Kuskokwim River Salmon Management Working Group

1 (800) 315-6338 (MEET) Code: 58756# (KUSKO)

ADF&G Bethel toll free: 1 (855) 933-2433

Meeting Agenda

Date: **7/14/2021** **Time**: **10:00 a.m.–12:00 p.m.** Place: **ADF&G Office, Bethel, AK**

Time Called to Order: Chair:

ROLL CALL TO ESTABLISH QUORUM:

Upriver Elder:
Downriver Elder:
Commercial Fisher:
Lower River Subsistence:
Middle River Subsistence:
Upper River Subsistence:
Headwaters Subsistence:

QUORUM MET? Yes / No

Member at Large 1:
Member at Large 2:
Sport Fisher:
Western Interior RAC:
Y-K Delta RAC:
KRITFC:
ADF&G:

INTRODUCTIONS:
INVOCATION:
APPROVAL OF MINUTES: *Optional. ADF&G does not prepare official meeting minutes.*
APPROVAL OF AGENDA: *the agenda may be amended at this time.*
USFWS/KRITFC UPDATE:
ADF&G MANAGEMENT ACTIONS UNDER CONSIDERATION:
PEOPLE TO BE HEARD: *Non-Working Group Members*
CONTINUING BUSINESS:

- Subsistence Reports: Lowest River, ONC Inseason Subsistence Report, Lower River, Middle River, Upper River, Headwaters
- Inseason Harvest Report (ONC/KRITFC)
- Overview of Kuskokwim River salmon run assessment:
  a. Test Fisheries (Bethel and Aniak):
  b. Sonar/Weirs/Aerial Surveys/Other:
  c. Subsistence Division Project Update:
  d. NVN Report:
- Working Group KRITFC Representative Report:
- Commercial Catch Report: N/A
- Processor Report: N/A
- Sport Fish Report:
- Trawl Bycatch Report
- Donlin Gold
- Intercept Fishery Report: *optional*
- Weather Forecast:
- Discussion of ADF&G Management considerations and discussion of possible alternatives (recommendations from the Working Group):
- Motion for Discussion and Action:

OLD BUSINESS:
NEW BUSINESS:

COMMENTS FROM WORKING GROUP MEMBERS:

NEXT MEETING DATE:_____Time:_____Place:_____

Informational Packet

Information Packets *ARE*:

- **Intended to help inform Working Group discussions.**
- **To be viewed and used in context with Working Group meetings only.**

Packets *ARE NOT*:

- **To be viewed as standalone documents.**
- **A final say on fisheries management decisions.**

Please use this information responsibly:
Packet information is an incomplete snapshot of an ongoing discussion and changing conditions. Packet information should not be reproduced for any purpose other than to describe Working Group meeting discussions.

Misuse of Packet information can contribute to misunderstandings that can **cause harm to salmon users** and potentially **damage salmon resources**.

Ask Questions: ADF&G staff will be happy to answer biology and management questions. Please call **1-855-933-2433** to reach ADF&G Kuskokwim Area staff.

Attend Meetings: Each Working Group meeting is announced at least 48 hours prior to time and date of meeting. In addition, each meeting is recorded. Recordings can be found here: **http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareakuskokwim.kswg**

Viewing the information packet while listening to meetings/recordings will provide a better understanding of the information presented in this packet.

Thank you,
Nick Smith and Ben Gray
Working Group Coordinators

ONC
ORUTSARARMIUT NATIVE COUNCIL
ONC Fisheries 545-6001

Orutsararmiut Native Council (ONC) Inseason Harvest Monitoring Weekly Report

July 14, 2021

For the July 9, 2021 opener, ONC fisheries crew visited 23 Bethel area fish camps. 15 fish camps were actively fishing and surveyed. ONC fisheries crew also gathered information from 61 fishing trips at the Bethel boat harbor with a combined total of 76 surveys conducted on July 9th.

Comments from the July 9th opener and End of Season community feedback are as follows:

Two people were unhappy and confused about the June 28th opener. Two more people said it was good fishing weather. There are a few people asking where the chum salmon are and why they are less abundant. Someone would like to use a bigger mesh size to catch the bigger fish. Another said one week between openers is too long when there is good weather. A couple people suggested opening up the river while another wanted the river to be opened from the beginning to eliminate combat fishing, saying the people would be out at different times and only catching the amount they need. A different suggestion was to bring back set net opportunities on the weekends with one opener during the week. Also one fisher did not like the idea of people having to pull their set nets out at 6PM only having to set it back out at midnight. One person thinks the opener was not long enough. People would like to see more openings in the month of June before it starts raining and there is more sunshine to prevent the fish from spoiling. One person followed that with, “In the beginning of June is when the males come up, but later in June is when the females come, allow people to fish more at the beginning of June.” A fisher said it was too wet and people have been complaining about the weather ruining their fish. A person would like to see something done about the trawlers out in the ocean and two people would like to see more law enforcement out on the river making sure only residents of Bethel are fishing. One fisherman wanted all weirs removed from the Kuskokwim river because elders have stated when the fish hit the weir they turn around and would appreciate it if management could listen more to the elders advice. One person noticed every year the sockeye salmon return in great quantities. One person was hopeful everyone was able to get the amount of fish they needed. To end on a good note, someone said keep up the good work and thank you for allowing us to fish.

At the end of the season, we asked fish camp users, “Have you or the Bethel community benefited from being involved with the ONC inseason harvest monitoring program?” We then followed up with identifying how they have benefited or if they have not benefited, what are ways our program can be more beneficial and helpful to them in the future. This season, thirteen of the respondents (n=13) benefited from being involved with the ONC inseason harvest monitoring program. Fishers benefited from the fish distribution program, the financial incentive associated with the Chinook salmon age-sex-length sampling program, being more informed of fishing opportunities, tracking harvest numbers and by having their comments and concerns

shared at the fisheries management meetings. Those who did not benefit (n=3) would like to see more fishing in the beginning of June when the weather is good, one person said the work were doing is extra in a good way but saw no benefit to them, and the last person would like to see more information posted on websites and social media. Some fish camps were not able to be contacted on July 9, 2021 for their final comments, but ONC staff will follow up with them for their final comments before the end of July.

Table 1. Average fish harvest, net length, and mesh size range surveyed at the Bethel area fish camps and Bethel boat harbor from the July 9, 2021 fishing opportunity.

Data Source	Number of Surveys Conducted*	Average Chinook Salmon Harvest	Average Chum Salmon Harvest	Average Sockeye Salmon Harvest	Average other harvest	Net Length Range (ft.)	Mesh Size Range (in.)
Bethel Boat Harbor	61	2.9	3.3	28.5	<1	25-150	4-6
Bethel Fish Camps	15	3.4	5	37.8	<1	50-150	3.5-6

*4 of the surveys collected at Bethel boat harbor and 1 of the surveys collected at Bethel area fish camps were not used to produce harvest estimates because the fishing was done outside of the area used in the harvest estimates program (stratum O). Some fish camps and fishers at the harbor had multiple surveys conducted due to conducting multiple fishing trips.

Table 2. Fishing progress data from Bethel area fish camps from July 9th.

Progress	Not at all	Under half	Halfway	Over Half	Goal Met
King Salmon	0%	22.22%	22.22%	0%	55.56%
Chum Salmon	44.44%	22.22%	11.11%	0%	22.22%
Sockeye Salmon	0%	33.33%	0%	22.22%	44.44%

Table 3. Fishing goals for 2021 fishing season. Participants were asked how their goals this year have changed compared to last year (2020). These harvest goals have been modified since the restrictions started. Many goals change from year to year due to the people's ability to fish and the corresponding weather.

Level of Change of Goal from 2020 to 2021	Chinook Goal	Sockeye Goal	Chum Goal
Same	30	32	36
Increased	14	13	11
Decreased	5	4	1

Reasons for changing goals from 2020 to 2021 included:

Fish camps that indicated the same goal as 2020 for all three species did not give any comments or reason to why their goals are still the same. Subsistence users that increased their Chinook salmon goal indicated they want more because there weren't as many openers last year, didn't catch as many last year, have a big family to feed, weren't able to fish last year, and they're good for strips. The increase in sockeye and chum goals from last year include they didn't get enough chums last year and wanting more for "half dried", target more reds because of lower abundance of other two species, and ran out of reds from last year. A decrease in harvest goals for all species including their children had left Bethel so less mouths to feed and some had fish leftover from last summer. Other reasons for the amount of reds they harvest depends on the amount of Chinook that they were able to harvest. A fish camp stated that they caught lots of Chinook and sockeye but low numbers of chum. Some camps don't harvest chums and focus more on sockeye. Lastly, the amount of fishers on the river make it hard to catch the amount that they need and everyone always wants more fish.

Fish Distribution

From the afternoon of July 6, 2021 through the morning of July 13, 2021, ONC fisheries crew delivered 56 Chinook salmon to Bethel area Elders, widowed, and disabled. These fish were caught by the Alaska Department of Fish & Game Bethel Test Fishery.

Kuskokwim River In-season Harvest Interview Data Summary

7/9/2021 Subsistence Harvest Opportunity (Drift & Set Nets)

Opportunity Time Period: 6:00 AM – 6:00 PM (12 Hours)

Contact Person(s): Kevin Whitworth (kevinwhitworth@kritfc.org), Katie Russell (krussell@nativecouncil.org)

Special Action #: 3-KS-03-21

Special Action: https://www.fws.gov/uploadedFiles/3-KS-03-21_Final_7.1.2021.pdf?fbclid=IwAR2tAlnoL7tVqfm3s40yFia6NXPVI9yalYMCrY6-fm4BGfZDt98c4e7a8Lg

NOTE: *Aerial surveys could not be flown due to inclement weather. Without these counts, no effort or harvest estimates were generated. Instead, this document presents interview data summaries.*

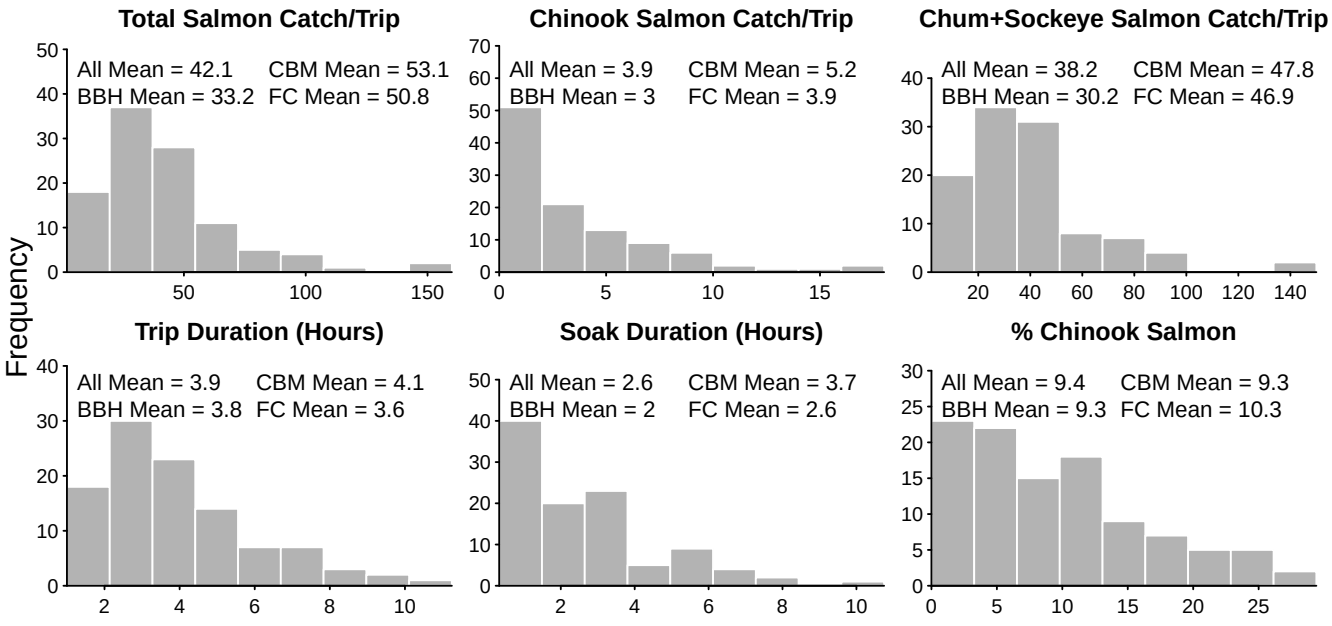
Data Sources

TABLE 1. The number and percent of fisher interviews conducted by location and organization.

Data Source	Interviews	Percent
Bethel Boat Harbor (ONC)	57	53%
Other Villages (BSFA/KRITFC)	36	34%
Bethel Area Fish Camps (ONC)	14	13%
Total	**107**	**100%**

Of these interviews, **106** were from drift nets and **1** were from set nets.

FIGURE 1. Distributions of relevant quantities from all completed trips using drift nets. The mean quantity by primary data source is shown in the top right; BBH = Bethel Boat Harbor (ONC), CBM = Other Villages (BSFA/KRITFC), FC = Bethel Area Fish Camps (ONC).



Appendix: Detailed Interview Summaries

Column Meanings

- **Area**: the area of the river the trip occurred in
- **N**: the number of interviews with usable information in each area
- **Min**: the minimum value among trips in each area
- **25%**: the value that 25% of trips fell below in each area
- **Mean**: the average value across trips in each area
- **75%**: the value that 75% of trips fell below in each area
- **Max**: the maximum value among trips in each area

Information is for drift net trips only.

TABLE A1. Summary of drift net catch rate of Chinook salmon by fishing area (salmon per 150 feet of net per hour).

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ⟷ Johnson R.	2	0.4	0.7	1	1.2	1.5
Johnson R. ⟷ Napaskiak	30	0	0.6	1.8	2.4	8
Napaskiak ⟷ Akiachak	71	0	0.7	2.2	3	18
Akiachak ⟷ Akiak	2	0	1	2	3	4
All	**105**	**0**	**0.6**	**2.1**	**2.5**	**18**

TABLE A2. Summary of drift net catch per trip of Chinook salmon by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ⟷ Johnson R.	2	1	1	2	2	2
Johnson R. ⟷ Napaskiak	30	0	1	5	8	18
Napaskiak ⟷ Akiachak	72	0	1	3	5	12
Akiachak ⟷ Akiak	2	0	1	2	2	3
All	**106**	**0**	**1**	**4**	**6**	**18**

TABLE A3. Summary of drift net catch rate of chum+sockeye salmon by fishing area (salmon per 150 feet of net per hour).

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ⟷ Johnson R.	2	7.8	17.1	26.4	35.7	45
Johnson R. ⟷ Napaskiak	30	4.1	8.7	18.1	19.1	63.4
Napaskiak ⟷ Akiachak	71	2.4	12	24.6	27	104
Akiachak ⟷ Akiak	2	52	68.3	84.7	101	117.3
All	**105**	**2.4**	**10.8**	**23.9**	**26.3**	**117.3**

TABLE A4. Summary of drift net catch per trip of chum+sockeye salmon by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ⟷ Johnson R.	2	30	31	32	34	35
Johnson R. ⟷ Napaskiak	30	19	32	48	70	97
Napaskiak ⟷ Akiachak	72	2	18	33	40	150
Akiachak ⟷ Akiak	2	39	51	64	76	88
All	**106**	**2**	**21**	**38**	**46**	**150**

TABLE A5. Summary of drift net percent composition of Chinook salmon by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ⟷ Johnson R.	2	3%	4%	4%	5%	5%
Johnson R. ⟷ Napaskiak	30	0%	5%	9%	13%	24%
Napaskiak ⟷ Akiachak	72	0%	4%	10%	16%	29%
Akiachak ⟷ Akiak	2	0%	2%	4%	5%	7%
All	**106**	**0%**	**4%**	**9%**	**14%**	**29%**

TABLE A6. Summary of drift net active fishing hours by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ⟷ Johnson R.	2	1	1.3	1.6	1.9	2.2
Johnson R. ⟷ Napaskiak	30	1	2.2	3.8	5	8.2
Napaskiak ⟷ Akiachak	69	0.3	1	2.2	2.9	10.8
Akiachak ⟷ Akiak	2	0.8	0.8	0.8	0.8	0.8
All	**103**	**0.3**	**1**	**2.6**	**3.2**	**10.8**

TABLE A7. Summary of drift net total trip duration by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ⟷ Johnson R.	2	2.2	2.9	3.6	4.3	5
Johnson R. ⟷ Napaskiak	30	1.5	3.4	4.9	6.8	9.1
Napaskiak ⟷ Akiachak	72	1	2.3	3.5	4.4	11.2
Akiachak ⟷ Akiak	2	1	1	1	1	1
All	**106**	**1**	**2.5**	**3.9**	**5**	**11.2**

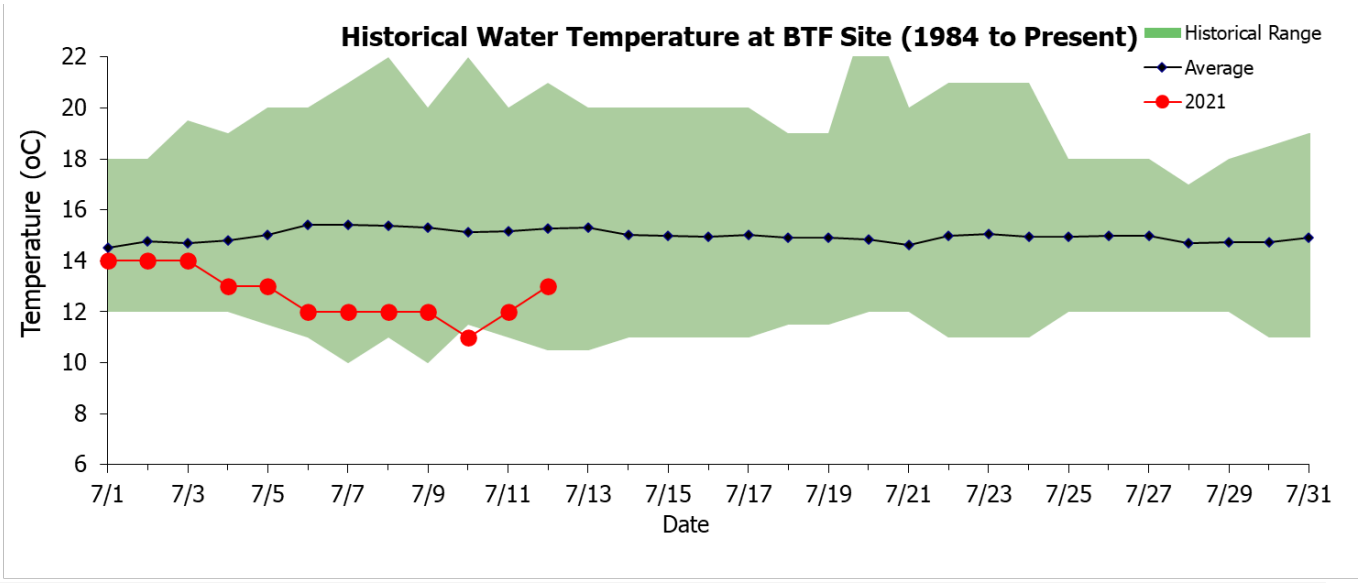
TABLE A8. Summary of drift net trip start time by fishing area.

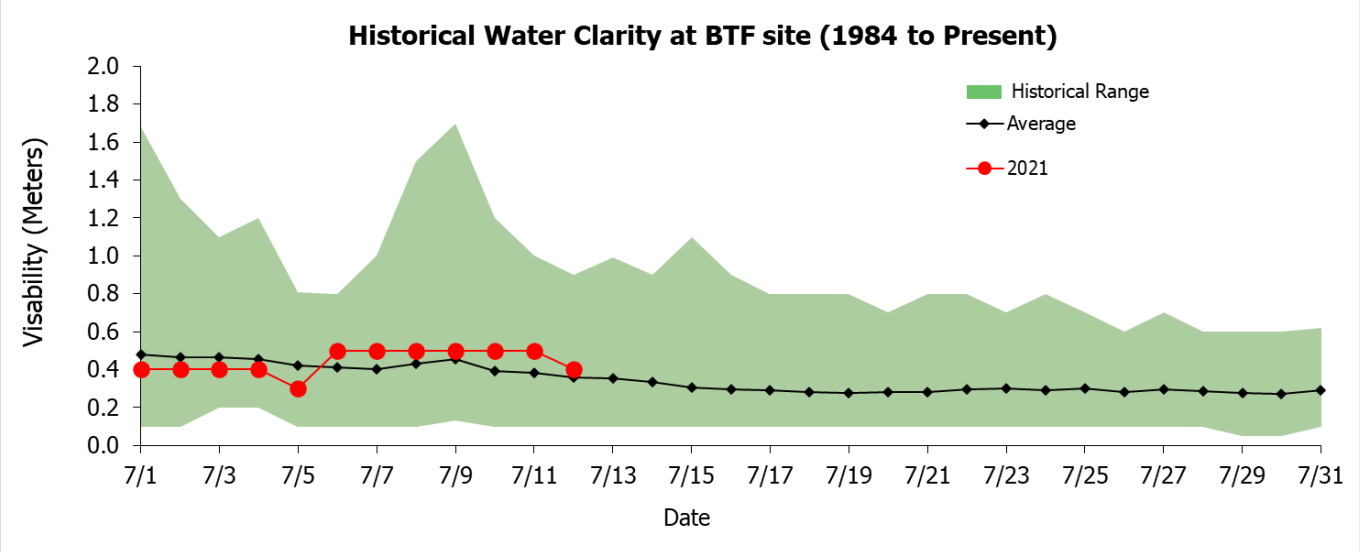
Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ⟷ Johnson R.	2	1:45 PM	2:00 PM	2:15 PM	2:30 PM	2:45 PM
Johnson R. ⟷ Napaskiak	30	6:00 AM	7:00 AM	9:29 AM	11:45 AM	4:30 PM
Napaskiak ⟷ Akiachak	72	6:00 AM	9:00 AM	11:11 AM	1:30 PM	4:15 PM
Akiachak ⟷ Akiak	2	6:30 AM	7:52 AM	9:15 AM	10:37 AM	12:00 PM
All	**106**	**6:00 AM**	**8:30 AM**	**10:43 AM**	**1:00 PM**	**4:30 PM**

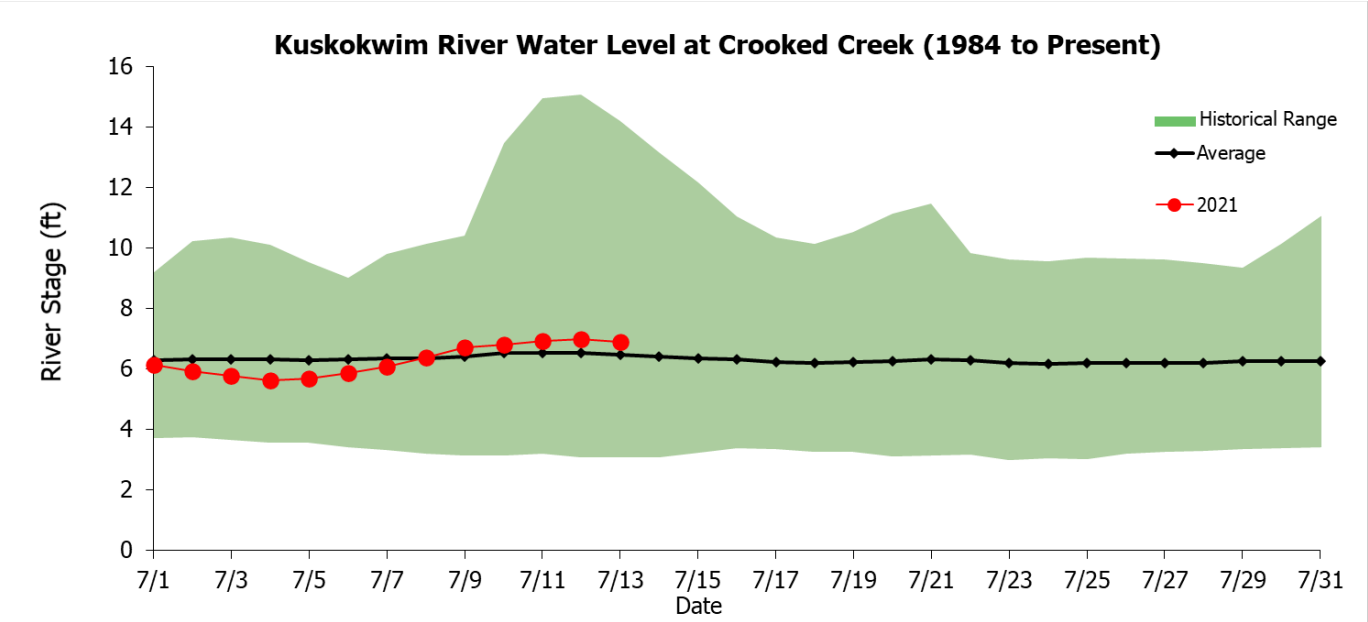
TABLE A9. Summary of drift net trip end time by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ⟷ Johnson R.	2	5:00 PM	5:26 PM	5:53 PM	6:20 PM	6:47 PM
Johnson R. ⟷ Napaskiak	30	10:00 AM	12:03 PM	2:23 PM	4:00 PM	6:50 PM
Napaskiak ⟷ Akiachak	72	9:00 AM	1:20 PM	2:44 PM	4:48 PM	6:43 PM
Akiachak ⟷ Akiak	2	7:30 AM	8:52 AM	10:15 AM	11:37 AM	1:00 PM
All	**106**	**7:30 AM**	**12:53 PM**	**2:36 PM**	**4:44 PM**	**6:50 PM**

Weather summary at BTF as of 7/5







Kuskokwim River Salmon Assessment Update
7/12/2021

This document presents the key assessment information considered by managers in-season. The production of this document is a collaborative effort between USFWS and ADF&G. **All data and analyses contained are preliminary and are subject to change, so please make interpretations carefully**.

If you have any questions about the content, please contact Spencer Rearden (USFWS; spencer_rearden@fws.gov) or Sean Larson (ADF&G; sean.larson@alaska.gov). Major credit for the development of this data packet belongs to Benjamin Staton.

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Abbreviations:

- BTF: Bethel Test Fishery
- ATF: Aniak Test Fishery
- CPUE: Catch-per-unit-effort
- EOS: End-of-Season
- ADF&G: Alaska Department of Fish and Game
- KRITFC: Kuskokwim River Inter-tribal Fisheries Commission
- ONC: Orutsaramiut Native Council
- USFWS: United States Fish and Wildlife Service
- YDNWR: Yukon Delta National Wildlife Refuge

To view escapement information, please visit the ADF&G Kuskokwim River Fish Counts page: * http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareakuskokwim.salmon#fishcounts

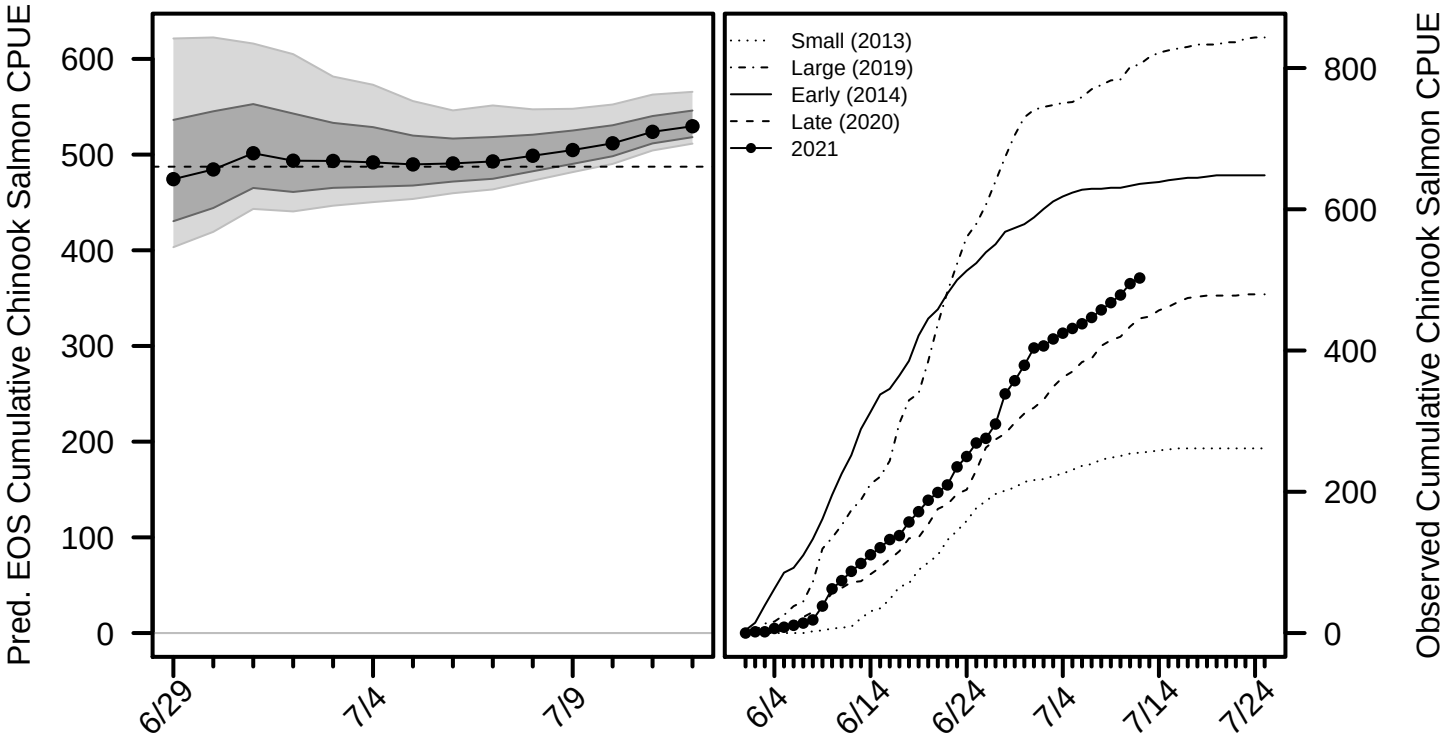
For the most up-to-date information regarding fishing opportunities please visit:

- **USFWS:** https://www.fws.gov/refuge/yukon_delta/wildlife_and_habitat/dailyupdate.html
- **ADF&G:** http://www.adfg.alaska.gov/index.cfm?adfg=cfnews.main

Chinook Salmon BTF Summary (7/12)

- The BTF daily CPUE was **8**.
- The BTF cumulative CPUE is now **503**.
- **38%** years since 2008 fell below this cumulative CPUE on this date.
- **95%** of the run is complete based on historical average run timing.
- **92% - 97%** of the run is complete based the central 50% of all historical run timing scenarios.
- **1% - 3%** of the run is expected to pass Bethel in the next 5 days.
- Over the last 3 days, Chinook salmon made up **10%** of the BTF catches, compared to **3%** on average.

Chinook Salmon Figure 1. *Left*: predicted cumulative EOS BTF CPUE according to various run timing scenarios: central 80% (light grey band), central 50% (dark grey band), and the historical median (circles). The dashed horizontal line shows the EOS value from 2020. *Right*: The cumulative BTF CPUE from 2021 plotted along with four previous years intended to represent a range of early/late and small/large index values.



For more detailed information, see the ***Chinook salmon appendix*** *at the end of this document.*

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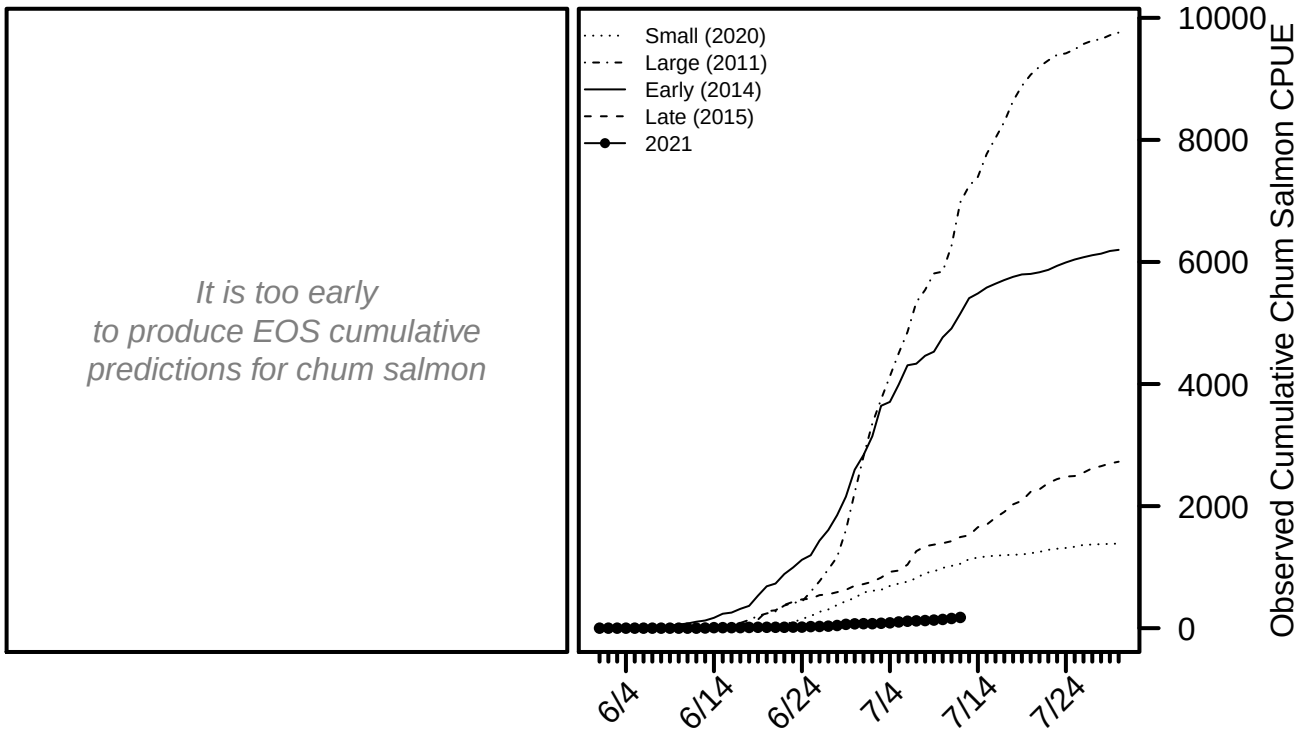
Chum Salmon BTF Summary (7/12)

- The BTF daily CPUE was **17**.
- The BTF cumulative CPUE is now **175**.
- **0%** years since 2008 fell below this cumulative CPUE on this date.
- **74%** of the run is complete based on historical average run timing.
- **65% - 83%** of the run is complete based the central 50% of all historical run timing scenarios.
- **8% - 13%** of the run is expected to pass Bethel in the next 5 days.
- Over the last 3 days, chum salmon made up **12%** of the BTF catches, compared to **79%** on average.

Chum Salmon Figure 1. *Left*: will show predicted cumulative EOS BTF CPUE according to various run timing scenarios when enough data have been collected. *Right*: The cumulative BTF CPUE from 2021 plotted along with four previous years intended to represent a range of early/late and small/large index values.



For more detailed information, see the ***chum salmon appendix*** *at the end of this document.*

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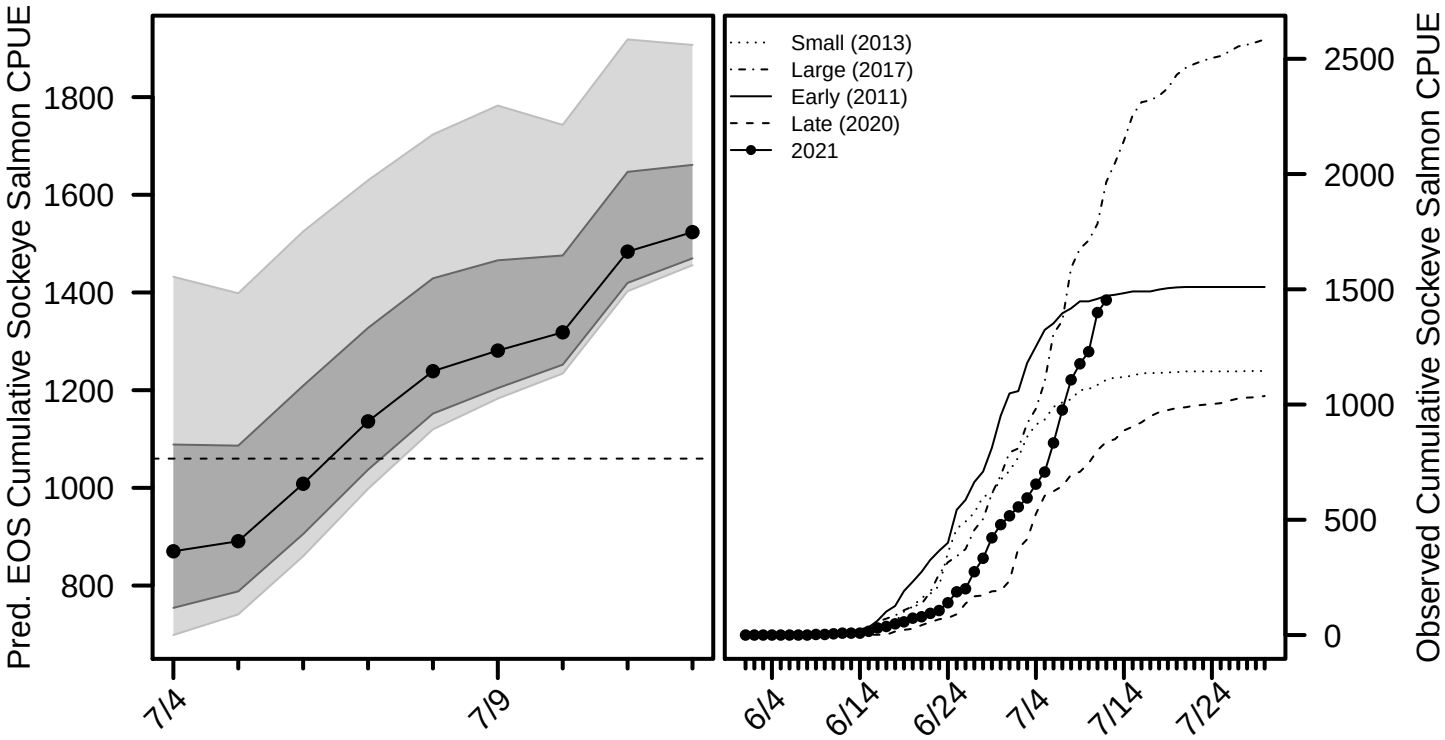
Sockeye Salmon BTF Summary (7/12)

- The BTF daily CPUE was **54**.
- The BTF cumulative CPUE is now **1,453**.
- **46%** years since 2008 fell below this cumulative CPUE on this date.
- **95%** of the run is complete based on historical average run timing.
- **88% - 99%** of the run is complete based the central 50% of all historical run timing scenarios.
- **1% - 7%** of the run is expected to pass Bethel in the next 5 days.
- Over the last 3 days, sockeye salmon made up **77%** of the BTF catches, compared to **17%** on average.

Sockeye Salmon Figure 1. *Left*: predicted cumulative EOS BTF CPUE according to various run timing scenarios: central 80% (light grey band), central 50% (dark grey band), and the historical median (circles). The dashed horizontal line shows the EOS value from 2020. *Right*: The cumulative BTF CPUE from 2021 plotted along with four previous years intended to represent a range of early/late and small/large index values.



For more detailed information, see the ***sockeye salmon appendix*** *at the end of this document.*

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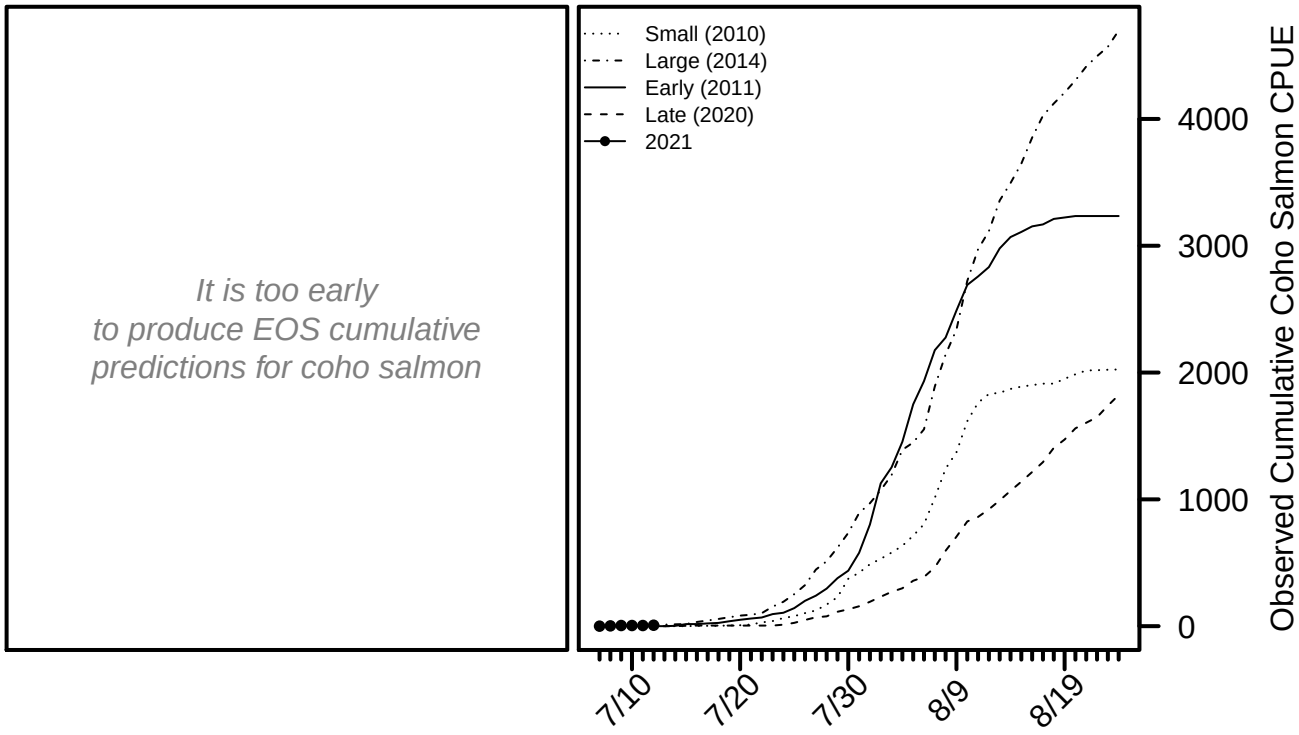
Coho Salmon BTF Summary (7/12)

- The BTF daily CPUE was **2**.
- The BTF cumulative CPUE is now **7**.
- **85%** years since 2008 fell below this cumulative CPUE on this date.
- **<1%** of the run is complete based on historical average run timing.
- **<1% - <1%** of the run is complete based the central 50% of all historical run timing scenarios.
- **0% - 1%** of the run is expected to pass Bethel in the next 5 days.
- Over the last 3 days, coho salmon made up **1%** of the BTF catches, compared to **0%** on average.

Coho Salmon Figure 1. *Left*: will show predicted cumulative EOS BTF CPUE according to various run timing scenarios when enough data have been collected. *Right*: The cumulative BTF CPUE from 2021 plotted along with four previous years intended to represent a range of early/late and small/large index values.



For more detailed information, see the ***coho salmon appendix*** *at the end of this document.*

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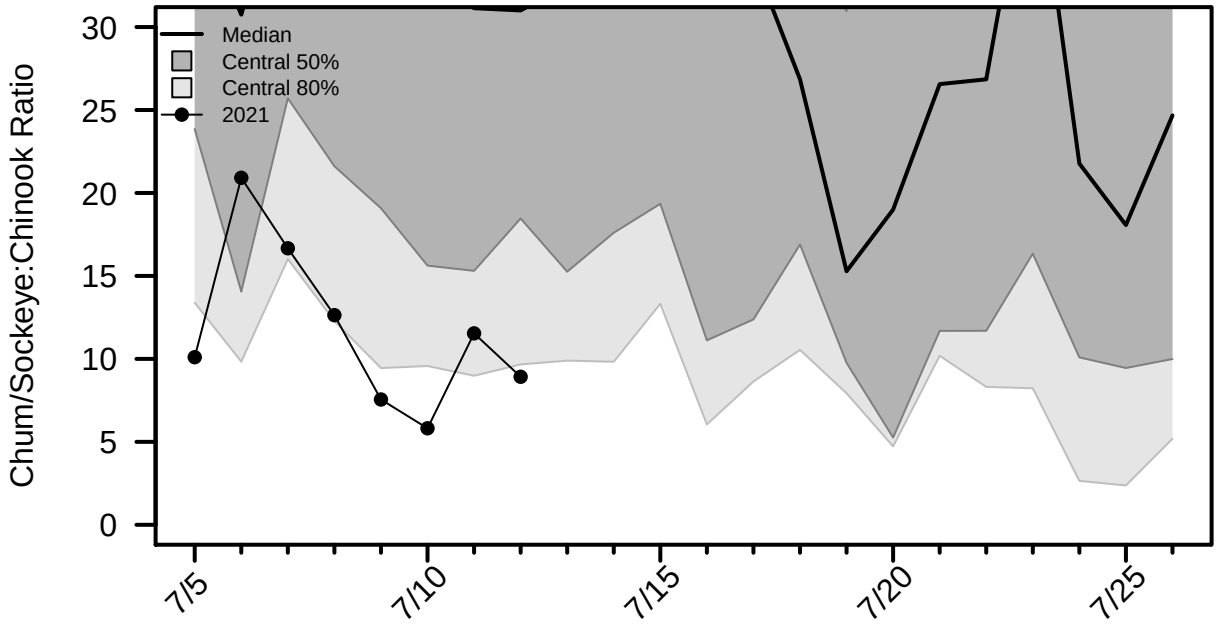
Chum/Sockeye:Chinook Salmon Ratio

This ratio is calculated by dividing the total number of chum and sockeye salmon counted by the number of Chinook salmon counted by a project each day. A value of zero indicates Chinook salmon were counted that day, but not chum or sockeye salmon. A missing value on a day the project operated indicates no Chinook salmon were counted that day.

Species Ratio Figure 1. Time series of the species ratio with historical quantiles shown as grey regions and the ratio time series for 2021 shown with points connected by lines.



Ratio Table 1. A subset of the species ratios, including the ratios from the ATF.

Date	2021 BTF	BTF Median	BTF Lower 10%	BTF Upper 10%	2021 ATF
7/9	7.55	38.92	9.45	197.6	0.35
7/10	5.82	32.86	9.57	102.4	0
7/11	11.54	31.14	8.98	117.6	–
7/12	**8.92**	**31**	**9.67**	**141.6**	**0.98**
7/13		32.55	9.89	158.5	
7/14		31.58	9.83	191.2	
7/15		44.61	13.32	118.3	

Ratio Table 2. The percent of previous years in which a given species ratio was exceeded at least once before a certain day in the BTF.

Date	Ratio > 1	Ratio > 3	Ratio > 5	Ratio > 10	Ratio > 20
7/9	100%	100%	100%	100%	97%
7/10	100%	100%	100%	100%	97%
7/11	100%	100%	100%	100%	97%
7/12	**100%**	**100%**	**100%**	**100%**	**97%**
7/13	100%	100%	100%	100%	100%
7/14	100%	100%	100%	100%	100%
7/15	100%	100%	100%	100%	100%

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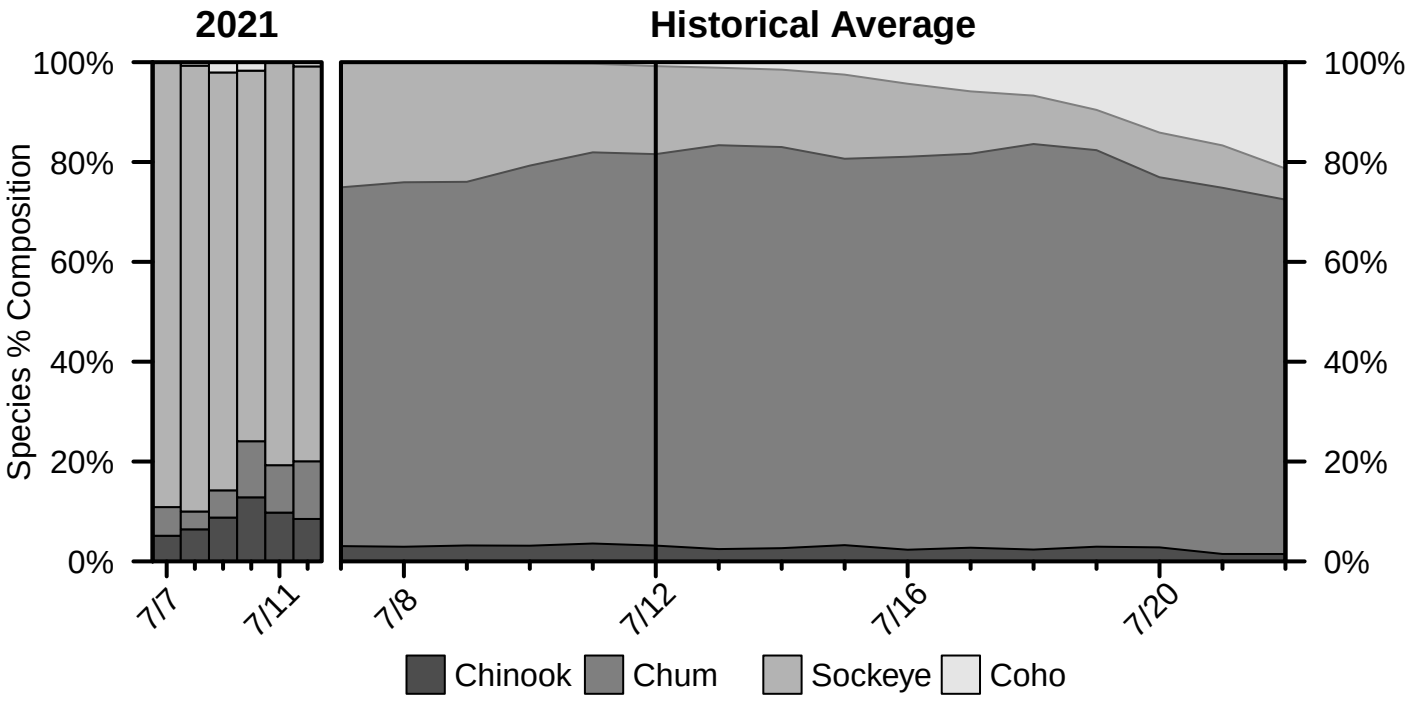
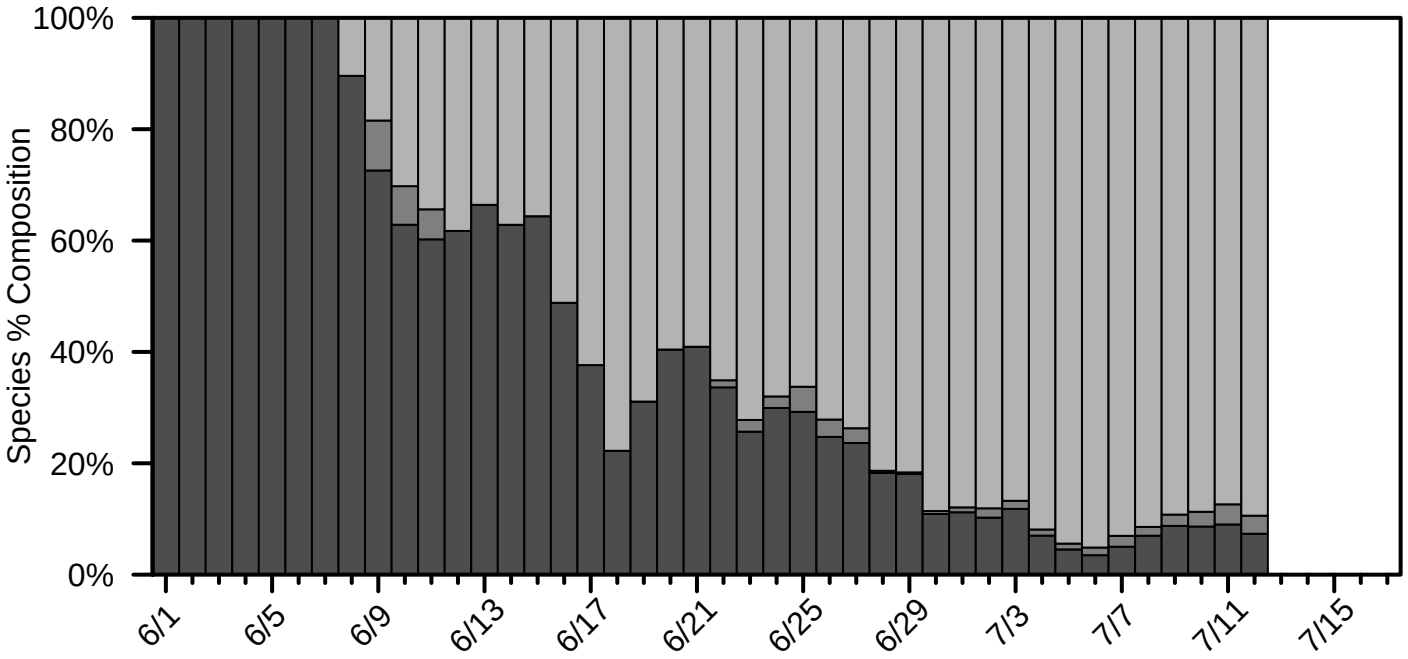
Percent Composition by Salmon Species

Percent Composition Figure 1. Species percent composition in the BTF from 2021 and based on the historical average. The composition presented on each day represents the average composition over the past 2 days.



Species Composition Figure 2. Species percent composition from the sonar estimates from 2021 (salmon species only, excluding pink salmon). The composition presented on each day represents the average composition over the past 3 days.



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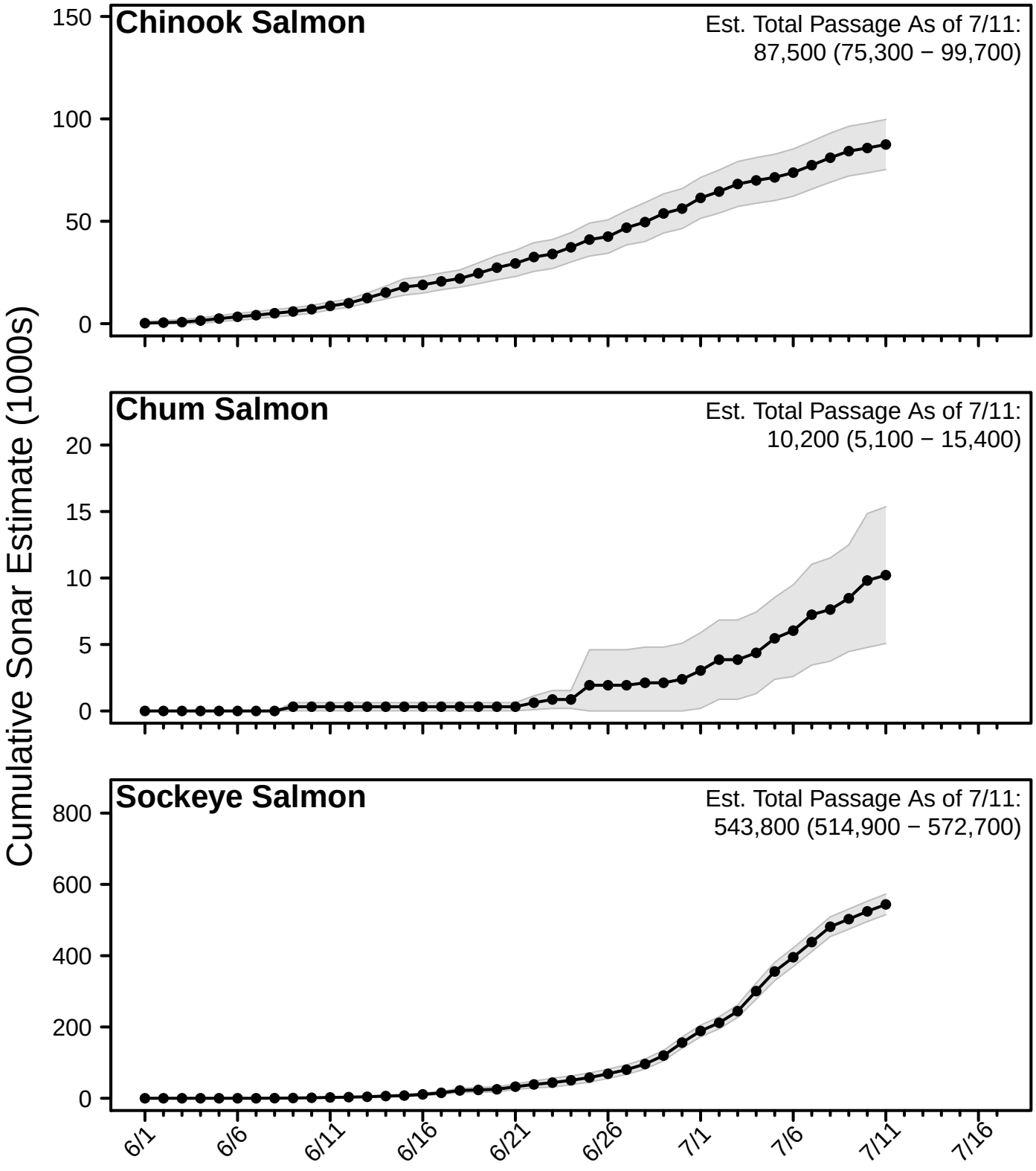
Sonar Passage Estimates

Sonar Figure 1. Cumulative estimates of salmon passage from the 2021 sonar operation through the last complete reporting day. Grey bands show the 95% confidence intervals on each complete reporting day.



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In-Season Harvest Estimates

In-season harvest estimates are produced by combining counts of total fishing effort (usually obtained via aerial surveys performed by USFWS) and on-the-ground fisher interview information using statistically-rigorous methodology. The data collection efforts to produce these estimates is a highly collaborative effort, involving staff from KRITFC and ONC, with harvest data collected by community based harvest monitors and ONC. Fishing periods from 6/2-6/9 were set net only opportunities. More detailed information can be found on the KRITFC website (https://www.kuskosalmon.org/2021-fishing-info).

In the tables below, CV stands for coefficient of variation, which is a commonly-used measure of uncertainty in the estimate (larger CV values are more uncertain).

Harvest Table 1. Estimated total Chinook salmon harvest within the YDNWR, excluding the section between Akiak and Aniak.

Date	Daily Harvest	Cumulative Harvest	Daily CV	Cumulative CV
6/2	30	30	0.23	0.23
6/5	310	340	0.47	0.43
6/9	480	820	0.19	0.21
6/12	3,220	4,040	0.06	0.06
6/15	6,780	10,820	0.06	0.04
6/19	6,190	17,010	0.08	0.04
6/28	2,980	19,990	0.06	0.04
7/2	1,330	21,320	0.09	0.03

Harvest Table 2. Estimated total chum salmon harvest within the YDNWR, excluding the section between Akiak and Aniak.

Date	Daily Harvest	Cumulative Harvest	Daily CV	Cumulative CV
6/2	0	0	0	0
6/5	20	20	0.65	0.65
6/9	0	20	0	0.65
6/12	70	90	0.18	0.2
6/15	350	440	0.15	0.13
6/19	990	1,430	0.19	0.14
6/28	960	2,390	0.1	0.09
7/2	1,150	3,540	0.15	0.08

Harvest Table 3. Estimated total sockeye salmon harvest within the YDNWR, excluding the section between Akiak and Aniak.

Date	Daily Harvest	Cumulative Harvest	Daily CV	Cumulative CV
6/2	0	0	0	0
6/5	50	50	0.44	0.44
6/9	20	70	0.43	0.34
6/12	340	410	0.16	0.14
6/15	1,400	1,810	0.11	0.09
6/19	2,400	4,210	0.07	0.06
6/28	6,880	11,090	0.07	0.05
7/2	8,990	20,080	0.07	0.04

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Chinook Salmon Appendix

Chinook Salmon Table A1. Cumulative CPUE from the BTF.

Date	2021	2020	2019	2018	2017	5-Yr Avg.	2008 - 2020 Avg.
7/9	468	415	782	606	311	545	518
7/10	479	420	784	619	312	552	522
7/11	495	434	801	624	321	563	529
7/12	**503**	**445**	**805**	**627**	**328**	**569**	**534**
7/13		448	815	628	331	573	538
7/14		457	822	633	338	579	541
7/15		462	825	637	344	584	544
EOS		487	848	667	374	613	568

Chinook Salmon Table A2. Cumulative CPUE from the ATF.

Date	2021	2020	2019	2018	2017
7/9	1,835	1,729	1,691	760	6,143
7/10	1,863	1,780	1,691	760	6,308
7/11	1,863	1,796	1,691	760	6,387
7/12	**1,879**	**1,796**	**1,691**	**767**	**6,437**
7/13		1,831	1,691	804	6,473
7/14		1,856	1,691	812	6,500
7/15		1,874	1,691	820	6,508
EOS		1,874	1,691	820	6,508

Chinook Salmon Table A3. Percent of run complete according to various historical run timing scenarios from the BTF.

Timing	Midpoint	7/12 Cumulative %
Earliest	6/14	99%
Early 10%	6/18	98%
Early 25%	6/21	97%
Median	6/22	95%
Late 25%	6/25	92%
Late 10%	6/26	89%
Latest	7/3	85%

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Chum Salmon Appendix

Chum Salmon Table A1. Cumulative CPUE from the BTF.

Date	2021	2020	2019	2018	2017	5-Yr Avg.	2008 - 2020 Avg.
7/9	132	930	2,157	3,937	4,597	2,671	3,510
7/10	143	987	2,188	4,492	4,942	2,900	3,726
7/11	158	1,020	2,421	4,854	5,187	3,118	3,945
7/12	**175**	**1,055**	**2,707**	**5,525**	**5,443**	**3,377**	**4,171**
7/13		1,131	2,761	5,878	5,515	3,514	4,342
7/14		1,156	2,917	6,105	5,641	3,652	4,533
7/15		1,176	3,115	6,412	5,723	3,812	4,717
EOS		1,442	6,427	8,212	6,785	5,352	6,256

Chum Salmon Table A2. Cumulative CPUE from the ATF.

Date	2021	2020	2019	2018	2017
7/9	239	1,725	1,051	6,098	8,256
7/10	239	1,853	1,051	6,538	9,240
7/11	239	1,995	1,051	6,816	10,130
7/12	**255**	**2,073**	**1,051**	**7,618**	**10,746**
7/13		2,291	1,051	8,729	11,252
7/14		2,422	1,051	9,297	11,391
7/15		2,611	1,051	10,277	11,588
EOS		2,611	1,051	10,277	11,588

Chum Salmon Table A3. Percent of run complete according to various historical run timing scenarios from the BTF.

Timing	Midpoint	7/12 Cumulative %
Earliest	6/23	94%
Early 10%	7/1	89%
Early 25%	7/3	83%
Median	7/6	74%
Late 25%	7/8	64%
Late 10%	7/11	54%
Latest	7/15	44%

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Sockeye Salmon Appendix

Sockeye Salmon Table A1. Cumulative CPUE from the BTF.

Date	2021	2020	2019	2018	2017	5-Yr Avg.	2008 - 2020 Avg.
7/9	1,177	708	1,638	1,347	1,676	1,322	1,286
7/10	1,229	745	1,663	1,423	1,712	1,392	1,332
7/11	1,399	801	1,735	1,491	1,784	1,456	1,375
7/12	**1,453**	**838**	**1,826**	**1,555**	**1,966**	**1,547**	**1,422**
7/13		850	1,895	1,596	2,049	1,599	1,450
7/14		887	1,960	1,656	2,144	1,664	1,483
7/15		904	2,020	1,689	2,256	1,715	1,526
EOS		1,060	2,685	2,275	2,690	2,234	1,779

Sockeye Salmon Table A2. Cumulative CPUE from the ATF.

Date	2021	2020	2019	2018	2017
7/9	233	100	33	68	286
7/10	233	100	33	68	304
7/11	241	105	33	68	366
7/12	**241**	**131**	**33**	**75**	**374**
7/13		155	33	75	374
7/14		179	33	75	393
7/15		209	33	75	393
EOS		209	33	75	393

Sockeye Salmon Table A3. Percent of run complete according to various historical run timing scenarios from the BTF.

Timing	Midpoint	7/12 Cumulative %
Earliest	6/22	100%
Early 10%	6/24	100%
Early 25%	6/27	99%
Median	6/29	95%
Late 25%	7/2	87%
Late 10%	7/6	76%
Latest	7/10	61%

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Coho Salmon Appendix

Coho Salmon Table A1. Cumulative CPUE from the BTF.

Date	2021	2020	2019	2018	2017	5-Yr Avg.	2008 - 2020 Avg.
7/9	5	0	0	0	0	0	1
7/10	5	0	0	0	0	0	1
7/11	5	0	0	0	0	0	2
7/12	**7**	**0**	**0**	**0**	**0**	**0**	**2**
7/13		0	0	0	0	1	3
7/14		0	2	0	0	1	4
7/15		3	4	0	2	3	8
EOS		1,822	1,801	901	3,245	2,260	3,017

Coho Salmon Table A2. Percent of run complete according to various historical run timing scenarios from the BTF.

Timing	Midpoint	7/12 Cumulative %
Earliest	7/29	<1%
Early 10%	8/4	<1%
Early 25%	8/6	<1%
Median	8/8	<1%
Late 25%	8/11	<1%
Late 10%	8/13	<1%
Latest	8/15	<1%

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Bering Sea Bycatch Update

Bycatch updated through July 8, 2021

- King salmon bycatch to date: **11,550** (all stocks)
- Non-king salmon bycatch to date: **32,179** (all stocks)

Important: Kuskokwim River fish are a small component of the total bycatch.

Background Information

- Bycatch occurs in the Bering Sea and Aleutian Island (BSAI) groundfish fishery, which is managed by the National Marine Fisheries Service and is one of the most extensively monitored fisheries in the U.S.
- The 2011–2020[1] average king bycatch of all stocks is ~23,000
- The impact of bycatch on adult Kuskokwim River King salmon runs is small compared to other sources of mortality and does not explain the magnitude of declines we have observed on the Kuskokwim River.

  We think this is true because:

  - The Kuskokwim River is only one of many stocks that make up the total bycatch (other stocks range from California, Alaska, to Russia)
  - The Kuskokwim River is one part of the Western Alaska stock group[2], which makes up about 45%–70% of the total annual bycatch.
  - Most of the bycatch is made up of juvenile fish, many of which would not have survived to adulthood due to natural mortality[3].
  - Of the fish that would have survived in they had not been caught, only subset of them would have returned this year because salmon spend a varying amount of time in ocean.

Helpful Links

Bycatch numbers are reported by the National Marine Fisheries Service, available at: https://alaskafisheries.noaa.gov/fisheries-catch-landings?tid=286

Bycatch updates are reported by the North Pacific Fisheries Management Council, available at: https://www.npfmc.org/bsai-salmon-bycatch/

[1] 2011–2020 is the recent 10-year average. In 2011, amendments to Fishery Management Plans were enacted to reduce King salmon bycatch in the BSAI Pollok fishery.
[2] The Western Alaska group includes Bristol Bay, Kuskokwim, Yukon, and Norton Sound stocks.
[3] It is estimated that about 90% of all salmon that enter the marine environment die of natural causes.