

# In-Season Bayesian Risk Assessment Tool

## Historical Data

## Purpose

This document is intended to be a companion to the *In-Season Chinook Salmon Bayesian Risk Assessment Tool* (hereafter, “Bayes’ Tool” or simply “the Tool”) that provides some historical data users can test the Tool out with.

This document is organized into two sections:

1. **Values for Estimation Tab:** here, users will find the appropriate information to enter on the Estimation tab for all years since 2008. Table 1 shows the pre-season run size forecasts that would have been used had the run reconstruction (Liller et al. 2018) been available back then, if the forecasting rule used now had been used back then, and if the run estimates were the same back then as they are now. Table 2 shows the cumulative catch-per-unit-effort at weekly intervals starting on June 12<sup>th</sup> in these years.
2. **Values for Reference:** here, users will find the “true” values the Tool attempts to estimate: run size and harvest levels given different escapement targets.

**NOTE:** it is inappropriate to interpret the output of the tool in these years as “management could have been so much better if the Tool had been used back then”, because much of the data the Tool uses were not available back then. This document is provided simply to allow users to test the Tool and practice using and interpreting its output using real data.

**The Tool was developed for Kuskokwim River Chinook salmon only.** Hereafter, all references in this document to salmon, fish, runs, escapement, and harvest are about the drainage-wide stock of Chinook salmon in the Kuskokwim River.

## Resources

- Tool interface: [\[INSERT LINK\]](#)
- Tool user manual: [\[INSERT LINK\]](#)
- Tool technical documentation: [\[INSERT LINK\]](#)
- Tool historical data (this document): [\[INSERT LINK\]](#)
- Source code for the Tool and all documentation: [\[INSERT LINK\]](#)

## Values for Estimation Tab

TABLE 1. Pre-season run size forecast expectation (mean) and uncertainty (coefficient of variation; CV). Run size data are from Liller et al. (2018).

Year <sup>a</sup>	Mean <sup>b</sup>	CV
2008	245,000	0.30
2009	220,000	0.29
2010	189,000	0.29
2011	113,000	0.30
2012	114,000	0.29
2013	79,000	0.30
2014	84,000	0.29
2015	84,000	0.29
2016	125,000	0.29
2017	129,000	0.29
2018	133,000	0.28

*Note:*

Do not enter commas into the tool.

<sup>a</sup> The year the user is interested in testing out.

<sup>b</sup> Under the current forecast method, the mean for year  $t$  is the value for year  $t - 1$ . Values rounded to the nearest thousand fish.

TABLE 2. Cumulative catch-per-unit-effort (CCPUE) from the Bethel Test Fishery. These data are also available online<sup>a</sup>. The methods for the Bethel Test Fishery are described in Bue and Lipka (2016).

Year	6/12	6/19	6/26	7/4	7/11	7/18
2008	46	160	374	539	579	607
2009	62	232	522	650	676	697
2010	23	193	314	393	433	451
2011	78	229	363	490	548	576
2012	6	50	228	334	401	410
2013	9	89	187	226	254	261
2014	252	421	539	618	633	645
2015	117	259	366	484	535	571
2016	165	278	432	542	634	659
2017	21	71	168	278	321	350
2018	66	198	385	556	622	645

<sup>a</sup> **BTF Data:** <http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareakuskokwim.btf>

## Values for Reference

TABLE 3. Estimated run size in each year and different levels of harvest that would have resulted in different levels of escapement. For example, the minimum value is the number of fish that could have been harvested to obtain exactly 120,000 escapement. Zero values indicate any level of harvest would have resulted in escapement less than the specific escapement level of interest.

Year	Run Size <sup>1</sup>	Minimum <sup>2</sup>	Medium <sup>3</sup>	Maximum <sup>d</sup>
2008	220,000	100,000	127,500	155,000
2009	189,000	69,000	96,500	124,000
2010	113,000	0	20,500	48,000
2011	114,000	0	21,500	49,000
2012	79,000	0	0	14,000
2013	84,000	0	0	19,000
2014	84,000	0	0	19,000
2015	125,000	5,000	32,500	60,000
2016	129,000	9,000	36,500	64,000
2017	133,000	13,000	40,500	68,000
2018	145,000	25,000	52,500	80,000

Values rounded to the nearest thousand fish.

<sup>a</sup> Most current run size estimates used; presented in Liller et al. (2018)

**Harvest that would have resulted in escapement at the:**

<sup>1</sup> upper end of the escapement goal: 120,000

<sup>2</sup> midpoint of the escapement goal: 92,500

<sup>3</sup> lower end of the escapement goal: 65,000

## References

- Bue, D. G. and Lipka, C. G. 2016. Characterization of the 2011 salmon run in the Kuskokwim River based on the test fishery at Bethel. Fishery Data Series 16-05, Alaska Department of Fish and Game, Anchorage, AK. Available at: <http://www.adfg.alaska.gov/FedAidPDFs/FDS16-05.pdf> [last accessed 2/20/2019].
- Liller, Z. W., Hamazaki, H., Decossas, G., Bechtol, W., Catalano, M., and Smith, N. 2018. Kuskokwim River Chinook salmon run reconstruction model revision – executive summary. Regional Information Report 3A.18-04, Alaska Department of Fish and Game, Anchorage, AK. Available at: <http://www.adfg.alaska.gov/FedAidPDFs/RIR.3A.2018.04.pdf> [last accessed 2/20/2019].