

UPPER YUKON RIVER FISHERY INVESTIGATIONS, 1971

by

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INTRODUCTION

The primary objectives of the upper Yukon River Fishery Investigations project were as follows:

1. Obtain accurate commercial and subsistence salmon catch data for subdistrict 334-40.
2. Obtain age, sex, size and fecundity information from commercial and subsistence king and chum salmon catches.
3. Assist in enforcement of commercial and subsistence fishing regulations and distribute information regarding regulations to fishermen and buyers.
4. Obtain information regarding Lake Minchumina whitefish fishery.

PROCEDURES

I was stationed in Fairbanks and periodically contacted fishermen and buyers in the communities of Galena, Ruby, Tanana, Rampart, Stevens Village, Beaver, Circle and Eagle. Nenana and Fairbanks were driven to by personal auto, while the former were contacted by chartered and scheduled aircraft:

- a. Fort Yukon Air Service--flies Rampart to Eagle
- b. Tanana Air Taxi--flies Tanana downriver to Galena
- c. Wien--flies to Fort Yukon, Galena and Tanana

A list of all primary buyers, processors and fishermen was maintained.

Catch forms were given to fishermen who had not received them in the mail prior to the fishing season. These forms were periodically checked.

Fish tickets were completed, tabulated and up-to-date catch data phoned into the area biologist.

Assistance was given to the Fairbanks office staff whenever possible in issuing subsistence salmon fishing permits for the Tanana River drainage above Wood River.

Salmon were sampled whenever available from gill nets and fishwheels and the following information was recorded: species, sex, length, weight, relative maturity and incidence of gill net marks (from fishwheel catches only).

Ovaries were taken from the female king salmon of various sizes and preserved in 10 percent formaldehyde. Fecundity was determined by directly counting the eggs of each ovary. In addition roe weights were recorded from chum and king salmon.

Fifty dollars tag reward money was available for purchasing of recovered tags from fishermen. Although fishermen were informed to watch for tagged salmon, surprisingly none were collected by me in the Upper Yukon area this summer.

Catch forms and regulation notices were distributed. License applications and Intent to Operate forms were issued upon request and fish ticket books were distributed to appropriate persons.

GENERAL INFORMATION

- 6/29 An early trip was made to Nenana. Effort and catch was zero at this time. Water was high on Tanana River.
- 7/1 A charter to Ruby, Galena and Tanana was made. There was no effort in Galena, in Ruby there were two nets and one fishwheel operating with a catch of 23 kings, and in Tanana there was Kozevnikoff with two nets set and a catch of four kings.

- 7/2 There were three nets and three wheels at this time in Rampart and the catch to date was a total of two kings.
- 7/4 In relation to the July 4th activities in Tanana and Rampart, it is wise to avoid these villages at this time because lodging is unavailable.
- 7/7 Kozevnikoff is still the only fisherman in Tanana. He is using three nets now and has a total catch to date of 28 kings.
- 7/8 Eight people are fishing in Rampart now and the run is just starting to come in.
- 7/13& Heavy rain in Fairbanks area, which caused the Chena and Tanana
7/14 River to be very high.
- 7/14 I believe this is the date Environmental Health closed down Ira Weisner's canning operation because of the unsanitary conditions.
- 7/15 This year a trip was made to Eagle and Circle. Fishermen were contacted. I learned that approximately six to eight people in Eagle did subsistence fishing and four were operating at this time. In Circle there are only subsistence fishermen. Raymond Bell (commercial fisherman from Circle) fishes 45 miles upriver from Circle. Martini, a commercial fisherman from Eagle, fishes 1 1/2 miles upriver from Eagle and had not caught anything at this time. Biederman (Eagle) did not have his wheel in the water yet. First trip to Fort Yukon was made on this date. Tommy Carroll was the only person fishing. Most men of the village were out fighting fires. I stopped at the RuralCap office in Fort Yukon and left subsistence applications and commercial licenses there because most of the village people go to this office when they have questions.

The water was high at Circle and Fort Yukon for this time of the year.

7/16 I made my third trip to Tanana. Beard and Erhart had just put their wheels in the water the day before. McLaughlin, who uses a drift net, caught his first two kings today. He fishes in the evenings and weekends.

7/24 Sport Fish Division saw four kings 75 miles up the south fork of the Chena River and three kings 107 miles up the east fork of the Chena.

7/30 Another trip was made to Fort Yukon and there were five subsistence fishermen at this time.

Hanna Adams, at Beaver, reported approximately 100 kings caught to date. She is the only person fishing in Beaver at this time. Moses Cruikshank will fish the late chum run.

8/16 I made the last trip to Nenana at this date. The king run was virtually over and the chum run was tapering off.

Due to growing interest by local Fairbanks commercial fishermen, I found it necessary to find out some of the requirements for commercial fishermen to sell fish legally in the Fairbanks city limits.

1. A commercial fishing license
2. A \$25 business license
3. A \$200 bond posted in advance of sale in the city limits
4. A 5 percent sales tax required by the city
5. Five dollars a day operational fee within city limits
6. Public Health Service must check the operation for sanitation.

I talked with David Bruce, who is the city sanitarian and works with the Department of Health and Welfare. Mr. Bruce was interested in people who sell food products because of sanitational reasons. I brought him up to date on intent to operate forms, people who sell strips, canned salmon or fresh fish. He was also not aware of the salmon roe operation in Nenana. We felt we could be very helpful to each other in the future.

While at Rampart fuel was purchased to travel upriver to the camp of Richard Smith, Walter Wood and downriver to Mayo's camp. Payment for use of the boat was fuel.

Egg weights were unable to be taken on the majority of female fish. The fishermen were not dressing the fish until the buyer came to pick up the fish. Fish were kept cool in nearby freshwater creeks.

With the Yukon and Tanana Rivers steadily falling and rising, the fishermen had a lot of problems with drift this summer.

Bureau of Land Management allows Fish and Game to fly with them when room is available.

Graftan Burgman, N.C. manager, and the state trooper are good contacts for knowledge of fishermen in Fort Yukon.

I received word from Raymond Accola that William Carlo was selling fish to the Travelers Inn and Hodges from Nenana was selling fish to the Grubsteak Cafe. Neither of these people had an Intent to Operate so I turned the information over to Protection Division.

Since Rampart is the most accessible village, the concentration of fish buyers is greater there. But, since Peter Merry has been established and has relatives in Rampart, he usually has first priority to buy fish. He also makes regular trips to Rampart. Since the run was spread out and due to the fact that Peter Merry was "big" competition, other buyers found it not worth the effort and money to buy much fish this year.

Similarly, since the run was spread out, the effort was probably equal to that of last year even though there were more fishermen this year.

The first king salmon was reported caught at the following locations: Ruby (6/27), Tanana (6/28), Rampart Rapids (6/30), Nenana (7/4), Fort Yukon (7/8), Circle (7/11) and Eagle (7/13). Chum salmon were first captured at Tanana (7/15) and Nenana (7/16).

COMMERCIAL FISHERY INFORMATION

As of August 5 the 1,348 king were recorded sold. Of these 1,348 kings, 1,107 were purchased by buyers, the rest were sold by fishermen without Intent to Operate forms. The main two fishermen were Thomas Albert (67 kings) and Kozevnikoff; I had not received any data from Circle or Eagle yet.

Average weight per king salmon was 23.0 pounds. Only the salmon with known weights were taken and all weights were dressed weights. The 23.0 pounds per fish is the average weight per fish bought by the buyers, but since 1,107 of the 1,348 fish caught were purchased by buyers, I believe 23.0 pounds is very near true "weight per fish sold."

I have tabulated 691 pounds of strips sold by John Honea of Ruby but haven't received word from other fishermen who sell strips. I will contact them and get data when I go on the subsistence catch trip with Bob Castoldi.

Table 1 presents list of commercial fishermen by location and their seasonal catch. Table 2 lists Intent to Operate forms filed and Table 3 presents list of firms checked for sale of fish. Table 4 shows daily salmon catches made by fishermen in various locations.

LAKE MINCHUMINA

On July 22 Ron Regnart and I flew to Lake Minchumina. We were interested in getting some general information about the lake, its fishing and the surrounding area.

Three permits had been issued for the taking of whitefish in Lake Minchumina this year. They were issued to Mr. Flood, Mr. Blackburn and Mr. Holmes.

When we arrived at the lake Mr. Blackburn was the only permittee there so we obtained all our information from him. I have only bits of the information, Ron has the majority.

Blackburn has a market for the sale of whitefish in the Fairbanks area. He sells whitefish in the round to Market Basket, Safeway and Foodland. Blackburn has a freezer unit set up and catches only enough whitefish to fill the freezer. Thus he fishes and sells when there is a demand from Fairbanks.

Blackburn uses a 5" mesh gill net and is interested in catching only the larger whitefish. Previously he tried a 4 1/2" gill net and was catching too many pike and suckers so he switched to the 5" mesh and has had better luck catching more whitefish and less pike.

Whitefish are in the lake all year round, but the water is too dark to see the fish. Mid-September to October the whitefish run comes in to spawn and nets are set at the outlet of Lake Minchumina to the Muddy River. Nets are set at the mouths of the other creeks also.

About the tenth to the fifteenth of October Blackburn fished below the spit where the water is deeper and where there are a few good fishing holes. After the ice freezes, he fishes above the spit where the water is shallow.

Blackburn mentioned that in the 1930's there were four fur farms on the rivers near the lake and these animals were fed by fish in the lake. He says there are sheefish in "Bonestar Lake" and whitefish used to be taken from there to feed dogs that were in a camp on Bonestar Lake.

In Lake Minchumina Blackburn says he gets sheefish up to 8-10 pounds.

He says he gets an occasional chum salmon below the spit in late September and catches some salmon between mid-September to October. He says salmon go up the McKinley Creek in late fall.

GALENA TRIP

On August 12 I made a trip to Galena. Max Huhndorf, the only commercial fisherman in Galena, had not done any fishing so far this year and did not think he would have a chance to do any later in the fall.

I spoke with Mr. Demoski, Regional Director of the Koyukon Development Corporation, Inc. Mr. Demoski was interested in regulations and information regarding the fishery in the Y-4 area.

He was interested in quotas of sheefish, whitefish, chum and king salmon. I told him no definite quota had been established on sheefish and whitefish for the Y-4 area. I told him the number of fishermen and the amount of whitefish and sheefish desired would have to be submitted to the regional supervisor. He in turn said he did not have any statistics yet.

Mr. Demoski's plan was to unite fishermen from nearby villages, Galena and Koyukuk were mentioned, fish for kings and chum salmon, sell these in the half dried state either locally, in Fairbanks or the lower 48 states, if a market could be established. I informed him that the

whitefish and salmon market was already fairly well established in the Fairbanks area and it would be very unlikely for him to establish any market there. Whitefish and sheefish would be sold in the lower 48 states also. A large freezer unit would be established for holding the fish.

Mr. Demoski, at the time I talked to him, had no date set for starting of operations, no ideas as to specific amounts of each kind of fish to be taken or the number of fishermen involved. He did state, however, that the area to be fished would be above the Koyukuk River to about midway between Galena and Ruby.

Mr. Demoski did inquire if there were any areas that native people could sportfish and hunt that would be barred from the rest of the population. My answer was no at this time.

SAMPLING

A total of 290 king and 190 chum salmon were sampled for age-sex-size information from fishwheel and gillnet catches at Nenana, Tanana and Rampart. Results are summarized in the Special Data Report series.

Table 5 presents data regarding stages of relative maturity of king and chum salmon. A total of 357 kings were examined and 12.1% were categorized as Stage I (silvery bright). The remainder of the kings were designated either Stage II (intermediate)--43.4% or Stage III (hooked snout, rust to red coloration, highly spotted)--44.5%. A total of 205 chums was examined and nearly all fish (99.5%) were categorized as Stage III (hooked snout, pronounced teeth, definite bars on side with red, green and black coloration).

Table 6 presents data regarding the incidence of gill net marks of king and chum salmon sampled from fishwheel catches. A total of 164

kings were examined and only 2 fish (1.2%) were gill net marked. None of the 207 chum salmon sampled were net marked.

A total of 12 female king salmon were sampled for fecundity. Fish ranged in length from 817 to 972 mm and weight from 16.1 to 31.0 pounds. The number of eggs per fish ranged from 5,955 to 13,434. The average number of eggs per female was 9,786 (Table 7). The linear regression of number of eggs on length is significant: $r = 0.844$ (Figure 1).

A total of 34 king and 19 chum salmon egg weights were taken. The average king salmon egg weights was 3.3 pounds (15.2% of the total body weight). The average weight of chum salmon eggs was 0.8 pounds (18.2% of the total body weight). Data is summarized in Table 8.

Table 1. Upper Yukon (subdistrict 334-40) commercial catches by licensed fishermen, 1971.

<u>Name</u>	<u>Y Number</u>	<u>Gear</u>	<u>Commercial Catch</u>		
			<u>King</u>	<u>Coho</u>	<u>Chum</u>
		<u>GALENA</u>			
Max J. Huhndorf	972	Set Net			
		<u>RUBY</u>			
Billy Captain	938	Fishwheel	129	1	9
Alfred Gurtler	979	Drift & Set Net, Fishwheel			Sells strips in winter
Frank Gurtler	977	Set Net			Sells strips in winter
John Honea	745	Set Net	240	-	-
Albert Yrjana	512	Set Net	44	-	-
		<u>TANANA</u>			
Paul Beard	503	Set Net, Fishwheel	48*	-	-
Walter Carlo	-	Did not fish			
Lee Edwin	500	Fishwheel	6	-	-
Lester Erhart	527	Fishwheel	25*	-	-
James Folger	986	Fishwheel	8	-	-
Wilfred Kozevnikoff	505	Set Net	201	-	-
William McLaughlin	993	Drift & Set Net, Fishwheel	24	-	0
Jim Temple	990	Fishwheel (did not fish)			
		<u>RAMPART</u>			
Lillian Burns	982	Set Net, Fishwheel	10	-	-
Peter Evans	518	Fishwheel	161	-	-
Thomas Evans, Jr.	991	Helper			
Georgianna Lincoln	748	Set Net	27	-	-
Alfred Mayo	746	Set Net	104	-	-
Troy Mayo	-	Helper			
Turak J. Newman	519	Set Net	154	-	-
Renee Merry	984	Set Net	6	-	-
Richard Smith	490	Set Net	74	-	-
Henry Wiehl	522	Set Net	93	-	1
John Wiehl	523	Set Net	14	-	-
		<u>STEVENS VILLAGE</u>			
George Kilborne	514	Set Net	-	-	-
William Pitka	526	Set Net	-	-	-
		<u>FORT YUKON</u>			
Tommy Carroll	-	Fishwheel	-	-	-
		<u>CIRCLE</u>			
Raymond Bell	975		-	-	20

Table 1. (continued) Upper Yukon (subdistrict 334-40) commercial catches by licensed fishermen, 1971.

<u>Name</u>	<u>Y Number</u>	<u>Gear</u>	<u>Commercial Catch</u>		
			<u>King</u>	<u>Coho</u>	<u>Chum</u>
		<u>EAGLE</u>			
Charles Biederman	974		-	-	-
David Martini	971		-	-	408
		<u>NENANA</u>			
Thomas Albert	504	Fishwheel	67	30	326
Dinah Albert	-	Helper			
Donna Bruce	-	Fishwheel			
Barbara Carson	-	Fishwheel	*715 pounds of salmon roe		
Charles Cox	973	Set Net			
Rudy Demientieff	-	Fishwheel	4*		
Ruben Esau	-	Fishwheel			
Paul Esau	-	Helper			
Severt Jacobson	992	Set Net			
Henry Ketzler	980	Fishwheel			
Gilbert Ketzler	-	Helper			
Joseph Ketzler	-	Helper			
Robert Ketzler	-	Helper			
Edmund Lord	-	Fishwheel	171	1	9
Reinhard Rupprecht	502	Fishwheel & Set Net	5*		
		<u>FAIRBANKS</u>			
Raymond Accola	44	Set Net			
Charles Anderson	743	Fishwheel			
Robert V. Danielson	981	Set Net			
Nick Demientieff	-	Fishwheel			
Lester Fickes	985	Set Net	180		
Anita Henry	-				
Catherine Ludecker	525	Fishwheel	5	2	11
Howard Luke	528	Set Net, Fishwheel			
Felix Rasmus	516	Set Net, Fishwheel	3	-	213
Edward Mayo	940	Set Net, Fishwheel			
Moses Samuelson	-	Fishwheel			
		Total ^{1/}	1,803	34	997

* Catches not recorded on fish tickets.

^{1/} Also includes 28 kings, 4 cohos and 64 chums sold by unlicensed fishermen but recorded on fish tickets.

Table 2. Intents to operate filed.

Raymond G. Accola	6 1/2 Mile Steese, Fairbanks, AK
Paul Beard	Tanana, AK
Barbara Carson*	Nenana, AK
Nick Demientieff*	Box 1713, Fairbanks, AK
Les Fickes	Box 2618, Fairbanks, AK
Edmund Lord	Nenana, AK
Glenn Miller	226 Northward, Fairbanks, AK
Peter Merry Guide Service	1206 Coppett, Fairbanks, AK
Felix Rasmus	1705 Southern, Fairbanks, AK
Weisner Trading Company*	Rampart, AK
Yukon Fish Company (John Zeller)	Box 14, Healy, AK
Yukon Trading Company (William Pirie and Sterling True)	Box 335, Nenana, AK

NOTE: We have issued five more intent to operate forms this year than last.

*Did not operate

Table 3. Establishments checked for sale of fish.

Airport Grocery		No fish
B&B Market	Arley Fisher	
Badger Road Grocery		No fish
Cabin Inn		No fish
College Grocery		No fish
Denali Grocery		No fish
Fairbanks Inn	Bill Carlo Raymond Accola	
Foodland	Val Blackburn	Whitefish
Grubsteak		No fish
Lindy's		No fish
Lolas		No fish
Market Basket	Peter Merry Jim Schriver Blackburn	Salmon Halibut Whitefish
Safeway	Northern Fish Products, Tacoma, Washington Blackburn	Kipped salmon tips Whitefish
Steese Market		No fish
26th Street Market		No fish
Traveler's Inn	Arley Fisher	
Van Horn Lodge		No fish

Table 4. (continued) Daily salmon catches for selected fishermen, upper Yukon River, 1971.

Date	Henry Gurtler ^{1/2/} Ruby		Tod Kozevnikoff ^{2/} Tanana	Lillian Burns ^{2/} Rampart	Thomas Albert ^{1/} Nenana	
	King	Chum	King	King	King	Chum
8/9						100
8/10						120
8/11						95
8/12						66
8/13						100
8/14						80
8/15						58
8/16						37

1/ Fishwheel operated.

2/ Gill net operated.

Table 5. Relative maturity of king and chum salmon sampled from fishwheels and gill nets at Nenana, Tanana and Rampart, 1971.

<u>King Salmon</u> ^{1/}	Stage of Relative Maturity			Total No. (%)
	I No. (%)	II No. (%)	III No. (%)	
Fishwheel	20 (8.9)	96 (42.7)	109 (48.4)	225 (100.0)
Gillnet	23 (17.4)	59 (44.7)	50 (37.9)	132 (100.0)
Total	43 (12.1)	155 (43.4)	159 (44.5)	357 (100.0)
<u>Chum Salmon</u> ^{2/}				
Fishwheel	0 --	1 (0.5)	204 (99.5)	205 (100.0)

1/ Stage of Relative Maturity Kings:

- I Silvery bright.
- II Intermediate--may have slight red coloration.
- III Hooked snout, rust to red coloration, highly spotted.

2/ Stage of Relative Maturity Chums:

- I Silvery bright--may have faint bars on side, teeth small, no pronounced hooking of snout.
- II Intermediate.
- III Hooked snout, pronounced teeth, definite bars on side along with red, green and black coloration.

Table 6. Incidence of gill net marks of king and chum salmon sampled from fishwheels at Nenana, Tanana and Rampart, 1971.

	Incidence of Gill Net Marks		
	<u>No Marks</u> <u>Number (%)</u>	<u>Net Marked</u> <u>Number (%)</u>	<u>Total</u> <u>Number (%)</u>
Chum Salmon	207 (100.0)	0 (100.0)	207 (100.0)
King Salmon	162 (98.8)	2 (1.2)	164 (100.0)

Table 7. Size and fecundity data of Yukon River king salmon commercial catch sample^{1/} taken at Tanana, Nenana and Rampart, 1971.

Age Class	Length ^{2/} (mm)	Body Weight (lbs.)	Egg Weight (lbs.)	Number of Eggs
5 ₂	858	19.5	4.5	10,324
6 ₂	817	16.1	2.3	5,955
6 ₂	853	19.0	1.8	6,411
6 ₂	854	20.0	5.1	9,278
6 ₂	869	24.0	3.1	7,709
6 ₂	874	22.5	2.3	8,159
6 ₂	893	25.2	2.3	8,843
6 ₂	906	25.5	2.5	10,560
6 ₂	908	22.0	6.8	13,434
6 ₂	926	27.0	3.0	10,923
6 ₂	958	28.5	7.1	12,412
6 ₂	<u>972</u>	<u>31.0</u>	<u>4.7</u>	<u>13,421</u>
Average	891	23.4	3.8	9,786

^{1/} Gear consisted of 8 1/2" mesh set gill nets and fishwheels.

^{2/} Mid-eye to fork of tail measurement.

Table 8. Egg weights and associated data of king and chum salmon sampled from fishwheels and gill nets at Nenana, Tanana and Rampart, 1971.

	<u>Number</u>	<u>Average Body Length (Range)</u>	<u>Average Body Weight (Range)</u>	<u>Average Egg Weight (Range)</u>	<u>Percent Egg Weight of Body Weight (Range)</u>
Kings	34	876 mm (760-972)	21.8 lbs (12.4-31.0)	3.3 lbs (1.0-7.1)	15.2% (6.1-30.9)
Chums	19	550 mm (486-631)	4.5 lbs (2.4-7.1)	0.8 lbs (0.4-1.5)	18.2% (9.7-23.0)

Figure 1. Regression of number of eggs on length, upper Yukon River king salmon, 1971.

