

To: Alaska Board of Fisheries / October Work Session
Glenn Haight, executive director
P.O. Box 115526
Juneau, Alaska 99811-5526

Re: ACR 11 and ACR 14 / additional comment and information
Submitted via email.

Board Chair and members,

ACR 11 describes the issues. Measured reconsideration of this provision in regulation is warranted. The best available information by the Department's within Commercial Fisheries Division, M. Willette, P. Shields, and E. Volk response clearly states the *Kintama* report was severely limited and speculative at best (see PC 112). In fact, the sampled study consisted of only 7 large king of Kenai River origin out of a dozen while the acoustic-tracking array was several miles offshore and well outside of the ESSN fishery but within the Drift opened Areas. Tidal influence on setnet fisheries net depth was disregarded across numerous variables. However, studies show that with only 2 knots of tidal influence - the net depth is decreased by half. Cook Inlet has a tidal effect of 12 knots per tide and reduces the net-depth by 75%. Slack-tide represents approx. 30 minutes per tide per opening. By comparison, The Drift net fishery has an additional 45 fathoms of gear (150 fathoms aggregate vs. 105 set gillnet aggregate) and "drifts" the gear in the tide and less affected by net depth affects but catch ratio on Kenai large kings is relatively low while fishing deeper and with more gear. An attached file (*Bethe vs. Sockeye*) on net depth shows no significant difference on Chinook harvest for 28 mesh nets vs. 45 mesh depth nets along the Kenai Section. However, a significant reduction in Sockeye harvest by 3-fold in the overall per net Sockeye / Chinook average. Remarkably, the Kenai River Late-run king salmon management Plan (e) (3) (G) (i) and (ii) mandates gear reductions and mesh depth-net reduction use: based on speculation – full stop.

Note: PC 111 by Gary Hollier stated his opposition to ACR 11; however PC111 contains a misrepresentation-of-fact. Mr. Hollier claims a 45 mesh net depth is over 18 feet deep at slack tide. This is the depth for 5 inch **stretched mesh** containing **NO opened webbed diamonds**; i.e., unhung webbing or perhaps by hanging 10 times the normal webbing by length; i.e. 700 fathoms of gear hung on the cork line and lead line with no opened diamonds instead of 70 fathoms of gear hung under normal hung gear ratio's used for 35 fathoms on normal gear. The actual hung depth net would approximate 12 – 13.5 feet of depth depending on the commercial hanging ratio preference on 5 inch web. Hung net table ratio's on gear are available world-wide and studied for decades. The Board should not be burdened with this type of false or misleading information on gear.

The over-all social-economic consequences to the commercial fishing community has been devastating over available sockeye yield continuously and needlessly foregone; the coupled lost yield on production for the two major sockeye systems in Cook Inlet (Kasilof River sockeye salmon and Kenai River late-run sockeye). ACR 14 seeks addressment of Kasilof River sockeye salmon and the chronic inability to maintain sockeye escapements within the bounds of the BEG; i.e. a management concern. The Department has over four decades of spawner-recruitment data; including production loss returns due to over escapement years and causal yield loss - less than replacement, mere replacement years - compared to significant produced yields/returns based on escapements within the established BEG goal range. In the last two years alone over 1,000,000 sockeye salmon escaped (521,859/yr.2021 and

545,654/yr.2020). All prior boards' intent and objectives written into the Kasilof River sockeye salmon management Plan are negated thru the Kenai River Late-run king salmon management Plan (e) (3) (G) (i) and (ii); including the direction to the Department to manage and distribute escapements within the Kasilof sockeye BEG goal range (140k – 320k). Conflicts in regulation shall be addressed by the Board and Department and outlined within the Sustainable Salmon Fisheries Policy. ACR 14 seeks addressment by the Board as the Department's RC 2 completely negated ACR 14's issues within its response. Paradoxically, it was Commercial Fisheries staff who requested that I submit ACR 14 to the Board.

5AAC.21.363. Upper Cook Inlet Salmon Management Plan (a) (6) states: consistent with 5 AAC.39.220 (b), it is the intent of the board that, in the absence of a specific management plan, where there are known conservation problems, the burden of conservation shall, to the extent practicable, be shared among all user groups in close proportion to their respective harvest on the stock of concern. [Emphasis added]. First of all, prior Kenai late-run king salmon management plans existed and incorporated conservation (all sized king goals). Second, the latest rendition of the Kenai late-run king plan "paired restrictions under a Large king OEG goal range" has a directed in-river king sport fishery affecting a directed sockeye salmon fishery with incidental harvest on king salmon. Kenai late-run king salmon are NOT a stock of concern. The no bait provision in a directed sport fishery occurs throughout Alaska. Nowhere else in Alaska does the board or Department impose a large fish goal or burden under a no bait provision to restrict a non-directed commercial fishery harvest on time by less than half allowed in regulation; place another 66% reduction on sockeye harvest by mandated gear reductions; place another 95% reduction by area under a sport no bait provision. The term "fair and equitable"* now requires a notation in the Sustainable Salmon Fisheries Policy (SSFP); except for Cook Inlet*. Tens of millions of economic loss occurs annually on Sockeye salmon from a Di Minimis incidental harvest of Large Kenai late-run king salmon; especially in the Kasilof Section of the Upper Sub-district in Cook Inlet.

In 2021, the Kasilof Section had 12 openings on area waters out to 1.5 nm offshore and 4 within "600 foot" and included the 2/3 reduction in gear mandate and hours per week restrictions. However, the harvest rate on Kenai late-run large king salmon can be calculated as well as the sockeye harvest levels impacted. In PC 112 the Department estimated the number of Kenai River late-run large king salmon thru July 20th @ 187 fish. The Kasilof Section proportion was estimated from previous year's average thru July 8th (early strata) and late strata thru July 20th. The pooled proportion estimate of 85 out of 187 Kenai large kings per 1886 deliveries represents four one-hundreds of 1 Kenai large per delivery. This represents 6 or 7 Kenai large in regularly opened waters per opening with 36,000 sockeye harvests. 600 foot opening have 2,600 ave. sockeye harvest levels coupled with 0-4 large Kenai late-run kings. Over the last five years; during 2017, 2018, and 2019 openings in the regular opened waters which included the majority of hours utilized 3 nets per permit and the exploitation rate per Net was one one-hundreds of 1 Kenai large king salmon per net. In other words for every 100 nets an estimated 1 Kenai large king salmon was harvested along with 36,000 or higher levels of sockeye salmon utilized (harvested). The half mile sockeye harvest levels are 16,000 to 187,000 sockeye (Ref: FDS10-93.pdf / FMS10-01.pdf) and the exploitation rate on Kenai late-run large approximates 4-6 kings. In other words it takes 6 to 14 opened 600 foot openings to harvest the same estimated sockeye harvest level during 1 announced half-mile opening in the Kasilof Section; 20 - 30 Kenai large kings would be harvested for similar sockeye harvest levels instead of 4-6 during one half-mile opening. The germane point being, the 600' openings do nothing to manage and distribute sockeye escapement levels into the Kasilof River or utilize the resources available along 40 miles of beach in the Kasilof Section and hold the majority of set gillnet permits along the eastside (63%). The fishing community of Kasilof hold the 3rd highest per capita / permits in this state and rely on commercial fishing.

Run timing is earlier on Kasilof sockeye stocks - mid-point July 14th, Kenai late-run sockeye mid-point July 23rd, and Kenai River large late-run king salmon mid-point July 30th over the last three years. Historically, 86% of kings harvested along the Kasilof Section are small, males, and would never be counted at river mile 14 Aris Sonar station on the Kenai – period.

The SSFP definition of “salmon stock” includes genetic, phenotypic, life history...in the same geographic area and is “managed as a unit.” However, Kenai late-run king salmon are not managed as a unit contrary to defined “salmon population and salmon stock” which includes spawning population (all age classes). Genetic data on Kenai River late-run king salmon has been ongoing since 2010 and includes genetic harvest sampling by statistical area along the “eastside” and by Section (Kasilof / Kenai –East Forelands Sections) harvest rates on both small and large Kenai king salmon and stratified by time and area openings; however, the length composition on Kenai late-run king estimates are only “within 30% of true value 90% of the time” (See FDS21-11, Eastside Set gillnet Chinook harvest composition in Upper Cook Inlet, Alaska, 2020 by Anthony Eskelin and Andrew Barclay). Tables within this report and earlier reports estimate Kasilof “early and late stratum” as well as Kenai Section (late stratum) on Kenai large late-run harvest levels. The Kenai Section (North Kalifornsky beach 244-32 / Salamantof Beach 244-41 / East-Forelands 244-42 harvest levels per opening on Kenai large king salmon are double than that in the Kasilof Section. Kenai Section with less permits operating / 140 permits and harvest twice the numbers of Kenai late-run large king salmon. I oppose ACR 10 as an attempt to undermine the traditional fishing time and area within the Kasilof Section; including half-mile opening use. The distribution of sockeye harvest levels along the Kasilof Section have been severely impacted and the use of 600’ opening have only compounded sockeye salmon escapement levels into the Kasilof River – period.

After July 15th North K. Beach sockeye harvests are comprised mainly of Kenai late-run sockeye during 600’ openings and advocate /speculate the use of 29 mesh gear in order to fish under the guise of Kasilof sockeye abundance. The Kasilof Section bears twice the burden than the Kenai Section in this king plan– day in and day out; year after year, net per net as represented in the large fish stock composition Eskelin / Barclay reports and the last 5 years of ADF&G harvest data. By comparison, in 2019 Eskelin / Barclay report (table 6) - the Kasilof Early stratum period of June 27th – July 4th shows the harvest composition on Large Kenai mainstem king salmon of only .05% and from July 8th – August 3 @ .14%... compared to Kenai Section @ .30% stock composition harvest levels on Kenai River large mainstem fish.

Finally, I offer the following regarding the Kenai River late-run OEG large king goal. The Board nor the public received the yield difference on maximum sustained yield loss when deliberating to increase the goal under an OEG as required under the SSFP nor the consequences on yield affects upon Kasilof BEG established goal range or the Kenai late-run sockeye salmon SEG in-river goal range. I have attached files from ADFG Sport Fish Division / Escapement Goal Review Committee comprised of Sport and Commercial Fisheries Research experts during the last review in 2017 when the goal range was changed to a large fish goal of 13,500 – 27,000. One page states management similar to the status goal as a range equals 10,950 – 21,900. Another page states “recent large fish mixture estimates” would be equivalent to 10,050 – 20,100 range. Commercial Fisheries Division panel experts recommended a range of 12,500 – 23,500 with 80% / 80% MSY profile in this range. The OEG has a 50% increase by comparison of Sport Fish equivalent ranges and 2,500 – 6,500 fish added to Commercial Fisheries Research staff recommendation goal range.

Recent Kenai River large late-run returns have been estimated at 15,000 fish. The commercial set gillnet exploitation rate in 2021 was .01% of the return (186 fish) for the entire eastside on a salmon

stock not declared a stock of concern and caused millions of sockeye salmon to go unharvested along the eastside since 2020 and past 5 years. The new large fish OEG Kenai king goal range was upped by several thousands of fish while the eastside harvest levels are in the hundreds. The large fish goal range is stated as 1.3, 1.4, and 1.5 Kenai River age composition over 75.4 cm mid-eye tail fork length / a fork length (FL snout to tail fork) of 83.1 cm / total length of 33.3 inches. However, over the last 3 years the number of age 5 (1.3) Kenai late-run king salmon have been 50% under 75 cm Aris mixture-model threshold and 50% over 75 cm in length. In addition, 10% of 1.4 (6-year old kings) are under the 75 cm Aris threshold - resulting in individual Aris Length measurements (cm) for these age compositions to be placed under "small" kings that may or may not be counted by limited netting program sampled data and again NOT counted by Aris sonar. For example an age 5 (1.3) king salmon 32.5 inches in length are tossed out. Hundreds or thousands of "large kings" are tossed in the "do not count file" when Kenai sockeye salmon rarely exceed 29 inches in total length. Perhaps Sport Fish Division can explain the difference in "biological productivity" for a king salmon 32 inches FL or 32.5 inches in FL length vs. 32.71 inches by measured fork length? The aforementioned is directly related to escapement goals and recent published scientific published report submitted by Gale Vick and PC 123. The *Nature Communications* Article titled *Recent declines in salmon body size impact ecosystems and fisheries* shows significant decline in Chinook length at returning ages. Figure 1 and Figure 2 indicate in Upper Cook Inlet a 9% decline in length for Chinook salmon which compares to the AYK regions @10%. Sockeye salmon length declines in Upper Cook Inlet approximate a 25% decline. The explanations are presented in the article and based on millions of age/sex/length data since 2010 in Alaska Regions.

Respectfully submitted,

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Please Note: For the Record; I submitted under on time public Comment a 5-year harvest composition data set; including all hours, opening dates, CPUE, statistical harvest per openings on Sockeye salmon and detailed under an Information Request to the Department. A king tab shows similar information and stats but was for all sized kings harvested instead of the germane issue: Kenai River late-run large king salmon. If the Board reviews the CPUE king data - the Large Kenai king ratio would be fairly represented at a ratio of .15 x all sized kings harvested in the Kasilof Section with all gear allowed and all areas opened. I am awaiting a response from Glenn Haight as to why this information was not included in PC 112. This should not occur under the Board of Fisheries public process.

		Sockeye	Sockeye	Sockeye	Sockeye	Chinook	Chinook	Chinook	Chinook	Sockeye
29 Meshes-n=40		Upper 2/3	Lower 1/3	Unknown	Total	Upper 2/3	Lower 1/3	Unknown	Total	Per Chinook
Ebb	Total	204	38	26	268	2	6	-	8	34
	Ave/Net	10.74	2.00	1.37	14.11	0.11	0.32	0	0.42	
Flood	Total	250	37	10	297	2	-	-	2	149
	Ave/Net	15.63	2.31	0.63	18.56	0.13	0.00	0.00	0.13	
Total										
Overall		454	75	36	565	4	6	-	10	57
	Ave/Net	12.97	2.14	1.03	16.14	0.11	0.17	0.00	0.29	

45 Meshes-n~1700		Sockeye	Sockeye	Sockeye	Sockeye	Chinook	Chinook	Chinook	Chinook	Sockeye
		Upper 2/3	Lower 1/3	Unknown	Total	Upper 2/3	Lower 1/3	Unknown	Total	Per Chinook
Ebb	Total	21,083	7,029	2,940	31,052	181	65	32	278	112
	Ave/Net	26.13	8.71	3.64	38.48	0.22	0.08	0.040	0.34	
Flood	Total	16,348	6,579	1,854	24,781	122	64	27	213	116
	Ave/Net	19.72	7.94	2.24	29.89	0.15	0.08	0.03	0.26	
Both										
Tides	Total	10,660	2,647	1,992	15,299	55	25	7	87	176
	Ave/Net	34.39	8.54	6.43	49.35	0.18	0.08	0.02	0.28	

Total										
Overall		48,091	16,255	6,786	71,132	358	154	66	578	
	Ave/Net	24.71	8.35	3.49	36.55	0.18	0.08	0.03	0.30	

Raw data from Investigations of Methods and Means to Minimize Chinook Salmon Harvest in the East Side Set Net Fishery of Upper Cook Inlet, 1996 by Bethe, M.L. and P. Hanson, 1998

Table 5.—Overall stock compositions and stock-specific harvest estimates, including mean and 90% credibility intervals (CI) for Chinook salmon harvested in the Eastside set gillnet fishery, Upper Cook Inlet, Alaska, 2019.

Stratum			Stock composition			Stock-specific harvest		
Area	Date	Reporting group	Mean	90% CI		Harvest	90% CI	
				5%	95%		5%	95%
All areas	27 Jun–3 Aug							
		Kenai River tributaries	0.02	0.01	0.04	49	14	86
		Kenai River mainstem	0.65	0.61	0.69	1,458	1,366	1,545
		Kasilof River mainstem	0.32	0.28	0.35	714	631	795
		Cook Inlet other	0.01	0.00	0.03	25	0	71

MSA STRATIFIED BY SIZE

Large *Kenai River mainstem* fish were harvested (and composed the harvest) in each stratum as follows: 38 fish (0.18) from Kasilof Section “Early,” 184 fish (0.19) from Kasilof Section “Late,” 391 fish (0.36) from *Kenai–East Foreland sections* “Late” (Table 6).

Table 6.—Stock composition and stock-specific harvest estimates of Chinook salmon harvested in the Eastside set gillnet fishery, including mean and 90% credibility intervals (CI), stratified by size (large and small) for each temporal and geographic stratum, Upper Cook Inlet, Alaska, 2019.

Stratum				Stock composition ^a			Stock-specific harvest		
Area	Period	Size	Reporting group	Mean	90% CI		Harvest	90% CI	
					5%	95%		5%	95%
Kasilof Section	27 Jun–4 Jul	Large	Kenai R. tributaries	0.05	0.04	0.01	11	8	1
			Kenai R. mainstem	0.18	0.05	0.10	38	10	22
			Kasilof R. mainstem	0.07	0.03	0.02	15	8	4
			Cook Inlet other	0.02	0.03	0.00	4	5	0
	Small	Kenai R. tributaries	0.17	0.08	0.04	36	17	9	
		Kenai R. mainstem	0.33	0.07	0.22	72	15	47	
		Kasilof R. mainstem	0.12	0.05	0.05	26	10	11	
		Cook Inlet other	0.06	0.08	0.00	14	16	0	
Kasilof Section	8 Jul–3 Aug	Large	Kenai R. tributaries	0.00	0.00	0.00	0	0	2
			Kenai R. mainstem	0.19	0.14	0.24	184	138	233
			Kasilof R. mainstem	0.33	0.28	0.39	318	266	370
			Cook Inlet other	0.00	0.00	0.00	0	0	2
	Small	Kenai R. tributaries	0.00	0.00	0.00	0	0	3	
		Kenai R. mainstem	0.20	0.15	0.25	194	146	242	
		Kasilof R. mainstem	0.27	0.22	0.33	259	209	313	
		Cook Inlet other	0.00	0.00	0.00	0	0	3	
Kenai–East Foreland sections	8 Jul–3 Aug	Large	Kenai R. tributaries	0.00	0.00	0.00	0	0	2
			Kenai R. mainstem	0.36	0.30	0.43	391	320	459
			Kasilof R. mainstem	0.06	0.03	0.09	60	35	92
			Cook Inlet other	0.00	0.00	0.01	2	0	12
	Small	Kenai R. tributaries	0.00	0.00	0.00	1	0	2	
		Kenai R. mainstem	0.54	0.48	0.60	579	510	640	
		Kasilof R. mainstem	0.03	0.01	0.06	35	14	61	
		Cook Inlet other	0.00	0.00	0.03	5	0	37	

Note: Large fish are 75 cm METF and longer; small fish are less than 75 cm METF.

^a Stock composition is mean proportion of all fish (large and small combined) for each stratum.

Are these goals “management neutral”?

Difficult to say but probably not. This depends on future size composition of Kenai Chinook, which is difficult to predict.

During 2014-2016, estimates of Chinook 75 cm or longer have averaged
55% of mixture model estimates in early run
67% of mixture model estimates in late run

If those ratios persist, then ER/LR goals of

$$0.55 * (3,800 - 8,500) = (2,090 - 4,675)$$

$$0.67 * (15,000 - 30,000) = (10,050 - 20,100) \leftarrow$$

would provide approx. equivalent management as existing goals, on average

In a given year, the proportion of Chinook ≥ 75 cm would have to be
 $2,748 / 3,800 = 0.72$ (ER) and $13,540 / 15,000 = 0.90$ (LR)
for the new goal to prompt the same management as the status quo

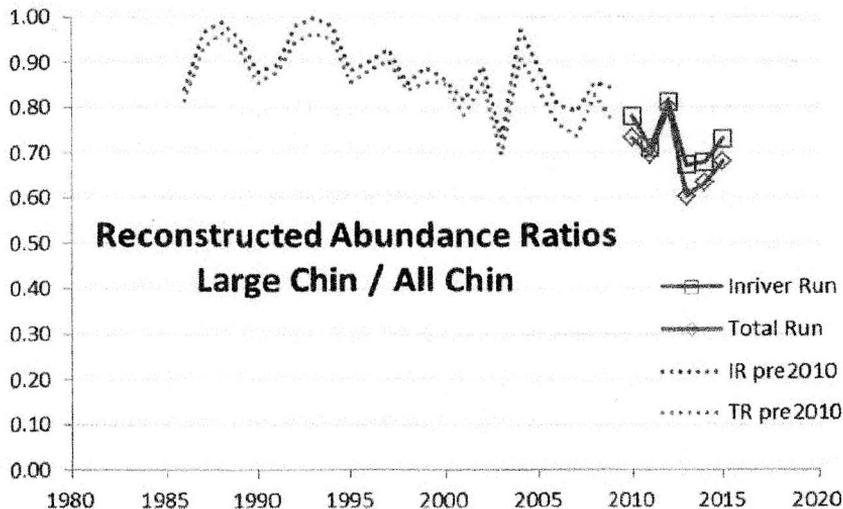
No matter the size comp, the new goals would result in appropriate management, because mgmt will not be influenced by small Chinook

What if we use only recent years?

During 2010-2015*, IR estimates of Chinook ≥ 75 cm have averaged 73% of mixture model estimates in late run

If those ratios persist, then goals of $0.73 * (15,000 - 30,000) = (10,950 - 21,900)$ would provide management similar to status quo, on average

*Reliable estimates of historical abundance of Chinook regardless of size before 2010 are not available



LR

Analysis = 13,673 – 27,346

RC012

Recommendation = 13,500 – 27,000

DCF Recommended Ranges:

ER

(80%/80%) Recommendation = 2,100 – 4,600

LR

(80%/80%) Recommendation = 12,500 – 23,500

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