

**ANNUAL PROGRESS REPORT FOR 2015
FALL CHINOOK SALMON CONSERVATION PLAN
ROGUE SPECIES MANAGEMENT UNIT
OREGON DEPARTMENT OF FISH AND WILDLIFE
ROGUE WATERSHED DISTRICT**

INTRODUCTION

In January of 2013, the Oregon Fish and Wildlife Commission formally adopted a conservation plan for fall Chinook salmon in the Rogue Species Management Unit (SMU). This plan calls for the Oregon Department of Fish and Wildlife (ODFW) to complete annual reports that will include, at least, the following elements: (1) SMU status in relation to the desired status and conservation status statements embedded in the conservation plan, (2) summaries of annual efforts to monitor SMU attributes, (3) implications of any research or evaluation projects completed during the reporting year, (4) any updated assessments of population attributes completed during the reporting year, and (5) presentation of the rationale associated with any changes in management actions made during the reporting year.

This report summarizes the status of the SMU in relation to desired status and conservation status through the 2015 return year, completed management actions, and 2016 preseason forecasts in relation to conservation status and maximum sustained yield (Chetco, Winchuck).

A copy of the conservation plan, and annual progress reports, is available on the ODFW website at:

http://www.dfw.state.or.us/fish/CRP/rogue_fall_chinook_conservation_plan.asp

SUMMARY OF SMU STATUS

Two population strata compose the SMU: (1) the Rogue stratum and (2) the coastal stratum. The two strata are differentiated by life history and genetic differences within the constituent independent populations of naturally produced fall Chinook salmon (NP CHF). Where possible, status criteria were developed for each independent population monitored by ODFW. Populations in the Rogue stratum are monitored as an aggregate by sampling at Huntley Park near the mouth of the Rogue River, except that NP CHF in the Lower Rogue population area are also monitored annually by ODFW.

Monitoring of SMU attributes is designed to produce metrics that are to be used to characterize the current status of the SMU. All monitoring needed to update SMU status was completed by ODFW in 2015, and the results are included in tables 1 and 2. Monitoring results that most differed in 2015, as compared to previous years, include significantly reduced escapement in the Rogue Aggregate population, and above average escapement in the Hunter population.

Table 1. Comparisons of singular elements of current and desired status for naturally produced fall Chinook salmon in the Rogue Species Management Unit. Desired status criteria are described in the conservation plan, and both metrics cover the most recent ten year period. Underlined metrics of current status did not meet desired status criteria.

Status Element	Desired Status	Current Status	2015 Estimate
ROGUE AGGREGATE POPULATIONS			
Adult Abundance ^a	≥54,400	<u>51,579</u>	31,286
Age Structure ^b	≥10%	<u>9%</u>	7%
Run Timing ^c	≥8%	9%	8%
Run Composition ^d	≤5%	5%	6%
LOWER ROGUE POPULATION			
Adult Abundance ^e	≥3,500	6,091	5,749
Spawner Composition ^f	≤10%	3%	4%
CHETCO POPULATION			
Adult Abundance ^e	≥3,800	3,964	5,793
Age Structure ^h	≥16%	20%	33%
Spawner Composition ^f	≤18%	13%	7%
WINCHUCK POPULATION			
Adult Abundance ^e	≥1,000	1,014	1,469
Juvenile Abundance ^g	≥125,000	165,064	302,782
Spawner Composition ^f	≤10%	3%	0%
PISTOL POPULATION			
Adult Abundance ^e	≥1,300	1,434	1,417
Spawner Composition ^f	≤5%	2%	0%
HUNTER POPULATION			
Adult Abundance ^e	≥560	816	2,399
Spawner Composition ^f	≤5%	1%	0%

^a Number of age 3-6 NP CHF that pass Huntley Park.

^b Relative abundance of age 5+6 fish among NP CHF that pass Huntley Park.

^c Relative abundance of October migrants among NP CHF that pass Huntley Park.

^d Relative abundance of hatchery fish among CHF that pass Huntley Park.

^e Number of NP CHF spawners.

^f Relative abundance of hatchery fish among CHF spawners.

^g Number of juvenile NP CHF produced in areas upstream of the South Fork.

^h Relative abundance of age 5+6 fish among NP CHF spawners.

Table 2. Status of the Rogue Fall Chinook Salmon Species Management Unit as compared to conservation criteria. Conservation status criteria are described in the conservation plan and cover, unless otherwise noted, the most recent three year period. Underlined metrics of current status did not meet conservation status criteria.

Status Element	Conservation Criterion	Comparative Status	2015 Estimate
ROGUE AGGREGATE POPULATIONS			
Adult Abundance ^a	<20,400 ⁱ	42,416	31,286
Age Structure ^b	<3%	7%	7%
Run Composition ^c	<5%	6%	8%
Run Composition ^d	>10%	4%	6%
LOWER ROGUE POPULATION			
Adult Abundance ^e	<1,500	5,007	5,749
Spawner Composition ^f	>15%	5%	4%
CHETCO POPULATION			
Adult Abundance ^e	<1,440 ⁱ	5,634	5,793
Age Structure ^h	<5%	18%	33%
Spawner Composition ^f	>20%	12%	7%
WINCHUCK POPULATION			
Adult Abundance ^e	<300 ⁱ	1,253	1,469
Juvenile Abundance ^g	<50,000 ^j	302,782	302,782
Spawner Composition ^f	>15%	2%	0%
PISTOL POPULATION			
Adult Abundance ^e	<540	1,992	1,469
Spawner Composition ^f	>10%	0%	0%
HUNTER POPULATION			
Adult Abundance ^e	<300	1,699	2,399
Spawner Composition ^f	>10%	0%	0%

^a Number of age 3-6 NP CHF that pass Huntley Park.

^b Relative abundance of age 5+6 fish among NP CHF that pass Huntley Park.

^c Relative abundance of October migrants among NP CHF that pass Huntley Park.

^d Relative abundance of hatchery fish among CHF that pass Huntley Park.

^e Number of NP CHF spawners.

^f Relative abundance of hatchery fish among CHF spawners.

^g Number of juvenile NP CHF produced upstream of the South Fork.

^h Relative abundance of age 5+6 fish among NP CHF spawners.

ⁱ Criteria are based on a running two year average.

^j Criterion covers every year.

COMPLETED MANAGEMENT ACTIONS - ROGUE STRATUM

The Oregon Fish and Wildlife Commission adopted Rogue Alternative 4, outlined in the conservation plan, as the preferred suite of management strategies to be employed by ODFW. Some of the relevant actions, completed by ODFW during 2015, are briefly discussed below. A tabulated progress summary related to management actions described in the conservation plan is included in Table 5.

Management Strategy 4.1

Many of the actions within Management Strategy 4.1 relate to seasonal operations of Lost Creek and Applegate reservoirs by the United States Army Corps of Engineers (USACE). ODFW worked cooperatively with the USACE to identify and implement reservoir release strategies designed to enhance naturally-produced fall Chinook (actions 4.1.1, 4.1.2, 4.1.4, 4.1.5, 4.1.6, 4.1.7, 4.1.9). A weekly conference call, implemented in 2013 to facilitate communication, was continued in 2015. ODFW participated in the USACE annual winter management coordination meeting.

Average flow at the Agness gage was maintained at 1,915 cfs August 14 – September 8 (action 4.1.7). Flow augmentation for adult fall Chinook began August 14 based on a significant movement of fall Chinook past Huntley Park beginning on August 12. Disease-related mortality of adult fall Chinook in 2015 was estimated at 20%. Mortality estimates are derived from flow-based models. Additional management actions would be triggered if disease-related losses were forecast to reach 40% (action 4.1.8).

The minimum flow needed to protect juvenile fish rearing in the mainstem in summer is 1,000 cfs as measured at the Grants Pass gage. The flow in 2015 exceeded this level, averaging 1,504 cfs at Grants Pass July 1 – August 13 (action 4.1.9). The lowest average daily flow during the period was 1,390 on July 3.

ODFW participated in a variety of habitat protection activities (action 4.1.14), including review of water right applications, removal/fill applications, Conditional Use permits, and compliance monitoring of municipal and county riparian ordinances.

ODFW participated in 2 projects to remove passage barriers from Evans Creek (action 4.1.16). Fielder and Wimer dams on mainstem Evans Creek were removed in 2015. These were channel spanning concrete dams and were numbers 4 and 8 respectively on ODFW's statewide passage priority list. ODFW estimates the removal of Fielder Dam opened access to 6 miles of fall Chinook habitat. The removal of Wimer Dam accessed an additional 10 miles of fall Chinook habitat (upstream to West Fork Evans Creek). ODFW will monitor fall Chinook distribution in Evans Creek over the next several years to help evaluate fish response to dam removal.

Management Strategy 4.2

ODFW's Aquatic Invasive Species program deployed two watercraft inspection crews in the Rogue Watershed District in 2015 (action 4.2.1). Crews based in Central Point and Gold Beach

conducted boat inspections, primarily on the I-5, Hwy 97, and Hwy 101 corridors, from late spring through early fall.

Management Strategy 4.3

The minimum flow needed to protect juvenile fish rearing in the mainstem in summer is 1,000 cfs as measured at the Grants Pass gage. The flow in 2015 exceeded this level, averaging 1,504 cfs at Grants Pass July 1 – August 13. Lower water temperatures in downstream areas, as a result of the increased flow, result in fewer predation losses because of decreases in pikeminnow metabolic rates (action 4.3.2), using storage that is not needed to protect adult spring Chinook and adult fall Chinook.

Management Strategy 4.4

Zone regulations were employed in 2015 because fall Chinook escapement was forecasted to exceed escapement goals related to conservation criteria (action 4.4.1).

Management Strategy 4.5

ODFW did not complete any work specific to Management Strategy 4.5 in 2015.

COMPLETED MANAGEMENT ACTIONS - COASTAL STRATUM

The Oregon Fish and Wildlife Commission adopted Coastal Alternative 6, outlined in the conservation plan, as the preferred suite of management strategies to be employed by ODFW. Some of the relevant actions, completed by ODFW during 2015, are briefly discussed below. A tabulated progress summary related to management actions described in the conservation plan is included in Table 6.

Management Strategy 6.1

ODFW participated in a variety of habitat protection activities (actions 6.1.2, 6.1.8), including review of water right applications, removal/fill applications, Conditional Use permits, and compliance monitoring of municipal and county riparian ordinances.

Management Strategy 6.2

ODFW's Aquatic Invasive Species program deployed two watercraft inspection crews in the Rogue Watershed District in 2015 (action 6.2.1). Crews based in Central Point and Gold Beach conducted boat inspections, primarily on the I-5, Hwy 97, and Hwy 101 corridors, from late spring through early fall.

Management Strategy 6.3

Zone regulations were employed in 2015 because fall Chinook escapement was forecasted to exceed escapement goals related to conservation criteria (action 6.3.1). Gear restrictions (bobber rule) were implemented by permanent rule on the Chetco and Winchuck rivers between September 1 and November 3. Adoption of the bobber rule on the Chetco and Winchuck rivers was aimed at reducing snagging activity during low flow conditions, while still providing early season harvest opportunity (action 6.3.8).

Regulations for the Chetco ocean terminal area fishery in 2015 were similar to recent years, except that the recreational season was shortened by 1 day (from 12 to 11). Based on both the Chetco and Winchuck preseason forecasts exceeding S_{MSY} the harvest guideline was maintained at 1,200 Chinook (action 6.3.5). The recreational fishery was reduced by 1 day to more closely balance harvest between the recreational and commercial fisheries (action 6.3.8). The recreational season was open October 1-11, harvest was estimated at 792 Chinook. The commercial season was scheduled for the earlier of October 12-31 or a quota of 600 Chinook. The commercial fishery was open 10/12 - 17, and then re-opened 10/21, 23, 24, 27 – 31. Harvest was 632 Chinook.

Management Strategy 6.4

A release group of 26,779 smolts were acclimated at Ferry Creek reservoir (Chetco) in October 2015 and subsequently released into the Chetco River at Snug Harbor (action 6.4.3). The purpose of the acclimation project is to determine whether 1) returning adult Chinook acclimated at Ferry Creek contribute to the river fishery at a higher rate than non-acclimated Chinook; 2) acclimated Chinook are recovered from natural spawning areas at a lower rate than non-acclimated Chinook.

163,262 Chetco fall Chinook smolts were released September 14-15, 2015 at Morrison Hole on the Chetco River (action 6.4.4). Target release date was October 15 but low flow conditions, elevated water temperatures, and an ongoing outbreak of *Ichthyophthirius* at Elk River Hatchery necessitated an early release of Chetco fall Chinook smolts.

Management Strategy 6.5

A snorkel survey was conducted on 7/2/15 to assess passage at a partial barrier located on the South Fork Chetco River, approximately 500 meters upstream from the confluence with Quail Prairie Creek (action 6.5.1). The natural barrier consists of a bedrock step/fall approximately 3 meters in height located within a 180 meter bedrock cascade. Surveyors noted the bedrock step/falls and bedrock cascade as barriers to upstream migration during low flow and as potential velocity barriers at high flow. The density of juvenile Chinook observed was similar upstream and downstream of the barrier suggesting that the cascade did not significantly restrict the passage of adult Chinook in 2014.

OTHER

A diet study, initiated in the lower Rogue River in 2013, to determine the level of predation by double-crested cormorants (DCCO) on juvenile salmonids, was continued in 2015. A Scientific Collecting Permit was obtained from the U.S. Fish and Wildlife Service Migratory Bird Permit Office, allowing lethal collection of up to 50 DCCO in the lower Rogue River. During the period of mid-August – September, a total of 50 DCCO were lethally collected. Stomach samples were collected from 31 (19 stomachs didn't have enough identifiable contents to use for analysis). All of the cormorants collected were subadults. A preliminary (visual) analysis of stomach contents is shown in Table 3 (located at the end of this document). Most consumed

salmonids appeared to be Chinook (genetic analysis of stomach contents will provide final identification). Survey data indicated that approximately 200 DCCO, on average, were using the lower Rogue River during August – September 2015 (n = 14 surveys, mean = 214.9 SD = 104.2).

Spawning ground surveys were conducted in select reaches within the upper Rogue, middle Rogue, Applegate, and Illinois population areas in 2015 (Table 4).

Table 4. Peak fall Chinook counts on survey reaches within the Rogue Aggregate population areas.

Survey	Peak Count (Live + Dead)	Date	Survey Length (miles)	Chinook/mile
Bear Creek ¹	90	10/23/15	1.2	75
Grave Creek ²	1	11/16/15	1.5	1
Applegate R-FHP	1,094	11/10/15	7.4	148
Applegate M-FHP	718	10/29/15	7.1	101
Applegate Will-M	856	10/21/15	5.0	171
Applegate App-M	1,193	11/5/15	11.0	108
W Fk Illinois	66	11/13/15	0.25	264
E Fk Illinois	67	11/13/15	0.8	84
Sucker Creek ³	3	11/13/15	0.5	6

¹ Upper Rogue Population Area

² Middle Rogue Population Area

³ Illinois Population Area

Table 5. Summary of progress related to management actions described in the fall Chinook salmon Conservation Plan, as related to the Rogue Stratum of the SMU. The “X” symbol means that ODFW completed work on an action that requires annual attention. The “Y” symbol means that ODFW completed the action and that no further work is needed. The “Z” symbol means that ODFW completed work on an allied topic that complemented the action item included in the conservation plan. The “--” symbol means that no ODFW work was completed on the action item during the year.

Action Item	Year of completion for action item									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	
MANAGEMENT STRATEGY 4.1										
4.1.1	X	X	X							
4.1.2	X	X	X							
4.1.3	Y									
4.1.4	X	X	X							
4.1.5	X	X	X							
4.1.6	X	X	X							
4.1.7	X	X	X							
4.1.8	n/a	n/a	n/a							
4.1.9	X	X	X							
4.1.10	--	--	--							
4.1.11	--	--	--							
4.1.12	--	--	--							
4.1.13	--	--	--							
4.1.14	X	X	X							
4.1.15	X	n/a	n/a							
4.1.16	X	X	X							
4.1.17	X	X	X							
MANAGEMENT STRATEGY 4.2										
4.2.1	X	X	X							
MANAGEMENT STRATEGY 4.3										
4.3.1	--	--	--							
4.3.2	X	X	X							
MANAGEMENT STRATEGY 4.4										
4.4.1	X	X	X							
4.4.2	n/a	n/a	n/a							
4.4.3	n/a	n/a	n/a							
4.4.4	n/a	n/a	n/a							
MANAGEMENT STRATEGY 4.5										
4.5.1	X	X	X							
4.5.2	n/a	n/a	n/a							
4.5.3	Y									
4.5.4	X	X	X							

Table 6. Summary of progress related to management actions described in the fall Chinook salmon Conservation Plan, as related to the Coastal Stratum of the SMU. The “X” symbol means that ODFW completed work on an action that requires annual attention. The “Y” symbol means that ODFW completed the action and that no further work is needed. The “Z” symbol means that ODFW completed work on an allied topic that complemented the action item included in the conservation plan. The “--” symbol means that no ODFW work was completed on the action item during the year.

Action Item	Year of completion for action item									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	
MANAGEMENT STRATEGY 6.1										
6.1.1	--	--	--							
6.1.2	X	X	X							
6.1.3	--	--	--							
6.1.4	--	--	--							
6.1.5	--	--	--							
6.1.6	--	--	--							
6.1.7	--	--	--							
6.1.8	X	X	X							
6.1.9	--	--	--							
6.1.10	X	X	X							
6.1.11	--	--	--							
6.1.12	--	--	--							
6.1.13	--	--	--							
6.1.14	--	--	--							
6.1.15	--	--	--							
6.1.16	n/a	n/a	n/a							
6.1.17	--	--	--							
MANAGEMENT STRATEGY 6.2										
6.2.1	X	X	X							
MANAGEMENT STRATEGY 6.3										
6.3.1	X	X	X							
6.3.2	n/a	X	n/a							
6.3.3	n/a	n/a	n/a							
6.3.4	n/a	n/a	n/a							
6.3.5	X	X	X							
6.3.6	n/a	X	n/a							
6.3.7	n/a	X	n/a							
6.3.8	--	Y								
MANAGEMENT STRATEGY 6.4										
6.4.1	X	X	X							
6.4.2	n/a	n/a	n/a							
6.4.3	X	X	X							
6.4.4	X	X								
6.4.5	Y									
6.4.6	X	X	X							
MANAGEMENT STRATEGY 6.5										
6.5.1	--	--	X							

PRE-SEASON FORECASTS

ODFW fishery managers will utilize pre-season forecasts to determine if (1) NP CHF populations might reach conservation criteria and (2) to determine the number of NP CHF that can be harvested in the late-season terminal fishery that operates off the mouths of the Chetco and Winchuck rivers. The efficacy of any annual forecast will, by default, be questionable because of substantial uncertainty in (1) the stock size estimates before the onset of any fishing in spring, (2) the forecasted harvest rates of CHF in the ocean fisheries that operate in federally managed waters, and (3) the forecasted harvest rates in the recreational freshwater fisheries. However, management criteria for each population are based on spawner escapements over multiple (2 or 3) years, which helps buffer the uncertainty associated with the pre-season forecasts.

Preseason Forecasts in Relation to Conservation Criteria

Harvest opportunities in the recreational freshwater fisheries will be constrained to some degree if the pre-season forecasts indicate that NP CHF populations will drop into conservation status. As described in the conservation plan, this situation can be expected in 6-23% of the years, depending on the population in question. Based on the pre-season forecasts for 2016, no additional constraints appear warranted for any of the freshwater recreational fisheries (Table 7).

Table 7. Forecasted 2016 spawning escapement of age 3-6 NP CHF in relation to conservation status criteria that cover multiple years. For each population, the forecasted number of spawners includes the 2016 forecast and estimated spawner numbers in the previous year or previous two years.

Population (s)	Conservation criterion	Forecasted number of spawners	Conservation shortfall
Rogue Aggregate	20,400 ^{ab}	32,170 ^{ab}	0
Lower Rogue	1,500 ^c	5,528 ^c	0
Chetco	1,440 ^b	4,215 ^b	0
Winchuck	300 ^b	1,010 ^b	0
Pistol	540 ^c	1,573 ^c	0
Hunter	300 ^c	1,526 ^c	0

^a Criterion covers passage at Huntley Park instead of spawning escapement.

^b Covers 2015 (estimated spawners) and 2016 (forecasted spawners).

^c Covers 2014 and 2015 (estimated spawners) and 2016 (forecasted spawners).

Preseason Forecasts in Relation to Management of the Chetco Terminal Fishery

The conservation plan outlines that harvest opportunities in the late-season, near-shore, Chetco terminal fishery will be based on the number of estimated spawners needed for maximum sustained yield (Smsy) in population areas proximal to the Chetco River (Action 6.3.5 in Management Strategy 6.3 for the Coastal Stratum). ODFW completed an assessment of the efficacy of pre-season forecasting needs associated with this fishery and because the Smsy estimates pertain to *average* conditions, ODFW concluded that harvest opportunities in the Chetco terminal fishery should be based on a three year arithmetic mean. ODFW also concluded that management of the Chetco terminal fishery should only be based on the Chetco and Winchuck populations, because the other populations in the SMU contribute to the fishery at very low rates; as described in the conservation plan.

Harvest opportunities in the late-season, near-shore Chetco terminal fishery will be constrained to some degree if the pre-season forecasts indicate that NP CHF populations will drop below individual Smsy needs estimated for the Chetco and Winchuck populations of NP CHF. ODFW estimates that this situation can be expected in 40% of the years. Estimated spawner numbers in 2014 and 2015 were well above Smsy. However, the pre-season forecast for spawner numbers in 2016 is below Smsy. Given that a strong El Nino is underway, and the apparent continuation of poor ocean conditions for salmon (low biomass of northern copepods and forage fish), the 2016 abundance forecast may be optimistic. So while there is an opportunity to harvest NP CHF based on the 3 year average (Table 8), a more conservative harvest guideline is warranted for the 2016 terminal fishery.

Table 8. Forecasted 2016 spawning escapement of age 3-6 NP CHF in relation to Smsy estimates for the Chetco and Winchuck populations. For each population, the forecasted number of spawners includes the 2016 forecast and estimated spawner numbers in 2014 and 2015.

Population	S _{msy}	Forecasted number of spawners	Difference
Chetco	2,740	4,634 ^a	1,894
Winchuck	560	1,019 ^a	459

^a Covers 2014 and 2015 (estimated spawners) and 2016 (forecasted spawners).

Table 3. Preliminary 2015 Rogue double-crested cormorant diet analysis, identifiable prey biomass only*

Sample Period	N	Salmonid	Anchovy	Cyprinid ¹	Osmerid ²	Surfperch	Stickleback	Sculpin	Pleuronectid ³	Unid Nonsal ⁴	Crustacean ⁵
Late August	6	16.5%	0.0%	0.0%	0.0%	0.3%	0.4%	51.4%	0.0%	23.5%	7.9%
Early September	12	24.9%	0.0%	0.0%	23.4%	0.0%	5.5%	38.1%	0.0%	7.8%	0.2%
Late September	13	7.3%	0.5%	0.5%	7.2%	0.0%	7.6%	37.8%	0.2%	14.0%	14.9%
Total	31	16.2%	0.2%	0.2%	10.2%	0.1%	4.5%	42.4%	0.1%	15.1%	7.7%

*based on an average of 91.97% of all prey biomass in foregut having been identifiable

¹ redbside shiner, pikeminnow

² smelt

³ starry flounder

⁴ unidentified non-salmonid prey items

⁵ crayfish