2015 Terminal Freshwater Fishery Performance Report:

Skagit Summer/Fall, Puyallup Fall, Nisqually Fall, and Skokomish Fall Chinook Management Units

This report is provided in fulfillment of Term and Condition 5a of the co-managers Section 7(a)(2) Biological Opinion on 2015 Puget Sound Salmon fishing activities, NMFS Consultation Number F/WCR-2015-2433. The following report provides the preliminary 2015 post-season assessment of Chinook run size and terminal fishery performance for Skagit Summer/Fall, Puyallup, Nisqually, and Skokomish River stocks.

At the current time, final estimates of recreational fishery (sport) catches for 2015 are not available to fully assess terminal run size and terminal harvest rates for the four stocks evaluated in this report, due to the timing of reporting of sport Catch Record Cards (CRC). In the interim, preliminary co-manager estimates for sport harvest impacts are used in this report, based on co-manager agreements on the best surrogate estimates until the 2015 final CRC estimates are available. While this report provides NMFS with the requested information as outlined pursuant to the Terms and Conditions of the 2015 Chinook Harvest Plan, we note that estimated harvest rates and terminal run sizes are preliminary and expected to change pending incorporation of the 2015 CRC-based estimates of recreational harvest.

During the 2015 season, freshwater sport fishing directed on Skagit River summer/fall Chinook was closed although incidental impacts, which were modeled pre-season, occurred in sport fisheries targeting other salmon species in the Skagit basin. Mark-selective sport fisheries for Chinook were planned for the Puyallup (including from the mouth of the Carbon River upstream to Voights Creek), Nisqually, and Skokomish rivers. Sport fishery seasons proceeded as planned pre-season, with the exception of the Nisqually, where a rule was enacted in August to close fishing daily after 2:00 p.m., due to the high river temperatures and concern for the potential of elevated mortality rates for fish caught and released.

Recent year trends in estimates of freshwater treaty catch, freshwater sport fishery catch, and escapement are also provided for each Management Unit (Figures 1 through 4). Freshwater treaty catch data includes the combined total of marked and unmarked fish harvested, and for the Skagit (Figure 1) and Nisqually (Figure 3) rivers, also accounts for associated release mortalities during non-retention or mark-selective periods, respectively. Estimates of freshwater sport fishery harvest of Chinook in the Skagit River (Figure 1) were obtained from creel surveys conducted during the in-river sockeye fishery only, and do not account for incidental impacts associated with sport fisheries targeting coho, pink (odd years), and trout fisheries. For Nisqually River Chinook (Figure 3), estimates of freshwater sport impacts include retained harvest as well as release mortalities that were estimated based on creel data collected during intensive monitoring of the Nisqually mark-selective Chinook fishery from 2010-2012. Estimates of freshwater sport fishery harvest of Puyallup River Chinook were acquired from CRC information, which provide retained harvest estimates only (i.e., primarily adipose fin-clipped hatchery fish harvested in mark-selective fisheries) and does not include estimated release mortality of marked and un-marked

fish (Figure 2). For Skokomish River Chinook (Figure 4), estimates of harvest in the sport fishery incorporate the estimated release mortality (10% mortality rate) of marked and un-marked adults in the Chinook-directed sport fishery, based on mark rate data collected during fishery sampling and proportional to the CRC harvest estimate. However, these release mortality estimates do not account for incidental mortalities incurred during coho, pink, or trout directed fisheries.

Except for Skokomish River Management Unit in 2015, all Management Units have been at or above their Low Abundance Threshold objectives for natural spawners in recent years.

Skagit Summer/Fall 2015 Post-Season Assessment

During 2015 there were no treaty commercial fisheries directed at summer/fall Chinook in the Skagit terminal area. However, as anticipated, incidental catch of summer/fall Chinook occurred in the sockeye, pink, and coho fisheries. The sockeye, pink, and coho fisheries were adjusted from the pre-season schedules due to in-season management needs, response to greater than expected Chinook encounters, and intertribal sharing agreements. The Upper Skagit Tribe's sockeye, pink, and coho fisheries were all Chinook non-retention fisheries, as was planned pre-season. The Swinomish and Sauk-Suiattle Tribes switched to Chinook non-retention during the second week of the pink fishery (management week 36) because of greater than expected Chinook encounters, and remained Chinook non-retention through the coho fishery. An estimated 52.4% release mortality rate was applied to total encounters during the non-retention periods. The Swinomish and Sauk-Suiattle Tribes closed Area 78C for the final week of the pink fishery and restructured the coho fishery to reduce Chinook encounters (Table 1). Total summer/fall Chinook mortality in these fisheries was estimated at 1,283 fish, compared to the pre-season expectation of 1,203 based on Chinook FRAM 2115. An additional 11 summer/fall Chinook were harvested for ceremonial purposes, which was less than the pre-season modeled value of 275.

A suite of Skagit terminal area test fisheries targeting Chinook, sockeye, coho, and chum was conducted by the Skagit tribes in 2015. Some weeks of these fisheries were adjusted or cancelled, in response to weather, flow concerns, or staffing issues. A total of 444 summer/fall Chinook were caught in these fisheries. The pre-season expectation of summer/fall Chinook mortalities in the test fisheries was 372 summer/fall Chinook.

Overall, an estimated total of 1,738 summer/fall Chinook were killed in treaty commercial, C&S, and test fisheries. The preseason expectation based on FRAM Chin2115 was 1,850 summer/falls. The *preliminary* post-season estimate of 14,661 summer/fall terminal run size was greater than the FRAM forecast of 12,360. Based on these preliminary data, the terminal treaty harvest rate (HR) on Skagit summer/fall Chinook was 12.2% compared to the pre-season expectation of 15%.

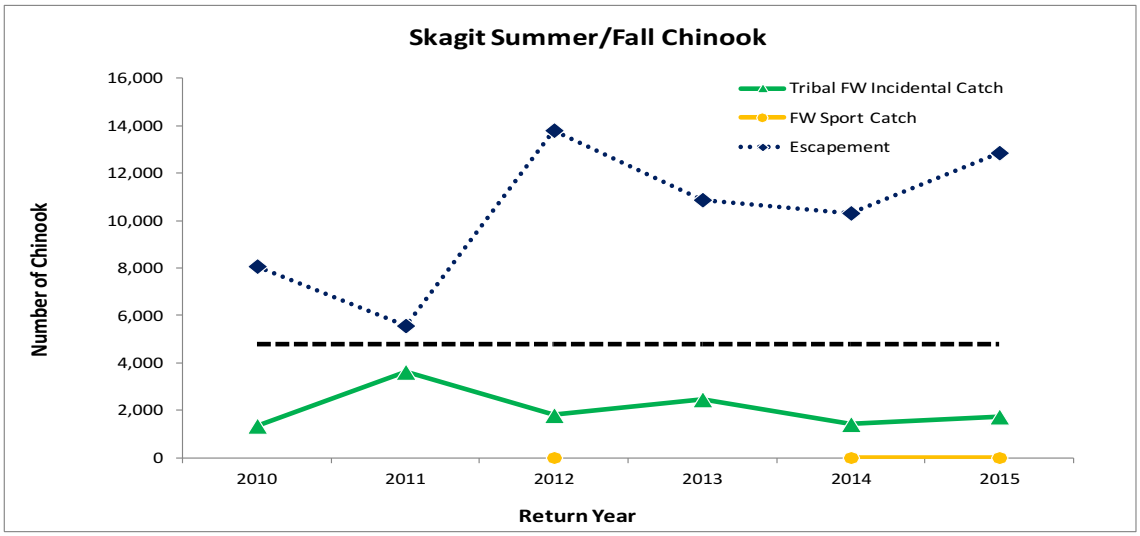

Figure 1. Recent trends (2010-2015) in estimates of freshwater treaty incidental catch (Commercial, C&S, and Test fisheries), incidental impacts during the in-river sockeye fishery, and escapement for Skagit River Summer/Fall Chinook Management Unit (MU). Dashed line represents the Low Abundance Threshold escapement objective for the MU.

Puyallup Fall 2015 Post-Season Assessment

The Treaty commercial fall Chinook salmon fishery in the Puyallup River (81B) was scheduled for a 6-hr opening during management week 33 (8/9). The coho fishery, with incidental Chinook impacts, was scheduled to begin during management week 36 (8/30) through week 42 (10/11) with an opening of 1, 2, 2, 3, 3, 3, 3, days per week. Both the 6-hr Chinook fishery and the coho fishery were prosecuted as expected.

The pre-season freshwater (FW) extreme terminal run size (ETRS) for Puyallup fall Chinook was predicted to be 6,087 fish, including both natural and hatchery origin fish. Projected catch was 1,896 and total mortalities (including release mortality) was predicted to be 1,964 for the Chinook sport fishery in the Puyallup and Carbon rivers and 1,499 for treaty commercial catch. The current preliminary estimate of FW ETRS for 2015 is 8,780 fish. This includes total Chinook escapement to hatcheries and spawning grounds of 5,906, net catch of 1,511, and a preliminary placeholder estimate of sport catch of 1,363 (based on average CRC sport catch data from 2010-2014). The pre-season terminal harvest rate for the commercial treaty fisheries was 24.6% under the proposed fishery structure (FRAM 2115). The preliminary post-season harvest rate for commercial treaty fisheries was 17.2%, a difference of -7.4% (Post – Pre).

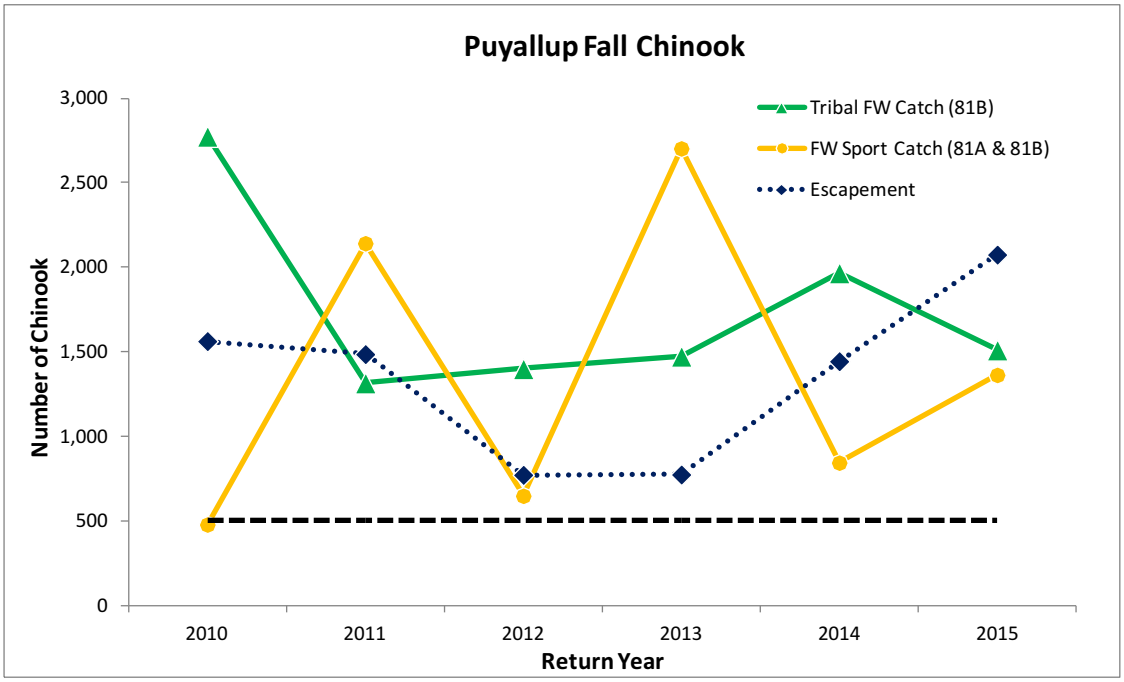

Figure 2. Recent trends (2010-2015) in estimates of freshwater treaty commercial catch, freshwater sport catch, and escapement for Puyallup River Fall Chinook Management Unit (MU). Dashed line represents the Low Abundance Threshold escapement objective for the MU. The 2015 FW sport catch estimate is preliminary as described in text.

Nisqually 2015 Post Season Assessment

The pre-season freshwater ETRS for Nisqually fall Chinook was 24,355. The preliminary post-season freshwater ETRS estimate is approximately 14,000. This preliminary estimate combines hatchery and natural escapement, treaty net catches, and a preliminary sport catch estimate. The preliminary sport catch estimate assumes that actual encounters (2,613) in the sport fishery were lower than the pre-season prediction (4,452 encounters and 2,311 mortalities) at a proportion similar to the difference between the preliminary post-season and the pre-season expected terminal run sizes.

The pre-season commercial fishery structure for the treaty gillnet (GN) fishery was for 2-days/wk during management weeks 31-34 (wb 7/26- wb 8/16) with an additional 24-hr (1-day) opening during week 35 (wb 8/23). The tangle-net (TN) fishery was structured to fish one 14-hr (0.58 day) opening per week during management weeks 36-39 (wb 8/30- wb (9/20). In-season, the TN fishery was reduced by two weeks (wks 38 and 39 eliminated) in order to provide an additional 6-hr GN fishery during week 35.

The pre-season GN harvest rate (HR) expectation, excluding the C&S fishery impacts, was 19.78% with a preliminary observed HR of 17.75%. Pre-season encounter rate for the TN fishery was 5.245% under the pre-season fishery schedule. Despite reducing the fishery by two weeks, the preliminary observed encounter rate was 10.79%. Increased effort and efficiency of the fishery along with a potentially later peak run due to higher summer temperatures likely combined to result in higher than expected impacts in the tangle net fishery. Unmarked retention rate in the TN fishery exceeded the pre-season expectations of 10% by 6.5% (observed unmarked retention rate =16.5%).

The pre-season C&S fishery expectation was for a catch of 5 fish based on the previous three year average impact. During 2015, C&S fishery was prosecuted for two days (9/28 and 9/29) with at total catch of 249 Chinook. The pre-season expected HR was 0.015% with a preliminary observed HR of 1.97%. Pre-season, these impacts are modeled in FRAM/TAMM under the Nisqually Net Fishery (83D) with an input of 19.798% HR. The preliminary post season observed HR for GN and C&S impacts combined was 19.73%, 0.068% less than preseason expectations.

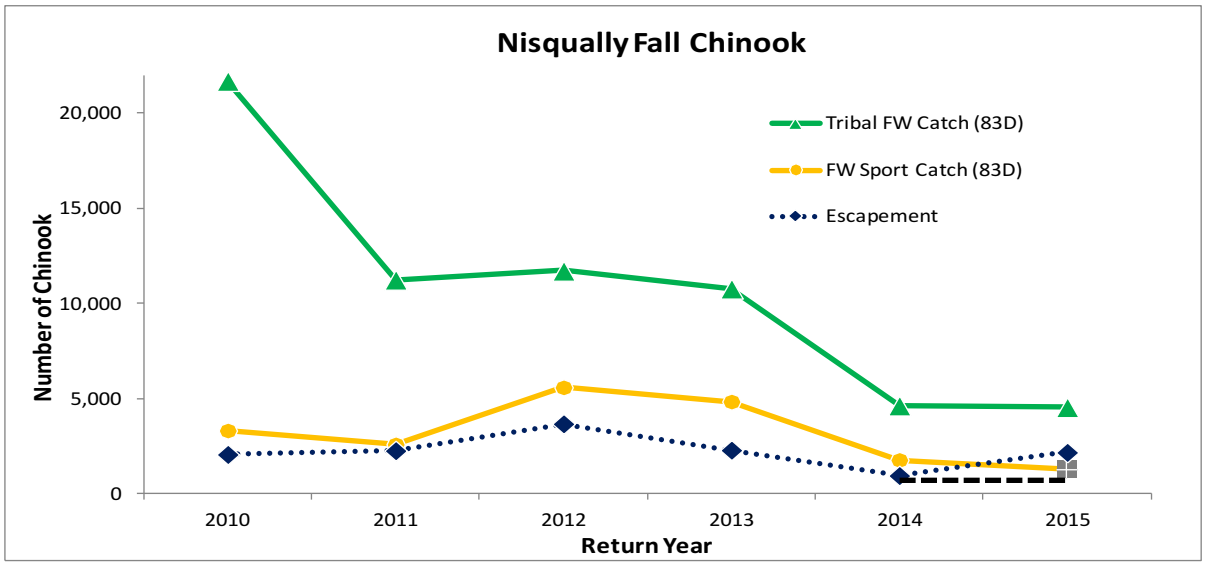

Figure 3. Recent trends (2010-2015) in estimates of freshwater treaty commercial catch, freshwater sport catch, and escapement for Nisqually River Fall Chinook Management Unit (MU). Dashed line represents the Low Abundance Threshold escapement objective for the MU established in 2014. The 2015 freshwater sport catch estimate is preliminary as described in text.

Skokomish 2015 Post Season Assessment

The pre-season fishery structure for the Skokomish In-River (82G) and Purdy Creek tributary (82J) commercial net fishery was outlined in the 2015-2016 List of Agreed Fisheries. All terminal freshwater Treaty fisheries occurred as developed pre-season without in-season adjustments.

Pre-season FW ETRS forecast for Chinook returns to Skokomish River was 36,576, with a preliminary observed return of 15,682. Purdy Creek (82J), a tributary of the Skokomish River, provides Chinook escapement for broodstock needs to the George Adams Hatchery (GAH). Tribal net fisheries were scheduled for one day per week (July through the 1st week in September), in order to address chronic over-escapement at GAH which could range in magnitude from >10-24K beyond broodstock needs. This fishery also accomplishes the removal of the earlier timed Chinook that are undesirable for use as broodstock and NOR contributions, as per recommendations of NOAA Fisheries Northwest Science Center scientists as well as co-manager and NWIFC biological staff.

The pre-season freshwater extreme-terminal Chinook harvest rate (HR) was 21% for net fisheries scheduled in 82G. Based on the preliminary post-season run-reconstruction, the observed freshwater HR for commercial net fisheries in 82G was 40%. However, when the 82J catch is added to the GAH rack escapement (based on an assumption that all Chinook landed in the 82J fishery would have contributed to the GAH rack escapement had they not been caught), the overall HR is reduced to 31%. The overage in the HR is a possible combination of forecasting error, poor ocean conditions, and low flow conditions

during Chinook migration, conditions which the pre-season forecast could not foresee or possibly account for, consequently resulting in a greater harvest rate on a smaller run.

In 2016, cautionary measures will be taken in an attempt to prevent possible HR overages in the in-river (82G) and tributary (82J) fisheries. These measures include a closure of the adult (minor fishery will remain open and is included in overall in-river HR/ER calculations) commercial hook and line/dip net fishery that occurs from July-August in 82G from the mouth to the HWY 106 Bridge, and reduction in 82J openings from nine (9) to four (4) weeks. If in-season broodstock needs are not being met at the GAH, a closure will be enacted in the 82J fishery and possible reductions will be taken in the 82G (Hwy 106 Bridge to HWY 101 Bridge) net fisheries that take place during August.

The pre-season estimate of Chinook harvest in the Skokomish River non-treaty sport fishery was 5,798 fish. Considering that the 2015 CRC estimates of actual sport fishery harvest will not be available until the summer of 2016, we estimated total non-treaty sport fishery Chinook harvest (Figure 4) using a three-year average harvest combined with in-season mark sampling data and an assumed 10% release mortality rate. Based on this approach, the preliminary post-season estimate of 2015 Skokomish Chinook sport harvest is 2,931.

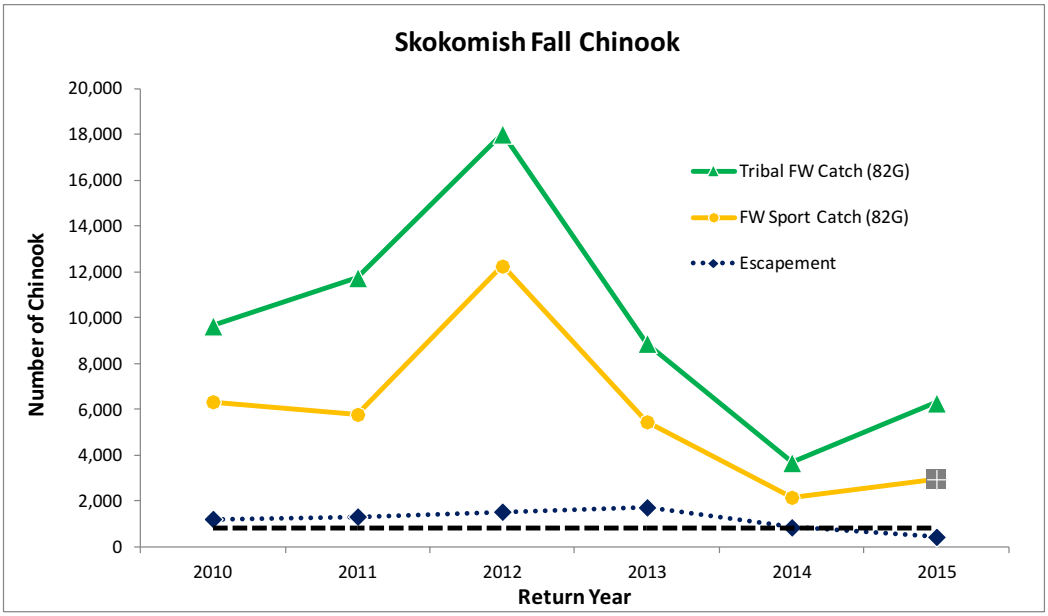

Figure 4. Recent trends (2010-2015) in estimates of freshwater treaty commercial catch, freshwater sport catch, and escapement to the spawning grounds for Skokomish River Fall Chinook Management Unit (MU). Dashed line represents the Low Abundance Threshold escapement objective for natural spawners (n=800) for the MU. The 2015 FW sport catch estimate is preliminary as described in text.

Further discussions are needed between the co-managers in 2016 to address ongoing concerns revolving around the previous/current catch accounting and estimation of the actual fishery harvest in both treaty and non-treaty fisheries.