INFORMATIONAL LEAFLET NO. 167

A SUMMARY OF PRELIMINARY 1975 FORECASTS FOR
ALASKAN SALMON FISHERIES

Prepared by:

Division of Commercial Fisheries
ALASKA DEPARTMENT OF FISH AND GAME

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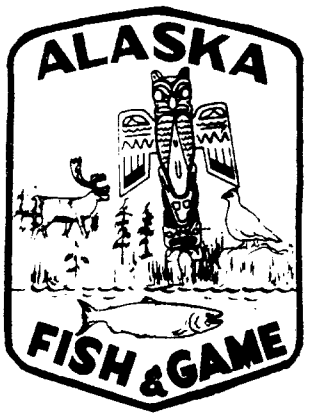

January 1975

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SUMMARY

A 19.0 million commercial salmon harvest is projected for Alaskan fisheries in 1975. Probable lower and upper limits for the harvest are 14.2 and 23.7 million, these limits having been calculated on the basis of differences between pre-season projections and actual harvests for the years 1970-74. Several factors exist which tend to indicate that the 1975 harvest is more likely to fall in the upper half of the range, 19.0 to 23.7 million, than in the lower half.

The projected 19.0 million harvest for 1975 is comparable to the 1974 harvest of 21-22 million and the 1973 harvest of 22.3 million. As reflected in the 1975 projected harvest, the unusually severe winters of 1970-71 and 1971-72 continue to affect - both directly and indirectly - the production of salmon in Alaska.

Salmon returns to Southeastern Alaska, including Yakutat, are expected to contribute about 4.8 million fish or 26 percent of the total state harvest. An estimated 9.2 million salmon or 48 percent of the total are expected from the Central statistical region encompassing Prince William Sound, Cook Inlet, Kodiak, Chignik and South Side Peninsula. The remaining 5.0 million salmon harvest is projected for the Western statistical region including the North Side Peninsula, Bristol Bay and the Arctic-Yukon-Kuskokwim region.

The species composition of the projected 1975 salmon harvest is as follows: Chinook - 0.5 million (3%); Coho - 1.6 million (8%); Chum - 5.6 million (29%); Sockeye - 5.6 million (30%); Pink - 5.7 million (30%).

While projected 1975 harvest levels remain below average for all species, the major weakness is due to the poor pink salmon projections. The projected sockeye harvest is also substantially below past comparable years.

INTRODUCTION

In 1969 the Division of Commercial Fisheries, Alaska Department of Fish and Game, initiated an annual statewide salmon forecast report designed to present pre-season forecasts for Alaska's commercial salmon fisheries. Released in November, these reports make information available on salmon returns expected the following year to some of the major fisheries in the state. A projection of the total commercial salmon harvest for the state is also presented.

In order to provide pre-season forecast information at this time it is necessary to include in some analyses preliminary data collected during the season just ended. Special attention is drawn to the use of very preliminary data on commercial catches in 1974. Final compilation of commercial catch statistics will not be completed until the spring of 1975. Some differences, though generally minor, will exist between preliminary commercial harvest data used in this report and final data presently being compiled.

Salmon forecasts in this leaflet are, therefore, presented under preliminary status. Revision of data on which these forecasts are based and further analyses may require modification of preliminary forecasts. In the past, however, preliminary forecasts have not differed substantially from final forecasts. Final forecasts are published by the Department and/or are made available via the news media.

Past Pre-season Projections of Commercial Salmon Harvests

Pre-season projections of statewide commercial salmon harvests have been made annually since 1970. These past projections and subsequent commercial salmon harvests are shown below: (Numbers of fish in millions)

Year	Pre-season Projected Harvest	Actual Harvest
1970	95.5	68.5
1971	41.5	47.5
1972	46.7	32.0
1973	30.0	22.3
1974	15.6	20.7 1/
1975: Point	19.0	
Range	14.2-23.7	

1/ Preliminary data

Differences between projected and actual harvest levels reflect the lack of complete information on salmon escapements, fry or smolt production and subsequent survival of salmon during the course of a very complex life cycle. As the state of knowledge on factors affecting survival increases and data bases expand, forecasting of annual salmon returns should continue to improve.

Terminology and Definitions

Definitions of some key terms frequently used in this report are as follows:

Salmon return or run - the total number of salmon returning in a given year to Alaskan waters from ocean rearing areas. A portion of these returning salmon is normally harvested while the remaining fish are allowed to reach the spawning grounds.

Commercial catch or harvest - that portion of a returning salmon run harvested by commercial fisheries.

Escapement, spawning population or brood stock - that portion of a returning salmon run which is not harvested and survives to reach the spawning grounds.

Different common names are often used for a particular species of salmon. The scientific names and most frequently used common names for the five species of Pacific salmon are given below:

Scientific Name	Common Name
Oncorhynchus tshawytscha	king, chinook
Oncorhynchus nerka	red, sockeye
Oncorhynchus kisutch	coho, silver
Oncorhynchus gorbuscha	pink, humpback, humpy
Oncorhynchus keta	chum, dog, keta

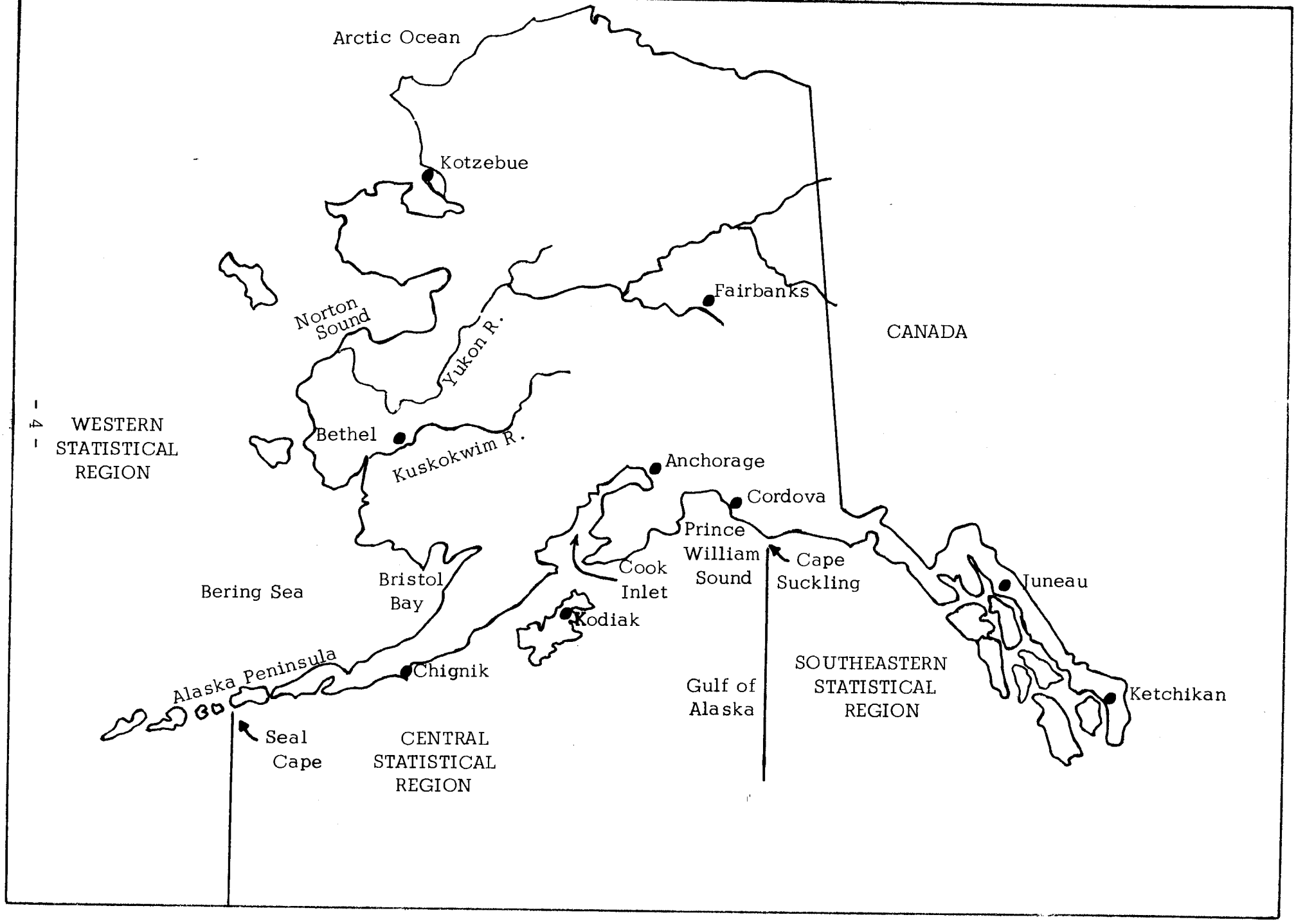
The three regions used for the purpose of this report are the statistical regions by which commercial fisheries statistics are presented in the Department's Statistical Leaflet series and in prior statistical reports. The boundaries of these regions are shown in Figure 1 and are defined as follows:

SOUTHEASTERN:	Dixon Entrance to Cape Suckling (including the Southeastern Alaska and Yakutat areas).
CENTRAL:	Cape Suckling to Seal Cape on the southwestern tip of Unimak Island (including the Copper River-Bering River, Prince William Sound, Cook Inlet, Kodiak, Chignik and South Side Alaska Peninsula areas).
WESTERN:	Seal Cape to, and including, the Aleutian Islands and the Bering Sea north through Kotzebue Sound (including the Aleutian Islands, North Side Alaska Peninsula, Bristol Bay, and Arctic-Yukon-Kuskokwim areas).

Acknowledgments

Materials presented in this report were prepared by Division of Commercial Fisheries biologists located in field offices throughout the state. Area biologists, not individually identified, contributed the materials for the discussion of the 1974 fishing season. Individual credit for forecast material is given following the area forecasts presented in Appendix A.

FIGURE 1. ALASKA DEPARTMENT OF FISH AND GAME COMMERCIAL FISHERIES STATISTICAL REGIONS.



REVIEW OF THE 1974 SEASON

The 1974 Alaska commercial salmon harvest of about 20.7 million fish, based on preliminary data, represents one of the lowest harvests since inception of the Alaska salmon fishery in the late 1800's. This low catch occurs after the low 1973 harvest of 22.3 million and the 1967 harvest of 20.9 million fish--the two previous record low harvest years since 1900. These harvests represent about 40% of 1960-71 average harvest of 52 million salmon.

In the 1974 season, as well as in 1973 and 1967, the primary weakness in statewide harvests was due to poor showings of pink salmon. It appears that the 1974 cycle continues to feel the affect of unusually severe winters of 1970-71 and 1971-72.

As low as the harvest appears to be, it did exceed the predicted return of 15.6 million fish by 33%. Better than anticipated returns of Bristol Bay sockeye, Kodiak pinks, and Northern chums contributed to much of the increase.

Commercial salmon catches by species and fishing area in 1974 are shown in Table 1. As this information is compiled from preliminary in-season catch reports, some revisions will occur as final catch statistics are tabulated. Late reported catches are expected to contribute an additional 0.5 to 1.0 million fish to the 20.7 million catch shown in Table 1. Thus, the final 1974 commercial salmon harvest is expected to fall between 21 and 22 million.

Additional comments on the 1974 commercial fishing season in specific areas are presented below. All commercial catch statistics are preliminary.

Southeastern Alaska and Yakutat

The harvest of all species of salmon in Southeastern totaled 7,738,000 or only about 50% of the average salmon harvest since 1960.

The harvest of 4,440,000 pink salmon was only 31% of the even-year catch since 1960 and represents the lowest even-year harvest since 1960 when only three million pinks were taken. Although the harvest for the whole of Southeastern fell within the forecast range, catches of 580,000 pinks from northern Southeastern were far lower than anticipated while southern Southeastern catches of 3,860,000 pinks exceeded the upper forecast level.

TABLE 1. PRELIMINARY 1974 ALASKA COMMERCIAL SALMON HARVEST BY SPECIES AND MAJOR FISHING AREAS (Compiled 11/20/74).

(Numbers of fish in thousands)

AREA	SPECIES					
	Chinook	Sockeye	Coho	Pink	Chum	Total
Southeastern Alaska	300.2	575.9	925.8	4435.9	1329.9	7567.7
Yakutat	2.3	82.8	77.1	4.3	4.2	170.7
SOUTHEASTERN REGION SUBTOTAL	302.5	658.7	1002.9	4440.2	1334.1	7738.4
Prince William Sound	19.4	741.4	75.5	458.6	89.3	1384.2
Cook Inlet	6.8	524.8	206.3	534.5	416.0	1688.4
Kodiak	.4	408.4	13.5	2637.1	246.8	3308.2
Chignik	.2	659.4	11.0	69.9	35.0	775.5
Alaska Peninsula - S. Side	.5	204.7	9.4	99.7	71.5	385.8
CENTRAL REGION SUBTOTAL	27.3	2538.7	315.7	3799.8	858.6	7540.1
Alaska Peninsula - N. Side	5.1	247.9	24.0	10.5	35.3	322.8
Aleutian Islands	No Fishery					
Bristol Bay	45.3	1417.4	41.0	903.5	274.8	2682.0
Arctic-Yukon-Kuskokwim	130.1	29.0	197.9	207.9	1854.5	2419.4
WESTERN REGION SUBTOTAL	180.5	1694.3	262.9	1121.9	2164.6	5424.2
TOTAL ALASKA	510.3	4891.7	1581.5	9361.9	4357.3	20702.7

The chum salmon harvested of 1,334,000 was about the same as last season and about 30% below the 1960-73 average. The sockeye harvest of 659,000 fish was about 20% below the average while the coho harvest of 1,003,000 fish was about 10% below average. The king salmon harvest of 303,000 was about average for the period 1960-73.

Prince William Sound

The return of 1,330,000 pinks, falling within the lower half of the forecast range, was associated with a harvest of 459,000 fish or about 15% of the even-year average since 1960. The point estimate return of 290,000 chum salmon with a forecast harvest of 90,000 fish proved to be quite precise as 284,000 chums actually returned and the catch was 89,000 fish (20% of the 1960-73 average harvest).

The coho harvest was substantially down with only 76,000 fish being taken, or only 28% of the average. The harvest of 780,000 sockeye was about average while the king salmon catch of 15,000, although low in comparison to recent year catches, was 128% above the 1960-73 average.

Cook Inlet

The pink run to the Southern and Outer districts of Cook Inlet came in at 26% of the predicted strength resulting in a catch of only 50,000 pinks or about one-half the anticipated harvest. The total pink harvest for the Cook Inlet area was 535,000 fish, only 20% of the average even-year harvest since statehood and lowest even-year harvest since 1932 when only 441,000 pinks were caught.

The sockeye harvest of 525,000 fish represented the second lowest catch since 1907 and lowest harvest since statehood.

The king and chum harvests of 6,800 and 416,000 fish were 52% and 57% of the average harvest since 1960. The coho catch of 206,000 fish represented about 90% of the 1960-73 average coho harvest.

Kodiak

The Kodiak pink catch of 2,637,000 fish outperformed the anticipated harvest by 18 fold. Although far above pre-season expectations, the harvest was still only 28% of the even-year 1960-72 average of 9,557,000 fish. The better than anticipated harvest of pinks was due to a total return of about 4.6

million fish--in the upper portion of the 2.9-5.3 million forecast range.

The harvests of chum (247,000), coho (13,500), and king salmon (400) were 65-67% of the 1960-73 averages. The sockeye harvest of 408,000 was about 83% of the average.

Chignik

The total Chignik harvest of 775,000 salmon represented 45% of the 1960-73 average catch. The small harvest was due to continuation of the weak pink salmon runs in the area. The pink run (248,000), low by historical standards, did exceed the forecast return by 50%. The 70,000 pink salmon caught represented 7% of the average even-year harvest since 1960.

Returns of sockeye and chum salmon were above forecast levels and provided harvests of 659,000 and 35,000 fish, respectively. The sockeye harvest was about average while the chum harvest was much reduced--18% of the 1960-73 average harvest. The coho harvest of 11,000 fish represents a recent year decrease but is slightly above the average catch since statehood.

Alaska Peninsula and Aleutian Islands

The total salmon harvest, all species, of 709,000 fish was far below average. The commercial salmon catch normally ranges between two and four million fish.

Pink salmon, generally producing one-half of the total harvest, contributed a meager 15% this season. Although sockeye catches were below average in both the north and south peninsula fisheries, the harvest of 453,000 salmon contributed 64% of the total harvest.

There was no active fishery in the Aleutians this season.

Bristol Bay

The Bristol Bay story is, again, an interesting one. With a forecast total return of five million sockeye, a predicted return below escapement requirements, no significant fishing for sockeye was anticipated. With the actual return of about 11 million fish, or 220% of the forecast level, a number of Bristol Bay systems did have an excess of fish beyond spawning requirements and commercial fishing was allowed. After initial openings on July 4

and 5, fishing was virtually continuous throughout the remainder of the season and a harvest of 1.4 million sockeye occurred. This catch still represents the second lowest harvest since inception of the fishery in the 1890's and follows back-to-back the lowest year of catch, 1973, when only 757,000 sockeye were taken.

The coho harvest of 37,000 fish was 111% of the average catch since statehood while the pink harvest of 904,000 fish was 81% of the average. Harvests of 45,000 king salmon and 275,000 chum salmon were both about 45% of the 1960-73 average.

Arctic-Yukon-Kuskokwim

The 1974 commercial salmon harvest of 2.4 million fish was the largest recorded, surpassing the previous high catch made in 1973 by about 800,000 fish. Record harvests were recorded for chum (1,855,000), coho (198,000), pink salmon (208,000), and sockeye (29,000). The king salmon harvest of 130,000 fish represents 91% of the 1960-73 average.

Chum salmon produced 77% of the A-Y-K harvest. On the Yukon River the catch of 877,000 chum exceeded the old record established in 1973 by 359,000 fish. A large run and greater effort were influencing factors. On the Kuskokwim River a harvest of 170,000 chum was made which was about 30,000 more than the previous 1973 record. Subsistence catch data indicates a catch exceeding 300,000 chum occurred--the largest since the 1940's and coincidental with the legalization of the sale of salmon roe from subsistence caught fish. In Norton Sound an above average harvest of 150,000 chum occurred with escapements also above average. In the Kotzebue fishery, the catch of 631,000 chums greatly exceed the previous record of 370,000 made in 1973. Escapements to the Kobuk and Noatak River systems appear to be at record levels, as well.

PRELIMINARY FORECASTS OF TOTAL SALMON RETURNS TO SOME MAJOR ALASKAN FISHERIES IN 1975

The Department's salmon management program includes a number of projects designed to provide pre-season forecasts of total salmon returns to some of the major salmon fisheries throughout the state. Areas and species on which intensified forecast research is presently being conducted were chosen on priority basis relative to economic importance, potential predictability of annual returns and compatibility with existing programs. The Department's forecasting program is being expanded as funding permits.

These intensified forecasting programs are generally designed to provide a more reliable forecasting basis than merely number of spawners in parent years. This may include more refined information on spawning distributions, survival to an intermediate life stage, population age compositions or some combinations of these factors. In addition to forecasts of total salmon returns to an area, information on the relative strength of returns to specific districts or systems obtained from these studies provides for more efficient management of these stocks.

Salmon stocks included in these intensified forecast studies have contributed from 50 percent to 70 percent of the total statewide salmon harvest in recent years.

Comparison of 1974 Forecasts with Actual Returns

Only a very cursory review of the accuracy of the 1974 salmon forecasts will be presented here. More thorough discussions of forecast accuracy and factors thought to be responsible for differences between pre-season forecasts and actual 1974 returns will be given in individual forecast reports in which final 1975 forecasts are made for specific salmon fisheries.

In Table 2, the 1974 pre-season forecasts of November 1973 are compared with actual 1974 returns. It should be noted that total returns, that is catch plus escapement (or in some cases escapement index), and forecasts of total returns are presented in the table. For the purpose of this report, the percentage forecast error is calculated by expressing the difference between forecast and actual return as a percent of the forecast rather than the return. This measure of error can then be directly applied to future forecasts prior to knowing actual returns to estimate the magnitude of variations which might occur between expected and actual returns.

TABLE 2. COMPARISON OF PRELIMINARY 1974 SALMON RETURNS WITH PRE-SEASON FORECASTS FOR SOME MAJOR ALASKAN SALMON FISHERIES [1/]

Number of Fish in Thousands

Area	Species	Pre-season Forecast [2/] Range	Pre-season Forecast [2/] Point	Preliminary Return	Forecast Error [3/] Number	Forecast Error [3/] Percent
Southern Southeastern	Pink	4,400 - 9,200	6,800	6,740	+ 60	+ 1
Northern Southeastern	Pink	7,400 - 11,200	9,300	2,000	+ 7,300	+ 78
Southeastern Subtotals	Pink	11,800 - 20,400	16,100	8,740	+ 7,360	+ 46
Prince William Sound	Pink	300 - 3,700	2,000	1,330	+ 670	+ 34
	Chum	140 - 450	290	280	+ 10	+ 3
Cook Inlet - Southern and Outer District	Pink	[4/]	340	100	+ 240	+ 71
Kodiak	Pink	1,900 - 5,300	2,900	4,640	- 1,740	- 60
Chignik	Sockeye	650 - 1,420	990	1,300	- 310	- 31
	Pink	[4/]	200	300	- 100	- 50
	Chum	[4/]	50	180	- 130	- 260
Bristol Bay	Sockeye	[4/]	5,000	11,300	- 6,300	- 126
Bristol Bay - Nushagak District	Pink	200 - 400	300	980	- 680	- 227

1/ Formal forecasts of total salmon returns are available only for those areas and species listed above.

2/ Pre-season forecasts of November, 1973.

3/ Forecast errors are computed from point forecasts. Percent errors are computed from forecasts.

4/ Forecast ranges not available.

While the percent forecast error used in Table 2 provides a convenient quantitative measure of forecast error, it does not necessarily provide a meaningful measure of the practical benefits or disbenefits of a particular pre-season forecast. For example, consider a salmon run which has in the past ranged from 2 to 20 million with an average run of say 10 million fish. Suppose furthermore that for a particular year a pre-season forecast of 1 million fish was made but that the return was actually twice as large or 2 million. This would indicate a mathematical error of 100 percent relative to the forecast (or 50 percent relative to the return). From a practical viewpoint, an extremely poor return of 1 million had been predicted with, in all likelihood, no expected harvest while the actual return of 2 million was still a very poor return with little or no harvest. In lieu of no formal forecast, an average return of say 10 million and a subsequent average harvest might have been expected. It is apparent that pre-season planning based on the 1 million forecast, in spite of the 100 percent error, would have been much preferred to planning based on a 10 million average return. Such factors must be taken into account when analyzing the practical value derived from a particular forecast.

The 1974 Southeast Alaska pink salmon return of 8.7 million only slightly exceeded half the predicted 16.1 million return and was substantially below the lower end of the forecast range of 11.8 - 20.4 million. This difference was due almost entirely to the difference between the forecast of 9.3 million and the actual return of 2.0 million pinks in northern Southeast Alaska. In southern Southeast Alaska the actual return of 6.7 million was only nominally different from the pre-season forecast of 6.8 million.

In Prince William Sound the pink salmon return of 1.3 million was well within the predicted range of 0.3 - 3.7 million and only 34 percent below the point forecast of 2.0 million. The chum return of 280,000 fish was only nominally different from the 290,000 forecast. This continued a history of above average forecast success for this area.

In the Southern and Outer districts of Cook Inlet, the preliminary pink salmon return of 100,000, while falling about 70 percent below the forecast of 340,000, substantiated the pre-season prediction of a below-average run to this portion of the Cook Inlet area.

The 1974 return of 4.6 million pink salmon to the Kodiak area exceeded the point forecast of 2.9 million by 60 percent while falling in the upper end of the predicted range of 1.9 - 5.3 million. The resulting commercial harvest of 2.6 million pink salmon was also at the upper end of the pre-season projected harvest range of 0 - 2.8 million.

In the Chignik area a sockeye salmon return of 1.3 million agreed substantially with the pre-season forecast of 1.0 million and was well within the forecast range of 650,000 to 1.4 million. The slightly stronger than expected return was due primarily to the early or Black Lake run of roughly 600,000 which exceeded the point prediction of 400,000 by some 200,000 sockeye. Pink and chum salmon returns to this area of 300,000 and 180,000 respectively, while exceeding the pre-season forecasts of 200,000 pinks and 150,000 chums, still resulted in substantially below-average catches of these species as had been indicated by pre-season forecasts.

In Bristol Bay the 1974 return of 11.3 million sockeye (including the estimated Japanese mothership harvest) substantially exceeded the pre-season forecast of 5.0 million. The commercial harvest of 1.4 million while significantly larger than the expected harvest of 200,000 was still far below harvest levels of the previous comparable years immediately preceeding the large cycle years for the Kvichak River. For comparison, commercial sockeye salmon harvests in Bristol Bay for the years, 1959, 1964 and 1969 (years preceeding the Kvichak peak cycle years of 1960, 1965 and 1970) were 4.6, 5.6 and 6.6 million respectively. Forecast studies had indicated this would probably occur due to the apparent poor relative production from the 1969 and 1970 parent year spawnings in the Kvichak system which normally would have been primary contributors to the 1974 return.

The pink salmon return of 980,000 to the Nushagak District of Bristol Bay in 1974 more than tripled the pre-season forecast of 300,000 as the result of an astonishing return of about 16 adults for each of the 60,000 parent spawners in 1972. For the prior even-year brood years 1958-70, the return per spawner averaged 3.2 and did not exceed 10. Abnormally large pink salmon returns were also experienced in several other districts of Bristol Bay.

Preliminary 1975 Forecasts of Total Returns to Some Major Systems

Forecasts of 1975 returns to major Alaskan salmon fisheries for which forecasts of total returns are available are summarized in Table 3. Point and range forecasts are given for both total returns and anticipated harvest levels for these runs. Special attention is drawn to the range forecasts for both total returns and anticipated harvests as these ranges reflect the element of uncertainty inherent in forecasting salmon runs. As indicated above, salmon runs discussed in this section generally contribute 50 to 70 percent of the State's total commercial salmon harvest.

Forecasts of pink salmon returns in 1975 are available for Southeastern Alaska, Prince William Sound, the Southern and Outer districts of Cook Inlet,

TABLE 3. PRELIMINARY FORECASTS OF TOTAL SALMON RETURNS TO SOME[1/] MAJOR ALASKAN FISHERIES IN 1975
(Number of fish in thousands)

Area	Species	Forecasted Total Return		Estimated Harvest	
		Range	Point	Range	Point
Southern Southeastern	Pink	0 - 4,300	2,000	0 - 300	0
Northern Southeastern	Pink	1,800 - 7,400	4,600	0 - 3,500	1,300
Southeastern Subtotals	Pink	1,800 - 11,700	6,600	0 - 3,800	1,300
Prince William Sound	Pink	1,300 - 4,900	3,100	0 - 3,400	1,600
	Chum	140 - 290	220	0 - 90	20
Cook Inlet - Southern and Outer Districts	Pink	250 - 990	620	0 - 740	370
Kodiak	Pink	2,100 - 4,400	3,000	1,100 - 3,600	2,100
South Side Alaska Peninsula	Pink	100 - 700	400[2/]	Negligible	
Chignik	Sockeye	760 - 1,480	1,090	110 - 920	490
	Pink	180 - 750	460[2/]	0 - 150	80[2/]
	Chum	250 - 450	350[2/]	50 - 100	75[2/]
Bristol Bay	Sockeye	8,400 - 17,400	12,900	600 - 4,300	2,400
Bristol Bay - Nushagak District	Pink	(Negligible return in odd years)		Negligible	
TOTALS			28,740		8,435

1/ Formal forecasts of total salmon returns are presently available only for those areas and species listed above.

2/ Because of the relatively small amount of data accumulated to date in some new forecast programs, numerical calculations were made only for the lower and upper ranges of the forecasts. The point estimates are merely midpoints of the ranges and are calculated for convenience of presentation.

Kodiak, South Side Alaska Peninsula and Chignik. Pink salmon returns forecasted for these areas in 1975 total 13.9 million with an indicated harvest of 5.2 million fish. The relatively low indicated harvest rate is the result of most of these runs remaining depressed below optimum levels thus requiring an unusually large proportion of returning runs to be allocated for spawning in an attempt to return the runs to higher, more productive levels. By comparison, these runs produced a harvest of approximately 8.6 million pinks in 1974.

The predicted 6.6 million pink salmon return to Southeastern Alaska in 1975 represents one of the poorer outlooks for major fisheries in the State. The estimated harvest of 1.3 million (the range estimate is 0 to 3.8 million) would be the smallest pink harvest since the developmental period of the fishery in the 1890's. For comparison, odd-year pink salmon catches since 1950 have ranged from 3.1 million (1967) to 22.2 million (1951). In southern Southeast Alaska the forecast of 2.0 million with a range of 0 to 4.3 million would, if substantially correct, preclude any significant harvest of pink salmon even at the upper end of the forecast range in view of escapement requirements of approximately 6 million fish. The forecast of 4.6 million pinks for northern Southeast Alaska indicates a possible harvest of about 1.3 million, however total escapement requirements are 4.0 million and the expected harvest depends heavily on returns to several districts exceeding district escapement goals as returns to other districts are expected to be substantially below escapement requirements.

For Prince William Sound a total return of 3.1 million pink salmon is forecast for 1975 with an associated harvest projection of 1.6 million. Probable lower and upper limits for the total returns are 1.3 and 4.9 million. A return at the upper end of the range could result in a harvest as large as 3.4 million while a return at the lower end of the range would allow for only a very limited fishery in view of a 1.5 million escapement goal. For comparison, since 1964 when pink salmon runs in this area were damaged by the Good Friday earthquake, pink salmon harvests have ranged from 57,000 (1972) to 7.3 million (1971). The chum salmon forecast of 140,000 to 290,000 for the Prince William Sound area indicates a below average harvest of less than 90,000 chums for the 1975 season.

In the Southern and Outer districts of Cook Inlet a 1975 pink salmon return of 620,000 is predicted (the range estimate is 250,000 to 990,000) with a corresponding harvest projection of 370,000 (the estimated harvest range is 0 to 740,000).

A total return of 3.0 million pink salmon is forecast for the Kodiak area with an associated range estimate of 2.1 to 4.4 million. An odd-year escape-

ment goal of 800,000 to 1.0 million indicates a probable harvest of 1.1 to 3.6 million pink salmon. Since 1960, pink salmon catches in the Kodiak fishery have ranged from 188,000 (1967) to 14.2 million (1962). The projected 1975 harvest remains below past average harvest levels.

An expected pink salmon return of 100,000 to 700,000 for the South Side Alaska Peninsula in 1975 indicates only a negligible harvest of pinks for this area. A return of this magnitude would only meet basic escapement requirements needed to rebuild these runs to more productive levels.

Forecast for 1975 returns of sockeye, pink and chum salmon are available for the Chignik area. Sockeye salmon are normally the most important species in this fishery. For 1975, the sockeye run is expected to be in the range of 760,000 to 1.5 million with a most probable return of about 1.1 million. This would indicate a most probable harvest of about 490,000 sockeye, however this could range from 110,000 to 920,000 depending on the magnitude of the actual total return. Roughly 40 percent of the predicted harvest is expected to be produced by the early run and occur prior to July 1 while the remaining 60 percent is expected from the late run after July 1. The 1975 pink salmon returns to the Chignik area are expected to remain weak, falling in the range of 180,000 to 750,000 and allowing for a harvest not exceeding 150,000 pinks. An expected chum return of 250,000 to 450,000 indicates the possibility of some recovery of this species. While the most probable resulting harvest is expected to be about 75,000 chum salmon, a return at the lower end of the forecast range could reduce the harvest to as low as 50,000 fish.

For Bristol Bay, a sockeye salmon return of 12.9 million is forecast for 1975. Variability in data used for forecasting returns indicates that the return might be as low as 8.4 million or as high as 17.4 million. Harvest projections corresponding to these forecasts of total returns are a point harvest estimate of 2.4 million and a range estimate of 0.6 to 4.3 million sockeye. While 1975 is a peak cycle year for the Kvichak River run which normally would be expected to provide a large contribution to the total Bristol Bay harvest, the forecast of total return to the Kvichak is only 4.5 to 9.2 million. The peak year escapement goal for the Kvichak system is 14.0 million sockeye, thus the Kvichak is expected to contribute no harvest except for a small number of fish which might be caught incidentally in other districts. The primary contributors to the expected 2.4 million sockeye harvest are the Nushagak and Egegik systems with 1.1 and 0.8 million fish respectively. The actual inshore harvest achieved in Bristol Bay will depend to some extent on the high seas harvest of Bristol Bay sockeye by the Japanese fishery.

Salmon runs for which forecasts of total returns have just been presented are expected to contribute an estimated 8.6 million salmon to the 1975 Alaska commercial harvest. By comparison, these runs contributed about 10 million in 1974 and 12 million in 1973.

Additional information on forecast techniques, relative strength of returns to specific districts or systems, potential problems anticipated for the 1975 season and other items of interest related to the above forecasts are presented in Appendix A.

PROJECTED TOTAL COMMERCIAL SALMON HARVEST FOR ALASKAN FISHERIES IN 1975

Pre-season forecasts of salmon runs and anticipated harvests for specific area fisheries are essential to the operational planning of persons directly involved with these fisheries. However, information on the expected total Alaska salmon production is also important to agencies, industries or persons involved in fisheries in many or all areas of the state such as industry suppliers, the transportation industry and the State government (for projection of state revenues). Consequently, the Department is continuing efforts to develop a basis for providing useful and accurate pre-season estimates of total state salmon production.

For salmon fisheries not discussed in the previous section, it is generally necessary to base pre-season estimates of harvest on recent harvest trends. Projections based on this method will generally reflect more variation from actual harvests as adjustments are not made for variations in brood stock abundance or annual survival rates.

Because of the strong evidence of abnormally high mortalities being induced in Alaska salmon stocks by the severe winters of 1970-71 and 1971-72, the trend of reduced salmon harvests experienced in 1973 and 1974 has been taken into account in projecting the statewide salmon harvest for 1975. As shown below, salmon spawned in 1970 and 1971 would normally be expected to be major contributors to the 1975 return.

Primary Brood Years Contributing to the 1975 Alaska Salmon Return

Species	Age of Returning Salmon in Years				
	2	3	4	5	6
Pink	1973				
Chum		1972	1971		
Coho		1972	1971		
Sockeye			1971	1970	1969
Chinook			1971	1970	1969

Note: The above age classes generally contribute in excess of 90 percent of adult salmon returns.

Pink salmon returns in 1975, while eminating from the 1973 brood year spawning, will in some areas reflect indirectly the poor survival of fish spawned in 1970. Pink salmon escapements in 1973 - returning from the 1971 brood year spawning - were substantially below optimum levels in some areas in spite of very restricted fisheries. Thus, while an apparent average to good fry survival occurred in some areas during the 1973-74 winter and spring, projected total 1975 pink salmon harvests will remain below pre-1973 average levels. Since the majority of Alaskan chum salmon mature as 4-year fish, the 1975 chum harvest will be primarily from 1971 spawning and can be expected to remain depressed to some extent. (While several areas, most notably in the Arctic-Yukon-Kuskokwim region, experienced unusually strong chum returns in 1974 from the 1970 brood year spawning, the statewide harvest of 4.4 million chums was still substantially below average.)

The majority of sockeye salmon returning in 1975 will be 4-year and 5-year fish from 1971 and 1970 brood year spawning respectively and, hence, the statewide sockeye harvest in 1975 is expected to remain depressed below past comparable years. This is to a great extent the result of the poor outlook for the peak year return to the Kvichak River system in Bristol Bay.

There is little direct information on the effect of the recent severe winters on coho and chinook salmon expected to return in 1975.

The projection for Alaska's 1975 commercial salmon harvest is 19.0 million salmon of all species. Projected harvests by statistical region and species are presented in Table 4. The projected 1975 harvest of 19.4 million is expected to produce approximately 1.1 million 48 lb. cases (or equivalent) and about 52 million pounds of fresh/frozen and cured salmon products. Estimates of casepack, fresh/frozen and cured products are based on the assumption that relative demands for these products in 1975 will be similar to that in 1973 and 1974. The percentage of Alaska's salmon processed as fresh/frozen and cured products has increased substantially in recent years.

In addition to the point projection of 19.0 million for the 1975 salmon harvest, a probable harvest range as also been provided to indicate the variability or projection error which might be expected. Deviations between preseason projections and actual harvests for the five years 1970-74 have averaged about 25 percent ignoring the direction of deviation. On this basis a probable harvest range of 14.2 to 23.7 million fish has been calculated for the 1975 season. Several factors, including record level returns of chum salmon to the Arctic-Yukon-Kuskokwim region in 1974, abnormally high production from some segments of the 1972 pink salmon spawning as reflected in 1974 returns to several areas and, quite simply, the historical production record of Alaska's

TABLE 4. PROJECTED[1/] TOTAL COMMERCIAL SALMON HARVESTS BY ALASKAN FISHERIES IN 1975.

Number of fish in thousands

Statistical Region	Species					Total
	Chinook	Sockeye	Coho	Pink	Chum	
Southeastern	300	620	1,080	1,300	1,520	4,820
Central	40	2,320	340	4,360	2,100	9,160
Western	160	2,660	140	80	1,940	4,980
Total Alaska	500	5,600	1,560	5,740	5,560	18,960
	Projected harvest range: 14,220 - 23,700					
Estimated number of 48-lb. cases in thousands[2/]	10	420	30	260	350	1,070
Estimated production of fresh/frozen and cured salmon products in 1000's of pounds	8,520	9,740	9,320	1,280	23,480	52,340

1/ The above estimates of 1975 salmon harvests were obtained by combining estimates of commercial harvests resulting from the forecasts of total returns to some of the major salmon fisheries (refer to Table 3) with projected harvests of the remaining fisheries based on recent harvest trends.

2/ Although the majority of salmon harvested commercially in Alaska are processed as canned products, a large proportion of the harvest of certain species is processed as fresh/frozen and cured products. The number of cases presented above are not adjusted to include salmon processed by means other than canning, consequently the fish per case ratio indicated in this table may not agree with the actual cannery conversion rate of fish per case. Cases other than 48-lb. cases are converted to an equivalent number of standard 48-lb. cases.

salmon since the early 1900's, would indicate that a harvest in the upper half of the range, 19.0 to 23.7 million, appears more likely in 1975 than a return in the lower half of the range. However, at least one factor favoring the lower end of the range, 14.2 to 19.0 million, would be that major age classes of chum, sockeye and chinook salmon expected to be important contributors to 1975 returns were exposed during spawning and early life stages to the severe 1970-71 and 1971-72 winters.

The Southeastern statistical region, that area of the state from Yakutat southward, is expected to produce about 4.8 million fish or about 26 percent of the total 1975 state harvest. The Central statistical region, including Prince William Sound, Cook Inlet, Kodiak, Chignik and the South Side Alaska Peninsula, is expected to contribute 9.2 million salmon or 48 percent to the statewide harvest. The remaining 26 percent or 5.0 million salmon are expected to be harvested in the Western region fisheries including those of the North Side Peninsula, Bristol Bay and Arctic-Yukon-Kuskokwim areas.

Pink and chum salmon are expected to contribute nearly 60 percent, in terms of numbers of fish, of the total state harvest in 1975 with each of the two species contributing about 5.7 million fish. The projected 5.6 million sockeye harvest would account for another 30 percent while coho and chinook would contribute the remaining 2.1 million or 10 percent.

CONCLUDING REMARKS

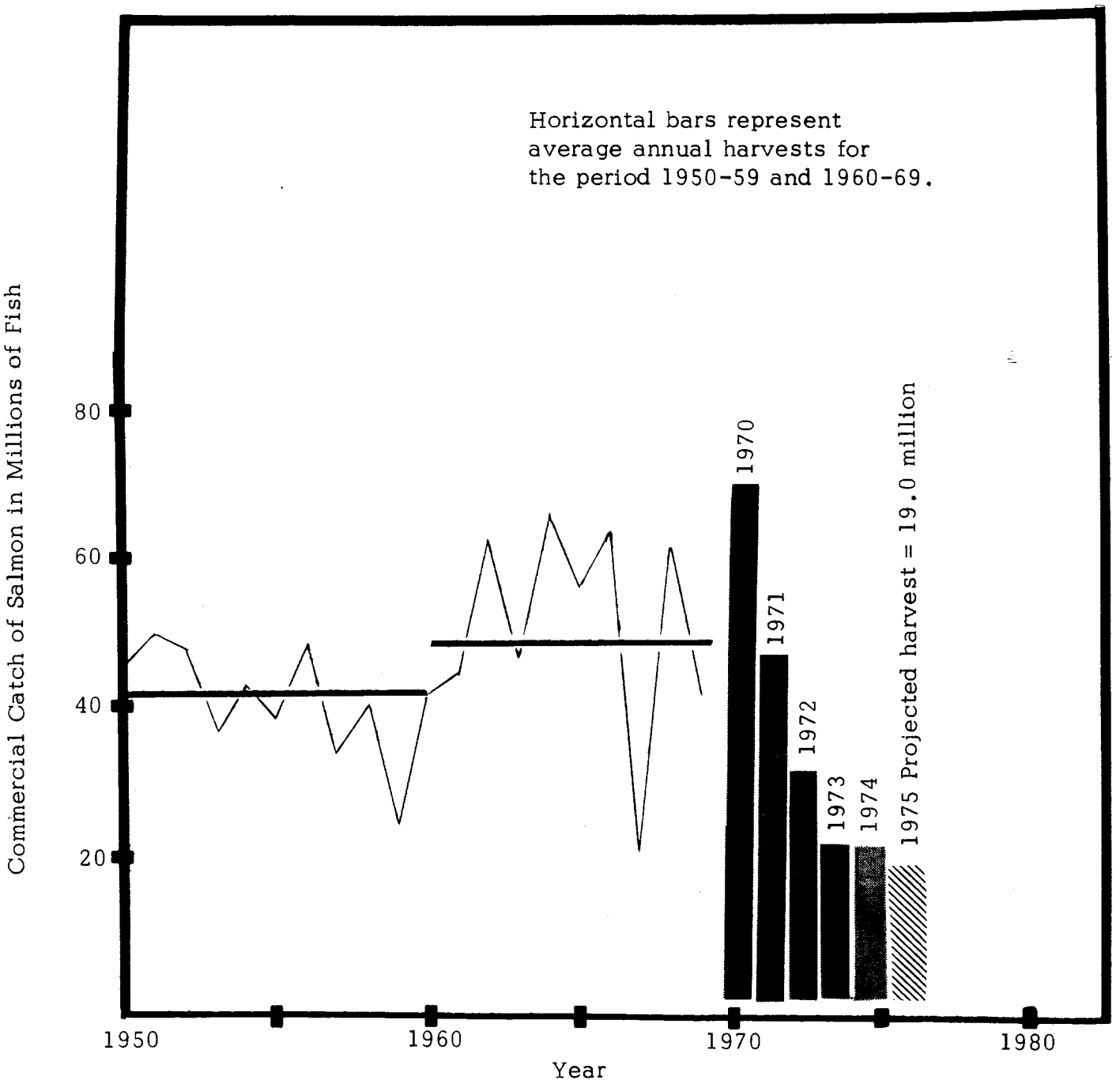
Annual Alaska commercial salmon harvests since 1950 are presented by statistical region and species in Appendix B with total annual harvests being shown graphically in Figure 2. The largest harvest since 1950 was 68 million in 1970 while harvests of 20.9 million in 1967 and approximately 20.7 million (based on preliminary data) in 1974 were the smallest. (Compilation of final 1974 harvest statistics are expected to result in a final 1974 harvest of 21 to 22 million fish.) Annual harvests averaged 41 million during the 1950's, 51 million during the 1960's and 38 million during the first five years of the 1970's. These figures include only domestic, inshore salmon catches and do not include Alaska salmon harvested by foreign fishing fleets on the high seas.

The upward trend reflected in Alaska's salmon harvests during the period 1960-71 was reversed in 1972 with a catch of 32.0 million and subsequent catches of 22.3 million in 1973 and 21-22 million in 1974. If the 1975 projection of 19.0 million is substantially correct, this would mark the third year since 1970 that catches have been less than 25 million. Annual harvests fell at or below the 25 million level during only one year in each of the previous decades, namely in 1959 and 1967.

Available information continues to indicate that the primary factor responsible for the present depressed state of Alaska's salmon runs was the unusually severe winters and springs of 1970-71 and 1971-72 during which juvenile salmon suffered above average mortalities. There is further evidence that in some areas of the state unusually high mortalities occurred in both freshwater and early marine life stages of young salmon. There have been no changes in Alaska's basic fisheries management policies or strategies which would have adversely affected salmon harvest or production levels on a statewide basis.

As in the past three years, the weakness in the 1975 projected harvest is due to the greatest extent to the poor pink and sockeye salmon harvests expected. If the projected pink salmon harvest of 5.7 million for 1975 actually occurs, it would be the smallest harvest of this species since 1905 when 3.4 million pinks were harvested. By comparison, the average annual pink salmon harvest for the 13-year period 1960-72 immediately prior to the recent poor years was 28 million fish or nearly 25 million more than the harvest projected for 1975. The projected harvest of 5.6 million sockeye for 1975, is expected to benefit little if any from the depressed peak cycle year return to the Kvichak River system in Bristol Bay. The Kvichak River run was a major contributor to the large statewide

FIGURE 2. ANNUAL COMMERCIAL HARVESTS OF ALASKAN SALMON, 1950-1974.



sockeye harvests of 28 million in 1970 and 30 million in 1965, the two previous year peak cycle years for this system.

As already indicated, recent reductions in the number of commercial salmon harvested annually in Alaska has been due to the greatest part to the reduction in pink salmon harvest. As shown in Figure 3, the average annual pink salmon harvest during the first five years of the 1970's, namely 1970-74, declined 40 percent below the harvest level of the 1960's; the coho salmon harvest declined 16 percent and sockeye 13 percent. During the 1970-74 period, average chinook harvests increased by 4 percent while chum harvests increased 22 percent, the latter being due primarily to increased harvests in the northern areas of the state.

Because recent reductions in salmon harvest have been due to a great extent to reductions in pink salmon harvests, the relative reduction in total pounds of salmon harvested and total value received by fishermen has not been as great as the relative reduction in numbers of fish. Pinks are normally both the smallest in average size and least valuable on a per pound basis of the five species of salmon. Thus as shown in Figure 4 while the average number of fish harvested annually declined from 51 million in the 1960's to 38 million during 1970-74, a reduction of 25 percent, the average number of pounds harvested annually declined about 17 percent from 254 million to 212 million pounds. If annual dollar values received by fishermen for commercially harvested salmon are forward discounted to 1974, assuming 5 percent per annum inflation through 1970 with an additional 2 percent per annum increase for each year thereafter, the average annual value for 1970-74 declined by about 9 percent from the level of 1960-69.

While the 1975 harvest of salmon will continue to be depressed at about the same level of 1973-74, there are indications that the declining trend in harvests may be at least leveling off, albeit at a low level. Salmon harvests for 1973 and 1974 and the projected 1975 harvest are all very similar, falling in the range of 20 to 23 million. Historically since 1900, Alaska's salmon runs have demonstrated an ability to produce at or above the 20 million mark in spite of the occurrence of conditions unfavorable to salmon production. There are, furthermore, some indications that at least an initial recovery of Alaska's salmon runs is starting to occur. Chum salmon returns to the Arctic-Yukon-Kuskokwim region in 1974 were at record levels. The 1974 Bristol Bay sockeye run was more than twice as strong as predicted and escapements realized were near or above estimated optimum levels for all major systems. In a number of pink salmon systems throughout the state, the 1974 returns indicated abnormally high production from the 1974 parent year spawning. These indications, combined with the fact that the basic productive potential of Alaska's salmon does not appear to have impaired in recent years, would indicate that given at least average survival conditions, the State's salmon runs can again recover as they did in the 1960's and produce much higher levels of harvest than at present.

FIGURE 3. PERCENT CHANGES IN AVERAGE ALASKA SALMON HARVEST BY SPECIES FROM THE PERIOD 1960-69 TO THE PERIOD 1970-74.

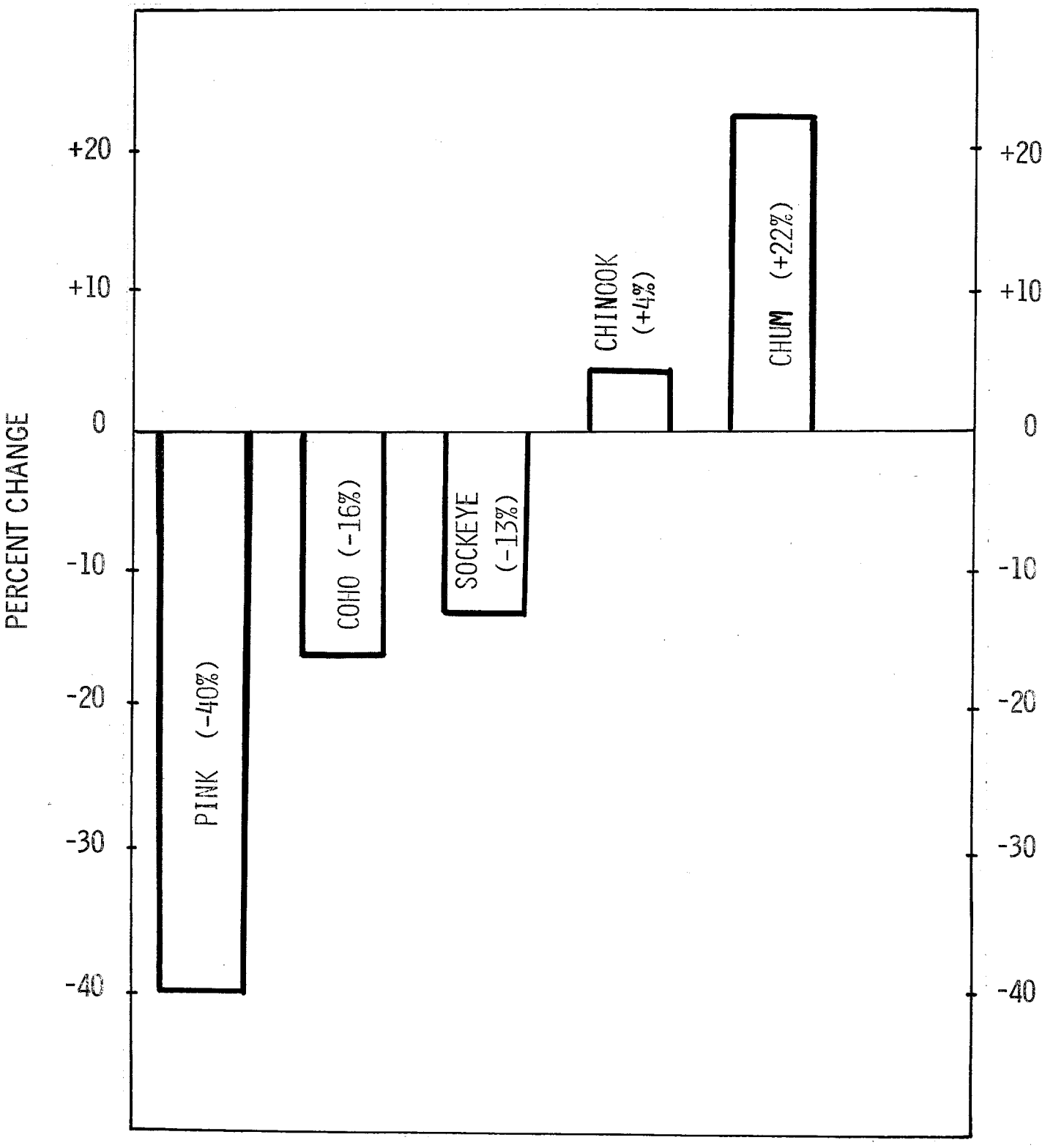
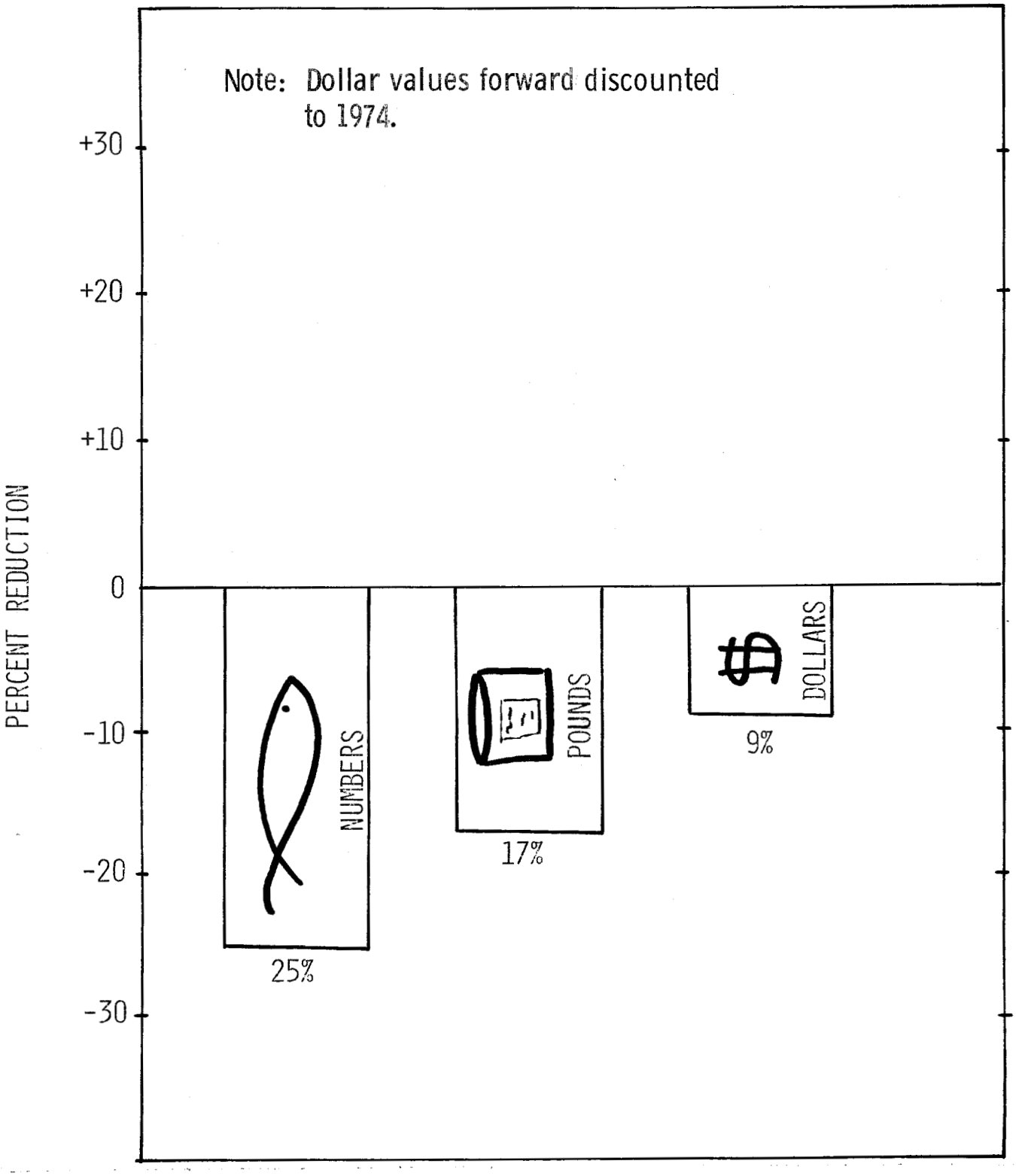


FIGURE 4. PERCENT REDUCTION IN NUMBERS OF FISH, POUNDS OF FISH AND DOLLAR VALUE TO FISHERMEN FOR ALASKAN SALMON FISHERIES FROM THE PERIOD 1960-69 TO THE PERIOD 1970-74.



In summary, the Department wishes to emphasize that the estimates of salmon harvests for 1975 presented above are dependent on 1975 salmon returns being of the magnitudes anticipated. Returns weaker than forecasted may require additional restriction of harvests to insure desired escapement goals while returns larger than forecasted may result in relaxation of regulations to insure maximum allowable harvest.

APPENDIX A. PRELIMINARY FORECASTS, FORECAST TECHNIQUES AND DISCUSSION OF ANTICIPATED 1975 SEASON FOR MAJOR SALMON FISHERIES FOR WHICH FORECASTS OF TOTAL RETURNS ARE AVAILABLE.

FORECAST AREA: Southeastern Alaska

SPECIES: Pink Salmon

PRELIMINARY FORECAST OF 1975 TOTAL RETURN:

Southern Southeastern

Point Estimate = 2.0 million

Range Estimate = 0 - 4.3 million

Northern Southeastern

Point Estimate = 4.6 million

Range Estimate = 1.8 - 7.4 million

Total Southeastern

Point Estimate = 6.6 million

Range Estimate = 1.8 - 11.7 million

FORECAST METHODS:

Total returns referred to in this forecast are more precisely indices of total returns as they represent the sum of commercial catches and escapement indices rather than the sum of catches and total escapement estimates.

Methods used in forecasting the 1975 Southeastern pink salmon returns are basically similar to those used in forecasting the 1974 returns in that relationships between pre-emergent fry abundance, estuarine conditions and subsequent adult returns are employed. However some changes were made in the analyses to deal with problems peculiar to the northern and southern segments, specifically 1) very low pre-emergent fry indices in southern Southeastern and 2) 1974 returns to northern Southeastern much lower than forecast. Separate forecasts for the two segments have been prepared since 1967 because of recognized differences in migration routes and abundance trends between pink salmon stocks from the two areas.

The 1975 forecast for southern Southeastern is based on the relationship between the pre-emergent fry index and adult return. A simple regression with no weighting of the fry indices was used because differences in the fry index alone seem to account for most of the variation between years in pink salmon returns to the area.

The fry index associated with the 1975 adult return to the southern area is the lowest we have encountered in nine years of sampling and adherence to a strict linear relationship would result in a predicted return slightly less than zero. Instead we have projected a line from the previous low returns of 1967 and 1969 through the origin (zero fry index and zero return) thereby using a graphical spline analysis approach as an approximation for a curvilinear relationship. The resulting point estimate of the 1975 return is 2 million fish, slightly below the 2.2 million return in 1967 which was associated with a fry index of 73.4. The upper range of the forecast was based on the linear regression. To evaluate the possible effect of 1974 estuarine conditions on the 1975 return, a multiple regression of fry index, Ketchikan sea surface temperature and pink salmon returns was calculated. That method indicated even lower point and upper range estimates than the linear regression analysis based only on fry indices.

The 1975 northern Southeastern forecast is based on a multiple regression of weighted pre-emergent fry values, air temperature data and adult returns. The raw district fry indices have been weighted to compensate for annual variation in spawner distribution within each district. A second weighting factor was applied to adjust for differences in the total spawning riffle area between districts.

Forecast methods for northern Southeastern were developed following a detailed review and analysis of the data and past forecast procedures in light of the 1974 forecast. The total return in 1974 amounted to only about 2 million fish, far below the lower range of the forecast (7.4 million). The productive capacity of Districts 10 and 11 may have been over-estimated somewhat in the 1974 forecast, however, a primary source of error appears to have been exceptionally poor marine survival. Only about one fish returned per index spawner in the parent year although the pre-emergent sampling indicated good fry production from the spawning grounds of several districts.

The Juneau and Sitka sea water temperatures used in the 1974 forecast did not prove useful as indicators of estuarine conditions and fry survival throughout northern Southeastern. In the 1975 forecast, mean air temperature from seven stations throughout northern Southeastern for the period April through August were chosen as an indicator of estuarine condition. Air temperatures were utilized in place of sea water temperatures because more recording stations were available and because sea surface and air temperatures were found to be closely correlated at several stations. It should be stressed that basic relationship between sea water temperature and fry survival may very well be indirect or coincidental and additional review of this problem is anticipated as part of Southeastern Pink Salmon Research project.

DISCUSSION OF 1975 FORECAST:

Southern Southeastern

The 1975 predicted return of 2.0 million pink salmon to southern Southeastern is expected to be comparable to the extremely weak return of 1967. No harvestable surplus is anticipated unless the return exceeds the point estimate and falls in the upper end of the forecast range of 0-4.3 million. In this case Districts 3, 5 and 7 and especially the late run systems, might produce a harvestable surplus of about 300,000 pink salmon. Returns to early and middle run streams expected to be critically weak.

Northern Southeastern

Based on the point forecast for the 1975 return to the northern area of 4.6 million, the harvest is expected to be near 1.3 million pink salmon. The probable harvest range would be 0 to 3.5 million fish. As in the south, the early and middle run segments are expected to be weak and nearly all of the harvest is expected to result from late run streams on the outside coasts of Chichagof, Baranof and Kuiu islands.

Prepared by: Alan Kingsbury
Fisheries Research Biologist
Juneau

Paul Larson
Fisheries Research Biologist
Ketchikan

FORECAST AREA: Prince William Sound

SPECIES: Pink Salmon

PRELIMINARY FORECAST OF 1975 TOTAL RETURN:

Point Estimate = 3.1 million

Range Estimate = 1.3 - 4.9 million

FORECAST METHODS:

Forecasts for Prince William Sound pink salmon are based on indices of pre-emergent alevins or fry and subsequent adult returns. The data is analyzed using a linear regression to develop point and range predictions of subsequent adult returns.

DISCUSSION OF 1975 FORECAST:

The 1975 pink salmon return will be from the 1973 brood year spawning. The parent escapement in 1973 was 1,230,000. The subsequent pre-emergent alevin index of 150 alevins per square meter indicates an expected adult pink salmon return of 3.1 million in 1975. Variability between past hindcasts and actual returns indicates a probable range of 1.3 - 4.9 million for the 1975 return.

If the 1975 return comes in close to the point estimate of 3.1 million then the fishery can expect a harvest of about 1.6 million thus leaving the desired 1.5 million for escapement. The probable harvest range is 0 - 3.4 million pinks. Most of the harvest should be from stocks that are destined for streams in the Eastern District.

SPECIES: Chum Salmon

PRELIMINARY FORECAST OF 1975 TOTAL RETURN:

Point Estimate = 215,000

Range Estimate = 137,000 - 293,000

FORECAST METHOD:

The method used for forecasting annual returns of chum salmon are the same as used for pink salmon with the following two exceptions. They are (1) the set of index streams is different from that used for pinks and (2) the forecast is based primarily on 4 year old fish. While chum salmon mature as 3, 4, 5 or 6 year old fish, returns in a given year have generally consisted of about 80% four year olds.

DISCUSSION OF 1975 FORECAST:

The alevin index of 17 is the lowest recorded since 1960. The point estimate of 215,000 may allow an incidental commercial harvest of 15,000 as the minimum escapement goal for the Sound 200,000. It is anticipated that the return will tend toward the lower range of the forecast because of the late, cold springs of 1972. This cold spring could have incurred higher than usual mortalities on fry entering the estuarine environment.

Prepared by: Michael L. McCurdy
Fisheries Research Biologist
Cordova

FORECAST AREA: Cook Inlet - Southern and Outer districts only

SPECIES: Pink Salmon

PRELIMINARY FORECAST OF 1975 TOTAL RETURN:

Point Estimate = 620,000

Range Estimate = 251-986,000

FORECAST METHODS:

The 1975 pink salmon forecast for the Southern and Outer districts of Cook Inlet was derived from the relationship between alevin density and subsequent return. Indices of alevin abundance from nine important spawning streams are obtained in the spring prior to pink fry emergence. The densities from each stream are weighted by mean escapement for that stream. The resultant individual stream indices are combined to derive a weighted alevin index for the two districts as a whole. This index is correlated with subsequent return and the regression line computed.

DISCUSSION OF 1975 FORECAST:

The 1973 total escapement of 111,000 was the third poorest on record since the earthquake of March 1964. However, the weighted alevin index from the 1973 brood year spawning was the third greatest of these years indicating an apparent good stream survival for the winter of 1973-74. The resulting point forecast for 1975 is 620,000 with a probable range of 251-986,000.

A conservative approach is appropriate for the 1975 season dictated by an overall escapement goal of 200-300 thousand pink salmon. Restricted or possibly no seine fishery should be expected from, and including, Port Graham to Rocky Bay with the exception of Windy Bay. Very limited fishing should be expected for the remainder of the Outer District, including Port Dick. The primary producer should be that portion of the Southern District from Seldovia Bay northeast to Chugachik Island and Windy Bay in the Outer District. The total harvest of pink salmon for the Southern and Outer districts is expected to fall in the range of 50-700,000 fish.

Prepared by: Charles Hurd
Fisheries Research Biologist
Homer

FORECAST AREA: Kodiak

SPECIES: Pink Salmon

PRELIMINARY FORECAST OF 1975 TOTAL RETURN:

Point Estimate = 3.0 million

Range Estimate = 2.1 - 4.4 million

FORECAST METHODS:

A forecast of the 1975 pink salmon return to the Kodiak area was developed using the relationship between alevin densities and subsequent adult returns. All indexing data collected since 1963 were used to establish this relationship. Emphasis was given to those methods of analysis which provided a total return range of the greatest magnitude within the limits of the available data. This was done to support qualitative indications that the actual return may slightly exceed the forecasted return. Preliminary findings by the Fisheries Research Institute during their 1975 estuarine tow netting studies indicate that estuarine survival was favorably similar to those conditions which brought back the slightly better than expected 1974 return. Their data tends to indicate a return in the upper end of the ADF&G forecast range.

DISCUSSION OF 1975 FORECAST:

Pre-emergent sampling indicated fair to good overwinter survival from a brood year escapement which was 37% below the average odd-year escapement. The 23 index streams sampled yielded an index of 6.58 fry per tenth square meter; a 50% drop from the average odd-year index of 13.17 and one which is similar, albeit slightly better, than the 5.76 fry per tenth square meter index which brought back the all time low return of 680,000 in 1967.

Indications are that a total of 2.1 to 4.4 million pink salmon will return to the Kodiak area in 1975. Since the spawner escapement goal for odd-year returns is 0.8 to 1.0 million pinks, a limited harvest ranging from 1.1 to 3.6 million pinks would be expected, depending of course upon the magnitude and distribution of the actual return.

A break-down by major catch associated districts as to strengths and weaknesses of the expected return is indicated below:

(1) Afognak District: District alevin density 58% below odd-year average; survival fair from a low brood year escapement. Return to be spotty, with Perenosa River being the major producer. Most systems remain predominately even-year producers.

(2) Westside District: District alevin density 48% below odd-year average survival good from a fair brood year escapement. Return should be well distributed, similar to brood year. Uyak, Uganik and Terror River will be the strongest producers. This district should be the major contributor to the 1975 return.

(3) Alitak District: District alevin density 58% below odd-year average; survival good from a fair brood year escapement. Return should be slightly less than average for this cycle. Deadman and Humpy rivers remain the major producers, while Dog Salmon remains depressed as a major contributor.

(4) General District: District alein density 61% below odd-year average; survival fair from a very poor brood year escapement. Return should be below normal with distribution spotty. North-end systems should be major contributors to district return.

Prepared by: Larry Malloy
Fishery Biologist
Kodiak

FORECAST AREA: South Side Alaska Peninsula

SPECIES: Pink Salmon

PRELIMINARY FORECAST OF 1975 TOTAL RETURN:

Point Estimate: Because of the relatively small amount of data accumulated to date in this new forecast project, numerical calculations were made only for the lower and upper ranges of the forecast.

Range Estimate: 100,000 - 700,000

FORECAST METHODS:

The South Side Alaska Peninsula pink salmon forecast project is relatively new with the first substantial pre-emergent fry density data being collected in 1970. When an adequate series of data has been collected, forecasts will be calculated from the relationship between pre-emergent fry densities and subsequent adult returns. Because of the very limited amount of pre-emergent fry data presently available, a forecast range for the 1975 return has been developed on the basis of both fry data and spawner-return data.

DISCUSSION OF 1975 FORECAST:

The south side of the Alaska Peninsula area can again expect a poor pink salmon return in 1975. The run will be weak for all districts with the possibility of good returns to a few systems in the Southeastern district. The series of pre-emergent fry sampling densities recorded in the spring of 1974 are the lowest series yet recorded for the Peninsula area, with the exception of those densities calculated from sampling in 1973. The 1973 data correctly indicated the low return for 1974 and pointed out one of the only potential bright spots for the 1974 season, Settlement Point.

The pre-emergent fry sampling data combined with extremely low escapements throughout the area point to a very low return in 1975. The one factor which could alter this gloomy forecast to some degree was the weather. The stream temperatures during the sampling period were warm and the mild and sunny spring weather continued into the summer possibly accomodating good to excellent survival for those fry which did successfully emerge.

The lack of continuity of data for the Alaska Peninsula pink salmon pre-emergent fry sampling program does not, as yet, permit the calculations of a reliable numerical forecast from pre-emergent densities. However, using a twelve year average return/spawner ratio of 2.26 and a 1973 south side escapement of 86,000 pink salmon an estimate of 194,000 pink salmon can be calculated. Considering that the 1972 escapement of 82,000 brought back approximately 358,000, a return/spawner ratio of 4.37, and had similar sampling densities a reasonable mid-point might be 376,000 pink salmon for 1975.

Another way of looking at the problem, if a very good return/spawner ratio of 10.0 is used with the 1973 escapement the subsequent calculated return of 860,000 is still just slightly more than an adequate escapement. In 1969 when the south side received an unprecedented return of 3.3 million from an escapement of 0.4 million, the return/spawner ratio was still only 7.66. If this ratio, the highest recorded in 13 years, was used the total run would only be 659,000 pinks. On the other hand, if the lowest recorded return/spawner ratio of 0.15 for 1970-1972 is used a low return of 13,000 would result. It appears, therefore, that a probable range for the 1975 return would be 100-700,000 pink salmon.

When this information along with the pre-emergent data is considered, it is hard to foresee the 1975 pink run providing an adequate escapement let along supporting a fishery.

Prepared by: Phillip Rigby
Ass't. Area Management Biologist
Chignik Area

FORECAST AREA: Chignik

SPECIES: Sockeye Salmon

PRELIMINARY FORECAST OF 1975 TOTAL RETURN:

Early (Black Lake) Run

Point Estimate = 600,000

Range Estimate = 450,000 - 700,000

Late (Chignik Lake) Run

Point Estimate = 490,000

Range Estimate = 310,000 - 780,000

Total Chignik System

Point Estimate = 1,090,000

Range Estimate = 760,000 - 1,480,000

FORECAST METHODS:

Early Run

The forecast for the early or Black Lake run is calculated as the number of sockeye returning to the system prior to July 1. Black Lake fish continue to enter Chignik River well into July, and generally, fish bound for Chignik Lake enter the system during the latter part of June. The assumption is made that the number of Black Lake fish entering after July 1 is approximately equal to the number of Chignik Lake fish entering prior to July 1.

The four major age groups in order of importance are those of age 1.3, 2.3, 1.2, and 2.2. The order of importance may be different during certain years, for example there were more 2.2's than 1.2's in 1974. Seven minor age classes are represented by such small numbers that they are not considered in the forecast. During the past ten years, .3 ocean fish have constituted about 90 percent of the total early run. The magnitude of their return, during most of the past years, has been closely related to the

number of .2 ocean fish returning in the year previous and this provides the basis for forecasting the return of .3 ocean fish. Age data obtained from scale samples collected at Chignik from 1954 to present is used. Age data is also obtained from otolith samples collected on the spawning grounds.

It is felt that age data collected from the spawning grounds during the 1974 season is more valid than the data from Chignik Lagoon. The scale samples showed a very significantly larger number of 2.2 fish than determined from spawning ground samples. Many of the 2.2 scales closely resembled Chignik Lake scale patterns. Both runs appeared to be earlier than normal, therefore the scale data probably contained a large number of Chignik Lake fish. A regression analysis of .2 ocean fish to .3 ocean fish the following year, using 1974 spawning ground data, shows a 1975 return of 539,000 .3 ocean fish. The ten-year average of .2 ocean fish is 62,000. Assuming an average return of this age group, a return of approximately 601,000 fish can be expected prior to July 1.

The parent year (1970) escapement of 536,000 was considered very good. However, this escapement was followed by two extremely severe winters and springs. Tow netting by FRI in 1971 indicated mediocre numbers of fry in Black Lake. Consequently, it is felt that the return per spawner from the 1970 escapements will not be much more than 1 to 1.

The size of the .2 ocean fish in 1974 was larger than normal. Consequently, it is possible that a larger proportion than normal offspring from the 1970 parent escapement may return as .2 ocean.

With the above considerations in mind, the chances of the 1975 return exceeding 600,000 are probably less than the chances of going under 600,000.

Late Run

Forecast for returns of sockeye to Chignik Lake based on the above methods have not been accurate. Until a more reliable technique is developed, average return per spawner applied to the parent escapement will be used. The parent year escapement, in 1969 (the majority of Chignik Lake sockeye are six year-old fish) was 132,000. The return per spawner from escapements between 100,000 and 200,000 during the previous ten years was 3.7, consequently, a return of 488,000 could be expected in

1975. The range, determined from the lowest (2.3) and highest (5.9) return per spawner from 100,000 - 200,000 escapements during the past ten years, would be 307,000 to 779,000.

The winter of 1969-70 was very mild but severe flooding occurred during the fall and has been blamed for the poor pink and chum returns in 1971 and 1973. However, most of the 1969 Chignik Lake red escapement were beach spawners and therefore were not as vulnerable to scouring. It is not known what effect the cold lake temperatures during the winters and springs of 1970-71 and 1971-72 had on the fry.

DISCUSSION OF 1975 FORECAST:

Early Run

The escapement goal for the early or Black Lake run is 350,000 - 400,000. The forecast of 450,000 - 700,000 indicates a harvest of 50,000 to 350,000 can be anticipated prior to July 1 in 1975. The point estimate of harvest for the early run is 200,000.

Late Run

The escapement goal for the late or Chignik Lake run is 200,000 - 250,000. This indicates a harvest after July 1 of 60,000 to 570,000 in view of the forecast range of 310,000 - 780,000. The point estimate of harvest for the late run is 320,000.

Total anticipated harvest from both runs combined is 110,000 to 920,000 with a point estimate of roughly 520,000 sockeye.

Prepared by: Arnold R. Shaul
Area Management Biologist
Chignik Area

FORECAST AREA: Chignik

SPECIES: Pink Salmon

PRELIMINARY FORECAST OF 1975 TOTAL RETURN:

Point Estimate: Because of the relatively small amount of data accumulated to date in this new forecast project, numerical calculations were made only for the lower and upper ranges of the forecast.

Range Estimate: 180,000 - 750,000

FORECAST METHODS:

The lack of continuity in the limited pre-emergent fry sampling data for Chignik area pink salmon prevents a forecast based on formal regression analysis. It is possible, though, using other factors including historical production data, weather conditions, and pre-emergent densities to evolve a general forecast which may serve as a guideline for those involved in the Chignik area pink salmon fishery.

DISCUSSION OF 1975 FORECAST:

The pink salmon pre-emergent fry densities recorded from sampling during the spring of 1974 were generally low with the exception of three streams. The apparent factors primarily responsible for these low densities were in addition to poor escapements, freezing and scouring. Both the flooding in the fall of 1973 and the ice scouring during the spring breakup appear to be responsible for the total absence of eggs, fry, or shells in some areas which had good spawning concentrations. Course changes, piles of debris, and testimony from local residents substantiate this conclusion. Mortality from freezing seemed especially severe only in two systems, Portage and Cape Kumliun.

The three streams which showed fair to good survival through the 1973-1974 winter, Foot Bay, Cape Kumliun and Agripina, have not been sampled previously. Hence, it is difficult to relate these data with years previous. Although survival in the primary producing streams appears to have been poor, and escapements in 1973 were poor, these higher densities indicate that fry production in

scattered streams throughout the area was better than expected.

The weather during the sampling period in early April 1974 was mild, and the stream temperatures were warm. The sunny, warm weather continued through most of the summer potentially promoting good smolt growth and survival. The pink salmon smolt sampled by the Fisheries Research Institute in the bays around Kodiak Island were exceptionally large. Since weather conditions were good throughout the Westward Region this summer, this information may indicate good growth of pink smolt along the south side of the Alaska Peninsula as well.

In the spring of 1973 many streams were not sampled because escapements were too poor and distribution on the spawning grounds was too sparse to make sampling feasible. The densities in these streams could be assumed to be essentially zero. Two of these streams, Ivanoff River and Humpback River, had return per spawner ratios in 1974 of 2.6 and 17.1 respectively. Since the densities in 1974 were somewhat higher than those in 1973 and assuming that the return per spawner ratios were similar to those of 1972-1974, a run with a small harvestable surplus could result in 1975. This thinking is highly speculative. However, it does point out the possibility that some streams could, even with poor sampling densities and escapements, produce fair returns.

Information on probable 1975 returns by district is given below:

District	Forecast Range	Comments
Perryville	30,000 - 210,000	Will probably not produce more than an adequate escapement, although the possibility of a restricted fishery exists.
Western	60,000 - 250,000	Same as the above except that Ivan River will produce a poor return while the Kuiukta Bay systems, although returns are expected to be spotty, may produce a small harvestable surplus.
Eastern	60,000 - 270,000	Many systems will not even receive adequate escapements. A few systems may produce a harvestable surplus.

District	Forecast Range	Comments
Total area	180,000 - 750,000	Odd-year escapement goal: 550,000 to 600,000 pink salmon.

Prepared by: Phillip W. Rigby
Ass't. Area Management Biologist
Chignik Area

FORECAST AREA: Chignik

SPECIES: Chum Salmon

PRELIMINARY FORECAST OF 1975 RETURN:

Point Estimate: Because of the relatively small amount of data accumulated to date in this new forecast project, numerical calculations were made only for the lower and upper ranges of the forecast.

Range Estimate: 250,000 - 450,000

FORECAST METHODS:

Forecasts of chum salmon returns to the Chignik area are based on historical spawner-return data, the magnitude of parent year spawning populations and the relative survival of pink salmon from similar brood years.

The chum salmon of the Chignik area average 85% age class 0.3, this percentage varying to some degree with the strength of the runs from year to year. For the purposes of forecasting, this age composition is assumed to remain relatively constant.

DISCUSSION OF 1975 FORECAST:

In 1971, the primary parent year for the 1975 return, the Chignik area had the largest recorded chum escapement in the 15-year period since 1960 - 400,000 chum salmon. All three major districts, the Perryville, Western and Eastern, had record chum escapements, 25.5, 143.8 and 223.8 thousand respectively. Although this data looks promising for 1975 the winter of 1971-72 was one of the two most severe in recent history. This factor will then alter a very optimistic forecast downward.

Comparing changes in pink salmon return per spawner (R/S) ratios can give some insight into the survival of chum salmon spawning the same season. The pinks are subjected to similar environmental hardships during development in the gravel as the chums, but their survival success can be assessed when they return two years earlier than the chums. The R/S ratio for pink salmon spawning in 1970 and returning in 1972 for the Chignik area was a very low 0.22. The area pink R/S ratio for 1971-73 was 0.57. Although still considerably less than a one to one ratio,

it does indicate better survival during the winter and spring of 1971-72 than during the winter of 1970-71.

Assuming that there is a direct relationship between the survival of pink and chum salmon spawned the same season, the chum R/S ratio for 1971-75 can be expected to be higher than the 0.86 for 1970-74. Incomplete data from pink salmon pre-emergent fry sampling also indicating higher densities of chum fry during the spring of 1972 than in 1971 substantiates this supposition.

After considering past escapement levels, return per spawner relationships, and pre-emergent densities a chum catch of 50,000 to 100,000 may be harvested in certain bays and taken incidentally to the sockeye salmon fishery.

The intermixing of pink and chum salmon in some fishing areas makes separate management of these species difficult in some years. Thus, achievement of the above indicated escapement goals and harvest levels in 1975 will depend not only on the magnitude and distribution of chum salmon returns but also on the magnitude and distribution of pink salmon returns.

Again, a factor that should be emphasized is the severe weather during the winter and especially the spring of 1971-72. If for some reason estuarine mortality was higher on the chum smolt during the spring of 1972 than during the previous spring a return less than predicted will result.

Prepared by: Phillip Rigby
Ass't. Area Management Biologist
Chignik Area

FORECAST AREA: Bristol Bay

SPECIES: Sockeye Salmon

PRELIMINARY FORECAST OF 1975 TOTAL RETURN:

Point Estimate = 12.9 million

Range Estimate = 8.4 million - 17.4 million

FORECAST METHODS:

Most Bristol Bay sockeye mature four to six years from the time of spawning. The run in 1975 will, therefore, be the progeny of the escapements in 1969, 1970 and 1971. Forecasts Bristol Bay sockeye by Alaska Department of Fish and Game are generally based on one or more of the following methods:

(1) Escapement-return relationships, based on historical data, provide estimates of total production from each brood year escapement. Average marine maturity schedules are then applied to determine the anticipated numbers of adult salmon returning each year.

(2) On the Kvichak, Naknek and Ugashik rivers, numbers of smolt migrating to the ocean are enumerated annually. The return of adult salmon each year is then estimated on the basis of past survival data and average marine maturity schedules.

(3) For all systems, relationships have been developed between the numbers of adult fish returning in a particular year and the number of adult fish from the same age group of smolt and parent escapement that will return the following year.

The total Bristol Bay forecast is the sum of the forecasts of individual river systems, each based on one or more of the above methods.

Evaluation of smolt production from the escapements that will produce the 1975 run indicates that for the Kvichak, Naknek and Ugashik systems, the smolt per spawner was good in 1969 but far below average in 1970 and 1971. Returns of adult fish in 1973 and 1974 from the 1969 escapement indicate that despite good smolt production, survival in the estuary and on the high seas

was abnormally low. Returns in 1974 of 4-year-old fish from the 1970 peak year escapement was well below average, confirming the poor production from that brood year. Although 1975 would normally be a peak year, poor production from the 1970 escapement will probably result in a much lower than average return of 5-year-old fish in 1975. Reasons for the poor production and survival are probably temperature dependant. The spring seasons of 1971 and 1972 were the coldest recorded in Bristol Bay since 1951. This was compounded by low ocean bottom water temperatures in the eastern Bering Sea which the International Pacific Halibut Commission found to be lower than any year since 1965.

DISCUSSION OF 1975 FORECAST:

The 1975 forecast is for a run of 12.9 million sockeye (with a range of 8.4 to 17.4 million fish) of which 70% are 2-ocean and 30% are 3-ocean fish. The return of 2-ocean fish is expected to be predominantly 5-year-old fish from the Kvichak River.

Escapement requirements for Bristol Bay in 1975 are 17.5 million fish. The escapement goal for the Kvichak River for this peak year is 14 million leaving a 3.5 million escapement goal for the other systems combined. The forecast return to the Kvichak is 6.8 million fish (range - 4.5 to 9.2 million). As a result, no harvest is anticipated in the Kvichak section in 1975.

Returns to the other systems, except for Ugashik, may permit some harvest. Point estimates of forecast harvests for 1975 in descending order of magnitude are: Nushagak - 1,080,000, Egegik - 800,000, Naknek and Branch rivers - 467,000, Togiak - 78,000. The total forecast harvest of 2.4 million fish (range - 0.6 to 4.3 million) takes into account an estimated 1975 Japanese high seas harvest of 0.9 million Bristol Bay sockeye. The inshore harvest would be expected to change depending on the actual impact of the high seas fishery during the season.

Prepared by: Paul Krasnowski
Fisheries Research Biologist
Anchorage

FORECAST AREA: Bristol Bay - Nushagak District Only

SPECIES: Pink Salmon

PRELIMINARY FORECAST OF 1975 TOTAL RETURN:

Pink salmon runs to the Nushagak District of Bristol Bay are strongly dominant even-year runs. In odd years, such as 1975, total returns and subsequently harvest are of negligible numbers.

Prepared by: Michael L. Nelson
Fisheries Management Biologist
Dillingham

APPENDIX B. ANNUAL ALASKA COMMERCIAL SALMON HARVEST BY SPECIES AND STATISTICAL REGION, 1950 TO PRESENT

APPENDIX TABLE B. ANNUAL ALASKA COMMERCIAL SALMON HARVEST BY SPECIES AND STATISTICAL REGION, 1950 TO PRESENT.

Year	Statistical Region 1/	Number of Fish in Thousands						No. of 48-lb. Cases in Thousands 2/
		Species						
		Chinook	Sockeye	Coho	Pink	Chum	Total	
1950	SOUTHEASTERN	379	552	1,652	9,424	4,779	16,786	1,199
	CENTRAL	137	5,947	762	11,978	2,515	21,339	1,465
	WESTERN	95	7,267	83	30	447	7,922	644
	Subtotal	611	13,766	2,497	21,432	7,741	46,047	3,308
1951	SOUTHEASTERN	474	820	3,310	22,211	4,123	30,938	2,028
	CENTRAL	213	4,136	645	6,185	2,040	13,219	1,068
	WESTERN	102	4,697	76	21	454	5,350	389
	Subtotal	789	9,653	4,031	28,417	6,617	49,507	3,485
1952	SOUTHEASTERN	528	919	1,746	9,819	4,179	17,191	1,321
	CENTRAL	115	4,341	617	10,012	3,463	18,548	1,456
	WESTERN	92	11,664	70	47	522	12,395	797
	Subtotal	735	16,924	2,433	19,878	8,164	48,134	3,574
1953	SOUTHEASTERN	498	1,376	1,164	4,980	3,542	11,560	978
	CENTRAL	112	3,763	387	10,602	3,132	17,996	1,351
	WESTERN	102	6,654	31	88	619	7,494	534
	Subtotal	712	11,793	1,582	15,670	7,293	37,050	2,863
1954	SOUTHEASTERN	398	1,208	1,771	8,909	4,242	16,528	1,303
	CENTRAL	85	3,190	679	12,576	3,323	19,853	1,395
	WESTERN	128	5,014	59	688	820	6,709	397
	Subtotal	611	9,412	2,509	22,173	8,385	43,090	3,095
1955	SOUTHEASTERN	372	681	1,338	9,334	1,527	13,252	840
	CENTRAL	74	2,675	468	14,758	1,631	19,606	1,163
	WESTERN	135	5,148	27	32	342	5,684	383
	Subtotal	581	8,504	1,833	24,124	3,500	38,542	2,386
1956	SOUTHEASTERN	239	921	935	13,472	2,736	18,303	1,032
	CENTRAL	82	3,432	495	11,940	3,674	19,623	1,349
	WESTERN	137	10,252	52	125	791	11,357	641
	Subtotal	458	14,605	1,482	25,537	7,201	49,283	3,022

APPENDIX TABLE B. ANNUAL ALASKA COMMERCIAL SALMON HARVEST BY SPECIES AND STATISTICAL REGION, 1950 TO PRESENT (cont.)

Year	Statistical Region 1/	Number of Fish in Thousands: Species						No. of 48-lb. Cases in Thousands 2/
		Chinook	Sockeye	Coho	Pink	Chum	Total	
1957	SOUTHEASTERN	298	1,031	1,217	6,858	3,369	12,773	905
	CENTRAL	57	2,071	301	6,659	4,362	13,450	1,002
	WESTERN	158	6,631	87	4	548	7,428	557
	Subtotal	513	9,733	1,605	13,521	8,279	33,651	2,464
1958	SOUTHEASTERN	323	971	955	9,836	2,767	14,852	1,181
	CENTRAL	45	1,636	459	14,452	3,244	19,836	1,354
	WESTERN	182	3,460	193	1,809	613	6,257	437
	Subtotal	550	6,067	1,607	26,097	6,624	40,945	2,972
1959	SOUTHEASTERN	359	777	1,094	7,851	1,247	11,328	759
	CENTRAL	47	1,937	332	3,057	1,908	7,281	573
	WESTERN	195	5,249	76	22	886	6,428	446
	Subtotal	601	7,963	1,502	10,930	4,041	25,037	1,778
1960	SOUTHEASTERN	310	588	721	2,985	1,019	5,623	318
	CENTRAL	41	2,835	618	12,313	3,682	19,489	1,205
	WESTERN	196	14,411	66	782	1,923	17,378	1,049
	Subtotal	547	17,834	1,405	16,080	6,624	42,490	2,572
1961	SOUTHEASTERN	230	744	889	12,638	2,559	17,060	1,224
	CENTRAL	31	3,030	357	8,736	2,080	14,234	940
	WESTERN	243	12,307	67	132	991	13,740	1,048
	Subtotal	504	16,081	1,313	21,506	5,630	45,034	3,212
1962	SOUTHEASTERN	206	772	1,223	11,585	1,996	15,782	935
	CENTRAL	42	3,534	692	29,297	4,024	37,589	2,013
	WESTERN	213	4,990	124	2,981	1,128	9,436	528
	Subtotal	461	9,296	2,039	43,863	7,148	62,807	3,476
1963	SOUTHEASTERN	258	678	1,275	19,145	1,479	22,835	1,216
	CENTRAL	35	2,437	627	14,976	2,350	20,425	1,135
	WESTERN	208	3,101	121	154	635	4,219	305
	Subtotal	501	6,216	2,023	34,275	4,464	47,479	2,656

APPENDIX TABLE B. ANNUAL ALASKA COMMERCIAL SALMON HARVEST BY SPECIES AND STATISTICAL REGION, 1950 TO PRESENT (cont.)

Year	Statistical Region 1/	Number of Fish in Thousands: Species						No. of 48-lb. Cases in Thousands 2/
		Chinook	Sockeye	Coho	Pink	Chum	Total	
1964	SOUTHEASTERN	357	924	1,588	18,581	1,936	23,386	1,263
	CENTRAL	22	3,198	866	24,945	4,160	33,191	1,724
	WESTERN	260	5,839	105	1,747	1,179	9,130	563
	Subtotal	639	9,961	2,559	45,273	7,275	65,707	3,550
1965	SOUTHEASTERN	287	1,085	1,548	10,880	1,474	15,274	758
	CENTRAL	31	4,229	393	9,464	1,635	15,752	985
	WESTERN	265	24,732	57	3	271	25,328	1,525
	Subtotal	583	30,046	1,998	20,347	3,380	56,354	3,268
1966	SOUTHEASTERN	308	1,054	1,227	20,438	3,273	26,300	1,562
	CENTRAL	24	4,458	574	17,028	2,574	24,658	1,532
	WESTERN	208	9,562	119	2,585	609	13,083	897
	Subtotal	540	15,074	1,920	40,051	6,456	64,041	3,991
1967	SOUTHEASTERN	301	972	866	3,111	1,810	7,060	431
	CENTRAL	26	3,049	450	3,409	1,198	8,132	609
	WESTERN	284	4,557	172	39	646	5,698	424
	Subtotal	611	8,578	1,488	6,559	3,654	20,890	1,464
1968	SOUTHEASTERN	332	831	1,543	25,085	2,644	30,435	1,372
	CENTRAL	20	4,260	875	16,664	2,837	24,656	1,437
	WESTERN	259	3,039	333	2,977	601	7,209	359
	Subtotal	611	8,130	2,751	44,726	6,082	62,300	3,168
1969	SOUTHEASTERN	314	812	596	4,870	561	7,153	292
	CENTRAL	38	3,650	274	20,565	1,644	26,171	1,412
	WESTERN	287	6,931	263	332	770	8,583	519
	Subtotal	639	11,393	1,133	25,767	2,975	41,907	2,223
1970	SOUTHEASTERN	322	668	759	10,657	2,446	14,851	676
	CENTRAL	33	6,020	647	19,263	3,609	29,571	1,662
	WESTERN	291	20,946	121	1,228	1,445	24,031	1,227
	Subtotal	646	27,634	1,527	31,147	7,500	68,454	3,565

APPENDIX TABLE B. ANNUAL ALASKA COMMERCIAL SALMON HARVEST BY SPECIES AND STATISTICAL REGION, 1950 TO PRESENT (cont.)

		Number of Fish in Thousands						No. of 48 lb. Cases in
		Species						
Year	Statistical Region 1/	Chinook	Sockeye	Coho	Pink	Chum	Total	Thousands 2/
1971	SOUTHEASTERN	334	623	914	9,345	1,946	13,162	687
	CENTRAL	45	3,611	487	14,133	4,317	22,593	1,425
	WESTERN	283	9,945	46	51	1,417	11,742	787
	Subtotal	662	14,179	1,447	23,529	7,680	47,497	2,899
1972	SOUTHEASTERN	287	917	1,509	12,400	2,942	18,054	748
	CENTRAL	42	3,073	252	3,344	2,726	9,437	676
	WESTERN	224	2,600	70	177	1,396	4,468	281
	Subtotal	553	6,590	1,831	15,920	7,065	31,959	1,705
1973	SOUTHEASTERN	344	1,011	836	6,455	1,832	10,479	449
	CENTRAL	30	2,540	338	3,295	2,143	8,345	643
	WESTERN	177	939	282	52	2,045	3,495	123
	Subtotal	551	4,490	1,457	9,802	6,020	22,319	1,215
1974 3/	SOUTHEASTERN	302	659	1,003	4,440	1,334	7,738	451
	CENTRAL	27	2,539	316	3,800	859	7,540	638
	WESTERN	180	1,694	263	1,122	2,164	5,424	176
	Subtotal	509	4,892	1,582	9,362	4,358	20,702	1,265

Data Sources

i) Alaska Department of Fish and Game Commercial Fisheries Statistical Leaflets.

ii) Alaska Department of Fish and Game Statistics Section. Unpublished data.

iii) Alaska Fisheries Reports, 1954-59. Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service.

1/ For the purpose of reporting Alaska commercial fisheries statistics, the statistical regions are defined as follows:

SOUTHEASTERN: Dixon Entrance to Cape Suckling

CENTRAL: Cape Suckling to Seal Cape on the southwestern tip of Unimak Island.

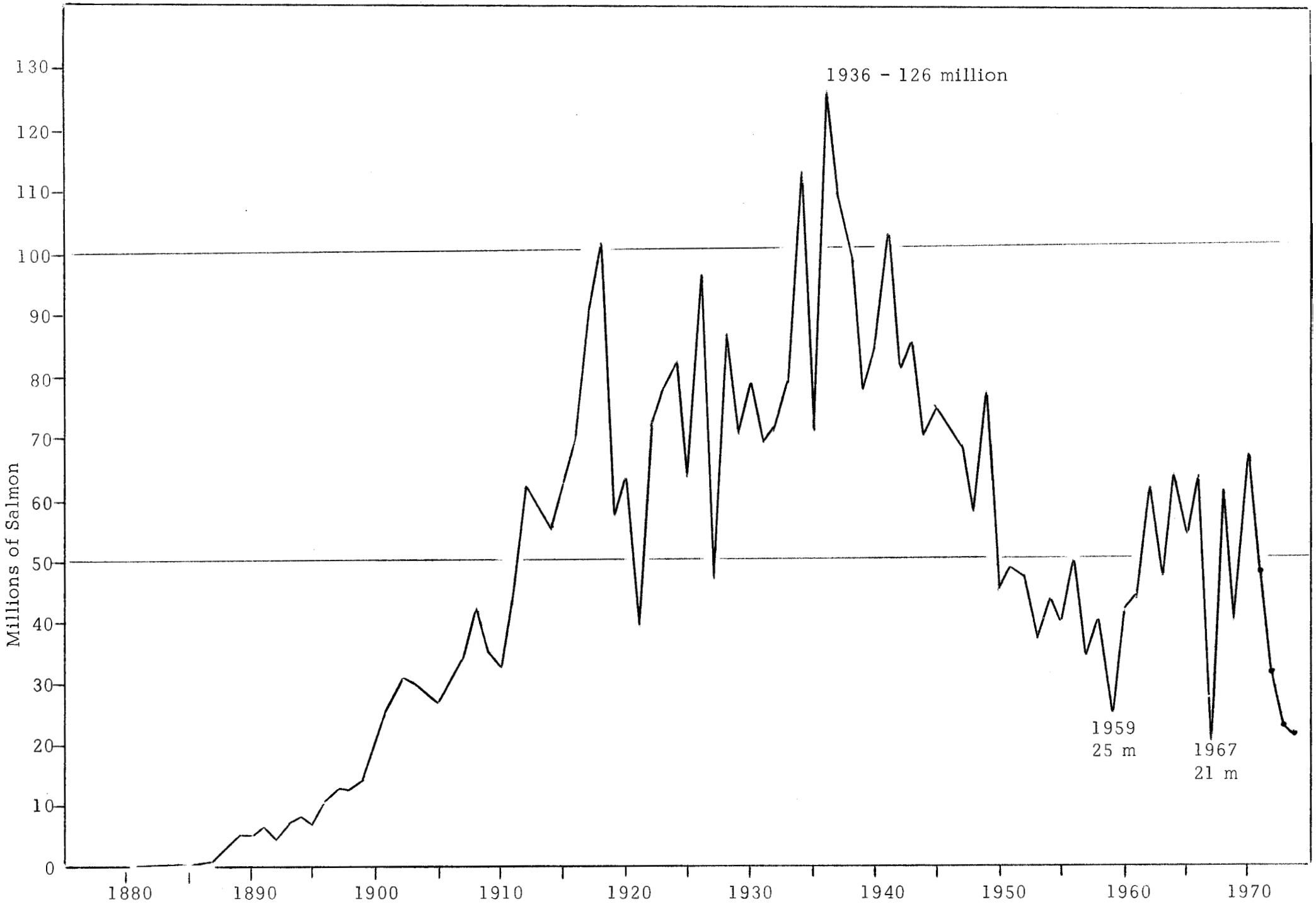
WESTERN: Seal Cape to, and including, the Aleutian Islands and the Bering Cape north through Kotzebue Sound.

APPENDIX TABLE B. ANNUAL ALASKA COMMERCIAL SALMON HARVEST BY SPECIES AND STATISTICAL REGION, 1950 TO PRESENT (cont.)

2/ Although the majority of commercially harvested salmon in Alaska are processed as canned products, in some regions certain species (such as king and coho salmon in the Southeastern region) are processed predominantly as fresh/frozen or cured products. These case pack figures do not include salmon processed in ways other than canning.

3/ Preliminary data.

ANNUAL ALASKA COMMERCIAL SALMON HARVEST, 1878 - 1974



PROJECTED 1975 ALASKA COMMERCIAL SALMON HARVESTS BY SPECIES COMPARED WITH AVERAGE ANNUAL HARVESTS FOR 1960-71.