

**ANNUAL PROGRESS REPORT FOR 2021
ROGUE RIVER SPRING CHINOOK SALMON CONSERVATION PLAN
ROGUE WATERSHED DISTRICT
OREGON DEPARTMENT OF FISH AND WILDLIFE**

INTRODUCTION

In September of 2007, the Oregon Fish and Wildlife Commission formally adopted a conservation plan for spring Chinook salmon in the Rogue Species Management Unit (SMU). The 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 document is the fourteenth annual report to be completed. A copy of the conservation plan, the comprehensive assessment and update, along with annual progress reports previously completed are available on the ODFW website at:
http://www.dfw.state.or.us/fish/CRP/rogue_spring_chinook_conservation_plan.asp

MONITORING RESULTS AND SMU STATUS

Monitoring of SMU attributes is designed to produce metrics that are to be used to characterize the current status of the SMU. All possible monitoring needed to update SMU status was completed by ODFW in 2021, with results presented in Table 1 and Table 2.

The ability to monitor naturally produced spring Chinook salmon changed significantly with the removal of Gold Ray Dam in 2010 and the allied loss of the fish counting station. Beginning in 2011, all monitoring is now based on counts of spring Chinook salmon carcasses found (1) in the Rogue River between Cole M. Rivers Hatchery and the historical pool upstream of Gold Ray Dam and (2) in the lower mile of Big Butte Creek. These locations are the primary spawning areas of naturally produced spring Chinook salmon in the Rogue River Basin.

ODFW used results from the spawner surveys to hindcast the number of naturally produced spring Chinook salmon that would have passed Gold Ray Dam in 2021; had the dam and fish counting station not been removed. During the 2004-2010 surveys of fish that spawned in September, carcass counts of naturally produced fish averaged 15% (95% confidence interval = $\pm 2\%$) of the number of live counterparts that passed Gold Ray Dam. This relationship between carcass and dam counts is used to estimate the number of live fish that passed the historical site of Gold Ray Dam. No analogous methods could be devised to hindcast two other metrics in the plan: the percentage of jacks in the run and adult migration timing at Gold Ray Dam. These two management criteria for naturally produced spring Chinook salmon in the Rogue SMU were thus abandoned; beginning in 2011.

An estimated 4,633 naturally produced spring Chinook salmon passed the historical site of Gold Ray Dam during 2021. This estimate was derived from the recovery of 676 carcasses of unmarked fish and 19 carcasses of unexamined fish (all assumed to be naturally produced).

It should be noted that ODFW was not able to hire seasonal employees to conduct the spring Chinook carcass surveys in 2021 due to a myriad of reasons. Fish biologists from the district office with assistance from ACOE biologists completed the surveys through September 10 of 2021 to generate the population estimate but no further surveys were conducted after that point in time.

Table 1. Comparisons of singular elements of current and desired status for naturally produced spring Chinook salmon in the Rogue Spring Chinook Salmon Species Management Unit. Desired status elements are described in the conservation plan, and the plan also called for the description of current status based on average values noted during the previous ten years (where available). Two conservation plan elements of desired status (migration timing and age structure) can no longer be estimated as a result of the removal of Gold Ray Dam in 2010.

Status Element	Desired Status	Current Status	2021 Estimate
Abundance (at Gold Ray Dam)	$\geq 15,000$	9,161 (2012-2021)	4,633
Sept. Spawner Distribution^b (% above Shady Cove)	$\geq 40\%$	61% (2012-2021)	62%
Spawner Composition (% hatchery)	$\leq 15\%$	3% (2010-2021)	1%

^a Metric estimated as described in the text.

^b This element only covers September spawners because October spawners cannot be distinguished from fall Chinook salmon that spawn in overlapping areas.

Table 2. Status of the Rogue Spring Chinook Salmon Species Management Unit as compared to adopted conservation criteria. Conservation criteria are based on a three year running average, except where noted. Two conservation plan elements of desired status (migration timing and age structure) can no longer be estimated as a result of the removal of Gold Ray Dam in 2010.

Status Element	Conservation Criterion	Conservation Status (years)
Abundance^a (at Gold Ray Dam)	$< 3,500$	4,633 (2021) ^b
Abundance (at Gold Ray Dam)	$< 5,000$	4,540 (2019-2021)
Sept. Spawner Distribution^c (% above Shady Cove)	$< 30\%$	66% (2019-2021)
Spawner Composition^d (% hatchery)	$> 25\%$	2% (2020-2021)

^a During any single year.

^b Metric estimated as described in the text.

^c This element only covers September spawners because October spawners cannot be distinguished from fall Chinook salmon that spawn in overlapping areas.

^d Average during two consecutive years

Rogue spring Chinook have fallen below the Conservation Status metric of greater than 5,000 fish estimated at Gold Ray Dam for a three-year running average (Table 2). Lower than anticipated returns in 2020 and 2021 have caused a decline in the three-year average to 4,540, which is 460 fish below Conservation Status. ODFW is currently considering alternatives which may include harvest restrictions to protect returning spring Chinook to ensure the population is able rebound above the conservation criterion.

COMPLETED MANAGEMENT ACTIONS

The Oregon Fish and Wildlife Commission adopted Alternative 9, 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 2021, are briefly discussed below.

Management Strategy 9.1

1. Most of the action items within this management strategy relate to seasonal operations of Lost Creek Reservoir 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 spring Chinook salmon. A weekly conference call is conducted to facilitate communication. ODFW provides an orientation session on fish needs to dam operations staff and participated in the Corps' annual winter management coordination meeting. Coordination on reservoir management continues to be a very large workload for ODFW staff to protect spring Chinook.

USACE completed successful operations for fish in 2021 despite Lost Creek reservoir not filling to full pool and a drought declaration again being issued for Jackson County. In 2021, the reservoir filled to the elevation of 1,856 feet which is sixteen feet below full pool. This led to a shortfall of 54,000kaf of water to be released for fisheries enhancement. 2021 also saw the month of March produce 55% of average precipitation and April produce 15% of average precipitation, leading to a severe decrease in the predicted inflow to Lost Creek for the months of May through September. Inflows were predicted to be 76% of average yet only 80% of the predicted water was observed.

This shortfall of water available in Lost Creek prompted the USACE to utilize conservation storage to accomplish fisheries enhancement objectives. The use of stored was further increased due to the "heat dome" that impacted the Pacific northwest in late June into early July. Impacts to conservation storage were historically large and the reservoir bottomed out at elevation 1,771 feet around the third week in October. Through winter 2021 into 2022 the reservoir has not been able to rebound from this deficit.

Due to lower-than-normal releases throughout the conservation season and the "heat dome" after flow augmentation decreased in late June, ODFW conducted a canyon float trip to look for dead or diseased Chinook. BLM River Rangers also assisted with providing summaries from their weekly floats through the canyon. A summary of surveys and data collected is below:

- June 30, 2021. BLM River Rangers reported numerous adult fish at the mouth of Kelsey Creek, no dead fish reported.
- July 4, 2021. BLM River Rangers reported numerous adult fish at the mouth of Stair Creek, no dead fish reported.
- July 8, 2021. ODFW float trip from Grave Creek to Foster Bar. Water temperature ranged from 72-76° F. Too many boats occupying tributary mouths to accurately estimate fish holding in cool water refuge; however, a snorkel survey was conducted at the mouth of Stair Creek where numerous wild and hatchery adult spring Chinook were observed as well as summer steelhead. ODFW did not observe dead spring Chinook but BLM reported one fish at Bronco Creek. ODFW did observe one dead summer steelhead at Black Bar.
- July 11, 2021. BLM River Rangers reported numerous adult fish as the mouth of Rum Creek. One ranger reported two dead salmon carcasses being eaten by vultures near Howard Creek.
- August 3, 2021. BLM River Rangers reported adult fish at the mouths of Rum, Kelsey and Staircase Creeks. No dead fish reported.
- August 6, 2021, 7:00 am. ODFW checked the mouth of Stair Creek for 5 minutes and observed 33 fish which includes jacks and half pounders. Mouth of Mule Creek obscured by boats.
- August 17, 2021, 8:00 pm. ODFW checked the mouth of Stair Creek for 5 minutes and observed 51 fish which includes jacks and half pounders.
- August 18, 2021, 7:00 am. ODFW checked the mouth of Stair Creek for 5 minutes and observed 47 fish which includes jacks and half pounders.

2. ODFW continued to participate in a wide variety of habitat protection activities (Action 1.14 in the conservation plan), including the following:

- ODFW reviewed and commented on numerous plans and permit applications for development activities, fill and removal projects, mining operations, forest operations, and water rights to ensure that activities were completed in a way that minimized impacts to fisheries resources.

3. ODFW continued to implement projects to encourage good stewardship by streamside landowners, primarily through activities in the Salmon Trout Enhancement Program (Action 1.15 in the conservation plan).

Management Strategy 9.2

No additional gravel was placed in the mainstem or Big Butte Creek in 2021. However, ODFW was able to fund the purchase of 225 cubic yards of Chinook sized spawning gravel which is currently stored on USACE property adjacent to the upper Rogue. ODFW is in the process of applying for a “no rise certification” or Type II Floodplain Development Permit from Jackson County. After that that permit is obtained, we will need a Section 408 permit from the USACE to place the gravel within the Rogue. Another project to place gravel in Big Butte Creek on BLM land is in the design phase and we are hoping to jointly implement this project in 2023. ODFW is also pursuing private landowners on Big Butte Creek that have access to Big Butte Creek and are willing to allow the placement of gravel in the creek on their property.

Management Strategy 9.3

A pilot project to encourage Umpqua Pikeminnow removal was initiated in the Grants Pass area of the Rogue River in 2019. The project was in the form of a derby with donated gifts available to anglers with the largest and most fish caught. ODFW has repeated this project annually through 2021.

A full time watercraft inspection technician is stationed in the Rogue Watershed District office.

Management Strategy 9.4

6D. Actions 4.6 and 4.7

Beginning with the 2013 brood year, the production goal for Coho salmon at Cole Rivers Hatchery has been decreased, and the production goal for spring Chinook has been increased (Action 9.4.7 in the conservation plan). The September smolt release group has been increased to 193,250 smolts from 162,000 smolts. In addition, ODFW has re-started a yearling release. In March, at least 50,000 smolts are released near Gold Hill. Coded wire tagging of the March release will facilitate evaluation of this release.

6E. Management Changes

The Rogue Spring Conservation Plan Comprehensive Assessment and Update, completed by ODFW in 2019, included a framework for providing additional harvest opportunity for wild (naturally produced) spring Chinook as the population builds toward desired status. The abundance triggers and associated changes in seasons and bag limits are described in the 2019 Comprehensive Assessment and Update (see Table 4 on page 32) and the Rogue Spring Chinook Annual Progress Report for 2019. In 2021, the abundance triggers for additional harvest opportunity were not met.

Management Strategy 9.5

ODFW did not complete any work related to the only action item that was relevant to this management strategy during 2021.

10. Monitoring, Evaluation and Research Needs

The Plan acknowledged that not all the tasks identified in this section would be completed and that prioritization would be needed. Adaptive management was likely to identify additional monitoring, evaluation and research needs.

9A. Monitoring Needs

Reports detailing the results of multiple years of genetic analysis of Rogue spring Chinook carcasses collected from the spawning grounds and from the lower Rogue fishery can be found at the link below:

9C. Research Needs

Preseason forecasts of abundance for naturally produced Rogue spring Chinook are now available as ODFW continues to collect scales from spawned out spring Chinook carcasses which provide necessary age data. Two separate models were used for the forecast for 2022, sibling regression and an ARIMAX model with multiple covariates such as river flow at spawning, NPGO, and timing of spring upwelling. The preseason forecast for 2022 follows:

Technique	Covariates	2022 Prediction
Sibling Regression	None	5,032
ARIMAX	Multiple	6,071

The 2021 forecast derived only from sibling regression, as described in the Annual Progress Report for 2020, was 9,638 spring Chinook. ODFW's estimate of spawners from spawning ground surveys in 2021 is 4,633.