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BRISTOL BAY AREA ANNUAL DATA REPORT

1965

The 1965 Bristol Bay red salmon fishery produced the third largest harvest in the 73 year history of the fishery, just under the record high years of 1917 and 1938. Final figures place the catch at 24,255,239 red salmon. The catch for all species was 24,737,533.

The dominant Kvichak system, producing the second largest return ever recorded for the Naknek-Kvichak district, provided the bulk of the 1,464,345 case pack, a figure not attained since 1938. The 1965 case pack ranks seventh in the Bay's history. The most recent wholesale quote of \$37 per case, places a 54 million dollar wholesale value on the case pack this season.

The Egegik district catch of 3,179,557 established a new record, substantially above the previous record year of 1961 for that district.

The total inshore return, catch plus escapement to Bristol Bay was 53,128,505. Adding the 1.7 million catch of immatures by the Japanese fishery in the fall of 1964, plus an estimated 6-7 million mothership catch of adults in the summer of 1965, raises the 1965 total Bristol Bay red salmon run to over 61 million fish.

The most probable predicted return was for 26.5 million reds to Bristol Bay with a range from 21 to 36 million. Shortly before the run entered the Bay, the return was adjusted upward into the higher range of the prediction based upon information gathered from U.S. high seas sampling plus analysis of Japanese mothership catches in areas known for concentration of Bristol Bay stocks. However, there never was any forewarning of a run the size of that which developed.

Large catches were realized in the Naknek-Kvichak district right from the start of the regulatory period on June 25. A 12 hour period on June 30 produced a 1.6 million catch and resulted in limits being imposed by the canneries to slow the flood of fish piling on top of a 2.7 million catch in a previous 48 hour period. As crews and cannery facilities became taxed to maximum capacity, plus heavy catches in the Egegik district, limits were extended to other districts. Cool weather and moderate winds permitted ready movement of fish to other areas for canning. With each successive fishing period, it became more apparent that the run was going to hold up in strength.

Realizing that we could be faced with a problem of harvesting fish in excess of escapement goals, the Department kept fishing pressure on this strong and very early showing of fish, planning to get the bulk of the escapement during the traditional peak from July 4-7. However, it soon became obvious that the canneries could not keep pace with continuous fishing at limits of 2,000 per boat with the terrific amount of gear that converged in the Naknek-Kvichak district. In order to realize the maximum harvest and to prevent waste of fish, it became necessary to alternate openings of 24 hours with closures of 24 hours. This arrangement kept canneries going at maximum production for a two week period.

Another problem soon became apparent. With fishermen quickly catching their limits, thus reducing fishing effort to a fraction of the allowable time in each open period, fish were continuing to stream through the district during open as well as closed periods.

An unexpected situation developed on July 12 while very good catches were still being realized. A shortage of cans forced one major cannery to stop receiving fish. By July 14 all major canneries in the Naknek-Kvichak district had announced a stoppage. Some intermittent fishing was allowed as cans were flown into the area on a round-the-clock basis. This limited supply could not meet the demand, and some operators did not resume operations after the third week in July.

Historically, the canning capacity during comparable years in the late 20's and early 30's was twice that presently operating in Bristol Bay. Had the fishery not been managed to accommodate the canning facilities, the harvest would have been much less.

The huge Kvichak system run overshadowed the lesser Naknek system. A good return to the Naknek failed to materialize as expected, and restrictive fishing was necessary in this section of the Naknek-Kvichak district to achieve the lower scale of the desired escapement range.

An excellent escapement was reached in the Egegik system along with the record catch. The Ugashik return was considerably less than predicted, but a 1 million escapement, one of the highest in recent years, was realized with a catch of 925,690.

The Nushagak district had a small return as predicted, but escapement goals were achieved throughout the several river systems while allowing a catch of 793,323 reds. The king salmon season was exceptionally good for the second consecutive year in the Nushagak.

The Togiak red salmon catch was the second highest in this 12 year-old fishery. The escapement into the lake system was slightly below the desired goal.

The success of the 1960 parent year escapement of 14.5 million to the Kvichak system, plus the return to the historic 5-year cycle, is an encouraging trend toward former production levels that established Bristol Bay as the world's richest fishery.

The remarkable return also highlights some important questions and problems.

1. The urgent need for more reliable methods of forecasting returns.
2. The large 24.3 million escapement to the Kvichak River may very well help establish a new basis or resolve some unanswered questions for determining optimum escapement levels on this important system.
3. The importance of refining inshore techniques to reliably indicate the size of a particular run just prior to entering the fishery.

TABLE 1 --BRISTOL BAY LICENSE STATISTICS, 1960-1965

COMMERCIAL FISHING LICENSES	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>
Resident	1,422	2,112	1,993	2,258	2,494	2,124
Non-resident	745	1,506	933	1,344	1,231	1,674
TOTAL	<u>2,167</u>	<u>3,618</u>	<u>2,926</u>	<u>3,602</u>	<u>3,725</u>	<u>4,098</u>
VESSEL LICENSES						
<u>Fishing vessels</u>						
Resident	804	1,058	1,031	1,209	1,161	1,181
Non-resident	350	665	386	581	605	722
TOTAL	<u>1,154</u>	<u>1,723</u>	<u>1,417</u>	<u>1,790</u>	<u>1,766</u>	<u>1,903</u>
<u>Scows</u>						
Resident	22	14	30	33	15	1/
Non-resident	28	46	19	32	35	-
TOTAL	<u>50</u>	<u>60</u>	<u>49</u>	<u>65</u>	<u>50</u>	<u>-</u>
GEAR LICENSES						
<u>Resident</u>						
150 F. drift net	561	674	715	766	815	800
100 F. drift net	89	106	76	148	132	116
50 F. set net	345	496	619	773	793	868
TOTAL	<u>995</u>	<u>1,276</u>	<u>1,410</u>	<u>1,687</u>	<u>1,740</u>	<u>1,784</u>
<u>Non-resident</u>						
150 F. drift net	342	600	383	509	639	626
100 F. drift net	22	38	17	36	50	51
50 F. set net	0	10	20	116	137	125
TOTAL	<u>364</u>	<u>648</u>	<u>420</u>	<u>661</u>	<u>826</u>	<u>802</u>
TOTAL GEAR	<u>1,359</u>	<u>1,924</u>	<u>1,830</u>	<u>2,348</u>	<u>2,566</u>	<u>2,586</u>
TOTAL LICENSES SOLD ^{2/}	4,730	7,325	6,222	7,805	8,107	8,587
TOTAL LICENSE REVENUES COLLECTED	\$72,075	--	\$87,725	\$92,250	\$113,359	\$131,895

1/ Scows included with Vessel Licenses.

2/ Information on total license sales indicates only those licenses sold in Bristol Bay

TABLE 2 . BRISTOL BAY PRE SEASON GEAR REGISTRATION
BY DISTRICT, 1965

Fishing district	150 F. Drift 1965	100 F. Drift 1965	50 F. Set 1965	Total 1965
<u>NAKNEK-KVICHAK</u>				
Resident	223	50	287	560
Non-resident	<u>412</u>	<u>10</u>	<u>10</u>	<u>432</u>
TOTAL	635	60	297	992
<u>EGEGIK</u>				
Resident	76	11	155	242
Non-resident	<u>117</u>	<u>13</u>	<u>59</u>	<u>189</u>
TOTAL	193	24	214	431
<u>UGASHIK</u>				
Resident	60	0	90	150
Non-resident	<u>40</u>	<u>2</u>	<u>31</u>	<u>73</u>
TOTAL	100	2	121	223
<u>NUSHAGAK</u>				
Resident	349	55	332	736
Non-resident	<u>56</u>	<u>26</u>	<u>25</u>	<u>107</u>
TOTAL	405	81	357	843
<u>TOGIAK</u>				
Resident	92	0	4	96
Non-resident	<u>1</u>	<u>0</u>	<u>0</u>	<u>1</u>
TOTAL	93	0	4	97
<u>BRISTOL BAY</u>				
Resident	800	116	868	1,784
Non-resident	<u>626</u>	<u>51</u>	<u>125</u>	<u>802</u>
TOTAL	1,426	167	993	2,586

TABLE 3 -BRISTOL BAY FISHING PERIODS, 1965

<u>NAKNEK-KVICHAK DISTRICT</u>				<u>UGASHIK DISTRICT</u>			
<u>Date & Time</u>		<u>Hours</u>	<u>Date & Time</u>		<u>Hours</u>		
June 24	12MN - June 26	9am 33	June 24	12MN - June 26	9am 33		
June 27	7am - June 28	7am 24	June 28	6 am - June 29	7am 25		
June 28	7am - June 29	7am 24	June 29	7am - June 30	7am 24		
June 30	10am - June 30	10pm 12	June 30	7am - July 1	7am 24		
July 1	11am - July 1	11pm 12	July 1	7am - July 2	7am 24		
July 4	2am - July 5	2am 24	July 3	9am - July 4	9am 24		
July 6	4am - July 7	4am 24	July 4	9am-July 5	11am 26		
July 8	6am - July 9	6am 24	July 5	11am - July 6	12N 25		
July 10	7am - July 11	7am 24	July 8	1pm - July 9	2pm 25		
July 11	7am - July 19	9am 194	July 10	3pm - July 11	3pm 24		
<u>NAKNEK SECTION ONLY - Set Nets Only:</u>				July 13	6am - July 13	6pm 12	
July 12	9am - July 13	9am 24	July 15	7am - July 15	7pm 12		
July 14	10am - July 15	10am 24	July 19	9am revert to 5 day week.			
July 16	12 N - July 17	12N 24	Total fishing hours during regulatory period, June 25 - July 18: 278				
July 19	9am revert to 5 day week.						
Total fishing hours during regulatory period, June 25 - July 18:							
Kvichak section: 395							
Naknek section: drift 201							
set only 72							

<u>EGEGIK DISTRICT</u>				<u>NUSHAGAK DISTRICT</u>			
<u>Date & Time</u>		<u>Hours</u>	<u>Date & Time</u>		<u>Hours</u>		
June 24	12MN - June 26	9am 33	June 24	12MN - June 26	9am 33		
June 27	7am - June 28	7am 24	June 29	10am - June 29	10pm 12		
June 28	7am - June 29	7am 24	July 2	1pm - July 3	1am 12		
June 29	9pm - June 30	9pm 24	July 7	6am - July 7	2pm 8		
July 2	12 N - July 3	12N 24	July 8	6am - July 8	6pm 12		
July 4	3pm - July 5	3pm 24	July 9	7am - July 10	7am 24		
July 6	5pm - July 7	5pm 24	NUSHAGAK section only:				
July 8	8pm - July 9	8am 12	July 10	7am - July 11	7am 24		
July 9	8pm - July 11	10pm 50	July 11	7am - July 19	9am 194		
July 12	10pm - July 19	9am 155	IGUSHIK section only:				
July 19	9am revert to 5 day week.		July 12	10am - July 13	10am 24		
Total fishing hours during regulatory period, June 25 - July 18: 394				July 13	10am - July 19	9am 143	
				Total fishing hours during regulatory period, June 25 - July 18: 319			
				Nushagak section: 319			
				Igushik section: 268			

<u>TOGIK DISTRICT</u>			
<u>Date & Time</u>		<u>Hours</u>	
June 24	12MN - June 26	9am 33	Total fishing hours during regulatory period, June 25 - July 18: 337.
June 28	9am - July 3	9am 120	There was one further closure of the fishery: July 21 5pm - July 26 9am for 72 hours.
July 5	9am - July 10	9am 120	
July 12	9am - July 15	1am 64	

TABLE 4 .--NAKNEK-KVICHAK DISTRICT PRELIMINARY CATCH BY SPECIES, 1965

Period	Hours	Reds	Kings	chums	Pinks	Cohos	\bar{X} Chum%	Total
To 6/26	-	1,614,982	3,178	4,840			0.31	1,623,000
6/27-29	48	2,700,359	656	3,245			0.12	2,704,260
6/30	12	1,650,026	292	-				1,650,318
7/1	12	1,555,927	274	-				1,556,201
7/4-5	24	1,858,146	241	-				1,858,387
7/6-7	24	1,666,664	388	11,579			0.69	1,678,631
7/8-9	24	2,257,610	376	8,609			0.38	2,266,595
7/10-11	24	960,427	170	4,244			0.44	964,841
7/11-19	194	4,222,902	923	18,672			0.44	4,242,497
7/19-24	5 days	1,087,011	311	4,801			0.44	1,092,123
7/26=31	5 days	9,815	14	188			0.43	10,017
8/2-7	5 days	381	11	30		78	7.20	500
Total		19,584,250	6,834	56,208		78	0.29	19,647,370
Percent of district catch		99.68	0.03	0.29	0.00	+		100.00

TABLE 5 --EGEGIK DISTRICT PRELIMINARY CATCH BY SPECIES, 1965

Period	Hours	Reds	Kings	Chums	Pinks	Cohos	\bar{X} Chum%	Total
To 6/26	-	215,372	1,336	2,132			0.98	218,840
6/27-29	48	483,056	239	1,647			0.34	484,942
6/29-30	24	493,524	232	1,585			0.32	495,341
7/2-3	24	398,559	247	1,922			0.48	400,728
7/4-5	24	351,561	117	705			0.20	352,383
7/6-7	24	377,878	37	796			0.21	378,711
7/8-9	12	239,822	51	2,765			1.14	242,638
7/9-11	50	147,743	28	727			0.49	148,498
7/12-19	155	498,757	118	2,151			0.43	501,026
7/19-24	5 days	66,545	5	294			0.43	66,844
7/26-31	5 days	990		4		94	0.43	1,088
8/2-7	5 days	38				51	-	89
8/9-14	5 days	32				536	-	568
8/16-21	5 days	4				954	-	958
8/23-28	5 days					201		
8/30-94	5 days							
Total		3,273,881	2,410	14,728		1,836		3,292,855

TABLE 6 .--UGASHIK DISTRICT PRELIMINARY CATCH BY SPECIES, 1965

Period	Hours	Reds	Kings	Chums	Pinks	Cohos	\bar{X} Chum%	Total
To 6/26		15,991	2,870	862			5.62	19,723
6/28-7/2	97	105,339	196	1,760			1.75	107,295
7/3-6	75	299,842	289	6,188			2.05	306,319
7/8-9	25	127,403	65	1,024			0.83	128,492
7/10-11	24	167,134	54	3,304			1.98	170,492
7/13	12	67,066	27	1,073			1.69	68,166
7/15	12	91,910	28	1,516			1.69	93,454
7/19-24	5 days	26,055	89	715			1.69	26,859
7/26-31	5 days	4,429	70	219			1.69	4,718
8/2-7	5 days	455				2		457
8/9-14	5 days	281				124		405
8/16-21	5 days	40				325		365
8/23-28	5 days	5				261		266
Total		905,950	3,688	16,661		712		927,011
Percent of District catch		97.73	0.40	1.80		0.07		100.0

TABLE 7.--NUSHAGAK DISTRICT PRELIMINARY CATCH BY SPECIES, 1965

Period	Hours	Reds	Kings	Chums	Pinks	Cohos	\bar{X} Chum%	Total
5/31-6/5	5 days		6,696					6,696
6/7-12	5 days		11,860	11				11,871
6/14-19	5 days	3,350	38,515	3,568			45.08	45,433
6/21-26	5 days	95,450	22,746	77,359	8	1	45.08	195,564
6/29	12	115,641	3,952	32,825	1		22.11	152,419
7/2-3	12	152,866	370	11,224	8		6.84	164,468
7/7	8	66,173	724	6,898		2	9.44	73,797
7/8	12	81,685	147	8,514			9.44	90,346
7/9-10	24	32,801	89	4,880	5	6	12.95	37,751
7/10-19	218	161,668	682	23,648	36	124	12.95	186,158
7/19-24	5 days	44,437	264	7,012	29	2,776	12.95	54,518
7/26-31	5 days	1,337	3	56	5	59	4.02	1,460
Total		755,408	86,048	175,995	92	2,968	18.90	1,020,511
Percent of district catch		74.02	8.43	17.25	0.01	0.29		100.00

TABLE 8.--TOGIAC DISTRICT PRELIMINARY CATCH BY SPECIES, 1965

Period	Hours	Reds	Kings	Chums	Pinks	Cohos	\bar{X} Chum%	Total
To 6/19	-	231	1,793	603			72.25	2,627
6/21-26	5 days	6,449	4,029	16,790	1		72.25	27,269
6/28-7/3	5 days	43,172	2,239	28,351	9		39.64	73,771
7/5-10	5 days	79,559	2,105	28,877	6		26.63	110,547
7/12-15	64	37,136	281	18,641	2		33.42	56,060
7/19-21	56	31,814	56	9,020	5		22.09	40,895
7/26-31	5 days	13,947	19	8,030	6	3	36.54	22,005
8/2-7	5 days	1,427	1	821	3	31	36.54	2,283
Total		213,735	10,523	111,133	32	34		335,457
Percent of district catch		63.71	3.14	33.13	0.01	0.01		100.00

TABLE 9.--SUMMARY OF BRISTOL BAY FINAL
CATCH BY DISTRICT AND SPECIES, 1965

District and Sub-District	Reds	Kings	Chums	Pinks	Cohos	Chum%	Total
<u>NAKNEK-KVICHAK</u>							
Kvichak	17,785,664						
Branch	239,303						
Naknek	1,114,600						
Total	19,139,567	9,793	45,430	514	3,053	0.24	19,198,357
<u>EGEGIK</u>	3,179,559	2,313	11,188	0	945	0.35	3,194,005
<u>UGASHIK</u>	925,690	4,042	14,971	0	713	1.58	945,416
<u>NUSHAGAK</u>							
Wood	468,496						
Igushik	133,211						
Snake	8,146						
Nuyakuk	161,286						
Nush-Mulchat	22,184						
Total	793,323	85,910	177,434	95	2,851	16.75	1,059,613
<u>TOGLAK</u>	217,100	10,909	111,521	91	521	32.79	340,142
Total	24,255,239	112,967	360,544	700	8,083	1.46	24,737,533

Species Percent of Season Total

Reds	-----98.05%
Kings	----- 0.46%
Chums	----- 1.46%
Pinks	----- trace
Cohos	----- 0.03%

TABLE 10.--COMPARATIVE BRISTOL BAY RED SALMON CATCH IN NUMBERS
OF FISH BY DISTRICT, 1951-1965

Year	Naknek Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1951	2,926,413	644,551	318,629	436,950	-	4,326,543
1952	9,401,060	886,852	280,146	698,071	-	11,266,129
1953	3,738,839	1,234,600	688,720	449,341	-	6,111,500
1954	1,819,666	1,437,791	1,067,531	315,357	12,280	4,652,625
1955	2,546,341	622,885	240,817	1,054,978	66,085	4,549,106
1956	5,987,750	1,187,108	341,499	1,263,186	101,933	8,881,476
1957	4,578,643	814,459	350,858	491,498	40,044	6,275,502
1958	922,611	500,684	433,813	1,092,156	36,402	2,985,666
1959	1,689,425	662,391	423,414	1,719,687	113,202	4,608,119
1960	9,847,848	1,446,884	752,634	1,517,988	139,648	13,705,002
1961	8,166,983	2,686,076	357,223	511,483	192,161	11,913,926
1962	2,281,284	638,862	243,159	1,461,766	92,945	4,718,016
1963	957,902	695,558	188,695	842,744	186,283	2,871,182
1964	2,243,701	1,103,935	576,768	1,420,941	250,775	5,596,120
1965	19,139,567	3,179,559	925,690	793,323	217,100	24,255,239
15 Year Average	5,083,202	1,182,813	479,306	1,004,631	120,738 ^{1/}	7,781,076

^{1/} 12 year average for Togiak district

Source of Data

Alaska Commercial Salmon Catch Statistics, 1951-1959, Statistical Digest
No. 50, by U. S. Bureau of Commercial Fisheries

Statistical Yearbooks, 1952-1961, International North Pacific Fisheries
Commission

Alaska Department Fish & Game, 1960-1965, Division of Statistics

TABLE 11.--COMPARATIVE BRISTOL BAY KING SALMON CATCH IN NUMBERS
OF FISH BY DISTRICT, 1951-1965

Year	Naknek Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1951	5,009	342	606	34,226	-	40,183
1952	11,404	972	632	39,848	-	52,856
1953	13,848	743	463	27,502	-	42,556
1954	7,101	9,777	1,093	38,045	-	56,016
1955	11,448	3,079	3,160	56,463	1,279	75,429
1956	6,006	1,448	616	57,441	866	66,377
1957	5,524	4,139	883	79,122	1,752	91,420
1958	8,391	3,155	2,368	87,245	2,048	103,207
1959	15,298	3,282	5,493	54,299	5,917	84,289
1960	17,778	2,991	2,209	81,416	7,309	111,703
1961	10,206	3,266	3,483	60,953	10,748	88,656
1962	8,816	2,070	2,929	61,283	8,949	84,047
1963	4,713	2,355	3,030	45,979	6,192	62,269
1964	12,902	3,618	3,694	108,606	10,716	139,536
1965	9,793	2,313	4,042	85,910	10,909	112,967
15 year average	9,882	2,903	2,313	61,223	6,062 ^{1/}	80,767

^{1/} 11 year average for Togiak district

Source of Data

Alaska Commercial Salmon Catch Statistics, 1951-1959, Statistical Digest
No. 50, by U. S. Bureau of Commercial Fisheries

Alaska Department Fish and Game, 1960-1965, Division of Statistics

TABLE 12.--COMPARATIVE BRISTOL BAY CHUM SALMON CATCH IN NUMBERS
OF FISH BY DISTRICT, 1951-1965

Year	Naknek Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1951	38,844	15,439	16,843	85,624	-	156,750
1952	93,835	18,060	19,651	117,875	-	249,421
1953	212,112	26,724	21,027	127,483	-	387,346
1954	138,016	62,040	39,384	159,852	1,352	400,644
1955	39,405	23,238	51,280	97,521	735	212,179
1956	93,841	16,713	6,934	172,546	25,483	315,517
1957	45,620	12,849	13,226	143,461	44,186	259,342
1958	119,324	12,089	12,714	193,688	20,277	358,092
1959	200,458	29,407	20,185	186,891	44,575	481,516
1960	304,286	62,837	51,415	642,099	255,320	1,315,957
1961	182,398	57,429	30,928	267,176	190,001	727,932
1962	176,712	23,053	22,040	290,633	165,107	677,545
1963	100,408	14,807	10,554	167,161	77,167	370,097
1964	153,644	23,496	30,688	463,309	131,371	802,508
1965	45,430	11,188	14,971	177,434	111,521	360,544
15 year average	129,622	27,291	24,123	219,517	88,925 ^{1/}	471,693

^{1/} 12 year average for Togiak district

Source of data

Alaska Commercial Salmon Catch Statistics, 1951-1959, Statistical Digest
No. 50, by U. S. Bureau of Commercial Fisheries

Alaska Department Fish and Game, 1960-1965, Division of Statistics

TABLE 13.--COMPARATIVE BRISTOL BAY PINK SALMON CATCH IN NUMBERS
OF FISH BY DISTRICT, 1951-1965

Year	Naknek Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1951	11	-	-	23	-	34
1952	6,277	-	1,000	6,852	-	14,129
1953	7	2	-	3	-	12
1954	1,925	-	-	99,207	1,850	102,982
1955	-	-	-	9	-	9
1956	511	4	-	91,457	-	91,972
1957	2	24	-	3	-	29
1958	19,666	492	-	1,113,794	1,590	1,135,542
1959	25	6	78	137	55	301
1960	10,582	-	-	289,781	1,669	302,032
1961	42	3	-	248	245	538
1962	32,436	43	1	880,424	1,030	913,934
1963	56	1	2	226	176	461
1964	49,127	606	18	1,497,817	2,001	1,549,569
1965	514	-	-	95	91	700
7 year average ^{1/}	17,218	164	145	568,476	1,357 ^{2/}	587,166

^{1/} Includes only even years

^{2/} 6 Year average for Togiak district

Source of Data

Alaska Commercial Salmon Catch Statistics, 1951-1959, Statistical Digest
No. 50, by U. S. Bureau of Commercial Fisheries

Alaska Department Fish and Game, 1960-1965, Division of Statistics

TABLE 14.--COMPARATIVE BRISTOL BAY COHO SALMON CATCH IN NUMBERS
OF FISH BY DISTRICT, 1951-1965

Year	Naknek Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1951	1,404	2,520	35,683	2,856	-	42,463
1952	11	-	2,936	2,067	-	5,014
1953	660	1,761	-	2,195	-	4,616
1954	111	2,932	70	20,423	-	23,536
1955	123	4,208	2,777	13,920	-	21,028
1956	887	8,573	-	53,999	-	63,459
1957	1,619	4,056	-	61,454	1,616	68,745
1958	3,624	4,370	746	127,088	-	135,828
1959	40	1,388	1,397	12,779	1,731	17,335
1960	197	2,421	-	13,457	65	16,140
1961	426	3,533	16	16,653	5	20,633
1962	2,474	3,828	4,553	28,418	11	39,284
1963	6,823	910	2,743	29,648	1,138	41,262
1964	3,133	775	380	26,416	5,859	36,563
1965	3,053	945	713	2,851	521	8,083
15 year average	1,639	2,815	3,468	27,615	1,216 ^{1/}	36,266

^{1/} 9 year average for Togiak district

Source of Data

Alaska Commercial Salmon Catch Statistics, 1951-1959, Statistical Digest No. 50, by U. S. Bureau of Commercial Fisheries

Alaska Department Fish and Game, 1960-1965, Division of Statistics

TABLE 15.--COMPARATIVE BRISTOL BAY SALMON CATCH IN NUMBERS
OF FISH BY DISTRICT, 1951-1965
ALL SPECIES

Year	Naknek Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1951	2,971,681	662,852	371,761	559,679	-	4,565,973
1952	9,512,587	905,884	304,365	864,713	-	11,587,549
1953	3,965,466	1,263,830	710,210	606,524	-	6,546,030
1954	1,966,819	1,512,540	1,108,078	632,884	15,482	5,235,803
1955	2,615,317	653,410	298,034	1,222,891	68,099	4,857,751
1956	6,088,995	1,213,846	349,049	1,638,629	128,282	9,418,801
1957	4,631,408	835,527	364,967	775,538	87,598	6,695,038
1958	1,073,616	520,790	449,641	2,613,971	60,317	4,718,335
1959	1,905,246	696,474	450,567	1,973,793	165,480	5,191,560
1960	10,180,691	1,515,133	806,258	2,544,741	404,011	15,450,834
1961	8,360,055	2,750,307	391,650	856,513	393,160	12,751,685
1962	2,501,722	667,856	272,682	2,722,524	268,042	6,432,826
1963	1,069,902	713,631	205,024	1,085,758	270,956	3,345,271
1964	2,462,507	1,132,430	611,548	3,517,089	400,722	8,124,296
1965	19,198,357	3,194,005	945,416	1,059,613	340,142	24,737,533
15 year average	5,233,625	1,215,901	509,283	1,511,657	216,858 ^{1/}	8,643,952

^{1/} 12 year average for Togiak district

Source of Data

Alaska Commercial Salmon Catch Statistics, 1951-1959, Statistical Digest
No. 50, by U. S. Bureau of Commercial Fisheries

Alaska Department Fish and Game, 1960-1965, Division of Statistics

TABLE 16.--BRISTOL BAY CASE PACK BY SPECIES, 1951-1965^{1/}

48 1 lb. cans per case

Year	Reds	Kings	Chums	Pinks	Coho	Total
1951	300,956	4,661	15,744	0	4,366	334,707
1952	715,083	11,380	31,457	1,339	793	760,052
1953	445,535	8,050	37,052	3	333	490,973
1954	308,405	9,266	32,232	4,732	2,839	357,474
1955	312,284	13,089	20,701	0	1,928	348,002
1956	529,726	9,386	24,450	3,918	4,133	571,613
1957	471,979	16,285	23,940	0	4,220	516,424
1958	241,099	24,844	34,954	61,740	10,555	373,192
1959	332,713	17,364	42,812	0	2,582	395,471
1960	854,807	19,566	103,569	12,055	3,073	993,070
1961	926,441	15,501	51,828	0	1,980	995,750
1962	361,226	16,797	58,571	38,638	2,941	478,173
1963	217,901	9,495	34,157	2	4,296	265,851
1964	372,928	25,677	70,523	67,431	5,024	541,583
1965 ^{1/2/}	1,464,345	24,239	31,531	0	459	1,520,574
15 year average	524,293	15,040	40,901	27,121 ^{3/}	3,301	596,193

^{1/} Preliminary data

^{2/} Does not include the following cases packed from Bristol Bay fish transported outside the area for processing: Reds - 69,555 cases; Kings - 52 cases; Chums - 326 cases.

^{3/} Average pink case pack includes even years only.

Source of Data

Alaska Fishery and Fur-Seal Industries, 1951, by U. S. Bureau of Commercial Fisheries, Statistical No. 31

Statistical Yearbooks, 1952-1961, International North Pacific Fisheries Commission

Statistical Leaflet No. 9, 1964, Alaska Department of Fish and Game
1960-1963, Division of Statistics

TABLE 17.--BRISTOL BAY FISH PER CASE BY SPECIES, 1951-1965

Year	Reds	Kings	Chums	Pinks	Cohos
1951	11.87	4.53	10.87	18.16	10.29
1952	13.69	5.12	10.34	13.37	10.57
1953	11.91	5.22	10.16	23.09	10.30
1954	12.04	4.79	10.26	18.47	10.69
1955	12.77	4.13	9.84	-	11.17
1956	12.91	4.15	11.50	20.93	12.64
1957	11.79	3.81	10.21	-	-
1958	12.30	4.20	9.40	18.20	12.80
1959	12.80	4.10	11.40	23.00	7.80
1960	14.58	6.19	12.58	17.27	11.34
1961	11.93	4.43	11.25	19.19	7.39
1962	12.45	4.66	11.47	25.80	12.10
1963	12.15	5.49	11.36	-	12.21
1964	13.57	5.31	11.01	25.58	12.58
1965	15.75	4.28	12.31	-	9.08
15 year average	12.79	4.66	10.90	19.50 ^{1/}	10.64 ^{2/}

^{1/} Average fish per case includes even years only; 7 year average

^{2/} 14 year average

^{3/} Geometric mean

Source of Data

Alaska Department of Fish and Game, 1951-1963, Division of Statistics
 Alaska Department of Fish and Game, Division of Commercial Fisheries,
 Bristol Bay, 1964-1965

TABLE 18.--BRISTOL BAY FROZEN AND CURED FISH, 1961-1965

COMPARATIVE CATCH

Year	Reds	Kings	Chums	Pinks	Cohos	Total
1961	170,745	11,585	348	-	-	182,678
1962	27,926	4,510	2,665	-	4,073	39,174
1963	34,641	3,917	11,690	1	4,028	54,277
1964	80,787	9,011	3,295	276	8,956	102,325
1965	85,728	3,506	15	-	2,476	91,725
5 Year Average	79,965	6,505	3,602	-	3,906 ^{1/}	94,035

^{1/} 4 year average

Source of Data

Alaska Department Fish and Game, 1961-1965, Fisheries Management Staff

TABLE 19.--SUMMARY OF 1965 BRISTOL BAY RED SALMON ESCAPEMENT GOALS

<u>NAKNEK-KVICHAK DISTRICT</u>	<u>Predicted Return</u> ^{1/}	<u>1965 Goal</u>	<u>Management Escapement Range</u>
Kvichak River	13,170,000	8,000,000	6,000,000 - 10,000,000
Naknek River	3,070,000	800,000	600,000 - 1,000,000
Alagnak (Branch) River	960,000	400,000	250,000 - 750,000
Total	17,200,000	9,200,000	6,850,000 - 11,750,000
 <u>NUSHAGAK DISTRICT</u>			
Wood River	970,000	500,000	500,000 - 1,750,000
Igushak River	570,000	250,000	250,000 - 400,000
Snake River	50,000	47,000	47,000 - 150,000
Nuyakuk River	300,000	200,000	150,000 - 200,000
Nushagak-Mulchatna	60,000	20,000	20,000 - 50,000
Total	1,950,000	1,017,000	967,000 - 1,550,000
 <u>EGEGIK DISTRICT</u>			
	4,180,000	1,000,000	750,000 - 1,150,000
 <u>UGASHIK DISTRICT</u> ^{3/}			
	3,000,000	800,000	600,000 - 1,000,000
 <u>TOGIK DISTRICT</u>			
Togiak River	280,000 ^{2/}	150,000	150,000 - 175,000
Togiak Tributaries	20,000 ^{2/}	10,000	10,000 - 20,000
Kulukak System	10,000	10,000	10,000 - 20,000
Total	310,000	170,000	170,000 - 215,000
TOTAL JOINT PREDICTION	27,780,000	12,187,000	9,337,000 - 15,665,000
TOTAL BAY PREDICTION	<u>27,810,000</u>		

- ^{1/} Bristol Bay Red Salmon Forecast of Run for 1965, Alaska Department Fish and Game, Informational Leaflet 59
- ^{2/} System prediction by Alaska Department Fish and Game. Not included in joint Bristol Bay prediction
- ^{3/} Excluding Mother Goose system return

TABLE 20.--COMPARATIVE RED SALMON ESCAPEMENT COUNTS BY RIVER SYSTEM, 1960-1965

River	1960	1961	1962	1963	1964	1965
Kvichak River	14,630,000	3,705,849	2,530,884	338,760	957,120	24,325,926
Branch River	1,240,530	90,036	90,630	203,304	248,700	175,020
Naknek River	828,381	351,078	723,066	905,358	1,349,604	717,798
Egegik River	1,798,764	701,538	1,027,482	997,602	849,576	1,444,608
Ugashik River	2,304,200	348,639	255,426	388,254	472,770	996,612
Mother Goose System	37,200 ^{1/}	17,800 ^{1/}	18,600 ^{1/}	8,750 ^{1/}	10,000 ^{1/}	1,250 ^{1/}
Wood River	1,016,073	460,737	873,883	721,404	1,076,112	675,156
Igushik River	495,087	294,252	15,660	92,184	128,532	180,840
Snake River	16,598	4,856	1,760	37,960	12,436	12,000 ^{1/}
Nuyakuk River	145,500	79,788	37,890	166,608	103,224	203,070
Nushagak-Mulchatna System	--	20,000 ^{1/}	8,500 ^{1/}	45,700 ^{1/}	78,700 ^{1/}	28,200 ^{1/}
Togiak River	162,810	95,454	47,352	102,396	95,574	88,386
Togiak Tributaries	29,200 ^{1/}	26,800 ^{1/}	14,600 ^{1/}	13,600 ^{1/}	9,300 ^{1/}	8,100 ^{1/}
Kulukak System	--	5,200 ^{1/}	9,600 ^{1/}	11,400 ^{1/}	9,800 ^{1/}	16,300 ^{1/}
Total Escapement	22,704,343	6,202,027	5,705,338	4,033,480	5,341,448	28,873,266

^{1/} Aerial survey estimate

TABLE 21.--COMPARATIVE BRISTOL BAY RED SALMON ESCAPEMENT IN
NUMBERS OF FISH BY DISTRICT, 1951-1965

Year	Naknek- Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1951	-	-	205,881	539,600	51,000	796,481
1952	-	756,921	651,209	433,800	102,000	1,943,930
1953	-	519,098	1,056,361	828,542	102,000	2,506,001
1954	-	507,298	458,635	691,624	77,000	1,734,557
1955	529,046	271,039	76,982	1,933,755	112,000	2,922,822
1956	11,215,913	1,104,230	425,295	1,212,101	225,000	14,182,539
1957	3,604,050	391,207	214,802	498,727	25,000	4,733,786
1958	907,553	246,354	279,546	1,277,933	72,000	2,783,386
1959	3,737,238	1,072,459	219,228	3,041,885	209,640	8,280,450
1960	16,698,911	1,798,764	2,341,400	1,673,258	192,010	22,704,343
1961	4,146,963	701,538	366,439	859,633	127,454	6,202,027
1962	3,394,580	1,027,482	274,026	937,698	71,552	5,705,338
1963	1,447,422	997,602	397,004	1,063,856	127,596	4,033,480
1964	2,555,424	849,576	482,770	1,339,004	114,674	5,341,448
1965	25,218,744	1,444,608	997,862	1,099,266	112,786	28,873,266
average	6,677,804	834,870	563,163 ^{1/}	1,228,712	114,781 ^{2/}	9,614,808 ^{3/}

^{1/} Includes Mother Goose system beginning in 1960

^{2/} 1951-1953 and 1956-1958 includes Togiak Lakes only. 1954-1955 includes only Ongivinuk system and 1959 to date includes all Togiak tributaries. Kulukak system included 1961 to date.

^{3/} 11 year average, 1955 through 1965

Source of Data

Statistical Records and Computations on Red Salmon Runs to the Nushagak District, 1946-1959, by Fisheries Research Institute, University of Washington

Tabulated Information on Red Salmon Runs to the Ugashik System, 1946-1957. Circular No. 184, by Fisheries Research Institute, University of Washington

Annual Reports for Bristol Bay, 1951-1959, by Fishery Management Agents, U. S. Bureau of Commercial Fisheries

Comparison of Escapements to the Togiak Lakes System in 1954 and 1955, by Fisheries Research Institute, University of Washington, (Interdepartmental report)

Alaska Department Fish and Game, Division of Commercial Fisheries, 1960-1965, Bristol Bay

TABLE 22--SUMMARY OF BRISTOL BAY RED SALMON
CATCH AND ESCAPEMENT, 1965^{1/}

	<u>Escapement</u>		<u>Catch</u>	<u>Total Return</u>
<u>N/K DISTRICT:</u>	<u>System</u>	<u>District</u>		
Kvichak River	24,325,926			
Naknek River	717,798			
Alagnak River	175,020			
		25,218,744	19,139,567	44,358,311
<u>ELEGIK DISTRICT:</u>		1,444,608	3,179,559	4,624,167
<u>UGASHIK DISTRICT:</u>				
Ugashik Lakes	996,612			
Mother Goose System	1,250			
		997,862	925,690	1,923,522
<u>NUSHAGAK DISTRICT:</u>				
Wood River	675,156			
Igushik River	180,840			
Snake River	12,000			
Tikchik Lakes	203,070			
Nush-Mulchatna System	28,200			
		1,099,266	793,323	1,892,589
<u>TOGLAK DISTRICT:</u>				
Togiak River	88,386			
Togiak Tributaries	8,100			
Kulukak System	16,300			
		112,786	217,100	329,886
TOTAL BRISTOL BAY		28,873,266	24,255,239	53,128,505

1/ Final catch and escapement data

Source of Data

Alaska Department Fish and Game, Division of Commercial Fisheries, Bristol Bay

TABLE 23.--CATCH AND ESCAPEMENT OF RED SALMON
IN THE NAKNEK-KVICHAK DISTRICT BY RIVER SYSTEM, 1955-1965

Year	Escapement by River System				Catch	Total Return
	<u>Kvichak</u>	<u>Branch</u>	<u>Naknek</u>	<u>Total</u>		
1955	250,546	-	278,500	529,046	2,564,341	3,093,387
1956	9,443,318	-	1,772,595	11,215,913	5,987,750	17,203,663
1957	2,842,810	126,595	634,645	3,604,050	4,578,643	8,182,693
1958	534,785	94,650	278,118	907,553	922,611	1,830,164
1959	680,000	825,431	2,231,807	3,737,238	1,689,425	5,426,663
1960	14,630,000	1,240,530	828,381	16,698,911	9,847,848	26,546,759
1961	3,705,849	90,036	351,078	4,146,963	8,166,983	12,313,946
1962	2,580,884	90,630	723,066	3,394,580	2,281,284	5,675,864
1963	338,760	203,304	905,358	1,447,422	957,902	2,405,324
1964	957,120	248,700	1,349,604	2,555,424	2,243,701	4,799,125
1965	24,325,926	175,020	717,798	25,218,744	19,139,567	44,358,311
average	5,480,909	343,877	915,541	6,677,804	5,307,278	11,985,082

Source of Data

Statistical Yearbooks, 1952-1961, International North Pacific Fisheries Commission

Annual Reports for Bristol Bay, 1951-1959, by Fishery Management Agents, U. S. Bureau of Commercial Fisheries

Alaska Department Fish and Game, Division of Commercial Fisheries, Bristol Bay, 1960-1965

TABLE 24.--CATCH AND ESCAPEMENT OF RED SALMON
IN THE EGEGIK AND UGASHIK DISTRICTS BY RIVER SYSTEM, 1951-1965

Year	Egegik District			Ugashik District			Catch	Total Return
	Escapement	Catch	Total Return	Escapement	Total			
	<u>Egegik</u>			<u>Ugashik</u>	<u>Mother Goose</u>	<u>Total</u>		
1951		644,551	--	205,881	--	205,881	318,629	524,510
1952	756,921	886,852	1,643,773	651,209	--	651,209	280,146	931,355
1953	519,098	1,234,600	1,753,698	1,056,361	--	1,056,361	688,720	1,745,081
1954	507,298	1,437,791	1,945,089	458,635	--	458,635	1,067,531	1,526,166
1955	271,039	622,885	893,924	76,982	--	76,982	240,817	317,799
1956	1,104,230	1,187,108	2,291,338	425,295	--	425,295	341,499	766,794
1957	391,207	814,459	1,205,666	214,802	--	214,802	350,858	565,660
1958	246,354	500,684	747,038	279,546	--	279,546	433,813	713,359
1959	1,072,459	662,391	1,734,850	219,228	--	219,228	423,414	642,642
1960	1,798,764	1,446,884	3,245,648	2,304,200	37,200	2,341,400	752,634	3,094,034
1961	701,538	2,686,076	3,387,614	348,639	17,800	366,439	357,223	723,662
1962	1,027,482	638,862	1,666,344	255,426	18,600	274,026	243,159	517,185
1963	997,602	695,558	1,693,160	388,254	8,750	397,004	188,695	585,699
1964	849,576	1,103,935	1,953,511	472,770	10,000	482,770	576,768	1,059,538
1965	1,444,608	3,179,559	4,624,167	996,612	1,250	997,862	925,690	1,923,552
average	834,870	1,182,813	2,056,130	556,923	15,600	563,163	479,306	1,042,469

Source of Data

Statistical Yearbooks, 1952-1961, International North Pacific Fisheries Commission
Annual Reports for Bristol Bay, 1951-1959, by Fishery Management Agents, U. S. Bureau Commercial Fisheries
Tabulated Information on Red Salmon Runs to the Ugashik system, 1946-1957, Circular No. 184, by Fisheries
Research Institute, University of Washington; Alaska Department Fish and Game, Division of Commercial Fisheries,
Bristol Bay, 1960-1965

TABLE 25.--CATCH AND ESCAPEMENT OF RED SALMON
IN THE NUSHAGAK DISTRICT BY RIVER SYSTEM, 1951-1965

Year	Escapement by River System						Catch	Total Return
	Wood	Toughik	Snake	Nuyakuk	Nushagak- Mulchatna	Total		
1951	457,600	40,000	3,000	39,000	--	539,600	436,950	976,550
1952	226,800	150,000	4,000	38,000	15,000	433,800	698,071	1,131,871
1953	515,542	100,000	4,000	189,000	20,000	828,542	449,341	1,277,883
1954	570,624	80,000	4,000	29,000	8,000	691,624	315,357	1,006,981
1955	1,382,755	500,000	30,000	16,000	5,000	1,933,755	1,054,978	2,988,733
1956	773,101	400,000	4,000	30,000	5,000	1,212,101	1,263,186	2,475,287
1957	288,727	130,000	3,000	67,000	10,000	498,727	491,498	990,225
1958	960,455	107,478	9,000	196,000	5,000	1,277,933	1,092,156	2,370,089
1959	2,209,266	643,808	139,950	48,861	--	3,041,885	1,719,687	4,761,572
1960	1,016,073	495,087	16,598	145,500	--	1,673,258	1,517,988	3,191,246
1961	460,737	294,252	4,856	79,788	20,000	859,633	511,483	1,371,116
1962	873,888	15,660	1,760	37,890	8,500	937,698	1,461,766	2,399,464
1963	721,404	92,184	37,960	166,608	45,700	1,063,856	842,744	1,906,600
1964	1,076,112	128,532	12,436	103,224	18,700	1,339,004	1,420,941	2,759,945
1965	675,156	180,840	12,000	203,070	28,200	1,099,266	793,323	1,892,589
average	813,883	223,856	19,104	92,596	15,758	1,162,045	1,004,631	2,100,010

Source of Data

Statistical Records and Computations on Red Salmon Runs to the Nushagak District, 1946-1959, by Fisheries Research Institute, University of Washington; Alaska Department Fish and Game, Division of Commercial Fisheries, Bristol Bay, 1960-1965

TABLE 26 .--CATCH AND ESCAPEMENT OF RED SALMON
IN THE TOGLIAK DISTRICT BY RIVER SYSTEM, 1951-1965

Year	Escapement by River System				Catch	Total Return
	<u>Togiak</u>	<u>Tributaries</u>	<u>Kulukak</u>	<u>Total</u>		
1951	51,000	--	--	51,000	--	51,000
1952	102,000	--	--	102,000	--	102,000
1953	102,000	--	--	102,000	--	102,000
1954	57,000	20,000	--	77,000	12,280	89,280
1955	104,000	8,000	--	112,000	66,085	178,085
1956	225,000	--	--	225,000	101,933	326,933
1957	25,000	--	--	25,000	40,044	65,044
1958	72,000	--	--	72,000	36,402	108,402
1959	178,740	30,900	--	209,640	113,202	322,842
1960	162,810	29,200	--	192,010	139,648	331,658
1961	95,454	26,800	5,200	127,454	192,161	319,615
1962	47,352	14,600	9,600	71,552	92,945	164,497
1963	102,396	13,800	11,400	127,596	186,283	313,879
1964	95,574	9,300	9,800	114,674	250,775	365,449
1965	88,386	8,100	16,300	112,786	217,100	329,886
Average	100,581	18,957	10,460	114,781	120,738	211,371

Source of Data

Alaska Commercial Salmon Catch Statistics, 1951-1959, Statistical Digest No. 50, U. S. Bureau of Commercial Fisheries; Comparison of Escapements to the Togiak Lakes System in 1954 & 1955, by Fisheries Research Institute, University of Washington (Interdepartmental Report); Alaska Department Fish and Game, Division of Commercial Fisheries, Bristol Bay, 1960-1965

TABLE 27.--TOTAL BRISTOL BAY RETURN OF RED SALMON BY DISTRICT, 1951-1965

Year	Catch and Escapement by District					Total Return Bristol Bay
	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	
1951	--	--	524,510	976,550	51,000	--
1952	--	1,643,773	931,355	1,131,871	102,000	--
1953	--	1,753,698	1,745,081	1,277,883	102,000	--
1954	--	1,945,089	1,526,166	1,006,981	89,280	--
1955	3,093,387	893,924	317,799	2,988,733	178,085	7,471,928
1956	17,203,663	2,291,338	766,794	2,475,287	326,933	23,064,015
1957	8,182,693	1,205,666	565,660	990,225	65,044	11,009,288
1958	1,830,164	747,038	713,359	2,370,089	108,402	5,769,052
1959	5,426,663	1,734,850	642,642	4,761,572	322,842	12,888,569
1960	26,546,759	3,245,648	3,094,034	3,191,246	331,658	36,409,345
1961	12,313,946	3,387,614	723,662	1,371,116	319,615	18,115,983
1962	5,675,864	1,666,344	517,185	2,399,464	164,497	10,423,354
1963	2,405,324	1,693,160	585,699	1,906,600	313,879	6,904,662
1964	4,799,125	1,953,511	1,059,538	2,759,945	365,449	10,937,568
1965	44,358,311	4,624,167	1,923,552	1,892,589	329,886	53,128,505
15 year average	11,985,082	2,056,130 ^{2/}	1,042,469	2,100,010	211,371	17,829,297 ^{1/}

^{1/} 11 year average^{2/} 14 year averageSource of Data

Statistical Yearbooks, International North Pacific Fisheries Commission

U. S. Bureau of Commercial Fisheries

Fisheries Research Institute, University of Washington

Alaska Department Fish and Game, Division of Commercial Fisheries, Bristol Bay

TABLE 28.-- RED SALMON SMOLT DATA FROM THE
KVICHAK RIVER SYSTEM 1955-1965

Year of Seaward Migration	Age I		Age II		24 hour ^{1/} Index Points	Index ^{2/} Net Catch
	Percent	Mean Length in mm	Percent	Mean Length in mm		
1955	7.3	89.0	92.7	109.0	7.8	259,978
1956	39.2	92.0	60.8	116.0	2.3	77,660
1957	72.3	96.0	27.7	120.0	0.9	30,907
1958	97.9	84.0	2.1	114.0	100.0	3,333,953
1959	2.9	80.0	97.1	99.0	85.9	2,863,876
1960	10.0	91.0	90.0	108.0	18.4	614,003
1961	72.2	91.8	27.8	117.2	1.1	36,164
1962	94.0	82.0	6.0	110.0	36.1	1,203,000
1963	2.7	83.3	97.3	98.3	126.9	4,229,431
1964	22.0	87.0	78.0	108.0	61.8	2,061,586
1965	3.6	90.0	96.4	108.9	54.4	1,812,555
Average	38.5	87.7	61.4	109.6	45.0	1,502,101

^{1/} One index point = 33,340 smolts

^{2/} For derivation of 24 hour index catch figures refer to: Pennoyer and Seibel. 1965. 1964 Kvichak River Red Salmon Smolt Studies, Alaska Department of Fish and Game Informational Leaflet No. 58.

Source of Data

Alaska Department of Fish and Game, Commercial Fisheries Division, Research section.

TABLE 29.--COMPARATIVE AGE, LENGTH,
AND OUTMIGRATION EXTIMATES OF RED SALMON SMOLT FROM THE NAKNEK
RIVER SYSTEM, 1956-1965*

Year of Seaward Migration	Age I ^{1/}		Age II ^{2/}		Outmigration Estimate
	Percent	Mean Length in mm	Percent	Mean Length in mm	
1956	84.4	94.0	15.6	103.0	6,000,000
1957	57.9	111.0	42.1	112.0	3,040,416
1958	96.4	91.0	3.6	114.0	10,060,200
1959	80.5	97.0	19.5	106.0	12,465,487
1960	53.1	99.0	46.6	109.0	6,691,377
1961	77.8	103.0	22.2	113.0	5,612,647
1962	48.6	105.0	51.4	112.0	16,462,216
1963	40.6	98.0	58.5	114.0	14,900,855
1964	31.1	97.0	68.8	110.0	7,228,339
1965	59.6	99.0	40.0	114.0	24,708,672
Average	63.0 ^{2/}	99.4	36.8 ^{2/}	110.7	10,717,021

* Age and length weighted by night's catch

1/ Number winters in freshwater

2/ Age III smolt amounted to 0.3% in 1960; 0.9% in 1963; 0.1% in 1964;
0.4% in 1965

Source of Data

U. S. Bureau of Commercial Fisheries, 1956-1965

TABLE 30 -- COMPARATIVE AGE, LENGTH, INDEX NET CATCHES
AND OUTMIGRATION ESTIMATES OF RED SALMON SMOLT
FROM THE UGASHIK RIVER SYSTEM, 1956-1965*

Year of Seaward Migration	Age I ^{1/}		AGE II ^{1/}		Index ^{3/} Points	Index ^{4/} Net Catch	Outmigration Estimate
	%	Mean Length in mm	%	Mean Length in mm			
1956	11.0	--	89.0	--	--	--	--
1957	4.0	--	96.0	--	--	--	--
1958 ^{2/}	98.1	93.0	1.9	112.0	100.0	301,232	11,659,905
1959	87.3	90.0	12.7	120.0	36.5	109,982	2,887,002
1960	59.7	90.0	39.3	108.0	75.1	226,317	5,503,646
1961	20.4	90.0	79.6	112.0	52.3	157,441	3,802,079
1962	80.7	88.0	19.3	112.0	103.1	310,616	16,692,089
1963	46.3	89.8	53.7	104.3	305.2	919,451	33,750,496
1964	80.1	92.2	19.8	118.3	68.1	205,145	9,990,048
1965	28.8	93.7	71.2	114.1	57.4	172,893	3,640,115
Average	51.6	90.8	48.3	112.6		300,385	10,990,673

* Age and length weighted by index net catch

1/ Number winters in freshwater

2/ Base year: assigned value of 100.0

3/ One index point = 3,012.32 smolts

4/ Three hour index period, 10 p.m. to 1 a.m.

Source of Data

Fisheries Research Institute, University of Washington, 1956-1957

U.S. Bureau of Commercial Fisheries, 1958-1962

Alaska Department Fish and Game, Division of Commercial Fisheries, Bristol Bay,
1963-1965

Table 31. Comparative Age, length and index net catches of red salmon smolt from the Wood River System, 1951-65*

Year of Seaward Migration	Age I ^{1/}		Age II ^{1/}		Index Points ^{3/}		Two Hour Index Net Catch ^{4/}
	Percent	Mean Length	Percent	Mean Length	Unadjusted	Adjusted	
1951	80.0	91.0	20.0	---	9.9	9.9	16,809
1952 ^{2/}	99.0	87.0	1.0	---	100.0	100.0	170,034
1953	95.3	86.0	4.7	103.0	296.1	296.1	503,444
1954	95.8	87.0	4.2	107.0	438.6	438.6	745,832
1955	98.0	85.0	2.0	102.0	221.7	221.7	377,032
1956	78.4	82.0	21.6	95.0	329.3	326.6	559,932
1957	80.7	77.0	19.3	93.0	144.0	165.5	244,831
1958	65.0	82.0	35.0	102.0	249.1	230.9	423,580
1959	93.5	87.9	6.5	105.0	59.1	60.5	100,450
1960	99.4	88.0	0.6	114.0	223.3	223.3	379,668
1961	93.0	81.7	7.0	102.1	518.7	518.7	881,911
1962	86.0	80.1	14.0	97.6	177.6	177.6	301,892
1963	84.3	82.6	15.7	102.1	88.9	88.9	151,206
1964	98.8	83.7	1.2	104.2	568.6	332.2	966,807
1965	92.0	85.5	8.0	106.1	217.7	296.2	370,112
Average	89.3	84.4	10.7	102.5	175.0 ^{4/}	173.4 ^{4/}	412,903

* Age and length weighted by index net catch.

^{1/} Number winters in freshwater.

^{2/} One index point = 1,700.34 smolt.

^{3/} Two hour index period, 9 to 11 p.m.

^{4/} Geometric mean.

Source of Data

Fisheries Research Institute, University of Washington, 1951 - 1960.

Alaska Department Fish and Game, Division of Commercial Fisheries, Bristol Bay, 1961-1965