Kuskokwim River In-season Harvest and Effort Estimates

6/16/2022 Subsistence Harvest Opportunity (Drift & Set Nets)

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

Area Covered by Estimates: Tuntutuliak ⟷ Akiak

Announcement #: 3-KS-01-22

Data Sources

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

Data Source	Interviews	Percent
Bethel Boat Harbor (ONC)	139	56%
Other Villages (BSFA/KRITFC)	84	34%
Bethel Area Fish Camps (ONC)	25	10%
Total	**248**	**100%**

Of these interviews, **240** were from drift nets and **8** 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**
10:00 AM	12:00 PM	2	374	31
2:00 PM	4:00 PM	2	389	24

Effort Estimates

- An estimated **473** total drift boat trips occurred.
  - An estimated **82%** of the trips counted on flight 2 were also counted on flight 1.
  - An estimated **28** trips were not counted during any flight.
- An estimated **32** total set net trips occurred.

Harvest Estimates

- An estimated total of **9,770 (7,860 – 12,030)** salmon were harvested.
  - An estimated total of **7,680 (6,360 – 9,150)** Chinook salmon were harvested.
  - An estimated total of **160 (90 – 270)** chum salmon were harvested.
  - An estimated total of **1,920 (1,260 – 2,970)** sockeye salmon were harvested.
- Harvest by set nets accounted for an estimated **160 (50 – 310)** total salmon (100% Chinook salmon, 0% chum salmon, and 0% sockeye salmon).

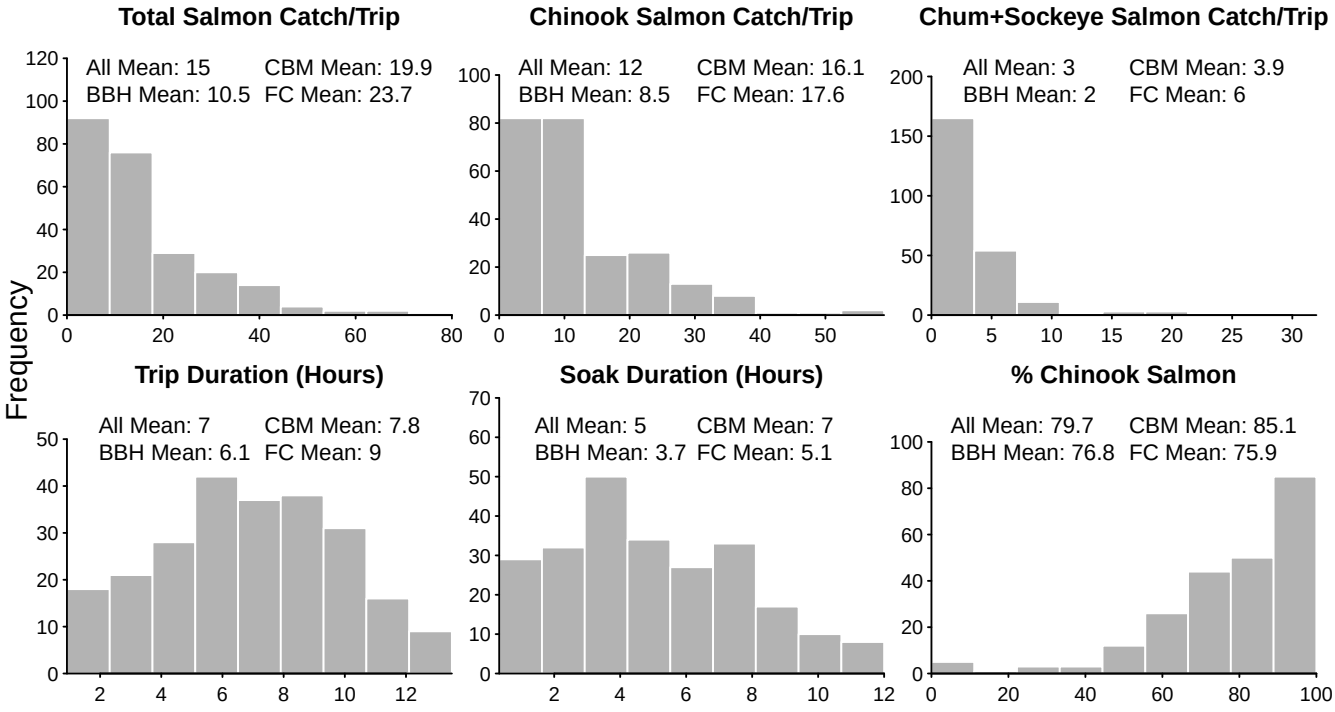
TABLE 3. Summary of relevant quantities by river stratum (area) for drift nets. Numbers in parentheses are 95% confidence intervals.

			Estimated Harvest			
Stratum	**Interviews**	**Effort Est.**	**Chinook**	**Chum**	**Sockeye**	**Total**
Tuntutuliak ⟷ Johnson R.	19	121	2,790 (1,630 – 4,170)	70 (10 – 150)	960 (360 – 2,030)	**3,820 (2,100 – 6,180)**
Johnson R. ⟷ Napaskiak	69	101	1,650 (1,380 – 1,950)	70 (30 – 120)	460 (350 – 580)	**2,180 (1,860 – 2,570)**
Napaskiak ⟷ Akiachak	149	200	2,450 (1,950 – 3,080)	20 (10 – 40)	400 (300 – 500)	**2,870 (2,340 – 3,540)**
Akiachak ⟷ Akiak	3	51	630 (510 – 790)	10 (0 – 10)	100 (80 – 130)	**740 (610 – 900)**
All	**240**	**473**	**7,520 (6,230 – 8,990)**	**160 (80 – 270)**	**1,920 (1,260 – 2,970)**	**9,600 (7,720 – 11,850)**

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.

	Proximity to Johnson R. Mouth	
Quantity	**Downstream**	**Upstream**
Total Catch/Trip	32 (17 – 51)	16 (15 – 19)
% Chinook Salmon	74% (63% – 85%)	82% (79% – 84%)

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 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.	19	0	6	16	30	59
Johnson R. ⟷ Napaskiak	69	0	7	16	23	50
Napaskiak ⟷ Akiachak	149	0	3	10	13	59
Akiachak ⟷ Akiak	3	7	9	10	12	12
All	**240**	**0**	**4**	**12**	**16**	**59**

TABLE A2. 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.	19	0	0.8	3.1	3.5	13.8
Johnson R. ⟷ Napaskiak	69	0	1.6	2.8	3.6	7.5
Napaskiak ⟷ Akiachak	149	0	1	2.9	3.4	40.8
Akiachak ⟷ Akiak	3	0.7	1	1.4	1.7	2.2
All	**240**	**0**	**1.1**	**2.9**	**3.6**	**40.8**

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

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ⟷ Johnson R.	19	0	2	5	5	25
Johnson R. ⟷ Napaskiak	69	0	1	5	7	32
Napaskiak ⟷ Akiachak	149	0	0	2	2	23
Akiachak ⟷ Akiak	3	2	2	3	3	4
All	**240**	**0**	**0**	**3**	**4**	**32**

TABLE A4. 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.	19	0	0.2	1.1	0.8	11.5
Johnson R. ⟷ Napaskiak	69	0	0.4	0.9	1.4	3.6
Napaskiak ⟷ Akiachak	149	0	0	0.5	0.7	3.8
Akiachak ⟷ Akiak	3	0.2	0.3	0.3	0.4	0.4
All	**240**	**0**	**0**	**0.7**	**0.9**	**11.5**

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

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ⟷ Johnson R.	19	50%	67%	75%	86%	94%
Johnson R. ⟷ Napaskiak	69	0%	67%	75%	85%	100%
Napaskiak ⟷ Akiachak	149	0%	71%	83%	100%	100%
Akiachak ⟷ Akiak	3	75%	76%	79%	81%	85%
All	**240**	**0%**	**70%**	**80%**	**100%**	**100%**

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

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ⟷ Johnson R.	19	1.5	2.4	4.9	6.3	10.8
Johnson R. ⟷ Napaskiak	69	0.5	3.8	5.5	7.5	11.2
Napaskiak ⟷ Akiachak	149	0.3	2	4.7	7	12
Akiachak ⟷ Akiak	3	5	6	7.3	8.5	10
All	**240**	**0.3**	**2.7**	**5**	**7**	**12**

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

Area	N	Min	25%	Mean	75%	Max
Tuntutuliak ⟷ Johnson R.	19	5.2	7.3	9.3	12.2	13.1
Johnson R. ⟷ Napaskiak	69	1.6	5.5	7.1	9	13.5
Napaskiak ⟷ Akiachak	149	0.9	4	6.5	9	13.2
Akiachak ⟷ Akiak	3	8.3	9.2	9.6	10.2	10.5
All	**240**	**0.9**	**4.7**	**7**	**9.2**	**13.5**

Appendix B: Non-salmon Harvest Information

- An estimated total of **810 (70 – 1,900)** non-salmon (sheefish and whitefishes) were harvested.
  - An estimated total of **50 (20 – 80)** sheefish were harvested.
  - An estimated total of **760 (30 – 1,850)** whitefishes were harvested.
- Harvest by set nets accounted for an estimated **680 (0 – 1,750)** total non-salmon fishes (0% sheefish and 100% whitefishes).

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

			Estimated Harvest		
Stratum	**Interviews**	**Effort Est.**	**Sheefish**	**Whitefishes**	**Total**
Tuntutuliak ⟷ Johnson R.	19	121	0 (0 – 0)	0 (0 – 0)	**0** **(0 – 0)**
Johnson R. ⟷ Napaskiak	69	101	10 (0 – 20)	10 (0 – 10)	**10** **(0 – 20)**
Napaskiak ⟷ Akiachak	149	200	30 (0 – 60)	60 (10 – 150)	**90** **(30 – 180)**
Akiachak ⟷ Akiak	3	51	10 (0 – 20)	20 (0 – 40)	**20** **(10 – 40)**
All	**240**	**473**	**50** **(20 – 80)**	**90** **(20 – 170)**	**130** **(60 – 220)**

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

Area	**N**	**Min**	**25%**	**Mean**	**75%**	**Max**
Tuntutuliak ⟷ Johnson R.	19	0	0	0	0	0
Johnson R. ⟷ Napaskiak	69	0	0	0	0	1
Napaskiak ⟷ Akiachak	149	0	0	0	0	2
Akiachak ⟷ Akiak	3	0	0	0	0	0
All	**240**	**0**	**0**	**0**	**0**	**2**

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

Area	**N**	**Min**	**25%**	**Mean**	**75%**	**Max**
Tuntutuliak ⟷ Johnson R.	19	0	0	0	0	0
Johnson R. ⟷ Napaskiak	69	0	0	0	0	1
Napaskiak ⟷ Akiachak	149	0	0	0	0	9
Akiachak ⟷ Akiak	3	0	0	0	0	1
All	**240**	**0**	**0**	**0**	**0**	**9**