
Kuskokwim River In-season Harvest and Effort Estimates

6/23/2023 Subsistence Harvest Opportunity (Drift & Set Nets)

Opportunity Time Period: 7:00 AM – 7:00 PM (12 Hours)

Area Covered by Estimates: Tuntutuliak ↔ Bogus Cr.



Data Sources

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

Data Source	Interviews	Percent
Bethel Boat Harbor (ONC)	143	54%
Other Villages (KRITFC)	86	32%
Bethel Area Fish Camps (ONC)	38	14%
Total	267	100%

Of these interviews, **258** were from drift nets and **9** were from set nets.

TABLE 2. The time each flight was conducted and fishers counted each flight.

Time Information			Nets Counted	
Start Time	End Time	Hours	Drift	Set
10:15 AM	12:10 PM	1.92	371	27
4:11 PM	5:50 PM	1.65	229	10

Effort Estimates

- An estimated **449** drift boat trips occurred.
 - An estimated **74%** of the trips counted on flight 2 were also counted on flight 1.
 - An estimated **18** trips started and ended when no flights occurred.
- An estimated **33** set net trips occurred.

Harvest Estimates

- An estimated total of **21,175 (18,656 – 23,978)** salmon were harvested.
 - An estimated total of **6,949 (5,871 – 8,121)** Chinook salmon were harvested.
 - An estimated total of **4,647 (3,915 – 5,428)** chum salmon were harvested.
 - An estimated total of **38 (12 – 73)** coho salmon were harvested.
 - An estimated total of **9,541 (8,274 – 10,943)** sockeye salmon were harvested.
- Harvest by set nets accounted for an estimated **897 (296 – 1,728)** total salmon (**17%** Chinook salmon, **7%** chum salmon, **0%** coho salmon, and **76%** sockeye salmon).

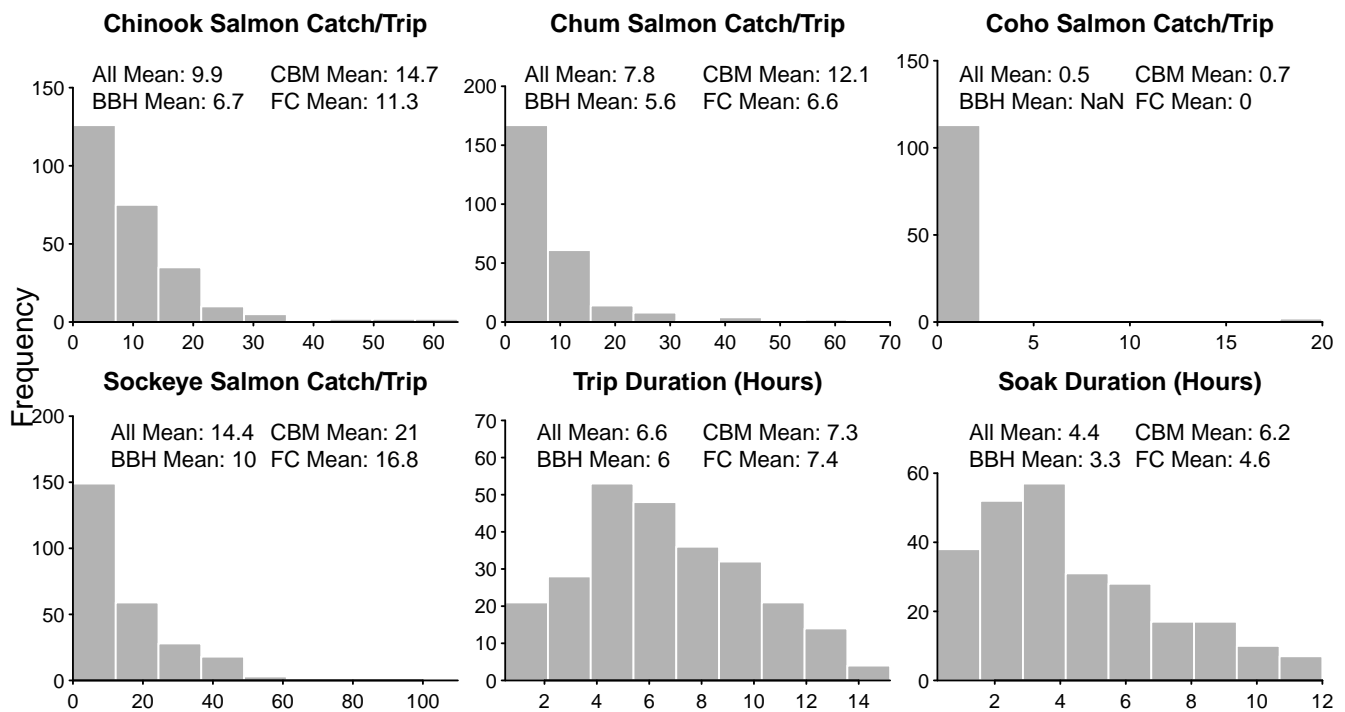
TABLE 3. Summaries by river stratum (area) for drift nets. Numbers in parentheses are 95% confidence intervals.

Stratum	Interviews	Effort Est.	Estimated Harvest				
			Chinook	Chum	Coho	Sockeye	Total
Tuntutuliak ↔ Johnson R.	18	78	2,479 (1,600 – 3,550)	1,151 (786 – 1,625)	0 (0 – 0)	1,622 (1,094 – 2,264)	5,251 (3,744 – 6,934)
Johnson R. ↔ Napaskiak	71	92	1,028 (825 – 1,242)	1,226 (874 – 1,653)	0 (0 – 0)	2,082 (1,567 – 2,688)	4,336 (3,475 – 5,285)
Napaskiak ↔ Akiachak	163	218	2,565 (2,069 – 3,088)	1,710 (1,280 – 2,249)	19 (0 – 53)	4,037 (3,251 – 5,005)	8,330 (6,771 – 10,175)
Akiachak ↔ Akiak	4	36	430 (349 – 520)	294 (222 – 390)	11 (1 – 25)	667 (528 – 826)	1,402 (1,142 – 1,724)
Akiak ↔ Bogus Cr.	2	25	296 (241 – 359)	201 (154 – 265)	8 (1 – 17)	454 (364 – 559)	958 (790 – 1,163)
Total	258	449	6,797 (5,746 – 8,011)	4,582 (3,849 – 5,364)	38 (12 – 73)	8,861 (7,808 – 10,117)	20,278 (17,882 – 23,007)

TABLE 4. Estimated trips, average (95% confidence limits) total salmon catch per trip, and percent catch by species summarized for the areas above and below the confluence of the Johnson River with the Kuskokwim River. Quantities are derived from the strata- and species-specific harvest estimates, not the raw interview data.

Location	Total Trips	Total Catch/Trip	Salmon Species % Composition			
			Chinook	Chum	Coho	Sockeye
Downstream of Johnson R.	78	67 (48 – 89)	47% (38% – 55%)	22% (15% – 30%)	0% (0% – 0%)	31% (24% – 37%)
Upstream of Johnson R.	371	41 (36 – 46)	29% (26% – 31%)	23% (20% – 25%)	<1% (0% – 1%)	48% (45% – 51%)

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 (KRITFC), FC = Bethel Area Fish Camps (ONC).



Appendix A: 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 per trip of Chinook salmon by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ↔ Johnson R.	18	5	10	17	22	40
Johnson R. ↔ Napaskiak	71	0	4	10	14	35
Napaskiak ↔ Akiachak	163	0	2	9	12	64
Akiachak ↔ Akiak	4	6	10	24	30	60
Akiak ↔ Bogus Cr.	2	2	3	4	4	5
All	258	0	3	10	14	64

TABLE A2. Summary of drift net catch rate of Chinook salmon by fishing area (fish per 150 feet of net per hour).

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ↔ Johnson R.	18	0.8	1.2	5.2	5.2	22.9
Johnson R. ↔ Napaskiak	71	0	1.1	2.4	2.9	9.2
Napaskiak ↔ Akiachak	162	0	0.9	2.8	3.3	25
Akiachak ↔ Akiak	4	1.4	2.2	3.2	4.1	5.4
Akiak ↔ Bogus Cr.	2	0.4	1	1.7	2.3	3
All	257	0	1	2.8	3.3	25

TABLE A3. Summary of drift net catch per trip of chum salmon by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ↔ Johnson R.	18	0	4	12	15	60
Johnson R. ↔ Napaskiak	71	0	3	9	12	60
Napaskiak ↔ Akiachak	163	0	1	6	8	70
Akiachak ↔ Akiak	4	9	10	22	32	40
Akiak ↔ Bogus Cr.	2	2	3	4	6	7
All	258	0	1	8	11	70

TABLE A4. Summary of drift net catch rate of chum salmon by fishing area (fish per 150 feet of net per hour).

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ↔ Johnson R.	18	0	0.6	2.4	3.8	5.7
Johnson R. ↔ Napaskiak	71	0	0.6	2.8	3.1	27.7
Napaskiak ↔ Akiachak	162	0	0.2	1.9	2.4	35
Akiachak ↔ Akiak	4	1.8	1.8	3.6	4.5	7.1
Akiak ↔ Bogus Cr.	2	1.2	1.2	1.2	1.3	1.3
All	257	0	0.4	2.2	2.7	35

TABLE A5. Summary of drift net catch per trip of coho salmon by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ↔ Johnson R.	18	0	0	0	0	0
Johnson R. ↔ Napaskiak	71	0	0	0	0	0
Napaskiak ↔ Akiachak	163	0	0	0	0	20
Akiachak ↔ Akiak	4	0	5	10	15	20
Akiak ↔ Bogus Cr.	2	2	2	2	2	2
All	258	0	0	1	0	20

TABLE A6. Summary of drift net catch rate of coho salmon by fishing area (fish per 150 feet of net per hour).

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ↔ Johnson R.	18	0	0	0	0	0
Johnson R. ↔ Napaskiak	71	0	0	0	0	0
Napaskiak ↔ Akiachak	162	0	0	0	0	1
Akiachak ↔ Akiak	4	0	0.9	1.2	1.8	1.9
Akiak ↔ Bogus Cr.	2	0.4	0.4	0.4	0.4	0.4
All	257	0	0	0	0	1.9

TABLE A7. Summary of drift net catch per trip of sockeye salmon by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ↔ Johnson R.	18	0	3	13	15	35
Johnson R. ↔ Napaskiak	71	0	6	17	26	45
Napaskiak ↔ Akiachak	163	0	4	14	16	110
Akiachak ↔ Akiak	4	2	7	13	15	30
Akiak ↔ Bogus Cr.	2	0	1	2	3	4
All	258	0	5	14	20	110

TABLE A8. Summary of drift net catch rate of sockeye salmon by fishing area (fish per 150 feet of net per hour).

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ↔ Johnson R.	18	0	0.8	3.3	4	14.8
Johnson R. ↔ Napaskiak	71	0	1.9	4.8	5	27.6
Napaskiak ↔ Akiachak	162	0	1.3	4.4	5	55
Akiachak ↔ Akiak	4	0.5	1.5	1.7	2.1	2.7
Akiak ↔ Bogus Cr.	2	0	0.6	1.2	1.8	2.4
All	257	0	1.4	4.4	5	55

TABLE A9. Summary of drift net percent composition of Chinook salmon by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ↔ Johnson R.	18	42%	46%	52%	54%	67%
Johnson R. ↔ Napaskiak	71	9%	22%	32%	39%	82%
Napaskiak ↔ Akiachak	163	0%	18%	33%	45%	100%
Akiachak ↔ Akiak	4	16%	28%	32%	40%	40%
Akiak ↔ Bogus Cr.	2	18%	18%	18%	18%	18%
All	258	0%	20%	33%	44%	100%

TABLE A10. Summary of drift net trip duration by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ↔ Johnson R.	18	2.5	7	8.3	9.4	15.2
Johnson R. ↔ Napaskiak	71	1	4.5	6.6	8.8	14
Napaskiak ↔ Akiachak	162	0.5	4	6.3	8.7	14.9
Akiachak ↔ Akiak	4	9.1	11.3	11.3	12	12
Akiak ↔ Bogus Cr.	2	8.4	9.3	10.2	11.1	12
All	257	0.5	4.4	6.6	9	15.2

TABLE A11. Summary of drift net active fishing hours by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ↔ Johnson R.	18	1.3	2.4	4.1	5.2	8.5
Johnson R. ↔ Napaskiak	71	0.8	2.6	5	7.5	10.5
Napaskiak ↔ Akiachak	162	0.2	2	4.2	5.8	12
Akiachak ↔ Akiak	4	3	3	4.8	5.8	8
Akiak ↔ Bogus Cr.	2	1.7	2	2.3	2.7	3
All	257	0.2	2.1	4.4	6	12

Appendix B: Non-salmon Harvest Information

- An estimated total of **137 (80 – 215)** nonsalmon were harvested.
 - An estimated total of **70 (34 – 119)** sheefish were harvested.
 - An estimated total of **67 (25 – 134)** all whitefishes were harvested.
- Harvest by set nets accounted for an estimated **0 (0 – 0)** total nonsalmon (**0%** sheefish and **0%** all whitefishes).

TABLE B1. Summaries by river stratum (area) for drift nets. Numbers in parentheses are 95% confidence intervals.

Stratum	Interviews	Effort Est.	Estimated Harvest		
			Sheefish	Whitefish	Total
Tuntutuliak ↔ Johnson R.	18	78	2 (0 – 7)	0 (0 – 0)	2 (0 – 7)
Johnson R. ↔ Napaskiak	71	92	24 (3 – 63)	9 (1 – 19)	33 (9 – 72)
Napaskiak ↔ Akiachak	163	218	34 (12 – 64)	46 (8 – 113)	80 (32 – 149)
Akiachak ↔ Akiak	4	36	6 (2 – 11)	7 (1 – 18)	13 (5 – 25)
Akiak ↔ Bogus Cr.	2	25	4 (2 – 8)	5 (1 – 13)	9 (4 – 17)
Total	258	449	70 (34 – 119)	67 (25 – 134)	137 (80 – 215)

TABLE B2. Summary of drift net catch per trip of sheefish by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ↔ Johnson R.	18	0	0	0	0	1
Johnson R. ↔ Napaskiak	71	0	0	0	0	6
Napaskiak ↔ Akiachak	163	0	0	0	0	2
Akiachak ↔ Akiak	4	0	0	0	0	2
Akiak ↔ Bogus Cr.	2	0	0	0	0	0
All	258	0	0	0	0	6

TABLE B3. Summary of drift net catch per trip of all whitefishes by fishing area.

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ↔ Johnson R.	18	0	0	0	0	0
Johnson R. ↔ Napaskiak	71	0	0	0	0	2
Napaskiak ↔ Akiachak	163	0	0	0	0	1
Akiachak ↔ Akiak	4	0	0	0	0	0
Akiak ↔ Bogus Cr.	2	0	0	0	1	1
All	258	0	0	0	0	2