

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: 07/10/2019

Time: 10:00am

Place: ADF&G Office, Bethel

Time Called to Order:

Chair: Alissa N. Rogers

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

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

INTRODUCTIONS:

INVOCATION:

APPROVAL OF AGENDA: *the agenda may be amended at this time.*

APPROVAL OF MINUTES: *Optional. ADF&G does not prepare official meeting minutes.*

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
- Overview of Kuskokwim River salmon run assessment:
 - a. Test Fisheries (Bethel and Aniak):
 - b. Sonar/Weirs/Aerial Surveys/Other:
 - c. Subsistence Division Project Update:
- Commercial Catch Report: N/A
- Processor Report: N/A
- Sport Fish Report:
- 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=commercialbyarea_kuskokwim.kswg

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

Thank you.
Lily Reichard
Working Group Coordinator

Review of Bethel Test Fishery King CPUE, catchability change, and relationship to total run abundance.

KRSMWG 7/10/2019

Nicholas Smith ADF&G Kuskokwim Area Research Biologist

At the July 3rd meeting of the Kuskokwim River Salmon Management Working Group (KRSMWG), several members expressed interest in reviewing all Bethel Test Fishery (BTF) CPUE data and their relationship to the total annual run of Kuskokwim River King salmon. A concern was raised that the large 2019 BTF CPUE could be misinterpreted as a large King salmon run. The ADF&G research biologists agree with that concern. ADF&G has reminded users of BTF data that the project provides very limited information about the run size of King salmon, and recent year CPUE should not be compared to data prior to 2008. This document attempts to clarify the relationship between BTF end-of-season CPUE and total run and explain why ADF&G does not include all years of BTF data in the KRSMWG packet.

Figure 1 shows the historical cumulative BTF CPUE for King salmon with all years highlighted using a different color. This figure is very hard to read, because many of the lines are on top of each other. Figure 1 shows that the current 2019 cumulative BTF CPUE (thick red line) is the third largest CPUE in the 1984–2018 data set. Taken at face value and with no context, this may lead to the incorrect conclusion that the 2019 King salmon run is very large. **However, the 2019 run is not a large run, and BTF CPUE appears large compared to historical catches because of a change in mesh twine type which began in 2008.**

Beginning 2008, BTF gillnets were manufactured with a different twine type compared to all previous years, and King salmon catchability increased as a result. Catchability is a measure of how well a fishing gear catches fish. A gillnet with higher catchability will capture more King salmon and have a higher CPUE than a gill net with lower catchability, given the same size run. The effect of changing twine type can be observed in Figure 2, where the black lines are BTF CPUE since 2008 after the change to new twine, and the grey lines are earlier years with the old twine. All the black line are years with below average (including record low) run sizes, but they appear similar to many of the gray lines which were from total runs ranging from 123,000 to 400,000 fish. Figure 3 further demonstrates the change in catchability. The black dots represent end-of-season BTF CPUE for years since 2008 and grey dots represent years prior to the change in twine type. Regardless of twine type there is a moderate positive relationship between end-of-season BTF CPUE and total run. However, intermediate CPUEs observed since 2008 were associated with below average and record low runs. **The change in catchability is the reason why ADF&G staff have not been presenting any daily or cumulative CPUE data prior to 2008.**

After accounting for the change in catchability since 2008, there is still a positive relationship between total run of King salmon and BTF end of season cumulative CPUE (Figure 3). However, that relationship is quite variable. and leads to large confidence intervals when total run size predictions are made (Figure 4). Predictions can be made at any point during the King salmon run, but the predictions only become credible after the 50% point, and the relationship to total run is strongest at the end of the salmon run after all management decisions have been made (Staton and Catalano 2018).

Kuskokwim River King salmon assessment does not rely solely on BTF CPUE. In recent years, the Kuskokwim River has benefited from an accurate pre-season forecast, in-season harvest estimates, and the newly established sonar project. The sonar project was specifically designed to provide inseason estimates of total run passing the sonar site. When taken in aggregate, the preseason forecast, BTF run size projection (note wide confidence interval), and sonar all point the same general conclusion about the 2019 King salmon run. **The run is likely to be near the upper end of the pre-season forecast, but still well below average (Figure 4).**

The primary utility of the BTF CPUE data is inseason run timing and salmon species composition. These data are highly valued and regularly discussed at KRSMWG meetings and used to guide inseason management. BTF CPUE is also used as part of a probability-based tool, cooperatively developed by USFWS, Auburn University, and ADF&G, that properly incorporates BTF uncertainty.

Literature Cited:

Staton, B. A. and M. J. Catalano. 2018. Bayesian information updating procedures for Pacific salmon run size indicators: evaluation in the presence and absence of auxiliary migration timing information. Canadian Journal of Fisheries and Aquatic Sciences.

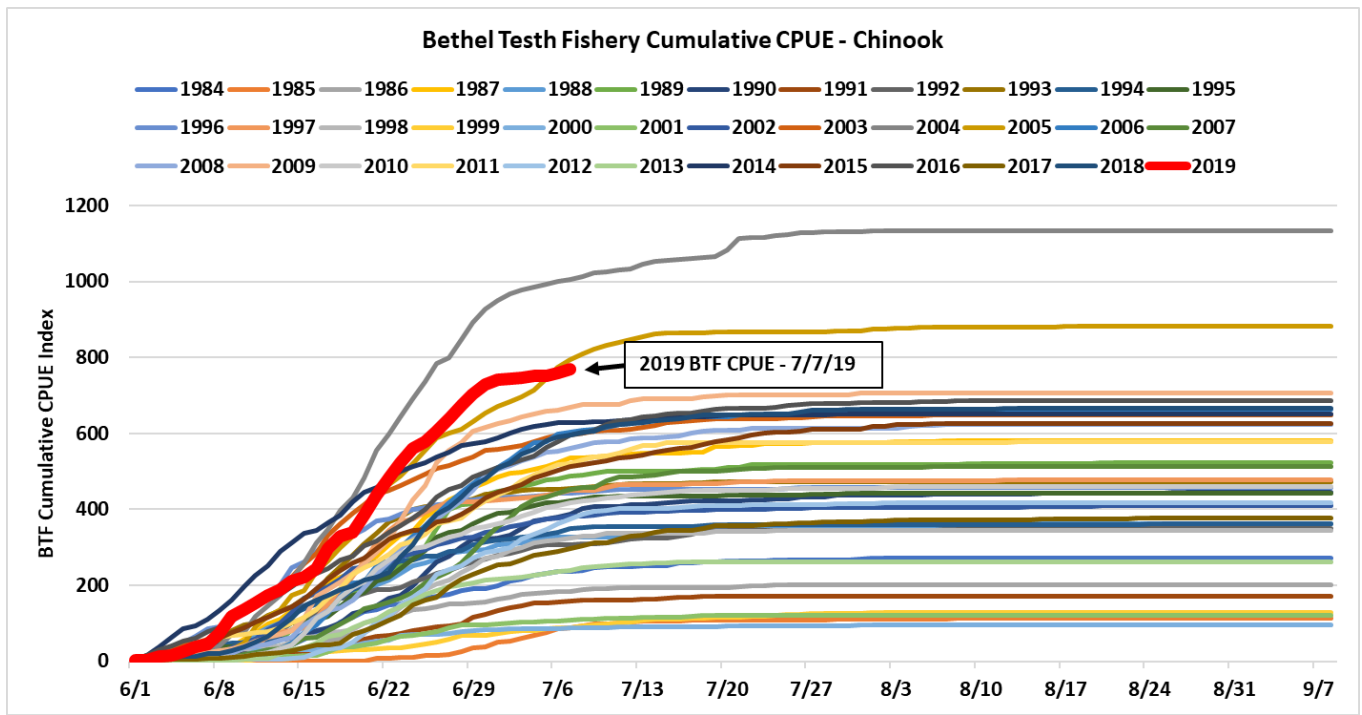


Figure 1. Bethel Test Fishery (BTF) Chinook (King) salmon cumulative mean tidal CPUE indices for years 1984–2018. Daily and historic test fishery information can be customized and viewed online at the ADF&G Kuskokwim Management Area Fish Counts webpage: <http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareakuskokwim.btf>

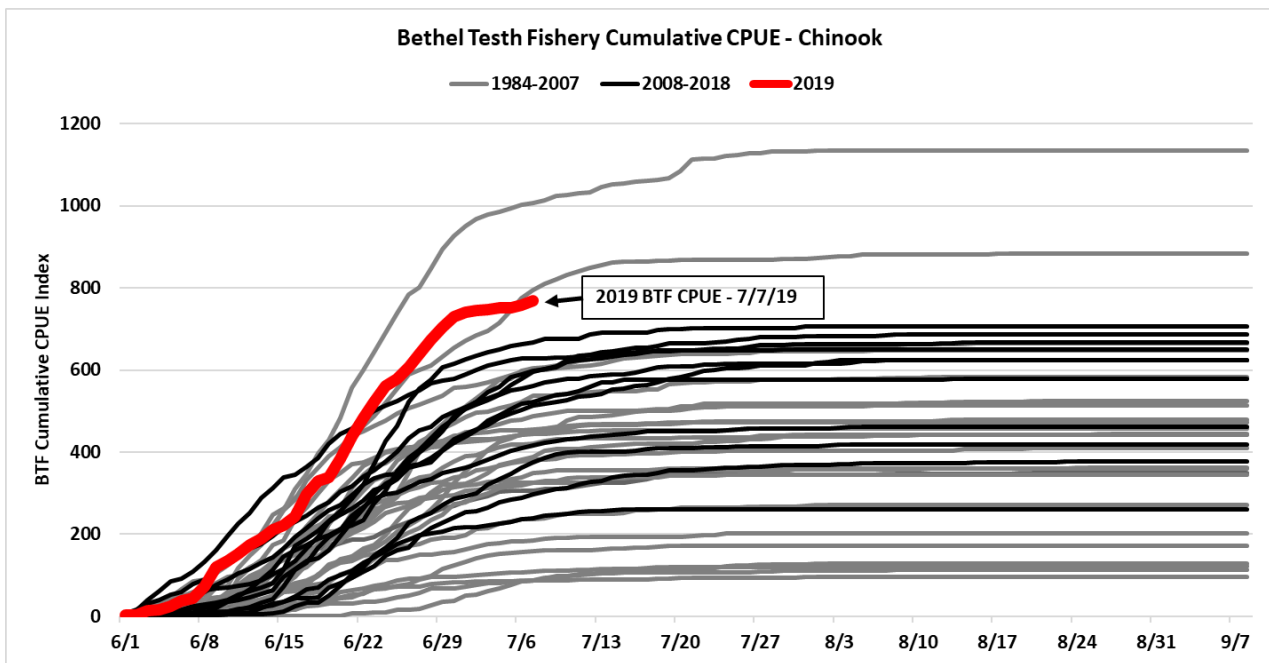


Figure 2. Bethel Test Fishery (BTF) Chinook (King) salmon cumulative mean tidal CPUE indices for years from 1984–2007 (gray) and 2008–2018 (black). The two time periods identify when different mesh types were used at the the BTF. The 2019 CPUE is red.

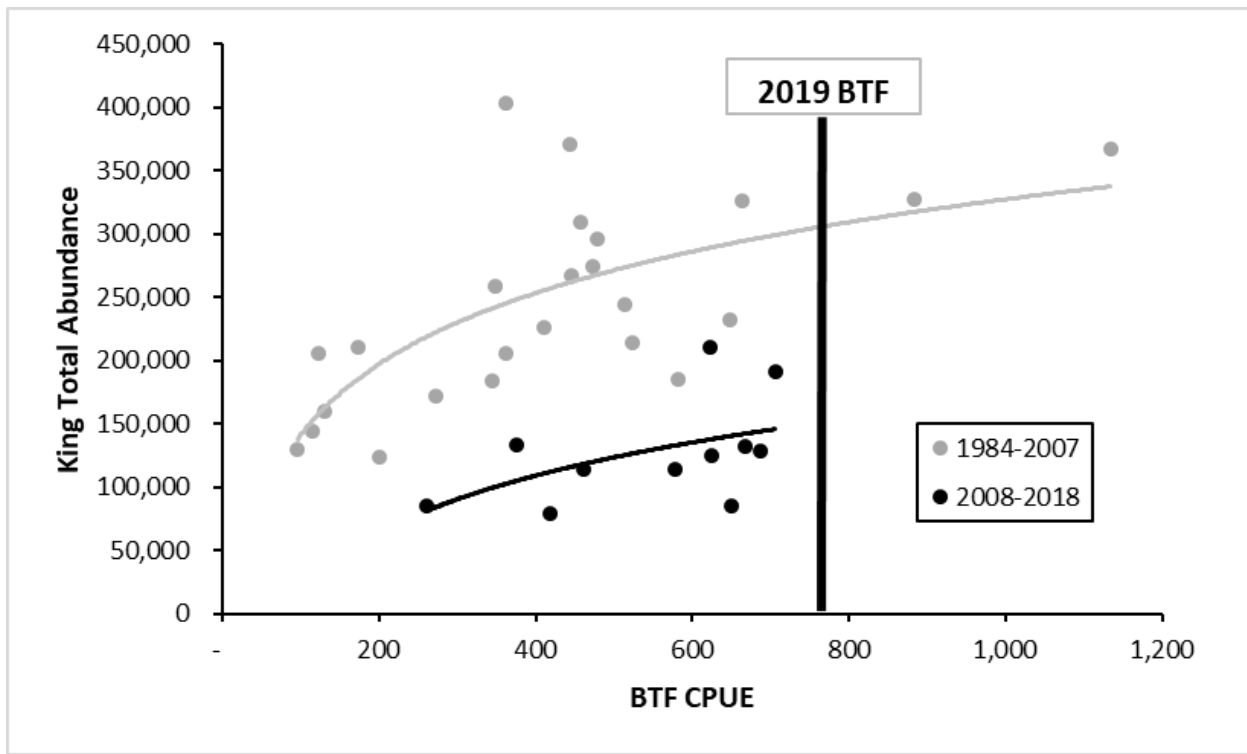


Figure 3. Relationship between total abundance of King salmon and end-of-season BTF cumulative CPUE from 1984–2007 (gray) and 2008–2018 (black). The two time periods identify when different mesh types were used at the BTF. The vertical black bar shows the 2019 end-of-season BTF CPUE.

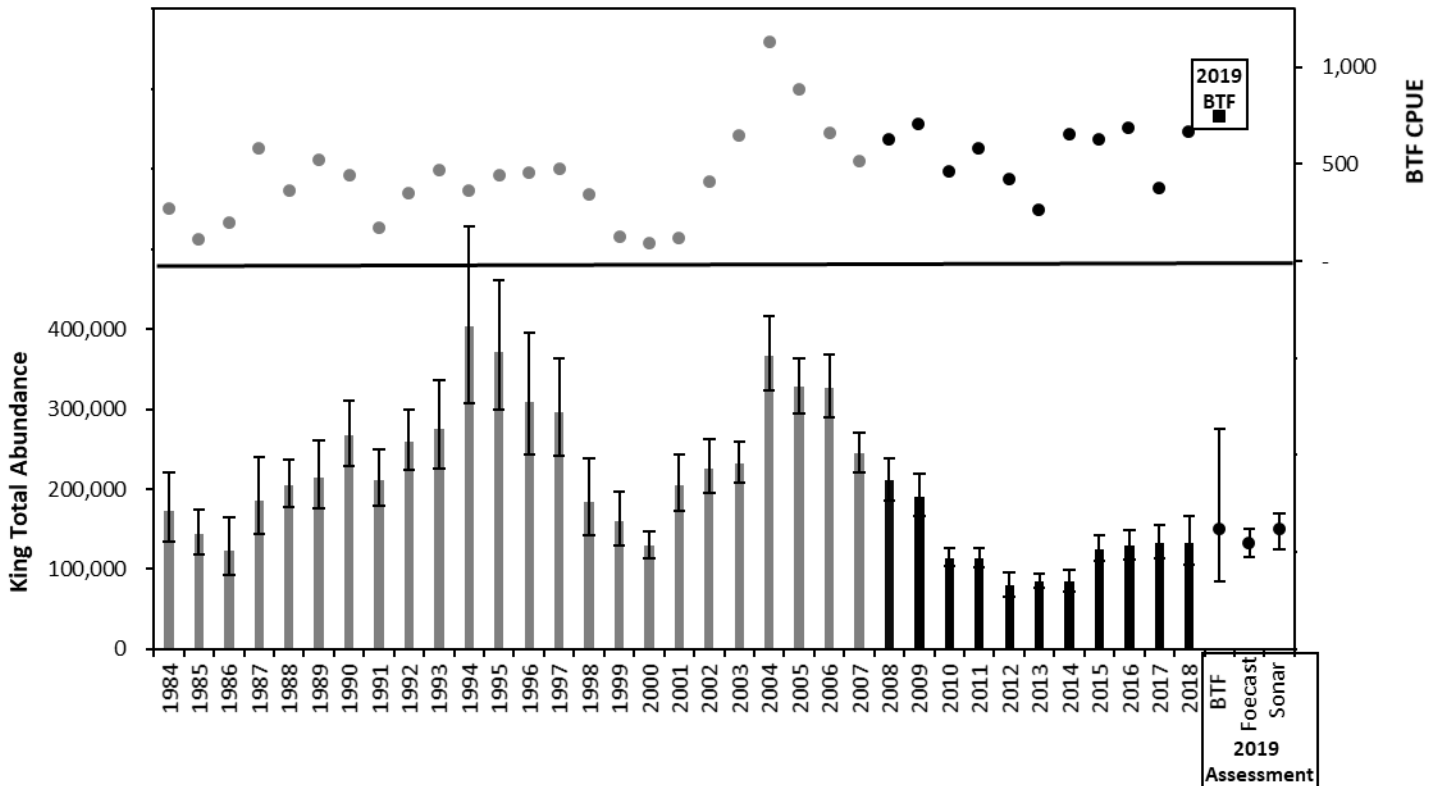


Figure 4. Annual end-of-season cumulative BTF CPUE (top pane) and total abundance of King salmon (bottom pane), 1984–2018. 1984–2007 (gray) and 2008–2018 (black). The gray (1984–2007) and black (2008–2018) colors signify different mesh types used at the BTF. Error bars represent 95% CI. The square in the top pane shows the projected 2019 end-of-season BTF CPUE. Right side of bottom pane shows projected run size from BTF, preseason forecast, and current sonar passage.

Orutsararmiut Native Council (ONC) Inseason Harvest Monitoring Weekly Report

July 10, 2019

Summary of Interview Activities

From July 6-8, our fisheries team contacted a total of 39 fish camps from Oscarville slough up to the bluffs to conduct the end of the season survey.

Fishing Progress Information

The majority of respondents (n=32) met their Chinook salmon harvest goals, sockeye salmon harvest goals (n=31) and chum salmon harvest goals (n=27). Reasons provided for not meeting Chinook or sockeye salmon harvest goals included not having a dependable boat, needing to support several families and hot weather. The majority of respondents who did not meet their chum salmon harvest goals attributed it to a weak chum salmon run. There were only two fish camps who were still actively fishing for sockeye salmon and chum salmon.

End of the Season Community Feedback

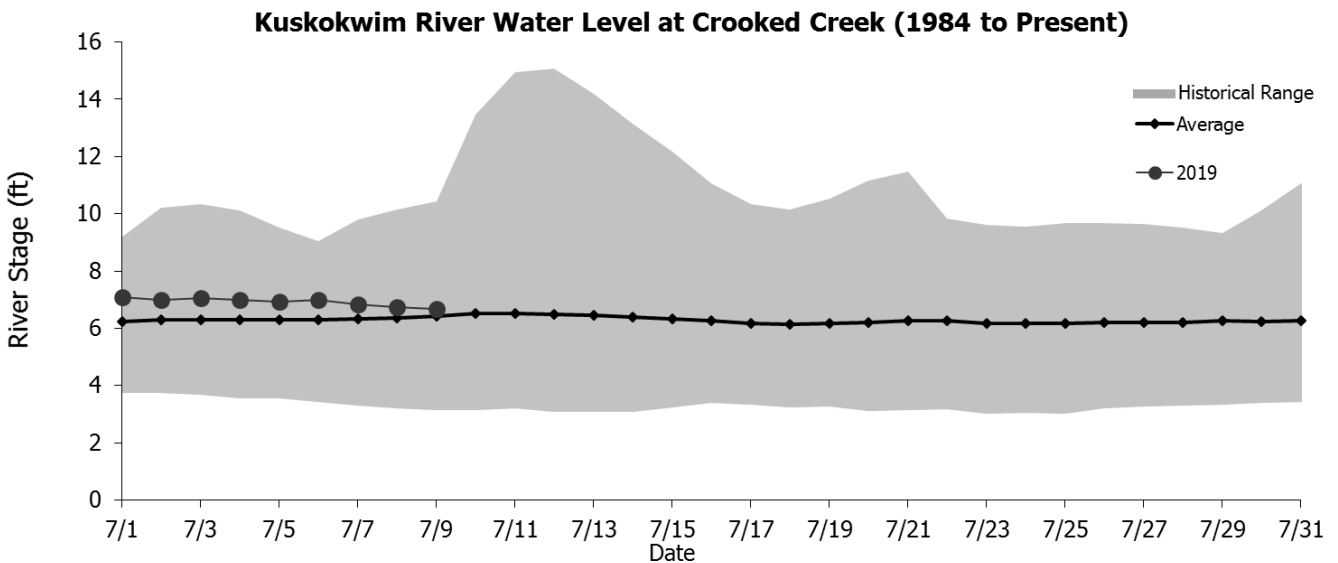
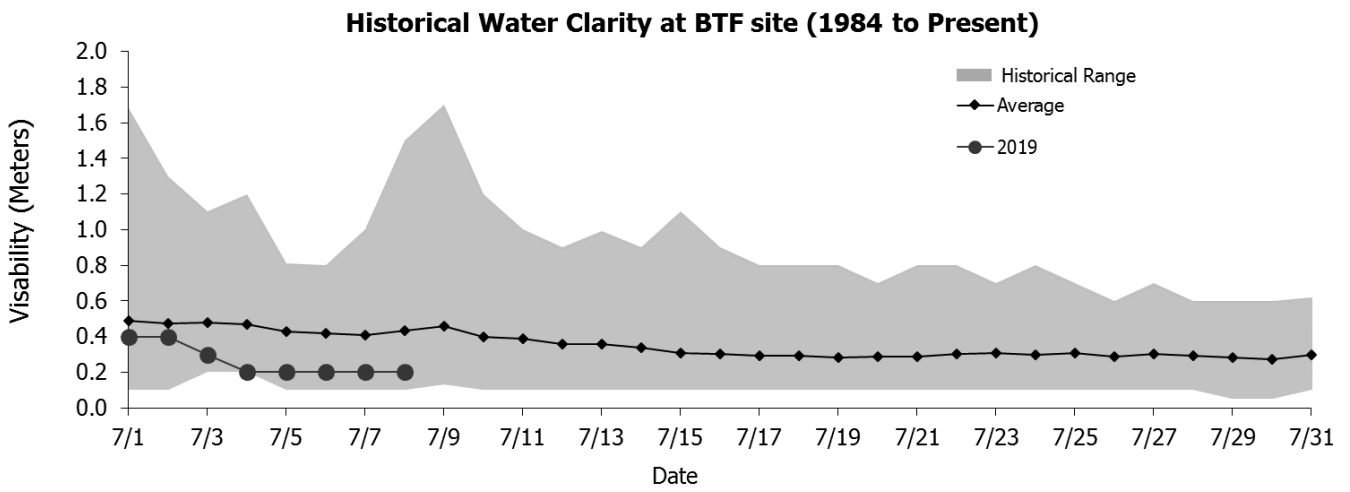
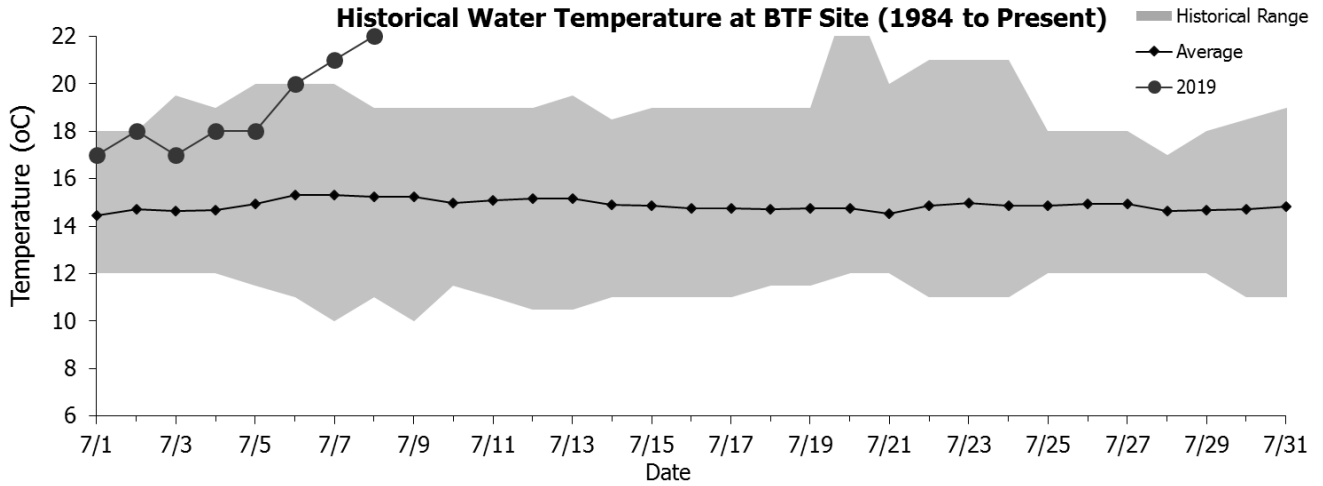
At the end of the season, we asked fish camp users, “Have you or the Bethel community benefited from being involved with the ONC inseason harvest monitoring program?” We then followed up with asking them to identify how they have benefited or if they have not benefited, what are ways our program can be more beneficial/helpful to them in the future. This season, the majority of respondents (n=35) benefited from being involved with the ONC inseason harvest monitoring program. People listed several program components they have benefited from including the Chinook salmon age-sex-length sampling program as a way to earn money, receiving fish caught by ADFG Bethel Test Fishery, keeping track of their harvest numbers, having their information reported to fisheries management meetings, being more informed about any fishing opportunities and many were glad to see local youth involved in the work. Those who did not benefit (n=4) wanted more fishery openers and no restrictions during the Chinook salmon run.

Chinook Salmon Age-Sex-Length (ASL) Sampling Recruitment

During the 2019 fisheries season, we received ASL samples from 26 samplers all from Bethel, with exception to one sampler from Tuntutuliak. We also exceeded our sample size goal of 1500 Chinook salmon samples. All samples will be sent to the ADFG office in Anchorage to be analyzed.

Fish Distribution

From July 1-July 8, we distributed 44 Chinook salmon to 19 Bethel area Elders, disabled and widows. These fish were caught by the Alaska Department of Fish & Game Bethel Test Fishery.



Kuskokwim River Salmon Assessment Update

7/8/2019



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 Gary Decossas (USFWS; gary_decossas@fws.gov) or Nick Smith (ADF&G; nick.smith@alaska.gov). Major credit for the development of this data packet belongs to Ben 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
- OTNC: Orutsaramiut Traditional 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>

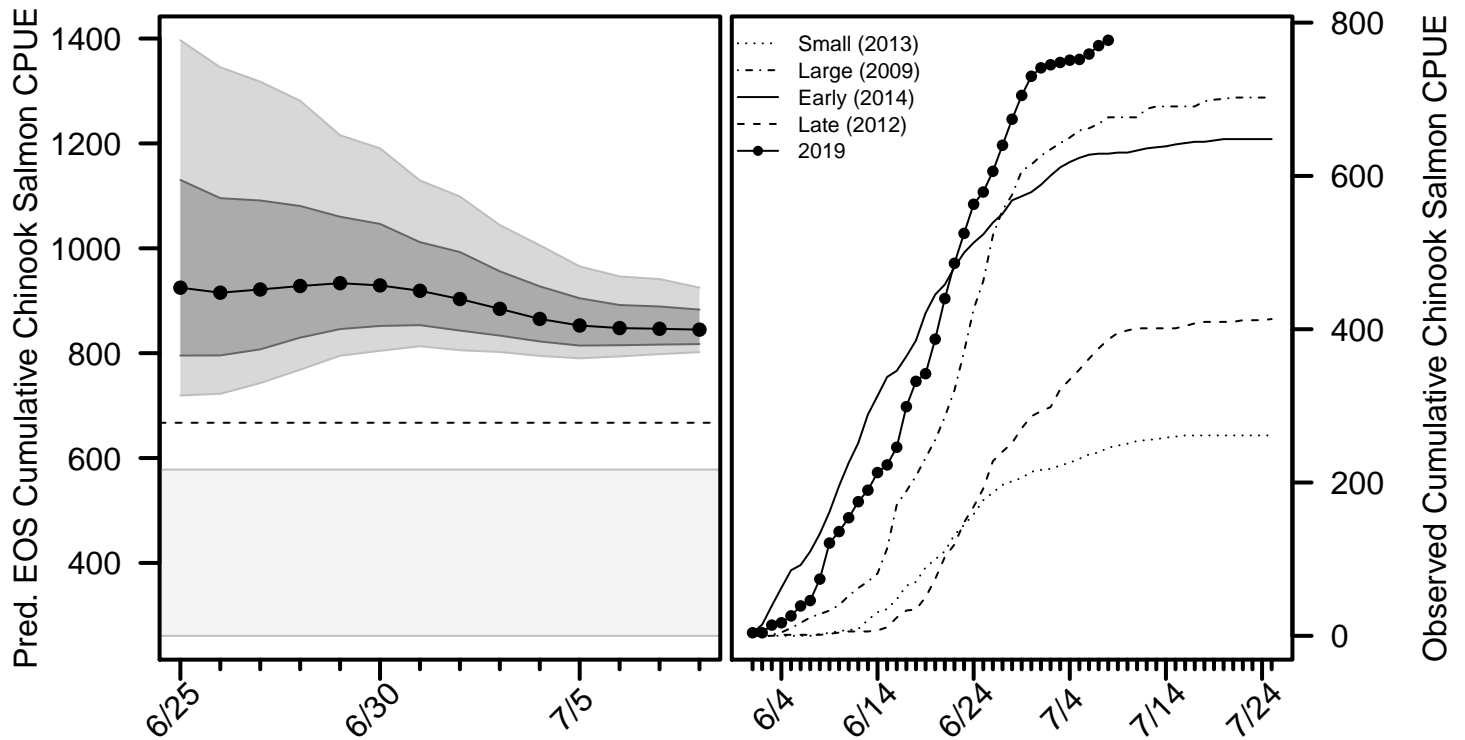
For the most up-to-date information regarding fishing opportunities please visit:

- 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 (7/8)

- The BTF daily CPUE was **7**.
- The BTF cumulative CPUE is now **777**.
- **100%** years since 2008 fell below this cumulative CPUE on this date.
- **92%** of the run is complete based on historical average run timing.
- **88% - 95%** of the run is complete based the central 50% of all historical run timing scenarios.
- **2% - 5%** of the run is expected to pass Bethel in the next 5 days.
- Over the last 3 days, Chinook salmon made up **6%** 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 grey box shows the range of EOS values from 2010 - 2013, which indexed run sizes past Bethel ranging from 60,000 to 82,000. The dashed horizontal line shows the EOS value from 2018. *Right:* The cumulative BTF CPUE from 2019 plotted along with four previous years intended to represent a range of early/late and small/large index values.



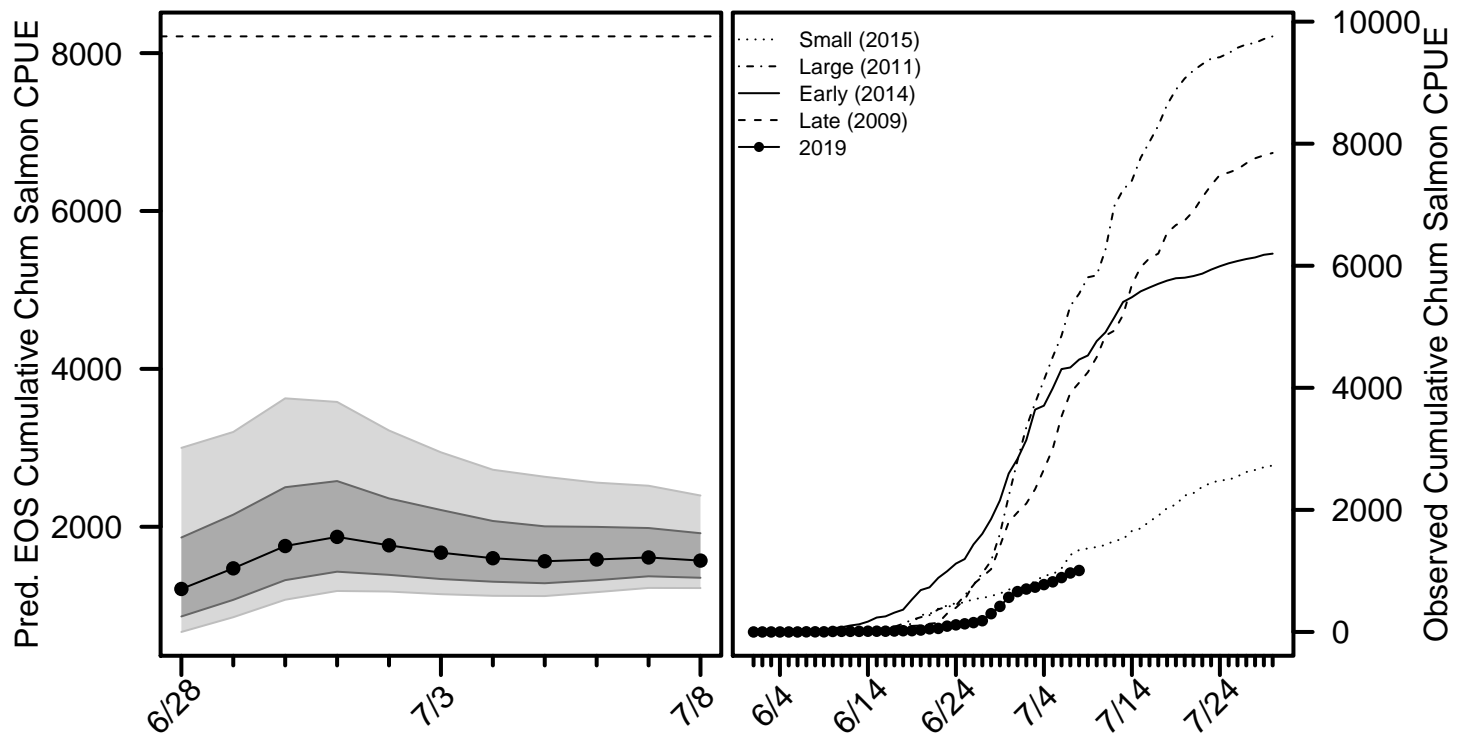
For more detailed information, see the [Chinook salmon appendix](#) at the end of this document.

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Chum Salmon BTF Summary (7/8)

- The BTF daily CPUE was **41**.
- The BTF cumulative CPUE is now **1,007**.
- **0%** years since 2008 fell below this cumulative CPUE on this date.
- **64%** of the run is complete based on historical average run timing.
- **53% - 74%** of the run is complete based the central 50% of all historical run timing scenarios.
- **11% - 16%** of the run is expected to pass Bethel in the next 5 days.
- Over the last 3 days, chum salmon made up **42%** of the BTF catches, compared to **74%** on average.

Chum 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 2018. *Right:* The cumulative BTF CPUE from 2019 plotted along with four previous years intended to represent a range of early/late and small/large index values.



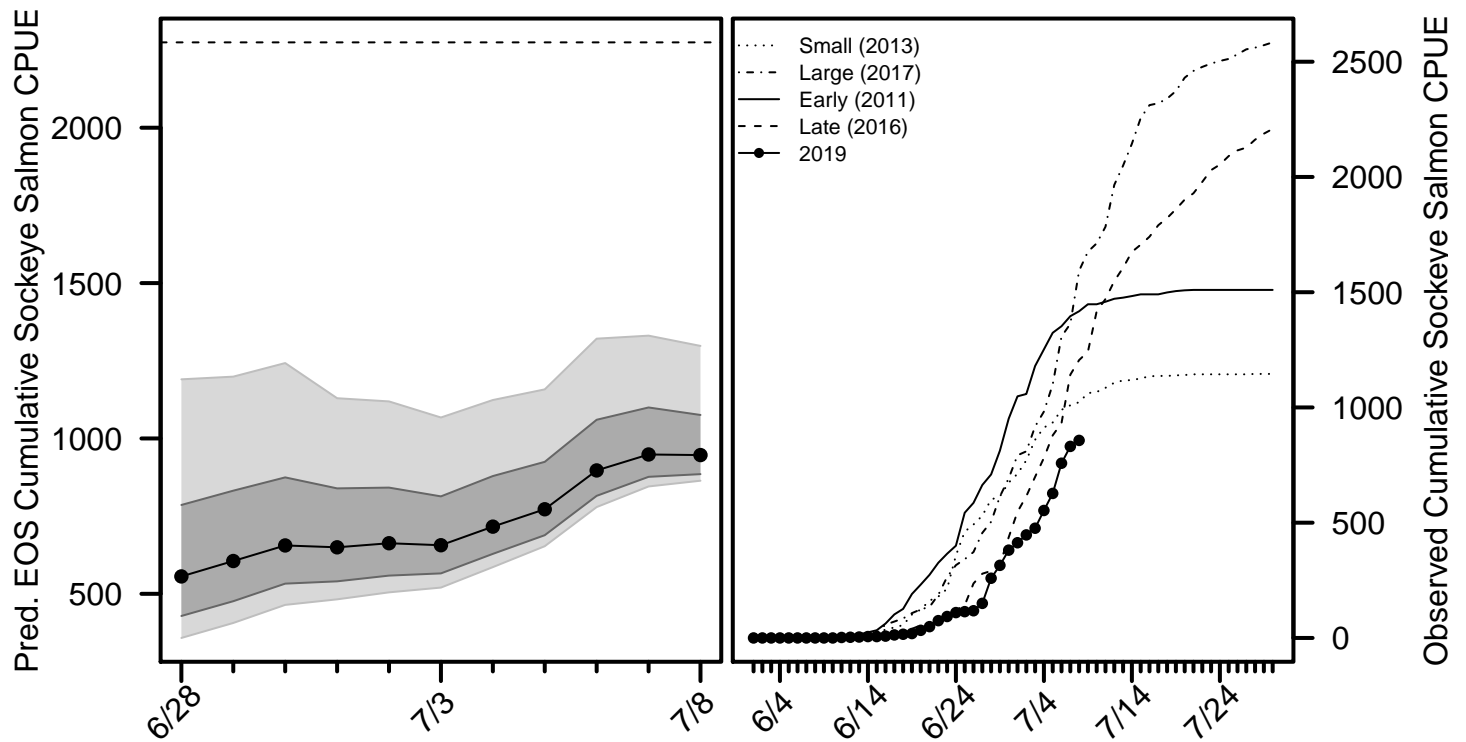
For more detailed information, see the [chum salmon appendix](#) at the end of this document.

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Sockeye Salmon BTF Summary (7/8)

- The BTF daily CPUE was **26**.
- The BTF cumulative CPUE is now **857**.
- **9%** years since 2008 fell below this cumulative CPUE on this date.
- **91%** of the run is complete based on historical average run timing.
- **80% - 97%** of the run is complete based the central 50% of all historical run timing scenarios.
- **3% - 9%** of the run is expected to pass Bethel in the next 5 days.
- Over the last 3 days, sockeye salmon made up **52%** of the BTF catches, compared to **23%** 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 2018. *Right:* The cumulative BTF CPUE from 2019 plotted along with four previous years intended to represent a range of early/late and small/large index values.



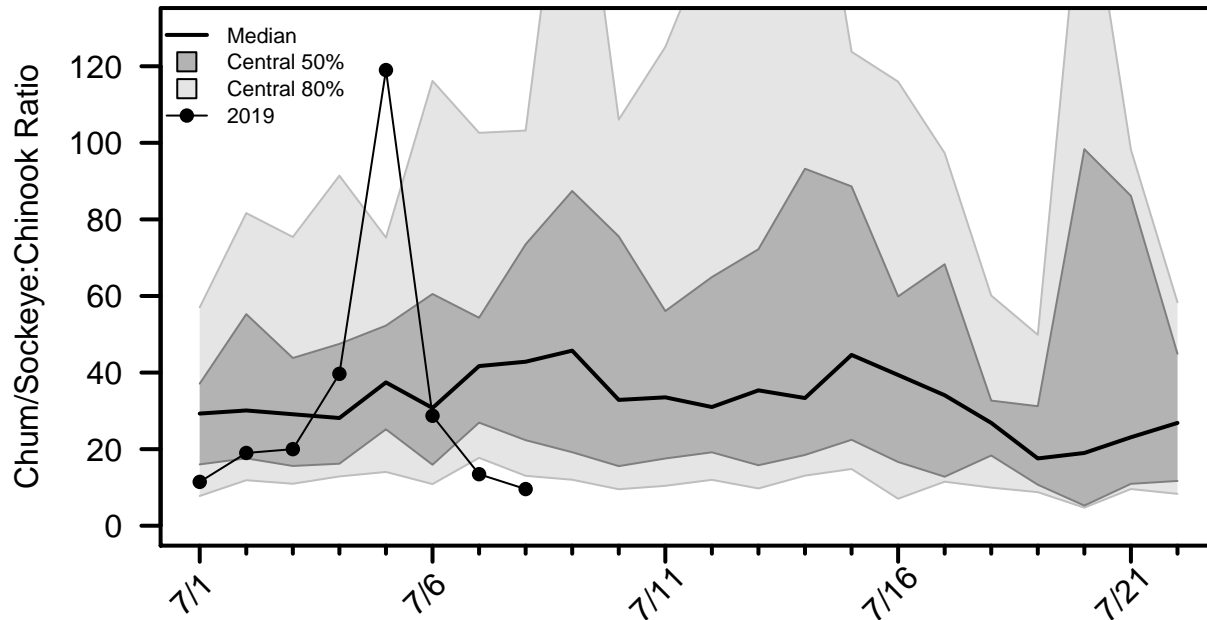
For more detailed information, see the [sockeye salmon appendix](#) at the end of this document.

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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 in the BTF with historical quantiles shown as grey regions and the ratio time series for 2019 shown with points connected by lines.



Ratio Table 1. A subset of the species ratios displayed in **Ratio Figure 1**, including the ratios from the ATF.

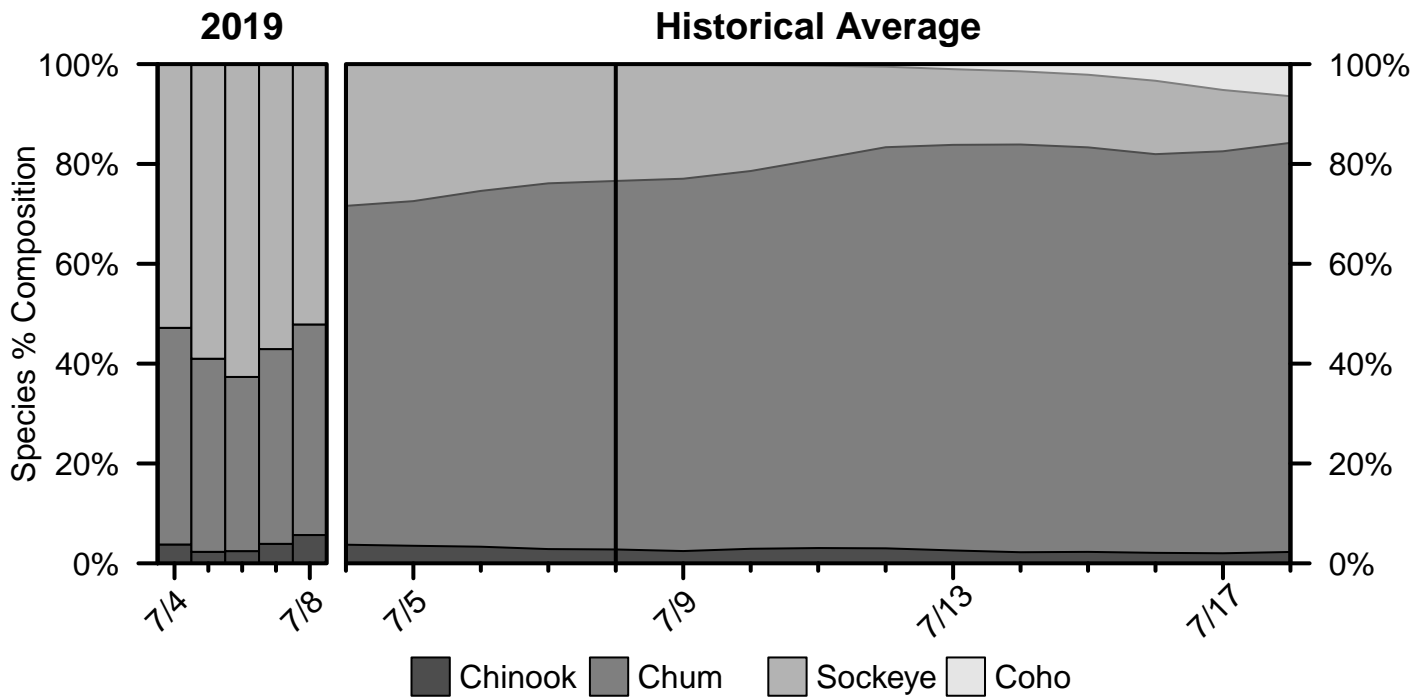
Date	2019 BTF	BTF Median	BTF Lower 10%	BTF Upper 10%
7/5	119	37.43	14.05	75.25
7/6	28.71	30.75	10.87	116.2
7/7	13.45	41.7	17.73	102.6
7/8	9.57	42.83	13.03	103.2
7/9		45.73	12.01	198.1
7/10		32.86	9.53	106
7/11		33.53	10.42	125

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.

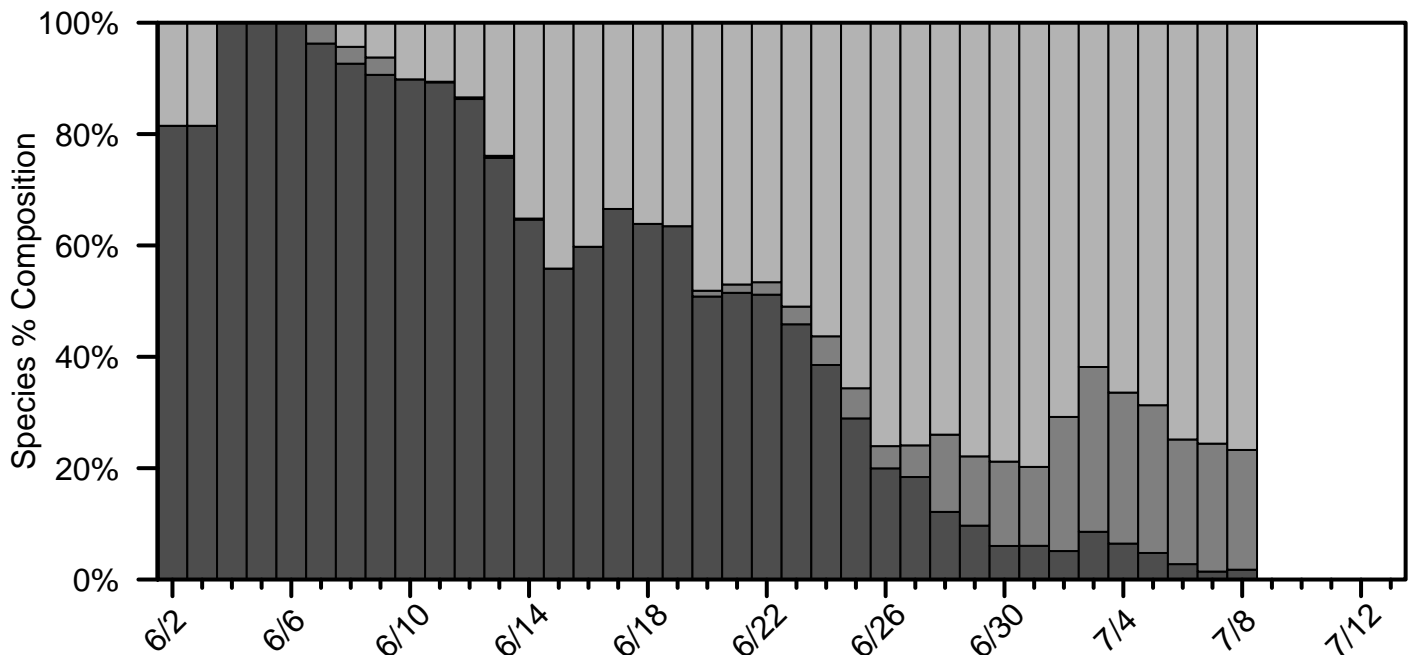
Date	Ratio > 3	Ratio > 5	Ratio > 7	Ratio > 10	Ratio > 20
7/5	100%	100%	100%	100%	97%
7/6	100%	100%	100%	100%	97%
7/7	100%	100%	100%	100%	97%
7/8	100%	100%	100%	100%	100%
7/9	100%	100%	100%	100%	100%
7/10	100%	100%	100%	100%	100%
7/11	100%	100%	100%	100%	100%

Percent Composition by Salmon Species

Percent Composition Figure 1. Species percent composition in the BTF from 2019 and based on the historical average. The composition presented on each day represents the average composition over the past 3 days.



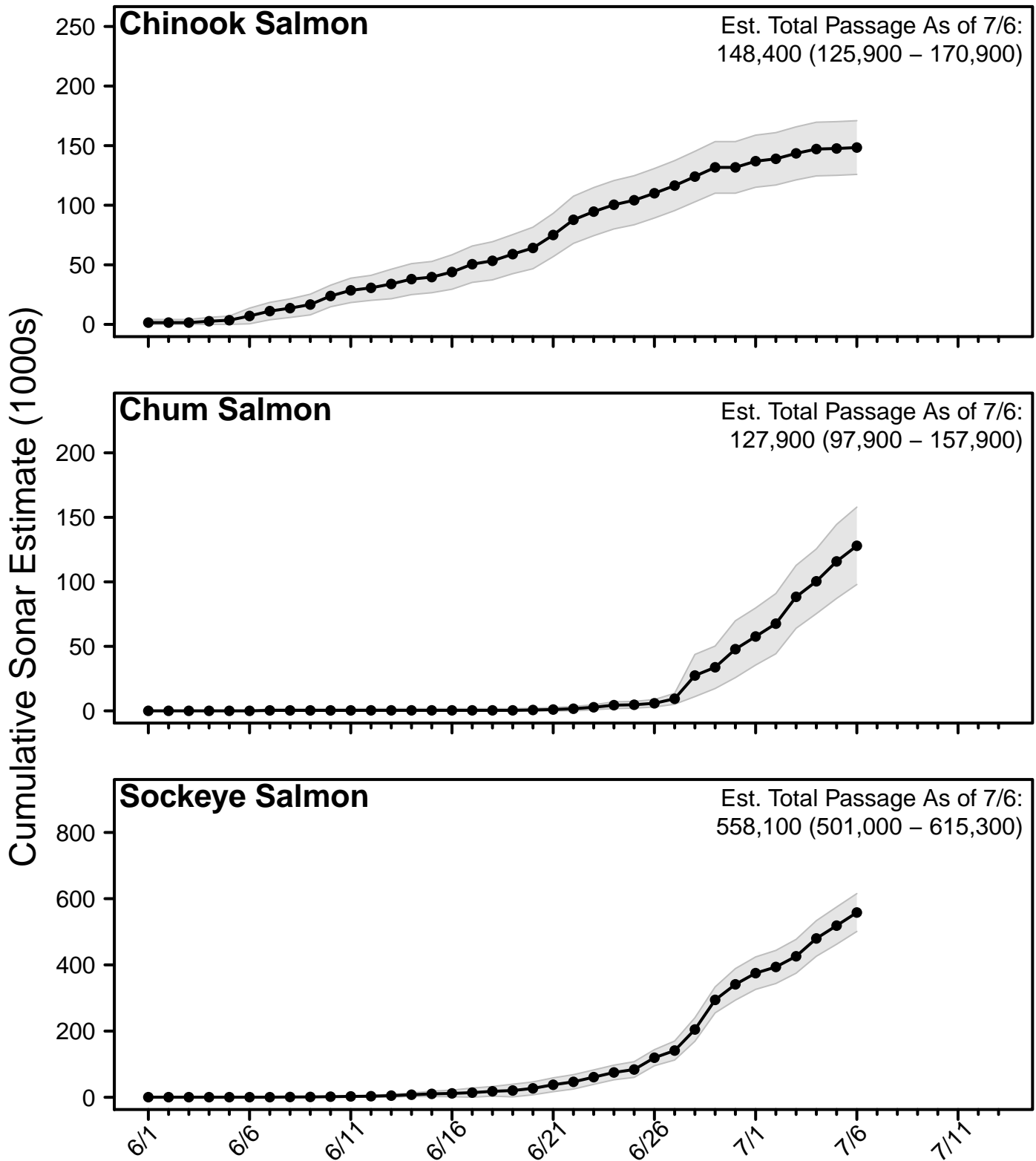
Species Composition Figure 2. Species percent composition from the sonar estimates from 2019 (salmon species only, excluding pink salmon). The composition presented on each day represents the average composition over the past 3 days.



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Sonar Passage Estimates

Sonar Figure 1. Cumulative estimates of salmon passage from the 2019 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 survey) 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 ADF&G, KRITFC, OTNC, and USFWS. Although USFWS performs the data analysis and harvest estimation, all estimates undergo technical review by a panel comprised of representatives from each of these entities.

Much more detailed information can be found on the YDNWR website (https://www.fws.gov/refuge/yukon_delta/wildlife_and_habitat/dailyupdate.html).

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
6/1	70	70	0.22	0.22
6/8	740	810	0.15	0.14
6/12	8,040	8,850	0.12	0.11
6/15	7,480	16,330	0.09	0.07
6/19	13,630	29,960	0.09	0.06
6/22	10,130	40,090	0.12	0.05

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
6/1	0	0	0	0
6/8	30	30	0.35	0.35
6/12	310	340	0.14	0.13
6/15	350	690	0.23	0.13
6/19	2,340	3,030	0.2	0.16
6/22	4,120	7,150	0.17	0.12

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
6/1	0	0	0	0
6/8	10	10	0.49	0.49
6/12	290	300	0.2	0.19
6/15	1,140	1,440	0.17	0.14
6/19	2,900	4,340	0.14	0.1
6/22	9,060	13,400	0.1	0.08

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Chinook Salmon Appendix

Chinook Salmon Table A1. Cumulative CPUE from the BTF.

Date	2019	2018	2017	2016	2015	5-Yr Avg.	2008 - 2018 Avg.
7/5	752	582	284	564	493	509	477
7/6	759	590	289	578	504	518	484
7/7	770	597	296	596	513	526	492
7/8	777	602	304	601	518	531	499
7/9		606	311	610	523	536	504
7/10		619	312	624	527	542	508
7/11		624	321	634	535	550	513
EOS		667	374	687	625	601	550

The ATF ended operations on 7/5 with an EOS cumulative CPUE value of **1,691** for Chinook salmon.

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

Timing	Midpoint	7/8 Cumulative %
Earliest	6/14	98%
Early 10%	6/17	97%
Early 25%	6/21	95%
Median	6/22	92%
Late 25%	6/25	88%
Late 10%	6/27	84%
Latest	7/3	79%

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Chum Salmon Appendix

Chum Salmon Table A1. Cumulative CPUE from the BTF.

Date	2019	2018	2017	2016	2015	5-Yr Avg.	2008 - 2018 Avg.
7/5	821	2,578	3,030	1,166	944	2,342	2,866
7/6	891	2,627	3,346	1,290	1,041	2,522	3,092
7/7	966	2,746	3,691	1,410	1,261	2,688	3,346
7/8	1,007	3,270	4,088	1,618	1,342	2,956	3,589
7/9		3,937	4,597	1,733	1,368	3,233	3,868
7/10		4,492	4,942	1,892	1,392	3,496	4,115
7/11		4,854	5,187	2,111	1,425	3,697	4,350
EOS		8,212	6,785	3,894	2,943	5,636	6,678

The ATF ended operations on 7/5 with an EOS cumulative CPUE value of **1,051** for chum salmon.

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

Timing	Midpoint	7/8 Cumulative %
Earliest	6/23	89%
Early 10%	7/1	82%
Early 25%	7/3	74%
Median	7/6	64%
Late 25%	7/7	53%
Late 10%	7/11	42%
Latest	7/14	31%

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Sockeye Salmon Appendix

Sockeye Salmon Table A1. Cumulative CPUE from the BTF.

Date	2019	2018	2017	2016	2015	5-Yr Avg.	2008 - 2018 Avg.
7/5	627	1,006	1,100	879	1,296	1,082	1,049
7/6	758	1,055	1,308	932	1,351	1,161	1,119
7/7	831	1,193	1,363	1,142	1,505	1,277	1,198
7/8	857	1,270	1,593	1,206	1,565	1,371	1,256
7/9		1,347	1,676	1,242	1,651	1,433	1,307
7/10		1,423	1,712	1,417	1,688	1,501	1,356
7/11		1,491	1,784	1,470	1,739	1,553	1,395
EOS		2,275	2,690	2,463	2,157	2,190	1,762

The ATF ended operations on 7/5 with an EOS cumulative CPUE value of **33** for sockeye salmon.

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

Timing	Midpoint	7/8 Cumulative %
Earliest	6/22	100%
Early 10%	6/24	99%
Early 25%	6/26	97%
Median	6/29	91%
Late 25%	7/1	79%
Late 10%	7/7	66%
Latest	7/10	50%

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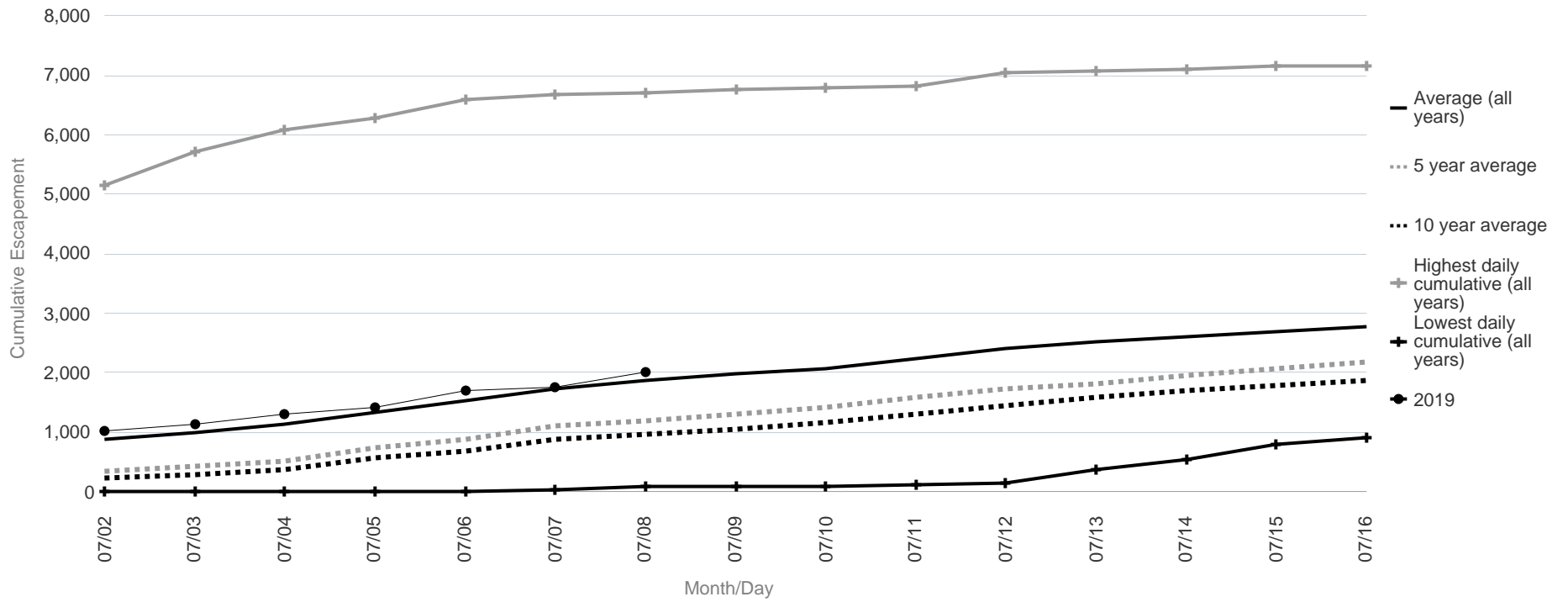
Chinook (7/9/2019 8:01:02 PM)	1
Chum (7/9/2019 8:03:21 PM)	6
Sockeye (7/9/2019 8:03:34 PM)	10

George River Salmon Monitoring Project Cumulative Daily Passage of Chinook Salmon

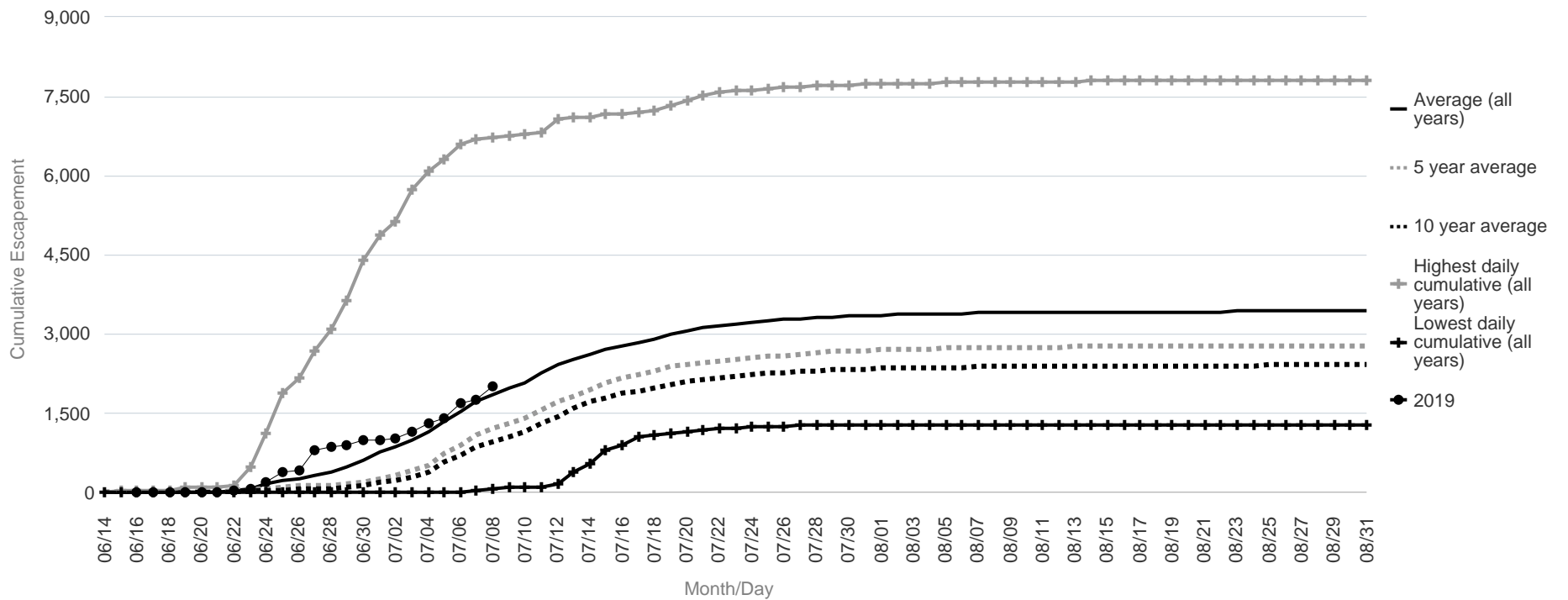
Escapement Goal Range: 1,800 to 3,300

		1,007	420	298	5,728	1,149
		1,151	525	384	6,075	1,296
		1,331	750	571	6,296	1,417
		1,526	890	693	6,590	1,691
		1,722	1,097	875	6,683	1,770
		1,863	1,204	962	6,717	2,019
		2,254	1,579	1,305	6,816	
		2,417	1,726	1,452	7,061	
		2,524	1,823	1,591	7,092	
		2,618	1,954	1,711	7,103	
		2,706	2,069	1,792	7,168	
		2,784	2,177	1,870	7,174	

Focused Two-Week Data View



Season Total Overview



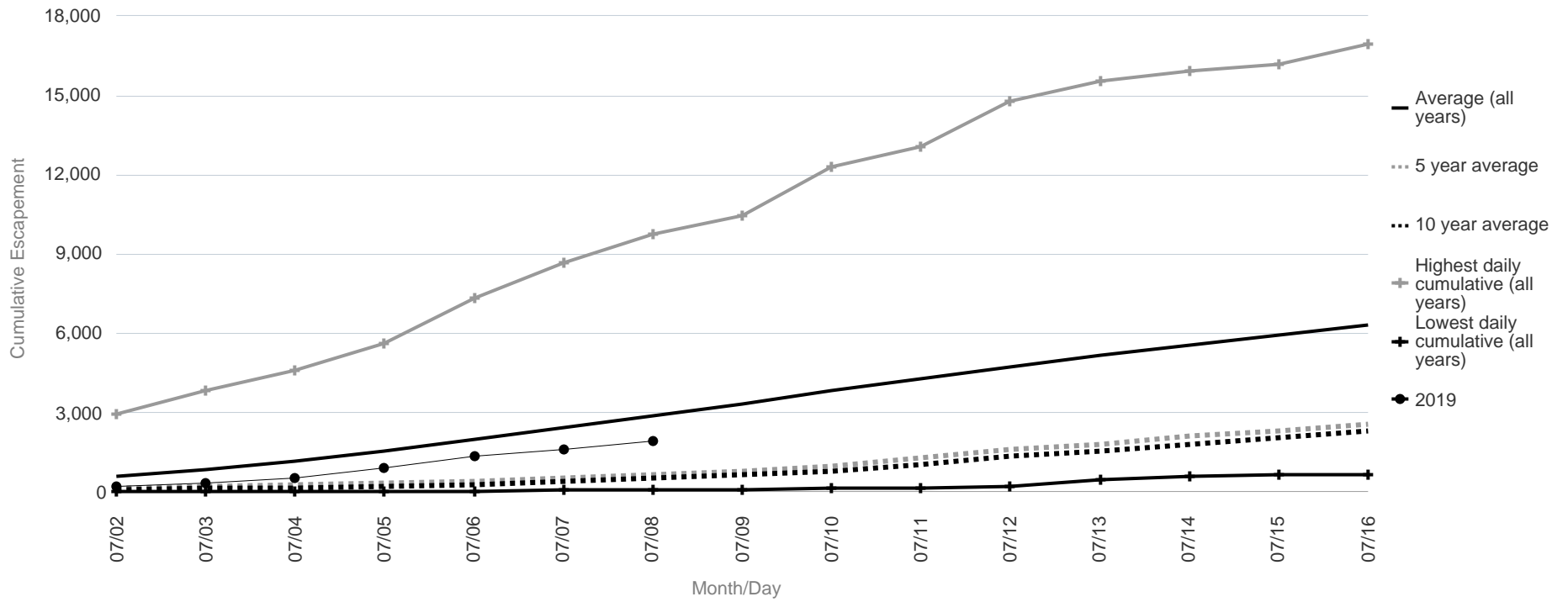
Kogrukluk River Salmon Monitoring Project Cumulative Daily Passage of Chinook Salmon

Escapement Goal Range: 4,800 to 8,800

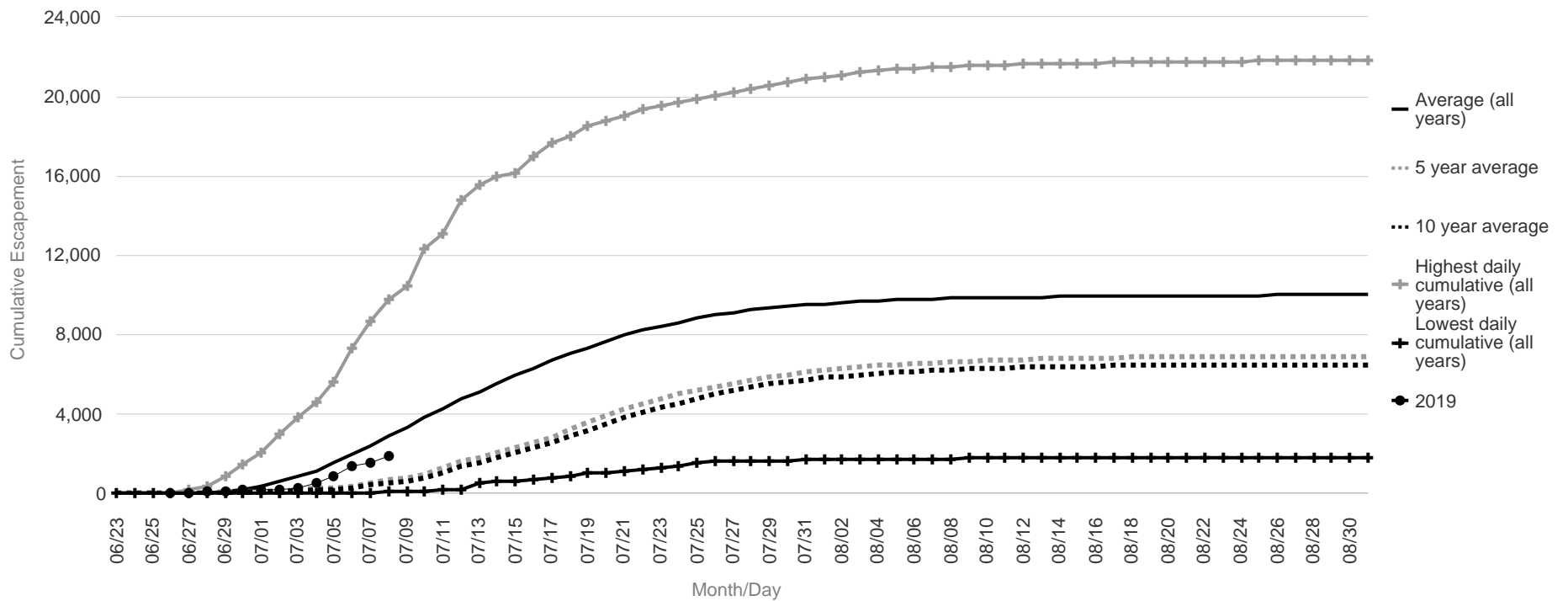
Date	Lowest daily cumulative (all years)	Average (all years)	5 year average	10 year average	Highest daily cumulative (all years)	2019
07/02	0	579	122	81	2,969	225
07/03	0	852	205	133	3,848	312
07/04	0	1,152	247	162	4,588	506
07/05	4	1,538	302	219	5,589	896
07/06	21	1,971	367	269	7,343	1,332
07/07	56	2,431	551	399	8,649	1,577
07/08	83	2,872	675	521	9,782	1,900
07/09	104	3,329	787	625	10,461	
07/10	116	3,826	970	782	12,287	
07/11	167	4,251	1,272	1,053	13,084	
07/12	191	4,741	1,597	1,342	14,798	
07/13	484	5,145	1,823	1,567	15,562	
07/14	574	5,566	2,090	1,820	15,937	
07/15	618	5,921	2,331	2,039	16,183	
07/16	678	6,329	2,583	2,303	16,957	

	Lowest Count	Average Count	5 Year Average	10 Year Average	Highest Count
Season Total	1,819	10,002	6,929	6,504	21,819

Focused Two-Week Data View



Season Total Overview

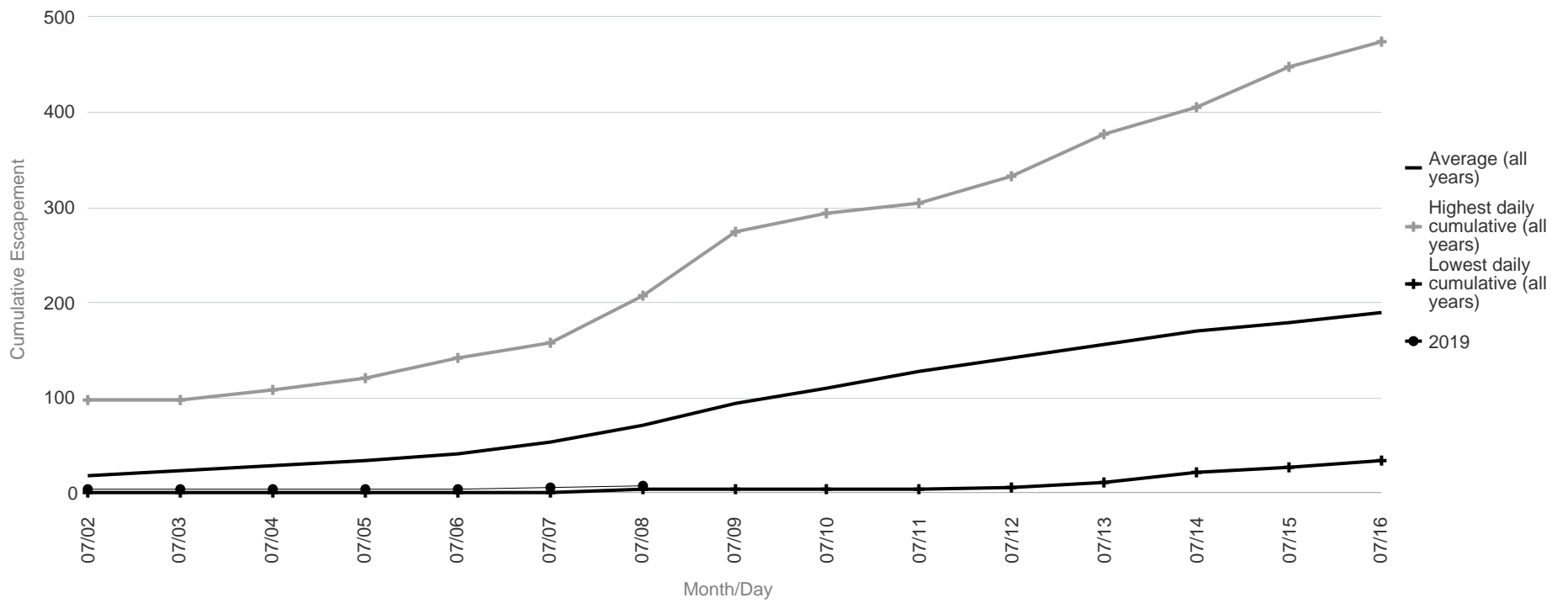


Takotna River Salmon Monitoring Project Passage of Chinook Salmon

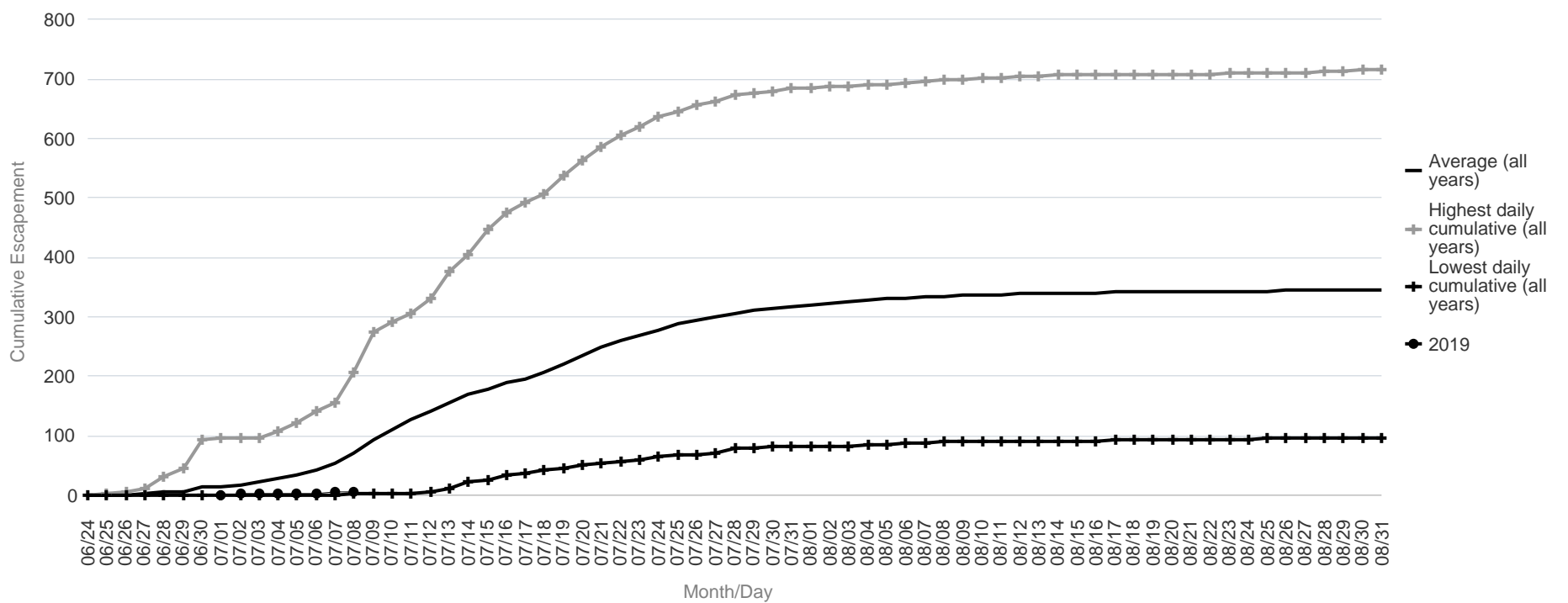
Date	Lowest daily cumulative (all years)	Average (all years)	Highest daily cumulative (all years)	2019
07/02	0	18	97	4
07/03	0	24	98	4
07/04	0	30	108	4
07/05	0	35	121	4
07/06	0	42	142	4
07/07	1	53	157	6
07/08	3	72	207	7
07/09	3	94	274	
07/10	4	110	293	
07/11	4	127	305	
07/12	5	143	332	
07/13	11	157	377	
07/14	22	170	406	
07/15	27	180	447	
07/16	34	189	475	

	Lowest Count	Average Count	Highest Count
Season Total	97	347	718

Focused Two-Week Data View



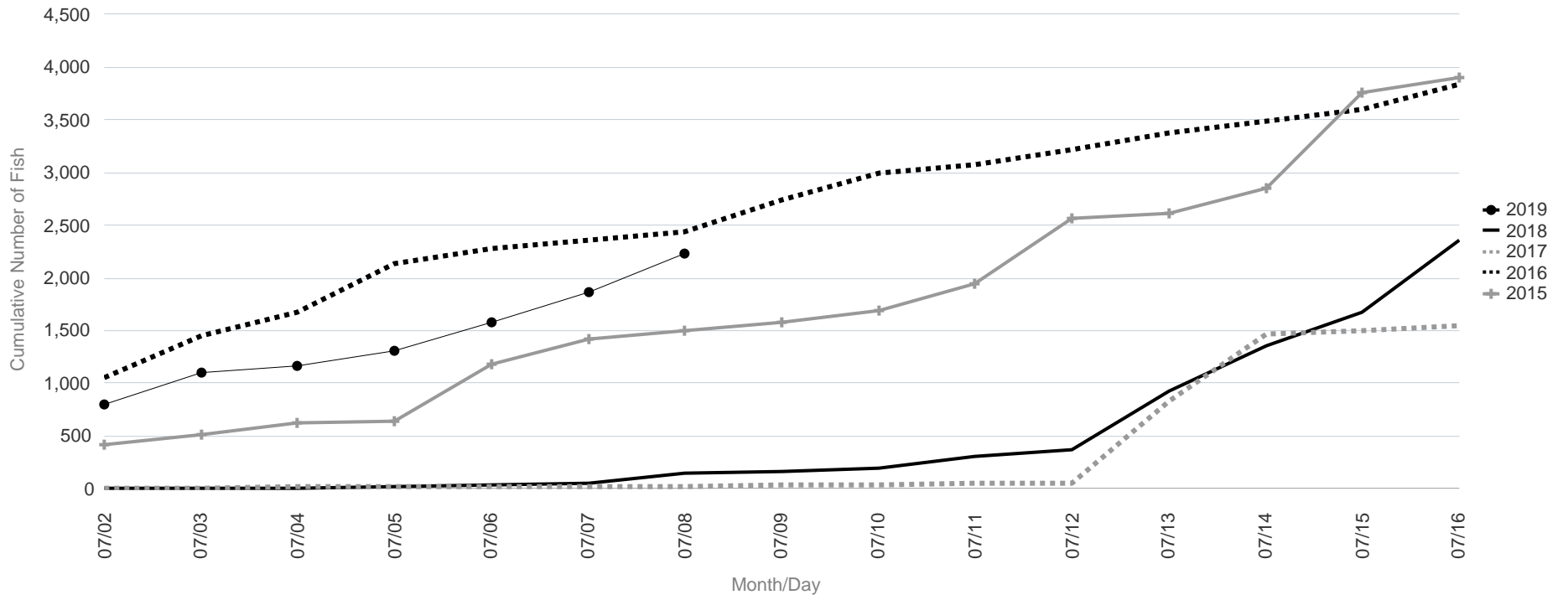
Season Total Overview



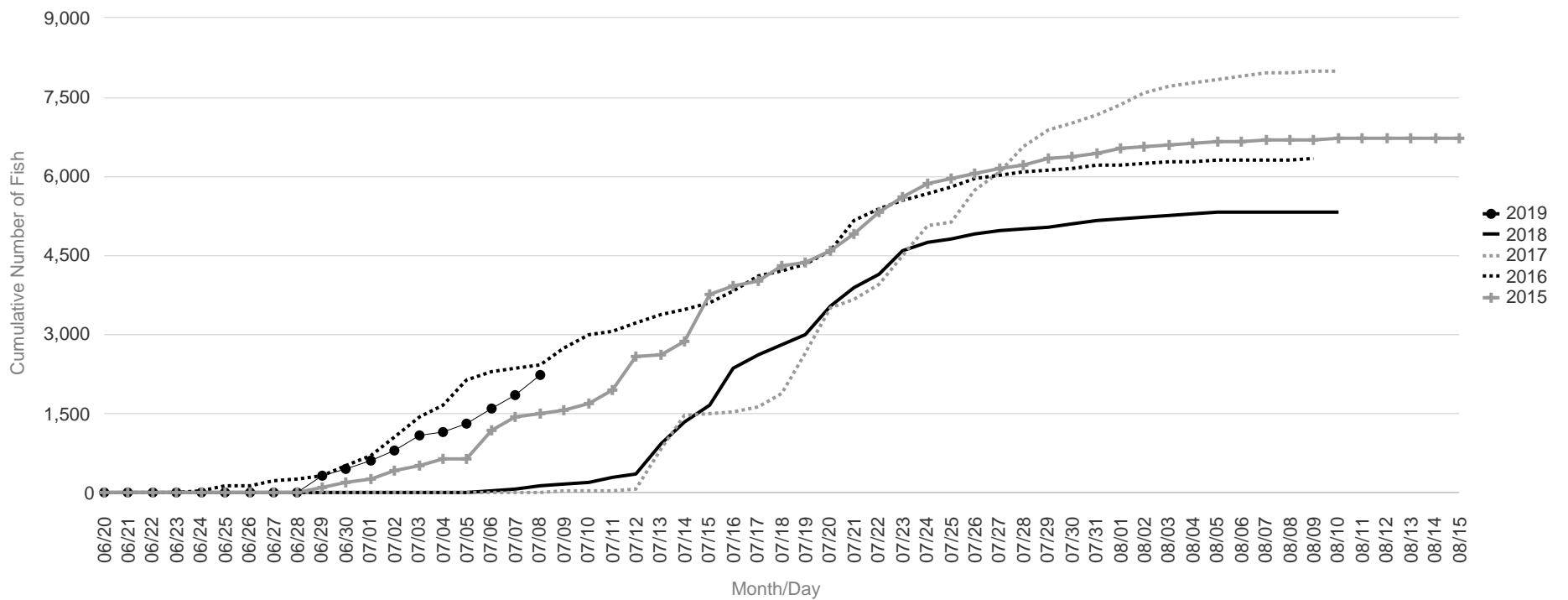
Salmon River (Pitka Fork) Salmon Monitoring Project Passage of Chinook Salmon

		1,450	5	4	1,095
		1,668	15	6	1,158
		2,141	17	14	1,314
		2,284	19	36	1,582
		2,366	20	58	1,867
		2,439	21	144	2,225
		3,072	43	301	
		3,211	56	363	
		3,376	827	927	
		3,488	1,475	1,351	
		3,605	1,493	1,676	
		3,839	1,542	2,355	

Focused Two-Week Data View



Season Total Overview

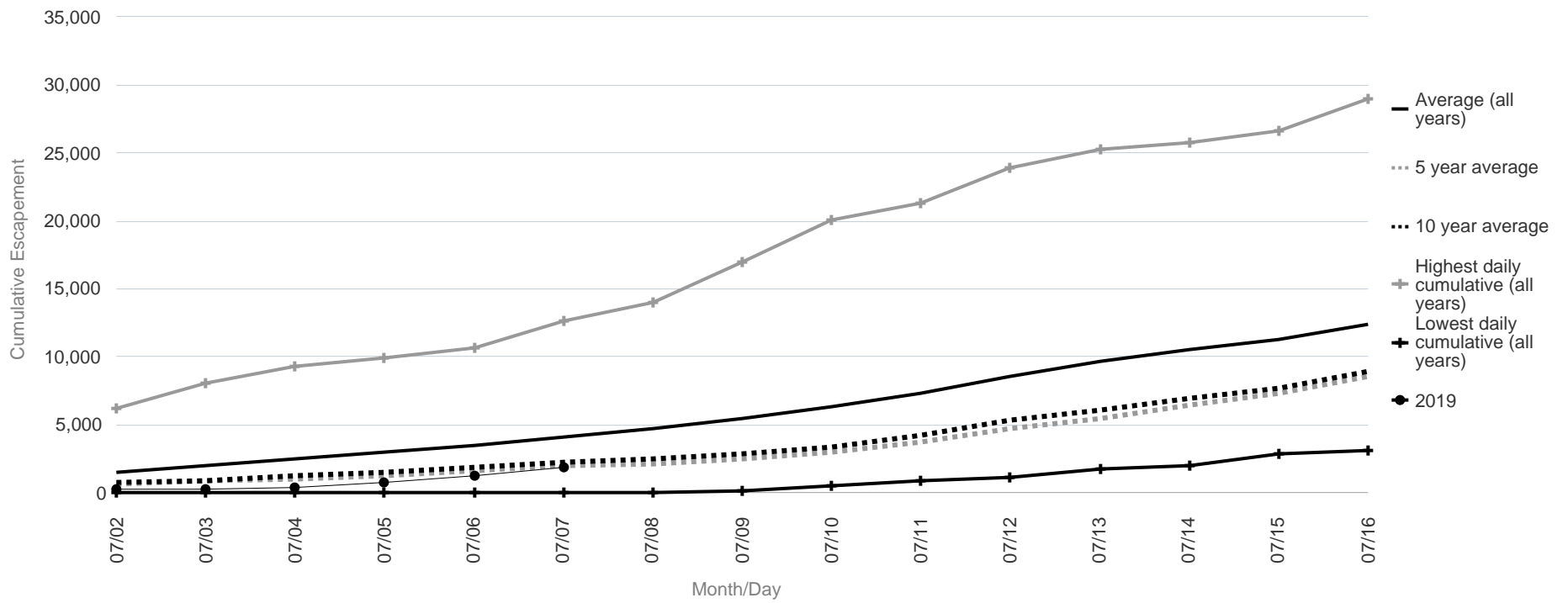


Kwethluk River Salmon Monitoring Project Cumulative Daily Passage of Chum Salmon

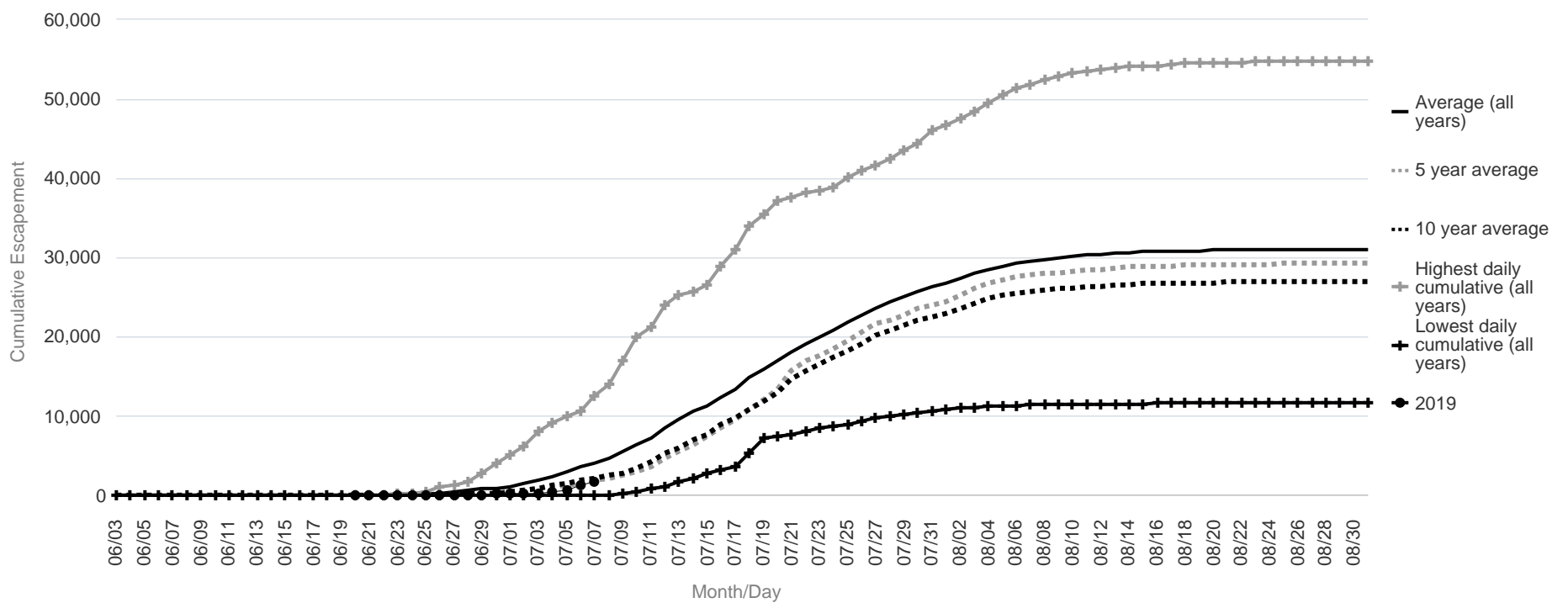
Date	Lowest daily cumulative (all years)	Average (all years)	5 year average	10 year average	Highest daily cumulative (all years)	2019
07/02	40	1,506	666	733	6,203	221
07/03	45	1,983	848	937	8,014	268
07/04	49	2,449	1,058	1,223	9,260	397
07/05	54	2,974	1,297	1,543	9,965	728
07/06	64	3,550	1,627	1,885	10,653	1,255
07/07	69	4,122	1,953	2,239	12,646	1,834
07/08	75	4,739	2,184	2,528	14,065	
07/09	202	5,474	2,519	2,862	17,038	
07/10	521	6,395	2,997	3,397	20,074	
07/11	904	7,351	3,746	4,241	21,339	
07/12	1,142	8,604	4,731	5,309	23,940	
07/13	1,709	9,659	5,527	6,075	25,299	
07/14	2,060	10,557	6,467	6,973	25,719	
07/15	2,858	11,347	7,369	7,736	26,606	
07/16	3,153	12,399	8,625	8,887	28,951	

	Lowest Count	Average Count	5 Year Average	10 Year Average	Highest Count
Season Total	11,691	31,104	29,379	27,080	54,913

Focused Two-Week Data View



Season Total Overview

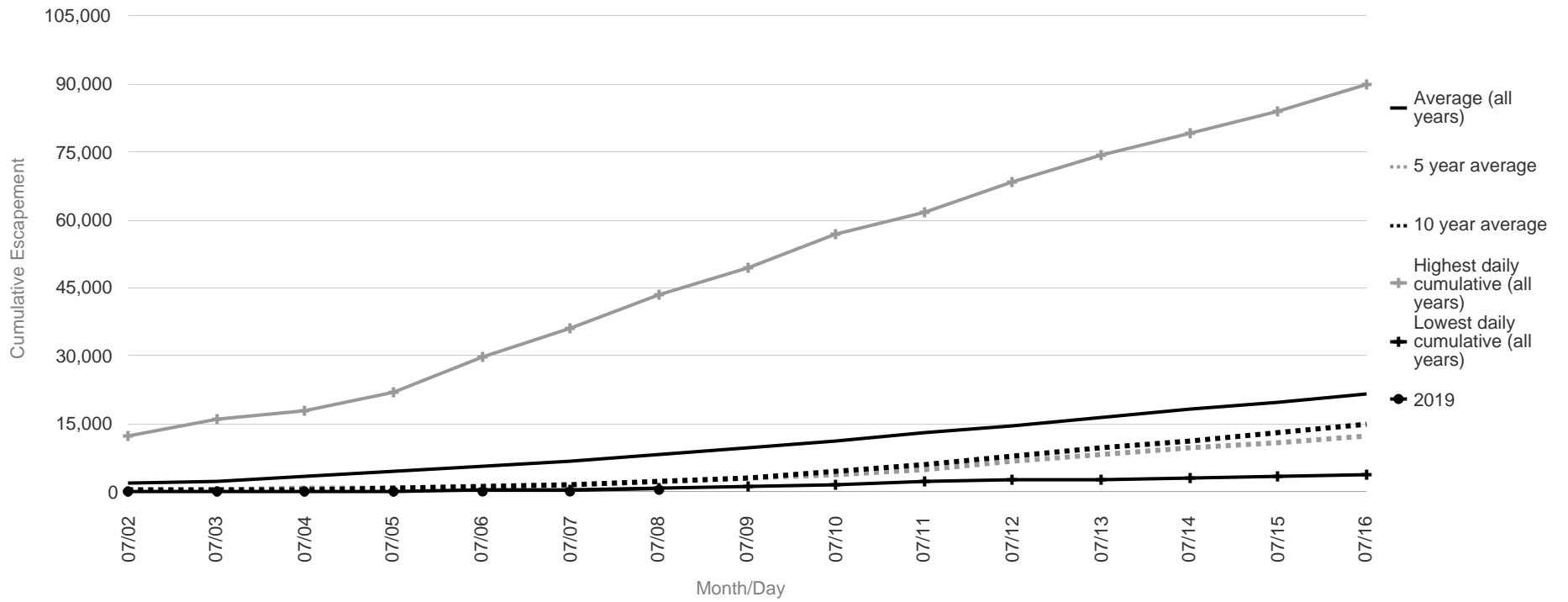


Kogrukluk River Salmon Monitoring Project Cumulative Daily Passage of Chum Salmon

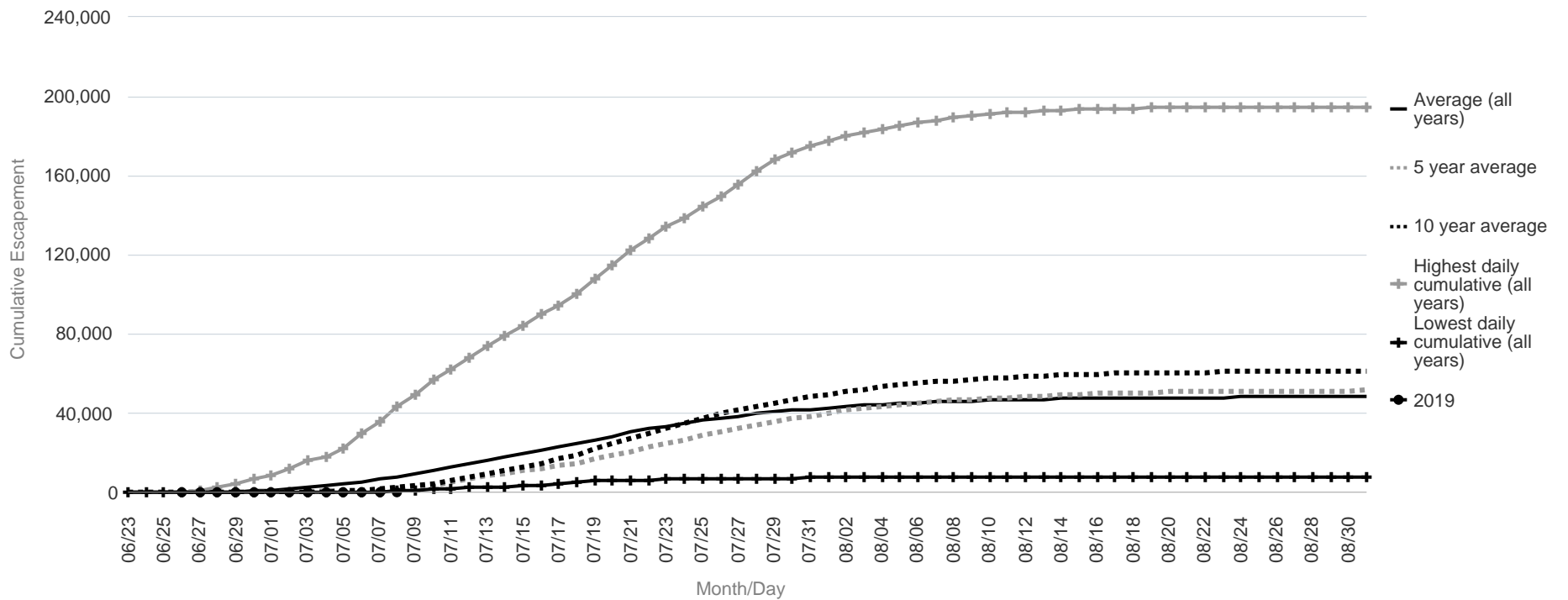
Escapement Goal Range: 15,000 to 49,000

		2,463	500	408	15,917	54
		3,275	639	559	18,024	75
		4,352	903	871	22,060	115
		5,560	1,186	1,237	29,780	163
		6,806	1,614	1,722	36,192	223
		8,201	2,131	2,321	43,627	321
		12,949	5,025	5,996	61,725	
		14,668	6,636	7,868	68,339	
		16,371	8,290	9,752	74,233	
		18,095	9,562	11,311	79,261	
		19,779	10,866	12,922	83,914	
		21,676	12,263	14,914	89,805	

Focused Two-Week Data View



Season Total Overview

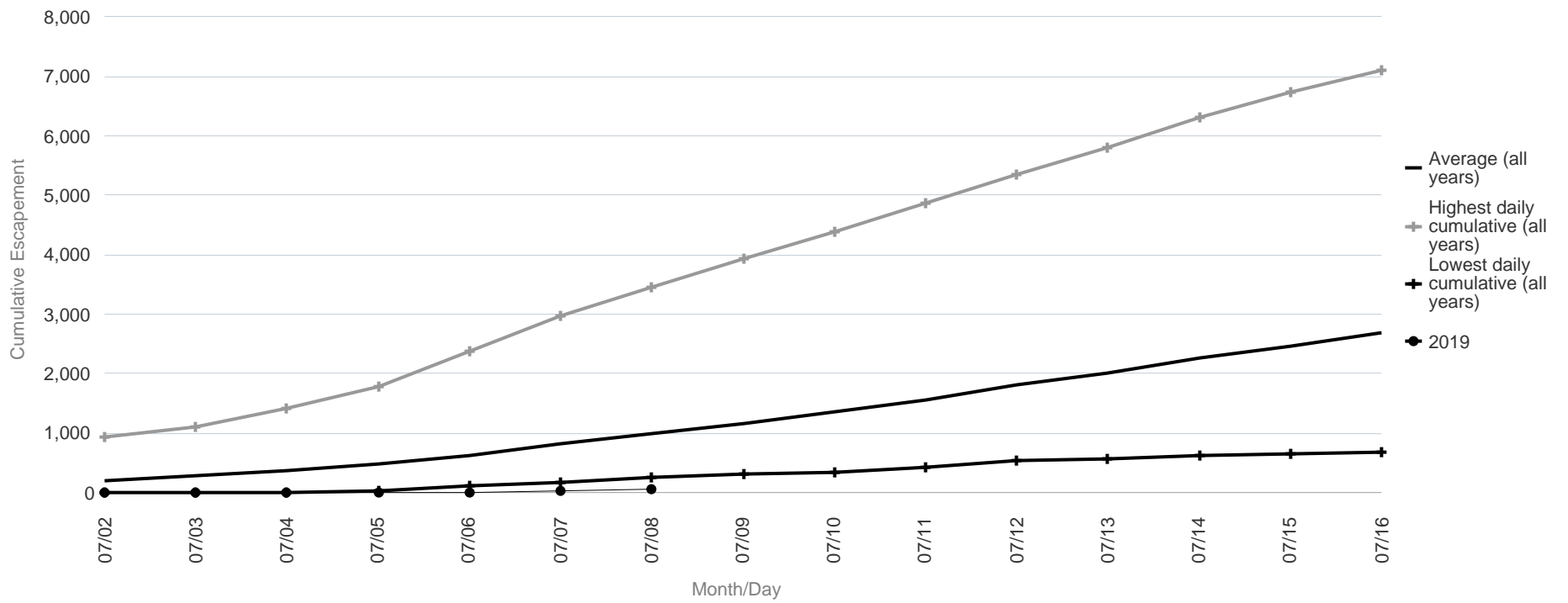


Takotna River Salmon Monitoring Project Passage of Chum Salmon

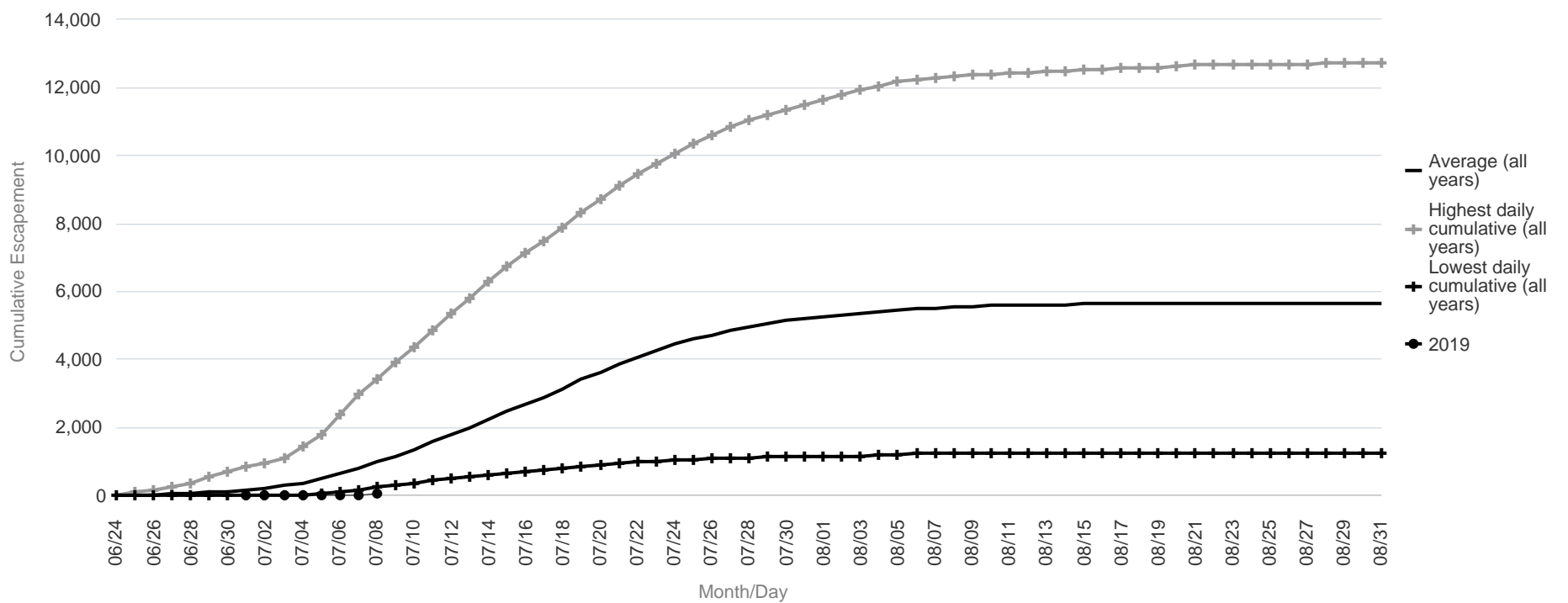
Date	Lowest daily cumulative (all years)	Average (all years)	Highest daily cumulative (all years)	2019
07/02	0	216	933	0
07/03	0	287	1,121	2
07/04	1	368	1,430	3
07/05	36	482	1,781	4
07/06	122	629	2,374	18
07/07	163	817	2,990	28
07/08	253	997	3,449	53
07/09	305	1,170	3,929	
07/10	357	1,371	4,391	
07/11	440	1,571	4,860	
07/12	529	1,805	5,348	
07/13	578	2,011	5,796	
07/14	628	2,257	6,313	
07/15	663	2,468	6,726	
07/16	696	2,682	7,118	

	Lowest Count	Average Count	Highest Count
Season Total	1,265	5,678	12,729

Focused Two-Week Data View



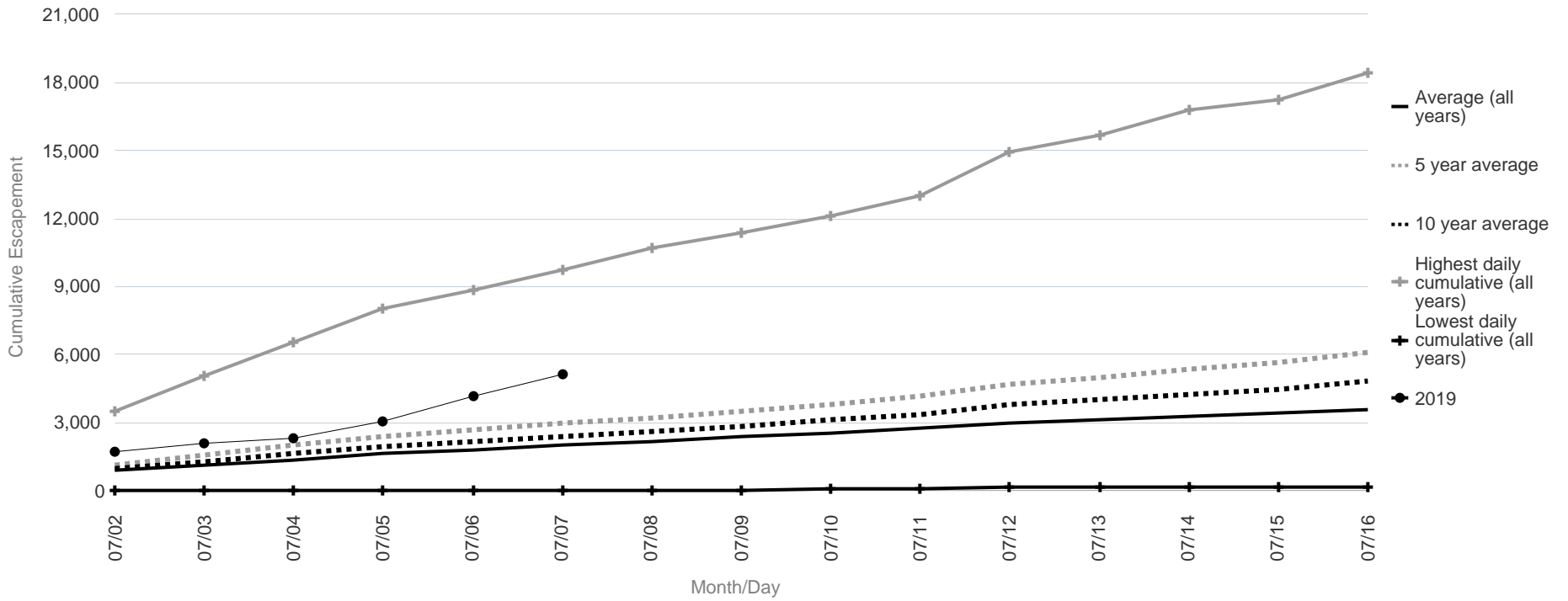
Season Total Overview



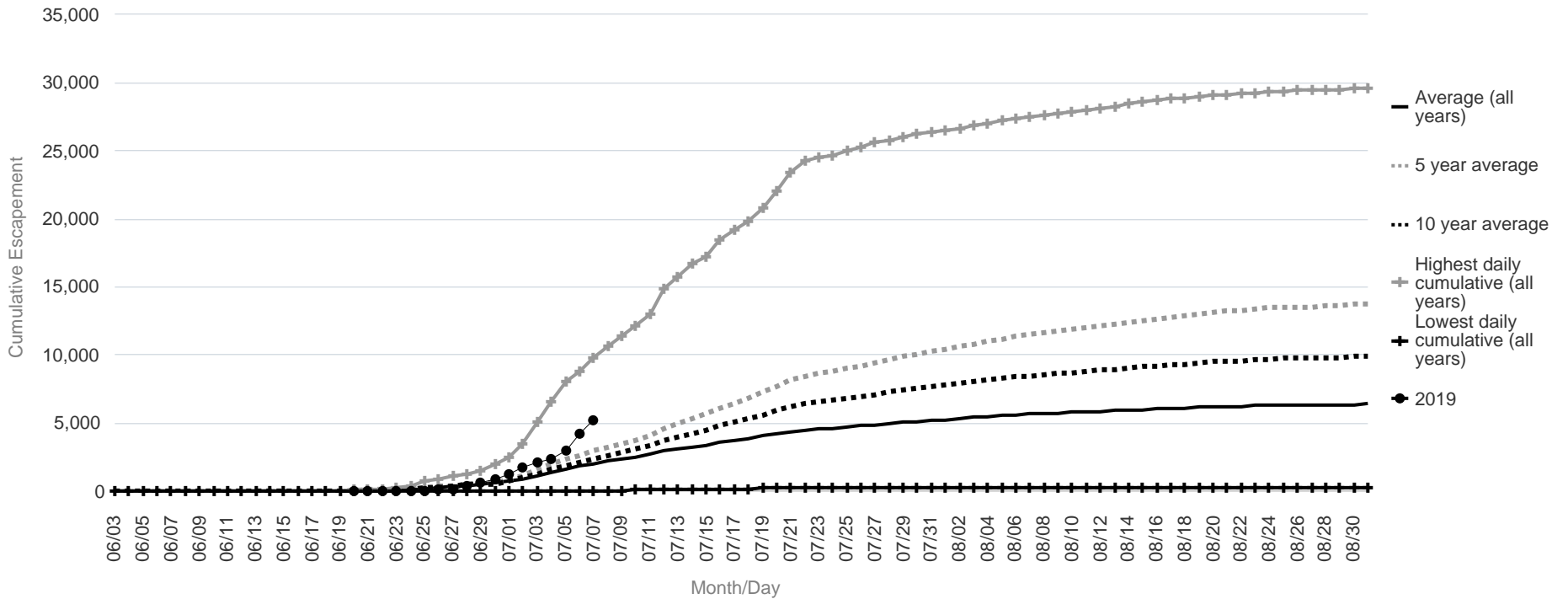
Kwethluk River Salmon Monitoring Project Cumulative Daily Passage of Sockeye Salmon

			1,150	1,575	1,282	5,053	2,069
			1,380	1,992	1,631	6,537	2,346
			1,621	2,377	1,934	8,056	3,042
			1,822	2,678	2,170	8,853	4,194
			1,999	2,973	2,387	9,773	5,174
			2,194	3,243	2,623	10,694	
			2,740	4,137	3,388	12,975	
			2,981	4,658	3,785	14,913	
			3,126	4,982	4,013	15,714	
			3,279	5,364	4,278	16,773	
			3,406	5,669	4,498	17,241	
			3,576	6,072	4,805	18,447	

Focused Two-Week Data View



Season Total Overview

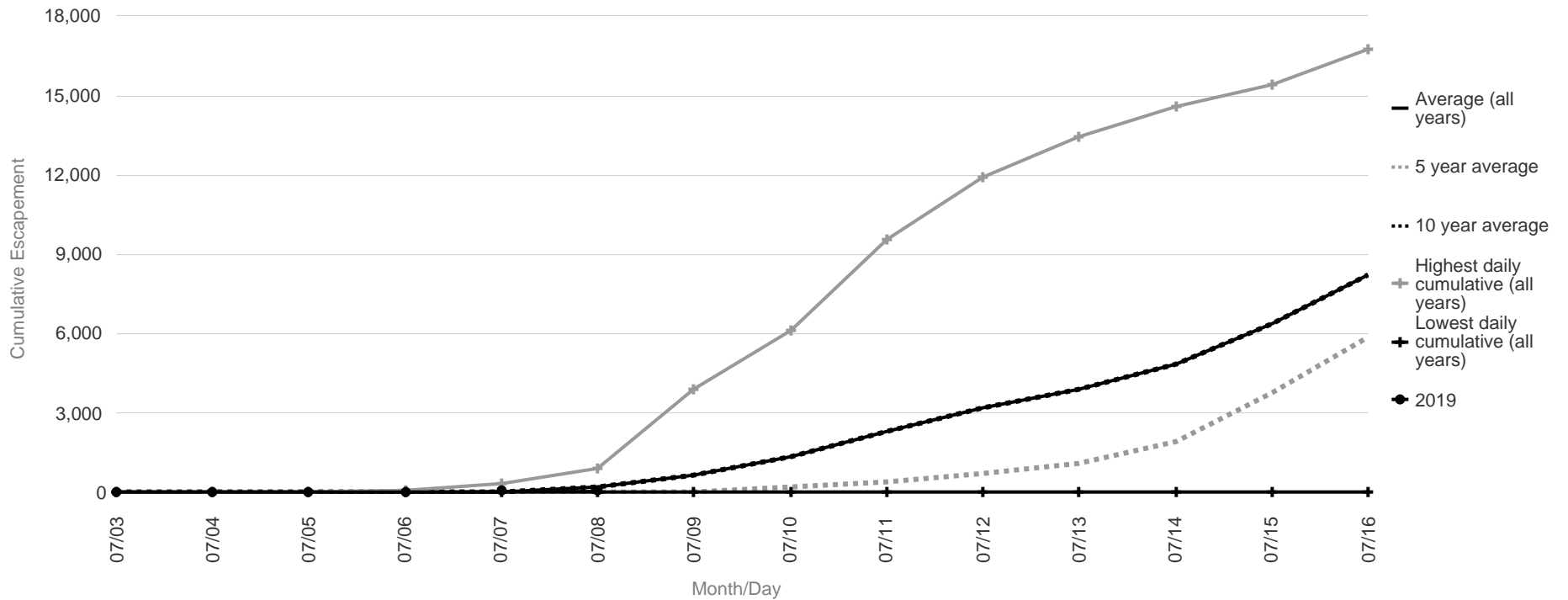


Telaquana River Salmon Monitoring Project Passage of Sockeye Salmon

Date	Lowest daily cumulative (all years)	Average (all years)	5 year average	10 year average	Highest daily cumulative (all years)	2019
07/03	0	0	0	0	0	0
07/04	0	0	0	0	0	0
07/05	0	0	0	0	0	0
07/06	0	7	0	7	59	2
07/07	0	34	1	34	302	46
07/08	0	175	4	175	928	68
07/09	0	653	8	653	3,921	
07/10	0	1,336	208	1,336	6,135	
07/11	0	2,304	367	2,304	9,584	
07/12	0	3,219	699	3,219	11,918	
07/13	1	3,901	1,082	3,901	13,466	
07/14	2	4,879	1,898	4,879	14,612	
07/15	2	6,395	3,740	6,395	15,403	
07/16	3	8,217	5,892	8,217	16,784	

	Lowest Count	Average Count	5 Year Average	10 Year Average	Highest Count
Season Total	23,005	78,135	109,025	78,135	197,352

Focused Two-Week Data View



Season Total Overview

