

2017-2018 Wild Skagit Steelhead Management Season Post-Season Report

Washington Department of Fish and Wildlife

Swinomish Indian Tribe

Upper Skagit Indian Tribe

Sauk-Suiattle Indian Tribe

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Introduction

This document describes fishery management actions, harvest activity, escapement and abundance assessment for the 2017-2018 wild Skagit steelhead management season, in accordance with the requirements of the Skagit River Steelhead Fishery Resource Management Plan. The wild Skagit steelhead management season runs from July 1st to June 30th of the following year. Thus, this report covers wild steelhead harvest during the July 1st, 2017 to June 30th, 2018 time frame.

Harvest Objectives

The Skagit River Steelhead Fishery Resource Management Plan defines a tiered harvest regime, in which the total allowable wild harvest rate depends upon total forecast wild terminal abundance. The pre-season forecast for 2017-2018 Skagit wild steelhead abundance was 5,247, so fisheries were planned such that the total harvest rate would not exceed 10%.

Table 1. Stepped fishing regime used for managing wild steelhead fisheries in the Skagit SMU (Sauk-Suiattle Indian Tribe et al. 2016).

| Preseason Forecast for Natural-Origin Steelhead | Allowable Impact Rate |
|--|------------------------------|
| Terminal Run \leq 4,000 | 4% |
| 4,001 \leq Terminal Run $<$ 6,000 | 10% |
| 6,001 \leq Terminal Run $<$ 8,000 | 20% |
| Terminal Run \geq 8,001 | 25% |

Note that for pre-season planning and post-season assessment, an adjustment is applied to kelts such that they count less in harvest totals and harvest rates than pre-spawn steelhead. The kelt adjustment factor was calculated as the average percentage of returning fish each year over the last 10 return years (2008-2017) that had already spawned in at least one previous year, based on scale sample analysis. The kelt adjustment factor calculated in this manner for the 2017-2018 wild steelhead management season was 8.78%. That is, a harvested kelt counts as 8.78% of a pre-spawn steelhead. For tribal net fisheries an additional 2% mortality is applied for net drop-out, those fish which escape from the net prior to landing.

Tribal Fisheries

No terminal area tribal commercial fisheries directed at Skagit steelhead occurred during the 2017-2018 wild steelhead management season (July 1, 2017 through June 30, 2018) because the allowable harvest rate associated with the forecast abundance level was not considered large enough to support a commercial opening. However, as expected, wild Skagit steelhead were caught incidentally in terminal area tribal spring Chinook and sockeye commercial fisheries that occurred during the July 1, 2017 through June 30, 2018 wild steelhead management season timeframe.

A total of 35 wild pre-spawn, 32 wild kelt, and 5 hatchery steelhead were caught and retained in these fisheries based on catch sampling and fish tickets. None were released. Using a kelt adjustment factor of 8.78%, the total kelt-adjusted wild mortality was 37 steelhead, including the unadjusted pre-spawn fish. The total kelt-adjusted wild mortality, including 2% net drop out mortality, is 38 steelhead.

Test Fisheries

The Upper Skagit Indian Tribe's directed steelhead tangle-net test fishery did not occur in 2018, because the Skagit steelhead RMP was not approved prior to the typical February start of that fishery. However, steelhead were caught during Chinook, sockeye, and coho test fisheries, conducted by the Skagit River System Cooperative and the Upper Skagit Indian Tribe, that occurred in the Skagit River during the July 1st, 2017 to June 30th, 2018 wild steelhead management season.

A total of 1 wild pre-spawn, 10 wild kelt, and 3 hatchery steelhead were caught and retained in these fisheries. None were released. Using the kelt adjustment factor described above, the total kelt-adjusted wild mortality associated with these fisheries was 2 steelhead. The total kelt-adjusted wild mortality including an additional 2% net drop out mortality remains at 2 steelhead.

Sport Fisheries

In spring of 2018, a directed steelhead catch and release sport fishery was open from April 14th through April 29th, excluding Mondays and Tuesdays. The fishery occurred on the Skagit River from the Dalles Bridge in Concrete (RM 54.1) to the Cascade River Road bridge in Marblemount (RM 78.3), and on the Sauk River from the mouth to the Sauk Prairie Road Bridge (RM 20.1). Fishing hours were limited to daylight hours only, which are described as from one hour before sunrise to one hour after sunset. Gear was restricted to artificial lures or flies only, no bait or scent, with single barbless hooks allowed (selective gear rules). Fishing from boats was allowed, but not while under power.

Based on a creel survey conducted during this fishery, anglers encountered and released 568 wild steelhead and retained 3 hatchery steelhead. Assuming a 10% release mortality rate, the number of wild steelhead mortalities associated with this fishery was 57. Evaluation of the creel methods used and calculation of the error with the catch estimates are in progress. WDFW is committed to improvements in creel methods where improvements can be attained for future fisheries.

Steelhead were also encountered incidentally in the spring Chinook, sockeye, and general gamefish fisheries that were open during the July 1st, 2017 to June 30th, 2018 wild steelhead management season. No creel survey has been conducted during the Skagit River spring Chinook sport fishery since 2012, so wild steelhead encounters during the 2018 fishery, which occurred from June 1-July 15th, were based on the average encounter rate during the 2010, 2011, and 2012 fisheries from which creel data is available. Based on this encounter rate, an estimated 89 wild steelhead were encountered incidentally and released during the 2018 fishery. Assuming 80% (71) of those were kelts and applying the 8.78% kelt adjustment to those, the total kelt adjusted encounters was 24 including the un-adjusted pre-spawn fish. Applying a 10% release mortality rate to the total kelt-adjusted encounters gives an estimate of 2.4 kelt-adjusted wild steelhead mortalities for these fisheries.

Creel surveys conducted during the 2017 (open 6/11-7/21) and 2018 (open 6/16-7/15) Skagit River sockeye fisheries estimated 0 wild steelhead encountered incidentally during the July 1st, 2017 to June 30th, 2018 time frame of the 2017-2018 wild steelhead management season. Four hatchery steelhead were estimated retained.

An estimated 16 wild steelhead release mortalities (163 encounters) were also estimated to occur during the basin-wide gamefish season that was open from June 1st to January 31st. Because no creel

occurs during this fishery, the estimate was based on the average encounter rate during years in which wild steelhead retention was most recently allowed (the 1992-1993 through 1999-2000 management seasons).

The total estimated wild steelhead mortalities over all sport fisheries was 76 kelt-adjusted wild steelhead.

Escapement

Skagit winter run steelhead spawn in the mainstem and tributaries of the Skagit River basin. Spawning ground surveys began 13 February 2018 in Skagit tributaries near the town of Sedro Woolley, and continued as late as 03 July 2018 in the farthest upstream index, Diobsud Creek, located near Marblemount, WA. Tributary stream indexes were surveyed by foot on a 7 to 14 day cycle. New redds were marked with survey flagging and enumerated. Linear regression of individual redds counted per km² of available spawning habitat in indexes was applied to available spawning habitat in unmonitored tributaries (km²) to predict the expected number of steelhead redds constructed in unmonitored anadromous tributary habitat.

Mainstem steelhead spawning in the Skagit River from the Highway 9 Bridge in Sedro Woolley, to the mouth of the Sauk River and the Sauk River from the mouth upstream including the North Fork from mouth to falls and South Fork from mouth to RM 2.6 were surveyed by helicopter. All visible redds were counted during aerial surveys regardless of any ability to identify unique previously constructed redds. Total mainstem redds in flown indexes were estimated using the area under the curve methodology. The remaining anadromous reaches of the Skagit River from the Sauk River mouth to the Newhalem powerhouse were surveyed by jet boat and individual redds were counted and GPS'd.

The Cascade River, White Chuck River, and Suiattle River have not historically been surveyed due to the poor viewing conditions, remoteness, potential hazards to surveyors, and numerous additional logistical obstacles. Spawning abundances in these systems were estimated using redds per mile calculated from specific mainstem sections of the Skagit River and Sauk River, multiplied by the length of the estimated mainstem anadromous zones of these rivers. The number of redds estimated in the 18.5 miles of steelhead spawning habitat in the mainstem of the Cascade River used the redds per mile estimate from Skagit River surveys between the Newhalem powerhouse and the town of Rockport. The number of redds built in the estimated 12.8 river miles of spawning habitat in the White Chuck River and estimated 26.3 miles of the Suiattle River mainstem used the redds per mile estimate from the mainstem Sauk River surveys from the Sauk River forks to the Darrington Sauk Prairie Road Bridge.

A total of 257 steelhead redds were observed in Skagit Basin tributary indexes in 2018 (Table 1). Linear regression predicted an additional 1,576 steelhead redds in the un-surveyed tributaries of the Skagit basin.

There were three mainstem flight surveys of the Skagit River and Sauk River indexes conducted over the course of the season, and surveys of the jet boat sections of the mainstem were performed every 7 to 14 days. We estimated 772 mainstem winter steelhead redds in the aerial and jet boat surveyed sections. An additional 437 redds were estimated using redds per mile expansions for the mainstem areas of the Cascade, Suiattle, and White Chuck Rivers. A total of 3,042 Skagit winter steelhead redds were estimated in the basin in 2018 (Table 1). Assuming a 1:1 sex ratio, total redds were multiplied by

two fish per redd and the 2018 Skagit River wild winter steelhead expected abundance was 6,084 fish (rounded).

The Skagit co-managers are committed to making improvements to the current escapement methodology and are committing, on an annual basis, resources to that effect.

Table 2. 2018 Skagit winter run steelhead spawning abundance estimates.

| Method | | Redds | | |
|---|---|-------|--------------|------------------|
| <u>Total observed tributary redds (surveys)</u> | | | | |
| Skagit tributary indexes | Census | | 162 | |
| Sauk tributary indexes | Census | | 95 | |
| <u>Total expected tributary redds from linear regression (non-surveyed)</u> | | | | |
| Skagit | Regression | | 1,278 | |
| Sauk | Regression | | 127 | |
| Suiattle | Regression | | 120 | |
| Cascade | Regression | | 51 | |
| <u>Total calculated, cumulative observed redds</u> | | | | |
| mainstem Lower Skagit | Flight surveys (AUC) | | 188 | |
| mainstem Upper Skagit | Boat surveys | | 146 | |
| mainstem Lower Sauk | Flight surveys (AUC) | | 241 | |
| mainstem Upper Sauk | Flight surveys (AUC) | | 158 | |
| SF Sauk | Flight surveys (AUC) | | 39 | |
| <u>Total calculated redds (non-surveyed mainstems)</u> | | | | |
| Cascade | Expansion using Upper Skagit redds/mile | | 105 | |
| Suiattle | Expansion using Upper Sauk redds/mile | | 223 | |
| White Chuck | Expansion using Upper Sauk redds/mile | | 109 | |
| | | | <i>Redds</i> | <i>Fish/redd</i> |
| Skagit winter steelhead anadromous spawner abundance estimate: | | | 3,042 | 2.0 |
| | | | | 6,084 |

Total Abundance and Harvest Rates

The total abundance (escapement plus catch) for the 2017-2018 wild steelhead management season (July 1st, 2017 to June 30th, 2018) was 6,199 wild Skagit steelhead, which was higher than the pre-season forecast of 5,247.

Total kelt-adjusted mortality was 116 Skagit wild steelhead over all tribal and non-tribal fisheries, including test fisheries, including net drop-out in net fisheries.

Based on the post-season abundance, kelt-adjusted wild steelhead harvest rates were 1.22% for sport fisheries, 0.61% for tribal commercial fisheries (0.62% with net drop-out), and 0.03% for test fisheries.

The overall kelt-adjusted wild steelhead harvest rate for all fisheries combined was 1.86% (1.87% with net drop-out). This is significantly lower than the maximum allowable harvest rate of 20% that would apply based on the post-season abundance estimate.

References

Sauk-Suiattle Indian Tribe, S. I. T. Community, U. S. I. Tribe, S. R. S. Cooperative, and W. D. o. F. a. Wildlife. 2016. Skagit River Steelhead Fishery Resource Management Plan. November 18, 2016. 53.