

YUKON RIVER SALMON TAGGING STUDIES

1962

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PART 6 YUKON TAGGING PROGRAM

by

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INTRODUCTION

The objectives of this investigation were to estimate the population size and to determine the racial composition and utilization of chum salmon of the Yukon River. It was also proposed that as much life history information (sex ratios, length, weights, etc.) as time allowed would be collected and analyzed. In order to accomplish the objectives set forth, a tag and recovery program coupled with a survey of the subsistence catch was initiated during the 1961 fishing season. The 1961 field season was mainly concerned with gear experimentation, with the majority of tag recovery effort being carried out in 1962.

DESCRIPTION OF THE YUKON RIVER

The Yukon River is over 2,000 miles in length and originates in a series of lakes in both the Yukon Territory and British Columbia. It flows northwesterly to Fort Yukon, in Alaska, thence in a westerly direction for the remainder of its course to the Bering Sea (Figure 1). Five species of Pacific salmon enter the Yukon River; these are chum salmon (Oncorhynchus keta) king salmon (Oncorhynchus tshawytscha), pink salmon (Oncorhynchus gorbuscha), coho salmon

(O. kisutch) and red salmon (O. nerka). The Yukon chum salmon are known to ascend to the outlet of Teslin Lake, in Canada, a distance of over 1,700 miles upstream from the mouth. Chum migrations in the Amur River of Siberia are the only known migrations to rival the distances traveled by Yukon chums.

METHODS AND MATERIALS

A tagging site, utilizing fish wheels as capture gear, was established at mile 87 on the north bank of the river. The fish wheels are commonly operated by subsistence fishermen throughout much of the drainage. The common native built fish wheel consists of a spruce log platform that supports an axle with two or three scoop like baskets attached and covered with poultry netting. These are turned by the force of the river's current. Two fish wheels were constructed of the same general design, but containing live tanks, metal pipe frame basket assembly, and a wooden platform enclosing styrofoam floats. Three native fish wheels were also built by project personnel during the fall of 1961 and were used during the 1962 tagging season. Captured salmon were tagged with Petersen disc tags in 1961, while both spaghetti and disc type were used in 1962. In 1961 the 5/8" diameter Petersen disc were placed in the salmon approximately one inch below the origin of the dorsal fin and in 1962 the Petersen disc tags were placed under the posterior third of the dorsal fin in an attempt to minimize net selectivity. The spaghetti tags consisted of 13" lengths of yellow plastic tubing, 1/16" in diameter, and were inserted with a needle applicator approximately one inch below and slightly forward of the origin of the dorsal fin. In

1962 the adipose fins of all tagged salmon were removed in order to facilitate identification in the catch if tag loss occurred. The legend on both types of tags included reward information and the mailing address of the Anchorage office of the Alaska Department of Fish and Game. A \$1.00 reward was offered for each tag recovered.

When possible sex, fork length, a subjective judgment as to the relative maturity, and the incidents of predator and net marks were recorded for every salmon tagged in 1962; but in 1961 only sex and fork length were recorded. Scale samples were also periodically taken during both 1961 and 1962. The 1962 sampling effort was greater than the initial 1961 effort.

RESULTS

Summer and Fall Chums

After the 1961 season it became fairly evident that there were two main stocks of chum salmon present in the Yukon River. These two groups shall be referred to as summer and fall chum salmon in the remainder of this report. These two groups are compared and discussed throughout this report, although in many cases significant comparisons were difficult to make because of the small sample size of tagged fall chums. Briefly listed below are the differences noted between these two groups during the study:

1. Summer chums enter the mouth of the river in early June in advance of the fall chum run which began in mid to late July.
2. Summer chums were relatively more mature (external sex characteristics clearly evident, water marking was common) than were fall chums.

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3. The fork lengths of fall chums were greater than that of summer chums for comparable age classes.
 4. Differences in age composition of the two groups were noted, i.e., in 1962 the fall chum sample contained a greater percentage of three-year olds and a lesser percentage of four-year olds when compared to the summer chum sample.
 5. Recovery data indicated that the fall chums spawned primarily in the upper portions of the drainage while the majority of the summer chums spawned in the lower and middle sections of the river.

Number of Fish Tagged

In 1961 a total of 1,097 chum salmon were tagged with Petersen disc tags and in 1962 a total of 3,967 chums were tagged with Petersen discs and spaghetti tags (305 Petersen discs, 3,491 spaghetti tags). Table 1 shows the number of chums tagged by date for 1961 and 1962. In 1961 only one fish wheel was used, while during 1962 a total of four fish wheels were used. However, during 1962 all four fish wheels were not always in operation each day.

Tag Recovery Results

Table 2 shows comparative tag recovery data for 1961 and 1962 and table 3 shows the distribution of tag recoveries by recovery location for both years. All tag recoveries with the exception of ten recoveries from the Andraefsky River were made by commercial and subsistence fishermen. The Andraefsky River recoveries were made by a Department carcass sampling crew and were not included in the data shown in tables 2 and 3.

Table 1. THE NUMBER OF CHUM SALMON TAGGED BY DATE FOR 1961 and 1962

Date	Total Number Chums Tagged		Date	Total Number Chums Tagged	
	1961	1962		1961	1962
6/14		2	8/5	4	38
6/15		28	8/6	6	21
6/16		79	8/7	10	20
6/17		57	8/8	3	18
6/18		204	8/9	4	12
6/19		238	8/10	3	6
6/20		67	8/11	1/	6
6/21		28	8/12	1/	4
6/22	47	10	8/13	3	1
6/23	86	36	8/14	14	1/
6/24	160	104	8/15	2	1/
6/25	82	223	8/16	9	1/
6/26	116	175	8/17	3	1/
6/27	61	153	8/18	3	1/
6/28	1/	124	8/19		1/
6/29	1/	210	8/20		1/
6/30	1/	156	8/21		10
7/1	1/	332			
7/2		229	TOTALS	1,097	3,967
7/3	40	177			
7/4	1/	122			
7/5	44	169			
7/6	82	72			
7/7	89	77			
7/8	42	2			
7/9	40	150			
7/10	1/	99			
7/11	1/	204			
7/12	12	65			
7/13	37	62			
7/14	1/	41			
7/15	28	20			
7/16	20	27			
7/17	1/	13			
7/18	21	15			
7/19	1/	7			
7/20	2	5			
7/21	1/	3			
7/22	1/	6			
7/23	1/	2			
7/24	1/	2			
7/25	1/	1			
7/26	1/	7			
7/27	1/	1/			
7/28	1/	22			
7/29	5	2			
7/30	1/	1/			
7/31	1/	1			
8/1	1/	3			
8/2	1/	1/			
8/3	18	1/			
8/4	1/	1/			

1/ Fishwheel did not fish these dates

FALL CHUMS | SUMMER CHUMS
 SUMMER CHUMS | FALL CHUMS

TABLE 2

THE TAG RECOVERY FOR, 1961 and 1962
(Andreafsky River Recoveries Not Included)

<u>Percentage Recovery of Total:</u>	1961			1962		
	Summer	Fall	Total	Summer	Fall	Total
Petersen Tagged Chums	31.9	25.0	31.7	37.7	<u>1/</u>	37.7
Spaghetti Tagged Chums	<u>1/</u>	<u>1/</u>	<u>1/</u>	13.8	24.0	14.3
Both Type, Tagged Chums	31.9	25.0	31.7	15.7	24.0	16.1
Recoveries (both tag types) By Type Gear:						
King Net	38.7	0	36.2	33.1	2.6	31.4
Dog Net	49.2	75.0	50.8	39.3	53.8	40.3
Gill Net (Mesh Size Unknown)	2.0	0	1.6	8.0	5.1	7.7
Fishwheel	10.0	25.0	11.1	17.0	38.4	18.3
Dip Net	0	0	0	0.9	0	0.9
Downstream Recoveries:						
Petersen Tagged Chums	28.6	22.7	28.2	37.4	<u>1/</u>	37.4
Spaghetti Tagged Chums	<u>1/</u>	<u>1/</u>	<u>1/</u>	15.0	24.4	15.7
Both Type, Tagged Chums	28.6	22.7	28.2	20.0	24.4	20.2
Recoveries made above Koyukuk and Mouth of Koyukuk River:						
Both Type, Tagged Chums	0.3	31.8	2.3	2.3	24.4	3.8

1/ Tag type not used

Table 3. THE 1961 AND 1962 CHUM SALM. RECOVERIES BY AREA

Area of Recovery ^{1/}	Mileages Below and above Tagging Site	NUMBER OF RECOVERIES ^{2/}					
		Summer Chums		Fall Chums		Total Chums	
		1961	1962	1961	1962	1961	1962
South Mouth, Yukon River	-87	7	1	0	0	7	1
Middle Mouth, Yukon River	-87	11	3	0	0	11	3
Alakanuk	-79	4	10	0	1	4	11
Kwiguk-Emonuk	-72	0	4	2	3	2	7
Aproka Pass	-61	2	0	0	0	2	0
Kwikpak Pass	-52	3	2	0	0	3	2
Fish Village	-44	0	5	0	0	0	5
Patsys Cabin	-25	2	5	0	1	2	6
Mountain Village	-9	54	88	3	5	57	93
Dominick Joe's Camp	-1	9	1	0	0	9	1
Tagging Site	0	3	7	1	0	4	7
Old Andraefsky	1	9	31	0	0	9	31
Pitkas Point	6	34	47	1	5	35	52
Mouth, Andraefsky River (St. Marys)	7	47	34	1	2	48	36
Goose Island	11	4	10	0	1	4	11
Pilot Station	25	31	158	3	1	34	159
Marshall	64	26	33	1	1	27	34
Ingrihak	73	9	10	0	0	9	10
Russian Mission	116	15	31	0	5	15	36
Paimiut	154	4	4	0	0	4	4
Holy Cross	183	19	25	1	1	20	26
Shageluk, Innoko River	232	2	1	0	0	2	1
Anvik and Vicinity	221	13	50	0	4	13	54
Kaltag	354	3	6	0	0	3	6
Nulato	388	6	7	2	1	8	8
Kovukuk	406	3	6	0	0	3	6
Huslia, Koyukuk River	615	1	1	0	0	1	1
Hughes, Koyukuk River	785	0	1	0	0	0	1
Allakaket, Koyukuk River	860	0	2	0	0	0	2
Galena	434	0	1	1	0	1	1
Ruby	485	0	5	2	5	2	10
Tanana	599	0	4	2	1	2	5
Manley Hot Springs, Tanana River	669	0	1	0	0	0	1
Minto, Tanana River	739	0	1	0	0	0	1

Table 3. THE 1961 AND 1962 CHUM SALMON RECOVERIES BY AREA

Area of Recovery ^{1/}	Mileages Below and Above Tagging Site	NUMBER OF RECOVERIES ^{2/}					
		Summer Chums		Fall Chums		Total Chums	
		1961	1962	1961	1962	1961	1962
Nenana, Tanana River	764	0	1	0	0	0	1
FWS Site (Six Mile Island)	662	1	0	1	1	2	1
Beaver	836	0	1	0	2	0	3
Old Crow, Porcupine River	1,163	0	0	0	1	0	1
Dawson	1,223	0	0	1	0	1	0
TOTALS:		322	597	22	41	344	638

^{1/} South Mouth includes recoveries made in following locations: Waterfall Slough, Casey Channel, Coffee Point, and Sheldons Point.

Middle Mouth includes: Snotty Slough.

Kwikpak Pass includes: Hamilton, Kotlik.

Kwiguk includes: Sunshine Bay.

Pilot Station includes: Pilot Village.

Ingeihak includes: Ohagamute.

Russian Mission includes: Dogfish Village

Anyik includes: Bonasila, Rapids and Greyling Creek Camps.

Ruby includes: Kokrines.

Tanana includes: Kallands.

^{2/} In 1961, four (4) recoveries were turned in in which area of capture could not be located.

1962 total recoveries do not include ten (10) recoveries made in Andreafsky River by a Department carcass sampling crew.

During 1961 a total of 348 Petersen disc recoveries were made which represented 31.7 percent of the total tags released. Of this amount 31.9 percent (322 recoveries) of the total tagged summer chums were recovered and 25.0 percent (22 recoveries) of the total tagged fall chums were recovered.

During 1962, 638 recoveries of tagged chum salmon were made. These recoveries represented a 16.1 percent recovery of tags released as compared to 31.7 percent during 1961. However, it should be remembered that during the 1961 season only Petersen disc tags were released while a majority of the tags during the 1962 season were of the spaghetti type. Comparative Petersen disc and spaghetti tag recoveries indicated that the fishing gear was selective to Petersen disc tagged chums. That is, Petersen disc tagged chums were not recovered in proportion to their relative abundance, but were often recovered because the tag became entangled in a gill net. Evidence supporting this assumption is shown in table 4, which indicates the recovery data from 305 chums tagged with Petersen discs and 303 chums tagged with spaghetti tags during June 15 to June 19, 1962. Approximately three Petersen disc tagged chums were recovered for every spaghetti tagged chum.

During 1962 the fall chums were tagged only with spaghetti type tags. The seasonal recovery of these fall chums was 24 percent as compared with 14 percent of the spaghetti tagged summer chums. The greater recovery rate for the fall chums was probably influenced by the greater proportion of the fishing gear being composed of chum net (5½ inch mesh) and fish wheels instead of king mesh (8½ inch) at this time of year.

A much higher percentage of fall chums were recovered from the upper portion of the drainage. Only 0.3 percent of the summer

TABLI

THE PERCENTAGE OF RECOVERY FOR PETERSEN DISC AND SPAGHETTI TAGS BY GEAR TYPE

Type of Tag	Sample Size	Unknown Gear	%	Gill Nets						Fish Wheels	%	Dip Net	%	Total <u>1/</u>	%
				Chum Net 5"	%	King Net 8"	%	Un-known Net	%						
Petersen Disc	305	4	80	17	85	78	86	13	87	3	18	0	0	115	77
Spaghetti	303	1	20	3	15	13	14	2	13	14	82	1	100	34	23
Total	608	5	100	20	100	91	100	15	100	17	100	1	100	149	100

1/ % of Petersen Discs Recovered 37.7
 % of Spaghetti Tags Recovered 11.2

chum recoveries in 1961 were made upstream of Koyukuk (Mile 500) while 31.8 percent of the fall chum recoveries were taken above Mile 500, with the farthest upstream recovery made at Dawson City, Yukon Territory.

In 1962, only two percent summer chums were recovered above Koyukuk while 24 percent of the fall chums were recovered above Mile 500. This strongly indicated that fall chums were bound for the upper river and that the majority of the summer chums were utilizing the lower and middle portions of the Yukon drainage.

A valid population estimate could not be made from the tagging results because of the few tag returns from the upper river and because the tagged salmon were taken selectively by gillnets.

Sex and Size Composition

A total of 876 summer chums tagged in 1961 and 3,796 summer chums tagged in 1962 were sexed. Sex determination was possible only on the summer chums as the fall chums were relatively immature and sex could not be determined by using external characteristics. The sex composition and average fork length of summer chums by tagging week is presented in table 5. In 1962 a daily equal sex ratio was recorded for the period June 14 to June 21. From June 23, on, with the exception of June 25, females were dominant and as the season progressed the percentage of females increased. The average fork length of summer chums tagged by each weekly period were similar for both years. In 1962 the respective average fork length for males and females tagged during June 24 to July 21 was 63.1 centimeters and 58.9 centimeters. In 1962 during the same period the average

TABLE 5

THE SEX COMPOSITION AND AVERAGE FORK LENGTHS OF
TAGGED SUMMER CHUM SALMON, 1961 AND 19621961

Tagging Week	Total Tagged	Sex		Not Sexed	Composition % Female	Average Fork	
		Male	Female			Male	Female
June 24-30	419	167	246	6	59.6	63.0	58.7
July 1-7	255	86	168	1	66.1	62.8	57.7
July 8-14	131	27	103	1	79.2	62.0	57.9
July 15-21	<u>71</u>	<u>19</u>	<u>51</u>	<u>1</u>	<u>72.9</u>	<u>63.8</u>	<u>58.7</u>
TOTALS:	876	299	568	9	65.5	62.8	58.4

1962

June 14-16	109	54	48	7	47.1	64.2	58.6
June 17-23	640	319	317	4	49.8	63.4	59.5
June 24-30	1,145	475	662	8	58.2	62.9	59.1
July 1-7	1,178	432	742	4	63.2	63.3	59.1
July 8-14	623	199	423	1	68.0	63.2	58.5
July 15-21	90	36	53	1	59.5	63.6	57.6
July 22-28	<u>11</u>	<u>3</u>	<u>8</u>	<u>0</u>	<u>72.7</u>	<u>64.3</u>	<u>56.1</u>
TOTALS:	3,796	1,518	2,253	25	59.7	63.2	59.0

fork length was 63.0 centimeters for males and 58.4 for females. Since fork length measurements were taken from the tip of the snout to the fork of the caudal fin the summer chum males tagged later in the season had slightly greater measurements than comparable sized earlier run males, because of the lengthening of the snout due to the increased sexual maturity of the fish. The average fork length of the fall chums was greater than that of summer chums for both years (Table 6).

TABLE 6
THE FORK LENGTH OF SUMMER AND FALL CHUM SALMON
TAGGED IN 1961 and 1962

YEAR	Fork Length (Centimeters)					
	Summer Chum			Fall Chum		
	Number	Range	Average	Number	Range	Average
1961	1009	50.0- 71.0	60.0	88	53.0- 70.0	62.3
1962	3796	48.0 75.0	60.7	171	54.0 75.0	62.2

Weights were also taken throughout the 1962 season. All weights were determined on a spring scale and were recorded to the nearest one-half pound. Twenty-eight males of the summer run weighed an average of 7.2 pounds (range 5.0 to 9.0 pounds) and 37 summer females averaged 6.0 pounds (range 5.0 to 7.5 pounds). Insufficient weights were taken during both years for the fall and for the summer chums during the 1961 season to obtain the average weights.

TABLE 7

THE AGE COMPOSITION OF YUKON TAGGED CHUM SALMON
IN 1961 AND 1962

Type of Fish	Sex	1961				1962			
		N	Age (%)			N	Age (%)		
			3	4	5		3	4	5
SUMMER CHUMS	MALE	97	1.0	28.0	6.2	915	0.7	28.9	14.4
	FEMALE		3.0	42.3	11.3		1.2	40.0	14.2
	UN- KNOWN		-	5.2	3.0		-	0.4	0.2
	TOTAL		4.0	75.5	20.5		1.9	69.3	28.8
FALL CHUMS	BOTH SEXES	13	-	-	-	103	16.0	53.0	31.0

Age Composition

Table 7 shows the age composition for the 1961 and 1962 male and female summer chum salmon. The sample was too small during 1961 for valid conclusions to be made concerning the age composition of the fall chums.

During 1961 a total of 97 summer chums and only 13 fall chums were aged. The age composition of the summer chums sampled was 4.0 percent three-year olds, 75.5 percent four-year olds, and 20.5 percent five-year olds. There was a higher percentage of females in all three age groups. In 1962 a total of 915 scale samples of summer chums and 103 scale samples of fall chums were aged. Scale samples of summer chums were not taken after July 3, however, at this date 70 percent of summer chums had been released and it was believed that the sample was representative of this group of salmon. The age composition of the 1962 summer chums was similar to the 1961 results with a few less three-year olds (3%) and four-year olds (60%) and a few more five-year olds (29%). As in 1961, females again formed the largest share of the three and four year old age groups. The age composition of the 1962 fall chums displayed a greater percentage of three-year old fish (16%) than in either the 1961 or 1962 summer chum samples.

Figure 2 shows the fish size (fork length) by age composition for the 1962 summer chum sample. The 1961 data are not shown because of the small number of samples taken. Males were larger than females for all age groups. Three-year old males averaged 58.8 centimeters, four-year old males 62.4 centimeters and the five-year old males 64.6 centimeters. Three-year old females averaged 54.2 centimeters, four-year old females averaged 58.8 centimeters and five-year old females 60.7 centimeters. Figure 3 shows the change in age and sex composition for each three day tagging

Figure 2. LENGTH FREQUENCIES OF SUMMER CHUM SALMON

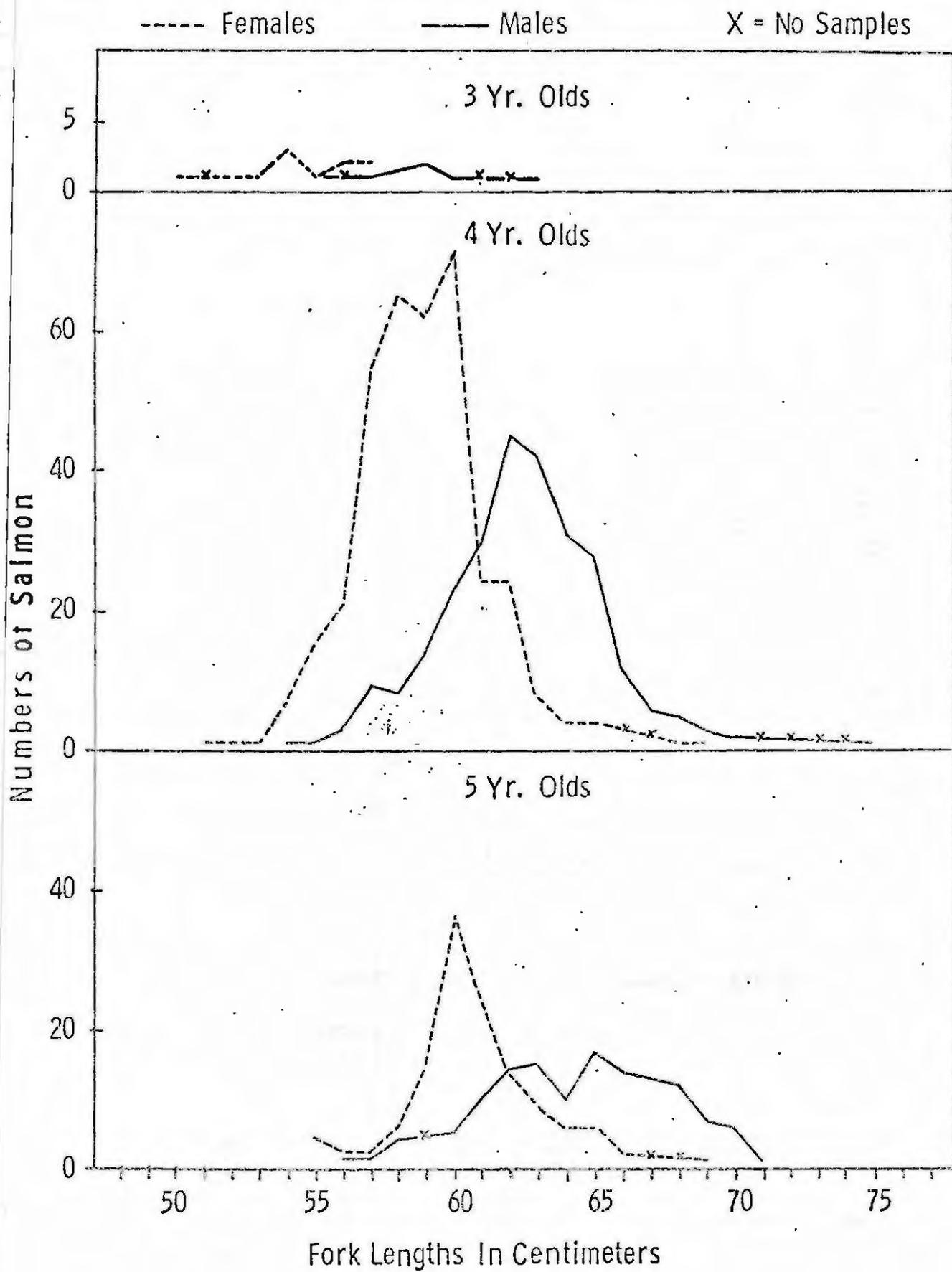
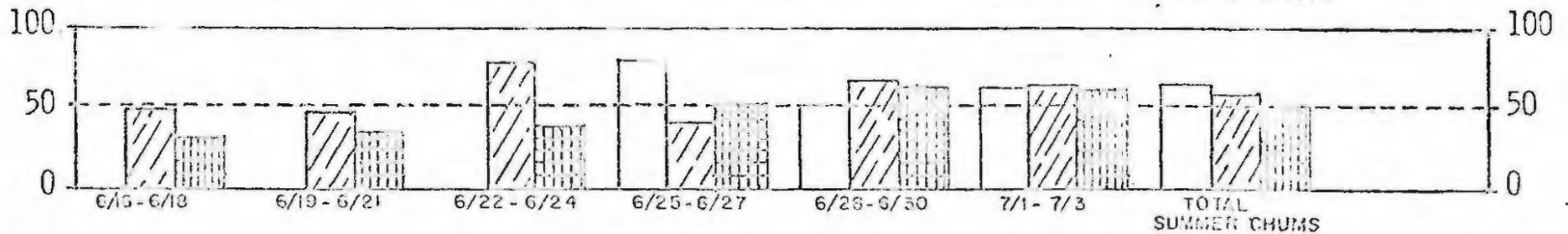


Figure 3.

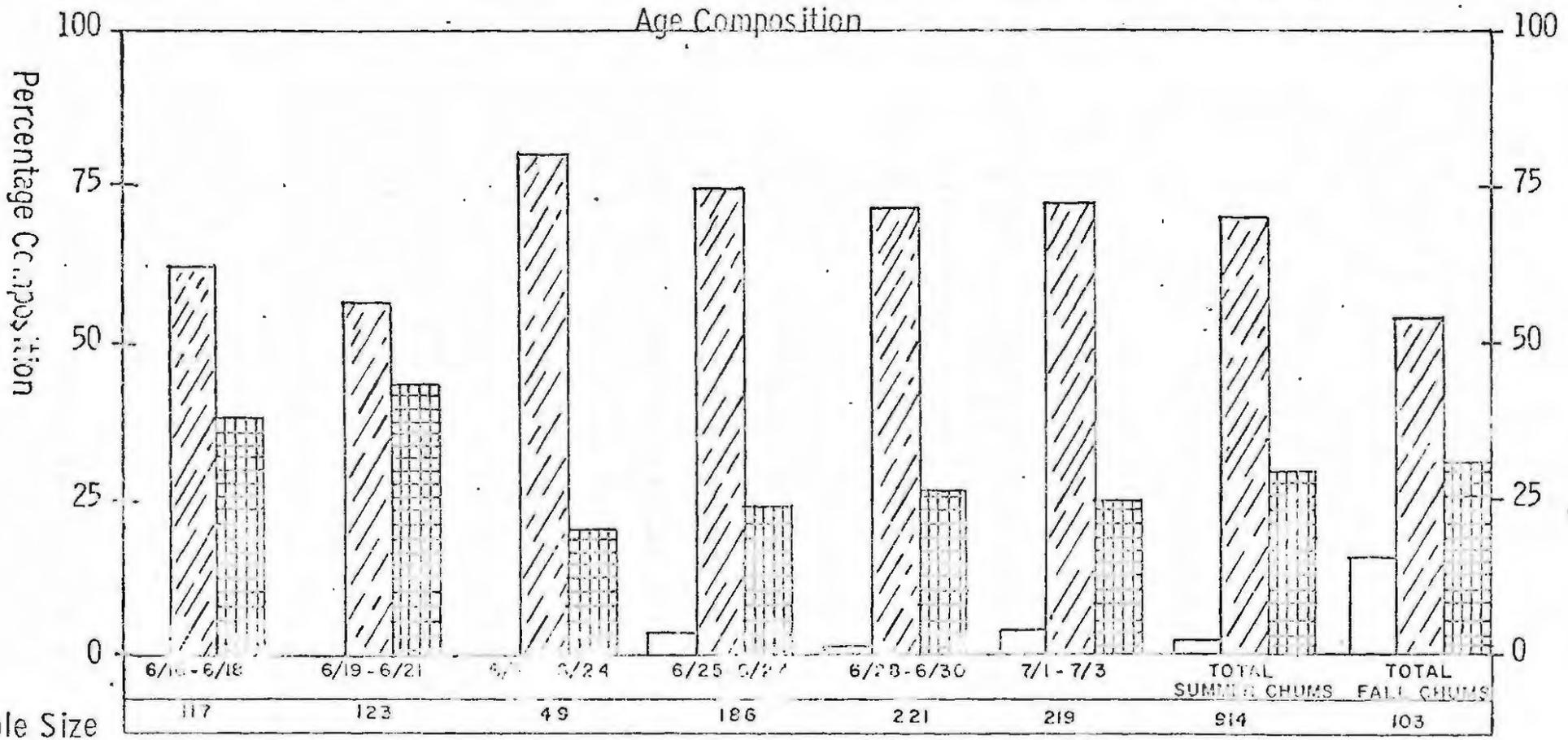
AGE AND SEX COMPOSITION OF 1962 SUMMER CHUM SALMON

Sex Composition of Aged Chums
(Percent Females)

 3 YR OLDS
  4 YR OLDS
  5 YR OLDS



Age Composition



period during 1962. The sex composition is shown on the basis of the percentage of females.

The majority of the four- and five-year old fish sampled during the first part of the run were males and then the females predominated for the last two periods. The total run of the five-year old chums displayed an equal sex ratio while the three- and four-year old fish showed a majority of females. The four-year old fish (combined sexes) dominated the catch samples throughout the fishing season, while the five-year old fish, which were second in abundance, were more prominent in the earlier part of the run. The three-year old chums entered the catch in late June and became more abundant as the season progressed.

Accessory Check Scales

Some of the adult scales examined had a check midway between the focus and the first salt water annulus as shown by figure 4. Generally the first annulus of the Yukon chum salmon was located from 21 to 25 circuli from the focus, and when this accessory check was present it ranged from 7 to 15 circuli from the focus. The area from the focus to this check may represent fresh water growth or the check may have been formed in estuarine water during the adjustment from fresh to salt water.

Three periodic samples during the field season in 1962 showed that the percentage of fish with the accessory check increased later in the season. On June 18 and 19 and again on July 1 and 2 chums with this mark constituted 24 percent and 25 percent of the scales read. However, scales taken from July 28 to August 12 indicated that 44 percent of the fish possessed this accessory check.

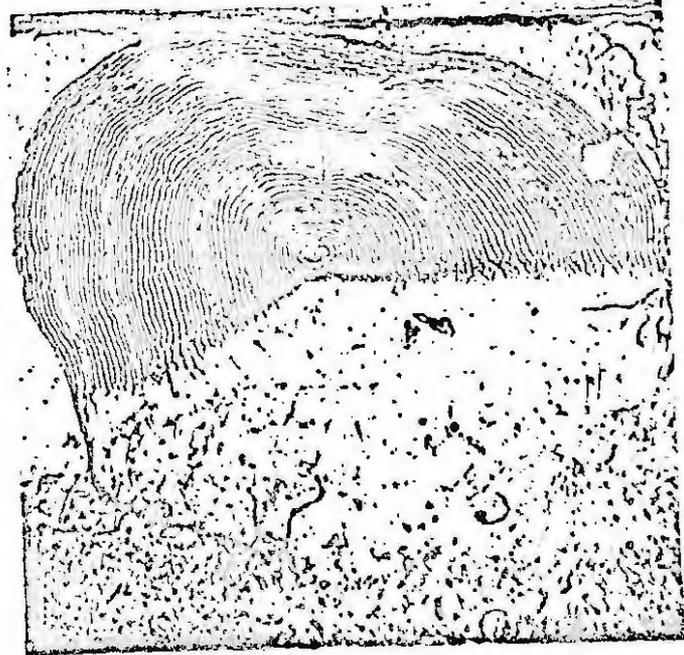


Figure 4. Four Yukon River Chum Salmon Scales Showing Accessory Check

The first two samples were taken from the summer run while the last sample was obtained from the fall run, which spawn primarily in the upper portion of the river. This could indicate that some of the fall out-migrants spent considerable time in the river before reaching salt water.

SUBSISTENCE UTILIZATION OF THE YUKON SALMON SPECIES

Surveys of the subsistence or personal use catch of all salmon species were made of the Yukon drainage in 1961 and 1962. During 1961 the survey included villages on the main Yukon from the mouth to Dawson. The villages of Minto, Manley Hotsprings, and Nenana on the Tanana River were also included. During 1962 through the effort of cooperating agencies, the survey of the Yukon drainage was extended to include villages on the Chandalar River, the Porcupine River and the upstream Yukon from Dawson, Canada. During the 1962 survey the Canadian Department of Fisheries, the United States Fish and Wildlife Service and the Alaska Department of Fish and Game cooperated in the effort.

Survey Methods

Mr. Keith Elliot, of the Canadian Department of Fisheries, tabulated subsistence catches which were made in Canada. Most of this information was obtained with correspondence with storekeepers and missionaries in the villages.

The United States Fish and Wildlife Service obtained subsistence catches in 1962 by distribution of catch forms to fishermen. Periodic checks were made throughout the season to insure that the forms were being properly completed. Their survey effort was discontinued when the fishing had declined to a point that it was considered impractical to continue the survey.

The Alaska Department of Fish and Game counted fish on drying

racks and in smokehouses in virtually every fishing camp and every village along the survey route. In 1961 the survey lasted 174 days and covered a total of 3,000 river miles. In 1962 the survey lasted 51 days and covered a total of 1,800 river miles. Most of the villages were surveyed only once, but at a time when all or a majority of the catch had been taken.

The number of coho salmon tabulated in both years was considered minimal because most of the catches of coho occurred after the survey dates.

1961 Survey Results

Table 8 shows a village by village comparison of subsistence catch statistics for 1961. A total of 645 surveyed fishing families (representing 3,734 people) caught 23,719 kings, 405,632 chums and 2,182 pinks for a total of 431,533 salmon for subsistence purposes. The estimated coverage of each fishing unit or village surveyed by the Department (from the mouth to Dawson including the Tanana River) was tabulated and the average estimated coverage for the entire survey was 92.5.

1962 Survey Results

Table 9 shows a village by village comparison of subsistence catch statistics for 1962. A total of 687 fishing families surveyed (representing 3,983 people) caught 19,910 kings, 356,754 chums, 549 pinks and 1,138 cohos for a total of 378,351 salmon for subsistence purposes. This included villages on the Chandalar, Porcupine, Innoko, Koyukuk rivers and villages in Canada above Dawson which were not surveyed during 1961. The Alaska Department of Fish and Game estimated 97.5 percent coverage of the villages in the area of their survey.

Table 8. THE 1961 SUBSISTENCE CATCH (EXPANDED) BY VILLAGE
YUKON RIVER DRAINAGE

Fishing Unit	Date of Survey	No. of Fishing Families	No. People In Fishing Families	Kings	Chums	Pinks	Total Salmon	Other Species	Units of Gear Fished		
									Chum Net	King Net	Fish-Wheels
Sheldons Point	7/25	37	253	180	12,683	602	13,465	208	42	1	0
Alakanuk	7/24	37	203	165	8,932	105	9,202	81	41	3	0
Kwiguk-Emonuk	7/26	30	172	137	15,670	256	16,063	167	41	2	0
Aproka Pass	7/24	19	107	171	7,303	208	7,682	240	30	5	1
Snotty Slough	7/28	13	62	8	1,106	45	1,159	44	20	0	0
Hamilton	7/29	30	174	111	3,931	139	4,181	992	44	1	0
Mountain Village	7/20	40	232	1,110	7,373	192	8,675	650	32	7	4
St. Marys	8/4	37	222	1,810	8,771	141	10,722	544	38	15	1
Pilot Station	8/6	28	174	753	5,605	269	6,627	1,497	32	15	1
Marshall	8/7	23	112	1,265	5,992	61	7,318	365	26	9	3
Russian Mission	8/8	15	78	1,563	4,098	63	5,724	293	14	13	1
Paimuit	8/9	1	27	300	1,076	2	1,378	250	0	4	1
Holy Cross	8/10	30	163	2,348	20,068	51	22,467	1,629	20	23	5
Anvik	8/12	17	105	22	61,406	13	61,441	799	1	0	11
Shageluk-Holikachuk	8/13	26	119	25	56,284	35	56,344	3,379	1	0	11
Kaltag	8/14	27	164	33	23,395	0	23,428	2,792	5	0	12
Nulato	8/15	38	225	513	63,163	0	63,676	3,063	11	2	10
Koyukuk	8/16	17	122	483	13,544	0	14,027	1,360	15	9	5
Galena	8/17	15	86	626	10,585	0	11,211	660	12	7	5
Ruby-Kokrines	8/20	19	98	1,060	15,654	0	16,714	2,120	3	1	12
Tanana	8/21	27	99	2,379	12,775	0	15,154	4,862	1	3	17
Rampart	9/3	10	59	605	11,722	0	12,327	2,569	0	0	6
Stevens Village	9/5	10	47	650	3,490	0	4,140	2,360	3	2	6
Beaver	9/6	4	22	185	2,975	0	3,160	1,526	1	0	3
Fort Yukon	9/8	43	315	2,958	13,252	0	16,210	4,033	3	0	26
Circle	9/10	4	17	496	992	0	1,488	322	1	0	3
Eagle	9/14	4	24	875	150	0	1,025	102	0	2	2
Dawson	9/18	13	67	2,231	725	0	2,956	143	6	5	8
TOTALS-MAIN YUKON RIVER		614	3,548	23,062	392,720	2,182	417,964	37,050	443	129	154

Table 8. THE 1961 SUBSISTENCE CATCH (EXPANDED) BY VILLAGE
YUKON RIVER DRAINAGE

Fishing Unit	Date of Survey	No. of Fishing Families	No. People In Fishing Families	Kings	Chums	Pinks	Total Salmon	Other Species	Units of Gear Fished		
									Chum Net	King Net	Fish-Wheels
Manley Hot Springs	8/23	2	13	330	1,950	0	2,280	334	0	0	2
Minto	9/1	19	105	17	4,536	0	4,553	168	1	0	14
Nenana	8/31	<u>10</u>	<u>68</u>	<u>310</u>	<u>6,426</u>	<u>0</u>	<u>6,736</u>	<u>1,246</u>	<u>4</u>	<u>0</u>	<u>12</u>
TOTALS-TANANA RIVER		31	186	657	12,912	0	13,569	1,748	5	0	28
GRAND TOTAL-YUKON DRAINAGE		645	3,734	23,719	405,632	2,182	431,533	38,798	448	129	182

Table 9. THE 1962 SUBSISTENCE CATCH (EXPANDED) BY VILLAGE
YUKON RIVER DRAINAGE

Fishing Unit	Date of Survey	No. of Fishing Families	No. People in Fishing Families	Kings	Chums	Pinks	Cohos	Total Salmon	Other Species	Units of Gear Fished		
										Chum Net	King Net	Fish-Wheels
Sheldons Point and Kwikluak Pass	8/5	57	329	116	10,899	126	83	11,224	1,398	85	0	0
Alakanuk	8/3	38	200	53	5,747	10	7	5,817	39	55	1	0
Kwiguk-Emonuk	8/2	29	187	21	9,074	8	0	9,103	1	60	0	1
Aproka Pass	8/1	15	88	180	5,277	21	0	5,478	100	39	0	0
Snotty Slough	8/1	5	30	1	794	0	0	795	2	8	0	0
Hamilton-Kotlik	7/31	26	167	35	5,362	23	103	5,523	287	46	1	0
Mountain Village	7/27, 8/28	35	203	619	8,331	99	0	9,049	777	30	21	0
Pitkas Pt.-St. Marys	7/30	31	208	391	10,510	135	0	11,036	163	26	25	0
Pilot Station	8/9	33	179	219	13,926	94	0	14,239	637	27	2	1
Marshall	8/10	15	79	503	6,595	25	0	7,123	736	20	1	1
Russian Mission	8/11	14	72	641	9,994	0	28	10,663	863	13	5	1
Holy Cross	8/12	28	175	1,111	20,424	4	0	21,539	2,100	13	26	7
Anvik	8/18	20	110	51	43,404	4	9	43,468	1,955	9	0	14
Shageluk Camp	12/29	8	44	4	11,240	0	0	11,244	-	0	0	3
Holikachuk Camp	11/16	19	97	33	21,497	0	0	21,530	12,088	4	0	13
Kaltag	8/21	28	156	224	25,824	0	0	26,048	1,596	15	2	6
Nulato	8/22	41	228	171	27,948	0	0	28,119	2,423	21	1	13
Koyukuk	8/26	13	87	423	6,282	0	0	6,705	96	16	13	2
Galena	8/26	6	35	123	1,673	0	0	1,796	34	8	5	2
Ruby-Kokrines	9/7	13	74	226	18,243	0	0	18,469	3,653	3	1	10
Tanana	9/7	7	37	332	7,245	0	0	7,577	-	0	1	7
Rampart	-	5	46	1,438	6,962	0	0	8,400	500	0	0	3
Stevens	-	10	53	831	4,355	0	0	5,186	704	3	0	5
Beaver	-	11	60	442	2,334	0	0	2,776	591	4	0	7
Fort Yukon	-	27	139	1,822	10,255	0	0	12,077	2,542	3	0	20
Circle	-	3	16	393	800	0	0	1,193	-	0	0	3
Eagle	-	5	19	400	100	0	0	500	-	5	0	0
Dawson	-	7	36	2,000	3,000	0	0	5,000	-	0	3	7
Ross River	-	-	-	500	0	0	0	500	-	-	-	-
Mayo	-	7	50	300	0	0	0	300	-	8	0	0
Pelly River-Minto	-	14	100	2,000	1,500	0	0	3,500	-	25	0	0
Carmacks	-	15	100	3,000	2,000	0	0	5,000	-	20	0	0
Johnsons Crossing	-	12	72	1,000	0	0	0	1,000	-	11	0	0
TOTALS-MAIN YUKON RIVER		597	3,476	19,603	301,595	549	230	321,977	33,285	577	108	126

Table 9. THE 1962 SUBSISTENCE CATCH (EXPANDED) BY VILLAGE
YUKON RIVER DRAINAGE (Continued)

Fishing Unit	Date of Survey	No. of Fishing Families	No. People in Fishing Families	Kings	Chums	Pinks	Cohos	Total Salmon	Other Species	Units of Gear Fished		
										Chum Net	King Net	Fish-Wheels
Shageluk	-	-	-	(Few)	3,500	0	0	3,500	-	(Few)	0	5
Holikachuk	-	2	-	0	100	0	0	100	-	-	-	-
TOTALS-INNOKO RIVER		2	-	(Few)	3,600	0	0	3,600	-	(Few)	-	5
Huslia	-	16	107	100	16,000	0	100	16,200	2,000	34	0	0
TOTALS-KOYUKUK RIVER		16	107	100	16,000	0	100	16,200	2,000	34	0	0
Minto	9/6	17	123	85	12,455	0	604	13,145	-	0	0	11
Manley Hot Springs	9/6	1	3	6	4,773	0	204	4,983	149	0	0	1
Nenana	9/4	12	70	115	13,821	0	0	13,936	-	0	0	10
TOTALS-TANANA RIVER		30	196	207	31,049	0	808	32,064	149	0	0	22
Venetie	-	6	30	(Few)	1,000	0	0	1,000	-	5	0	0
Canyon Village	-	2	40	0	210	0	0	210	-	2	0	0
Chalkytsik	-	1	5	0	500	0	0	500	-	8	0	0
Old Crow	-	33	129	0	2,800	0	0	2,800	-	-	-	-
TOTALS-CHANDALAR AND PORCUPINE RIVERS		42	204	(Few)	4,510	0	0	4,510	-	15	0	0
<u>GRAND TOTAL-YUKON DRAINAGE</u>		687	3,983	19,910	356,754	549	1,138	378,351	35,434	626	108	153

Contributions of Summer and Fall Chums

In this section an attempt will be made to estimate the numbers of summer and fall chums in the total chum salmon subsistence catch for the entire drainage during 1961 and 1962. Since a commercial fishery is allowed for fall chums, but not for summer chums, it is important that the degree of utilization of these two groups be determined. It was impossible to determine the total number of fall chums taken after the subsistence surveys were made in each village. Therefore this section is devoted to an estimate of the proportions of fall and summer chums in the total recorded catch.

In 1961 subsistence catch as recorded in Table 8 was estimated to include no more than 5 to 10 percent fall chums. The 1961 survey was made when fall chums were just beginning to migrate past many of the villages on the main river above Galena, as well as the Tanana River.

Table 10 shows the estimated numbers of fall and summer chums in the recorded subsistence catch for 1962. The 1962 survey was conducted later in the season than the 1961 survey and fall chums therefore made a greater contribution to the total recorded chum catch.

TABLE 10

THE ESTIMATED NUMBERS OF FALL AND SUMMER CHUMS IN THE TOTAL
RECORDED SUBSISTENCE CATCH, 1962

<u>Area</u>	<u>Estimated % of Fall Chums</u>	<u>Number of</u> <u>Fall Chums Summer Chums</u>	
Hamilton and Kotlik	75	4,021	1,341
Sheldons Pt., Kwiguk, Emonuk Alakanuk, Aproka Pass, Snotty Slough	10	3,179	28,612
Mt. Village, Pitkas Pt., St. Marys	15	2,826	16,015
Pilot Station to Galena	5	9,440	179,367
Ruby	50	9,122	9,121
Tanana	75	5,434	1,811
Drainage above Tanana	75	26,862	8,954
Innoko	0	0	3,600
Koyukuk River	0	0	16,000
Tanana River	50	15,524	15,525
TOTALS		76,408	280,346

Fall chums composed 21% of the total recorded subsistence chum
salmon catch.