



**TO:** Pacific Salmon Commission  
**FROM:** Milo Adkison, Jon Carey, Laura Tessier, Antonio Velez-Espino  
**DATE:** March 29, 2023  
**SUBJECT:** AABM Fisheries Preseason Abundance Indices for 2023 and Postseason Abundance Indices for 2022

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The Chinook Technical Committee (CTC) is providing to the Commission the results of completed calibration CLB 2304 of the Pacific Salmon Commission (PSC) Chinook Model for 2023. The calibration provides the 2023 preseason Abundance Indices (AIs) for determining the annual catch limits (ACLs) for the Northern British Columbia troll and Haida Gwaii sport (NBC) and West Coast Vancouver Island troll and outside sport (WCVI) Aggregate Abundance-Based Management (AABM) fisheries. The calibration also provides the AIs required for determining the 2022 postseason ACLs for all three AABM fisheries: Southeast Alaska Cape Suckling to Dixon Entrance (SEAK), NBC, and WCVI.

The PSC adopted a new multivariate model (Equation 1) in conjunction with 17 tiers (Appendix Table A.1) on February 16, 2023 to determine the preseason ACL for the SEAK AABM fishery in 2023. This multivariate model utilizes the PSC Chinook Model preseason AI (Pre AI), the catch per unit effort from the early winter power troll fishery in district 113 of Southeast Alaska for stat weeks 41–48 (CPUE), and the one-year-ahead projected AI from the prior year's PSC Chinook Model calibration (Projection). The CTC is providing to the Commission the results of the completed multivariate model analysis for 2023.

$$Post\ AI = \beta_0 + \beta_1 Pre\ AI + \beta_2 \ln(CPUE) + \beta_3 Projection$$

*Equation 1*

For 2023, the multivariate model was fit with data from 2001 through 2022 (excluding 2006 and 2007 due to unavailable projection values: Appendix Table A.2), resulting in the following coefficients:

- Intercept ( $\beta_0$ ): -0.340
- Preseason AI ( $\beta_1$ ): 0.451
- Ln CPUE ( $\beta_2$ ): 0.281
- Projection ( $\beta_3$ ): 0.468

Please note the following:

1. The 2023 preseason ACL for the SEAK AABM fishery was determined from Appendix Table A.1 based on the results of the multivariate model (Equation 1). The 2022 preseason and postseason ACLs for the SEAK AABM fishery were determined from Table 2 in Chapter 3 of the 2019 Pacific Salmon Treaty (PST) Agreement, using the CPUE to set the preseason ACL and the postseason AI to set the postseason ACL.

- The 2023 preseason ACLs and the 2022 preseason and postseason ACLs for the NBC and WCVI fisheries were determined from Table 1 in Chapter 3 of the 2019 PST Agreement based on the preseason and postseason AIs generated by the PSC Chinook Model.

The inputs to the multivariate model used to determine the 2023 SEAK AABM fishery preseason AI are shown in Table A. The 2023 preseason AIs and the associated ACLs for each of the AABM fisheries are shown in Table B. The 2022 postseason AIs along with observed catches, preseason AIs and associated ACLs for each of the AABM fisheries are shown in Table C.

*Table A. Inputs to the multivariate model used to determine the 2023 SEAK AABM fishery preseason AI and ACL.*

Model Inputs	Values
PSC Chinook Model preseason AI ( <i>Pre AI</i> )	1.15
SEAK early winter catch per unit effort from the early winter power troll fishery in district 113 ( <i>CPUE</i> )	9.20
One-year-ahead projected AI ( <i>Projection</i> )	1.31

*Table B. The 2023 SEAK preseason AI calculated using the multivariate model, and the NBC and WCVI 2023 preseason AIs calculated using the PSC Chinook Model, as well as associated ACLs for the 2023 AABM fisheries.*

	SEAK	NBC	WCVI
Abundance Index	1.42 (multivariate model) <sup>1</sup>	1.16	1.02
Annual Catch Limit	206,027 (Tier 9, Appendix Table A.1)	141,700	115,500

<sup>1</sup> The CLB2304 2023 preseason AI for SEAK is 1.15, which would yield a non-tiered ACL of 144,200 if the PSC Chinook Model was being used.

*Table C. Preseason AIs, observed catches, postseason AIs, and associated ACLs for the 2022 AABM fisheries.*

Preseason			
	SEAK	NBC	WCVI
Abundance Index	7.02 ( <i>CPUE</i> ) <sup>1</sup>	1.17	0.88
Annual Catch Limit	266,585 (Tier 5, Table 2)	142,800	100,700
Actual			
Observed Catch	238,621	83,153	95,288
Post-Season			
Abundance Index	1.04 (AI)	1.08	0.99
Annual Catch Limit	140,323 (Tier 3, Table 2)	133,000	112,400

<sup>1</sup> The CLB2203 2022 preseason AI for SEAK was 1.16 which would yield a non-tiered ACL of 146,400 if the PSC Chinook Model was being used.

**APPENDIX**

*Appendix Table A.1. The 17 tiers used to determine the SEAK AABM fishery ACL in 2023.*

Tier	Abundance Index Range	AI Midpoint	Catch Limits
1	Less than 0.895	NA	Commission Determination
2	Between 0.895 and 0.945	0.920	107,498
3	Between 0.945 and 0.985	0.965	111,888
4	Between 0.985 and 1.035	1.010	116,278
5	Between 1.035 and 1.105	1.070	127,130
6	Between 1.105 and 1.175	1.140	142,101
7	Between 1.175 and 1.245	1.210	157,072
8	Between 1.245 and 1.345	1.295	191,963
9	Between 1.345 and 1.455	1.400	206,027
10	Between 1.455 and 1.555	1.505	220,091
11	Between 1.555 and 1.665	1.610	252,358
12	Between 1.665 and 1.765	1.715	267,594
13	Between 1.765 and 1.875	1.820	282,830
14	Between 1.875 and 2.015	1.945	314,799
15	Between 2.015 and 2.145	2.080	335,288
16	Between 2.145 and 2.285	2.215	355,778
17	Greater than 2.285	2.285	373,801

*Appendix Table A.2. Data used to fit the multivariate model used to predict the 2023 postseason AI for the SEAK AABM fishery.*

Year	Postseason AI	Preseason AI	CPUE	Projection AI
2001	1.33	1.17	8.25	1.09
2002	1.89	1.80	16.88	1.55
2003	2.25	1.86	19.93	1.57
2004	2.14	1.95	8.03	1.47
2005	1.97	2.13	8.30	1.66
2006	1.79	1.75	10.26	NA
2007	1.38	1.65	3.43	NA
2008	1.04	1.10	2.34	1.44
2009	1.23	1.37	3.46	1.21
2010	1.35	1.39	4.34	1.29
2011	1.68	1.75	6.17	1.50
2012	1.27	1.57	5.00	1.46
2013	1.68	1.24	4.40	1.47
2014	2.29	2.68	7.44	1.81
2015	2.03	1.49	13.43	1.95
2016	1.71	2.13	11.12	1.47
2017	1.35	1.31	4.21	1.76
2018	0.94	1.10	3.58	1.24
2019	1.07	1.10	3.38	1.03
2020	1.11	1.13	4.83	1.02
2021	1.23	1.28	3.85	1.16
2022	1.04	1.16	7.02	1.22

cc John Field  
Cara Fogliato  
Courtney Hann