

## Willapa Bay Salmon Management Policy: Alternative 2 April 15, 2022, Fish Committee Draft

### Comments and Questions from WDFW Staff May 9, 2022

As per the discussion at the Fish Committee meeting on May 13, where there was insufficient time to discuss the questions below, red font in this document represents an initial cursory written response just for those questions that appear to be necessary to complete the first draft of the comparative analysis assignment. Questions addressed on May 13 are also noted. Discussion of the remaining questions, and further clarification of the questions addressed below, is scheduled for the June 10 Fish Committee meeting.

A version of the April 15, 2022 Alt 2 document with Line Numbers included in the margins is part of this package.

#### Useful definitions:

HOR = Hatchery-origin returns. Returning adults that are of hatchery origin.

NOR = Natural-origin returns. Returning adults that are of natural origin.

HOS = HORs that spawn naturally (in the river)

NOS = NORs that spawn naturally (in the river)

HOB = HORs that are used as broodstock in a hatchery

NOB = NORs that are used as broodstock in a hatchery

pHOS =  $HOS / (HOS + NOS)$ . Proportion of natural spawners that are of hatchery origin

pNOB =  $NOB / (NOB + HOB)$ . Proportion of hatchery broodstock that are of natural origin

Escapement = NORs and HORs that escape all fisheries and return to either the rivers or hatcheries

**Lines 40-41.** The sentence lists the terms: values, direction, positions, goals, objectives, and actions, and directs department staff to use these terms to “achieve the stated purpose of the Policy.” These terms are undefined and therefore may result in a disconnection between policy purpose and policy implementation. Line 52 states that the “Policy provides the Department with a cohesive set of guiding principles, strategies and actions . . . .” The term strategies is defined later in the policy, but those sections are deleted. If these terms are being used as synonyms, we suggest that a single word be used to improve clarity of the Policy. If each of these terms mean something different, we suggest that a glossary be included in the Policy.

**Line 64.** It is our understanding that steelhead has been removed from the policy. Please clarify. {Answered at the last Fish Committee meeting.}

**Line 73.** The first guiding principle is that the policy should be implemented with the recognition that no “fish species in the Willapa Bay basin [is] currently listed under the federal Endangered Species Act.” We are uncertain how to use this information when implementing the policy. {Answered at the last Fish Committee meeting. This guiding principle is an acknowledgment of the current situation. Policy implementation is triggered to be reconsidered if any of these species were to be listed.}

**Line 81.** The second guiding principle directs the Department to restore damaged habitat. We suggest that the principle states that the Department attempts to protect and restore damaged habitat where possible.

**Lines 97-100.** This Guiding Principle is unclear to us. What is being aggregated in the phrase “higher aggregate abundance”? Is this the combined HOR and NOR total escapement, or combined HOR and NOR that spawn naturally (HOS + NOS)? If HORs and NORs are combined in the aggregate, you can achieve a higher aggregate abundance with Alt. 2 just by producing more hatchery fish, regardless of the status (abundant or depressed) of the wild population. It is unclear to us how we would know if Alt. 2 provides a higher sustainable catch in fisheries than full implementation of Policy C-3622 adopted in 2015. With healthy wild populations, implementation of Policy C-3622 may produce a large sustainable catch.

**Lines 113-120** (including footnote 1). As with Lines 97-100, it is not clear what is being aggregated and which fisheries will be limited to 10% incidental take. If preseason forecast indicates that the aggregate fall Chinook NOR run-size will be below the escapement goal, and that the Coho run is healthy, does this limit the fall Chinook commercial, marine sport, and freshwater sport harvest to 10% of the run, or any harvest of Coho to 10% incidental take of fall Chinook? Likewise, it is not clear which fishery is being limited if the preseason forecast indicates that only one tributary (e.g., Willapa River) will be below the escapement goal. **In addition to the footnote, “In accordance with the Species Specific provisions of this Policy” is the key language in these lines—this is where the clarity is located. In general, Willapa Bay fisheries are to be managed to achieve the aggregate wild spawning escapement conservation goal and the aggregate hatchery spawning escapement goal for each species; as the fish move into tributaries, each tributary fishery is to be managed to achieve its wild spawning escapement conservation goal and its hatchery spawning escapement goal for each species.**

**Lines 152-153.** It is our understanding that the federal government can list an ESU if only a portion of the ESU (e.g., major population segment) is depressed.

**Lines 156-157 (and elsewhere).** Is there a difference between spawning escapement goal and a spawning escapement conservation goal? **No. The references should always be referred to as the latter, so Policy readers know what achieving a stated conservation goal means.**

**Lines 157-164.** Are these escapement goals based on NOS only, or a combined NOS + HOS? The language here seems to indicate that the goal is based on NOS only. In addition, are the values in yellow taken from the plots in Appendix 1 of the Comprehensive Evaluation of the Willapa Bay Salmon Management Policy C-3622, 2015-2018? **If so, we need to be mindful of the fact that these analyses were not intended for the development of any management metrics, including  $S_{msy}$ . Secondly, the plots show a broad range of uncertainty for both the Ricker curves (Line 441, gray lines, bottom figure) and the  $S_{msy}$  estimates (Line 441, short orange/yellow lines at the bottom of the bottom figure). This uncertainty would translate directly to uncertainty in establishing escapement goals using this method. Regarding the first sentence, the spawning escapement conservation goals are intended to be met by managing fisheries for that number of NOS; however, it is acknowledged that final accounting of total spawners will likely inevitably include both NOS and HOS, and may intentionally include HOS when managing fisheries in accordance with the policy provisions if NOR abundance is not capable of achieving the NOS spawning escapement conservation goal before fisheries begin. Regarding the third sentence, the intent is yes; the numbers were taken off the graph and have therefore been rounded by eye. Regarding the balance of the paragraph above, it is noted that:**

- The S/R data for fall chinook appears to be similar to the S/R data used to develop an MSY based goal for Willapa Bay coho salmon (14 brood year data points for fall chinook and 15 brood year data points for coho), and the information has been deemed to be sufficient BAS for use as the coho management metric.

- Uncertainty is a characteristic of all fish populations dynamics and S/R analytical exercises; midpoints of well calculated uncertainty ranges are the most probable result and should be used as a management metric if such science is the best available and sound enough for such use. The level of uncertainty from the fall chinook S/R exercise needs to be compared with the level of uncertainty in the fall chinook “spawner capacity” metric, which is very large given fall chinook spawning ecology, the other limiting ecological factors affecting the abundance natural fall chinook abundance, and methodical considerations; these collective uncertainties could be greater than the S/R analysis uncertainty.

**Lines 174-176.** This section states “and to utilize the number of hatchery-origin spawners necessary to achieve the wild spawning escapement conservation goal.” This section indicates that HOS count towards achieving the spawner escapement goal. Likewise, in Lines 232-233, the text states “to achieve aggregate spawning escapement conservation goals for both natural and hatchery origin fall chinook.” *Does this mean that the spawner escapement goals are established using the  $S_{msy}$  for NOS only, but both NOS and HOS are counted toward achieving that escapement goal? If so, wouldn't that guarantee that the  $S_{msy}$  threshold target would be achieved (i.e., escapement >  $S_{msy}$ ) every season? There are never guarantees on these kinds of things, but the policy intent is to achieve or exceed the wild spawning conservation goal every year with NOR if NOR abundance permits, but in the case where the number of NOR is insufficient to achieve this goal, that HOR be used to achieve the wild spawning conservation goal. For the sake of modeling future NOR abundance, the S/R data would indicate that it might be a rare year when NOR abundance is too low to achieve the goal (1 year of 14?).*

**Lines 191-198.** There is no indication here that these smolt release objectives are temporary until the HMPs for these facilities is established, as required by the Hatchery Policy C-3624. Are these temporary smolt release objectives or is this policy exempt from the C-3624? Same question concerns coho releases (Lines 283-285) and chum (Lines 345-347) releases. *There is no language specifying nor intent to exempt this Policy from Policy 3624 processes; HMPs are needed for every hatchery program in the Willapa Bay system.*

**Lines 196-197.** If Alternative 2 becomes the approved policy, for a SEPA analysis we will need to know how these smolt release objectives were established. Also, should we interpret these objectives as being minimum objectives, based on the inclusion of a plus sign “+” for each goal, and the content in Lines 200-202? *At this stage of the comparative analysis, the “+” symbol should be interpreted as allowing for the future possibility of increasing the goal for hatchery releases, based on future evaluations. Recognizing this contingency, the stated numbers should be used in the comparative analysis of the three alternatives at this time.*

**Lines 205-209.** Based on a Fish Committee assignment in November 2021 WDFW staff presented data, analyses, and results to the Fish Committee on December 2, 2021. These analyses showed that the out-of-basin releases into Willapa Bay did *not* leave a genetic legacy, and that the Willapa Bay fall Chinook population is genetically part of the Washington Coast ESU, which is composed of three unique population segments (north coast, Chehalis Basin/Grays Harbor tributaries, and Willapa Bay tributaries. *In other words, the “original genetic strains native to Willapa Bay tributaries” appear uncompromised by out-of-basin releases.* {This was discussed at the May 13 Fish Committee meeting.}

**Line 209.** We agree that the “genetic practices” should emphasize local adaptation to Willapa Bay tributaries.

**Lines 216-218.** We ask for clarification here. When spawner escapement goals are exceeded, will NORs be removed from the river and included as broodstock? Increasing pNOB can be useful in reducing fitness loss when HORs spawn naturally. However, based on Lines 174-176 (see above), a tributary can reach its spawner

escapement goal with a mix of HORs and NORs. If pHOS is high, removing NORs from the river may prevent local adaptation, inconsistent with Line 209. **The intent is not to remove NOR fish from natural spawning grounds if the returns are higher than the spawning conservation goal, other than any needed to integrate into the hatchery spawning broodstock as part of any fitness improvement efforts.**

**Line 229.** When referring to tributaries, does this include all freshwater fisheries? **The intent is to include freshwater fisheries for each tributary to Willapa Bay; is there a problem area with this intent?**

**Lines 255-265, and Line 334.** How were these numbers determined? **They came from the Comprehensive Review, Appendix 3 containing the coho salmon spawning escapement goal review, where they were characterized as the “current WDFW spawning escapement goals” (in 2014). The Comprehensive Review also states that as a result of this spawning goal review the aggregate goal was changed from 13,090 to 13,600, but no individual tributary goals were mentioned. Since the aggregate goals are so close, the total and individual tributary goals were used in this draft of Alternative 2 for the time being.**

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**The following is an initial draft of Objectives for each of the Alternatives based on our interpretation of the three alternatives**

**The characterizations below and implications will need significant discussion. There are also clarifications and questions about Alternative 3. However, neither of these factors should delay a delivery of first results of the cursory comparative analysis in advance of the June 10 Fish Committee meeting.**

## **OBJECTIVES**

(Specific and concise statements of desired future states)

### Alternative 1.

1. Wild populations are restored and conserved, and are adapted to the basin tributaries
2. Increased recreational (sport) fishing opportunities
3. Spawner escapement goals are established at a level that would result in an increase in the wild populations up to the spawning carrying capacity of each tributary
4. Broodstock management designed to reduce genetic and ecological impacts to wild populations from hatchery production.

### Alternative 2.

1. Increased both commercial and recreational fishing opportunities in Willapa Bay and tributaries
2. Increased hatchery production for Fall Chinook, Coho, and Chum
3. Spawner escapement goals are established at a level equal to spawner MSY
4. Hatchery production levels established within the policy are maintained or increased throughout the life of the policy

### Alternative 3.

1. Wild populations are restored and conserved, and are adapted to the basin tributaries
2. Increased recreational (sport) fishing opportunities
3. Spawner escapement goals are established at a level that would result in an increase in the wild populations, up to the spawning carrying capacity of each tributary

4. Broodstock management and hatchery production levels established through Hatchery Management Policy C-3624 process, as specified by hatchery program-specific Hatchery Management Plans (HMPs).
5. Temporary hatchery productions levels established until HMPs are finalized