



MEMORANDUM

Oregon Department of Fish and Wildlife

Fish Division

Date: January 7, 2011

To: Bob Turner, Asst. Regional Administrator, Salmon Management Division, NMFS

From: Tom Stahl, Conservation and Recovery Assistant Program Manager

Subject: Oregon's Report on Task E from the 2010 Lower Columbia Chinook Harvest Biological Opinion

The 2010 biological opinion ("opinion"; NMFS 2010^a) on the effects of the Pacific Coast Salmon Plan on Lower Columbia River (LCR) Chinook applied to proposed fisheries in 2010 and 2011. The opinion set the total exploitation rate limit on LCR tule Chinook in 2010 at 38%. The exploitation rate limit for 2011 was set at 36%, but the opinion allowed for an increase to 37% if certain tasks are completed. Tasks A through H are listed in the conservation recommendations section of the opinion. Task E read as follows:

Describe the transition strategy for reducing the proportion of hatchery fish in natural spawning areas for primary tule Chinook populations in a manner that addresses short term demographic risks while promoting progress to recovery objectives.

The following information responds to Task E.

cc: Alsbury, Corrarino, Faucera, French, Goodson, Knutsen, McIntosh, Murtagh, Nigro, North, Patterson, Williams, Dornbusch (NMFS), Dygert (NMFS)

^a National Marine Fisheries Service (NMFS). 2010. Biological Opinion on the Effects of the Pacific Coast Salmon Plan and U.S. Fraser Panel Fisheries in 2010 and 2011 on the Lower Columbia River Chinook Evolutionarily Significant Unit and Puget Sound/Georgia Basin Rockfish Distinct Populations Segments Listed Under the Endangered Species Act and Magnuson-Stevens Act Essential Fish Habitat Consultation. April 30, 2010. 150 pp.

STRATEGY FOR REDUCING THE PROPORTION OF HATCHERY FALL CHINOOK IN NATURAL SPAWNING AREAS IN OREGON

January 7, 2011

This document summarizes information contained in the *Lower Columbia River Conservation and Recovery Plan for Oregon Populations of Salmon and Steelhead* (August 6, 2010; henceforth referred to as the "Plan"). It is intended to fulfill Oregon's requirements for Task E listed in NMFS' April 30, 2010 harvest biological opinion (similar to Task E in the April 8, 2010 "annotated list of contingency actions for the PFMC biological opinion" and Task D of the March 2, 2010 harvest guidance letter to PFMC from NMFS). Task E reads as follows:

E. Describe the transition strategy for reducing the proportion of hatchery fish in natural spawning areas¹ for primary tule Chinook populations in a manner that addresses short term demographic risks while promoting progress to recovery objectives.

Recovery Standards

Population Designation	Desired Extinction Risk Class	ChF Populations (Desired Ext. Risk)	Maximum Stray Rate
Primary	L or VL ^a	Clatskanie (L) Scappoose (L) Hood (L) ^b	10%
Contributing	H or M (improved over current status, but not viable)	Big Creek (H) Clackamas (M) Sandy (M) Lower Gorge (M) ^c Upper Gorge (M) ^c	30%
Stabilizing	VH, H, or M (maintained at current status, with improvements to prevent deterioration)	Youngs Bay (H)	undefined

^a A population with a "low" or "very low" extinction risk is considered "viable". Extinction risk is on a reverse scale as persistence or viability level, which is utilized in Washington's LCR plan and NMFS' draft "roll-up" plan.

^b It is considered "unlikely" in the Plan that the Hood ChF population will achieve its desired status as a primary population.

^c This population is shared with Washington, which, based on the larger land area within its geographic boundary, determined the desired status. Oregon's recovery actions for the population are intended to support Washington's and are not designed to achieve the full recovery objective of the population.

¹ The proportion of hatchery fish spawning in natural areas will be referred to as the "**stray rate**" in this document. It is also commonly referred to as "pHOS" (proportion of hatchery fish on spawning grounds).

Hatchery Programs

Oregon only has three LCR population areas into which hatchery ChF are released. No primary ChF population has any hatchery ChF releases within the population area (though releases from other locations, within or outside Oregon and/or the ESU, may stray into the tributary, the extent of which is yet to be definitively determined). The hatchery programs are summarized below.

Population	Type	Purpose	Hatchery	Stock	Release #	Release Stage
Youngs Bay	Segregated	Augmentation	CCF (net pens)	SAB	1,350,000	smolt
			Klaskanine	Big Crk Tule	2,100,000	fingerling
Big Creek	Segregated	Augmentation	Big Crk	Big Crk Tule	3,700,000	fingerling
Lower Gorge	Segregated	Augmentation	Bonneville	URB and Tule	4,794,000	smolt

Oregon's Approach

Short Term. In the short term, Oregon has two primary approaches regarding stray rates. Given the limited amount of historical information, the first, and most important for long term strategy and adaptive management, is to better understand the actual stray rates and naturally-produced population levels for each ChF population through a comprehensive monitoring program (Actions **43-Trib**, **44-Trib**, **55-Trib**², **57-Trib**², and **58-Trib**³). Secondly, specific short term actions will be taken to reduce stray rates and hatchery risks, independent of monitoring results. These include⁴:

- *Program Changes*: eliminating, reducing, or shifting hatchery programs (Actions **3-Trib**, **134-BC**)
- *Operation Changes*: modifying hatchery operations (Actions 213-CM, 214-CM)
- *Program Modification Mechanism*: providing clear approval mechanisms for hatchery program modification (Action **4-Trib**)
- *Fishery Removal*: hatchery fish removal through fisheries modification, including selective gear and timing (Actions **55-Trib**², **100-Mxd**, 116-YB, 130-BC)
- *Trap and Sort*: investigating (Actions **61-Trib**, **147-CT**, 250-LG, 268-UG)⁵, creating (Actions 118-YB, 133-BC), and/or maintaining (Action 210-CM) "wild fish sanctuaries"

² This action requires coordination and involvement outside of the Oregon LCR management unit.

³ This action may require coordination and involvement outside of the Oregon LCR management unit.

⁴ Actions affecting primary populations are in **bold**. Within an action number, the following abbreviations are used:

Trib: occurs within any and/or all tributaries
Mxd: occurs in mixed population areas such as the mainstem, estuary, and ocean
YB: Youngs Bay
BC: Big Creek
CT: Clatskanie
SC: Scappoose
CM: Clackamas
LG: Lower Gorge
UG: Upper Gorge

⁵ Weir feasibility depends on finding a site that accesses enough fish to achieve management objectives (i.e., reduce stray rates to adequate levels) and allows safe and reliable installation and operation under the site's hydrogeomorphological conditions at an acceptable cost. Placement of weirs will also have to consider the desired status for population areas (e.g., primary?) and the amount of habitat available above the site for natural production.

through not stocking hatchery fish within the tributary or trapping and sorting⁶ adults within the tributary (Action **55-Trib**²)

- *No Hatchery Programs*: maintain "wild fish sanctuaries" through not stocking hatchery fish within the tributary (Actions **148-CT**, **168-SC**)⁷
- *Marking*: assuring all fish are marked (to aid objectives such as stray rate monitoring, passage sorting, and selective fisheries; Action **55-Trib**²)
- *Habitat Actions*: improving habitat conditions through restoration and protecting good habitat through various means will allow naturally-produced numbers to increase relative to hatchery fish (**numerous Actions**)

Long Term. Based on monitoring results⁸ and adaptive management decisions, Oregon will consider modifications to the short term actions noted above (including expanding, reducing, modifying, and/or eliminating them in terms of scope, details, location, or other factors), as well as the need⁹ for reintroductions or supplementation (Action **63-Trib**) utilizing conservation hatchery program/s¹⁰. The objective for reintroduction or supplementation would be to allow local adaption to proceed where populations require the use of new conservation hatchery programs, and in conjunction with identification and restoration of adequate habitat needs.

Integration Note

There is currently no professional consensus on which type of hatchery broodstock, integrated or segregated, has the least impact on naturally producing fish. This consideration applies primarily to harvest augmentation programs, as opposed to conservation hatchery programs (i.e., reintroduction, supplementation, or captive broodstock programs) which have a different set of considerations for determining broodstock and for which straying onto natural spawning grounds is the objective as opposed to a concern.

Integrated programs are thought to have less genetic impact if hatchery fish stray and spawn with wild fish. However, new information seems to indicate that natural productivity declines with hatchery introgression regardless of brood type. This, coupled with a) the need to remove wild fish from the naturally spawning population for broodstock (i.e., direct take; a significant impact, especially on listed populations with low abundance), b) the practical difficulty with

⁶ In the short term, given that Oregon has no conservation or supplementation hatchery programs for LCR ChF, sorting protocol entails simply passing unmarked fish only. ODFW understands pseudo-isolation concerns such as mismarking and passing unmarked F1's, but there are no current options to address these issues.

⁷ This applies to all populations where there is currently no hatchery stocking/program, including the Hood, Upper Gorge, Sandy, and Clackamas in addition to those specifically identified in the Plan (i.e., the Clatskanie and Scappoose).

⁸ It is expected that monitoring will last at least one life cycle (six years) before moving into *Long Term* recovery items noted in this description.

⁹ The *threshold* at which it is deemed a population is too low to remain self-sustaining, unable to achieve a recovery trajectory, and requires a demographic "save" will be determined based on analyses, modeling, and/or professional judgment and coordination with co-managers at the time monitoring information is adequate.

¹⁰ Determinations of appropriate stock, brood type, unique marking/identification, outplanting strategies, sorting at traps, and other conservation hatchery program details are inter-related and decisions will depend upon a variety of scientific, management, logistical, and policy factors. Note that, ideally and if feasible, a stock separate from the existing harvest augmentation programs (though possibly derived from them) would be utilized for any conservation hatchery program. Also note that the Plan indicates the possibility that tule stocks may not be the indigenous or most appropriate natural stock for the lower Columbia River, and this will be considered when making decisions about reintroduction or supplementation programs.

meeting recommended guidelines for integration (again, especially with low wild population abundances), and c) the greater potential for segregated hatchery fish to "naturally segregate" themselves from wild fish in time, space, or behavioral preference when they do stray onto natural spawning grounds, makes the preference for integration to reduce impacts of hatchery fish from harvest augmentation programs questionable.

It is recommended that this issue continue to be considered until consensus based upon the best available science is reached on which type of program to apply in specific situations (Action **59-Trib**), and particularly to harvest augmentation programs. Until then, Oregon will make decisions about integration of wild fish into hatchery broodstocks on a program-specific basis. Currently, all of Oregon's LCR ChF hatchery programs are segregated¹¹, for the purpose of harvest augmentation, and located where there is little, if any, wild production, and there are no plans to integrate wild brood into them at this time.

Specific Actions from the Plan Addressing Stray Rate

Action ID	Action
3 - Trib	Eliminate/reduce/shift program: To decrease mainstem and estuary competition and predation and reduce straying of hatchery fish onto natural spawning grounds, investigate and/or implement hatchery release reductions or program shifts to lower river terminal areas; include out-of-ESU programs and programs with surplus hatchery fish returns which are not harvested.
4 - Trib	Require hatchery programs/releases that are new, or increased more than 10% from 2009 levels, to complete or modify an HGMP and receive ODFW Fish Division approval; require reduced or eliminated programs to withdraw or modify their HGMP.
43 - Trib	Adequately fund and implement monitoring needed to track progress towards achieving recovery goals.
44 - Trib	Monitor, or continue to monitor, populations to track status and trends and improve understanding of the composition of natural spawners (what type/stray rates? how many? where from? timing?), other life history information, and habitat.
55 - Trib	Mark all hatchery fish.
57 - Trib	Coded-wire tag enough fish from each hatchery release to allow identification of hatchery origin of strays and evaluate rearing and/or release techniques of problem hatcheries.
58 - Trib	Monitor stray rates for 9 years and implement adaptive management options if rates called for in recovery scenarios are exceeded.
59 - Trib	Based on the best available science, evaluate whether integrated or segregated hatchery programs are more compatible with recovery, considering the objective of each hatchery program.
61 - Trib	Trap and sort hatchery adults: Identify a fall Chinook population with high stray rates, no hatchery program, and potential for un-supplemented wild fish recovery and place weir to see if hatchery fish removal causes wild fish increase.
62 - Trib	Identify the most appropriate stock, timing, and strategies for a reintroduction hatchery program and implement, if fish managers determine that reintroductions are needed to recover any fall Chinook population.

¹¹ Unmarked fish returning to a hatchery may be used for broodstock, if considered of hatchery origin.

100 - Mxd	Implement mark-selective Columbia fall Chinook fisheries ¹² by: a) Developing live-capture commercial gear and techniques, b) Conducting release mortality studies for all fisheries, c) Implementing for Columbia R commercial fisheries in August and September if live-capture is feasible, and d) Implementing for sport fisheries in ocean, Buoy 10, tributaries, and mainstem above Buoy 10 (if upriver/Snake wilds are low).
116 - YB	Consider implementing terminal commercial fisheries for fall Chinook to reduce stray rates.
118 - YB	Trap and sort hatchery adults: Begin passing tules and chum if suitable habitat exists (Klaskanine Hatchery).
130 - BC	Consider implementing terminal commercial fisheries for fall Chinook to reduce stray rates.
133 - BC	Trap and sort hatchery adults: Begin passing tules and chum (Big Crk Hatchery).
134 - BC	Eliminate/reduce/shift program: Reduce hatchery tule releases (5.7M to 3.7M in 2009; shifted to Youngs Bay).
147 - CT	Trap and sort hatchery adults: Investigate placing trap to sort hatchery fish from upstream migrants, if stray rate is greater than 10% (current fishway at RM 10 falls).
148 - CT	Maintain existing wild fish sanctuary (do not stock hatchery fish).
168 - SC	Maintain existing wild fish sanctuary (do not stock hatchery fish).
210 - CM	Maintain existing wild fish sanctuary (NF Dam).
213 - CM	Operationally open the hatchery trap for a longer period (Eagle Crk NFH).
214 - CM	Purchase a freezer trailer to aid the logistical disposition to carcass placement, tribes, and food banks if program is maintained (Eagle Crk NFH).
250 - LG	Trap and sort hatchery adults: Investigate placing new weir and trap to sort hatchery fish from upstream migrants (Eagle Crk [near mouth]; Tanner Crk).
268 - UG	Trap and sort hatchery adults: Investigate placing trap to sort hatchery fish from upstream migrants (Herman Crk at Oxbow Hatchery).

¹² This will likely require more intensive sampling to recover DIT tags from lower Columbia River hatchery tule groups, as the preferred method by PST to characterize total mortality. This entails sampling all ChF for CWTs (as opposed to just clipped fish, which occurs now), which in turn will require a large increase in sampling effort (and funding) in the ocean and river.