Historical Data

Chinook Salmon In-Season Bayesian Risk Assessment Tool

Version 1.6.0 (For use in 2023)

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Tool Interface: https://bstaton.shinyapps.io/BayesTool

Source Code: https://github.com/bstaton1/kusko-bayes-tool

User Manual: *Accessible through the tool interface*

Technical Documentation: *Accessible through the tool interface*

DISCLAIMER: The claims, conclusions, and all other statements made herein are those of the Tool Developers only, and do not necessarily reflect those of people who have provided feedback on the Tool, nor those of the agencies or organizations any of these people (including the Tool Developers) work for.

This document is intended to be a companion to the Chinook Salmon In-Season 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 (Larson 2023) 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 12th 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.

Values for Estimation Tab

TABLE 1. Pre-season run size forecast expectation (mean) and uncertainty (coefficient of variation; CV). Run size data are from Larson (2022).

Year[a]	Mean[b]	CV
2008	245,000	0.30
2009	213,000	0.29
2010	189,000	0.29
2011	113,000	0.30
2012	116,000	0.29
2013	81,000	0.29
2014	84,000	0.29
2015	85,000	0.29
2016	126,000	0.29
2017	131,000	0.29
2018	131,000	0.28
2019	133,000	0.28
2020	221,000	0.29
2021	124,000	0.30
2022	130,000	0.30

Note:
Do not enter commas into the tool.

[a] The year the user is interested in testing out.

[b] 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[a]. 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
2019	174	339	606	751	801	833
2020	72	135	262	362	434	476
2021	87	169	273	422	492	527
2022	54	121	295	424	471	485

[a] **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[a]	Minimum[1]	Medium[2]	Maximum[3]
2008	213,000	93,000	120,500	148,000
2009	189,000	69,000	96,500	124,000
2010	113,000	0	20,500	48,000
2011	116,000	0	23,500	51,000
2012	81,000	0	0	16,000
2013	84,000	0	0	19,000
2014	85,000	0	0	20,000
2015	126,000	6,000	33,500	61,000
2016	131,000	11,000	38,500	66,000
2017	131,000	11,000	38,500	66,000
2018	133,000	13,000	40,500	68,000
2019	221,000	101,000	128,500	156,000
2020	124,000	4,000	31,500	59,000
2021	130,000	10,000	37,500	65,000
2022	142,000	22,000	49,500	77,000

Values rounded to the nearest thousand fish.

[a] Most current run size estimates used; presented in Larson (2022)

Harvest that would have resulted in escapement at the:

[1] upper end of the escapement goal: 120,000

[2] midpoint of the escapement goal: 92,500

[3] 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].

Larson, S. 2022. 2021 Kuskokwim River Chinook salmon run reconstruction and 2022 forecast. Regional Information Report 3A.22-02, Alaska Department of Fish and Game, Division of Commercial Fisheries, Anchorage, AK. Available at: https://www.adfg.alaska.gov/FedAidPDFs/RIR.3A.2022.02.pdf [last accessed 6/2/2022].

Larson, S. 2023. 2022 Kuskokwim River Chinook salmon run reconstruction and 2023 forecast. Regional Information Report 3A.23-01, Alaska Department of Fish and Game, Division of Commercial Fisheries, Anchorage, AK. Available at: https://www.adfg.alaska.gov/FedAidPDFs/RIR.3A.2023.01.pdf[last accessed 5/22/2023].