# Forecast Area: Alaska Peninsula, Nelson River

# Species: Sockeye Salmon

**Preliminary forecast of the 2019 run**

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| --- | --- | --- |
| Total production | Forecast estimate (thousands) | Forecast range (thousands) |
| Total run estimate | 362 | 154–567 |
| Escapement goal a | 158 | 97−219 |
| Harvest estimate | 204 |  |

*Note*: Column numbers may not total or correspond exactly with numbers in text due to rounding.

a The escapement estimate is the midpoint of the escapement goal range (97,000–219,000) in 2019.

#### Forecast Methods

The 2019 Nelson River sockeye salmon run was forecasted using simple linear regression of ocean-age-class and parental escapement data from the past 19 years. Standard regression diagnostics were used to evaluate each model. Prediction intervals (80%) for regression estimates were calculated using the variances of the regression models. Age classes that could not be estimated with modeling were estimated using pooled medians and the 10th and 90th percentiles of the data were used to calculate the prediction interval of the median estimates.

Ocean-age-2 sockeye salmon returns corresponding to the year of outmigration were forecasted with simple linear regression using parental escapement of predominant age-2.2 fish from 2000 to 2014. The ocean-age-1, -3, and -4 returns were calculated from median estimates for each ocean age class using run data from the previous ten years.

Regression and median estimates were summed to estimate the total Nelson River sockeye salmon run for 2020. The range was estimated as an overall 80% prediction interval and calculated from the sum of the 80% prediction intervals for each age class forecasted.

#### Forecast Discussion

The 2019 Nelson River forecast of 362,000 sockeye salmon is about 37,000 fish less than the most recent 10-year average (2010–2019) of 399,000 fish and is approximately 24,000 fish less than the 2019 run of about 199,000 fish. The 2020 run should be composed mainly of ocean-age-2 (67%) and -3 (29%) fish. Regression relationships predicting ocean-age-2 sockeye salmon are significant and represent the majority of the run. However, the Nelson River sockeye salmon run has been notoriously unpredictable. Therefore, confidence in this forecast is fair. The projected harvest of 204,000 fish is based on achieving the midpoint (158,000 fish) of the escapement goal range.

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