will include collection and recording of all catch data, such as date, time, set location, number of sets, and catch by set and species. Data collected will be recorded on paper set logs and entered into an electronic logbook for real-time data transmission using a satellite system. This satellite system will also provide the Vessel Monitoring System (VMS) for real time monitoring of vessel positioning to a predetermined frequency. Enumeration procedures:

- Once the bunt is dried up alongside or at the stern of the vessel fish will be sampled by dip-netting a portion of the catch out of the net.
- The remaining fish will be counted by species as they swim out of the bunt over the breast line.
- Lowering and raising the breast line controls the speed with which the fish swim out of the net.
- The observer will count all chum salmon while crew members will count any salmon and steelhead by-catch.
- All fish will be released except those being sampled.

- All catch data including biological samples will be entered and stored and accessible over the web through the Fishery Operating System (FOS).

Sampling: A total of 400 chum will be sampled for biological information in each week (200/week on the Canadian side and 200/week on the U.S. side). Sampling will be done across sets attempting to sample proportionate to the CPUE. Information collected will be:

- Scale samples for age determination
- Length samples (Post Orbital Fork)
- Sex composition
- Tissue samples for DNA extraction DNA tissue samples will be collected as adipose tissue and mounted on Whatman paper. Alternatively, samples can be collected and preserved in 95% ethanol.

If required, other species may also be sampled following similar protocols.

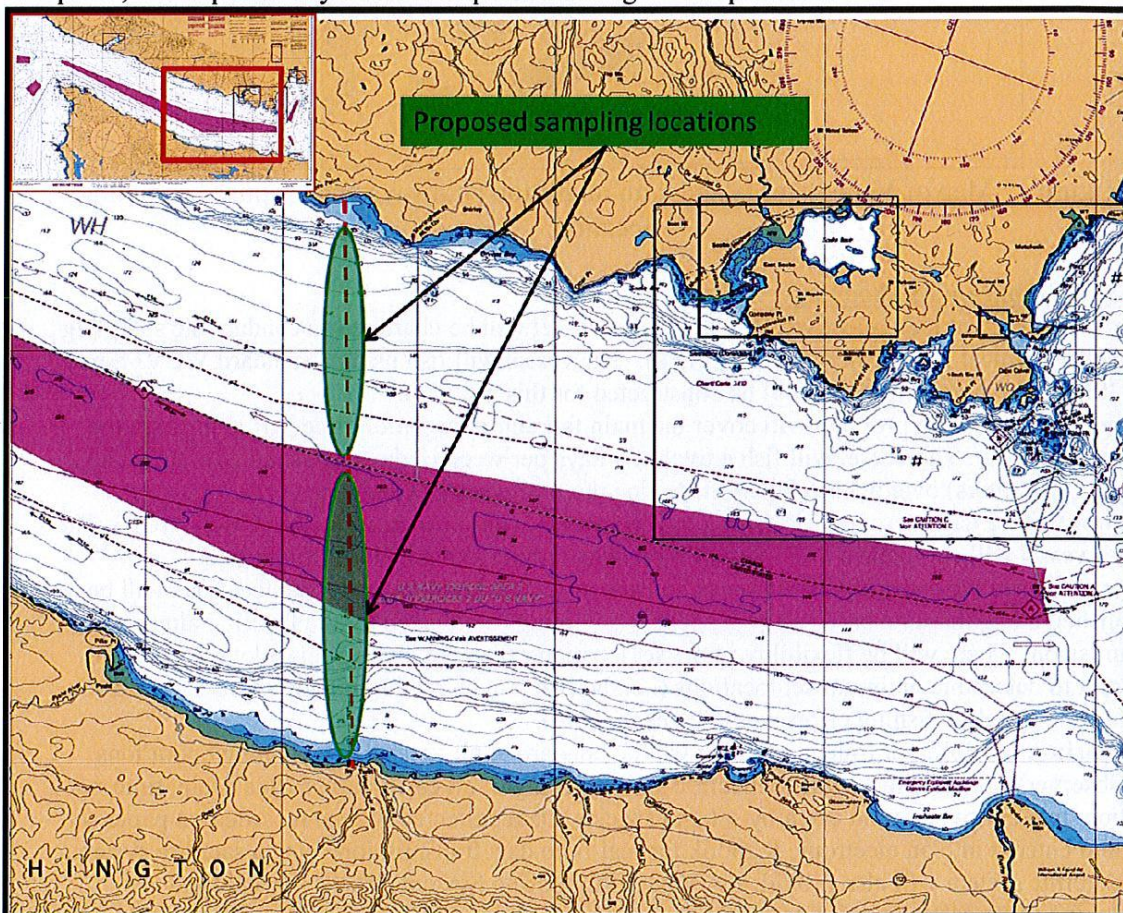


Figure 2. Proposed initial sampling locations for program initiation following similar pattern to past sampling programs for sockeye by the Pacific Salmon Commission. Fishing in US waters will be limited to Catch Area 5.

Mitigation Measures to Minimize the Potential for Take:

Sampled chum will be dip-netted out the seine. The remainder of the fish in the seine (including any potential listed fish) will not be brought aboard the vessel, but rather released directly from the seine while still in the water, by submerging the cork line.

Take Estimation and Reporting:

Zero encounters of ESA-listed salmonids occurred during 2016 research sampling. The very same protocols will be used during the 2017 operations. Therefore, the following take estimates (developed for 2016) represent very conservative impact expectations for the 2017 research.

Puget Sound Steelhead: Based on fish tickets from 5 recent years (2011-2015), October and November steelhead catches in all commercial fisheries within Areas 4B and 5 ranged from zero (in 2013, 2014 & 2015), to one (in the 2012 troll fishery), to three (in 2011 gillnet fisheries). Therefore, we would conservatively expect our research activities to encounter less than 10 adult steelhead in total, with all being released alive with minimal actual handling. Since all steelhead will be released without being brought aboard the vessel, a 20% release mortality will be assumed. This mortality rate is higher than the 10% rate assumed for recreational hook & line fisheries, but lower than the release mortality rates assumed for adult Chinook (33%) or Coho (26%) assumed for purse seine fisheries where the fish are brought aboard the vessel prior to being released. A 20% assumed release mortality rate suggests that this sampling program could potentially result in 2 dead steelhead of unknown production origin and listing status during 2017 operations. Steelhead that are potentially encountered in Area 5 may not be part of the listed Puget Sound ESU.

Puget Sound Chinook: Only immature "blackmouth" Chinook should be present in Area 5 during October and November. Based on WDFW estimates of Chinook encounters in October mark-selective fisheries in Area 5, we anticipate encountering less than 200 immature Chinook in the course of this research during 2017. Should any immature Chinook become entrained in the seine, smaller ones would likely escape through the mesh. Any entrained Chinook will be released over the cork line along with the excess chum. As with steelhead, no Chinook are expected to be brought aboard the vessel. Therefore, a lower release mortality rate than the rate that is usually assumed for immature Chinook that are hauled aboard purse seiners (45%) is appropriate. Assuming a release mortality rate of 30% suggests that this research might result in a total of 60 incidental mortalities of immature Chinook in Area 5 during October and early November. Based on FRAM modeling of those impacts, total adult equivalent (AEQ) mortalities expected in this research sampling program during 2017, by stock, are shown in Table 1.

Table 1. Total Adult Equivalent (AEQ) mortalities of all Chinook stocks estimated to occur incidentally in the Juan de Fuca Strait Chum Salmon Sampling Program during 2017.

Stock	AEQ mortalities
UnMarked Nooksack/Samish Fall	1
Marked Nooksack/Samish Fall	19
Marked Mid PS Fall Fing	1
UnMarked South Puget Sound Fall Fing	2
Marked South Puget Sound Fall Fing	26
UnMarked Fraser River Late	3
UnMarked Lower Columbia Naturals	1

Table 2. FRAM-derived estimates of increases in total 2017 Exploitation Rates (over those occurring in fisheries) of Puget Sound Chinook stocks anticipated to result from incidental release mortalities in the Juan de Fuca Strait Chum Salmon Sampling Program, rounded to the nearest one-hundredth of one percent.

Stock	Increase in Total ER
Spring/Early:	
Nooksack (n) - Total	0.00%
Skagit (n) - Total	0.01%
White	0.00%
Dungeness	0.00%
Summer/Fall:	
Skagit - Total	0.01%
Stillaguamish (n) - Total	0.00%
Snohomish (n) - Total	0.00%
Lake Wa. (Cedar R.)	0.01%
Green	0.01%
Puyallup	0.01%
Nisqually	0.04%
Western Strait-Hoko	0.00%
Elwha	0.00%
Mid-Hood Canal tribs. (n)	0.00%
Skokomish	0.08%

The anticipated net increases in total 2017 exploitation rates of Puget Sound Chinook stocks managed under the Co-manager Comprehensive Management Plan for Puget Sound Chinook are shown in Table 2. These low exploitation rates, when combined with the other research fishing activities consulted under the 2017 Chinook Harvest Management Plan (to our knowledge), still fall well below the level reserved for this type of research activity, as described in the 2010 Co-manager Comprehensive Management Plan for Puget Sound Chinook:

*Mortality associated with certain monitoring and research activities (e.g. test fisheries and update fisheries), that primarily inform in-season harvest management decisions, will be accounted with other fishery related mortality under the ER ceilings defined for each MU. **Mortality associated with other research and monitoring, which have broader applicability to stock assessment, will not be accounted under the ER ceilings, Mortality in this latter category will not exceed a level equivalent to 1% of the estimated annual abundance (i.e. 1% ER), for any MU.***

Co-Managers Anticipated 2017-2018 Incidental Steelhead Impacts

Amilee Wilson NMFS West Coast Region, Lacey Field Office 510 Desmond Dr.
Southeast, Suite 103 Lacey, WA 98503
RE: Incidental Steelhead Impacts

Dear Ms. Wilson,

Below is a description of anticipated impacts of the 2017/18 Puget Sound Tribal fisheries on ESA listed Puget Sound Steelhead DPS. This description covers anticipated impacts from harvest actions in preterminal and terminal marine waters of Puget Sound as well as freshwater fisheries. Previous fishery package submissions have not provided this information as NOAA has relied on post-season reports to develop incidental take statements. Additionally, winter steelhead harvest plans and winter chum salmon plans which address listed winter steelhead impacts are not generally developed until later in the Fall.

Steelhead are expected to be impacted in treaty marine fisheries occurring during the 2017/2018 season. Depending on location of the fishery, impacts could be on listed and un-listed natural-origin steelhead as well as listed and unlisted hatchery-origin steelhead. Previous Biological Opinions^{1,2} for Treaty and non-treaty fisheries have provided Incidental Take coverage of up to 325 steelhead, of listed and unlisted, hatchery and natural-origin steelhead, in Puget Sound marine waters. It is anticipated that treaty and non-treaty fisheries in marine waters will incidentally take up to 325 steelhead during the 2017/18 fishing season.

The same Biological Opinions also stipulated that harvest rates of incidental catch of natural-origin steelhead in freshwater fisheries targeting salmon and unlisted hatchery steelhead will not exceed an average 4.2% harvest rate across five Puget Sound winter steelhead populations where sufficient data are available (e.g. Skagit, Snohomish, Green, Puyallup, and Nisqually). The National Marine Fisheries Service, further anticipated that HRs for other steelhead populations would be within the range of the five populations based on similarity of catch patterns and fishing regulations. Incidental impacts of

Footnotes

1 NMFS. 2014. Endangered Species Act Biological Opinion and Magnuson-Stevens Act Essential Fish Habitat (EFH) Consultation – Impacts of Programs Administered by the Bureau of Indian Affairs that Support Puget Sound Tribal Salmon Fisheries, Salmon Fishing Activities Authorized by the U.S. Fish and Wildlife Service, and Fisheries Authorized by the U.S. Fraser Panel in 2014. NMFS, West Coast Region. F/WCR-2014-578. May 1, 2014. 156 p.

2 NMFS. 2015. Endangered Species Act Biological Opinion and Magnuson-Stevens Act Essential Fish Habitat (EFH) Consultation – Impacts of Programs Administered by the Bureau of Indian Affairs that Support Puget Sound Tribal Salmon Fisheries, Salmon Fishing Activities Authorized by the U.S. Fish and Wildlife Service, and Fisheries Authorized by the U.S. Fraser Panel in 2015. NMFS, West Coast Region. F/WCR-2015-2433. May 7, 2015. 172 p.

Treaty and non-treaty fisheries in terminal areas for the five previously noted winter steelhead populations are expected to be at or below the 4.2% average HR. Fisheries in other Puget Sound freshwater areas are anticipated to be within the range of the five noted populations with fishing schedules and structures consistent to previous years.

Harvest oriented research activities are also likely to impact steelhead in Puget Sound waters. Information has previously been submitted to NOAA, pertaining to potential incidental impacts to steelhead from the Tribal warm water test fishery in Lake Washington. There is no expected change in incidental steelhead impacts from this project. Additionally, the Pacific Salmon Commission-Chum Technical Committee is implementing a genetic stock composition research activity on fall chum salmon migrating through the Strait of Juan de Fuca during October and early November in Marine Catch Area 5. Steelhead encounters are anticipated to not exceed 10 fish, which will be released without being brought aboard the research vessel. Because these fish will be released without being brought aboard, a conservative 20% release morality is anticipated with an estimated mortality of two steelhead. Given the location of the fishery, encounters would be a composite of listed and unlisted hatchery-origin and listed and unlisted natural-origin steelhead. The anticipated impact of this research fishery is expected have minimal effect on listed Puget Sound steelhead.

It is worth noting, that while individual Tribes may seek discussions directly with NMFS regarding incidental steelhead impacts, the positions and agreements made during such interactions, should not be construed by NMFS to apply for all Puget Sound Treaty Tribes nor to WDFW fisheries.

Please contact Chris James at 360-528-4386 or cjames@nwifc.org if there are further questions. Thank you for your time.

Sincerely,



Justin Parker
Executive Director, NWIFC



Jim Unsworth
Director, WDFW

Cc: Susan Bishop, NMFS-NOAA Craig Bowhay, NWIFC Rudy Peone, BIA Bill Patton, NWIFC Northwest Tribal Fisheries Managers and Biologists