

**2013 Yukon River Chinook Salmon Subsistence Sampling: (Holy Cross, Anvik,  
Galena, Ruby, Fort Yukon)**

Yukon River Panel  
Restoration and Enhancement Fund  
Project URE-03-13

Final Report submitted by Spearfish Research

Prepared by:  
Paige Drobny<sup>1</sup>

March 2014

## Abstract

The Yukon River is home to many native communities which depend on subsistence harvest for their livelihood. This research project aimed to sample the subsistence-harvest from the communities of Holy Cross, Anvik, Galena, Ruby and Fort Yukon on the Yukon River. This project focused on Chinook salmon (*Oncorhynchus tshawytscha*) for biological information, scale samples and genetic tissue. The research data collected will serve to better understand the stock biology and composition of salmon that are harvested in these communities. The age-sex-length (ASL) and genetic data from this research project will help to rebuild the Canadian origin of the Chinook salmon run by determining the proportion of Canadian origin stocks. The Fisheries Biologist contacted the Tribal Councils in the respective communities and asked for their assistance with recruiting local fisherman to collect a sample size of 200 Chinook salmon samples from their subsistence catch. In 2013, 22 subsistence fishermen were trained to collect biological samples. Nine samplers were successful in sampling and 400 samples were obtained and analyzed. Managers restricted mesh size of gillnets to 6" early in the season so 6" mesh gillnet was the only gear that caught Chinook salmon in Anvik, Galena and Ruby (with the exception of 1 fish caught in a fishwheel). Because of the poor Chinook salmon return and restrictions in fishing time, no samples were collected in Holy Cross and samples sizes were low (> 100) for Anvik, Galena and Ruby. Fort Yukon exceeded its target sample size with 269 Chinook salmon samples and fished with, 6" mesh set gillnet, 3.5" mesh set gillnet and fishwheel to collect their samples. Size at age was consistent in each village for males and females. The percentage of females caught for this study ranged from 12.5% in Anvik to 36.2% in Fort Yukon. Providing technical fishery sampling training to subsistence fishers within each of these communities will better facilitate future research within this region and provide local subsistence users with a meaningful role in the fishery research in the region. The data generated from this project is essential to form the basis of the spawner-recruit models used to estimate past and future run productivity as well as setting escapement goals. Because of the variability in Chinook salmon runs and harvest pressure, annual monitoring is necessary to update brood tables.

Key Words: subsistence harvest sampling, Chinook salmon, Yukon River.

## Table of Contents

	Page
Title Page.....	i
Abstract.....	ii
Table of Contents.....	iii
List of Tables.....	iv
List of Figures.....	iv
Introduction.....	1
Objectives.....	1
Method.....	3
Results.....	3
Discussion.....	4
Literature Cited.....	6

## List of Tables

	Page
Table 1: Number of samplers in each village along with sample sizes.....	7
Table 2: Fishing gear and sample sizes in each village.....	7
Table 3: Anvik and Galena, Chinook salmon subsistence harvest age and sex composition and mean length (mm), 2013 (courtesy of ADF&G).....	8
Table 4: Ruby and totals for District 4 (Anvik, Galena and Ruby) samples, Chinook salmon subsistence harvest age and sex composition and mean length (mm), 2013 (courtesy of ADF&G).....	9
Table 5: Fort Yukon, Chinook salmon subsistence harvest age and sex composition and mean length (mm), 2013 (courtesy of ADF&G).....	10-11

## List of Figures

Figure 1: Map of the Yukon River Fisheries Management area with fishing districts shown. Communities involved in this project are circled in red.....	12
---	----

## Introduction

For over a decade, the Chinook salmon (*Oncorhynchus tshawytscha*) run on the Yukon River has been a stock of concern and more recently a stock of yield concern (ADF&G, 2013). Due to the conservation concerns for the declining number of Chinook salmon, the commercial harvest has been greatly reduced or nonexistent since the late 1990's (JTC, 2012). Since the late 1970's, subsistence fishers in Alaska and Canada have harvested on average 50,000 Chinook salmon with 58% of the total harvest coming from districts Y3, Y4, and Y5. The subsistence harvest has become the larger, more consistent component of the Yukon River Chinook salmon harvest, although subsistence fisheries are becoming increasingly restricted as the stock continues to struggle. Subsistence harvests have state and federal legal priority over commercial harvests. Data historically collected in the commercial harvest is now absent such that subsistence harvest data are needed to appropriately characterize the stock composition of the harvest. Additionally, the subsistence harvest in these districts can be comprised of a large proportion of Canadian-origin Chinook salmon (35% in Y4 in 2012 and 61-95% in Y5 in 2012), though the proportion varies from year to year (e.g. from 30% to 39% in Galena, years 2008-2012) (*S. Schmidt, ADF&G, personal communication*).

Sustainable salmon management strategy relies heavily on salmon run information (run timing and abundance, age, sex, length, and stock composition) obtained from escapements projects and commercial and subsistence harvests. Both decreased funding for gathering salmon escapement information and downward trends in commercial harvests have put constraints on this crucial information. This project will provide critical data and samples, adding to the age-sex-length database characterizing the Canadian-origin Chinook salmon run, in turn aiding in creating the brood year tables. This information is essential to form the basis of the spawner-recruit models used to estimate past and future run productivity as well as setting escapement goals. Because of the variability in Chinook salmon runs and harvest pressure, annual monitoring is necessary to update brood tables.

This project also directly involves subsistence user participation. This public involvement directly addresses the 2014 Restoration & Enhancement "Near Term Priorities" under the Stewardship Category, Management Category 12: Involve and educate users and non-users in communities to increase their capacity to maintain and protect salmon stocks and habitat. Under the Stewardship Category, this project directly addresses the management need to "build community capacity through community education and hands-on training.

## Objective

To representatively collect 200 samples from the subsistence-harvested Chinook salmon in Holy Cross, Anvik, Galena, Ruby and Fort Yukon for age, sex, length, girth, and genetic tissues.

## Methods

The project aimed to characterize the annual age, sex, and size of the Chinook salmon subsistence harvest in the US portion of the Yukon River. The grab sample design (Geiger and Wilbur, 1990) used by the Lower Kuskokwim ASL sampling program since 2005 (Molyneaux et al., 2010) guided the sample design. This method assumes that large sample sizes collected in the “grab” sample strategy was influenced by the availability of fish and samplers through time and locations. Large sample sizes in a given time period will imply large harvests with many opportunities to collect samples from either the sampler’s own harvests or those of others. Samples will therefore be self-weighting by gear, over the time period, and by the area that the participants are harvesting. The assumption is that if participants make consistent search efforts (each day of weekly subsistence periods) more samples will be collected on days when more fish are harvested.

In recent years, the total number of Chinook salmon entering the Yukon River has diminished. Because of this, managers reduced the time subsistence fishers are allowed to fish. An individual sampler’s harvest varies based on many factors: subsistence opening/closure times, abundance and timing of the run and changing household needs. As a precautionary approach, in order to assure that the goal of 200 samples is reached, any subsistence fishers that showed up for training were trained and given a sample kit. In addition, in consultation with ADF&G, there were multiple villages in district 4 in an effort to try to guarantee that the 200 samples were reached in case of tragedy within a certain village, weather/highwater affecting fishing in a certain area, or poor salmon runs. Spreading out the sampling efforts between subsistence fishers ensures that samples will be representative of the different gear type used in those areas. To ensure that sampling effort is proportional to harvest through time, contracted subsistence fishers are not limited to a sample size. Instead, it was requested that they fully sample every Chinook salmon that is caught for subsistence. They were compensated for every fish sampled, provided quality control measures were met.

Starting in May, the PI contacted the tribal councils in the respective communities and asked for their assistance with recruiting local fisherman to collect samples. A preseason training session was held in each village by the PI to familiarize the fishers with the protocols for sampling. The PI returned to the villages during the beginning of the fishing season to assist the subsistence fishers with sampling and to provide quality control by assuring that sampling methods were being followed accurately. All sampling methods were detailed in a workbook included in each subsistence fishers sampling kit for reference during sampling. Sampling kits included: sampling workbook, notebooks, data sheets, pencils, forceps, scale cards, measure tape, meter stick, ethanol, vials, clippers, squirt bottle and clipboard.

Chinook salmon were sampled from the subsistence catch to characterize the age, sex ratio and length (ASL) of subsistence-caught salmon, as well as to collect genetic tissue for stock of origin estimates. Sampling methods followed routine procedures outlined by the ADF&G protocols (Molyneaux 2010). Samples were taken as soon as possible after fish are caught and prior to or during cutting (processing). Local fishermen were trained to collect three scales from the preferred area above the lateral line on the left side of the fish, which were mounted on pre-

printed gum cards for age determination. Length was measured from mid eye to tail fork to the nearest 1 mm. Girth was measured around the fish in front of the dorsal fin to the nearest 1 mm. Sex was visually determined from external morphological characteristics combined with internal examination of the fish during processing. An axillary process fin was clipped from each fish for genetic information. This fin clip was placed in an individually numbered vial filled with ethanol and specifically segregated and identified to individual fish. Data sheets included capture methods, mesh size, location, date, fish number, scale card number and genetic vial numbers, which were recorded according to coordinated protocols with agency partners. Scales were processed and aged by the ADF&G aging lab. Genetic samples were processed and analyzed by the ADF&G Gene Conservation Lab to determine stock of origin. Samplers collected heads from all fish with a clipped adipose fin, which may have contained a coded wire tag inserted at the Whitehorse Hatchery in Canada. Tag recovery forms were completed for all fish with clipped adipose fins and heads and data sent to the appropriate location.

## Results

Samples were collected from the villages of Anvik, Galena, Ruby and Fort Yukon (Figure 1). Twenty nine households from five communities were recruited and trained for this project to sample their subsistence caught Chinook salmon for ASL, girth and genetic tissue for the 2013 season. Any one that wanted to participate was trained and given a sample kit. Nine of those 29 households from four communities were successful in harvesting and sampling fish for a total of 400 samples (Table 1). Eight of these samplers were successful in previous years. This low number of participants and low sample size is due to the low return of Chinook salmon and increased fishing regulations. No samples were collected from the fishermen in Holy Cross due to restrictions in time allotted to fish and restrictions in mesh size.

Various gear types and mesh sizes were used in each community to harvest the subsistence catch (Table 2). Fishermen were restricted from using mesh larger than 7.5 inches on the Yukon River, per regulations set by the Board of Fisheries and Federal Subsistence Board. Early in the season this was further restricted to 6" mesh net. All but one of the fish sampled in Anvik, Galena and Ruby were caught with the 6" mesh net while in Fort Yukon, most the fish sampled (209) were caught with a fishwheel.

The number of samples obtained per sampler ranged from 3-130. There were 400 samples sent to ADF&G for ageing and 338 (84.5%) were able to be aged (*S. Eaton, ADF&G, personal communication*). Regeneration was the most common reason for these scales to be unreadable. Anvik fish sampled were primarily age 5 and were only 12.5% female (Table 3). Male Chinook salmon caught in Galena were primarily age 5, while the females were primarily age 6 and the samples were 35.4% female. Ruby male Chinook salmon were split between ages 4 and 5, while the females were all age 6. Ruby fish sampled were 22.7% female (Table 4). Fort Yukon had a larger sample size. Fifty three percent of the males sampled were age 5 while 69% of the females were age 6. Females comprised 36.2% of the fish sampled in Fort Yukon (Table 5). Length at age was consistent in each of the communities and male and female length at age was similar.

At the time of publication of this report, the final estimates for stock of origin were not available for this data set. Tissue samples were of excellent quality with 371 out of the 400 samples (92.75%) used for genetic analysis (*Nick Decovich, ADF&G, personal communication*).

This project is primarily a data collection project and serves to bolster the Yukon River Chinook salmon samples to ADF&G for processing, analysis and archiving. Final data from this project will be reported in the annual ADF&G reports. The ADF&G reports are still in prep at the writing of this report.

## **Discussion**

The summer of 2013 saw greater restrictions than ever before in the subsistence Chinook salmon fishery. Mesh was reduced to 6" just as the first Chinook salmon were entering the river. Two window fishing periods were closed in each district to allow the first pulse of Chinook salmon, usually more than half Canadian bound fish, to pass and hopefully spawn. These management actions resulted in the desired effect, a reduction in the amount of Chinook salmon caught by subsistence fishers. Target sample sizes were not reached for the project in all communities except Fort Yukon. Holy Cross fishermen didn't catch or sample any fish. Because the summer chum run largely overlaps with the Chinook salmon run in the lower and middle parts of the river and was over one million strong this year, the fishermen had to weigh the desire for Chinook salmon over the abundance and work of catching summer chum salmon, which was sometimes in a ratio of 1:100. Most fishermen chose to stop fishing or didn't have the 6" mesh net, as was the case in Holy Cross. Galena had a massive flood during the breakup of the Yukon River in the spring and the people in the town were busy rebuilding during the summer. There was one person who was fishing for the community. Fort Yukon was able to reach and exceed the target sample size as they did in 2012. This is likely due to the fact that they are much farther up river where Chinook salmon are much more spread out, giving them more opportunity. They also don't have to contend with the large amount of chum salmon passing at the same time.

The number of samplers was very small but similar to last year with lots of restrictions. This is a concern for the project having representative samples. ADF&G has not published their final reports for number of fishing households in each village or the number of fish caught this year, so determining if this sample set is representative of the whole is unavailable at this time. However, subsistence fishermen were restricted to 6" mesh before the first Chinook salmon reached their fishing areas which made the variety of gear used minimal and every individual that wanted to participate was trained and given a sampling kit. All of the samples from Anvik, Galena and all but one from Ruby were caught in a 6" mesh net. The samples from Fort Yukon were mostly from fishwheels but there were some from a 6" mesh net and also some from a 3.5" mesh net. This is likely a good representation of the fish caught in these areas.

Sample quality was good for this project. For genetic analysis, only 29 samples were removed from the data set and only 1 of these was due to human error. Age determination from collected scales are the most difficult to obtain. The percentage of scales able to be aged this year went up significantly from 67% in 2012 to 84.5% in 2013. This is likely because of all the repeat samplers and more time spent with each sampler during training and sampling. The majority of

the scales that were rejected from this sample set were due to regeneration which is the hardest to determine.

While the target number of samples was not obtained for all districts, the use of this data is still extremely important for fisheries managers. From these data, and other data collected throughout the years by Tanana Chiefs Conference, Yukon area managers have a better idea of Chinook salmon run timing, size of Chinook salmon, and stock of origin. This also gives the managers feedback on whether management actions had the desired effect or not. Providing technical fishery sampling training to subsistence fishers within each of these communities will better facilitate future research within this region and provide local commercial and subsistence users with a meaningful role in the fishery research in the region. ASL and genetic sampling are tools which will continue to provide insight on this valuable resource for years to come. The data generated from this project is essential to form the basis of the spawner-recruit models used to estimate past and future run productivity as well as setting escapement goals. Because of the variability in Chinook salmon runs and harvest pressure, annual monitoring is necessary to update brood tables.

### **Literature Cited**

- Alaska Department of Fish and Game. State of Alaska Special Status Species. Web. 28 March 2013. <<http://www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akyieldconcern>>.
- Geiger, H.J. and R. L. Wilbur. 1990. Proceedings of the 1990 Alaska stock separation workshop. Alaska Department of Fish and Game, Division of Commercial Fisheries, Special Publication No. 2. Juneau.
- Molyneaux, D.B., A.R. Brodersen, D.L. Folletti, Z.W. Liller and G. Roczicka. 2010. Age, sex, and length composition of Chinook salmon in the 2005-07 Kuskokwim River subsistence fishery. Alaska Department of Fish and Game, Fishery Data Series No. 10-39, Anchorage.

Table 1: Number of samplers in each community along with sample sizes.

<b>Village</b>	<b># of People Trained</b>	<b># of People who Sampled</b>	<b>Sample size submitted</b>	<b>Sample size analyzed for ageing</b>
Holy Cross	6	0	0	0
Anvik	7	3	20	16
Galena	1	1	62	56
Ruby	5	2	49	44
Fort Yukon	10	3	269	222
Totals	29	9	400	338

Table 2: Fishing gear and sample sizes in each village.

<b>Village</b>	<b>Gear</b>	<b>Sample Size</b>
Anvik	Drift Gillnet 6"	20
Galena	Drift Gillnet 6"	62
Ruby	Set Gillnet 6"	48
Ruby	Fishwheel	1
Fort Yukon	Fishwheel	209
Fort Yukon	Set Gillnet 3.5"	10
Fort Yukon	Set Gillnet 6"	50

Table 3: Anvik and Galena, Chinook salmon subsistence harvest age and sex composition and mean length (mm), 2013 (courtesy of ADF&G).

Sample Dates (Village, Gear)	Sample Size		Brood Year (Age)																		Total						
			2010		2009		2008		2007		2006		2005														
			1.1	(1.2)	(2.1)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	N	%												
6/26-28; 7/10 (Anvik, 6" Drift Gill Net)	16	Male	0	0.0	5	31.3	0	0.0	9	56.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	14	87.5			
		Female	0	0.0	0	0.0	0	0.0	0	0.0	2	12.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	12.5			
		Subtotal	0	0.0	5	31.3	0	0.0	9	56.3	0	0.0	2	12.5	0	0.0	0	0.0	0	0.0	0	0.0	16	100.0			
			Male Mean Length	-	561	-	692	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
			SE	-	17	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
			Range	-	510-605	-	650-743	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
			n	-	5	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
			Female Mean Length	-	-	-	-	-	-	771	-	-	-	-	-	-	-	-	-	-	-	-	-				
			SE	-	-	-	-	-	-	55	-	-	-	-	-	-	-	-	-	-	-	-	-				
			Range	-	-	-	-	-	-	716-825	-	-	-	-	-	-	-	-	-	-	-	-	-				
			n	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-				
	6/28; 7/5, 11, 15 (Galena, 6" Drift Gill Net)	48	Male	0	0.0	5	10.4	0	0.0	18	37.5	0	0.0	8	16.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	31	64.6
			Female	0	0.0	2	4.2	0	0.0	5	10.4	0	0.0	9	18.8	0	0.0	1	2.1	0	0.0	0	0.0	17	35.4		
Subtotal			0	0.0	7	14.6	0	0.0	23	47.9	0	0.0	17	35.4	0	0.0	1	2.1	0	0.0	0	0.0	48	100.0			
			Male Mean Length	-	555	-	728	-	821	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
			SE	-	30	-	16	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
			Range	-	470-645	-	510-820	-	755-880	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
			n	-	5	-	18	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
			Female Mean Length	-	568	-	765	-	860	-	-	-	-	775	-	-	-	-	-	-	-	-	-				
			SE	-	23	-	44	-	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
			Range	-	545-590	-	600-860	-	760-940	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
			n	-	2	-	5	-	9	-	-	-	-	1	-	-	-	-	-	-	-	-	-				

Table 4: Ruby and totals for District 4 (Anvik, Galena and Ruby) samples, Chinook salmon subsistence harvest age and sex composition and mean length (mm), 2013 (courtesy of ADF&G).

Sample		Brood Year (Age)																Total								
		2010		2009				2008				2007				2006				2005						
		(1.1)		(1.2)		(2.1)		(1.3)		(2.2)		(1.4)		(2.3)		(1.5)				(2.4)		(1.6)		(2.5)		
Size		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
6/28; 7/1-2, 8 (Ruby, 6" Set Gill Net )	44	Male	0	0.0	15	34.1	0	0.0	17	38.6	0	0.0	2	4.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	34	77.3
			0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	9	20.5	0	0.0	1	2.3	0	0.0	0	0.0	0	0.0		
		Female																							10	22.7
		Subtotal	0	0.0	15	34.1	0	0.0	17	38.6	0	0.0	11	25.0	0	0.0	1	2.3	0	0.0	0	0.0	0	0.0	44	100.0
		Male																								
		Mean Length	-		579		-		701		-		876		-		-		-		-		-			
		SE	-		8		-		11		-		96		-		-		-		-		-			
		Range	-		507-625		-		628-804		-		780-972		-		-		-		-		-			
		n	-		15		-		17		-		2		-		-		-		-		-			
		Female																								
	Mean Length	-		-		-		-		-		809		-		941		-		-		-				
	SE	-		-		-		-		-		12		-		-		-		-		-				
	Range	-		-		-		-		-		760-876		-		-		-		-		-				
	n	-		-		-		-		-		9		-		1		-		-		-				
Total	108	Male	0	0.0	25	23.1	0	0.0	44	40.7	0	0.0	10	9.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	79	73.1
			0	0.0	2	1.9	0	0.0	5	4.6	0	0.0	20	18.5	0	0.0	1	0.9	1	0.9	0	0.0	0	0.0	29	26.9
		Female																								
		Total	0	0.0	27	25.0	0	0.0	49	45.4	0	0.0	30	27.8	0	0.0	1	0.9	1	0.9	0	0.0	0	0.0	108	100.0
		Male																								
		Mean Length	-		571		-		710		-		832		-		-		-		-		-			
		SE	-		8		-		8		-		22		-		-		-		-		-			
		Range	-		470-645		-		510-820		-		755-972		-		-		-		-		-			
		n	-		25		-		44		-		10		-		-		-		-		-			
		Female																								
	Mean Length	-		568		-		765		-		828		-		941	775	-		-		-				
	SE	-		23		-		44		-		13		-		-		-		-		-				
	Range	-		545-590		-		600-860		-		716-940		-		-		-		-		-				
	n	-		2		-		5		-		20		-		1	1	-		-		-				

Table 5: Fort Yukon, Chinook salmon subsistence harvest age and sex composition and mean length (mm), 2013 (courtesy of ADF&G).

Sample Dates	Sample Size		Brood Year (Age)																Total							
			2010		2009		2008		2007		2006		2005													
			(1.1)	(1.2)	(2.1)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	N	%											
7/24, 26, 30 (3.5" Set Gill Net)	9	Male	0	0.0	0	0.0	0	0.0	2	22.2	0	0.0	2	22.2	0	0.0	0	0.0	1	11.1	0	0.0	0	0.0	5	55.6
		Female	0	0.0	0	0.0	0	0.0	1	11.1	0	0.0	3	33.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4	44.4
		Subtotal	0	0.0	0	0.0	0	0.0	3	33.3	0	0.0	5	55.6	0	0.0	1	11.1	0	0.0	0	0.0	0	0.0	9	100.0
			Male Mean Length	-	-	-	-	728	-	750	-	-	-	795	-	-	-	-	-	-	-	-	-	-	-	
			SE	-	-	-	-	13	-	126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			Range	-	-	-	-	715-740	-	624-875	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			n	-	-	-	-	2	-	2	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	
			Female Mean Length	-	-	-	-	805	-	864	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			SE	-	-	-	-	-	-	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			Range	-	-	-	-	-	-	800-926	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			n	-	-	-	-	1	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7/10-14, 7/22 (6" Set Gill Net)	42	Male	0	0.0	4	9.5	0	0.0	15	35.7	0	0.0	5	11.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	24	57.1
		Female	0	0.0	0	0.0	0	0.0	6	14.3	0	0.0	10	23.8	2	4.8	0	0.0	0	0.0	0	0.0	0	0.0	18	42.9
		Subtotal	0	0.0	4	9.5	0	0.0	21	50.0	0	0.0	15	35.7	2	4.8	0	0.0	0	0.0	0	0.0	0	0.0	42	100.0
			Male Mean Length	-	590	-	-	687	-	816	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			SE	-	13	-	-	15	-	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			Range	-	560-625	-	-	579-797	-	770-906	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			n	-	4	-	-	15	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			Female Mean Length	-	-	-	-	704	-	794	710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			SE	-	-	-	-	19	-	20	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			Range	-	-	-	-	627-754	-	730-870	705-715	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			n	-	-	-	-	6	-	10	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Table 5 cont.

		Brood Year (Age)																									
		2010		2009				2008				2007				2006				2005				Total			
		(1.1)		(1.2)		(2.1)		(1.3)		(2.2)		(1.4)		(2.3)		(1.5)		(2.4)		(1.6)		(2.5)		Total			
Sample	Size	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
7/10-14, 24-25 (Fish Wheel)	170	Male	0	0.0	14	8.2	0	0.0	58	34.1	0	0.0	37	21.8	3	1.8	0	0.0	0	0.0	0	0.0	0	0.0	112	65.9	
		Female	0	0.0	5	2.9	0	0.0	11	6.5	0	0.0	42	24.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	58	34.1	
		Subtotal	0	0.0	19	11.2	0	0.0	69	40.6	0	0.0	79	46.5	3	1.8	0	0.0	0	0.0	0	0.0	0	0.0	170	100.0	
		Male Mean Length	-		577	-		708	-		810	687	-		-	-	-	-	-	-	-	-	-	-	-	-	
		SE	-		23	-		7	-		11	23	-		-	-	-	-	-	-	-	-	-	-	-	-	
		Range	-		510-860	-		570-810	-		660-960	650-730	-		-	-	-	-	-	-	-	-	-	-	-	-	
		n	-		14	-		58	-		37	3	-		-	-	-	-	-	-	-	-	-	-	-	-	
		Female Mean Length	-		534	-		736	-		856	-	-		-	-	-	-	-	-	-	-	-	-	-	-	
		SE	-		22	-		13	-		7	-	-		-	-	-	-	-	-	-	-	-	-	-	-	
		Range	-		496-610	-		680-810	-		800-972	-	-		-	-	-	-	-	-	-	-	-	-	-	-	
		n	-		5	-		11	-		42	-	-		-	-	-	-	-	-	-	-	-	-	-	-	
	Total	221	Male	0	0.0	18	8.1	0	0.0	75	33.9	0	0.0	44	19.9	3	1.4	0	0.0	1	0.5	0	0.0	0	0.0	141	63.8
			Female	0	0.0	5	2.3	0	0.0	18	8.1	0	0.0	55	24.9	2	0.9	0	0.0	0	0.0	0	0.0	0	0.0	80	36.2
			Total	0	0.0	23	10.4	0	0.0	93	42.1	0	0.0	99	44.8	5	2.3	0	0.0	1	0.5	0	0.0	0	0.0	221	100.0
		Male Mean Length	-		580	-		704	-		808	687	-		795	-	-	-	-	-	-	-	-	-	-	-	
		SE	-		18	-		6	-		11	23	-		-	-	-	-	-	-	-	-	-	-	-	-	
		Range	-		510-860	-		570-810	-		624-960	650-730	-		-	-	-	-	-	-	-	-	-	-	-	-	
		n	-		18	-		75	-		44	3	-		1	-	-	-	-	-	-	-	-	-	-	-	
		Female Mean Length	-		534	-		730	-		845	710	-		-	-	-	-	-	-	-	-	-	-	-	-	
		SE	-		22	-		10	-		7	5	-		-	-	-	-	-	-	-	-	-	-	-	-	
		Range	-		496-610	-		627-810	-		730-972	705-715	-		-	-	-	-	-	-	-	-	-	-	-	-	
		n	-		5	-		18	-		55	2	-		-	-	-	-	-	-	-	-	-	-	-	-	

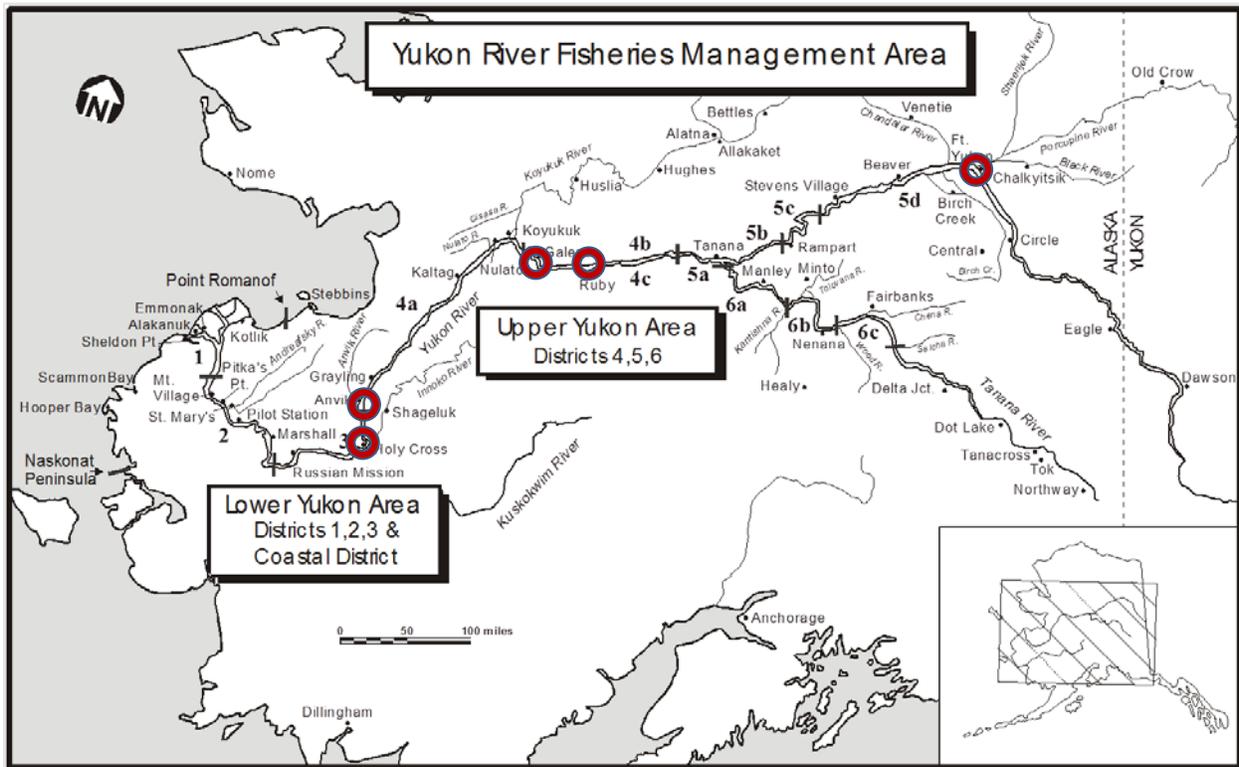


Figure 1: Map of the Yukon River Fisheries Management area with fishing districts shown. Communities involved in this project are circled in red.

**URE-03-13 Drobny**

**Name of Project:** Yukon River Chinook Salmon Subsistence Sampling:  
(Holy Cross, Anvik, Galena, Ruby, Fort Yukon)

**ELIGIBLE COSTS**

**Labour  
Wages & Salaries**

Position	# of crew	# of work days	hrs per day	rate per hour	Total (In-kind & cash + R&E Amount)
Principal Investigator	1	68.75	8	\$50	27,500
ADF&G sample processing					20,000
Person Days (# of crew x work days)		69			
			<b>sub total</b>		47,500

OTHER FUNDING	YUKON R&E FUND GRANT AMOUNT	Actual Expenditure	Variance	% Var
In-Kind & Cash	R&E Amount	Actual PSC Exp.	Variance from PSC Amt	% Var
20,000	27,500	27,500.00	-	0%
20,000	27,500	27,500.00	-	0%

**Labour - Employer Costs ( percent of wages subtotal amount )**

rate	0%	<b>sub total</b>	
------	----	------------------	--

--	--	--	--	--

**Subcontractors & Consultants**

# of crew	# of work days	hrs per day	rate per hour	
Fishers will be paid a minimum of \$5/sample x 900 samples				
				5,400
Insurance if applicable	rate	0%		
			<b>sub total</b>	5,400

	5,400	3,217.00	(2,183.00)	-40%
	5,400	3,217.00	(2,183.00)	-40%

**Volunteer Labour**

# of crew	# of work days	hrs per day		
Skilled				
Un-skilled				
Insurance if applicable	rate	0%		
			<b>sub total</b>	


**Total Labour Costs** 52,900

20,000 32,900 30,717.00 -2,183.00 -7%

**Site / Project Costs**

**Provide details in the space below (use an additional page if needed)**

Travel (do not include to & from work)	Details on Travels & Supplies	7,000
Small Tools & Equipment		
Site Supplies & Materials	Details on Travels & Supplies	1,500
Equipment Rental		
Work & Safety Gear		
Repairs & Maintenance		
Permits		
Technical Monitoring		
Other site costs		
<b>Total Site / Project Costs</b>		8,500

	7,000	5,128.00	(1,872.00)	-27%
	1,500	987.95	(512.05)	-34%
	8,500	6,115.95	(2,384.05)	-28%

# URE-03-13 Drobny

## ELIGIBLE COSTS

## BUDGET

## OTHER FUNDING

## CONTRIBUTION FUNDING

				Total (R&E + In-kind + cash)	In-Kind & Cash	R&E Amount	Actual PSC Exp.	Variance from PSC Amt	% Var
							Actual Expenditure	Variance	
<b>Training (e.g Swiftwater, bear aware, electrofishing, etc).</b>									
Name of course	# of crew	# of days							
<b>Total Training Costs</b>							0.00	-	n/a

## Overhead / Indirect Costs

Office space; including utilities, etc.									
Insurance									
Office supplies									
Telephone & long Distance									
Photocopies & printing									
Indirect/overhead costs									
(If the R&E contribution to Indirect costs exceeds 20% of the total R&E grant you will be required to submit back-up documentation justifying the expense).									
Other overhead costs									
<b>Total Overhead Costs</b>							0.00	-	n/a

## Capital Costs / Assets

Provide details in the space below (use an additional page if needed)

Assets are things of value that have an initial cost of \$250 or more and which can be readily misappropriated for personal use or gain or which are not, or will not be, fully consumed during the term of the project.

<b>Total Capital Costs</b>							0.00	-	n/a
<b>Project Total Costs</b>				61,400	20,000	41,400	36,832.95	-\$4,567.05	-11%

2012 Total Grant **41,400.00** US

## Budget Summary

(R&E + in-kind + cash)

Total Labour Costs	47,500
Total Site / Project Costs	13,900
Total Training Costs	
Total Overhead Costs	
Total Capital Costs	
<b>Project Total</b>	<b>61,400</b>

Actual Advances	
1st advance	20,700.00
2nd advance	16,560.00
3rd advance	-
Total advances	37,260.00
less actual \$ spent	36,832.95
<b>Difference</b>	<b>(427.05)</b>
<b>Amt due/(owed to PSC)</b>	<b>(427.05)</b>

Spearfish Research  
5575 Old Ridge Trail  
Fairbanks, AK 99709

Pacific Salmon Commission  
600-1155 Robson Street  
Vancouver, BC V6E 1B5

3/26/2014

To Whom it May Concern,

The project titled 2013 Yukon River Chinook Salmon Subsistence Sampling: (Holy Cross, Anvik, Galena, Ruby, Fort Yukon) project URE 03-13 had a projected budget of \$41,400. The actual budget spent was \$36,832.95. This grant was paid \$37,260. A return check is enclosed in the hard copy of the final report for \$427.05.

Sincerely,



Paige Drobny  
Owner/Chief Financial Officer