

# Kuskokwim River In-season Harvest and Effort Estimates

## 7/16/2021 Subsistence Harvest Opportunity (Drift & Set Nets)

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

Area Covered by Estimates: Tuntutuliak ↔ Akiak

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Special Action #: 3-KS-03-21

Special Action: [https://www.fws.gov/uploadedFiles/3-KS-03-21\\_Final\\_7.1.2021.pdf?fbclid=IwAR2tAlnoL7tVqfm3s40yFia6NXPVI9yaIYMCrY6-fm4BGfZDt98c4e7a8Lg](https://www.fws.gov/uploadedFiles/3-KS-03-21_Final_7.1.2021.pdf?fbclid=IwAR2tAlnoL7tVqfm3s40yFia6NXPVI9yaIYMCrY6-fm4BGfZDt98c4e7a8Lg)



## Data Sources

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

Data Source	Interviews	Percent
Bethel Boat Harbor (ONC)	55	75%
Bethel Area Fish Camps (ONC)	12	16%
Other Villages (BSFA/KRITFC)	6	8%
<b>Total</b>	<b>73</b>	<b>100%</b>

Of these interviews, **68** were from drift nets and **5** 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
3:45 PM	4:50 PM	1.08	101	4

## Effort Estimates

- An estimated **189** total drift boat trips occurred.
  - Since only one flight was conducted, the counts did not need to be corrected for double counts.
  - An estimated **87** trips were not counted during any flight.
- An estimated **4** total set net trips occurred.

## Harvest Estimates

- An estimated total of **3,580 (3,030 – 4,200)** salmon were harvested.
  - An estimated total of **240 (180 – 320)** Chinook salmon were harvested.
  - An estimated total of **520 (350 – 720)** chum salmon were harvested.
  - An estimated total of **2,830 (2,360 – 3,330)** sockeye salmon were harvested.
- Harvest by set nets accounted for an estimated **100 (60 – 140)** total salmon (0% Chinook salmon, 0% chum salmon, and 100% sockeye salmon).

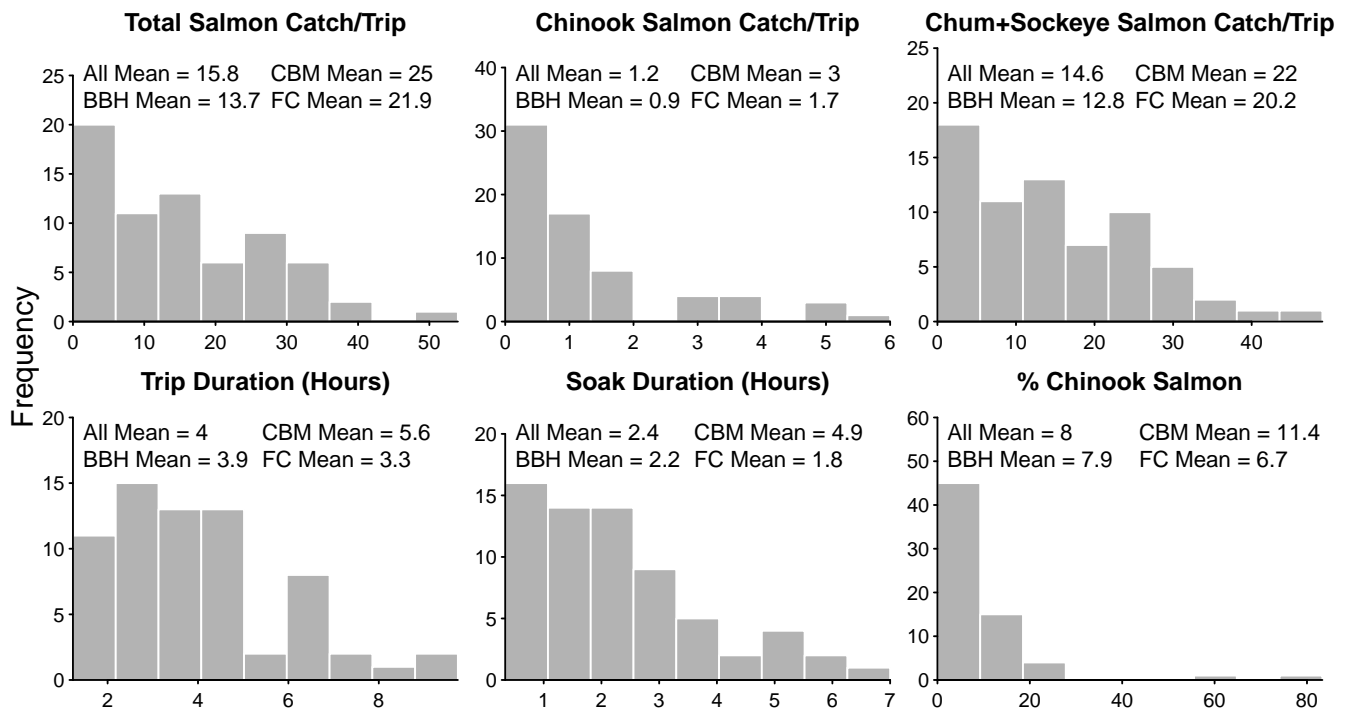
**TABLE 3.** Summary of relevant quantities by river stratum (area) for drift nets. Numbers in parentheses are 95% confidence intervals.

Stratum	Interviews	Effort Est.	Estimated Harvest			
			Chinook	Chum	Sockeye	Total
Tuntutuliak ↔ Johnson R.	2	32	30 (0 – 60)	100 (30 – 180)	440 (240 – 640)	560 (300 – 840)
Johnson R. ↔ Napaskiak	7	37	50 (30 – 80)	100 (60 – 160)	560 (430 – 710)	720 (560 – 880)
Napaskiak ↔ Akiachak	57	101	140 (80 – 200)	270 (130 – 440)	1,460 (1,080 – 1,920)	1,860 (1,400 – 2,360)
Akiachak ↔ Akiak	0	19	30 (20 – 40)	50 (20 – 80)	280 (200 – 360)	350 (270 – 450)
<b>All</b>	<b>66</b>	<b>189</b>	<b>240</b> (180 – 320)	<b>510</b> (350 – 710)	<b>2,730</b> (2,260 – 3,230)	<b>3,490</b> (2,930 – 4,100)

**TABLE 4.** Average (95% confidence limits) total salmon catch per trip and percent Chinook salmon, 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.

Quantity	Proximity to Johnson R. Mouth	
	Downstream	Upstream
Total Catch/Trip	17 (9 – 26)	19 (15 – 22)
% Chinook Salmon	4% (1% – 9%)	7% (5% – 10%)

**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	0	0	0	0
Johnson R. ↔ Napaskiak	6	0	0.1	0.4	0.6	0.7
Napaskiak ↔ Akiachak	54	0	0	0.7	1	5
<b>All</b>	<b>62</b>	<b>0</b>	<b>0</b>	<b>0.6</b>	<b>0.7</b>	<b>5</b>

**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	0	0	0	0	0
Johnson R. ↔ Napaskiak	7	0	1	2	4	6
Napaskiak ↔ Akiachak	57	0	0	1	2	5
<b>All</b>	<b>66</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>6</b>

**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	0	0.6	1.2	1.8	2.4
Johnson R. ↔ Napaskiak	6	3.8	4.7	6.6	9.2	11
Napaskiak ↔ Akiachak	54	0	3.1	8.3	11.5	42
<b>All</b>	<b>62</b>	<b>0</b>	<b>3.1</b>	<b>7.9</b>	<b>10.5</b>	<b>42</b>

**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	0	1	2	2	3
Johnson R. ↔ Napaskiak	7	10	18	22	26	33
Napaskiak ↔ Akiachak	57	0	5	14	24	49
<b>All</b>	<b>66</b>	<b>0</b>	<b>5</b>	<b>15</b>	<b>24</b>	<b>49</b>

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

Area	N	Min	25%	Mean	75%	Max
<b>Tuntutuliak ↔ Johnson R.</b>	2	0%	0%	0%	0%	0%
<b>Johnson R. ↔ Napaskiak</b>	7	0%	4%	9%	12%	15%
<b>Napaskiak ↔ Akiachak</b>	57	0%	0%	8%	12%	83%
<b>All</b>	<b>66</b>	<b>0%</b>	<b>0%</b>	<b>8%</b>	<b>12%</b>	<b>83%</b>

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

Area	N	Min	25%	Mean	75%	Max
<b>Tuntutuliak ↔ Johnson R.</b>	2	1.2	1.4	1.6	1.8	2
<b>Johnson R. ↔ Napaskiak</b>	6	2	2.5	4	5.4	6
<b>Napaskiak ↔ Akiachak</b>	54	0.3	1.3	2.2	3	6
<b>All</b>	<b>62</b>	<b>0.3</b>	<b>1.4</b>	<b>2.4</b>	<b>3</b>	<b>6</b>

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

Area	N	Min	25%	Mean	75%	Max
<b>Tuntutuliak ↔ Johnson R.</b>	2	2.5	2.6	2.8	2.9	3
<b>Johnson R. ↔ Napaskiak</b>	7	2	3.5	5.1	6.5	8
<b>Napaskiak ↔ Akiachak</b>	57	1.2	2.5	3.9	5	9.8
<b>All</b>	<b>66</b>	<b>1.2</b>	<b>2.5</b>	<b>4</b>	<b>5</b>	<b>9.8</b>

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

Area	N	Min	25%	Mean	75%	Max
<b>Tuntutuliak ↔ Johnson R.</b>	2	1:00 PM	1:41 PM	2:22 PM	3:03 PM	3:45 PM
<b>Johnson R. ↔ Napaskiak</b>	7	7:00 AM	8:00 AM	10:12 AM	12:00 PM	3:00 PM
<b>Napaskiak ↔ Akiachak</b>	57	6:00 AM	9:00 AM	11:50 AM	2:00 PM	5:00 PM
<b>All</b>	<b>66</b>	<b>6:00 AM</b>	<b>9:00 AM</b>	<b>11:44 AM</b>	<b>2:00 PM</b>	<b>5:00 PM</b>

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

Area	N	Min	25%	Mean	75%	Max
<b>Tuntutuliak ↔ Johnson R.</b>	2	3:30 PM	4:18 PM	5:07 PM	5:56 PM	6:45 PM
<b>Johnson R. ↔ Napaskiak</b>	7	1:00 PM	2:30 PM	3:21 PM	4:00 PM	6:30 PM
<b>Napaskiak ↔ Akiachak</b>	57	10:17 AM	2:25 PM	3:43 PM	5:48 PM	6:45 PM
<b>All</b>	<b>66</b>	<b>10:17 AM</b>	<b>2:30 PM</b>	<b>3:43 PM</b>	<b>5:45 PM</b>	<b>6:45 PM</b>