2014 WILLAPA BAY PRE-SEASON FORECAST SUMMARY

updated 03.20.14

CHINOOK

	NATURAL ORIGIN	HATCHERY	TOTAL
TOTAL FORECAST	**3,112**	**29,326**	**32,438**
Willapa/ North River	1,609	13,840	15,449
Nemah/Palix	158	11,337	11,495
Naselle/Bear	1,345	4,149	5,494

COHO Ocean Age 3 Estimates

	NATURAL ORIGIN	HATCHERY	TOTAL
FORECAST	**58,883**	**40,998**	**99,881**
Willapa/ North River	40,308	7,921	48,229
Nemah/Palix	6,786	0	6,786
Naselle/Bear	11,789	33,077	44,866

CHUM

	NATURAL ORIGIN	HATCHERY	TOTAL
FORECAST	**52,612**	**2,766**	**55,378**

2014 Willapa Bay Chinook Management Objectives
Draft March 21, 2014

Introduction

The draft 2010 Willapa Bay Management Plan (Plan) provides a framework for a transition in hatchery and fishery management strategies for salmon fisheries in Willapa Bay. Where the primary objective had been the harvest of hatchery-origin Chinook salmon, the Plan describes an enhanced focus on conservation consistent with the guidance of the Hatchery and Fishery Reform policy adopted by the Fish and Wildlife Commission in 2009. Achieving the conservation goals of the plan is anticipated to promote sustainable fisheries and reduce the likelihood of the listing of Washington coastal Chinook under the Endangered Species Act.

The Washington Department of Fish and Wildlife (Department) recognized that the Plan called for a significant shift in management, and that a period of transition would be needed to achieve the long-term conservation goals. Historical harvest rates on Willapa Bay Chinook salmon exceeded 90%, and hatchery-origin fish likely historically comprised most of the spawners in the Willapa and Naselle rivers.

Plan Components

The Plan includes the following components to initiate the transition toward improved hatchery and fishery management:

- Designated Viability Targets. The Plan established a hierarchy of viability using a classification system broadly used in recovery planning. Populations were classified as either *Primary*, which are targeted for restoration to high productivity and abundance; *Contributing,* where small to medium improvements are anticipated; or *Stabilizing,* populations that may be maintained at current levels. The Naselle was classified as a Primary Chinook population, the North/Smith as a Contributing population, and the Willapa, Palix, and Bear as Stabilizing populations.

- Reduced Naselle Hatchery Production. Consistent with the designation of the Naselle as a Primary Chinook population, the production of Chinook at the Naselle Hatchery was scheduled to transition from 3,000,000 to 500,000 smolts to reduce the number of hatchery-origin fish spawning in the Naselle River. The returns in 2013 were the first year when both age 4 and age 5 (the primary ages of return) fish were produced from a release of less than 900,000 smolts. Production was increased by 1,000,000 Chinook smolts at the Forks Creek Hatchery and 1,300,000 smolts at the Nemah Hatchery.

- Maintained 30% Harvest Rate Ceiling on the Naselle Population. The Plan maintains a 30% ceiling on the harvest rate of naturally produced Chinook salmon from the Naselle River.

- Identified Need for Mark-Selective Fisheries. The Plan recognizes that mark-selective fisheries would likely be needed to reduce harvest rates on natural-origin Chinook and the number of hatchery-origin Chinook salmon in natural spawning areas.

- Recognized Necessity of Adaptive Management. The Plan recognizes that there is significant uncertainty in our understanding of the abundance of naturally produced Chinook salmon and the impacts of fisheries in different subareas of Willapa Bay. Up through 2010, for example, our inability to distinguish hatchery and natural-origin salmon significantly limited our ability to assess the productivity of spawners and precluded the ability to focus fishery harvest on hatchery-origin Chinook salmon.

Plan Objectives

The draft Plan provides objectives to guide management during the transition in hatchery and fishery management. These include the following:

1) Managers will maximize harvest opportunity on hatchery fish in a manner that is consistent with achieving objectives and goals for healthy, diverse and sustainable natural spawning populations identified in Table 2 {of draft Plan}.

2) For Chinook programs, this will mainly be accomplished by shifting the location of large harvest augmentation programs away from the Chinook population in the Naselle River, which has been designated as a Primary population. The current 30% pre-season terminal harvest ceiling management will be maintained as the pre-season management objective for the Naselle Chinook population.

3) Other Chinook stocks will be managed to allow for higher harvest rates while achieving natural and hatchery escapement goals.

4) In an effort to address issues within the scope of this plan the WDFW will manage Willapa Bay Chinook to achieve stock specific escapement goal in conjunction with viability goals for each stock identified in Table 2 {of draft Plan}.

5) The WDFW will evaluate management success through fisheries and spawning.

6) Future evaluation of natural spawning success will assess individual river systems and their associated stocks within the Willapa Bay Region for whether or not they are achieving their system specific goals as identified in Table 2 {of draft Plan}.

7) For Primary and Contributing populations this assessment will evaluate the total number of spawners and the composition on spawning grounds in terms of natural or hatchery contribution. The proportion of hatchery origin spawners (pHOS) should not exceed 30% in rivers where hatchery production is integrated with the wild stock. The Naselle and North rivers

are designated as Primary and the Contributing respectively and will be managed to achieve this 30% pHOS standard.

The Department recognizes that the draft Plan provides a framework for a transition in hatchery and fishery management strategies for salmon hatchery and fishery management in Willapa Bay. All objectives may not be immediately attainable and – as might be expected during a transitional period - the Department acknowledges that we will be faced with the challenging task of balancing multiple trade-offs and objectives. For example, the Naselle has been designated as a Primary population, and we will be seeking to reduce the number of hatchery-origin fish in natural spawning areas. We will also be seeking to maintain sufficient natural spawners in the Naselle River to provide natural-origin production for the subsequent cycle. Since the majority of natural spawners in past years were of hatchery origin, it is likely that the productivity of natural spawners will be low relative to a locally adapted population.

The Department also recognizes that we will be moving through this transition with significant uncertainty in our understanding of natural production in tributaries to Willapa Bay. This uncertainty includes:

1) The number of spawners necessary to optimally seed tributaries to Willapa Bay. The current estimates are based on an assumed value of 36 Chinook salmon spawners per mile.

2) The current productivity of natural spawners. We have limited understanding of the productivity of natural spawners due to the lack of an identifying mark for most hatchery-origin adults returning in years prior to 2010.

3) How the productivity of natural spawners will change as we transition to a management system that will reduce the fraction of hatchery-origin spawners in natural spawning areas.

The Department recognizes that we are in the early stages of the transition and that there is uncertainty in how the natural populations will respond to implementation of the draft Plan. Success will depend upon careful monitoring and adaptive management to achieve both short term and long term conservation objectives.

Evaluation of Plan Implementation

Implementation of the Plan can be evaluated relative to multiple criteria, including:

1) Have we maintained a harvest rate of less than 30% on the Naselle population (Primary population)?

   The run reconstruction estimates of harvest rates on Naselle natural-origin Chinook were less than 30% in each year since implementation of the plan was initiated (29% in 2010, 14% in 2011, 23% in 2012, and 28% in 2013).

2) Have we reduced the proportion of hatchery-origin spawners for the Naselle population?

Returns in 2013 were the first to originate from a reduced production level of less than 900,000 smolts. The proportion of hatchery-origin spawners dropped to the lowest level (0.81) since marking was initiated but remained substantially higher than our long term objective of 0.30.

Table 1. Summary of natural-origin spawners (NOS), hatchery-origin spawners (HOS), total natural spawners, and proportion of hatchery-origin spawners (pHOS) for the Naselle population.

Year	NOS	HOS	Total	pHOS
2010	1,648	9,100	10,748	0.85
2011	1,433	9,609	11,042	0.87
2012	1,043	9,923	10,966	0.90
2103	564	2,417	2,981	0.81

3) Have we increased the number of natural-origin spawners (NOS) for the Naselle population?

The number of natural-origin spawners for the Naselle population has declined in each year since 2010, reaching a low of 564 spawners in 2013 (Table 1).

4) Have we maintained or increased the number of natural-origin spawners (NOS) in the North River/Smith Creek (Contributing population)?

The number of natural-origin spawners in the North River/Smith Creek was 315 in 2010, 298 in 2011, 168 in 2012, and 196 in 2013.

5) Have we maintained the viability of the Willapa, Palix, and Bear populations (Stabilizing populations)?

The number of spawners has remained above the spawner capacity estimate for the Willapa population, declined and remained below the capacity estimate for the Palix population, and remained low and below the spawner capacity estimate for the Bear population.

Table 2. Natural-origin (NOS) and total spawners for the Willapa, Palix, and Bear populations.

Year	Willapa		Palix		Bear	
	NOS	Total	NOS	Total	NOS	Total
2010	1,173	6,725	71	71	20	20
2011	1,219	7,043	23	23	25	25
2012	688	4,653	11	11	15	15
2013	551	2,294	17	17	40	40
Spawner Capacity Estimate	1,181		104		306	

This review of plan implementation suggests that additional management actions may be necessary to promote achievement of our management objectives during this transition period.

2014 Forecast and Management Objectives

The 2014 forecast is for 3,112 natural-origin Chinook and 29,327 hatchery-origin Chinook (Table 3). The relatively small return of natural-origin Chinook, the smallest in the last four years, will clearly make it difficult to achieve substantial progress in meeting our management objectives for this transitional period.

Table 3. Forecasted returns, estimated capacity for natural spawners, and hatchery spawner goal for Willapa Bay.

Component	Forecast	Natural Spawner Estimated Capacity	Hatchery Spawner Goal
Willapa/North Rivers		2,172	
Natural-Origin	1,609		
Hatchery-Origin	13,840		4,537
Nemah/Palix Rivers		328	
Natural-Origin	158		
Hatchery-Origin	11,337		4,679
Naselle/Bear Rivers		1,853	
Natural-Origin	1,345		
Hatchery-Origin	4,149		709
Total		4,353	
Natural-Origin	3,112		
Hatchery-Origin	29,327		9,925

The review of the performance of the plan over the last four years, and the forecast for natural-origin Chinook returns, indicate that additional conservation actions should be implemented in 2014. These actions should be directed at enhancing conservation actions for the Primary (Naselle) and Contributing (North) populations. Fishery and hatchery management actions will be developed to achieve the following objectives:

1) Address the declining trend in natural-origin spawners for the Naselle population by targeting a harvest rate of no more than 20% on the Naselle population. The projected natural-origin escapement will exceed the 2012 spawner level (> 1,050 fish).

2) Implement time and area closures that may provide additional protection for the Naselle population, including the closure of sub-areas 2P, 2R, and 2M through Sept. 15.

3) Continue to reduce the proportion of hatchery-origin spawners in the Naselle River by placing no more than 500 adult hatchery-origin Chinook above the weir.

4) Explore with the commercial fishing industry opportunities to implement alternative gear (purse seine, beach seine, or tangle net) to increase the catch of abundant hatchery fish while minimizing impacts to natural-origin Chinook.

5) Increase protection for the North Chinook population by delaying the recreational fishery in North Bay and the North River until October 1.

DRAFT 03-21-14

2014 WILLAPA BAY FISHERY MANAGEMENT OBJECTIVES

Salmon:

- **Chinook**
  - See attachment

- **Coho**
  - Management period is September 10th – October 15th.
  - Maximize harvest opportunity on hatchery fish, in a manner that is consistent with achieving objectives and goals for healthy, diverse and sustainable natural spawning populations.
  - Meet or exceed 13,090 escapement goal

- **Chum**
  - Management period October 16th – October 31st.
  - Continue moratorium on Chum directed fishing, i.e. closed.
  - Incidental impacts limited to a harvest rate of 10% or less.

Sturgeon: Closed due to conservation concerns.