Oregon Coastal Fall Chinook Salmon Monitoring and Abundance Estimates for Sliding Scale
Harvest Management under the Coastal Multispecies Management Plan (CMP)
June 19, 2020

Recent Coastal Fall Chinook Abundance and Bag Limits:

- Due to generally poor ocean conditions in recent years, and similar to observations in other Oregon Chinook stocks, ODFW's monitoring has indicated a large decline in returns of Oregon Coastal fall Chinook salmon, particularly in 2018 and 2019, where low abundances also coincided with low flows. Declines have been most pronounced in the Coquille and Siuslaw basins, where abundances in 2019 were the lowest in the record from 1986-2018 (Appendix Table A-1; Figure A-1).

- It is unlikely that recent low abundance estimates are the result of changes in spawning locations due to low flows or to survey timing that did not match the timing of fish presence on spawning grounds. The surveys are designed to include both mainstem and tributary habitat, surveys are repeated multiple times through the run (Appendix Figure A-2), and calibrations of survey observations to population abundances were established over a broad range of abundances. If flows allow fish to enter the river, the survey design will account for them.

- Where ODFW performed spot checks (surveys or check-in observations not part of typical sampling), observations generally confirmed low abundance in 2019 (e.g., Coquille), and pre-spawning mortality was observed in some North Coast rivers after disease outbreaks among fish concentrated by low flows. Spot-check observations can provide information on fish distribution, migration, and condition, but they do not provide population-scale abundance estimates.

- When spawners are at low abundance and when low flow conditions prevent migration out of estuaries and tidewater, Chinook populations may become concentrated where they are particularly vulnerable to intense fishing pressure and potentially high rates of harvest. Emergency closures and sliding scale harvest regulations (discussed further below) are tools that ODFW can use to reduce risk to wild fish in these situations.

- In 2018, no preseason changes were made to coastal fall Chinook regulations. Based on reports of poor migration conditions for Chinook from the Districts and public, ODFW issued emergency regulations closing Northwest Zone coastal rivers (Necanicum south to Siuslaw) to fall Chinook fishing, effective November 1. Portions of the Siletz, Yaquina, and Alsea reopened in November after a period of increased river flows in early November and subsequent observations of migrating fish by Mid Coast Fish District staff.

- ODFW implemented the CMP's sliding scale bag limits for the first time in 2019, including temporary rules for low abundance bag limits in most coastal streams. ODFW District staff hosted a series of meetings in May and June to overview the CMP actions and discuss the proposed changes with the public. In December, ODFW also enacted emergency closures of fall Chinook fisheries from the Necanicum River south to the Nestucca River after observations of pre-spawning mortality.

- Based on low observed abundance in 2019 and low abundance forecasts for certain areas for 2020 (Appendix Table A-1), ODFW has again enacted temporary rules as required in the CMP to reduce risk to wild fall Chinook during this period of low abundance. Temporary rules for 2020 generally include low-abundance bag limits from the Siletz River south along with a wild Chinook closure of the Coquille and a limit of one wild Chinook for the season in the Siuslaw.

- The sliding scale provides recommendations for management, but decisions on harvest regulations consider all available information. For example, strictly following the sliding scale would have resulted in full closure of in-river fisheries for wild fall Chinook in the Siuslaw River in 2020. Instead, ODFW set a conservative limit of one wild fall Chinook for the season.

- Populations of coastal fall Chinook salmon are cyclical as evident in historical trends (Appendix Figure A-1). ODFW expects these populations to rebound under more favorable ocean conditions as they have in the past, but actions to reduce risk to wild fish in this period of low abundance are critical for ensuring continued viability of these populations and long-term sustainability of fisheries.

How ODFW Monitors Coastal Fall Chinook Populations and Estimates Abundance:

- ODFW traditionally used counts of fall Chinook salmon at a series of standard survey sites to monitor abundance trends in coastal fall Chinook spawners. These surveys, some established as early as ~1950, were selected based on features including access and consistent observations of spawners. However, these surveys

provided only trend information, and they did not necessarily include good representation of mainstem spawning.

- In 1998, a revised Pacific Salmon Treaty was ratified, shifting international management of Chinook salmon from static quotas to abundance based. Trend data from standard surveys did not adequately inform this new management, so ODFW's Coastal Chinook Research and Monitoring Program (CCRMP) was tasked with developing a monitoring program to provide cost-effective, non-biased, and precise estimates of spawner abundance in specific populations or sub-populations.

- Investigations funded through the Pacific Salmon Commission (PSC) into CCRMP began to improve and enhance the ability to provide managers with estimates of population-scale spawner abundance. Calibration factors were developed using a relationship of data from select spawning ground reaches to mark & recapture[1] estimates of spawner abundance where these estimates are available. Calibrated groupings of index reaches include both mainstem and tributary spawning habitat to leverage homing principles and stabilize variability associated with delayed or altered migration, such as that expected with unusually low flows.

- Currently, counts of fall Chinook salmon on groupings of select index reaches have been calibrated to mark-recapture abundance estimates for 10 populations or sub-populations of coastal Oregon's river basins, ranging from the Nehalem River south to Elk River. In some basins, the strength of calibrations is limited by the number or age of mark & recapture abundance estimates. A variety of methods have been used to estimate abundances in the Tillamook, Yaquina, Alsea and Floras populations, where there have not been mark & recapture investigations. Estimates in these populations are therefore subject to greater uncertainty.

- The Oregon Coastal Chinook Technical Team (OCCTT), composed of ODFW staff in CCRMP, the Ocean Salmon and Columbia River Program and the Conservation and Recovery Program, performed methods standardizations to produce a series of historical spawner abundances from 1986 to 2019 (Appendix Table A-1; Figure A-1). These estimates are the basis for Sliding Scale harvest management, discussed below.

Coastal Multi-Species Plan Sliding Scale Harvest Management:

- In 2014, the Oregon Fish and Wildlife Commission approved the Coastal Multi-Species Conservation and Management Plan (CMP), which provides management direction and guidance for enhancement of multiple species of salmon and steelhead on the Oregon Coast north of Cape Blanco.

- The CMP directs ODFW to implement sliding scale harvest regulations for coastal fall Chinook salmon. The sliding scale is intended as a tool to adjust the harvest impact (through allowable bag limits) to reduce the impact when spawner abundances are expected to be low and to allow greater harvest opportunity when spawner abundances are expected to be higher.

- The CMP identifies four strata of coastal Chinook populations: the North Coast, Mid Coast, Umpqua, and Mid-South Coast. Categories of spawner abundance (Low, Medium, and High) and their respective bag limits were established for each stratum, with stakeholder involvement, during CMP development (Appendix Table A-2).

- To implement the sliding scale, thresholds for each stratum's abundance categories were developed so that each bag limit category has a pre-defined probability of occurring in any year (Appendix Figure A-3). However, there is no assumption or guarantee that the those probabilities will be met moving forward if environmental or other conditions that influenced Chinook during the baseline period change for better or worse.

- The sliding scale decision metric is a function of the previous year's spawner abundance and pre-season forecasts for populations within each stratum. Bag limits are tied to the categories in the sliding scale for each stratum.

- Since abundance categories are assigned at a stratum scale, daily and seasonal bag limits for natural-origin fall Chinook are the same for all populations within a stratum unless there is a population-specific conservation closure. A conservation closure may be implemented at the population scale when the average of last year's escapement and the pre-season forecast is less a conservation threshold derived from the period of 1986 through 2018 (Appendix Table A-1).

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[1] Mark & recapture population estimates are derived from capturing, marking (e.g., tagging), and releasing a subset of individuals in the population and recapturing marked and unmarked individuals in a subsequent capture event or events.