

Yukon River Inseason Salmon Harvest Interviews, 2004

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Abstract

Subsistence salmon harvest information collected during the fishing season is an important management tool for Yukon River fishery managers. Information gauging progress towards subsistence salmon harvest goals, fishing conditions, and quality of subsistence catch was collected in 2004. Interviews were conducted in the Yukon River villages of Emmonak, Holy Cross, Nulato, Huslia, and Beaver between May 27 and September 20, 2004. A combined total of 370 interviews were conducted during the Chinook salmon *Oncorhynchus tshawytscha* and summer and fall chum salmon *O. keta* fishing seasons. Information from these interviews was reported during 16 weekly public Yukon River Drainage Fisheries Association teleconferences and used in three federal inseason memorandums of concurrence management reports. Subsistence harvest goal completion percentages varied by village and ranged from 56% to 97% for Chinook salmon, 70% to 83% for summer chum salmon, and 64% to 75% for fall chum salmon during the 2004 fishing season.

Introduction

Chinook *Oncorhynchus tshawytscha* and chum *O. keta* salmon spawn in the Yukon River and its tributaries which are located in the Yukon Delta, Koyukuk, Nowitna, Innoko, Kanuti, Arctic, and Yukon Flats National Wildlife Refuges (Figure 1). The Yukon River is approximately 2,000 miles in length, the majority of which 1,200 miles is located in Alaska and the remainder is in Canada (Kammerer 1990).

Chinook and summer chum salmon are important species for subsistence, commercial, sport, and personal use fisheries. Yukon River salmon return to their natal breeding grounds to spawn beginning in early summer and ending in late fall. Chinook salmon begin upstream migration in the Yukon River during late May (Bales 2006). Chinook salmon spawn throughout the Yukon River drainage with some spawning grounds located over 1,900 miles from the Bering Sea (Healey 1991). Summer chum salmon enter the Yukon River in early June and spawn primarily in tributaries located between the mouth of the Yukon River to the Tanana River drainage while fall chum salmon spawn in the middle and upper reaches and within the Canadian portion of the Yukon River mainstem (ADF&G 2002). Returning adult salmon are harvested in subsistence, personal use, commercial and sport fisheries in Alaska and in aboriginal and domestic fisheries in Canada (JTC 2007).

Postseason surveys have been conducted annually on the Yukon River by the Alaska Department of Fish and Game (ADF&G) Commercial Fisheries Division since 1961. These surveys help to estimate subsistence salmon harvest levels, evaluate management actions postseason, and detect and quantify shifts in harvest patterns and amounts (Borba and Hamner 2001). This information is only available postseason and therefore unavailable for inseason management. The ten year (1993-2002) average subsistence harvest was estimated at 51,500 Chinook and 103,300 summer chum salmon and 78,300 fall chum salmon (Busher 2005).

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Managing mixed stocks and overlapping species with compressed or similar Yukon River entry timing which are harvested using different gear types (set gillnets, drift gillnets, and fishwheels) with variable catch efficiencies is a complex task. Numerous projects are used to evaluate inseason salmon run-timing and strength, including test-net and fishwheel index fisheries, sonar, aerial counts, weir and tower counts, and salmon age assessment based on scales. However, these projects target quantitative data collection specific to escapement and run assessment and do not assess progress towards meeting subsistence harvest goals. As a result, inseason interviews were implemented to assist in meeting the mandate set forth in the Alaska Native Interest Lands Conservation Act (ANILCA) and the State of Alaska Statute 16.05.258 *Subsistence use and allocation of fish and game*, both of which require a priority for subsistence over other consumptive uses.

The goal of the inseason interview project was to collect and summarize inseason subsistence salmon harvest information so that it can be used in inseason management decisions. The information collected provides fisheries managers with comparative harvest indices and an additional salmon run evaluation tool. In addition, it promotes feedback from and fosters involvement in management by subsistence fishermen. The communities selected to participate in the study were chosen because of their proximity to federal conservation system units and the presence of a dedicated interviewer. Interview collection and summary techniques were based on a methodology developed in 2003 (Gerken and Holder 2005). The project was funded by the United States Fish and Wildlife Service (USFWS), Office of Subsistence Management, Fisheries Resource Monitoring Program.

The 2004 project objectives included:

1. Facilitate inseason subsistence salmon interviews by local residents from early June to mid September in six Yukon River communities (Emmonak, Holy Cross, Galena, Huslia, and Beaver).
2. Collect and document subsistence harvest information in a standardized format weekly from at least five active fishing households per village. Provide a summary of subsistence fishing to fisheries managers by Monday noon of each week for inclusion in inseason fisheries management decision-making.
3. Identify new local interviewers and encourage their participation in the preseason training program.

Methods

Data Collection

Individuals were selected as interviewers based on their in-depth knowledge about their community and local fishing activities. Interviewers were employed by the USFWS National Wildlife Refuge system as a refuge information technician (RIT) or contracted by the USFWS. Interviews with subsistence fishermen in Holy Cross, Nulato, Huslia and Beaver were conducted by RITs. Interviews in Emmonak were conducted by an Emmonak Tribal Council local hire under contract with the USFWS. The Koyukuk/Nowitna National Wildlife Refuge Complex (KNNWRC) subsistence coordinator conducted the interviews in Galena. USFWS personnel conducted a two-day training session in Galena, AK beginning on May 12, 2004 to familiarize interviewers with project methodology. USFWS fishery managers, KNNWRC staff, RITs from the villages of Holy Cross, Nulato, Huslia, and Beaver, the ADF&G Commercial Fisheries Division Staff, and Yukon River Drainage Fisheries Association (YRDFA) staff attended and provided suggestions and critical review comments for improving project methodology.

Before the fishing season, interviewers contacted households either in person or by telephone to explain the project, determine if members of the household were willing to participate in the project, and gain their consent to be interviewed. Household lists from the ADF&G postseason subsistence surveys were used to identify potential interview contacts. Information from the ADF&G postseason surveys categorized households into unique strata dependent upon their degree of harvest during the prior five fishing seasons. These harvest strata were: Unknown, Do Not Fish, Light (1-200 salmon), Medium (201-500 salmon), or Heavy (> 500 salmon) harvester (Brase and Hamner 2003). Households identified for this project were categorized in the medium and heavy harvest strata. The assumption guiding this selection was that households in the medium and heavy harvest strata fished longer and more frequently and would provide greater consistency in weekly subsistence fishing input.

Interviews¹ were conducted weekly from the end of May through the end of September with a minimum goal of five subsistence fishing households per village. Timing of interviews was dependent on when salmon were present. Interviews were conducted near the end of the week, typically on weekends. Interviewers collected information on: 1) fishing gear used; 2) relative comparison to the 2003 season catch rate (“better”, “same”, “poor”) and amount of time fished (“more”, “equal”, “less”); 3) harvest goal progression (expressed as a percentage in 25% increments) that households were making toward completing their subsistence harvest; and 4) general comments from fishermen related to the salmon run.

Interviewers summarized the results and provided the information to the USFWS project leader, who compiled the weekly subsistence information from all villages and distributed written weekly summaries to managers and the public. Verbal summaries for each village describing fishing conditions and subsistence harvest progression were presented at weekly public YR DFA teleconferences. Household specific interview information is confidential and no information that could identify an individual household was released to the general public.

Data Analysis

Data were analyzed in three ways. First, to evaluate inseason harvest progression a weekly average percentage was reported. This percentage represents the qualitative estimate of a village’s subsistence harvest goal progression throughout the fishing season. Second, to estimate harvest goal completion, a final percentage was reported. This percentage represented the qualitative estimate of a village’s harvest goal success. Third, the 2004 harvest trend was compared to the historical Chinook salmon run-timing quartiles. This comparison was important for monitoring subsistence fishing practices and evaluating and predicting subsistence salmon harvest goal progression and success during the fishing season.

The weekly average percentage for each village was calculated using household responses to the question “where are you at in your harvest (%)?” during an interview week. In order to maintain consistency between villages, the weekly average percentage was constrained by two criteria. First, once a household reported it began fishing, indicated by a reported harvest percentage > 0%, the household was included in all remaining weekly average percentages regardless of an interview occurring. It was assumed that a household continued to fish and that the reported percentage would not decrease. For example, if a household reported 50% on week one and was

¹ For the purposes of this study, an interview is defined as a meeting between an interviewer and a representative of a subsistence fishing household where information was obtained and documented by the interviewer.

not interviewed again until week four, the weekly harvest percentages for week two and week three was considered 50%. Second, once a household reported a 100% completion, it was considered to have met its harvest goal and was no longer interviewed for that species, but was included in following weekly averages as 100%. The weekly average percentage tracked harvest progression by village during the fishing season, interviews ended when the majority of fishing households reported 100% and those households not reporting 100% reported no longer fishing for a specific salmon species. The weekly average percentage was reported inseason in a weekly harvest summary datasheet (Appendix A).

Estimating the level of subsistence harvest goal success a village, as a whole, attained after the fishing season was expressed as a final percentage in the village summaries. The final percentage was the weighted average from all interviewed households during the 2004 fishing season. A household was included in the weighted average if it reported a harvest percentage greater than 0%. This percentage was weighted by the number of interviews per household. For example, a household interviewed twice had a lower weight in the final percentage than a household with ten interviews. Maintaining a consistent weekly household interview list was not always possible and some households were interviewed at a higher frequency than others. A household which fished and was consistently interviewed throughout the fishing season was thought to represent subsistence harvest progression more accurately than a household that was interviewed infrequently.

The values for the weekly average percentages were used to generate a scatterplot for each project village. A linear trend was fitted to the data using Microsoft Excel. This trend represented the 2004 harvest progression. This analysis was specific to the project's target species, Chinook salmon. Information for chum salmon was included in the results section of this report, but minimal data precluded in-depth data analysis.

The timing of the quarter-point, midpoint, and three-quarter point of a particular salmon run are generally unknown until the run is completed, therefore comparisons of run-timing inseason typically involve historical averages. The historical run-timing (1980-2003) of these quartile points in the lower river for Chinook salmon, indicated by the ADF&G lower Yukon River test fishery were June 15, June 20, and June 26. Historical summer chum salmon quartile points (1986-1995, 1997-2003) and historical fall chum salmon quartile points (1986-1991, 1993-1995, and 1997-2003) in the lower river were based on the ADF&G Pilot Station sonar project and occur on June 22, June 27, and July 3 for summer chum salmon and on July 30, August 8, and August 17 for fall chum salmon. In the following discussions of individual village subsistence harvest progression, the historical run-timing was compared to the weekly average percentages. If subsistence harvest progression tracked exactly with historical run-timing, then managers would expect a village to have harvested 25% of their subsistence goals by the quarter point, 50% by the midpoint, and 75% by three-quarter point.

Salmon run-timing occurring for a village was estimated using the length of the run in relation to the ADF&G lower Yukon River test fishery for Chinook salmon and the ADF&G Pilot Station sonar project for summer and fall chum salmon. Dates for each village were estimated using a daily swimming rate of 36 miles/day for Chinook salmon, 18 miles/day for summer chum salmon (T. Spencer, pers. comm.), and 35 miles/day for fall chum salmon (F. Bue, pers. comm.). Radio-telemetry used to identify Chinook salmon movement patterns on the Yukon River indicated that radio-tagged fish traveled an average of 31 miles/day in 2003, but that their speed

varied dependent upon their location within the drainage (Eiler et. al. 2006). Inseason analysis in 2004 indicated that the fish were moving faster.

Results

A combined total of 370 interviews were conducted in the villages of Emmonak, Holy Cross, Nulato, Huslia, Galena, and Beaver during the 2004 summer and fall salmon fishing seasons. Subsistence harvest information for summer and fall chum salmon was collected in Emmonak and Huslia. Interviews were conducted between May 31 and September 20, 2004. Data were summarized and presented verbally on 16 YRDFA teleconferences occurring in 2004 (Table 1).

2004 Catch Rates and Fishing Time

Information regarding catch rates and fishing time was used to evaluate if subsistence fishermen were changing their fishing practices as compared to 2003. Information was collected between June 7 and July 12, 2004 for Chinook salmon. A total of 134 responses comparing the amount of time fished and 132 responses comparing the catch rates between 2004 and 2003 were collected during the Chinook salmon fishing season. The difference in the total number of responses was a result of fishermen declining to comment or an incomplete interview. The majority of these households indicated that they spent an equal amount of time fishing and that catch rates were equal to those in 2003 (Table 2).

Interviews pertaining to summer chum salmon harvests were conducted with households in Emmonak and Huslia between June 7 and August 9, 2004. A total of 67 responses were provided by households during the summer chum salmon fishing season regarding catch rates, and 66 responses were provided regarding the amount of time fished as compared to the 2003 fishing season. Households indicated that catch rates were the same or better in 2004 and that the amount of time fished was equal as compared to the 2003 fishing season (Table 3).

Fall chum salmon harvests interviews were conducted with households in Emmonak and Huslia between August 9 and September 20, 2004. A total of 28 responses were provided by households during the fall chum salmon fishing season regarding catch rates, and 29 responses were provided regarding the amount of time fished as compared to the 2003 fishing season. Households indicated that catch rates were the same in 2004 and that the amount of time fished was equal as compared to the 2003 fishing season (Table 4).

Village Results

The weekly average percentages (estimate of village harvest progression) for Chinook salmon were likely lower than corresponding actual percentages because many households could not be interviewed weekly (Table 5). In these instances, the percentage from the prior interview was used to estimate the current weekly average percentage. A household that was not interviewed likely had a larger harvest percentage than the week before, if they fished, and therefore the weekly average percentage represents the minimum for any interview week. This method was used because the number of interviews per week in a village differed and the households interviewed weekly differed in subsequent weeks. The final percentage (estimate of village harvest completion) was based on information collected in an interview and does not assume a harvest percentage in weeks where an interview for a household was not conducted (Table 5). Using a weighted average to depict the final percentage minimizes the influence of households that were interviewed infrequently. The estimated final percentage for Chinook salmon ranged

from 56% to 97%. The final percentage for summer chum salmon was 83% in Emmonak and 70% in Huslia (Table 6) and for fall chum salmon was 75% in Emmonak and 64% in Huslia (Table 7).

Emmonak

Interviews occurred between June 7 and August 23, 2004. Two to 24 households were interviewed weekly. The historical quartiles for Chinook salmon run-timing in Emmonak were June 15, June 20, and June 26. During the week these dates occurred, the weekly average percentages for Chinook salmon were 30%, 48%, and 78%, respectively. The 2004 harvest progression trend is displayed in Figure 2. The final percentage for Chinook salmon harvest from all interviewed households was 80% occurring on July 5, 2004.

The historical quartiles for summer chum salmon run-timing in Emmonak were June 17, June 22, and June 28, 2004. The weekly average percentages for summer chum salmon on these dates were 44%, 65%, and 80%, respectively. The final percentage for summer chum salmon from all interviewed households was 83% occurring on July 5, 2004.

The fall chum salmon historical run-timing quartiles in Emmonak were July 27, August 5, and August 18, 2004. Interviews were not performed during the week of the historical quarter-point. The weekly average percentages for fall chum salmon on the midpoint and three-quarter point dates were 19%, and 62%, respectively. The final percentage for fall chum salmon from all interviewed households was 75% occurring on August 23, 2004.

Holy Cross

Interviews occurred between May 31 and July 12, 2004. Five to 22 households were interviewed weekly. Interviews were not performed during the week of the historical three-quarter point. The historical quartiles for Chinook salmon run-timing were June 22, June 27, and July 3. The weekly average percentages for Chinook salmon on the quarter-point and midpoint dates were 32% and 40%. The 2004 harvest progression trend is displayed in Figure 3. The final percentage for Chinook salmon harvest from all interviewed households was 96% occurring on July 12, 2004.

Nulato

Interviews occurred between June 14 and July 5, 2004. Three to seven households were interviewed weekly. The historical quartiles for Chinook salmon run-timing were June 28, July 3, and July 9. The weekly average percentages for the first two dates were 48% and 69%, respectively. Interviews were not performed during the week of the historical three-quarter point. The 2004 harvest progression trend is displayed in Figure 4. The final percentage for Chinook salmon harvest from all interviewed households was 74% occurring on July 5, 2004.

Galena

Interviews occurred between June 28 and July 12, 2004. Three to 11 households were interviewed weekly. The historical quartiles for Chinook salmon run-timing were June 29, July 4, and July 10. The weekly average percentages for the latter two dates were 89% and 95%, respectively. Interviews were not performed during the week of the first date. The 2004 harvest progression trend is displayed in Figure 5. The final percentage for Chinook salmon harvest from all interviewed households was 97% occurring on July 12, 2004.

Huslia

Interviews occurred between June 14 and September 20, 2004. Two to nine households were interviewed weekly. The historical quartiles for Chinook salmon run-timing in Huslia were July 5, July 10, and July 16. The weekly average percentages for Chinook salmon for the first two dates were 29% and 51%, respectively. Interviews were not performed during the week of the third quartile date. The 2004 harvest progression trend is displayed in Figure 6. The final percentage for Chinook salmon harvest from all interviewed households was 56% occurring on July 12, 2004.

The historical quartiles for summer chum salmon run-timing in Huslia were July 25, July 30, and August 5, 2004. Interviews were only conducted during the weeks of the last two dates. The weekly average percentages for summer chum salmon on those dates were 61% and 65%, respectively. The final percentage for summer chum salmon from all interviewed households was 70% occurring on August 9, 2004.

The fall chum salmon historical run-timing quartiles in Huslia were August 18, August 27, and September 5, 2004. The weekly average percentages for fall chum salmon on these dates were 10%, 20%, and 35%, respectively. The final percentage for fall chum salmon from all interviewed households was 64% occurring on September 20, 2004.

Beaver

Interviews occurred during the week of July 19, 2004. Eight households were interviewed. The weekly average percentage was 59%. These interviews occurred in between the historical midpoint and three quarter point.

Gear Type

Fishery managers have the ability to regulate fishing gear if there is a concern for species conservation. Regulations regarding the allowable fishing gear differ between lower river and upper river fishing districts. The primary difference is the use of drift gillnets in the lower river. Subdistrict 4A has a limited drift gillnet fishery availability regulated by date, see 5AAC 01.220(e) (2) (ADF&G 2004). Seventy fishermen were interviewed for gear type in Yukon River Districts 1, 3, and Subdistrict 4A. In these areas the use of a drift gillnet was predominant ($n = 40$). In the Koyukuk River District, Subdistricts 4B and 4C, and Subdistrict 5D, 33 fishermen were interviewed for gear type. The majority ($n = 22$) reported fishing with set gillnets.

Discussion

Inseason Chinook salmon run assessment information is limited, particularly early in the fishing season. This project was designed to provide additional inseason subsistence fishing information to fishery managers throughout the Chinook salmon fishing season. Project objectives were to collect and document information on subsistence salmon harvests inseason. Data collected assisted fisheries managers in making more informed management decisions, especially with regard to changes to subsistence fishing time and implementation of commercial fishing opportunities. The information gathered through this project helps managers to: evaluate inseason subsistence salmon harvest progression during the fishing season; provide comparisons to other inseason management information such as historical run-timing quartiles; and provide an evaluation of village subsistence harvest goal completion.

Managers attain subsistence fishing reports on YRDFA teleconferences and in ad hoc telephone calls. However, because this information is limited in application for predicting subsistence harvest goal progression and completion inseason, the development of a comparative indicator was needed. The indicator compared inseason harvest goal progression and historical run-timing quartiles for use as an evaluative tool. A weekly average percentage, which estimated harvest goal progression during the fishing season, that exceeded 25% on the date of the historical quarter-point, 50% on the date of the historical midpoint, and 75% on the date of the historical three-quarter point was considered favorable for harvest goal completion in a village. Conversely, a weekly average percentage below historical quartiles raised concerns for harvest goal completion. During the Chinook salmon fishing season, excluding the villages of Galena and Beaver, due to a lack of interviews during the time period of the historical quarter-point, all villages reported weekly average percentages in 2004 that were greater than 25% on the date of the historical quarter-point. Similarly, weekly average percentages reported during the date of the historical midpoint, were near or greater than 50% in all villages excluding Holy Cross. Lastly, weekly average percentages reported near the date of the historical three-quarter point, were above 75% in Emmonak and Galena. No other villages conducted interviews during this time period. Of the six villages participating in this project, it appeared that harvest progression throughout the Chinook salmon fishing season in all villages was near or greater than expectations during any time period. The weekly average percentage in Holy Cross was lower than the 50% expectation at the midpoint of the run, which Holy Cross fishing households attributed to high water.

Based on the information collected in 2004, the final percentages for Chinook salmon subsistence harvest goal completion ranged from 56% to 97%. These percentages would likely have changed in nearly all of the villages had more interviews been performed during the fishing season. The Chinook salmon season lasts approximately six weeks, but varies by location on the river. Typically, fishermen in the upper river fish longer than those in the lower river because Chinook salmon tend to spread out as they migrate upriver from the concentrated pulses they form upon river entry as well as differences in allowable fishing gear and fishing locations. With this in mind, in order to track subsistence fishing harvest progression consistently during the fishing season interviewers should perform interviews as much as possible, but at a minimum interviews must be conducted during the weeks of the historical salmon run quartiles.

The disparity in village subsistence harvest goal success can be explained by reviewing the catch rate and time fished information as compared to the 2003 fishing season. From a holistic project point of view, catch rates and the amount of time fished in 2004 were ranked as the same and equal when compared to the 2003 fishing season. However, individual village rankings differed. The 2004 fishing season began with an early breakup and low water followed by rising water and large amounts of debris. The debris did delay fishing in most villages, but did not alter fishing practices drastically. The villages of Nulato and Huslia reported the lowest final percentages for Chinook salmon, but in general reported that catch rates were the same as compared to the 2003 fishing season. Nulato did report having to fish more in 2004 than in 2003, but comments from fishermen attributed this to trying to complete their harvest goals in a couple of weeks because they began fishing later than normal. Huslia reported fishing an equal amount of time, but fishermen there generally catch a small amount of Chinook salmon and subsidize their subsistence salmon goals with summer chum salmon harvests. The fishing areas near Huslia are extremely responsive to water level, when the water level raises, the efficiency of their set nets decreases. The low water in 2004 was encouraging for Chinook salmon fishing in Huslia and

although they did not report 100% harvest goal completion, they commented that Chinook salmon fishing was successful. The villages of Emmonak, Holy Cross, and Galena reported final percentages at or greater than the 80th percentile. Emmonak and Holy Cross fishermen commented that they fished an equal amount of time as compared to 2003 and that catch rates were the same. They commented that the early low water level was beneficial for subsistence fishermen, but when the water level began to rise the large amount of debris slowed fishing for approximately one to two weeks. Fishing in the Galena area was reported as better than in 2003 and that fishermen spent less time fishing. Fishermen commented that they finished fishing a week earlier than the 2003 fishing season.

Evaluating inseason Chinook salmon subsistence harvest goal progression and completion was possible. This project collected a variety of data in order to monitor, evaluate, and predict subsistence harvest goal progression and completion. Comparisons of the 2004 subsistence harvest information to historical quartiles were valuable for forecasting if harvest progression and completion would occur. Evaluating how and what fishing practices were occurring was accomplished through subsistence fishermen feedback and their comparisons of catch rates and fishing time to the 2003 fishing season. This information can be applied to other projects, such as the ADF&G postseason salmon survey, to augment inseason harvest analysis used to monitor long-term changes in subsistence fishing time and rates of subsistence harvest. Additionally, this project provides an additional opportunity for fishermen in fish camps to contribute and receive information related to the salmon runs.

This project primarily targeted Chinook salmon subsistence harvest information. Summer chum salmon and fall chum salmon information collected throughout the 2004 fishing season was included in the results section of this report. In summary, the 2004 summer chum salmon information indicates that most households fished an equal amount of time and had better catch rates as compared to the 2003 fishing season. Fall chum salmon fishermen reported fishing an equal amount of time with similar catch rates as compared to the 2003 fishing season. The final percentages for summer chum salmon ranged from 70% to 83% while fall chum salmon final percentages ranged from 64% to 75%.

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Table 1. YRDFA teleconferences attendance by local hire and Refuge Information Technicians during the 2004 salmon fishing season.

Date	Emmonak	Holy Cross	Nulato	Huslia	Galena	Beaver
1-Jun	X	X	X	X	X	X
8-Jun	X		X			
15-Jun	X	X	X	X	X	
22-Jun	X	X	X	X	X	
29-Jun	X		X	X	X	X
6-Jul	X	X	X	X	X	X
13-Jul	X				X	
20-Jul	X			X		
27-Jul	X	X		X	X	
3-Aug	X			X	X	X
10-Aug					X	
17-Aug	X	X	X	X		
24-Aug	X			X	X	
31-Aug		X		X		
7-Sep				X		
14-Sep				X	X	
Total	12	7	7	13	11	4

Table 2. Results of household responses to the 2004 inseason subsistence interview questions for Chinook salmon.

Date	Compared with this time "LAST" year, how were your catch rates for salmon this week?			Compared with this time "LAST" year, is the amount of time you have fished?		
	Poor	Same	Better	Less	Equal	More
Emmonak						
7-Jun		2			2	
14-Jun	2	11	3	5	9	2
21-Jun		4			6	
28-Jun		4	8	7	4	1
Holy Cross						
14-Jun	5		1		5	1
21-Jun	3	7	4	4	8	2
28-Jun	3		1	2		2
12-Jul		18	6	4	18	2
Nulato						
14-Jun	3					3
21-Jun	2	2				4
28-Jun	1	4				5
5-Jul		6	1	2		5
Huslia						
14-Jun		1			1	
21-Jun		1			1	
28-Jun		2	1		3	
5-Jul		5	2		7	
12-Jul	1	4	2		7	
Galena						
28-Jun		1	7	7	1	
5-Jul			3	2	1	
12-Jul			1		1	
Total	20	72	40	33	74	27

Table 3. Results of household responses to the 2004 inseason subsistence interview questions for summer chum salmon.

Date	Compared with this time "LAST" year, how were your catch rates for salmon this week?			Compared with this time "LAST" year, is the amount of time you have fished?		
	Poor	Same	Better	Less	Equal	More
Emmonak						
7-Jun		4		1	3	1
14-Jun		8	10	7	9	1
21-Jun		5	2	2	4	
28-Jun		1	9	7	2	1
Huslia						
14-Jun		3			3	
21-Jun		5			5	
28-Jun		2	5		7	
5-Jul		1	2		3	
12-Jul			3		3	
2-Aug		1	4		5	
9-Aug			2		2	
Total		30	37	17	46	3

Table 4. Results of household responses to the 2004 inseason subsistence interview questions for fall chum salmon.

Date	Compared with this time "LAST" year, how were your catch rates for salmon this week?			Compared with this time "LAST" year, is the amount of time you have fished?		
	Poor	Same	Better	Less	Equal	More
Emmonak						
9-Aug		1			1	1
23-Aug	2		1		1	2
Huslia						
9-Aug		1			1	
16-Aug		4			4	
23-Aug		4			4	
30-Aug		3			3	
6-Sep		4			4	
13-Sep		4			4	
20-Sep			4		4	
Total	2	21	5		26	3

Table 5. The 2004 weekly average percentages for Chinook salmon subsistence harvest from interviewed households in the Yukon River villages of Emmonak, Holy Cross, Nulato, Galena, Huslia, and Beaver.

Date	Emmonak		Holy Cross		Nulato		Galena		Huslia		Beaver	
	<i>n</i> ^a	Weekly average										
31-May			5	0%								
7-Jun	19	1%										
14-Jun	24	30%	12	4%	3	0%			8	0%		
21-Jun	7	48%	14	32%	4	6%			9	0%		
28-Jun	20	78%	6	40%	5	48%	11	89%	9	6%		
5-Jul	6	79%			7	69%	3	89%	9	29%		
12-Jul			22	89%			8	95%	5	51%		
19-Jul											8	59%
Total # of interviews	76		59		19		22		40		8	
Total # of interview weeks	5		5		4		3		5		1	
Final percentage ^b	32	80%	29	96%	11	74%	15	97%	12	56%	8	59%

^a Number of households calculated in the average.

^b Estimate of subsistence Chinook salmon harvest completion.

Table 6. The 2004 weekly average percentages for summer chum salmon subsistence harvest from interviewed households in the Yukon River villages of Emmonak and Huslia.

Date	Emmonak		Huslia	
	<i>n</i> ^a	Weekly average	<i>n</i> ^a	Weekly average
7-Jun	19	6%		
14-Jun	24	44%	7	0%
21-Jun	7	65%	7	1%
28-Jun	19	80%	6	11%
5-Jul	5	82%	5	41%
12-Jul			3	48%
19-Jul				
26-Jul				
2-Aug			5	61%
9-Aug			2	65%
Total # of interviews	74		35	
Total # of interview weeks	5		7	
Final percentage ^b	30	83%	9	70%

^a Number of households calculated in the average.

^b Estimate of subsistence summer chum salmon harvest completion.

Table 7. The 2004 weekly average percentages for fall chum salmon subsistence harvest from interviewed households in the Yukon River villages of Emmonak and Huslia.

Date	Emmonak		Huslia	
	<i>n</i> ^a	Weekly average	<i>n</i> ^a	Weekly average
2-Aug			3	0%
9-Aug	4	19%	3	10%
16-Aug	2	62%	4	10%
23-Aug	2	75%	4	13%
30-Aug			3	20%
6-Sep			4	35%
13-Sep			4	52%
20-Sep			4	56%
Total # of interviews	8		29	
Total # interview weeks	3		8	
Final percentage ^b	4	75%	6	64%

^a Number of households calculated in the average.

^b Estimate of subsistence fall chum salmon harvest completion.

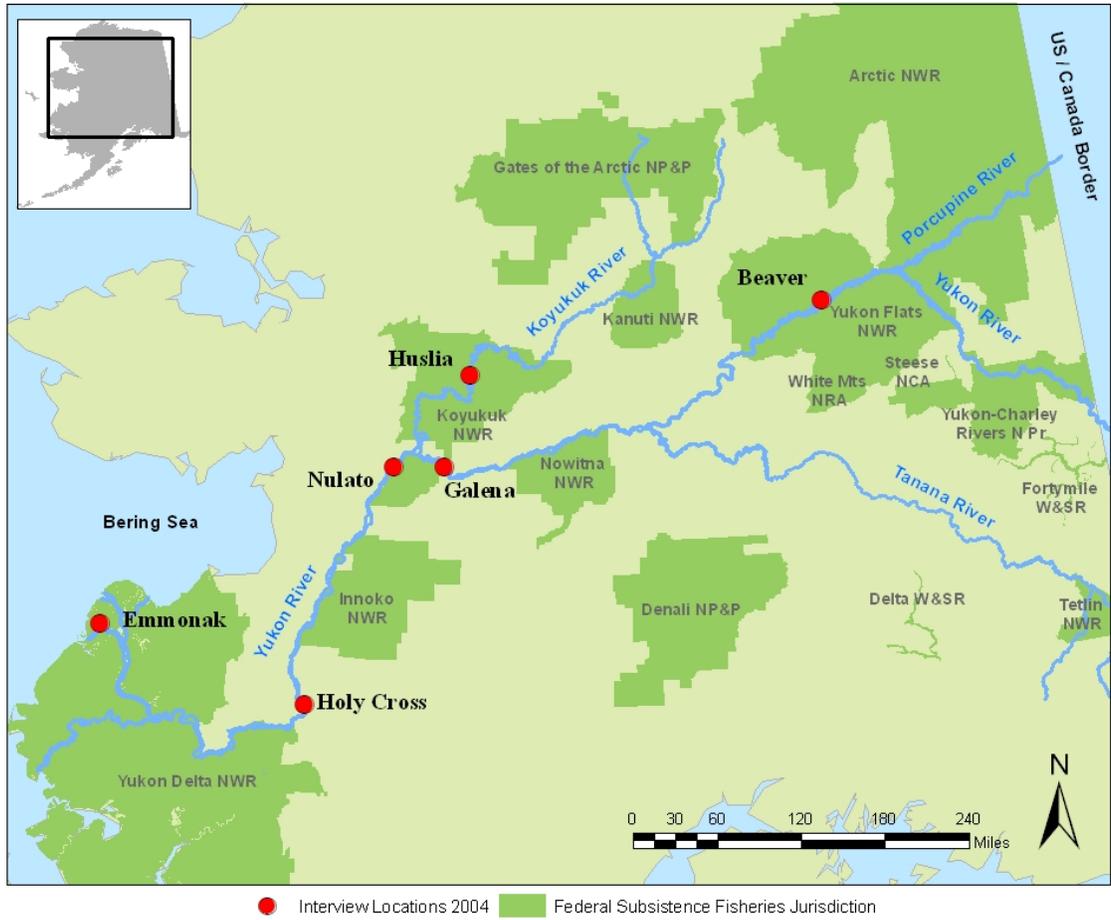


Figure 1. Map of the Yukon River drainage highlighting the villages of Emmonak, Holy Cross, Nulato, Huslia, Galena, and Beaver.

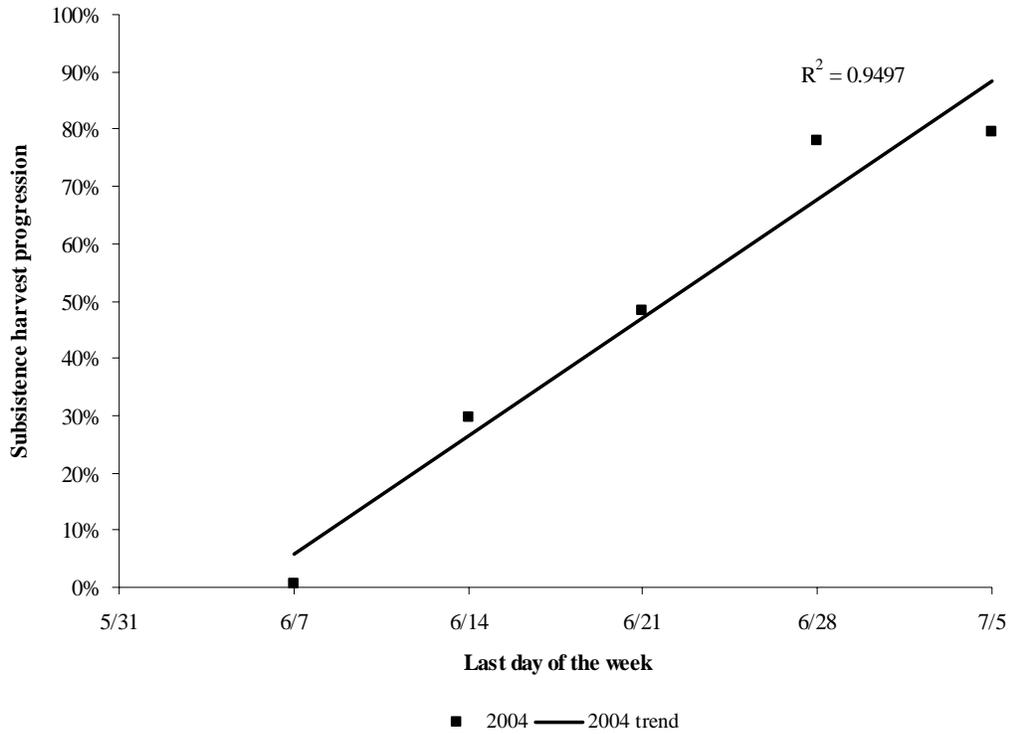


Figure 2. The 2004 weekly Chinook salmon subsistence harvest progression trend from interviewed households in Emmonak.

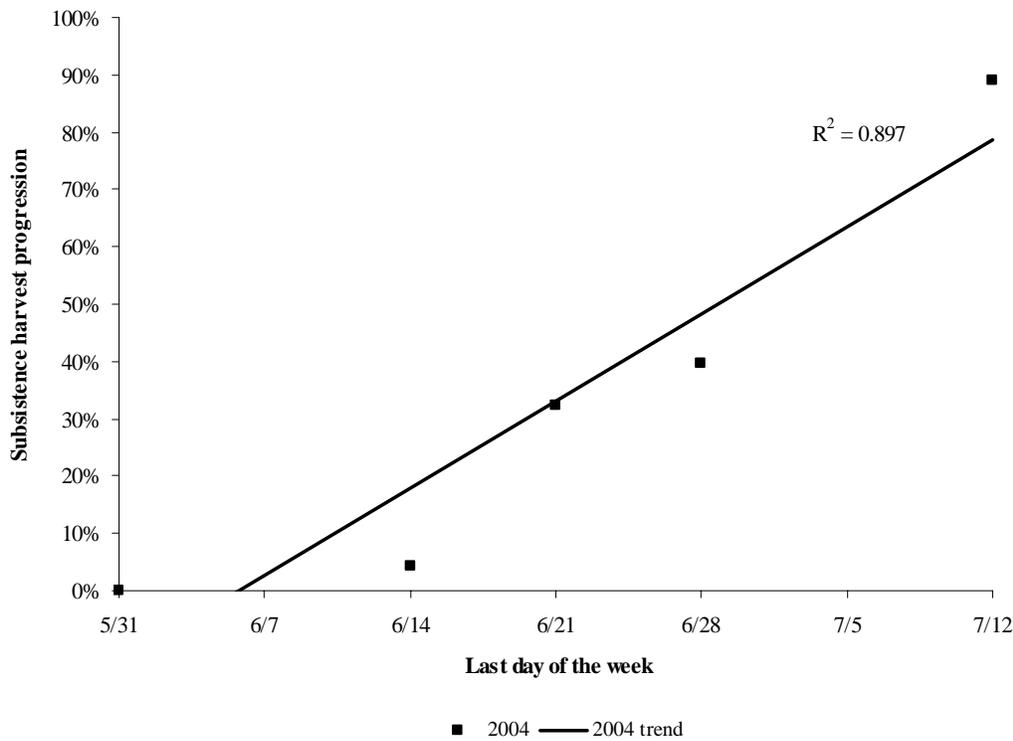


Figure 3. The 2004 weekly Chinook salmon subsistence harvest progression trend from interviewed households in Holy Cross.

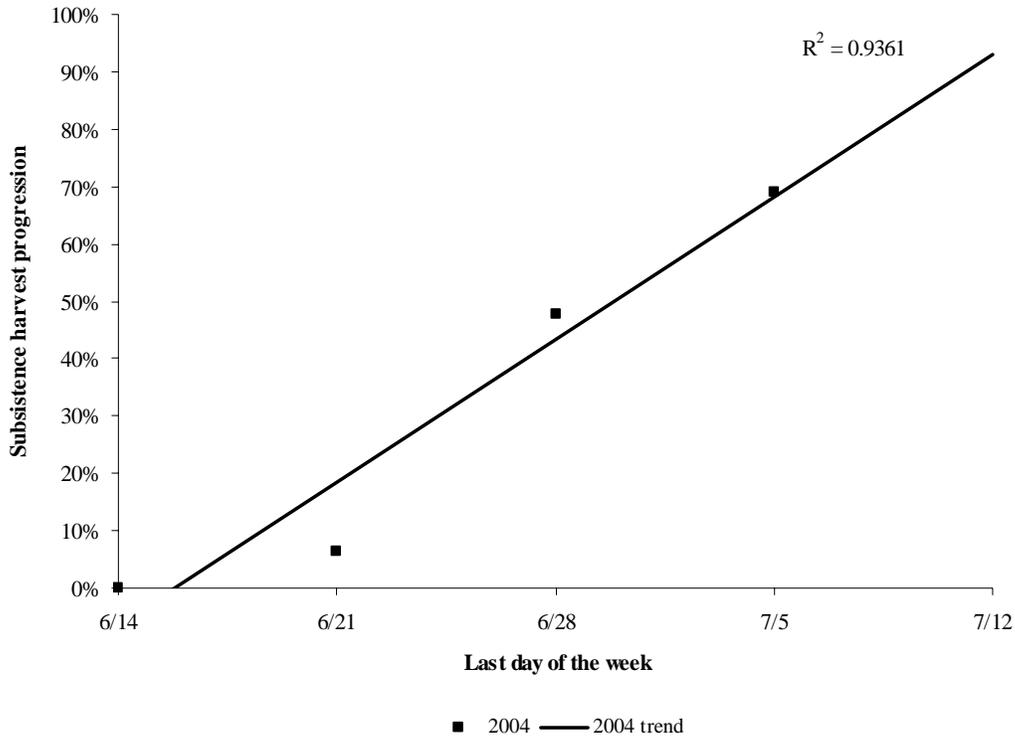


Figure 4. The 2004 weekly Chinook salmon subsistence harvest progression trend from interviewed households in Nulato.

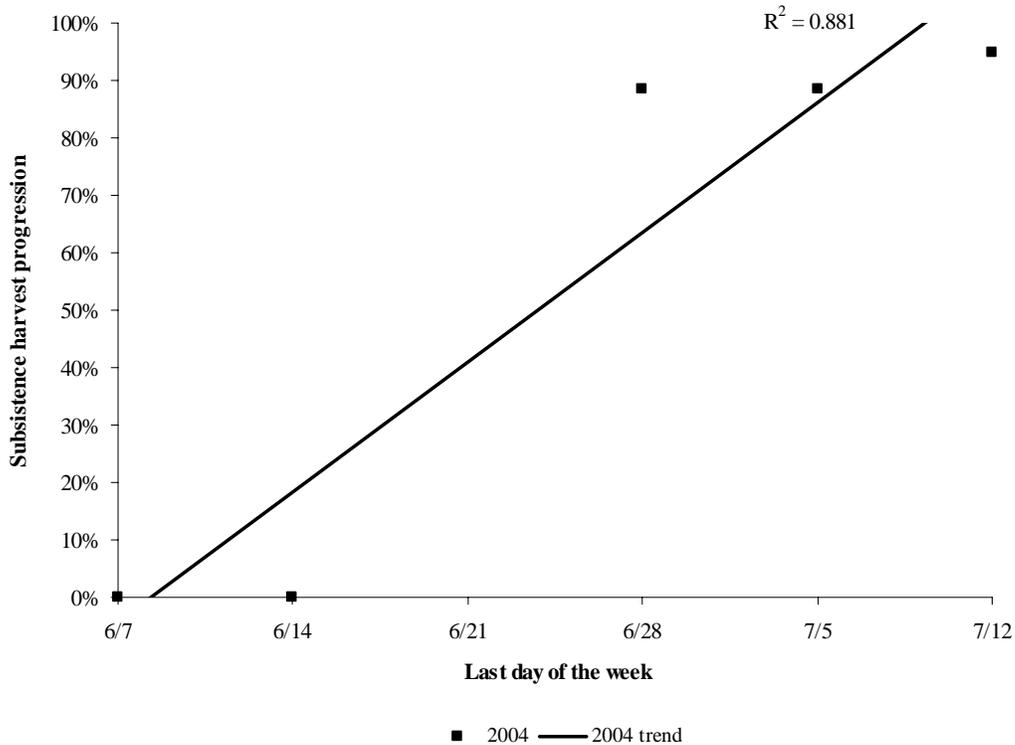


Figure 5. The 2007 weekly Chinook salmon subsistence harvest progression trend from interviewed households in Galena.

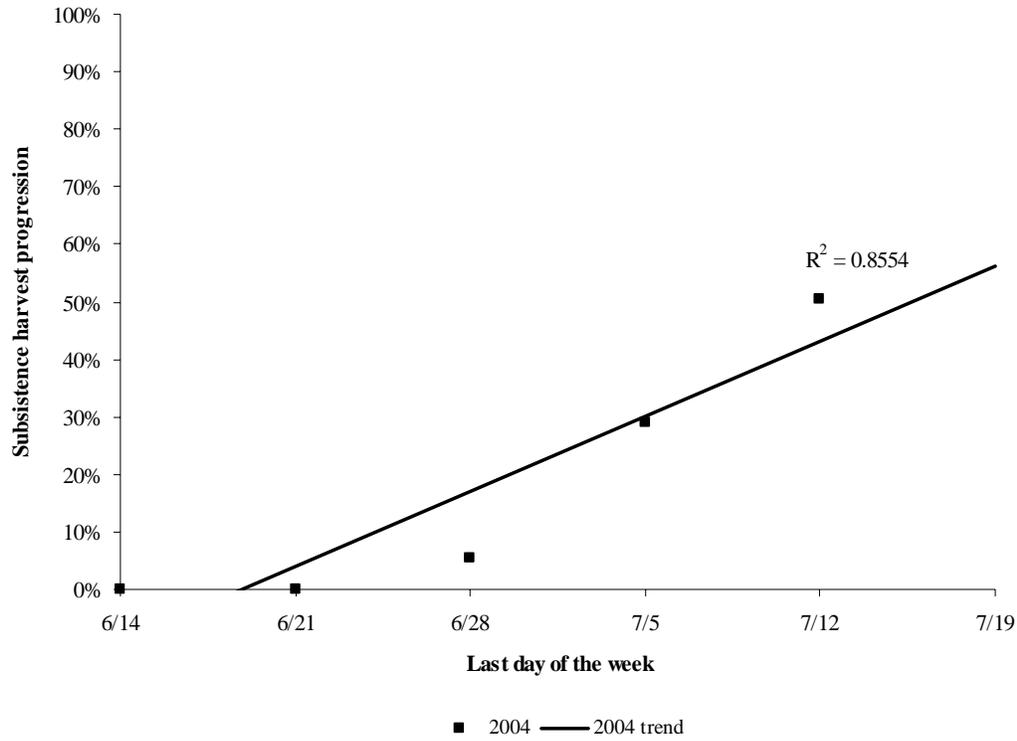


Figure 6. The 2004 weekly Chinook salmon subsistence harvest progression trend from interviewed households in Huslia.

Appendix A. The 2004 inseason salmon interview project weekly summary sheet.

Survey Date: _____
 Year: _____

Reminder fishers to use their subsistence harvest calendars

Fishing Date	Households Name	Catch Location & Bank Detail (North or South)	Gear	Did Not Fish (Enter Code)	Compared to "LAST" year how were your catch rates?		Compared to "LAST" year is the amount of time fished?		Where are you at in your harvest? (%)		Comments (size of fish, healthy, water levels, timing, more/less effort, abundance, fishing more places than usual, etc...)
					King	Chum	King	Chum	King	Chum	
			DN SN FW OTHER		Poor Same Better	Less Equal More	Less Equal More	0 10 25 50 75 100	0 10 25 50 75 100		
			DN SN FW OTHER		Poor Same Better	Less Equal More	Less Equal More	0 10 25 50 75 100	0 10 25 50 75 100		
			DN SN FW OTHER		Poor Same Better	Less Equal More	Less Equal More	0 10 25 50 75 100	0 10 25 50 75 100		
			DN SN FW OTHER		Poor Same Better	Less Equal More	Less Equal More	0 10 25 50 75 100	0 10 25 50 75 100		
			DN SN FW OTHER		Poor Same Better	Less Equal More	Less Equal More	0 10 25 50 75 100	0 10 25 50 75 100		
			DN SN FW OTHER		Poor Same Better	Less Equal More	Less Equal More	0 10 25 50 75 100	0 10 25 50 75 100		
			DN SN FW OTHER		Poor Same Better	Less Equal More	Less Equal More	0 10 25 50 75 100	0 10 25 50 75 100		
			DN SN FW OTHER		Poor Same Better	Less Equal More	Less Equal More	0 10 25 50 75 100	0 10 25 50 75 100		

More room for comments on reverse side

DN = drift gillnet
 SN = set gillnet
 FW = fish wheel
 OTHER = Mechanical
 1 = Have not began fishing
 2 = Bad weather
 3 = Out of town
 4 = Bad weather
 5 = Work interfered
 6 = Other (provide detail)