SUPPLEMENT TO THE
FINAL ENVIRONMENTAL IMPACT STATEMENT/FISHERY MANAGEMENT PLAN
FOR COMMERCIAL AND RECREATIONAL SALMON FISHERIES
OFF THE COASTS OF WASHINGTON, OREGON AND CALIFORNIA
COMMENCING IN 1978

INCLUDING PROPOSED AMENDMENTS AND APPENDICES FOR 1979

Pacific Fishery Management Council
526 SW Mill Street
Portland, Oregon 97201

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
1700 Westlake Avenue North
Seattle, Washington 98109

APRIL 1979

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ASSESSMENT OF 1978 COMMERCIAL AND RECREATIONAL SALMON FISHERIES

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Pacific Fishery Management Council
526 SW Mill Street
Portland, Oregon 97201

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1700 Westlake Avenue North
Seattle, Washington 98109

DECEMBER 1978

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230

Dear Reviewer:

In accordance with the provisions of Section 102(2)(C) of the National Environmental Policy Act of 1969, we are enclosing for your review and consideration the supplemental draft environmental impact statement to the fishery management plan prepared by the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration on its Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California, Commencing in 1978.

Any written comments you may have should be submitted in duplicate to the person listed below by

If you have any questions about the enclosed statement, please feel free to contact:

Mr. Donald R. Johnson
Director, Northwest Region
National Marine Fisheries Service
1700 Westlake Avenue, North
Seattle, Washington 98109
Telephone: 206/442-7575

Thank you for your consideration in this matter.

Sincerely,

Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

Enclosure

Supplemental Environmental Impact Statement
for Commercial and Recreational Salmon Fisheries
off the Coasts of Washington, Oregon and California
Commencing in 1978

(x) Draft ( ) Final

For

Amendments to the Fishery Management Plan for
Commercial and Recreational Salmon Fisheries off the Coasts
of Washington, Oregon and Califoria Commencing in 1978.

Responsible Agencies: Pacific Fishery Management Council

Contact: John A. Martinis, Chairman
526 SW Mill Street
Portland, Oregon 97201
(503) 221-6352

National Oceanic and Atmospheric Administration

Contact: Donald R. Johnson, Regional Director
National Marine Fisheries Service
1700 Westlake Avenue North
Seattle, Washington, 98109
(206) 442-7575

This is a supplemental Environmental Impact Statement addressing the proposed action to amend the Pacific Fishery Management Council's Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the coasts of Washington, Oregon, and California to extend measures which applied in 1978 to 1979 without change.

The 1978 FMP/EIS were written to include 1978 and 1979, if necessary, until a comprehensive fishery management plan for salmon could be developed. Based on information available as of November 1, 1978, no regulatory changes are proposed and no changes in the environmental impact are expected for 1979. The Pacific Council delayed action on establishing a moratorium to limit access in the ocean salmon fisheries and proposes to delete reference to it from the FMP.

Due to the brevity of this supplemental EIS, no summary is provided.

Comments due by: January 22, 1979

Hearings:

City	Time and Date, 1979	Location
Seattle, WA	January 2, 7:00 p.m.	Williamsburg Room Olympic Hotel 4th & Seneca Streets

City	Time and Date, 1979	Location
Astoria, OR	January 3, 7:00 p.m.	Auditorium, Astoria Middle School 1100 Klaskanine Avenue
Coos Bay, OR	January 4, 7:00 p.m.	Umpqua Room Thunderbird Motor Inn 1313 North Bayshore Dr.
Twin Falls, ID	January 4, 7:00 p.m.	Blue Lake Room Holiday Inn 1350 Blue Lake Blvd. No.
Eureka, CA	January 5, 7:00 p.m.	Redwood Ballroom Red Lion Motor Inn 1929 Fourth Street
San Francisco, CA	January 6, 2:00 p.m.	West Bay/Peninsula South Rm. Airport Marina 1380 Old Bayshore Dr.

Draft Statement to CEQ: _____

Final Statement to CEQ: _____

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

Supplementing the

Environmental Impact Statement for

Commercial and Recreational Salmon Fisheries

off the Coasts of Washington, Oregon and California

Commencing in 1978

1.0 Statement of Proposed Action:

The proposed action is to amend the Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon and California Commencing in 1978, to extend management measures which applied in 1978 to 1979 without change. These measures are listed on pages 13-15 of the FEIS and 103-106 of the FMP. This amendment is largely of a clarifying nature in that the Fishery Management Plan (FMP) states that it would apply in 1979 if a comprehensive FMP was not prepared. A second amendment is to delete Section 10.5, Limited Access of the Commercial Fishery, from the FMP. After prolonged review of this proposal, the Pacific Fishery Management Council decided to defer further consideration of a federal moratorium on entry into the fishery to permit the coastal states to institute license moratoria by state law for the 1980 fishing season. Information in the attached document, Assessment of 1978 Commercial and Recreational Salmon Fisheries off the Coast of Washington, Oregon and California, with Recommendations for the 1979 Salmon Fisheries (1978 Assessment) form the basis for the proposed action and is incorporated by reference. Information in Section 1.0 of the FEIS is supplemented by the 1978 Assessment. The 1978 Assessment has been prepared at this time to meet administrative and legal procedural requirements. Information presented herein is preliminary and in some instances is incomplete at this time.

1.1 New Information: The 1978 Assessment notes potential problems that may arise in the 1979 season as data are developed. They may be caused by (1) the 1976-77 drought in California, (2) poor survival of 1976 brood year coho, and (3) low abundance of the 1975 brood year Columbia River fall chinook.

Legal and administrative requirements for processing plans for 1979 preclude a thorough analysis of the 1978 fishery and the effect on salmon stocks, because the impact on the stocks of fish cannot be studied until spawning runs are complete and can be analyzed. As a result, this proposal for no change from the 1978 regulations has no meaningful alternative.

Additional data that will probably become available in the spring of 1979 may indicate the need for some changes in regulations. If this so develops, emergency in-season changes may be necessary. At present, none are anticipated that would require emergency or in-season action. Any proposal that would not be of emergency type should be carefully analyzed and presented later as a part of the basic comprehensive plan. In this category are efforts to influence long-range trends in the resource and the socio-economic aspects of the fisheries.

2.0 Relationship of the Proposed Action to Land-Use Plans, Policies and Control.

The proposed action does not change the analysis in Section 2 of the FEIS. No new information is available which requires this chapter to be supplemented.

3.0 Probable Environmental Impacts of the Proposed Action.

The proposed action does not change the analysis in Section 3 of the FEIS. Information relating to the 1978 fishery is in the 1978 Assessment. However, review of this information reveals that the analysis in Section 3 of the FEIS is valid.

The assessment of the 1978 fishery reveals a harvest level that is below the average for the years 1971-1975. In the commercial troll, the chinook catch was down to 52 percent of the average in Washington, but it was 89 percent in Oregon and California. The coho catch was generally about two-thirds of average (Oregon 64 percent; Washington 68 percent; and California 65 percent). The sport harvest of chinook was less than half in all states (Oregon 46 percent; Washington 43 percent; and California 35 percent). The sport catch of coho was near average in Oregon (102 percent, but in Washington 85 percent and in California 94 percent).

The cause of this decline in catch is not known at this time, but it is believed to be a result of both the 1978 ocean regulations, which are more restrictive than the 1971-1975 base years, and low abundance or availability of stocks.

An analysis of the total picture of the chinook and coho stocks is not possible until all data on spawning are available and analyzed -- which will not occur until early 1979. In view of this incomplete appraisal, the full biological impact of the 1978 regulations is not known, but there is no evidence of any unforeseen impact from any of the options or alternatives given in the 1978 management plan and FEIS.

The 1978 assessment indicates continued low escapements of natural spawning salmon due in part to the unselective ocean fishing on mixed stocks.

4.0 Alternatives to the Proposed Action.

A. No extension of federal management to 1979.

In such case, state management authorities would regulate the ocean fisheries, but it is likely to be without the regional coordination desired by the Fishery Conservation and Management Act.

B. More restrictive management measures on ocean fisheries.

Such action is desired by certain inside and coastal river fish harvesters. Alternative management measures and impacts are discussed in the FEIS, Section 4, and the FMP, Section 9.2.

C. Less restrictive management measures on ocean fisheries.

Such action is desired by certain ocean fish harvesters. Alternative management measures and their impacts are discussed in the FEIS, Section 4, and the FMP, Section 9.2.

D. Limited access.

The alternative to proposed action to delete Section 10.5, Limited Access of the Commercial Fishery, is to proceed with this management option. The judgement of the Pacific Council is that the states are better equipped to address this issue.

5.0 Unavoidable Adverse Impacts.

The proposed action does not change the analysis in Section 5 of the FEIS. New information in the 1978 analysis indicates that natural spawning escapements in some areas are still low.

The decline in chinook salmon stocks of the Snake River has given rise to consideration of these fish (spring, summer and fall runs) for possible listing as endangered or threatened species by the National Marine Fisheries Service and the Fish and Wildlife Service, under the Endangered Species Act of 1973. A task force of the Columbia River Fisheries Council is studying this and expects to make recommendations to the National Marine Fisheries Service in the spring of 1979.

6.0 Relationship Between Local, Short-Term Use of the Environment and Maintenance of Long-Term Productivity.

No change is anticipated from those stated in the EIS of the 1978 plan, although the effects of the 1978 fishery have not been evaluated fully.

7.0 Irreversible and Irretrievable Commitments of Resources.

Although the present evaluation is based on a preliminary review of the 1978 season and its impact on the salmon stocks, it is not believed that any lower-than-average ocean harvest that may have resulted from the 1978 regulations caused any irreversible damage to the resource. Inasmuch as no change is proposed, the same observations are made for 1979.

8.0 References.

1. Final Environmental Impact Statement and Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon and California Commencing in 1978.

2. Assessment of 1978 Commercial and Recreational Salmon Fisheries off the Coast of Washington, Oregon and California with Recommendations for the 1979 Salmon Fisheries.

PROPOSED AMENDMENT TO ENVIRONMENTAL IMPACT STATEMENT AND FISHERY MANAGEMENT PLAN FOR COMMERCIAL AND RECREATIONAL SALMON FISHERIES OFF THE COAST OF WASHINGTON, OREGON AND CALIFORNIA, COMMENCING IN 1978

1. The Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coast of Washington, Oregon and California, Commencing in 1978 and its management measures are extended to apply to the 1979 season.

2. Section 10.5 of the plan is deleted with the understanding that the Council continues to endorse its recommendation of August 10, 1978 to the States for limited entry.

ASSESSMENT OF 1978 COMMERCIAL AND RECREATIONAL SALMON FISHERIES OFF THE COAST OF WASHINGTON, OREGON AND CALIFORNIA WITH RECOMMENDATIONS FOR THE 1979 SALMON FISHERIES

NOVEMBER 1978

Pacific Fishery Management Council
526 SW Mill Street
Portland, Oregon 97201

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INTRODUCTION

The management plan for 1979 continues the basic plan approved by the Council in March 1978, entitled, "Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coast of Washington, Oregon and California, Commencing in 1978."

The purpose of this assessment of the 1978 salmon fisheries is to evaluate the need for any changes in regulations for 1979 and to take any action necessary for the conservation and preservation of the salmon resources. Time constraints set by administrative and legal procedures that require processing proposed plans and regulations at an early date to allow adequate review before implementing any regulations prevent complete consideration of the impact of the 1978 fishery. The spawning stocks cannot be fully addressed at this time, hence this assessment is based on incomplete data, yet they are the best available.

If analysis of additional data collected at the end of the season indicates that other regulatory changes are needed to preserve the resource and to meet management objectives for 1979, changes may be proposed prior to or during the 1979 season.

The development of a comprehensive plan for the management of the fishery has been undertaken by the Council, with a target date of completion prior to the 1980 season. This plan will encompass a thorough review of past fishing seasons under FCMA regulations, additional data and computer model capability, as well as results from new studies. Oregon State University is completing a socio-economic study of the fishery. This study, as well as other economic studies, will be available in early 1979. A task force has made a survey of the status and problems of salmon freshwater habitat. Additional studies have been made of artificial and ocean ranching production. Of further import are potential judicial and congressional actions relative to treaty Indian fishing rights.

Since these factors have not developed far enough to be included in a 1979 plan, the Council has chosen to delay implementation of the comprehensive plan until after the 1979 season. This comprehensive plan is intended to be a long-range management program that will serve as a foundation for yearly regulations that will be governed by the comprehensive plan as well as by changes required by unforeseen fluctuations in environment, stocks and fisheries.

STATUS OF THE 1978 OCEAN SALMON FISHERIES

California

Troll Fishery. Preliminary estimates of 1978 California troll salmon landings are 6.6 million pounds, 5.3 million pounds of chinook and 1.3 million pounds of coho. This is down from the recent 5-year (1971-75) average of 7.8 million pounds, but ahead of 1977 landings of 5.9 million pounds.

Chinook landings of 5.3 million pounds will be less than 1977 landings of 5.7 million pounds as well as the 5-year average of almost 5.8 million pounds (Table 2 and Figure 2).

Coho landings of 1.3 million pounds are significantly higher than 1977 landings of only 204,000 pounds (the worst landings in over a decade), but still well below the 5-year average of 2.2 million pounds (Table 2 and Figure 2).

Although specific effort data will not be available for several months, visual observation of north coast ports (Crescent City to Fort Bragg) indicate higher fishery pressure than usual during the early part of the season.

By July 1, 80 percent of north coast chinook landings had been made (79.5 percent during May and June alone). Eureka received 41 percent of the north coast season's landings; the remainder was split almost equally between Fort Bragg and Crescent City. During July many boats turned to the albacore fishery and others pursued coho into Oregon. During August inclement weather kept effort down. In spite of improved weather during September catch per effort remained low and except for Fort Bragg most boats still working fit the part-time-skiff fisherman category. During the last two weeks of September nearly all northern California effort has been centered off Fort Bragg. Boats have been averaging less than 5 chinook per day.

North coast coho landings were also high during the early season. Over 79 percent of the coho catch was made during May and June. However, only 17 percent of the coho catch was landed in the Fort Bragg area, with the remaining 83 percent divided between Eureka and Crescent City.

Recreational Fishery. Preliminary estimates of ocean sport landings through September indicate that landings are only 104,200 salmon, less than half the 5-year (1971-75) average of 218,000 as well as last year's landings of 112,000.

Chinook landings through September totaled 58,100 fish, well below the 5-year (1971-75) average of 170,000 (Table 1 and Figure 1). The comparable figure for 1977 is 100,150 chinook. The main reason for the decline in 1978 is exceptionally poor chinook landings off the San Francisco Bay area, which accounts for the majority of California's chinook landings.

Coho landings of 45,100 fish through September are running slightly behind the 5-year (1971-75) average of 48,289, however, landings are almost four times 1977 landings of only 11,805 coho (Table 1 and Figure 1). The bulk of the coho, almost 40,000, were landed by north coast (Crescent City to Fort Bragg) anglers.

TABLE 1. CALIFORNIA OCEAN SPORT CHINOOK AND COHO IN NUMBERS OF FISH FOR THE YEARS 1977 AND 1978 AND THE 5-YEAR (1971-75) AVERAGE*

CHINOOK

		February	March	April	May	June	July	August	September	October	November	Season
1971-75 AVERAGE	MONTHLY	17,233	26,389	16,659	10,586	17,290	30,806	25,390	12,981	8,796	3,454	169,584
	CUMULATIVE	17,233	43,622	60,281	70,867	88,157	118,963	144,353	157,334	166,130	169,584	169,584
1977	MONTHLY*	4,108	5,510	15,808	5,892	10,082	35,581	15,046	8,123	4,059	1,496	105,705
	CUMULATIVE*	4,108	9,618	25,426	31,318	41,400	76,981	92,027	100,150	104,209	105,705	105,705
1978 1/	MONTHLY*	6,000	6,600	4,000	4,000	12,000	13,000	6,500	6,000			
	CUMULATIVE*	8,000	12,600	16,600	20,600	32,600	45,600	52,100	58,100			

COHO

		February	March	April	May	June	July	August	September	October	November	Season
1971-75 AVERAGE	MONTHLY	1	109	1,315	3,971	8,555	24,938	8,532	821	41	6	48,289
	CUMULATIVE	1	110	1,425	5,396	13,951	38,889	47,421	48,242	48,283	48,289	48,289
1977	MONTHLY*	0	0	65	303	47	7,676	3,161	490	63	0	11,805
	CUMULATIVE*	0	0	65	368	415	8,091	11,252	11,742	11,805	11,805	11,805
1978 1/	MONTHLY*	0	100	500	3,000	19,000	20,000	3,000	500			
	CUMULATIVE*	0	100	600	3,600	21,600	41,600	44,600	45,100			

1/ Rounded to nearest 1,000 lbs.
* 1977 and 1978 data are preliminary.

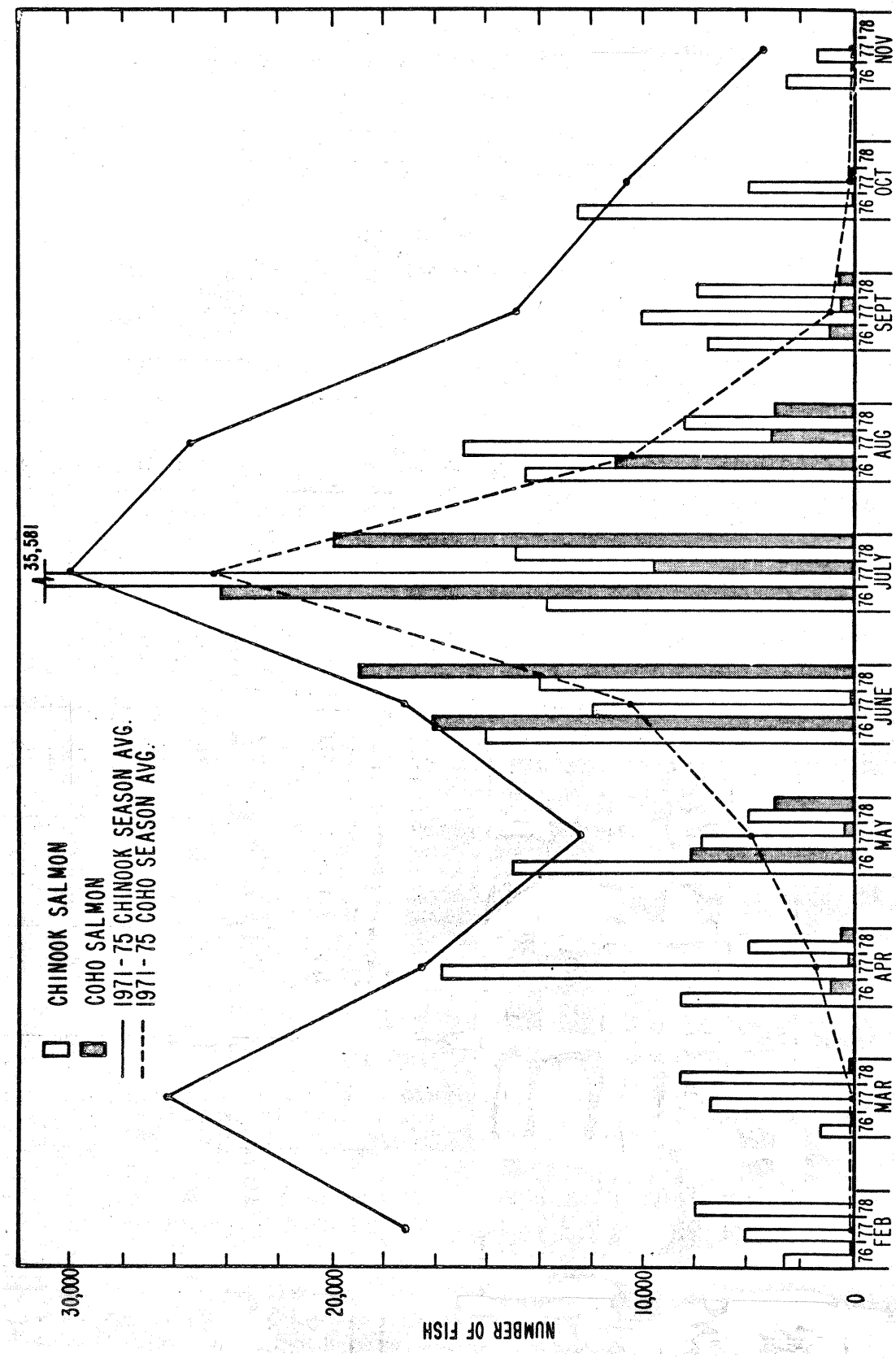

Figure 1. California Ocean Sport Chinook and Coho Landings in Numbers of Fish for the Years 1976, 1977, and 1978 by Month compared to the 5-Year (1971-75) Average*.

* 1977 and 1978 data are preliminary.

TABLE 2. CALIFORNIA OCEAN TROLL CHINOOK AND COHO LANDINGS IN POUNDS DRESSED WEIGHT FOR THE YEARS 1977 AND 1978 AND THE 5-YEAR (1971-75) AVERAGE*

CHINOOK

		April	May	June	July	August	September	Season
1971-75 AVERAGE	MONTHLY	340,278	1,365,515	1,653,994	1,411,124	686,114	285,169	5,742,194
	CUMULATIVE	340,278	1,705,793	3,359,787	4,770,911	5,457,025	5,742,194	5,742,194
1977 1/	MONTHLY*	1,169,000	1,134,000	928,000	1,472,000	687,000	338,000	5,728,000
	CUMULATIVE*	1,169,000	2,303,000	3,231,000	4,703,000	5,390,000	5,728,000	5,728,000
1978 1/	MONTHLY*	186,000	1,939,000	1,783,000	965,000	288,000	99,000	5,260,000
	CUMULATIVE*	186,000	2,125,000	3,908,000	4,873,000	5,161,000	5,260,000	5,260,000

COHO

		April	May	June	July	August	September	Season
1971-75 AVERAGE	MONTHLY	0	396,623	775,959	807,382	214,354	16,539	2,210,857
	CUMULATIVE	0	396,623	1,172,582	1,979,964	2,194,318	2,210,857	2,210,857
1977 1/	MONTHLY*	0	44,000	100,000	50,000	9,000	1,000	204,000
	CUMULATIVE*	0	44,000	144,000	194,000	203,000	204,000	204,000
1978 1/	MONTHLY*	0	158,000	842,000	234,000	37,000	6,000	1,277,000
	CUMULATIVE*	0	158,000	1,000,000	1,234,000	1,271,000	1,277,000	1,277,000

1/ Rounded to nearest 1,000 pounds.
* 1977 and 1978 data are preliminary.

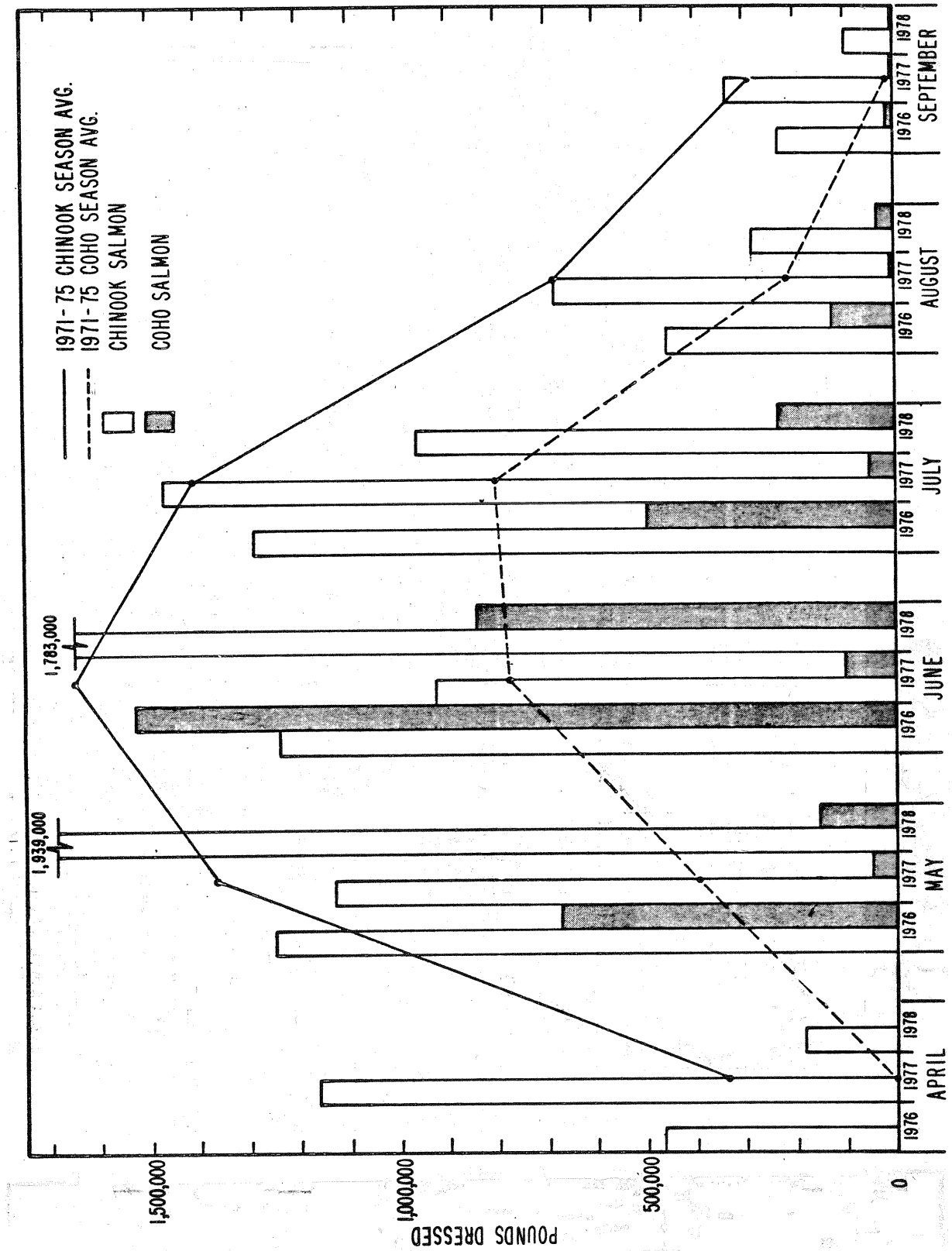

Figure 2. California Ocean Troll Chinook and Coho Landings in Pounds Dressed Weight for the Years 1976, 1977 and 1978 Compared to the 5-Year (1971-75) Average.*

*1977 and 1978 data are preliminary.

Oregon*

Troll Fishery - Effort: The sale of commercial salmon boat licenses in Oregon continued to increase in 1978 (Table 3). The 1978 license sales through September totaled 3,750 representing an increase of 355 over 1977.

Although precise estimates of troll effort off the Oregon coast are not available, it appears that overall effort in 1978 was down somewhat from previous years. During the early season (May 1-June 15) much of the trip boat fleet fished California waters and so less effort was directed off Oregon. During the closure north of Cape Falcon from June 15-30, there was a considerable shift of effort south by Washington boats into Oregon waters, however, by late June there was a general movement of boats back north (Table 4). Concentrations of boats were not observed in 1978 in the immediate vicinity of Cape Falcon-Tillamook Head as was the case in 1977 since better fishing was available in other areas. By early July much of the troll fleet converted to albacore fishing which decreased fishing effort on salmon. Most of the late season effort concentrated in the vicinity of coastal ports by small boats primarily day fishing since most of the larger and many of the medium sized vessels were out after tuna.

Table 3. Commercial salmon boat licenses[1/] issued in Oregon, 1972-78.

Year	Licenses issued
1972	2,614
1973	2,867
1974	2,278
1975	2,367
1976	2,852
1977	3,395
1978	3,750[2/]

[1/] Number of boat licenses issued reduced by the estimated number of shrimpers, trawlers, gill netters and other miscellaneous.

[2/] Through September.

*The statistics presented were derived from three main sources. Troll fishery landings were obtained directly from commercial fish buyer records and represent actual landings except for late September through November which were estimated. Sport fishery landings and effort were estimated from field samplings at nine coastal ports by ODFW personnel. Effort distribution was obtained by direct observation during flights along the coast once just prior to the June closure and twice during the closure. Escapement information, where available, was obtained from ODFW hatchery and management staff.

Table 4. Observation flight summary of troll fleet distribution.

Area	1976			1977	1978		
	22 Jun*	26 Jul	27 Aug	24 Jun	13 Jun	21 Jun	27 Jun
Col. R. Mouth to Tillamook Head	77	24	RAIN	5	7	3**	11**
Tillamook Head to Cape Falcon		40	38	93	1	2**	4**
Cape Falcon to Cape Lookout				102	2	79	125
Cape Lookout to Cascade Head	-	26	49	129	0	78	95
Cascade Head to Yaquina Head	-	20	38	127	0	14	29
Yaquina Head to Heceta Head	-	5	178	116	6	115	51
Heceta Head to Cape Blanco	-	15	163	242	14	288	31
Cape Blanco to Ore-Calif. Border	-	1	37	68	22	232	46
Totals	77	131	503	882	52	811	392

* Flew Col. R. Mouth to Tillamook Head only.

** Running

Troll Fishery - Catch: Commercial troll coho landings in 1978 totaled 628,400 fish weighing 3,107,000 pounds (round weight) compared with the 1971-75 average of 980,900 fish and 6,917,700 pounds (Table 5). The 1978 landings were down 36 percent in numbers and 55 percent in weight in comparison to the 5-year average. Landings were somewhat improved over 1977 but below 1976. The proportionate greater reduction in catch by weight was due to the poor growth and small size of coho in the fishery.

Table 5. Commercial troll salmon catch (thousands) off Oregon, 1971-1978.

Year	Coho		Chinook	
	No.	Lbs (round)	No.	Lbs (round)
1971	1,490.1	10,079.9	102.9	1,150.8
1972	824.6	5,584.8	127.3	1,499.3
1973	795.5	5,907.6	363.3	3,980.5
1974	1,137.2	8,315.5	224.1	2,634.0
1975	657.4	4,700.7	224.7	2,970.8
Average 1971-75	980.9	6,917.7	208.4	2,447.1
1976	1,827.0	10,420.3	184.3	2,209.8
1977a/	450.0	3,002.0	336.0	3,930.0
1978a/	628.4	3,107.0	186.1	1,894.0

a/ Preliminary catch statistics

The monthly distribution of troll coho catches was skewed toward the early part of the season (Table 6). Monthly catches in numbers of fish were above average in June but below average from July through September. Forty-eight percent of the total catch occurred during the first two weeks of the season (June 15-30) largely due to the shift of effort during the closure north of Cape Falcon. Eighty-four percent of the total catch occurred during June and July.

Table 6. Monthly distribution of 1978 Oregon troll salmon landings (numbers of fish) compared to the 1971-75 average.

	Monthly landings (Numbers)								
Year	March April	May	June	July	Aug.	Sept.	Oct.	Nov.	Total
Chinook									
Avg. 1971-75	532	8,324	27,528	56,647	69,725	31,442	13,701	1,406a/	208,460
1978	--	3,575	41,087	69,791	52,782	12,848	5,000b/	1,000b/	186,100
Coho									
Avg. 1971-75	--	--	227,843	414,383	305,753	29,691	3,286	--	980,956
1978	--	--	299,556	224,885	94,676	8,350	1,000b/	--	628,467

a/ Extended ocean season Elk-Chetco Rivers 1974 and 1975

b/ Estimated

Commercial troll chinook landings in 1978 were also below the 5-year average (Table 5). Total chinook landings numbered 186,100 fish weighing 1,894,000 pounds compared to the 1971-75 average of 208,400 fish and 2,447,100 pounds. The 1978 landings were down 11 percent in numbers and 23 percent in weight when compared to the 5-year average. Landings were comparable to 1976 but below 1977. Again, as with coho, there was a greater reduction in catch by weight than by numbers.

Chinook landings in numbers of fish were well below average in May, above average during June and July, and below average for the remainder of the season (Table 6). Reduced landings in May reflected the fact that the Oregon trip boat fleet was fishing California waters. Increased chinook landings in June to levels above the 5-year average appeared to be the result of additional fishing pressure off Oregon during the closure north of Cape Falcon.

The landed value of the 1978 salmon catch by the Oregon troll fishery was well below 1976 and 1977 but comparable to the 5-year average (Table 7). Preliminary estimates of dollar value of the 1978 catch was $6,715,000 compared to the 1971-75 average of $5,695,800. No adjustments have been made for inflation making it difficult to compare landed value between years.

Table 7. Landed value of the salmon catch by the Oregon troll fishery 1971-78.

Year	Average price paid per pound Chinook	Coho	Dollar value (Thousands)
1971	0.59	0.36	$ 3,746
1972	0.75	0.51	3,457
1973	1.02	0.78	7,532
1974	1.05	0.76	7,938
1975	1.04	0.77	5,806
1976	1.77	1.26	14,868
1977a/	2.10	1.30	10,800
1978a/	1.83	1.36	6,715

a/ Preliminary

Recreational Fishery - Effort: Angler effort expended in the 1978 recreational fishery off the Oregon coast was above the 5-year average (Table 8). Effort in 1978 totaled 410,300 angler trips compared to the 1971-75 average of 345,800 trips representing a 19 percent increase in effort. Effort was comparable to 1977 levels but well below the peak experienced in 1976.

Seasonal distribution of effort was above the 1974-77 average early in the year but dropped below average after mid-July (Table 9). The peak early season effort corresponded with maximal catch rates. Reductions in salmon catch rates and availability of albacore close inshore shifted some sport effort, particularly charter boats, to tuna and also bottomfish in August and September. Bad weather and rough ocean conditions also limited fishing in September.

An analysis of the distribution of the 1978 Oregon recreational ocean salmon effort by port revealed some changes in distribution of effort (Table 10). Most Oregon ports were near or below the 1975-77 average effort levels with the exception of Brookings and Newport where significant increases were noted. A large reduction in effort was observed on the Oregon side of the Columbia River where effort dropped 34 percent below the previous 3-year average. It is not certain what portion of this reduction can be attributed to the more restrictive chinook regulations in effect for this area. In general, effort showed the greatest reduction at north coast ports.

Table 8. Recreational ocean salmon effort and catch (thousands) off Oregon 1971-78.

Year	Effort (Angler trips)	Catch			Fish per angler
		Coho	Chinook	Total	
1971	303.7	311.7	29.6	341.3	1.12
1972	331.7	248.4	44.1	292.5	0.88
1973	350.4	234.1	61.0	295.1	0.84
1974	335.8	311.0	40.3	351.3	1.05
1975	407.5	253.4	75.7	329.1	0.81
Avg. 1971-75	345.8	271.7	50.1	321.8	0.93
1976	538.4	506.2	74.4	58.5	1.08
1977	414.2	196.4	60.2	256.6	0.62
1978a/	410.3	277.5	22.9	300.4	0.73

a/ Preliminary

Table 9. Bi-weekly distribution of the 1978 recreational ocean salmon catch and effort off Oregon compared to the 1974-77 average.1/

Year	Bi-weekly period						Total
	June 15-June 30	July 1-July 15	July 15-July 31	Aug 1-Aug 15	Aug 15-Aug 31	Sept 1-Sept 15	
Effort							
Avg. 1974-77	27,635	60,547	63,663	68,793	69,608	40,383	330,630
1978	43,700	73,734	59,745	49,706	57,339	23,303	333,901
Chinook							
Avg. 1974-77	4,142	7,264	10,504	12,452	11,097	5,267	50,727
1978	1,643	2,499	3,390	3,218	5,535	1,009	17,294
Coho							
Avg. 1974-77	21,587	49,775	55,219	52,177	50,100	19,588	248,448
1978	50,871	48,379	36,236	22,387	39,614	8,288	205,775

1/ Figures are from statistical creel sampling program and do not include salmon-steelhead tag returns.

Table 10. Distribution of the 1978 Oregon recreational ocean salmon catch and effort by port compared to the 1975-77 average.1/

Port	Effort (angler trips)		Catch			
			Coho		Chinook	
	1978	3-yr Avg.	1978	3-yr Avg.	1978	3-yr Avg.
Columbia River (Oregon side)	45,296	69,105	43,370	60,357	5,997	31,888
Garibaldi	17,873	27,239	5,378	16,312	291	944
Depoe Bay	29,302	43,022	18,036	29,760	431	1,386
Newport	81,609	54,912	44,361	34,119	1,834	2,095
Winchester Bay	57,421	65,362	48,620	57,758	3,029	8,791
Coos Bay	28,705	32,257	24,558	29,272	1,145	4,874
Gold Beach	11,837	9,425	8,422	1,884	2,706	1,700
Brookings	61,858	55,059	38,566	21,439	3,667	7,222
Total	333,901	356,381	231,311	250,901	19,100	58,900

1/ Figures are from statistical creel sampling program and do not include salmon-steelhead tag returns.

Recreational Fishery - Catch: The recreational ocean catch of coho salmon in 1978 totaled 277,500 fish compared to the 1971-75 average of 271,700 (Table 8). The 1978 catch was 2 percent above the 5-year average mainly due to increased effort. The catch level exceeded 1977 but was still well below the excellent year experienced in 1976. The overall catch rate for coho in 1978 was 0.68 fish per angler trip which is below the 5-year average.

The seasonal distribution of coho catches paralleled that of effort (Table 9). Above or near average catches occurred prior to mid-July, however, catch levels fell below average for the remainder of the season in response to declining effort and catch rates.

Considerable variation was observed in coho catches by port (Table 10). All ports reported below average catches of coho with the exception of Brookings, Gold Beach and Newport where significant increases were noted primarily in response to increased effort.

The recreational ocean catch of chinook salmon in 1978 totaled 22,900 fish which is 54 percent below the 5-year average (Table 8). The catch was also well below that reported in both 1976 and 1977. The overall catch rate for chinook was 0.06 fish per angler, well below the 5-year average. Chinook catches were below average throughout the season (Table 9). The chinook catch was below average at all ports, however, the greatest reduction occurred on the Oregon side of the Columbia River where catches were 81 percent below the previous 3-year average (Table 10). The observed reduction is probably the result of reduced chinook availability as well as the more restrictive minimum size limit for chinook in that area.

Washington

Troll Fishery. Most fish-receiving tickets for the troll fishery through October 8 are included in the present evaluation of the 1978 salmon troll fishery. The Washington troll salmon fishery north of Point Grenville closed after September 15, while the fishing south of Point Grenville continued through October 31, both as scheduled. Season catch and effort data are shown in Table 11 and Figures 3 to 5, for the 1971-75 base period and the 1976-78 fishery. The 1977-78 statistics are preliminary.

Table 11. Washington commercial troll fishery statistics for entire season, 1971-78 (1977-78 preliminary).

Year	Effort (days fished)	Chinook catch (no. fish)	Coho catch (no. fish)
1971	68,300	252,200	1,264,100
1972	54,300	202,900	575,300
1973	51,200	317,300	702,200
1974	58,500	353,100	1,038,300
1975	53,600	274,200	774,300
1971-75 mean	54,400[1/]	279,900	870,800
1976	62,000	361,400	1,384,800
1977	56,100	253,600	708,500
1978[2/]	44,000	145,000	591,000

[1/] Effort mean for 1973-75 base period. For comparable fishing time to 1978 season, the adjusted 1973-75 average is 46,073 days fished.

[2/] Preliminary projection of season total, based on effort and catches recorded through October 8, 1978.

Effort: Troll fishing effort for 1978 is below levels experienced in recent years. The preliminary estimate of effort through October 8 is 41,700 fishing days. The final fishing effort in 1978 will be less than 44,000 days. For comparable fishing periods in 1973-75, the average effort was 46,073 days. In 1977, effort during the comparable period was 56,123 days. During the entire troll season (including periods closed in 1978) troll effort averaged 54,400 fishing days in 1973-75. As in 1977, peak effort occurred after the June closure. Unlike 1977, the effort did not continue at a high level but fell off rapidly to below the 1973-75 adjusted average until the first week of September. Since September, the weekly total effort has reflected that shown for 1977 (Figure 8).

Chinook catch: The total Washington troll chinook catch recorded through October 8 is 141,000 (preliminary estimate) including over 15,000 landed in Washington from Southeastern Alaska. The average season's total catch (under current regulations) should be approximately 145,000 chinook (or 2.4 million pounds round weight). The weekly catch pattern approximately reflects that which was shown for 1977 (Figure 9).

The average number of chinook landed in Washington during comparable fishing periods for 1971 through 1975 seasons is 226,300. The average number landed during the entire season (including current closed periods) is 279,900 chinook. The total chinook catch in numbers of fish will be the lowest since 1967. The number of chinook caught in 1978 is approximately 52 percent of the entire season base period average. Total poundage landed is 70 percent of the average (see Figure 4), while the average round weight per fish is the largest recorded in recent years at 16.1 pounds (Table 12).

Table 12. Average round weight for Washington Coastal troll caught chinook and coho, 1967-78.

Year	Chinook	Coho
1967	12.9	7.9
1968	11.5	6.4
1969	12.3	7.1
1970	11.9	8.2
1971	12.1	6.2
1972	12.7	6.8
1973	12.0	6.2
1974	12.2	6.2
1975	12.0	6.6
1976	12.1	5.2
1977 1/	12.4	7.1
1978 1/	16.1	5.4

1/ Preliminary.

Coho catch: The 1978 troll coho catch recorded through October 8 totals 591,000 fish. The season total catch is expected to be approximately 593,000 (3.2 million pounds round weight). This is the lowest coho catch since 1972 and only 68 percent of the 1971-75 average of 870,800 fish for the entire season. Total poundage landed is only 58 percent of average (see Figure 7). The average round weight of troll coho in 1978 is approximately 5.4 pounds. This is the second smallest seasonal average size recorded in this state's troll fishery. The 1976 average round weight was smaller at 5.2 pounds. The 1971-75 adjusted average catch during that part of the season comparable to 1978 open periods was 677,142 coho. At the July opening, above average catches were immediately followed by poor catches throughout July and August. A relatively strong second peak occurred in early September (Figure 10).

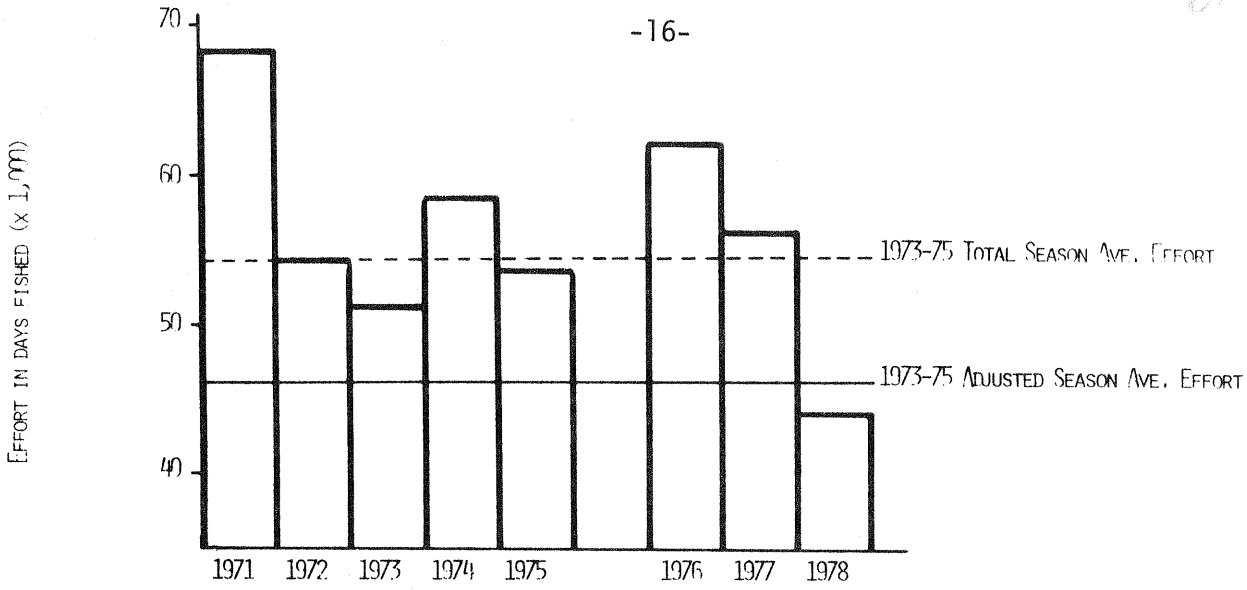

FIGURE 3. WASHINGTON ANNUAL COMMERCIAL TROLL SALMON FISHING EFFORTS, 1971 - 1977 AND PRELIMINARY 1978.

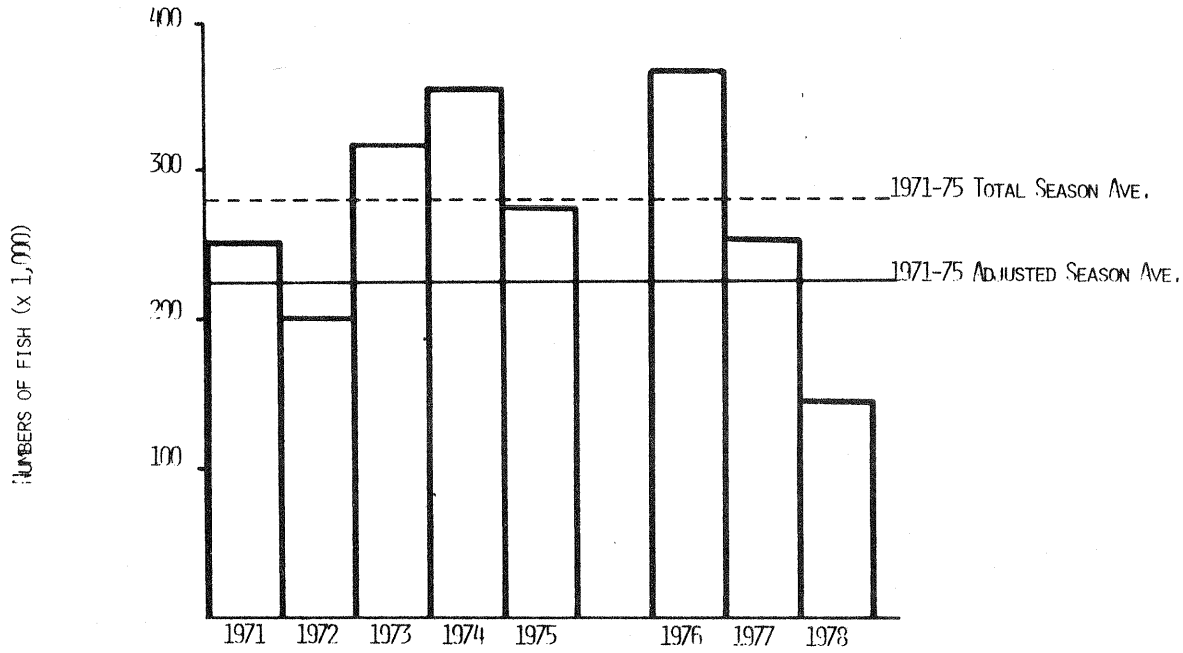

FIGURE 4. WASHINGTON ANNUAL COMMERCIAL TROLL CHINOOK SALMON CATCH, 1971 - 1977 AND PRELIMINARY 1978.

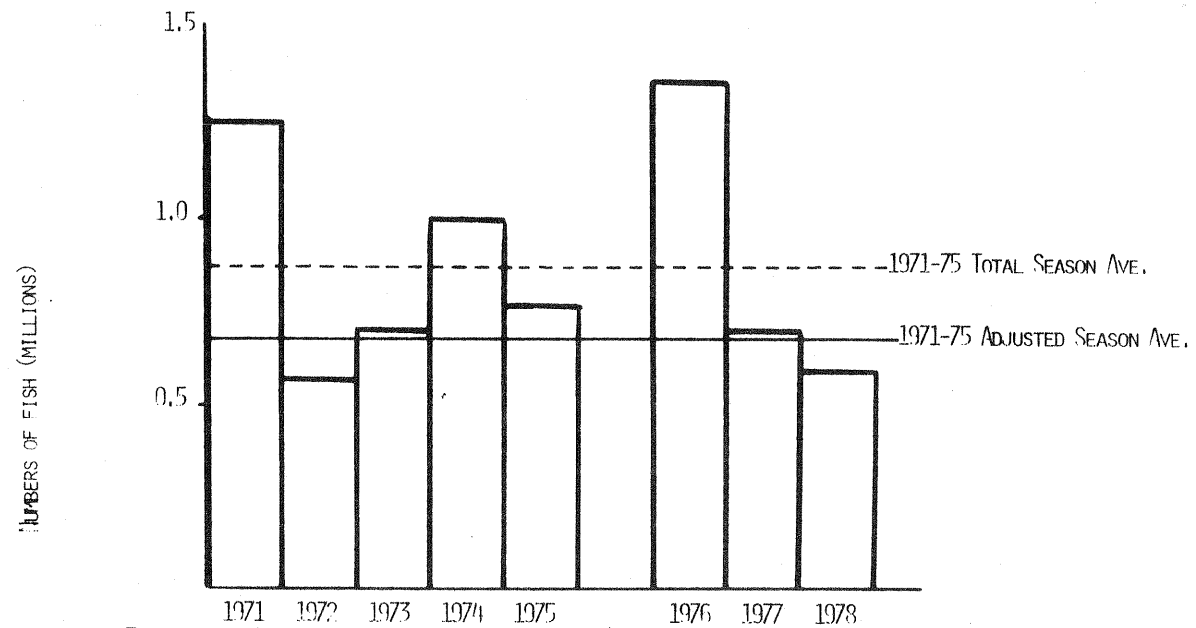

FIGURE 5. WASHINGTON ANNUAL COMMERCIAL TROLL COHO SALMON CATCH, 1971 - 1977 AND PRELIMINARY 1978.

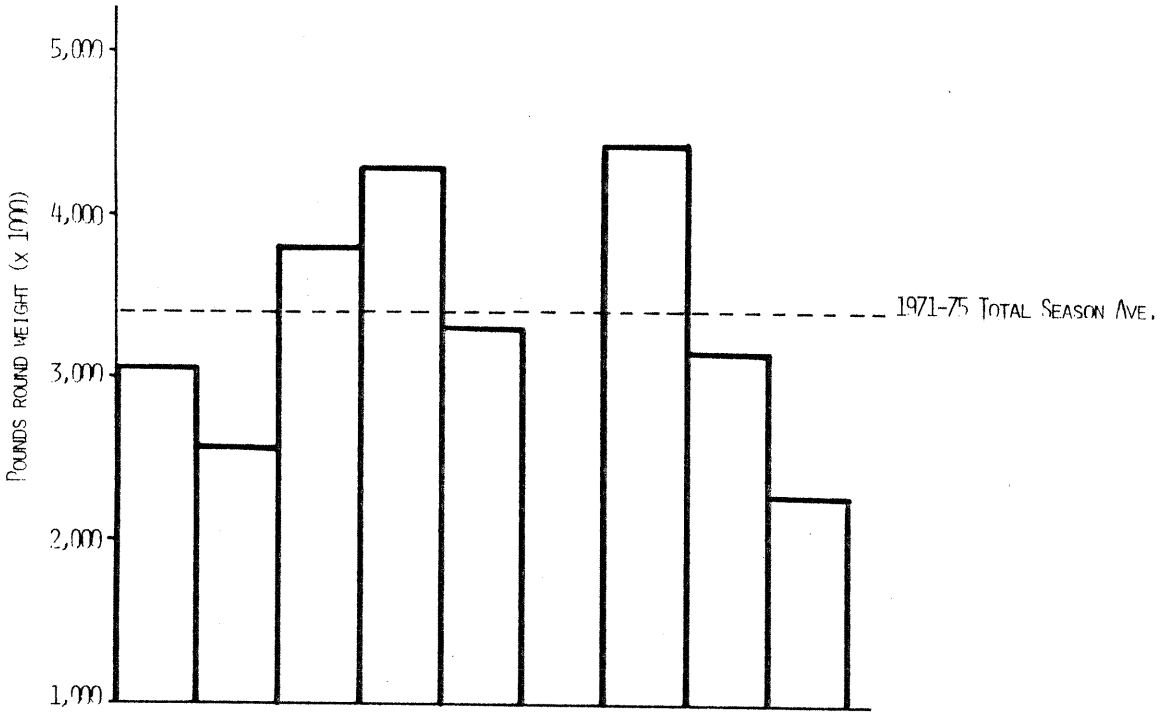

FIGURE 6. WASHINGTON ANNUAL COMMERCIAL TROLL CATCH IN POUNDS OF CHINOOK SALMON, 1971-1977 AND PRELIMINARY 1978.

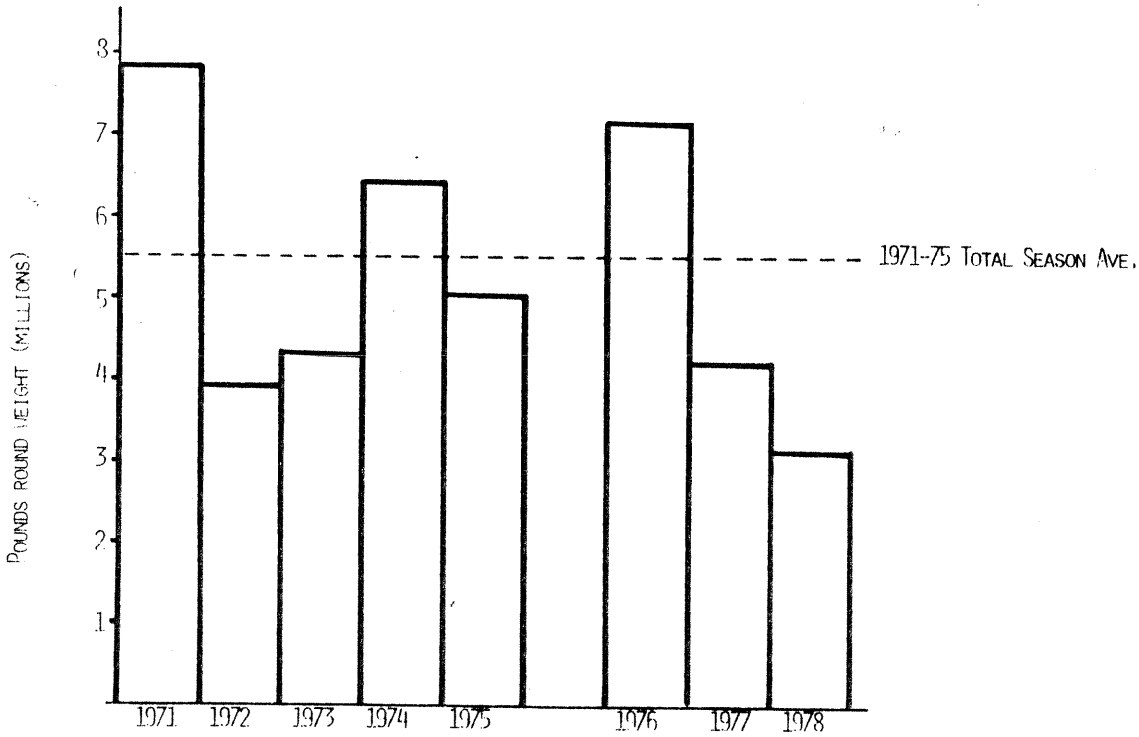

FIGURE 7. WASHINGTON ANNUAL COMMERCIAL TROLL CATCH IN POUNDS OF COHO SALMON, 1971-1977 AND PRELIMINARY 1978.

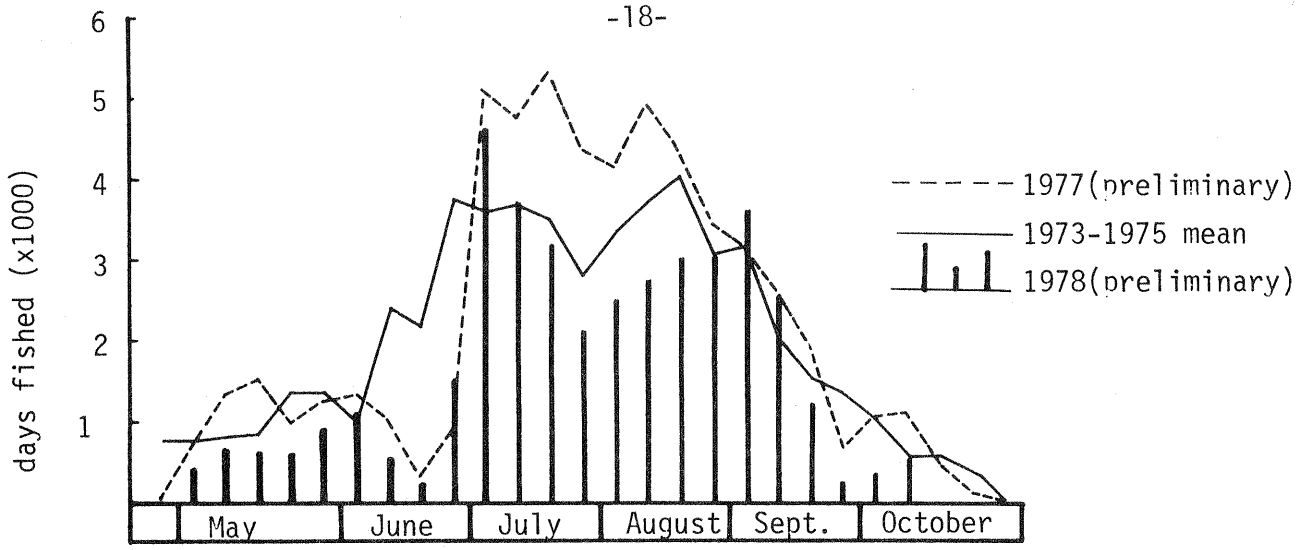

Figure 8. Washington commercial troll salmon fishing effort,1973-1975 mean, 1977 and 1978 (preliminary).

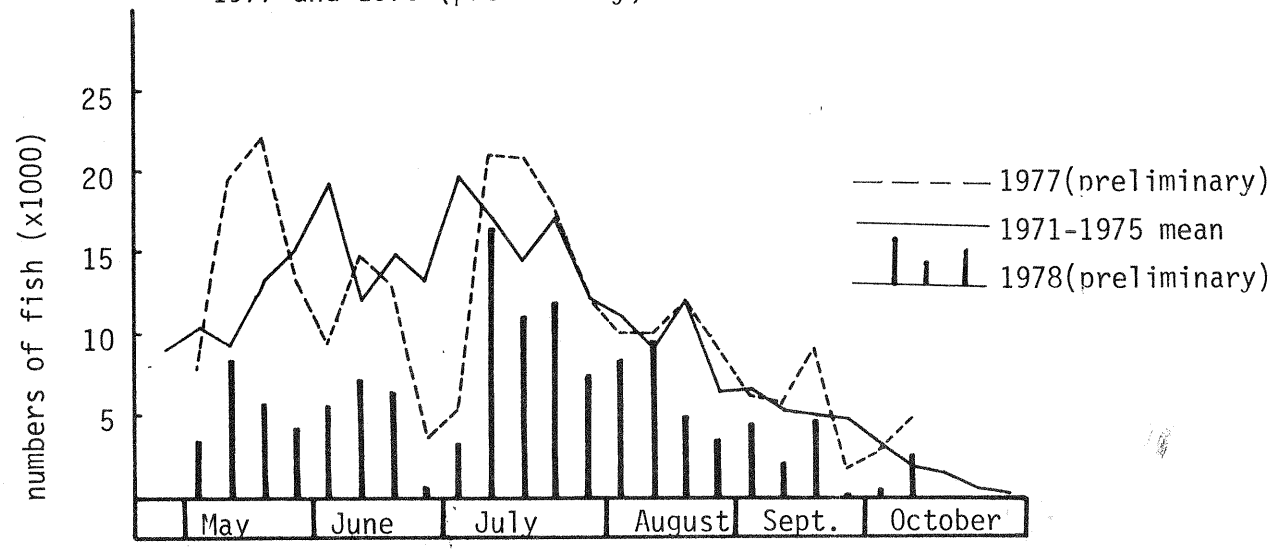

Figure 9. Washington commercial troll chinook salmon catch 1977(preliminary), 1978(preliminary), and 1971-1975 mean.

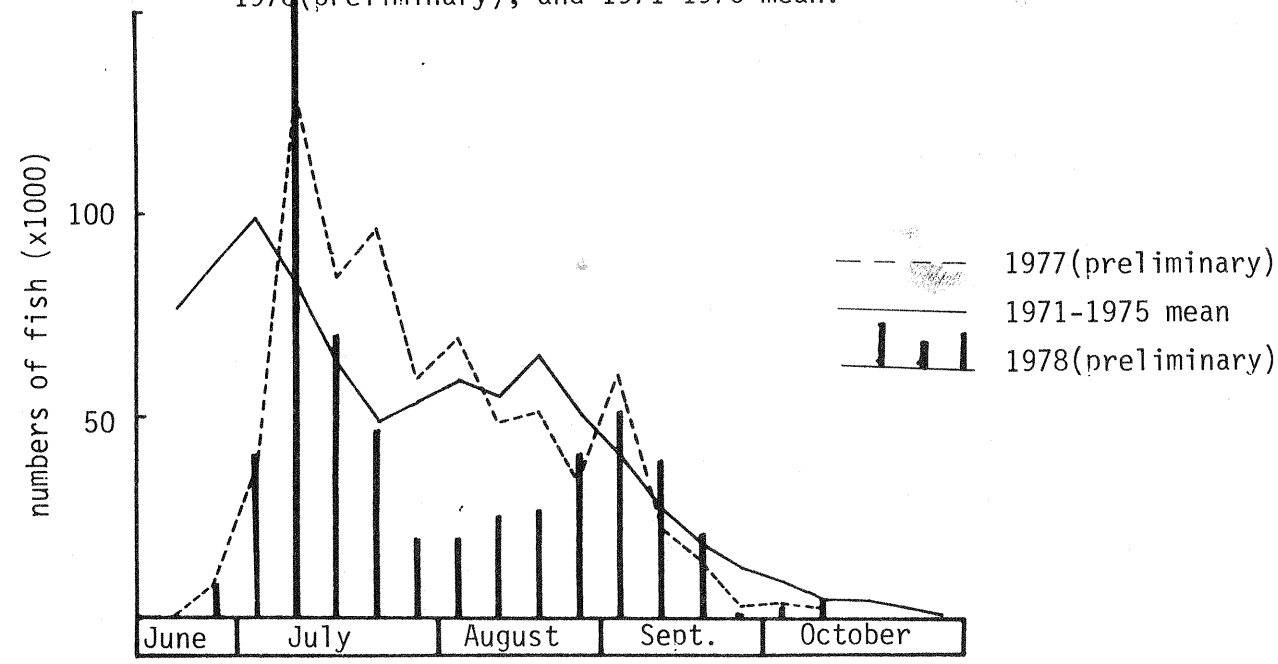

Figure 10 Washington commercial troll coho salmon catch, 1977(preliminary), 1978(preliminary), and 1971-1975 mean.

Recreational Fishery. Preliminary estimates of the 1978 ocean sport fishery are complete through Week 41 (October 8). Table 13 and Figures 11 to 13 show season catch and effort for the 1971-75 base period and the 1976-78 fishery. The 1978 statistics are preliminary. In August 1978, the 1977 sport fishery statistical report was finalized.

Table 13. Washington ocean sport fishery data (in thousands), 1971-77 and preliminary 1978.

Year	Angler Trips	No. chinook caught	No. coho caught
1971	443.3	160.0	747.3
1972	490.5	212.3	541.8
1973	479.7	203.8	471.7
1974	464.9	214.6	593.3
1975	535.9	261.6	481.1
1971-75 mean	493.5[1/]	210.5	567.0
1976	538.1	170.7	942.8
1977	530.0	175.0	490.2
1978	450.0	90.1	480.0

[1/] 1973-75 mean.

Effort: Following a period of above average fishing effort in late June and early July, intensity fell well below the 1973-75 mean angler trips. Total effort for 1978 is expected to be approximately 450,000 angler trips in coastal waters. This is 91 percent of the mean effort level relative to the 1973-75 base period. Weekly effort did not reflect the pattern as shown in the 1973-75 base period or in 1977. This was attributed to poor angler success from Mid-July to mid-August (Figure 14).

Chinook catch: The 1978 chinook sport catch along coastal Washington was the lowest since 1962. The season total catch will be less than 91,000 fish. This is only 43 percent of the 1971-75 average. Prior to the first week of July, the catch pattern shown by the 1978 fishery was not unlike that shown during 1971-75 base period or during the 1977 fishery. However, after the fourth week of June the catches fell to a low level and stayed there for the remainder of the season (Figure 15).

Coho catch: Better than average coho catches in late June and early July were largely offset by poorer success in late July and August (Figure 16). The preliminary catch estimate for the coastal coho fishery is 480,000. This is 85 percent of the 1971-75 level and the lowest since 1973.

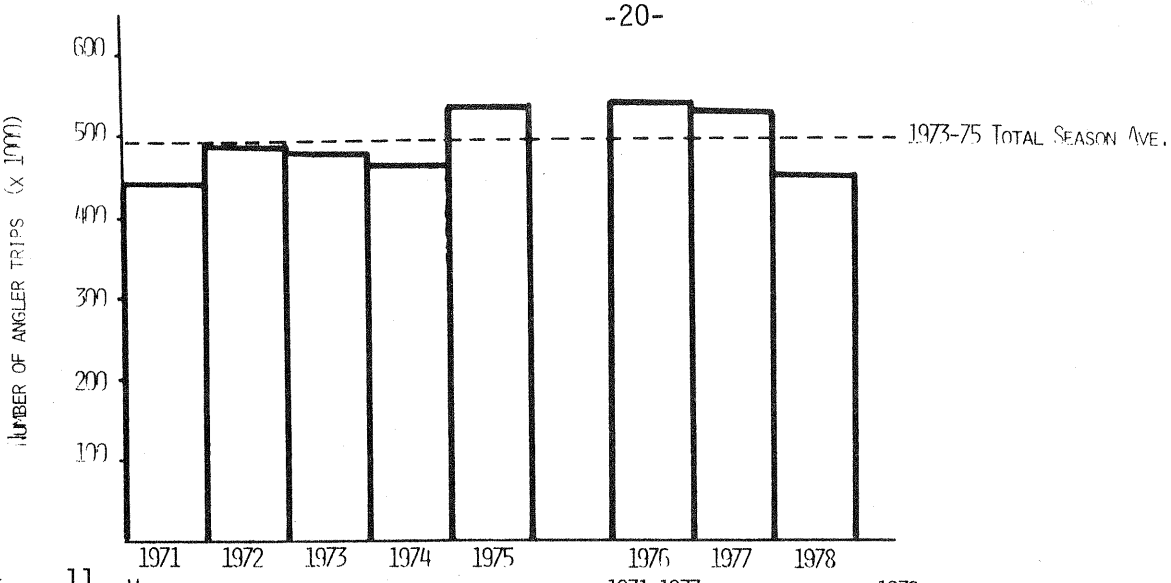

FIGURE 11. WASHINGTON ANNUAL OCEAN SPORT FISHING EFFORT, 1971-1977 AND PRELIMINARY 1978

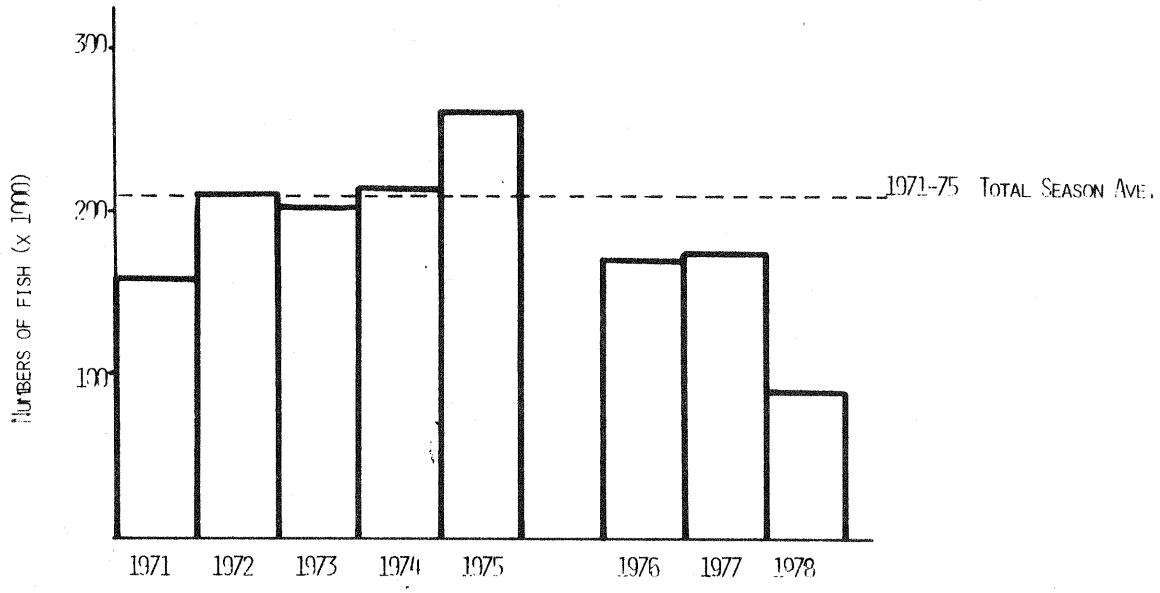

FIGURE 12. WASHINGTON ANNUAL OCEAN SPORT CATCH OF CHINOOK SALMON, 1971-1977 AND 1978 PRELIMINARY.

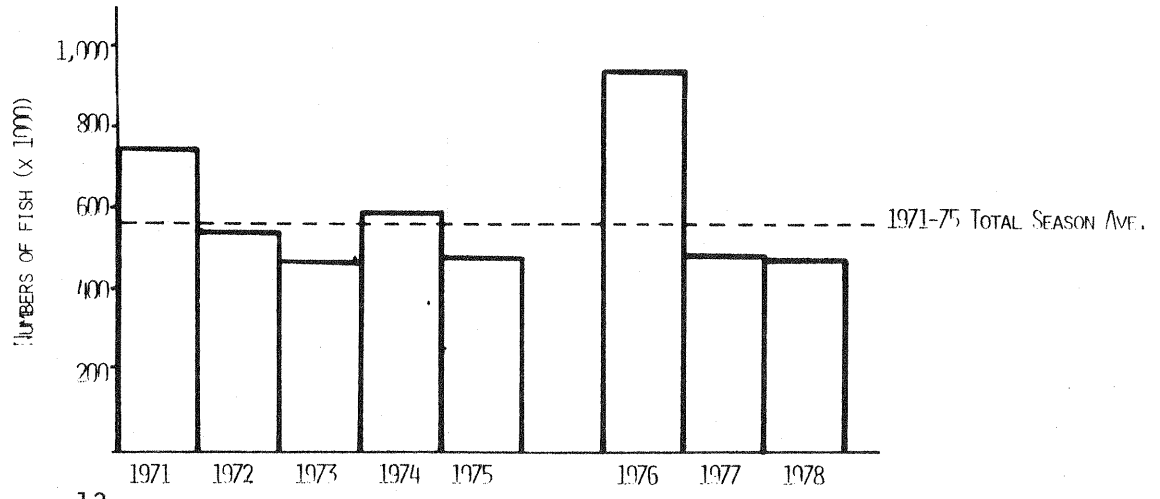

FIGURE 13. WASHINGTON ANNUAL OCEAN SPORT CATCH OF COHO SALMON, 1971-1977 AND PRELIMINARY 1978.

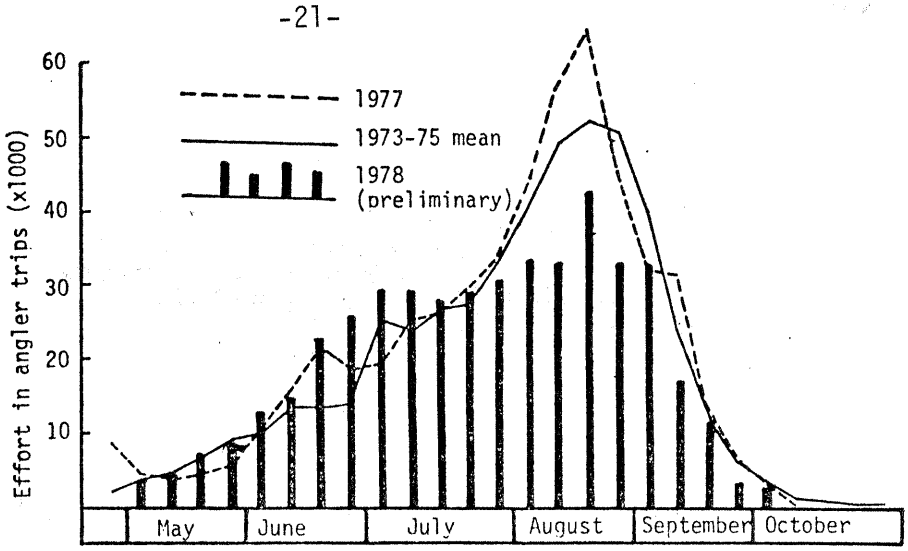

Figure 14. Weekly Washington coastal sport fishing effort; 1977, 1978 (preliminary), and 1973-75 mean.

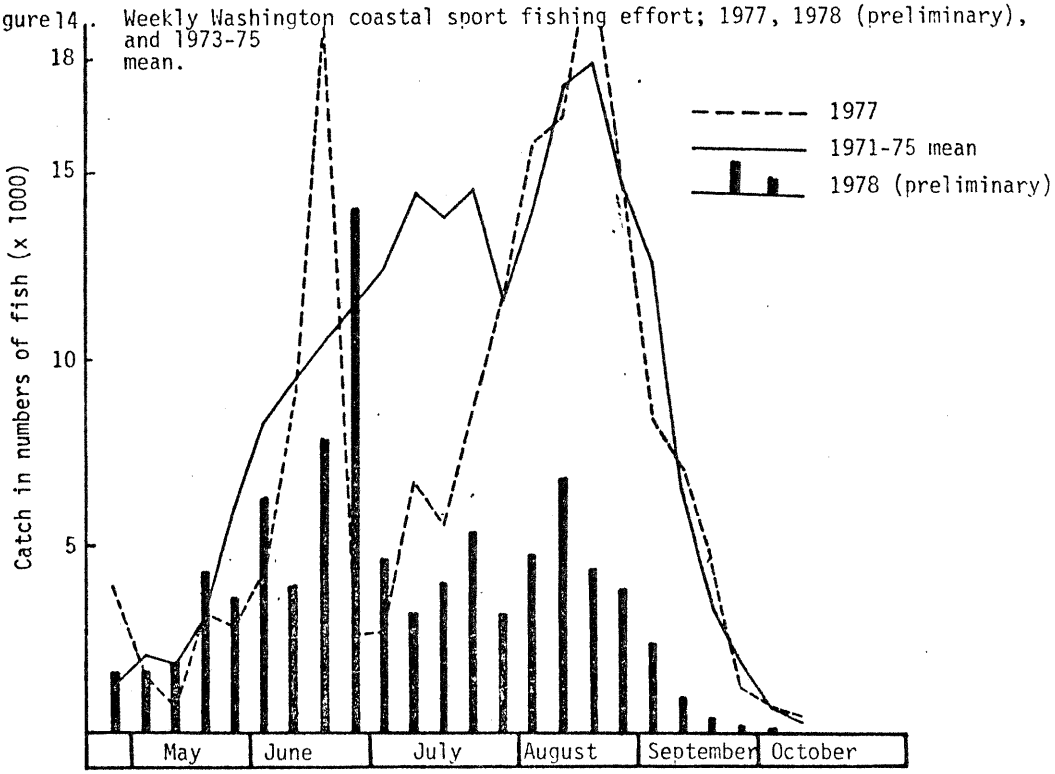

Figure 15. Washington coastal sport chinook salmon catch; 1977, 1978 (preliminary), and 1971-1975 mean.

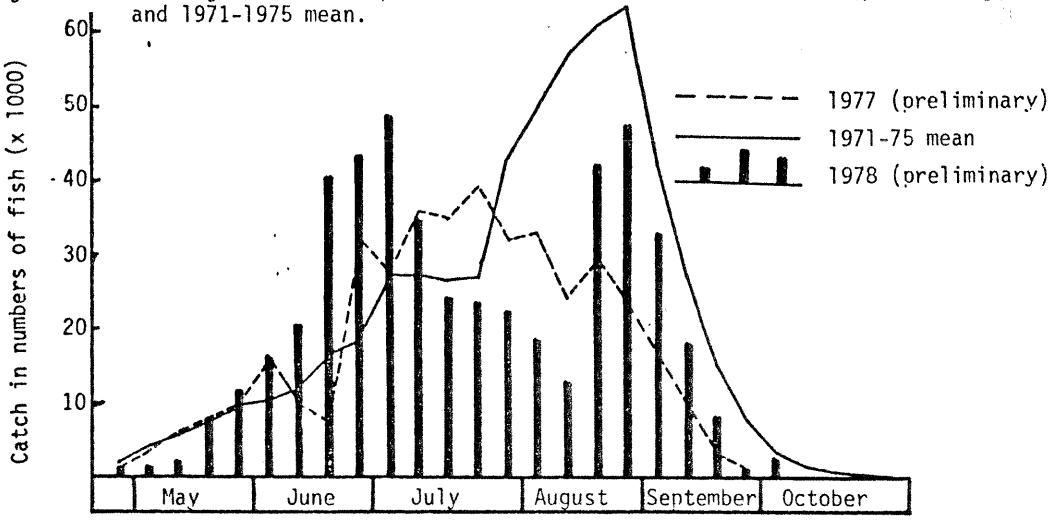

Figure 16. Washington coastal sport coho salmon catch, 1977 (preliminary), 1978 (preliminary), and 1971-75 mean.

OCTOBER 1978 REVIEW OF THE INSIDE SALMON FISHERIES

Introduction

All-citizen commercial net fisheries within Washington-Oregon jurisdiction occur in the Columbia River, Willapa Bay, Grays Harbor, and Puget Sound. These areas, plus over 100 tributary streams, have recreational salmon fisheries. In addition, the Columbia River, Grays Harbor, a number of north coastal rivers, and Puget Sound have treaty-Indian commercial net fisheries. Since all of the commercial fisheries are currently in various stages of active, day-to-day management (designed to meet specific spawning escapement objectives), it is impossible to present a cohesive, detailed summary for these fisheries. However, general status and preliminary harvest data are available for each of these commercial fisheries. Washington data are obtained mainly through WDF's Auxiliary Fish Catch Record System (AFCRS), which provides real-time in-season catch and effort statistics for all actively managed fisheries in the state.

Sport catch statistics are gathered for internal state waters through use of the sport salmon punch card. However, final statistics are not available until May or June of the following year. As a result, separate in-season estimates are made for all major sport fisheries such as Puget Sound marine areas and the main Columbia River. These estimates are made using catch and effort data obtained through field monitoring of the ongoing fisheries. In addition, real-time sport catch estimates are frequently made for specific river fisheries whenever these data are needed for active management situations.

Columbia River (Oregon and Washington) Fisheries and Fish Runs.

In 1978, a number of restrictions were placed on recreational angling as well as treaty and non-treaty commercial net fishing in the Columbia River. These were required to protect certain spawning stock populations, or to comply with the "Management Plan" adopted by the Federal Court in 1977.

The Management Plan was negotiated between Oregon, Washington and the four Columbia River treaty Indian tribes and was adopted, for a five-year period, by Federal Judge Robert Belloni in February 1977. The plan deals only with adult salmon entering the Columbia River system that are destined to migrate above Bonneville Dam. Major considerations include (1) protection for spawning stocks, (2) assurances for tribal ceremonial and subsistence fishing, (3) assurances for harvestable escapement levels of salmon and steelhead to the Snake River, and (4) development of a sharing formula between treaty and non-treaty fisheries for the harvest of those fish that are determined to be above levels required for spawning escapement plus upriver harvest.

The plan currently provides catch sharing formulas for upriver-bound spring chinook and fall chinook salmon. For harvestable spring chinook, the plan calls for a 60 percent allocation to the non-treaty catch (sport plus commercial) below Bonneville Dam and 40 percent to the treaty catch in established fishing areas above Bonneville Dam. For harvestable fall chinook salmon, 40 percent go to the non-treaty fishery below Bonneville Dam, and 60 percent go to the treaty fishery above. The plan calls for protection of other species or races of upriver-bound runs, most of which are in a generally depressed condition (Table 14). Steelhead trout are designated as a non-target species for any fishery other than sport.

Table 14. Run size estimates for salmon[1/] and steelhead destined to migrate above Bonneville Dam (in 1,000's of fish).

	Spring chinook	Summer chinook	Sockeye	Fall chinook	Coho	Steelhead
1971	168.1	90.1	150.5	296.1	75.4	239.2
1972	284.9	78.7	123.3	233.8	65.9	230.0
1973	238.1	48.9	58.4	316.5	54.6	191.8
1974	108.0	34.0	35.6	238.2	61.0	151.5
1975	104.1	44.4	55.4	373.0	58.3	84.1
Average 1971-75	180.6	59.2	84.6	291.5	63.0	
1976	78.3	42.1	33.7	358.6	51.9	122.4
1977	142.8	41.0	93.7	281.0	38.9	193.4
1978[2/]	120.0	44.0	20.0	239.0	50.0	113.2

[1/] Includes adult and jack salmon.
[2/] Preliminary.

For management purposes, the various Columbia River salmon runs are separated by seasons which reflect run timing through the standard treaty and non-treaty fishing zones, both above and below Bonneville Dam. Following is a current status for each of five seasonal fisheries.

Winter Season (January-March). The "winter season" is primarily a non-treaty fishery designed to harvest the early arriving segments of spring chinook salmon destined for several lower river tributaries, with Willamette River fish predominating. Although these stocks are not covered under the Management Plan, care must be taken to assure that the season does not unduly impact the upriver spring chinook run during the latter part of March. The 1978 winter season commercial catch of just under 13,000 fish was below the 1971-75 average, but considerably better than the two previous seasons (Table 15). This year's catch was considered quite good in view of the brief eight-day season allowed. Through the early 1970's, the winter season averaged more than 12 days per year. The favorable lower river sport harvest through March of 4,700 chinook was indicative of high effort and good river conditions for sport angling (Figure 17).

Table 15. Columbia River winter season landings (in 1,000's).

	Commercial		Sport
Year	Nos.	Pounds	Nos.
1971	13.4	278.0	6.5
1972	15.8	331.0	.2
1973	17.2	337.5	7.4
1974	13.3	277.0	2.2
1975	9.1	184.8	2.4
Average 1971-75	13.8	281.7	3.7
1976	4.7	96.0	3.2
1977	7.5	145.0	3.1
1978[1/]	12.8	256.0	4.7

[1/] Preliminary.

Spring Season (April-May). Spring seasons below Bonneville Dam involve upriver-bound spring chinook salmon, as well as many spring chinook destined for lower river tributaries. All mainstem Columbia fisheries during this season are conducted under guidelines of the Management Plan.

The 1978 upriver-bound spring chinook run to the Columbia River did not provide any harvestable numbers of fish to be shared between treaty and non-treaty fishermen. Consequently, there was no commercial season above or below Bonneville Dam (Table 16). Sport salmon fishing was closed from April 1 through the entire spring season along the lower and middle Columbia reaches (Figure 18).

Table 16. Columbia River spring season landings (1,000's).

	Non-treaty			Treaty	
	Commercial		Sport	Commercial	
Year	Nos.	Pounds	Nos.	Nos.	Pounds
1971	22.6	363.3	20.0	12.7	162.5
1972	69.9	1,076.5	28.9	42.8	637.9
1973	60.5	928.5	35.5	34.1	533.9
1974	8.4	135.1	13.3	17.5	270.8
1975	0	0	0	0	0
Average 1971-75	32.3	500.7	19.5	21.4	321.0
1976	0	0	0	0	0
1977	9.3	144.0	14.0	17.1	258.2
1978[1/]	0	0	0	0	0

[1/] Preliminary.

Summer Season (June-July). Summer seasons involve runs of upriver-bound summer chinook and sockeye salmon, and require management considerations for the early running "Group A" summer steelhead destined for the Snake River system. Each of these stocks falls under specific Management Plan guidelines.

Because of greatly reduced run strengths in recent years, each of these summer running stocks requires continued protection to achieve even minimal spawning escapement objectives. Consequently, in 1978 as in the past several years, no sport or treaty and non-treaty commercial net fisheries were allowed.

Early Fall Season (August below Bonneville Dam; August-October Above). The early fall season deals with upriver-bound fall chinook salmon. Both below and above Bonneville Dam, this run's timing coincides to varying degrees with Snake River runs of "Group A" and "Group B" summer steelhead. All fisheries conducted in August below Bonneville Dam and from August through October above Bonneville are under the Management Plan sharing formula for fall chinook.

The upriver adult fall chinook run destined above Bonneville totaled 184,000 fish in 1978 which is below the expected run of 250,000 fish.

This is less than the minimum average run size of 300,000 upriver fall chinook that was set by the Columbia River Management Plan. The total catch by Indian and non-Indian fisheries was 105,000 leaving the spawning escapement of upriver fall chinook above all fisheries at 79,000 adult fish which is somewhat short of the goal of 100,000 set by the Columbia River Management Plan. The 1978 non-treaty commercial harvest of 38,000 fish during the early fall season was far below average and one of the smallest catches on record (Table 17). This resulted from a severe reduction in August fishing time. That restriction was necessary to comply with the 60 percent treaty allocation as well as the Columbia River Management Plan stipulation of requiring a make-up during succeeding years of a treaty fishery deficit of 20,000 fish carried over from 1977. The 1978 treaty fishery took just over 67,000 fall chinook, thus the Indian fishery met its 63,000 fish (60%) allocation and was able to make up 4,000 fish from the 1977 deficit of 20,000.

Table 17. Columbia River early fall season landings (in 1,000's).

	Non-treaty		Treaty	
Year	Nos.	Pounds	Nos.	Pounds
1971	93.8	2,044.7	56.5	953.6
1972	96.3	2,177.5	42.9	634.5
1973	105.4	2,350.9	67.9	1,148.3
1974	52.2	1,225.6	54.9	980.1
1975	95.9	2,257.8	140.6	2,665.6
Average 1971-75	88.7	2,011.3	72.6	1,276.4
1976	33.3	746.3	134.9	2,553.5
1977	75.0	1,376.1	60.1	1,025.1
1978[1/]	38.0	910.0	67.1	1,200.0

[1/] Preliminary.

Late Fall Season (September-November). The late fall season establishes a non-treaty fishery below Bonneville Dam to harvest fall chinook and coho salmon destined for lower river tributaries. To a large degree these stocks are of hatchery origin. The season generally runs from September through early November, thus eliminating most harvesting conflicts with upriver bound fall chinook, late running summer steelhead, and early running winter steelhead. Consequently, the late fall season does not come directly under any Management Plan guidelines. However, precautions must be taken during early September fishery openings in order to minimize incidental catches of upriver-bound chinook and steelhead.

The 1978 late fall season opened somewhat later than in recent years. In addition, less fishing area was available to fishermen through mid-September due to a Federal Court Order imposing a closure between the Willamette River and the Bonneville deadline, 5 miles below Bonneville Dam. This was done to provide maximum protection for any upriver-bound chinook still moving through that area. Due to predictions for only a moderate lower river chinook return and for a relatively poor abundance of coho, the late fall season was restricted to seven 4-day weeks extending to November 2. Through mid-October, salmon runs and harvest

rates were about as expected, and projected catches should be approximately 56,000 chinook and 85,000 coho (Table 18, Figures 20 and 21). The gillnet fishery for coho is below the projected catch of 150,000 but well above the 1977 catch of 35,400.

Table 18. Columbia River late fall season commercial landings (in 1,000's).

Year	Chinook		Coho	
	Nos.	Pounds	Nos.	Pounds
1971	122.1	2,027.3	264.3	2,191.5
1972	43.4	715.4	131.3	1,177.5
1973	165.3	3,201.4	183.7	1,823.2
1974	44.7	748.5	266.2	2,391.0
1975	77.4	1,478.1	156.6	1,530.8
Average 1971-75	90.6	1,634.1	200.4	1,822.8
1976	114.2	2,174.4	164.6	1,269.4
1977	95.5	1,814.5	35.4	270.5
1978[1/]	56.0		90.0	

[1/] 1978 projection through season's end.

Willapa Bay

The early season gillnet fishery in Willapa Bay for non-local chinook stocks and sturgeon extended from July 6 through August 26. Chinook catches during this season were low, with a preliminary estimate of 3,900 fish. The fishery continued without weekly closures through August 20.

Local stock chinook catches in the regular fall season (after August 26) totaled approximately 6,400 fish through October 22. Coho catch for the same period is approximately 5,900. A one day per week fishery is currently being permitted during the chum management period. Recent year catches are found in Table 19. Willapa Bay is managed primarily on the basis of hatchery run strength of chinook and coho and natural run strength for chum.

Table 19. Willapa Bay chinook and coho catches in numbers of fish by gillnet gear.

Year	Early season chinook[1/]	Regular fall season	
		Chinook	Coho
1971	2,059	7,830	14,462
1972	2,376	8,562	10,755
1973	27,857	12,586	16,716
1974	4,997	8,727	15,821
1975	6,791	8,759	7,393
1976	15,685	12,654	9,021
1977[2/]	21,804[3/]	9,561[4/]	3,073[4/]
1978	3,900[3/]	6,400[4/]	5,900[4/]
1971-75 mean	8,816	9,293	13,029

[1/] Prior to August 26.
[2/] Subject to minor change.
[3/] Preliminary.
[4/] Partial only.

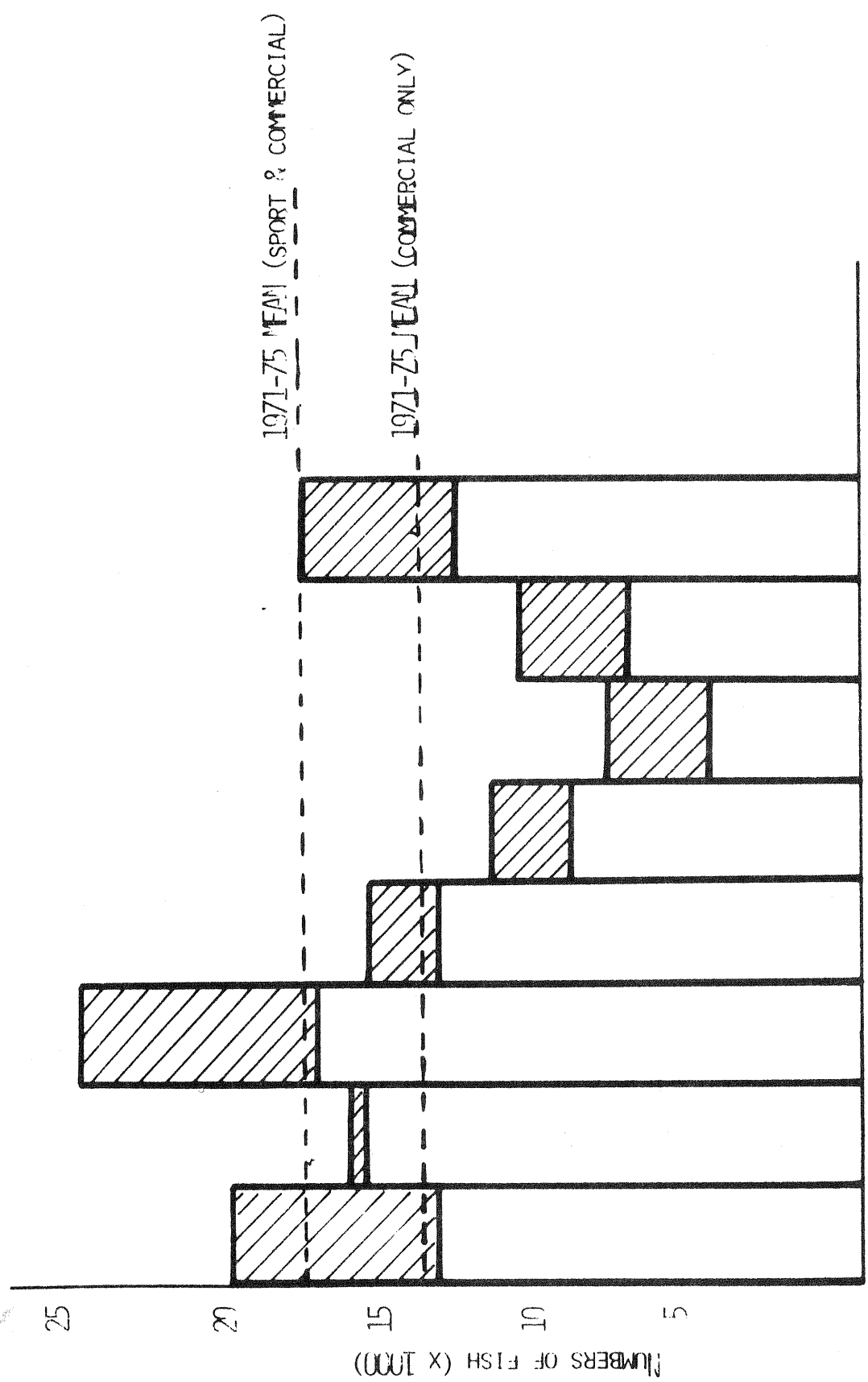

FIGURE 17. COLUMBIA RIVER WINTER SEASON LANDINGS, COMMERCIAL AND SPORT (SHADED REGION) 1971 TO 1977, 1978 (PRELIMINARY)

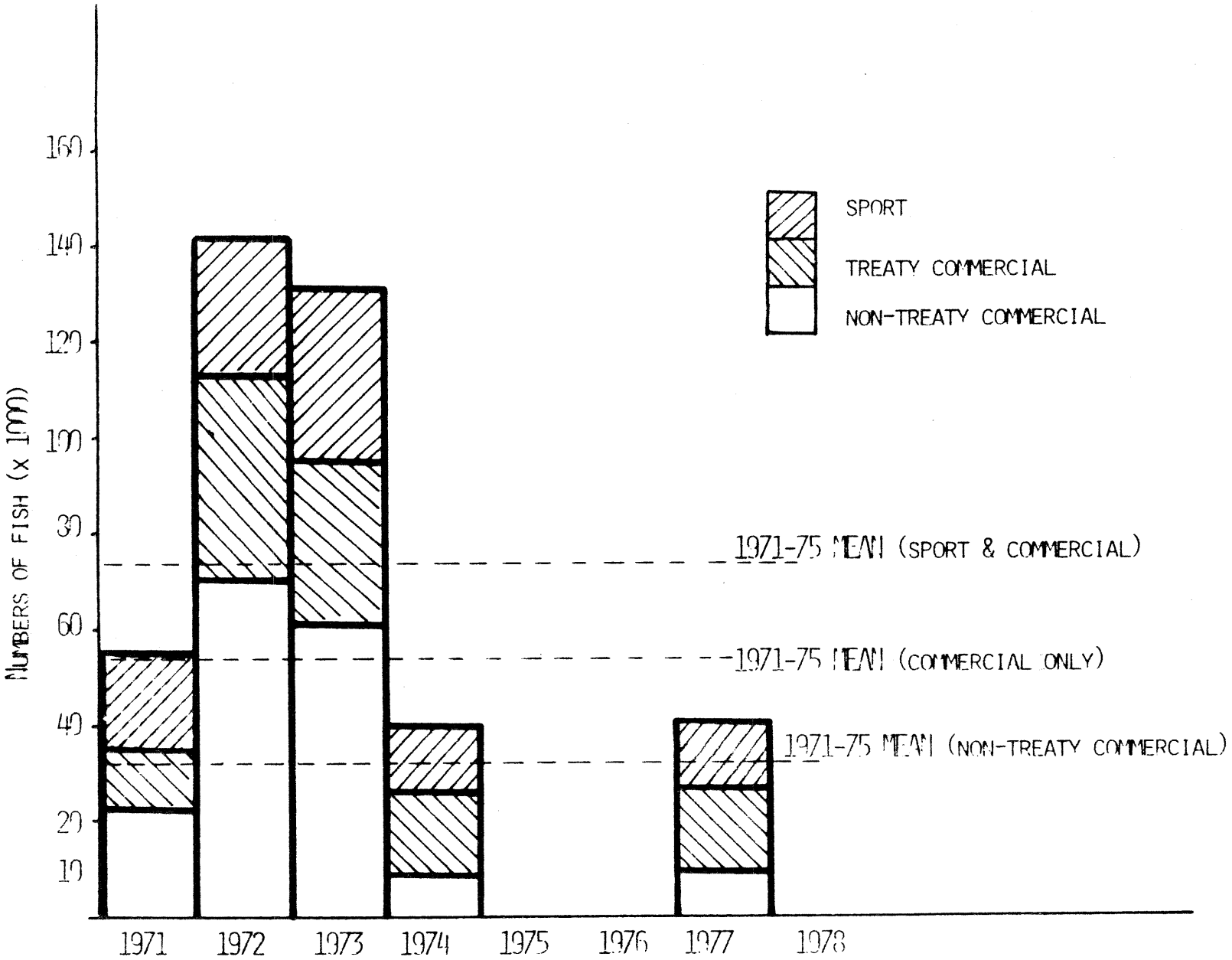

FIGURE 18. COLUMBIA RIVER SPRING SEASON LANDINGS, INCLUDING SPORT & COMMERCIAL (TREATY & NON-TREATY) TOTALS, 1971 TO 1977, 1978 (PRELIMINARY) (NO OPEN SEASON 1975, 1976 and 1978)

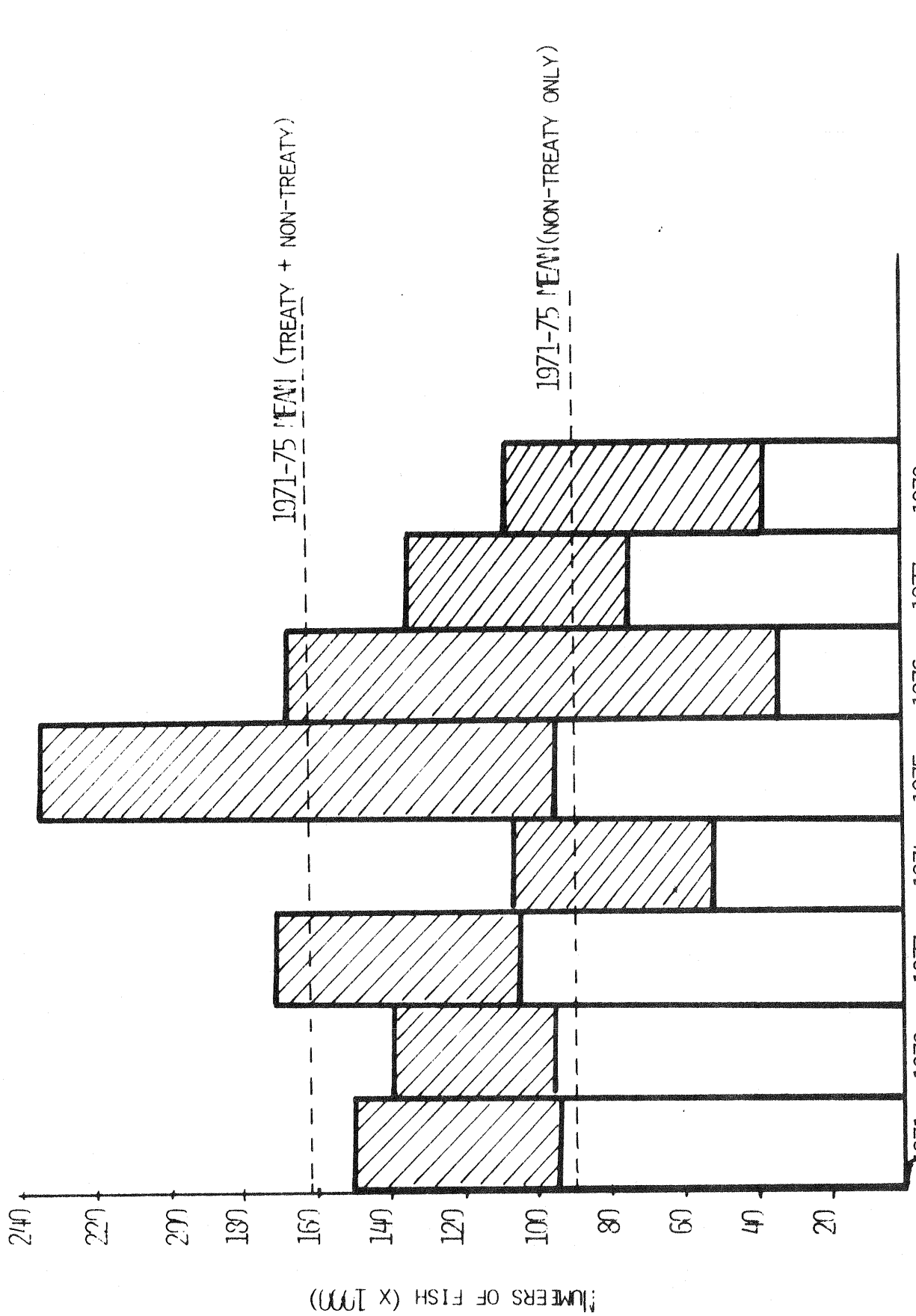

FIGURE 19. COLUMBIA RIVER EARLY FALL SEASON LANDINGS, TREATY (SHADED REGIONS) AND NON-TREATY, 1971 TO 1977, 1978 (PRELIMINARY)

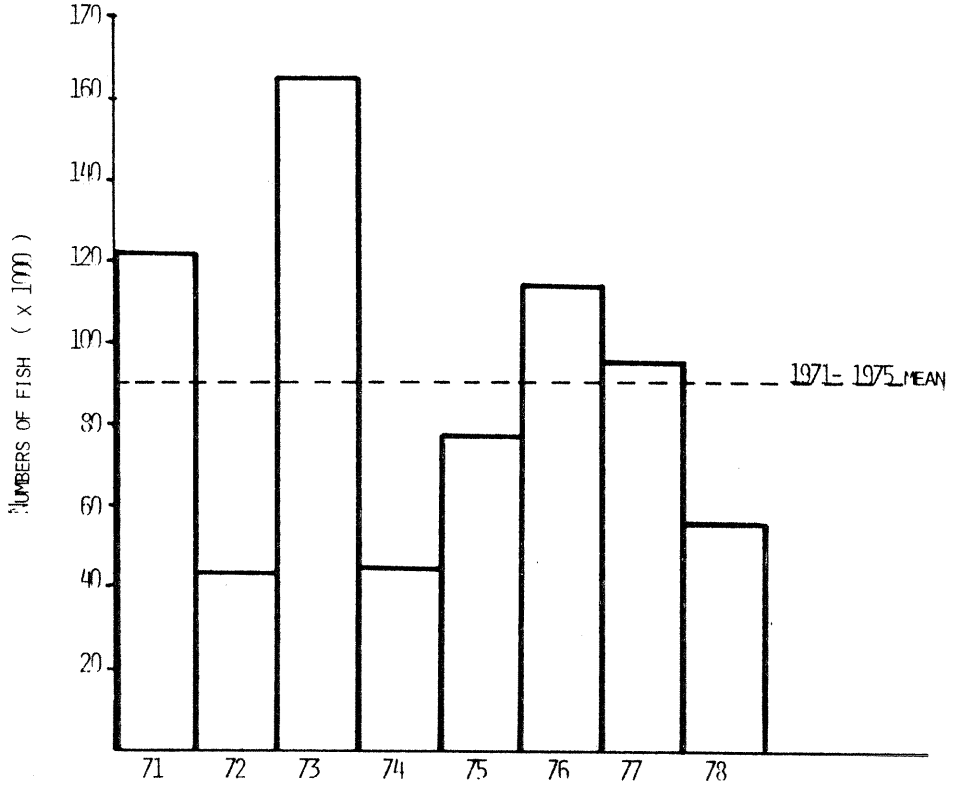

FIGURE 20 COLUMBIA RIVER LATE FALL SEASON CHINOOK LANDINGS, 1971 TO 1977. 1978 (PRELIMINARY)

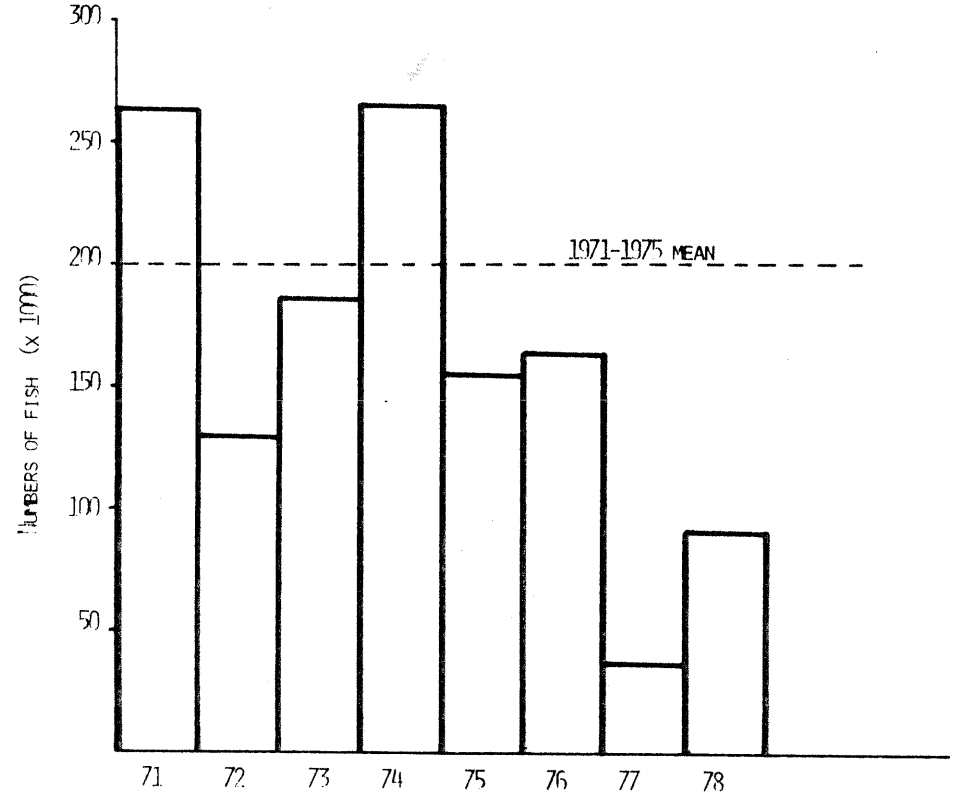

FIGURE 21 COLUMBIA RIVER LATE FALL SEASON COHO LANDINGS, 1971 TO 1977, 1978 (PRELIMINARY)

The 1971-75 average chinook catch for Weeks 36 through 43 (comparable to August 26 through October 22, 1978) is 7,910. The average coho catch for this period is 10,316. Catches in 1978 will be below the 1971-75 average for both chinook and coho (Figures 22 and 23).

Grays Harbor

The early gillnet fishery in Grays Harbor for non local chinook stocks and sturgeon extended from July 6 through August 14. The preliminary estimate of chinook catch during this period is 900 fish (Table 20).

The 1978 predictions for fall run chinook and coho salmon returning to Grays Harbor were for only 14,700 chinook and 42,000 coho, with escapement objectives of 15,000 and 38,000 fish, respectively. The entire 4,000 harvestable coho were allocated to the treaty Indian fishery by Federal Court order. No fisheries were permitted to target on chinook. Thus, any local stock fall chinook catch is taken incidental to other target species. Total treaty and non-treaty chinook and coho catches for recent years are shown in Table 20 and Figures 24 and 25. The 1978 catches shown are projected numbers. The runs are presently being fished by treaty Indians only. A chum fishery may be allowed for non-treaty fishermen. Grays Harbor is managed primarily on the basis of natural run strength for all species.

Due to anticipated Federal Court orders, the entire 1978 non-treaty gillnet fishing season on local salmon stocks will probably be less than 24 hours.

Table 20. Grays Harbor Indian and non-Indian chinook and coho catches in number of fish by gillnet gear.

Year	Early season chinook[1/]	Regular fall season					
		Coho			Chinook		
		Non-Indian	Indian	Total	Non-Indian	Indian	Total
1971	369	58,698	--	58,698	9,000	--	9,000
1972	397	46,552	--	46,552	10,156	--	10,156
1973	5,479	40,162	--	40,162	11,051	--	11,051
1974	1,712	49,515	--	49,515	7,968	--	7,968
1975	377	20,985	3,975	24,960	7,037	1,958	8,995
1976	5,280	13,863	14,317	28,180	2,874	3,023	5,897
1977[2/]	13,438[3/]	1,345	2,581	3,926[4/]	1,827	4,006	5,833[5/]
1978	900[3/]	--	--	4,000[4/]	--	--	1,000[5/]
1971-75 mean	1,667	43,182		43,977	9,042		9,434

[1/] Includes small treaty Indian catch.
[2/] Preliminary, subject to minor change.
[3/] Preliminary.
[4/] Projection only.
[5/] Projected catch incidental to coho and chum salmon fisheries.

Chehalis River (Grays Harbor Tributary)

A non-treaty Indian fishery is conducted by the Chehalis Tribe on their Chehalis Reservation. Despite the fact that no such gillnet fisheries (treaty or non-treaty) were permitted to intercept Chehalis River runs, the September chinook catch was average, and the coho catch was only 25 percent of average. Season total catches cannot be projected at this time, but are expected to be poor. Catches for recent years are tabled below (Table 21).

Table 21. Chehalis Indian Reservation Catches, 1971-77.

Year	Fall chinook[1/]	Coho
1971	489	3,607
1972	1,655	1,604
1973	2,262	3,288
1974	547	4,715
1975	591	1,131
1976	773	3,988
1977[2/]	1,417	1,603
1978[3/]	151	122
1971-75 mean	1,109	2,869

[1/] August through December.
[2/] Preliminary, subject to minor change.
[3/] Partial only through September.

Quinault River

Quinault River chinook and coho runs in recent years have relied increasingly upon hatchery returns (Table 22). Early indications for 1978 returns are for an above average run of chinook, but a below average return of coho. Both runs are managed primarily on the basis of hatchery run strength.

Table 22. Quinault River Indian Catches[1/].

Year	Fall chinook	Coho
1971	2,112	11,805
1972	2,938	13,021
1973	1,596	9,276
1974	2,458	14,807
1975	1,578	4,738
1976	3,236	5,604
1977	5,763	1,862
1978[2/]	5,440	3,934
1971-75 mean	2,136	10,729

[1/] 1973-77 data provided by the Quinault Indian Tribe.
[2/] Partial catches only.

Queets River

Quinault tribal net fisheries are also conducted on the Queets River. Catches shown for 1978 are preliminary estimates to late October (Table 23). Recent year's catches for the entire season are also provided. Complete closure of the 1978 fishery was necessary recently to protect coho spawning escapements. The fishery relies primarily on natural production of both chinook and coho.

Table 23. Queets River Indian catches, 1971-1977[1/].

Year	Fall chinook	Coho
1971	2,322	5,842
1972	2,527	5,068
1973	3,629	9,000
1974	3,063	12,015
1975	2,052	2,883
1976	1,274	2,849
1977	1,016	1,001
1978[2/]	1,018	2,137
1971-75 mean	2,719	6,962

1/ Data provided by Quinault Indian Tribe.
2/ Preliminary catches through October 20.

Total returns of coho to the Queets River system have exceeded the spawning escapement objective of 9,700 fish in only one of the past six years (Table 24). Given the three brood year cycles presented in this table (1972-75, 1973-76, 1974-77), a harvest rate of approximately 20 percent would probably perpetuate the run at its present level. Despite this fact, harvest rates from 0.35 to 0.83 have occurred. If these harvest rates were allowed to continue, this run will cease to be a viable segment of the coho resource. This example illustrates the need to provide sufficient escapement from the ocean fishery for an inside fishery plus meeting the spawning escapement objective. It also illustrates the equally important need to manage properly inside fisheries to obtain the necessary spawning escapement objective when such escapement (plus any additional harvestable fish) leave the ocean fishery.

Table 24. Data on Queets River coho salmon (provided by the Quinault Tribe at a U.S. District Court Fishery Advisory Board meeting on October 19, 1978.

	Number of Fish					
Year	Treaty Indian Catch	Escapement Index	Exploitation Rate	Total Run	Spawning Escapement	Total Returns
1972	4,471	3.46	0.56	7,984	3,513	3,473 (in 1975)
1973	4,074	3.79	0.52	7,835	3,761	5,814 (in 1976)
1974	12,015	2.61	0.82	14,652	2,637	2,860 (in 1977)
1975*	2,883	0.6	0.83	3,473	590	-- (in 1978)
1976	2,849	2.87	0.49	5,814	2,965	-- (in 1979)
1977	1,001	1.83	0.35	2,860	1,859	-- (in 1980)

* Escapement index believed to be unrealistically low due to survey conditions.

(NOTE: Actual escapement estimated at 1,125 fish from other data. Spawning escapement objectives proposed by the Quinault Tribe is 9,700 fish.)

Hoh River

In-season catch and effort data are used as indicators of returning run sizes in the Hoh River. The latest update on run sizes (October 25, 1978) forecasted a total return of 2,700 fall chinook (escapement objective: 2,700) and 7,770 coho (escapement objective: 4,700). Recent catches are shown in Table 25. The fishery is managed on the basis of natural run strengths.

Table 25. Hoh Indian catches, 1971-78.

Year	Fall chinook[1/]	Coho
1971	1,128	5,187
1972	668	2,886
1973	2,187	6,701
1974	812	5,630
1975	666	2,272
1976	462	1,742
1977[2/]	1,563	911
1978[3/]	0 (446)	3,070 (1,304)
1971-75 mean	1,092	4,535

[1/] Chinook catches after August 31.

[2/] Preliminary estimate, subject to minor change.

[3/] Allowable catch based on in-season run size estimates of October 25, 1978. (Actual catch to date--partial data.)

Quillayute River

Quileute tribal fisheries have been closed for conservation purposes since October 13. Conservation closures have also been imposed by WDF on all ocean sport fishing within three miles of the river mouth since October 9. The river and its tributaries are closed to the taking of adult salmon by the sport fishery (a 24-inch maximum size limit allows the harvest of jack salmon to continue).

A two-week fishery conducted by the Quileute Tribe indicated a total coho return of 12,300 fish and a chinook return of 7,000 fish. The coho spawning escapement objectives of 18,000 fish for natural spawning and 1,600 fish for hatchery needs will not be met. The chinook escapement objective of 6,000 natural spawners will not be attained. Catches during the limited 1978 fishery are tabled below (Table 26). The fishery closures are effective for the remainder of the season.

Table 26. Quileute Indian catches, 1971-78.

Year	Fall chinook[1]	Coho
1971	2,941	6,301
1972	3,523	7,771
1973	3,507	43,982
1974	3,849	29,625
1975	2,290	8,140
1976	2,246	8,762
1977[2]	5,377	6,168
1978[3]	1,700	4,600
1971-75 mean	3,222	19,146

[1] Catches after 8/31.
[2] Preliminary estimate, subject to minor changes, USFWS data.
[3] Preliminary.

Fall salmon runs in the Quillayute River system are managed on the basis of natural run strengths. Exceptionally good returns of hatchery coho in 1973 and 1974 have not been repeated. Fall chinook production at the existing hatchery facility has not been emphasized.

Puget Sound - Commercial

Harvest management for chinook and coho salmon within Puget Sound is based upon specific allocation requirements between non-treaty and treaty fisheries as a result of the "Boldt Decision" (U.S. vs. Washington, Civil No. 9213). This allocation occurs on a stock by stock basis depending upon prior interceptions (ocean troll, ocean sport and Puget Sound sport) plus sub-sistence-ceremonial and on-reservation allowances for catch of treaty Indian tribes. These allocations, current through in-season run size estimates of October 18, 1978, are presented in Table 27. Since catches of both chinook and coho are still continuing, harvests shown are only projected season end totals.

For comparison purposes, total projected Puget Sound harvests by all commercial gear types for chinook and coho salmon are 210,000-220,000 and 710,000-750,000 fish respectively. These total projected catch figures include salmon of both Puget Sound and Canadian origin which are caught in Puget Sound waters. The 1971-75 comparable average catches are 158,000 chinook and 748,000 coho. The slightly below average coho catch is the product of a poor abundance of Candaian coho (which provide a significant percentage of the northern Puget Sound catches, and an above average Puget Sound return.

Table 27. Harvests of Puget Sound origin chinook and coho salmon anticipated for 1978 (as of October 18, 1978).

	Summer/fall chinook		Coho	
Management Unit	Harvestable (nos. of fish)	Treaty Indian allocation	Harvestable (nos. of fish)	Treaty Indian allocation
Strait of Juan de Fuca	200	No allocation prescribed	20,300	82%
Nooksack-Samish	99,000	63%	84,400	76%
Skagit	6,300	91%	29,900	81%
Stillaguamish-Snohomish	9,500	96%	118,600	75%
South Puget Sound	26,600	93%	327,000	67%
Hood Canal	10,300	80%	57,800	82%
Total	151,900		638,000	

Puget Sound - Sport

In-season Puget Sound marine sport fishery catch projections are available through September 17, 1978. These statistics are only estimates and will be subject to change as salmon punch card returns are analyzed. The area is defined as all of Puget Sound easterly of the Sekiu River mouth, but does not include any river sport fishery catch estimates. The majority of river catches are small jack salmon which are surplus to spawning escapement needs (this is primarily a result of restrictive regulations and not the selectivity of sport gear). In 1978, preliminary estimates through September 17 are that 171,000 chinook and 219,000 coho have been harvested by the Puget Sound marine sport fishery.

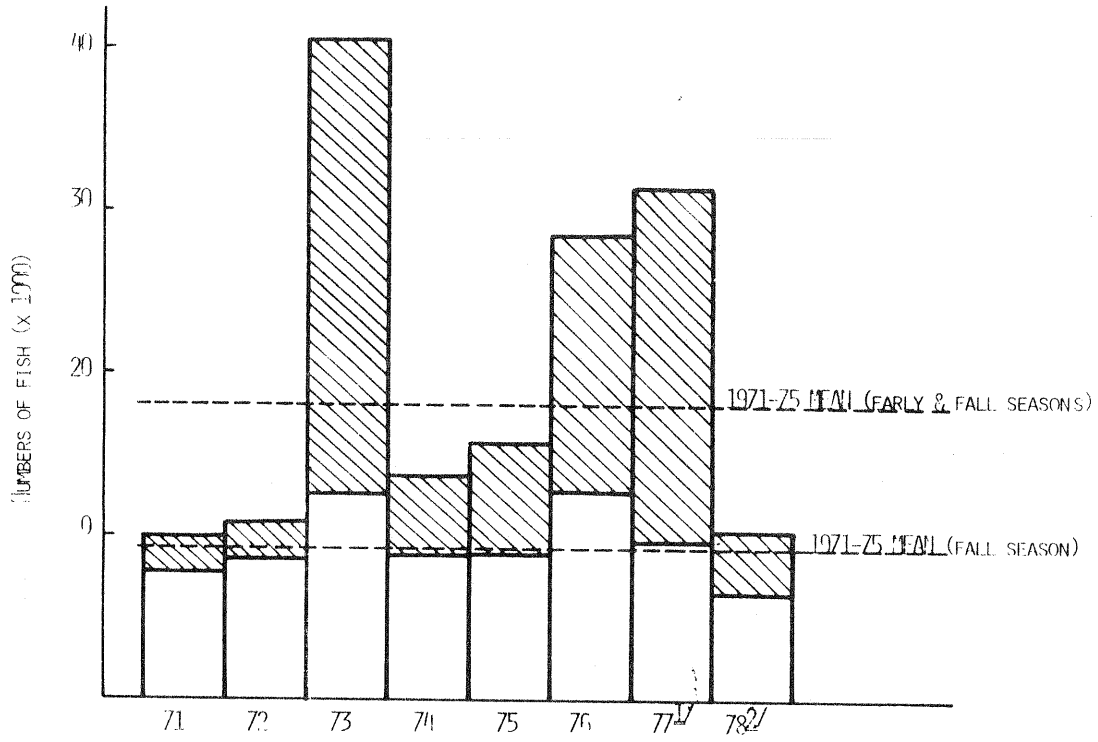

FIGURE 22 WILLAPA BAY CHINOOK CATCH BY GILL NET 1971 TO 1978 (77,78 PRELIMINARY) WITH 71-75 MEAN EARLY SEASON CATCH REPRESENTED BY SHADED AREAS.

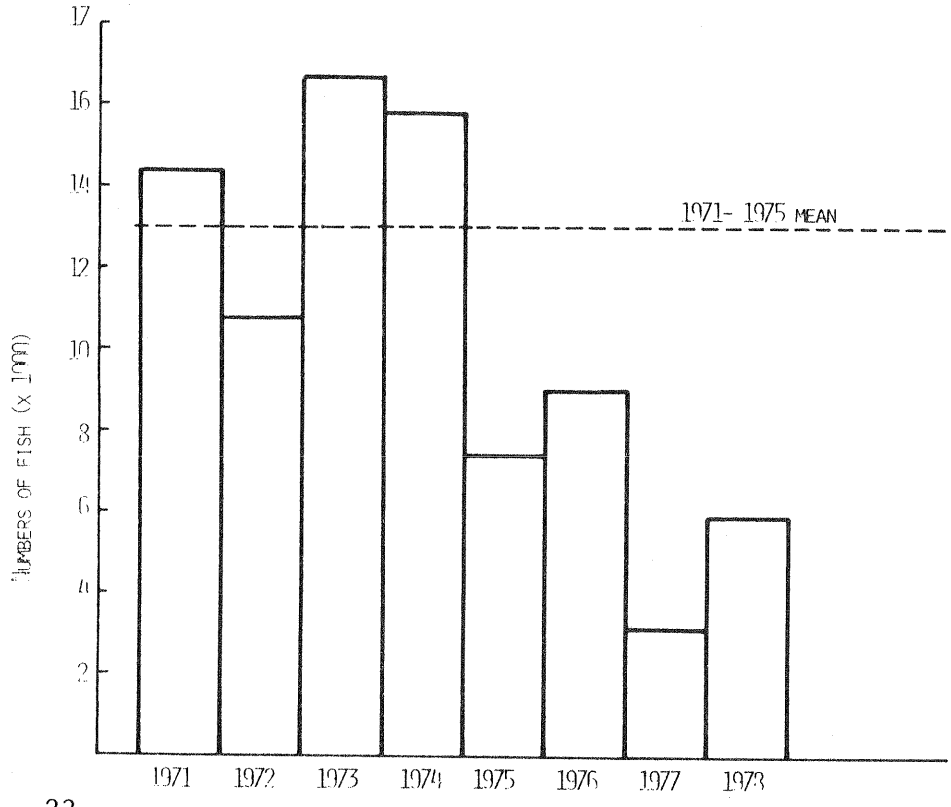

FIGURE 23 WILLAPA BAY COHO CATCH BY GILL NET 1971 TO 1978 WITH 1971-1975 MEAN (1977, 1978 PRELIMINARY).

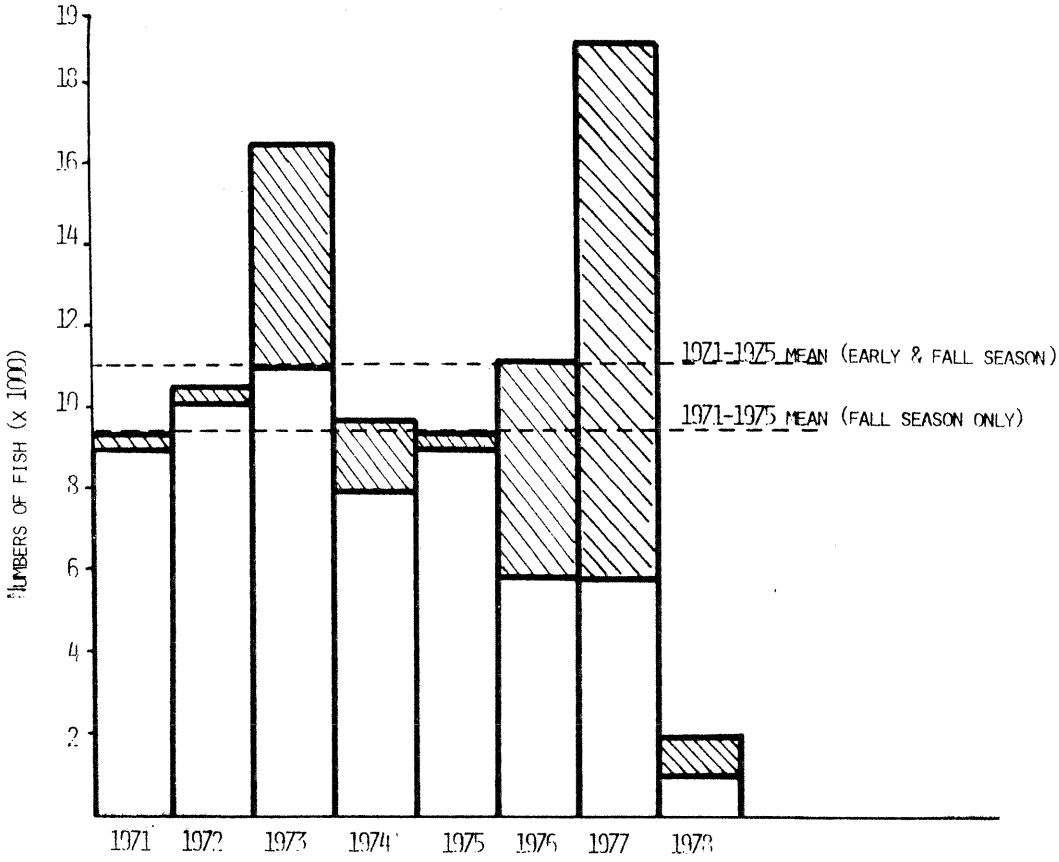

FIGURE 24 GRAYS HARBOR INDIAN AND NON-INDIAN CHINOOK CATCH BY GILL NET 1971 TO 1978 (1977 AND 1978 PRELIMINARY) WITH 1971-1975 MEAN. EARLY SEASON CATCH REPRESENTED BY SHADED REGIONS.

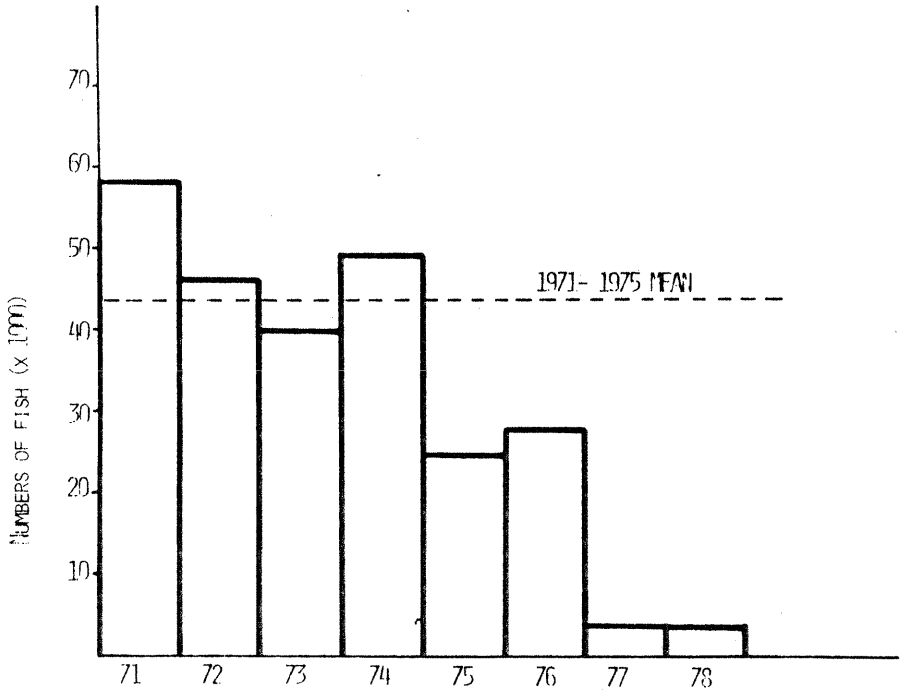

FIGURE 25 GRAYS HARBOR INDIAN & NON-INDIAN COHO CATCH BY GILL NET, 1971-1978, WITH 1971-1975 MEAN (77,78 PRELIMINARY)

SPAWNING ESCAPEMENTS

Introduction

Field crews are presently checking spawning escapement levels through regular "index area" counts on major spawning grounds. These surveys are made by air, by boat and on foot. This information will not totally be analyzed until spring. Final escapement estimates will be available at that time.

For California and the Oregon coast, escapement data are not available yet because spawning has not been completed. For Washington, present information available for both hatchery and natural spawning escapement levels is even more preliminary than that available for the internal state water's fisheries. Due to variability of chinook and coho salmon run timing between and within regions, best estimates at this time are what should be achieved given magnitude of runs as indicated by in-season run size updating methods. These rely primarily on commercial net fishery catch and effort data. During this current active management period, real-time hatchery return figures are obtained by repeatedly phoning the hatcheries for estimates of "fish-on-hand". Final returns as well as actual numbers of eggs taken will not be available until early 1979.

Columbia River. General status of upriver-bound salmon runs to the Columbia River were described in a previous section of this report. Status of salmon stocks originating below Bonneville Dam can be seen in indices of escapement to lower river tributaries (Table 28).

Table 28. Indices of escapement to Washington tributaries below Bonneville Dam.

	Spring chinook	Fall Chinook		Coho	
Year	Hatchery return (1,000's)	Hatchery return (1,000's)	Natural spawning (1,000's)	Hatchery return (1,000's)	Natural spawning (1,000's)
1971	6.2	30.4	20.3	128.3	9
1972	2.2	18.7	16.5	65.1	13
1973	5.6	18.3	22.8	47.9	3
1974	15.2	12.0	25.4	99.3	7
1975	16.7	17.1	24.5	56.7	5
Average 1971-75	9.2	19.3	21.9	79.5	7.4
1976	19.5	13.3	15.5	39.4	2/
1977	15.9	14.6	10.0	22.9	2/
1978 1/	9.3	19.0	10.0	Not available	2/

1/ 1978 figures are preliminary..

2/ Poor survey conditions -- counts not comparable.

In the lower Columbia River system both the spring and fall chinook runs have been good and the agencies have met their escapement goals. For the most part, upriver spring and summer run chinook remain in a depressed state. Even though the 1978 spring chinook return was well below returns of the past four years, it was more than adequate to achieve required hatchery egg takes. Surplus eggs from Cowlitz River Hatchery are being used to make up shortages at some upriver facilities.

Spawning escapements of upriver fall chinook above all fisheries was 79,000 adult fish which is somewhat short of the goal of 100,000. However, a return of over 19,000 fall chinook to Washington hatcheries provided total egg-take requirements. A number of individual stations did come up short, but surpluses at other facilities provided the required make up. Early natural spawning ground surveys indicate relatively low escapements, much the same as in 1977.

Early stock coho salmon that spawn in October returned in good numbers during 1978. Required egg takes have been achieved for this stock. The later running stock, which makes up the major segment of Washington's Columbia River hatchery coho production, is just beginning to arrive at lower river stations. Harvest results in the late fall fishery, along with early arrivals at some lower river hatcheries, indicate that the total coho return will be considerably better than in 1977. Last year's record low return did not provide necessary coho egg supplies for some Washington-Columbia River hatcheries, whereas Oregon met minimal egg requirements in all their Columbia River hatcheries.

Oregon. The status of coho harvest in 1978 can be assessed by reviewing the ocean harvest in the Oregon production index area compared with the predicted index of total adult abundance. The Oregon production index includes Columbia River and Oregon coastal stocks accounted for in: (1) ocean fisheries south of Ilwaco, (2) hatchery and dam escapements, and (3) Columbia River gillnet catch. The total adult production for the index area can be predicted with a high degree of accuracy ($r = 0.985$) from the abundance of coho jacks of the previous year. Based on the above relationship the total adult production index for 1978 was predicted to be 2,030,000 (standard error 202,000).

The ocean fisheries will harvest an estimated 1,608,300 coho from the production index area (Table 29). Comparing the ocean total of 1,608,300 with the predicted 2,030,000 for the total adult production index (Table 30) it appears escapement will be adequate to meet hatchery needs and provide for a Columbia River gillnet fishery.

Preliminary jack returns of coho to Columbia River hatcheries this fall have been low. Although the jack returns are incomplete, numbers are expected to remain below last year. Both jack returns and the upwelling index appear to be good predictors of adult abundance the following year. Based on the low jack returns this year and poor upwelling along the Oregon coast during the spring of 1978, it is possible that adult availability in 1979 will be depressed.

Table 29. Estimate of the 1978 ocean catch of coho from the Oregon production index area[1/].

Area	Fishery		Total
	Recreational	Troll	
California	43,400	308,100	351,500
Oregon	277,500	628,400	905,900
Washington	227,900	123,000	350,900
Total	548,800	1,059,500	1,608,300

1/ Oregon production index area includes California, Oregon and Ilwaco, Washington

Table 30. Oregon index of production of adult coho in thousands of fish, 1961-78.

Adult Production Year	Adult Production Index Areas[1/]				
	Ocean			Oregon	
	Troll	Sport	Columbia	coast	Total
1961	525	174	69	24	792
1962	449	273	110	31	863
1963	757	343	107	29	1,236
1964	947	361	359	53	1,720
1965	1,195	509	385	46	2,135
1966	1,270	404	582	41	2,297
1967	1,652	641	592	53	2,948
1968	1,372	479	331	40	2,222
1969	907	426	309	42	1,684
1970	1,374	475	868	51	2,768
1971	2,403	682	522	63	3,670
1972	1,208	534	266	21	2,029
1973	1,251	424	284	31	1,990
1974	1,987	633	453	40	3,113
1975	1,016	423	279	7	1,725
1976	2,779	872	269	38	3,958
1977[2/]	(650)	(310)	(85)	(15)	(1,060)
1978[3/]	(1,060)	(548)			(2,030) predicted

1/ Components are troll: California, Oregon, Ilwaco
sport: California, Oregon, Ilwaco
Columbia: Gill-net catch, hatchery, and dam escapements
Oregon coast: Hatchery and wild escapement

2/ Preliminary

3/ Estimated

Escapement of coho to Oregon coastal hatcheries is not complete at this time although no problems are anticipated in obtaining adequate numbers of adults to meet hatchery production needs. Spawning surveys will not be completed until December and, therefore, trends of wild escapement in 1978 are not yet known for Columbia River or Oregon coastal streams although the trend has been downward in recent years.

Escapement of chinook to Oregon coastal hatcheries is incomplete but no problems are anticipated in meeting escapement needs. As with coho, status of wild stocks will not be known until spawning surveys are completed sometime in December.

Washington - Coastal. It is difficult to assess coastal escapements at this time due to the later timing of the runs on the spawning grounds and at hatchery facilities. Available run size information, however, is indicated in Table 31.

Table 31. Comments on Washington coastal salmon escapements for 1978.

Area	Comments
Willapa Bay	Hatchery returns of chinook and coho are poor to date. Egg take needs will not be met.
Grays Harbor	Early fall chinook escapements appear to be low. It is too early to assess coho escapements. However, coho escapement is likely to be below the spawning objective of 38,000 fish.
Quinault River	Natural spawning escapements expected to be low.
Queets River	Chinook run is not expected to meet escapement objective. Coho escapement will fall far short of the objective of 9,700 fish.
Hoh River	Both chinook and coho escapement needs can be met.
Quillayute River	Despite a complete closure of all fishing since early October, escapement of chinook will be slightly below the escapement objective. Native coho escapement will be less than half of the number required.

Puget Sound. Although final figures are not now available for either hatchery or wild escapement, it is anticipated that natural spawning and artificial production objectives will be achieved for all major stocks of fall chinook and coho.

EFFECT OF 1978 REGULATIONS

The regulations in effect during 1978 were intended to achieve the objectives of the plan. The gains or losses because of these regulations are based on the 5-year average (1971-1975). Due to a number of complex interacting variables, catches and escapements in any single year cannot be expected to match the predictions of the plan. With these constraints in mind, the following observations are presented:

1. Ocean Stock Assessment: The 1978 ocean landings (both recreational and troll) were below the 1971-75 average (Table 32). Low stock abundance or availability as well as 1978 regulations contributed to this decline.

2. Indian Treaty Fisheries: Generally, the management effort for 1978 moved toward fulfilling Indian treaty obligations in accordance with the stated objectives of the Salmon Management Plan. For the most part, Indian fisheries in the Columbia River and in Washington inside waters achieved the court-ordered proportion of the catch between Indian and non-Indian fisheries. The Indian fishery for upper Columbia River fall chinook, above Bonneville Dam, was able to make up 4,000 fish from the 1977 deficit of 20,000, but the goal for increasing the harvestable upriver fall chinook salmon run was not met. Low returns to Grays Harbor and certain Washington coastal streams necessitated severe restrictions on inside catches. It must be recognized that the full benefits of 1978 regulations were not expected to be achieved in a single year.

3. Inside Commercial Fisheries: The inside fishery landings were below average with the exception of Puget Sound chinook which were slightly above average. In the mainstem Columbia River, the spring and summer chinook seasons were closed due to the small run size; harvest during the other chinook seasons was low. Preliminary data on coho show the catch to be better than in 1977, but still below average.

4. Spawning Escapements: Spawning escapement data for 1978 are not yet available for California and Oregon coastal streams. For the Columbia River, it appears that chinook and early stock coho returns were adequate to fulfill hatchery egg taking requirements. Downriver spring and fall chinook escapements appear to be good, whereas upriver spring and summer stocks remain in a depressed state. Early returns from late running coho stocks indicate the total Columbia River coho returns for 1978 will be considerably better than 1977.

   Although difficult to assess at this time, it appears that natural spawning and artificial production objectives will not be met for some Washington coastal areas, but will be achieved for major Puget Sound stocks.

5. MSY-OY: At this date, it is too early in a preliminary analysis with incomplete data from the 1978 fishery to determine whether the OY poundage figures were achieved in 1978. Due to a number of interacting variables that affect stock abundance, MSY and OY cannot be expected to match predictions of the plan in any single year. There is no information available which indicates the Council needs to change OY for 1979.

Table 32. Summary of salmon fisheries off coasts of California, Oregon and Washington. Base years for management plans of 1977 and 1978 were 1971 to 1975. (in thousands of fish)

	California						Oregon					
	Troll			Ocean Sport			Troll			Ocean Sport		
Year	Chinook	Coho	Total	Chinook	Coho	Total	Chinook	Coho	Total	Chinook	Coho	Total
1971	434	442	876	188	67	255	103	1,490	1,593	30	312	342
1972	492	158	650	200	45	245	127	825	952	44	248	292
1973	816	348	1,164	198	32	230	363	796	1,159	61	234	295
1974	491	655	1,146	157	77	234	224	1,137	1,361	40	311	351
1975	578	204	782	103	21	124	225	657	882	76	253	329
Average 1971-75	562	361	923	169	48	217	208	981	1,189	50	272	322
1976	540	622	1,162	80	58	138	184	1,827	2,011	74	506	580
1977*	544	37	581	106	12	118	336	450	786	60	196	256
1978*	500	233	733	58	45	103	186	628	814	23	278	301

	Washington						Total					
	Troll			Ocean Sport			Troll			Ocean Sport		
Year	Chinook	Coho	Total	Chinook	Coho	Total	Chinook	Coho	Total	Chinook	Coho	Total
1971	252	1,264	1,516	160	747	907	789	3,196	3,985	378	1,126	1,504
1972	203	575	778	212	542	754	822	1,558	2,380	456	835	1,291
1973	317	702	1,019	204	472	676	1,496	1,846	3,342	463	738	1,201
1974	353	1,038	1,391	215	593	808	1,068	2,830	3,898	412	981	1,393
1975	274	774	1,048	262	481	743	1,077	1,635	2,712	441	755	1,196
Average 1971-75	280	871	1,151	211	567	778	1,050	2,213	3,263	430	887	1,317
1976	361	1,385	1,746	171	943	1,114	1,085	3,834	4,919	325	1,507	1,832
1977*	254	709	963	175	490	665	1,134	1,196	2,330	341	698	1,039
1978*	145	591	736	90	480	570	831	1,452	2,283	171	803	974

*Preliminary

6. Cape Falcon Dividing Line: The dividing line intended to control ocean effort on chinook stocks was moved south from Tillamook Head to Cape Falcon on the northern Oregon coast in 1978. Present data are incomplete to assess the effects of the new dividing line. Coded wire tag recoveries collected during the 1978 season have not been analyzed yet to determine stock composition of chinook in the corridor between Tillamook Head and Cape Falcon.

   Fishing effort during the closure north of Cape Falcon (June 15-30) shifted south off California and the Oregon coast in both 1977 and 1978. In 1978 the shift was farther south due to the availability of coho stocks. Whereas in 1977 fishing effort was concentrated primarily on chinook near the dividing line.

RECOMMENDATIONS FOR 1979

Based on the most current information, much of which is necessarily incomplete, no change in regulations for the 1979 ocean salmon fisheries is recommended. However, potential problems still may exist for the 1979 ocean salmon fisheries which may require emergency regulations. Factors contributing to these potential problems are:

1. the 1976-77 drought in California;
2. poor survival of 1976 brood year coho;
3. 1975 brood year Columbia River fall run chinook.

1. California Drought and Possible Effects on Salmon Production

Coastal Streams. The 1976 and 1977 spring outflows of three major north coast rivers (Klamath, Smith and Eel) were significantly reduced when compared with 1974 and 1975. For example, mean monthly outflows measured at Klamath Glen on the Klamath River during the March-June period was 58,000 cfs in 1975, 18,000 cfs in 1976 and 5,418 cfs in 1977 (Table 32).

If the correlation of spring outflow and adult production 2.5 and 3.5 years later holds true on the north coast streams as it does on the San Joaquin River, we should see a decrease in the numbers of adult salmon in the ocean fishery and spawning escapement in 1978, 1979 and 1980.

San Joaquin River System. San Joaquin River chinook salmon face undesirable environmental conditions almost every year. Any effects the drought might have had are probably insignificant in relation to an impact on the ocean fishery, especially considering the low numbers generally produced in the drainage.

Sacramento River System. The chinook salmon population was affected by the drought conditions in the Sacramento River system in 1976 and 1977. However, the extent of the impact is unknown at this time.

Chinook salmon populations that were affected are listed as follows:

1976 BROOD YEAR

Sacramento River Winter Run - an estimated spawning population of 33,000 fish experienced water temperatures in excess of 60°F during the June and July 1976 spawning period and egg incubation period throughout the summer. The majority of this brood year production was eliminated.

Feather River Spring and Fall Run - Water flows and temperatures were adequate for spawning and egg incubation during the fall of 1976. However, releases from the Orville Project were severely curtailed during the spring months of 1977. Normal releases in excess of 2,000 cfs were cut to 750 cfs. The low spring flows may have reduced 1976 brood year juvenile survival and this could result in reduced numbers of adults in the fishery and escapement in 1979 and 1980.

American River Fall Run - The 1976 brood year fall run faced similar conditions as the Feather, adequate flows and spawning temperatures but low spring outflow. The 2,000 plus cfs spring outflow was reduced to 250 cfs. Again, we might expect reduced numbers of adults in the fishery and escapement in 1979 and 1980.

1977 BROOD YEAR

Sacramento River Winter Run - Again, these fish (16,470) faced high water temperatures during spawning and egg incubation. It is doubtful that many of the eggs or fry survived.

Sacramento River Spring Run - Because of high water temperatures and the threat of heavy metal contamination in the upper river area, 720 adults were hauled to tributary streams. In addition, 11,703 migrated past Red Bluff Diversion to spawn in the upper area. They faced water temperatures in excess of 65°F during the spawning and egg incubation periods. Again, little survival is expected.

Sacramento River Fall Run - The majority of the run was either hauled from Red Bluff Diversion Dam to Coleman and Feather River hatcheries or delayed below the Dam because of the threat of heavy metal pollution from Spring Creek. The fish that spawned in the Sacramento River were subjected to water temperatures in excess of 60°F. Adequate temperatures ($\leq$58°F) were not reached until early November. A substantial loss of the production of an estimated 60,000 spawners in the main stem Sacramento River resulted from high water temperatures. Effects of this low production will show in the 1980 and 1981 fishery and escapement.

Feather River Spring and Fall Runs - Salmon production was not adversely affected in 1977. The California Department of Water Resources released cooler water from the low level outlet of Orville Dam starting in October which prevented a near disaster.

American River Fall Run - It is predicted that half of the run in the river was affected by high water temperatures and the total run affected by low spawning flows (250 cfs). Temperatures did not decline to adequate levels until November 15; half of the fish spawn by this date. The 1980 and 1981 fishery and escapement will show the effects of the drought condition.

In summary, the ocean fishery and inland escapements will undoubtedly feel the effects of drought conditions in 1979, 1980 and 1981. The extent of reduction of the adult population is unknown.

2. Coho Survival: Columbia River and Oregon coastal coho stocks may be depressed in 1979. Both jack returns and coastal upwelling appear promising as predictors of adult abundance. A poor jack return coupled with poor upwelling along the Oregon coast in 1978 could indicate poor smolt survival in 1978 and subsequent reduced adult coho abundance in 1979.

3. Columbia River Chinook Survival: Washington commercial ocean chinook catches were at record low numbers in 1978 but the fish were a recent year record size (16.1 pounds round weight). This is a size which would not have been anticipated as a result of the 28-inch minimum size limit. In addition, the numbers of chinook caught by the ocean sport fishery was at the lowest level since 1962 despite a 24-inch minimum size limit which would have allowed them to catch larger numbers of 3-year old fish. This information seems to indicate that the 1975 brood chinook (3-year old in 1978 fishery, 4-year old in 1979 fishery) may be in low abundance. Poor survival of 1975 brood Columbia River fall run chinook may be attributed to the poor environmental conditions (high nitrogen content of river water) experienced by the outmigrants during the spring of 1976. This assumption will be evaluated relative to scale analysis for age composition of the 1978 catch. However, this analysis will not be complete until early spring of 1979.

HARVESTING AND PROCESSING CAPACITY AND TALFF

Historical experience of the salmon fishery indicates the domestic harvesting and processing capacity is sufficient to handle the anticipated allowable salmon catch in 1979. This situation was true in 1977 and 1978. There is no recent record of processors refusing fish from fishermen due to inadequate processing capacity.

In view of the adequacy of the domestic fishing industry to harvest the highest conceivable level of abundance the total allowable level of foreign fishing is zero. The United States historically has allowed Canadian fishing in U.S. waters under a reciprocal agreement until 1978. It is not known if this will be restored.

NEW INFORMATION

Information is becoming available from studies of the Council which will be of value in developing the Comprehensive Plan. There has not been sufficient time to review and analyze this material for the benefit of the present report, however, preliminary consideration indicates no justification for changes in 1979. This new information includes a socio-economic study by Oregon State University and an environment/habitat report by a special task force of the Council.

MORATORIUM AMENDMENT

The 1978 plan declared the intent to limit access in the salmon fisheries of the commercial troll and commercial passenger fishing vessels beginning in 1979. Subsequently, the Council decided to defer further consideration of limited access or a federal moratorium on entry into the fishery in order to permit the coastal states to institute moratoria by state law for the 1980 fishing season. In view of this action, it is recommended that the 1978 plan be amended to delete reference to implementation of limited entry considerations for the 1979 season.

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230
(202) 377-3111

21 MAR 1979

Dear Reviewer:

In accordance with the provisions of Section 102(2)(C) of the National Environmental Policy Act of 1969, we are enclosing for your review and consideration a final supplement to the final environmental impact statement/fishery management plan prepared by the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration and the Pacific Fishery Management Council on the Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon and California, Commencing in 1978.

If you have any questions about the enclosed statement, please feel free to contact:

Mr. Donald R. Johnson
Director, Northwest Region
National Marine Fisheries Service
1700 Westlake Avenue, North
Seattle, Washington 98109
Telephone: 206/442-7575

Thank you for your cooperation in this matter.

Sincerely,

Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

Enclosure

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SUMMARY SHEET

Supplemental Environmental Impact Statement for Amendments to the Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon and California Commencing in 1978.

( ) Draft (XX) Final

Responsible Agencies:

Pacific Fishery Management Council
Contact: John A. Martinis, Chairman
526 S.W. Mill Street
Portland, Oregon 97201

(503) 221-6352

National Oceanic and Atmospheric Administration
Contact: Donald R. Johnson, Regional Director
National Marine Fisheries Service
1700 Westlake Avenue North
Seattle, Washington 98109

(206) 442-7575

1. Name of Action: (XX) Administrative ( ) Legislative

2. Description of Action: The adopted action will continue the management of commercial and recreational salmon fisheries off the coasts of Washington, Oregon and California and will extend management measures which applied in 1978 to 1979 with changes. The latest data and stock assessments indicate that many of the 1979 salmon runs will be severely depressed and that management measures more restrictive than those in effect in 1978 are appropriate for adoption in 1979 to protect the resource, and better achieve the management objectives outlined in the plan.

3. Management Tools: The more restrictive regulations adopted for 1979 apply to both the commercial troll and ocean recreational fisheries in the Fishery Conservation Zone (FCZ). They take the form of lengthening the closed seasons for both the troll and recreational fishery and of reducing the daily bag limit for the recreational fishery. Alternative management measures and their impacts were considered in this decision.

4. Summary:

a. Probable Environmental Impacts

(1) No changes in the physical environment are expected as a result of the amended plan and its implementing regulations for 1979.

(2) Biological effects of the plan would be positive in that resultant increased escapement would increase total yield of the stocks over the long term.

(3) Some adverse economic and social impacts will be felt by the commercial ocean troll fleet, the commercial passenger-carrying fishing fleet, and recreational fishermen off the coasts of California, Oregon and Washington as a result of the proposed regulations to be in effect in 1979.

b. Positive Environmental Impacts

The proposed action is designed to allow for the attainment of optimum yield, improve escapement levels and provide for equitable allocation of fish among all fishermen. Attaining these objectives will create positive environmental impacts on the salmon stocks by increasing the number of salmon available for harvest and for reproduction.

c. Unavoidable Adverse Impacts

The impacts of the proposed regulations on the expected 1979 run, compared to the regulations of 1978, would result in the following:

It is estimated that the proposal would reduce California chinook troll catch by 20%, and the recreational catch by 5%, with a 15% increase in escapement. For Oregon, it would reduce the chinook troll catch by 7%, but would have a lesser impact on the recreational catch and a 7% increase in the escapement. For Washington, this option would reduce the catch of chinook for both the troll and recreational fisheries and increase escapement; no precise estimates of change are available for Washington stocks.

For coho, California troll catch would be reduced by 35% while the recreational catch would increase by 5%. For Oregon, troll catch would be reduced by 9% and recreational catch by 11%, with escapement increased by 28%. Washington's troll catch of coho would be reduced by 10%, with the recreational catch reduced by 10 to 30% and escapement increased 10 to 25%.

5. Alternatives: Three types of alternatives to the proposed action were considered for 1979.

a. More restrictive management measures on ocean salmon fisheries.

b. Less restrictive management measures on ocean salmon fisheries.

c. No extension of federal management to 1979.

Within this range of alternatives, the following optional management measures were considered:

(1) Troll chinook minimum size limit
(2) Troll coho minimum size limit
(3) Selective troll fishing gear
(4) Troll chinook fishing season
(5) Troll coho fishing season
(6) Incidental catch allowance for coho
(7) Troll fishery limited entry
(8) Ocean recreational fishing season
(9) Ocean recreational fishery minimum size limits
(10) Ocean recreational fishery bag limit

(11) Ocean recreational fishery limited entry
(12) Ocean recreational fishery gear
(13) River mouth closures
(14) Barbless hooks
(15) Ocean fishery catch quotas
(16) Area restrictions for ocean trollers

6. Comments Requested:

Federal Agencies	State Agencies and Other Organizations
U.S. Corps of Engineers	Fisheries Agencies, States of Washington, Oregon, California, Idaho and Alaska
U.S. Coast Guard	Conservation Organizations
Environmental Protection Agency	Salmon Processing Industry
Department of Interior	Northwest Indian Fisheries Commission
Fish and Wildlife Service	Columbia River Compact
Bureau of Land Management	North Pacific Fishery Management Council
Bureau of Outdoor Recreation	Trollers Associations
Bureau of Indian Affairs	Gillnetters Associations
Fisheries Service of Canada	Labor Organizations
Department of Agriculture	Recreational Fishery Organizations
Forest Service	Charter Boat Associations
Soil Conservation Service	
Department of Energy	
Bonneville Power Administration	

Comments were due by February 28, 1979

7. Hearings:

City	Time and Date, 1979	Location
Seattle, WA	January 2, 7:00 PM	Williamsburg Room Olympic Hotel 4th and Seneca Streets
Astoria, OR	January 3, 7:00 PM	Auditorium, Astoria Middle School
Coos Bay, OR	January 4, 7:00 PM	Umpqua Room Thunderbird Motor Inn 1313 North Bayshore Dr.
Twin Falls, ID	January 4, 7:00 PM	Blue Lake Room Holiday Inn 1350 Blue Lake Blvd, No.
Eureka, CA	January 5, 7:00 PM	Redwood Ballroom Red Lion Motor Inn 1929 Fourth Street
San Francisco, CA	January 6, 2:00 PM	West Bay/Peninsula South Room Airport Marina 1380 Old Bayshore Dr.

7. Hearings: (Continued)

City	Time and Date, 1979	Location
Astoria, OR	February 27, 7:00 PM	Chinook Room Thunderbird Motor Inn 400 Industry
Eureka, CA	February 28, 7:00 PM	Redwood Ballroom Red Lion Motor Inn 1929 4th Street
Seattle, WA	February 28, 7:00 PM	Olympic Bowl Olympic Hotel 416 Seneca

8. Draft Statement to EPA: December 1, 1979

9. Final Statement to EPA: March 21, 1979

SUPPLEMENT TO THE

FINAL ENVIRONMENTAL IMPACT STATEMENT/FISHERY MANAGEMENT PLAN

FOR COMMERCIAL AND RECREATIONAL SALMON FISHERIES

OFF THE COASTS OF WASHINGTON, OREGON AND CALIFORNIA

COMMENCING IN 1978

1.0 STATEMENT OF PROPOSED ACTION:

The proposed action is to amend the Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon and California Commencing in 1978, to extend to 1979 the management measures which applied in 1978 as appropriate and to establish additional measures as required to achieve the objectives of the plan.

Management objectives for 1979 remain the same as those listed in Section 1.1 of the FEIS. Management measures must be more restrictive on ocean harvests to accomplish those objectives, however, in 1979. The latest data and stock assessments indicate that many of the 1979 salmon runs are severely depressed and that additional curtailment of ocean harvests is necessary in 1979 to attempt to meet general management objectives.

Ammendment 1 to the Ocean Salmon Plan specifies the management measures as adopted for 1979 for both the commercial troll and recreational fisheries in the FCZ. They reduce the open fishing seasons for both the troll and recreational fisheries, and reduce the bag limit for the recreational fishery. These management measures are detailed in Section 1.4.

Amendment 2 deletes Section 10.5, Limited Access of the Commercial Fishery, from the FMP. After prolonged review of this proposal, the Pacific Fishery Management Council decided to defer further consideration of a federal moratorium on entry into the fishery to permit the coastal states to institute license moratoria by state law for the 1980 fishing season.

Amendment 3 replaces Sections 13.5 and 13.6 with a revised statement on the domestic ocean salmon harvest and processing capacity for the 1979 season and establishes the total allowable level of foreign fishing at zero.

A fourth amendment adds three documents as appendices to the FMP. These documents assess the 1978 ocean fisheries, predict the resource and fishery situation for 1979 and present various options for consideration in determining management measures to be in effect for 1979.

1.1 New Information: The most recent report on the status of the stocks that will contribute to the 1979 salmon fisheries reveals the following:

A. Oregon coastal and Columbia River coho stocks are predicted at 1.3 million fish, only 18% above the extremely poor year of 1977 but much below average levels of recent years.

B. A continuing decline has been observed in the abundance of wild stocks of Oregon coastal coho. A poor return of adults in 1979, coupled with low escapements in 1977 and 1978, would mean the reproductive failure of three successive brood years of coho, or one complete cycle.

C. Poor returns of natural runs of Washington coastal coho stocks are forecast for 1979. However, hatchery returns will be variable in strength depending upon the area. A commercial fishery is anticipated for Willapa Bay hatchery at a level near the 1971-75 average of 13,000 fish.

D. Natural runs of Puget Sound coho will be low, possibly at levels needed entirely for spawning escapement. However, in 1979 a favorable return of hatchery coho is expected comparable to 1976 but below 1977.

E. Predictions for pink salmon range from excellent for Fraser River stocks to "considerably improved" for Puget Sound stocks. Overall, 1979 should be an excellent pink salmon year.

F. Columbia River fall chinook stocks contributing to the ocean fishery in 1979 are predicted to be depressed as a result of weak age classes of 3- and 4-year-old fish. Without additional regulatory curtailments, escapement objectives and reasonable allocation of the resource to inside fisheries cannot be achieved.

G. Oregon coastal chinook stocks generally remain in a favorable status, showing recent upward trends in spawning escapement. However, the populations are still well below historic levels.

H. California chinook stocks were negatively impacted by the 1975-77 drought, but the precise effect on stock abundance is not known. Major effects of the drought will be felt in the 1979-81 ocean salmon fisheries.

1.2 Description of the Environment Affected

The proposed action does not change the analysis in section 1.2 of the FEIS.

1.3 Related Federal Activities

Replace the second paragraph of Section 1.3 in the FEIS with the following:

"In the past, reciprocal fishing agreements between the United States and Canada permitted some limited fishing by fishermen of one country off the coast of the other country. This agreement expired in December 1977, but was provisionally extended to both countries into early 1978. All reciprocal salmon fishing terminated in June 1978. No U. S. - Canada reciprocal salmon fishing is presently contemplated for 1979."

1.4 Proposed Regulations

Section 1.4 is amended to include the following seasons, sizes, and bag limits for the commercial and recreational fisheries:

COMMERCIAL SEASONS AND SIZE LIMITS

		Size Limit	Season	
California	Chinook:	26"	All salmon except coho:	May 1 thru May 23
	Coho:	22"		
			All salmon:	May 24 " Jun. 15
				Jul. 1 " Sep. 30
Oregon South of Cape Falcon	Chinook:	26"	All salmon except coho:	May 1 " May 31
	Coho:	16"		Sep. 16 " Oct. 31
			All salmon:	Jul. 1 " Sep. 15
Washington & Oregon North of Cape Falcon	Chinook:	28"	All salmon except coho:	May 1 " May 31
	Coho:	16"		
			All salmon:	Jul. 1 " Sep. 8

RECREATIONAL SEASONS AND SIZE LIMITS

		Size Limit	Bag Limit	Season
California	Chinook & Coho:	22"**	2	Feb. 17 - Oct. 14
Oregon South of Cape Falcon	Chinook:	22"	2	May 12 - Sep. 16
	Coho:	16"		
Washington & Oregon North of Cape Falcon	Chinook:	24"		
	Coho:	16"	2 + 1*	May 12 - Sep. 16

* 3 fish, no more than 2 of which may be chinook or coho.

** One chinook or coho salmon per day may be less than 22 inches, but not less than 20 inches.

2.0 RELATIONSHIP OF THE PROPOSED ACTION TO LAND-USE PLANS, POLICIES AND CONTROL

The proposed action does not change the analysis in Section 2 of the FEIS. No new information is available which requires this chapter to be supplemented.

3.0 PROBABLE ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

The proposed action does not change the analysis in Section 3 of the FEIS. Review of the information in appendices VIII, IX, and X reveals that the analysis in Section 3 of the FEIS is still valid.

Section 3.2.3 and 3.2.4 should be supplemented by the following information:

"The action of the Council was developed with the objective of reducing the possibility of shifts in fishing efforts and, at the same time, attempting to meet management objectives in each management area. One option, for example, might meet the management goals of California, but do little for depressed stocks off Oregon and Washington. Conversely, another option might meet Washington management objectives, but would place excessive restrictions on the California and Oregon ocean salmon fisheries relative to management objectives in those areas.

"The adopted regulations will permit the maximum possible fishery off California, recognizing the need for more stringent restrictions off the Oregon and Washington coasts, and at the same time attempting to keep the impacts of the regulations for the various states as comparable as possible. Thus, the closure north of Cape Falcon from September 9 to October 31, 1979 was adopted to provide for additional escapement. For the recreational fishery, it was concluded that closure of the period May 1-11, which was open in 1978, and closure on September 16 instead of October 31, were required off Oregon and Washington. These changes were needed to more nearly approach Washington's management objectives.

"This plan also provides additional protection needed for Columbia River chinook stocks. Since the size of the 1979 chinook run cannot be predicted and the Washington Department of Fisheries (most harvest occurs in Washington) has not been able to provide an analysis of the impacts of the proposed regulations on Columbia River escapement, it is difficult to quantify the degree of protection that will be provided to these stocks. However, it is believed that the full month closure of the troll fishery in June off Washington and Oregon, coupled with the reduction in the recreational fishery in time and bag limit, will provide additional protection to Columbia River chinook runs in 1979.

"It is estimated that the proposed regulations could reduce California chinook troll catch by 20%, and the recreational catch by 5%, with a 15% increase in escapement. For Oregon, it would reduce the chinook troll catch by 7%, but would have a lesser impact on the recreational catch and a 7% increase in the escapement. For Washington, this option would reduce the catch of chinook for both the troll and recreational fisheries and increase escapement. These impacts of the proposed regulations on the 1979 run are based on the average run of 1971-75 compared to the regulations of 1978.

"For coho, California troll catch would be reduced by 35% while the recreational catch would increase by 5%. For Oregon, troll catch would be reduced by 9% and recreational catch by 11%, with escapement increased by 28%. Washington's troll catch of coho would be reduced by 10%, with the recreational catch reduced by 10 to 30% and escapement increased 10 to 25%.

"In summary, the Council proposal is more restrictive than required by California, slightly more restrictive than recommended by Oregon and less restrictive than recommended by Washington. The proposal is intended to achieve the best regulatory combination possible with full consideration of the incompatibility of the various management objectives and the resource problems anticipated for the 1979 season. The proposal also tends to discourage the shift of large amounts of fishing effort between management areas, which could create additional and severe management problems."

3.3 Social and Economic Impacts:

1. It is anticipated that reductions in ocean harvest rates, as proposed in the plan, will combine with current low runs to produce marked declines in troll revenues and even sharper reductions in trollers' profits. To what extent these might be offset by higher salmon prices and by greater weights of chinook and coho salmon (due to the later fishing seasons) is not known. In the absence of specific predictions of run size, it is not possible to quantify these statements further.

2. It is also anticipated that participation in the recreational salmon fishery will decline significantly. The magnitude of the decline will be a function of the proposed regulations reducing the bag limits and seasons, as well as in-season changes in anglers' catch-rates, as they are affected by fish abundance and availability. Although it is not anticipated that this will result in a greater loss to the charterboat fleets relative to the troll fleets, such a result, with accompanying local impacts, is a possibility.

3. The Council attempted to develop regulations that would minimize shifts in effort between management areas. There already is evidence of a shift of trollers to alternative, non-salmon fisheries.

4. It is anticipated that lower harvest rates on fall chinook returning to the Columbia River will increase the numbers of salmon available to accommodate Treaty Indian fishing rights in the upper sections of the river and its tributaries.

4.0 ALTERNATIVES TO THE PROPOSED ACTION

A. No extension of federal management to 1979.

In such case, state management authorities could regulate the ocean fisheries through state landing laws, but it would be without the regional coordination intended by the Fishery Conservation and Management Act.

B. More restrictive management measures on ocean fisheries.

Such action is desired by certain inside and coastal river fish harvesters. Alternative management measures and impacts are discussed in the FEIS, Section 4, and the FMP, Section 9.2.

C. Less restrictive management measures on ocean fisheries.

Such action is desired by certain ocean fish harvesters. Alternative management measures and their impacts are discussed in the FEIS, Section 4, and the FMP, Section 9.2.

D. Limited Access.

The alternative to the proposed action to delete Section 10.5, Limited Access of the Commercial Fishery, is to proceed with this management option. The judgment of the Pacific Council is that the states are better equipped at present to address this issue.

5.0 UNAVOIDABLE ADVERSE IMPACTS

Delete all but the first paragraph of Section 5.0 of the FEIS and replace with the following:

"Compared to the 1978 regulations it is estimated that the proposed regulations would reduce California chinook troll catch by 20%, and the recreational catch by 5%, with a 15% increase in escapement. For Oregon, it would reduce the chinook troll catch by 7%, but would have a lesser impact on the recreational catch and a 7% increase in the escapement. For Washington, this option would reduce the catch of chinook for both the troll and recreational fisheries and increase escapement.

"For coho, California troll catch would be reduced by 35% while the recreational catch would increase by 5%. For Oregon, troll catch would be reduced by 9% and recreational catch by 11%, with escapement increased by 28%. Washington's troll catch of coho would be reduced by 10%, with the recreational catch reduced by 10 to 30% and escapement increased 10 to 25%.

"In summary, the Council proposal is more restrictive than required by California, slightly more restrictive than recommended by Oregon and less restrictive than recommended by Washington. Nevertheless, regulations proposed are necessary for conservation of the resource and present the best combination possible in view of the incompatibility of the various management objectives and the resource problems anticipated for the 1979 seasons.

"The decline in chinook salmon stocks of the Snake River has given rise to special consideration of these runs (spring, summer and fall) for possible declaration as endangered or threatened species by the National Marine Fisheries Service and the Fish and Wildlife Service, under the Endangered Species Act of 1973. A task force of the Columbia River Fisheries Council is studying this and expects to make recommendations to the National Marine Fisheries Service in the spring of 1979."

6.0 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE OF THE ENVIRONMENT AND MAINTENANCE OF LONG-TERM PRODUCTIVITY.

The proposed section does not change the analysis in Section 6.1 of the FEIS.

Replace Section 6.2 with the following:

"6.2 Foreclosure of Future Options by the Proposed Action

"1. The proposed regulations may not allow for adequate escapement of certain severely depressed stocks which are harvested in the troll fishery along with stocks that may be capable of sustaining high ocean fishing rates. Stocks that may be affected are native coho from Puget Sound, Washington Coast, and Oregon Coast, plus early chinook from the Columbia River and Washington coastal streams.

"The ocean harvest of Snake River fall chinook could result in escapements that are insufficient for perpetuating the stocks.

"2. The continuation of an early troll season on chinook salmon could contribute to limited escapement for spawning and for the maintenance of non-Indian and Treaty-Indian fisheries, although the changes provided by the present proposal are designed to allow increased survival of fish from ocean harvests for this purpose.

"3. The harvest of chinook salmon less than 28" total length south of Cape Falcon could result in a significant reduction in the numbers that would remain in the ocean, where they would increase in size and be available for capture at a later date.

"4. Although the proposed management measures are based upon the best evidence available, there remain some possibilities of error due to the lack of information and to unpredictable future events. The proposed measures have been carefully considered such that, if errors in production and management do occur, their effects would be in favor of resource stability and conservation and would minimize the foreclosure of future resource management options."

7.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

It is not believed that any lower-than-average ocean harvest that may have resulted from the 1978 regulations caused any irreversible damage to the resources. Inasmuch as regulations for 1979 are more restrictive, the same observations are made for 1979.

8.0 REFERENCES:

A. Final Environmental Impact Statement and Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon and California Commencing in 1978.

B. Appendix VIII - Assessment of 1978 Commercial and Recreational Salmon Fisheries off the Coast of Washington, Oregon and California with Recommendations for the 1979 Salmon Fisheries -- December 1978 (attached).

C. Appendix IX - Updated Status Report of Stocks Contributing to the 1979 Salmon Fisheries as of January 22, 1979 (attached).

D. Appendix X - Selected Options for Managing 1979 Ocean Salmon Fisheries off the Coasts of Washington, Oregon and California.

9.0 SUMMARY OF PUBLIC COMMENTS ON THE SUPPLEMENT TO THE FINAL ENVIRONMENTAL IMPACT STATEMENT/FISHERY MANAGEMENT PLAN

This section summarizes public testimony presented in response to the December 1978 supplement to the final EIS/FMP and the 1979 proposed salmon management options. The comments summarized in this section were either presented orally at the public hearings or submitted in written form to the Council and/or the NMFS directly or at the public hearings. A list of individuals and organizations that testified during the public comment period follows the summarized comments. Over 270 individuals and organizations submitted comments during the public comment period. Attendance at the nine public hearings sponsored jointly by the Council and the NMFS, totaled approximately 1130 individuals.

The comments which follow represent a cross-section of the opinions and statements submitted during the public comment period. Official state and federal agency comments have been appended.

1. Comment: The size limit for chinook salmon should be reduced from 28" to 26" north of Cape Falcon.

   Response: The Council has decided to recommend the 28" size limit for chinook salmon north of Cape Falcon in order to provide increased yield and protect immature portions of the population.

2. Comment: Regulations should impact user groups equally. Therefore, there should be a uniform closure of the ocean to all user groups.

   Response: The contention that commercial and recreational fisheries should be managed by identical seasons, size limits and gear restrictions is not justifiable. Each fishery has unique socio-economic needs, motivations, and values, all of which contribute to optimum yield, and management of each fishery should be based on its own set of requirements with full consideration of biological productivity.

3. Comment: There should be a 28" size limit for chinook salmon for the entire ocean troll fishery.

   Response: With the 28" limit there would be a reduction in numbers in the catch south of Cape Falcon, but the data base is currently insufficient to quantify the increase in yield and escapement and justify a change now.

4. Comment: The Council should concentrate more on salmon enhancement programs and less on regulating user groups.

   Response: The Council is now developing a comprehensive salmon plan that considers the multitude of environmental problems which beset the salmon resource. However, fishery enhancement and habitat protection and restoration are continuing efforts while the proposed regulations are only for the 1979 fishing season.

5. Comment: The Council should not be bound by the requirements of the Boldt mandate.

   Response: The Fishery Conservation and Management Act specifies that treaty Indian fishing rights must be considered in fishery management plans. These rights have been defined in decisions of the federal district courts for the Puget Sound and Columbia River fishery areas.

6. Comment: All reductions in harvest for the 1979 ocean salmon harvest should come from the troll industry.

   Response: As a result of predicted low abundance for some stocks in 1979, additional restrictive management measures are necessary for both the ocean recreational and troll fisheries. Inside fisheries may also be reduced by state agencies, according to the abundance of fish, to provide for adequate escapement.

7. Comment: Management measures for 1979 should not discriminate against the small ocean trollers.

   Response: The Council supports a management philosophy under which all users of the ocean fishery are called upon to reduce their harvests when necessary to meet the objectives of the plan. There has been no conscious effort made to discriminate against the small ocean trollers in the development of regulations for 1979.

8. Comment: The 22" as compared with the 16" size limit for commercial coho salmon in California should be maintained in 1979.

   Response: The Council has recommended the present 22" size limit for coho in California for 1979.

9. Comment: The 26" limit for chinook salmon south of Cape Falcon should be maintained in 1979.

   Response: The Council has recommended the 26" limit for 1979.

10. Comment: The opening of the California chinook salmon season should not be delayed.

    Response: The Council has considered numerous options because of reduced coho stock abundance and has selected a delayed season opening off California to prevent serious shifts of fishing effort from northern waters.

11. Comment: Power lines should be allowed in the recreational fishery.

    Response: Since the stocks are so depressed in 1979 and the user groups are facing increased restrictions, the Council did not consider it appropriate to increase the efficiency of any gear types.

12. Comment: There should be no curtailment of the salmon fishery in the Monterey Bay area.

Response: This is a state matter outside the jurisdiction of the Council.

13. Comment: If a closure of the ocean troll fishery is necessary, an end-of-season closure would be more economically sound since larger vessels could fish for rockfish.

Response: The Council has considered numerous options because of reduced stock abundance and has selected additional restrictions at the end of the summer in both Oregon and Washington. Additional closures in June were adopted for California and Washington. These closures are needed to protect badly depressed coho and chinook stocks.

14. Comment: The September 15 closure of the ocean troll fishery from Pt. Grenville to Cape Flattery is not supported by scientific evidence.

Response: Studies conducted by the Washington Department of Fisheries indicate that, by mid-September, a considerable number of juvenile salmon are encountered north of Pt. Grenville. To provide additional protection to the stocks, the Council has adopted a Sept 8 closure for the commercial troll fishery and a closure of the recreational fishery on Sept 16 for waters north of Cape Falcon.

15. Comment: The Cape Falcon boundary line should be returned to Tillamook Head.

Response: The Council has decided that the conditions prompting its 1978 choice of the Cape Falcon line still apply.

16. Comment: Any additional restrictions imposed on the troll industry indicate favoritism toward terminal fisheries.

Response: Due to the predicted low abundance of some salmon stocks in 1979 and to indications that the ocean salmon fisheries are harvesting an increasing portion of these stocks, the Council has adopted management measures to reduce the harvests of both the ocean recreational and commercial fisheries. Inside fisheries have been severely restricted in recent years, and have borne the brunt of conservation closures to try to obtain adequate spawning escapements.

17. Comment: The Council should make a greater effort to keep the public informed about the coast-wide status of the resources and the short-term and long-range problems facing the user group.

Response: The Council is making a special effort to keep the public informed and involved in the public-review process through newsletters, press releases, publication and distribution of draft fishery management plans and other status of stock documents, public hearings, and representation of user groups on the Council's advisory subpanels.

18. Comment: Recreational fishermen should be allowed to remove the head from ocean-caught salmon while at sea.

Response: This proposal would create problems in the enforcement of minimum length requirements for retention of salmon.

19. Comment: If the ocean troll fishery for chinook and coho salmon is closed north of Pt. Grenville, a fishery for the strong 1979 year-class of pink salmon should be allowed in that area.

Response: The Council recognizes that pink salmon stocks are in a more abundant condition than other coastal salmon stocks and has thus encouraged the harvest of pink salmon in 1979. The Council has further asked IPSFC (the Sockeye Commission) to reconsider its regulation preventing the retention of pink salmon by trollers in Convention Waters (north of 48° N. lat.) prior to July 28.

20. Comment: Estuarine "nursery" preserves should be established with complete seasonal closure of all sport and commercial fishing to protect seaward migrations of immature salmon.

Response: The 1979 amendments to the Salmon Plan address the ocean fishery only. The establishment of estuarine nursery preserves is currently under the jurisdiction of the states; however, the Council is considering suggestions such as these in its comprehensive Salmon Management Plan.

21. Comment: All commercial salmon fishing vessels operating off the coast of Washington and Oregon should be subject to pre-season hold inspection.

Response: Since the 1979 regulations off the coast of Washington and Oregon prohibit trolling immediately prior to the coho season, the Council felt there was no need for a hold inspection.

22. Comment: All sales of salmon eggs to private parties for aquaculture should be halted until public hatcheries are operating at full capacity.

Response: The sale of salmon eggs is under the state jurisdiction and not within the scope of considerations for 1979 amendments to the FMP.

23. Comment: The 1979 Supplement should deal with the problem of illegal gillnet fisheries off the coast of Washington and in the Columbia River.

Response: Fishing regulations, as adopted by the Council and approved by the Secretary, will be fully enforced in the Fishery Conservation Zone by Federal agencies. Fishing regulations in Territorial Waters and in inland waters are under the jurisdiction of the fishery agencies of the states of Oregon and Washington. However, in the inshore waters of Puget Sound and Grays Harbor (the "Boldt Case Area"), enforcement responsibilities are shared by the National Marine Fisheries Service and the U. S. Coast Guard, by specific orders of the Federal District Court.

24. Comment: The individual Council members have not identified their salmon management plan proposals, thus frustrating the public's opportunity to cross-examine and confront them at the public hearings.

Response: The Council considered a range of management proposals presented to them by the Plan Development Team and Scientific and Statistical Committee and voted in an open public meeting. The public was then given the opportunity to comment on these proposals and to make additional suggestions. The Council members then decided which management option was

preferred, again in an open public meeting. Efforts to develop management options for the 1979 fishing season at an early date were frustrated by the lack of sufficient information concerning the results of the 1978 salmon fisheries and spawning escapements.

25. Comment: The Council should impose more restrictive regulations on the 1979 ocean fishery in order to fulfill Indian Treaty obligations, provide inside fisheries the continuing opportunity to harvest salmon, meet escapement goals, and protect severely depressed natural coho stocks.

    Response: The Council has adopted more restrictive management measures on the ocean salmon fishery in an effort to move toward fulfilling its stated management objectives which include efforts to fulfill Treaty fishing rights.

26. Comment: The ocean trollers should be required to use barbless hooks for the entire season.

    Response: The Council has reviewed barbless hook requirements and has decided that the 1978 regulation is still applicable. Results of research are inadequate to justify mandatory use of barbless hooks in the all-species commercial troll fishery.

27. Comment: We protest the fact that a reduced ocean sport bag limit for 1979 will likely become permanent policy in following years.

    Response: Procedures provide that each time a plan is renewed for one year, all pertinent issues and elements are reviewed and updated. Each year's regulation will be developed after review of current information on status of the stocks.

28. Comment: The Council should adopt a poundage quota for the commercial fishery based on average annual landings from 1971-1978.

    Response: Depending upon the time of harvest and target species, poundage quotas could mean large numbers or small numbers of fish harvested. Escapement objectives are based upon numbers of fish.

29. Comment: The Council should increase its participation in the development of limited entry schemes for Washington, Oregon and California.

    Response: The Council declined to initiate a commercial fishing license moratorium during the 1979 fishing season because of the understanding that the individual states of Washington, Oregon and California would rapidly develop their own effort limitation schemes. The state of Washington has already placed in operation a license limitation scheme for its commercial salmon vessels. The legislatures of California and Oregon are currently considering imposing moratoria on fishing licenses and permits for two years. The Washington legislature has approved a new plan to limit participation in the charter boat fishery. At present the Council is satisfied that the states are actively developing and implementing limited entry

plans. The Council has pledged its support for responsible effort limitation schemes.

30. Comment: Recreational anglers should not be permitted the use of fishing gear selective for coho salmon during the commercial troll closure since the protection of coho stocks was the purpose of this closure.

Response: The ocean recreational fleet is not capable of affecting the mixed stocks of coho and chinook salmon to the degree that the commercial troll fleet can. The troll fleet has greater fishing power, greater mobility, is capable of "extended trip" fishing, and is not restricted by regulations limiting the numbers of legal-sized fish that can be harvested and landed. Because of the pre-season forecasts for poor coho runs for most Oregon and Washington coastal streams and the lower Columbia River, the Council has, however, placed additional restrictions on the ocean recreational fishery.

31. Comment: Reducing the 3-fish ocean sport bag limit to 2 fish is not significant because the average catch per angler-day is less than 2 fish anyway.

Response: The average catch in some areas and some weeks is greater than 2 fish. Reducing the ocean recreational bag limit from 3 fish to 2 fish has been predicted to reduce angler effort, especially aboard the charter boat fleet. A reduction in angler effort, even with essentially the same average catch per angler as in 1978, will reduce overall ocean harvest rates.

32. Comment: The Council should set as a long-range management objective the termination of the ocean troll fishery because that fishery threatens the existence of wild stocks of salmon.

Response: The Council has carefully considered its management objectives and intends to "provide all ocean and 'inside' fisheries the continuing opportunity to harvest salmon" (management objective 4).

33. Comment: The Council should monitor the progress of the 1979 ocean salmon fishery and impose emergency in-season regulations if necessary.

Response: The Council is considering the compilation and assessment of catch and effort statistics on a real-time basis for the purpose of monitoring the progress of the fishery. In the past, it has been very difficult to determine stock abundances on a timely basis from in-season catch and effort data. Furthermore, emergency in-season regulations can be extremely disruptive for the affected segments of the fishery. Therefore, until the Council has the capability to assess adequately the progress of the ocean fisheries during the seasons, and their effects on the resource, it will continue to set management regulations in advance of the season. Under no circumstances will the Council fail to take action when it is determined that a real emergency exists.

34. Comment: The 1978 Columbia River fall chinook season failed to comply with the mandate of the Belloni order (2/28/77) because not enough fish escaped the ocean fishery to provide for the promised Indian harvest of nearly 100,000 fish. The Council should initiate more restrictive ocean fishing regulations in 1979 in order to assure the Treaty Indians their court-ordered share of the 1979 Columbia River fall chinook run.

Response: The adult fall chinook run destined above Bonneville dam in 1978 (184,000 fish) was well below the expected returns of 250,000 fish. The total Indian and non-Indian river fisheries harvested 105,000 fish, leaving a spawning escapement of upriver fall chinook at 79,000 adult fish, or 21,000 fish short of the escapement goal set by the Columbia River Management Plan. There is concern that the 1975 and 1976 brood-year Columbia River fall chinook salmon runs have also experienced a below-average survival rate. These two brood-year salmon runs will be the major contributors to the 1979 fisheries. Recognizing the potential of greatly depressed runs in 1979, the Council has decided to impose more restrictive regulations on the ocean salmon fisheries to ensure a greater escapement from the ocean than would occur if 1978 regulations were reimposed.

35. Comment: The Pacific Council should request that the North Pacific Council impose more restrictive regulations on ocean salmon fishing off Alaska in order to reduce the impact those fisheries have on depressed Columbia River stocks.

Response: The State of Alaska already has imposed some restrictions on the troll fishery and the North Pacific Council is in the process of developing a salmon management plan. The major impact on Columbia River stocks to the north of Washington comes from the Canadian troll fishery and international negotiations are underway to try to resolve this problem.

36. Comment: To ensure that the incidental catch of salmon is not significant in the foreign trawl fishery, two U.S. observers should be assigned to each foreign vessel operating within the U.S. fishery conservation zone.

Response: Current funding levels and ceiling restrictions preclude the NMFS from increasing observer coverage on foreign vessels to 100% at this time. According to provisional observer data for the 1978 foreign trawl fishery off the coasts of Washington, Oregon and California, the total catch of salmon amounted to approximately 5,000 fish by all foreign nations fishing these waters. Coast Guard personnel who frequently board foreign vessels verify this general magnitude of estimated bycatch.

37. Comment: Information for 1979 is tentative and incomplete, and has not been analyzed to determine trend directions.

Response: The management options for 1979 proposed by the Council are based on the latest information available on the status of the salmon stocks that will contribute to the 1979 fisheries.

38. Comment: Landed values of the 1978 salmon troll catch are stated as being within the 5-year average; however, no adjustment has been made for inflation.

Response: The comment is correct. If adjustments had been made for inflation, the values would have been somewhat lower.

39. Comment: What formula is the Council using to arrive at optimum yield for Pacific salmon?

Response: The Council has identified OY by determining maximum sustainable yield (MSY) as modified by relevant social, economic and environmental factors. This approach is described in the 1978 plan.

40. Comment: The trollers, including small day-boat trollers, and recreational fishermen, are not adequately represented on the salmon advisory subpanel.

Response: The Council has included representatives from each user group on the salmon advisory subpanel.

41. Comment: Regulations must be placed on biologists to stop them from unnecessary stock manipulation.

Response: This issue is not within the context of this management plan. However, programs that involve "stock manipulations," including genetic and migration behavior approaches, are closely monitored, through supervisory and budgetary controls, by state and federal fishery agencies.

42. Comment: Any recommendations for imposing plug-only gear limitations on trollers should be strongly resisted by the Council.

Response: The Council has decided that the gear restrictions in effect in 1978 are still appropriate; "plug-only" gear limitations were not adopted.

43. Comment: The Council should amend page 33 of the December, 1978 orange supplement to include the ocean troll and sports harvests of Queets River coho.

Response: The intent of the report was to present data on a regional basis and it generally does not include catches of individual stocks.

44. Comment: On page 34 of the December, 1978 orange supplement, where Quillayute River fisheries are discussed, it should be mentioned that in four out of the last six years the total return of coho to the river, escaping the ocean fisheries, has been less than that required for spawning escapement.

Response: The Council agrees that this is a correct statement. Although these exact words were not included in the Council document, the depressed condition of the Quillayute coho stocks was acknowledged on page 34 and 42 of the orange document.

45. Comment: Table 27, page 36 of the December, 1978 orange supplement, does not adequately reflect the sharing formula prescribed by U.S. vs Washington because the ocean harvest is not taken into consideration.

Response: Pages 15-16 of the 1978 Plan refer to guidelines established by the Federal courts. In addition, specific examples of allocation formulas have been provided the Council through supplemental documents.

46. Comment: On page 36 of the December, 1978 orange supplement, in the section on Puget Sound sport fisheries, it is stated that, "The majority of river catches are small jack salmon which are surplus to spawning escapement needs." This statement is not entirely accurate. In 1976, for example, 100,601 salmon were caught by the freshwater recreational fishery in the State of Washington. Of that total, 44,130 or only 44 percent consisted of jacks, while 56,471 or 56 percent consisted of mature adult salmon.

Response: The quotation refers to data that was obtained by sampling the Puget Sound catch only. The catch from Puget Sound cannot be considered as representative of the entire state freshwater recreational catch. Furthermore, the majority of the Washington State freshwater catch is not from Puget Sound, but from the Columbia River.

47. Comment: Any closure around the mouth of the Klamath River should be opposed.

Response: River mouth closures within the 3-mile Territorial Waters are a responsibility of the states.

48. Comment: In reference to the effect of the 1978 regulations, the statement on page 43, section 2, should be amended. It should be made clear that in some cases where Treaty fisheries harvested their court-ordered share, it was necessary for non-Treaty inside net fisheries to be severely restricted because the prior troll and recreational fishery interceptions on those stocks under regulations of the Washington Department of Fisheries had taken the majority of the non-Treaty share.

Response: Since the inception of FCMA in 1976, ocean recreational and commercial fishery interceptions of stocks originating in Treaty areas are under regulatory control of the Council and the Department of Commerce, not the State of Washington. While it is true that, in some cases, inside fisheries have been strictly regulated in order to insure that escapement goals were achieved, the Council has adopted more restrictive management measures for the 1979 ocean fishery which are intended to provide inside fisheries the continuing opportunity to catch an equitable share of the harvestable salmon.

49. Comment: Protective zones should be established around the mouths of coastal rivers and trolling and recreational fisheries should be banned in those protective zones.

Response: River mouth closures within the 3-mile Territorial Waters are a responsibility of the states.

50. Comment: The recreational season off San Francisco opened in mid-February with much better catches than last year. Perhaps this indicates the 1979 season will not be as bad as everyone expects.

Response: The 1979 fisheries will be closely monitored to determine if the stock size is as predicted.

51. Comment: If the conservation laws now on the books were enforced, no further reduction of fishing effort would be necessary. Poachers, who take a significant percentage of many runs, should be arrested and given meaningful sentences.

Response: The Council agrees that state and federal fishery regulations should be fully enforced. However, the requirements of the Fishery Conservation and Management Act in the Fishery Conservation Zone have necessitated new management policies. These policies have required reductions in ocean fishing mortalities on coho and chinook salmon to attempt to achieve the Plan's conservation objectives.

52. Comment: Closures north of Cape Falcon and the 28" minimum size limit for chinook only serve to transfer more salmon into the Canadian fishery.

Response: Provisions of the 1979 plan are expected to provide protection for many severely depressed coho and Columbia River chinook. While it is true that some salmon will be intercepted by Canadians, negotiations are underway with Canada to minimize interceptions.

53. Comment: The proposed additional closures of the season are an over-reaction by the Council to what is a natural cycle of coho abundance. In addition, trollers cannot afford to fish on stocks which are depleted and scattered. Therefore, the troll fishery cannot damage stocks of low abundance. It is also true that many highliners are abandoning salmon fishing for other fisheries. This transfer of vessels and fishermen to the black cod and shrimp fisheries will lessen the effort on salmon in 1979. Therefore, there should be no additional season closures on the troll industry.

Response: Whether or not the current low abundance of coho salmon is due to natural cyclic variations, responsible management must take action that will conserve the runs, a part of which action must be to ensure that adequate escapement survives the ocean harvests. It is logical to assume that low abundance and wide dispersion of salmon may be followed by reduced fishing effort; however, the extent of continuing fishing effort would be determined by individual fisherman's decisions. Again, responsible management cannot leave fishing rates and fishing mortalities to decisions by individual harvesters, but must control the harvesting system by means of established regulations. The transfer of salmon trollers to non-salmon fisheries has not been

adequately documented, and regulation of ocean harvests of salmon cannot be established on speculation of future occurrences. In the absence of a valid information-base on the issues in this comment, the Council is bound by law to establish necessary restrictions on ocean harvests to meet conservation goals.

54. Comment: California commercial fishermen don't take steelhead, yet the steelhead populations are declining along with salmon runs. Their shared spawning habitat has dwindled in California from 6,000 miles in 1928 to less than 300 miles of stream bed in 1978. How can the ocean salmon troller be blamed for poor salmon runs when these facts are considered?

Response: It is acknowledged that freshwater habitats of anadromous salmonids have decreased drastically in the past 50 years, and that these losses may be one of the major causes of the current low abundance of salmon and steelhead. This acknowledgement does not, however, release the ocean fisheries, both commercial and recreational, from the additional restrictions necessary in 1979 to ensure that adequate salmon escape the ocean fisheries for allocation to inshore fisheries and to attempt to meet spawning-escapement objectives.

55. Comment: A two-fish bag limit will reduce business for charter by 30 percent according to the report entitled, "An Economic Analysis of Washington Ocean Recreational Salmon Fishing with Particular Emphasis on the Role Played by the Charter Vessel Industry." This loss of business will have a grave economic impact not only on the charter operations, but also on the regional businesses which supply lodging, food, tackle, etc., to recreational fishermen.

Response: Some loss is expected but it is hoped that these issues will not be as severe as indicated in the report. During a severe resource problem as in 1979, all users will have to face some restrictions.

56. Comment: Reduction of the charter season on the ocean will shift recreational pressure into the rivers and Puget Sound, and will not reduce the total recreational catch of salmon significantly.

Response: This may occur to some extent but it is not expected to be enough to have any major effect on the benefits.

57. Comment: Charter vessel operators cannot function with a mid-season closure imposed at this late date. Large numbers of recreational fishermen plan vacations around charter fishing and reservations are booked far in advance. In addition, rising costs require that charter boats have a season of at least 100 days to meet expenses. It is also true that charter fishing effort will be reduced in 1979 off Washington due to the poor season last year and bleak predictions for this coming season. This may cause the number of customers to decline. High gas prices, the collapse of the Hood Canal bridge and the late school year resulting from teachers' strikes will all contribute to the reduced charter fishing effort in Washington during 1979. Further season cuts in the fishery, therefore, are not necessary.

Response: The Council has recognized the unique characteristics of the ocean charter vessel fleet and the impact that a mid-season closure would have on that fleet. Accordingly, it has not proposed a mid-season closure on the ocean recreational fleet. However, until depressed stocks are increased to normal levels and escapement goals are met in certain areas, such as Washington and Oregon coastal streams, it will be necessary to maintain some control on all ocean fisheries that affect these stocks.

58. Comment: The proposed "2 + 1" recreational bag limit off Washington may cause increased hooking mortalities in chinook and coho. Should a recreational fisherman catch his limit of chinook and coho early in the day, he would be encouraged to continue fishing for the bonus pink salmon. In that process, additional chinook and coho would be hooked, injured and released. Therefore, the "2 + 1" bag is not an acceptable conservation measure.

Response: This may occur, but it is expected to happen only to a limited extent. The distribution of pink salmon in recreational fisheries in the past, has appeared to be limited in time and location. That is, when pink salmon are available, they are available in relatively high numbers; in this event, there is a high possibility that one of the first two salmon hooked will be a pink salmon. In areas and at times when very few pink salmon are available, it is expected that anglers will realize that the capture of a pink salmon is unlikely, and cease fishing. There may be some negative impact through capture and release of coho and chinook salmon, and some sorting may occur. However, the benefits to be derived by anglers from the expected high abundance of pink salmon in north-coastal waters in 1979 should offset the negative impact.

59. Comment: Unnecessary fishing mortalities could be avoided by requiring recreational fishermen to keep their first two or three salmon regardless of size.

Response: This would be beneficial if the fishermen kept the small fish. This is difficult to enforce, however, as it would increase the likelihood of sorting for larger fish, as has been demonstrated where such regulations have been tried.

60. Comment: There is no reason to limit California ocean sport fishermen to one rod because the current "no limit" practice has not been demonstrated to have any adverse impact on salmon runs.

Response: The Council did not recommend a change in the number of rods allowed in California.

61. Comment: The proposed quota system is not workable because fishery management agencies do not yet possess the expertise to predict individual salmon stock abundance in the ocean environment.

Response: The Council did not adopt a quota system for 1979.

62. Comment: Management Option I season openings should be recommended by the Council without any predetermined closure dates. The closure dates should be set after in-season monitoring of the progress of the ocean fishery.

Response: The problems to the fishery created by in-season changes and the currently-demonstrated depressed condition of the stocks make it necessary to have regulations in place at the beginning of the season that are more restrictive than Option I.

63. Comment: The Council should recommend Management Option VI, the area registration concept.

Response: The Council decided area registration would not be feasible for 1979 because of the difficulties of implementing such a system on short notice.

64. Comment: A program to control or eliminate predators of salmon in the ocean and freshwater environment should be initiated.

Response: The Council has no jurisdiction over marine mammals, but is concerned about this problem.

65. Comment: The ocean commercial and recreational fisheries should be restricted to the extent necessary in order to ensure Hoopa Valley Indian fishing rights on the Klamath and Trinity Rivers in California.

Response: The Council adopted more restrictive measures to ensure increased escapement to inside fisheries.

66. Comment: The Council should recommend to Congress that fishermen who have been adversely impacted as a result of more restrictive fishing regulations be compensated for their actual losses.

Response: The Council reviewed this proposal but did not consider it to be within the scope of this management plan.

67. Comment: The Council should attempt to get power companies to pledge that they will maintain adequate stream flows during those critical periods when salmon are present in the freshwater environment (spawning through smolt migration).

Response: The Council supports efforts to gain the cooperation of hydroelectric power operators to maintain stream flows in regulated areas sufficient to ensure the survival of salmon while the fish are resident or migratory to the freshwater environment. The Council plans to continue in these efforts.

Individuals and Organizations Submitting Comments

Adkins, Roger E. - Humboldt Fishermen's Marketing Association (HFMA)
Alford, Mary Lee - Umpqua Commercial Fishermen's Wives
All Coast Fishermen's Marketing Association
Allen, Dave - charter boat operator
Allen, Lee D.
American Fisheries Society
American Salmon Growers Association
Anderson, Phil - Charter boat operator
Andreani, Ronald - troller
Armstrong, Betty
Balding, George - troller
Ballard Fish and Game
Barbey Packing Corporation
Barker, Wilbur - troller
Barnes, Howard G. - commercial fishermen
Bay Fish Company, Inc.
Bentley, Suzanne - troller
Berckingham, Horace C. - troller
Bergeson, James - Orleans Karok Council
Berghagen, O. J.
Bingham, Nat - troller
Blanchard, Walt - charter boat operator
Borer, Earl - troller
Bradley, Donald - troller
Brigham, Kathryn - Umatilla Indian Tribe and CRIFC
Bristow, Russell - commercial fisherman
Brookings Fisherman's Marketing Association, Inc.
Cadwell, David - troller
Cadwell, Lorraine - Washington Trollers Auxillary
Calloway, Dale - marine electrician
Cameron, Don - Shelter Cove Mosquito Fleet
Canepa, David A. - troller
Cantrell, D. E.
Cantrell, Rose
Carlson, Jack - Olympic Charter Association
Carpenter, Earl - troller
Cascade Pacific Fisheries, Inc.
Cavanaugh, Ron - charter boat operator
Centolella, Paula - Klamath/Trinity Legal Defense Fund
Cetak, Charles J.
Chaney, John - charter boat operator
Chapman, David R. - troller
Chipley, Everett - troller
Christensen, Joseph M. - troller
Christenson, Don - charter boat operator
Chu, Ted - recreational angler
Clark, Les - gillnet advisor
Claypool, Henry - commercial fisherman
Cimilino, John
Colonna, Andy - recreational angler

Columbia River Intertribal Fish Commission
Commercial Fishermen's Wives Association
Confederated Tribes and Bands of the Yakima Indian Nation
Corbett, John W. - U. S. Federal Magistrate, Hoopa Valley Reservation
Cunningham, Michael - troller
Daniels, Larry - member, Idaho Wildlife Federation
Dawson, Charleen
Ducey, Tom - troller
Duncan, Don and Jean
Dussault, Donald R. - troller
Eickhoff, Nancy - Commercial Fishermen's Wives of Charleston
Eisinger, Gordon - recreational angler
Elerding, C. B. - Seattle Poggie Club
Elms, Eugene H. - troller
Engman, Earl - Washington State Sportsmen's Council
Estabrook, Raymond E.
Eureka Chamber of Commerce
Everett, Jack - troller
Federation of Independent Seafood Harvesters (FISH)
Fisher, Fred - troller
Fisherman's Marketing Association Inc. of Bodega Bay
Fitzhugh, Mel - Manager, Del Norte Fishermen's Marketing Association
Fitzmorris, Daniel J. - charter boat operator
Fort Bragg-Medocino Coast Chamber of Commerce
Fowler, Dawn M. - gillnetter's wife
Francis, Dick - troller
Gardner, Ken - charter boat operator
George, Gabriel - troller
Ghera, Roy
Gillingham, C.B. - troller
Gilmore, Con - recreational angler
Goekler, Buss - troller
Gota, Jeff - troller
Grader, W. F.- Pacific Coast Federation of Fishermen's Assoc.
Graham, Gary R. - troller
Gray, Steve - gillnetter
Green, Norman - troller
Guth, Norman - Idaho Outfitters and Guide Association
Haar, Albert - charter boat operator
Hager, Vern
Hale, Larry
Hamilton, Don - charter boat operator
Hampton, James - Westport Charter Association
Hankin, David G.-Faculty, Humboldt State University
Harbert, Kenneth
Hardcastle, Joseph
Harrah, Verle - commercial fisherman
Haugen, Richard - troller
Heath, James R. - troller
Heikkila, Paul - troller
Herrell, Keith - Westport Charter Boat Association
Hickey, Chuck
Hickey, M. P. - charter boat operator

Hill, Bill - Humboldt Fishermen's Marketing Association, Inc.
Hoine, John R. - commercial fisherman
Hokman, Judith C. - Pacific Coast Fishermen's Wives Association
Holte, Karl
Hopkins, Jack
Howard, Jack
Hudina, Frank - recreational angler
Humboldt Fishermen's Marketing Association, Inc.
Huntington, Jean
Hurley, Robert H. - recreational angler
Imrie, Stuart T. - troller
Irwin, James - Brookings Fishermen's Marketing Association
Izaak Walton League of America
Jaschek, Walter T. - recreational angler
Jett, Genevieve Strand - Washington Sportsman's League
Jett, Jack - sportsman, " " "
Jordon, Al - charter boat operator
Judkins, Chuck - Northwest Steelheader
Kaufner, Herb - troller
Kildon, Ferren L. - So. California Commercial Fishermen's Marketing Association
Klamath/Trinity Legal Defense Fund
Komm, Ronald M.
Krueger, O. K. - troller
Kruger, Gary - charter boat operator
Lachner, George J.
Lara, Walt - Klamath River Indian Wildlife Conservation Association
Levelle, Phillip - troller
Lazio, Lawrence - processor
Leaphart, Charles D. - troller
Lebon, Geoff - troller
Letton, Frank - troller
Lindstrom, Ross
Lohman, Tom
Maahs, William - troller
Makela, Marcet - NOYO Commercial Fishermen's Wives Association
Mallory, John - troller
Marincovich, Jack - Columbia River Fishery Protective Union/gillnetter
Masolini, Gerald - troller
Mason, Oliver - Quinault tribe
Mattson, Richard - Hoh Tribe Fisheries Management
McCallum, Martin
McCullough, Douglas S. - commercial fisherman
McDonald, L. D.
McMillan, John A.
McMorris, Edgar - troller
Meister, Roy - recreational angler
Myers, Jack - troller
Miller, Louis J. - troller
Miller, Russell - troller
Miller, Thomas - recreational angler
Mollendorf, Ray - recreational angler
Monterey Commercial Fishermen's Association, Inc.
Morganroth, Chris - Quileute Tribe
Morisset, Mason D.- Attorney for Makah and Quileute Indian Tribes
Moser, Jim - troller

Moss Landing Commercial Fishermen's Association
Musselman, Lawrence and Mabel - trollers
National Wildlife Federation
Neadeau, Mark H. - troller
Nelson, Ray - gillnetter
Nelson, Thor
Nichols, Jim - troller
Niemi, Richard - troller/gillnetter
Northern Porducts Corporation
Northwest Indian Fisheries Commission
Northwest Steelhead and Salmon Council of Trout Unlimited
Nostitz, Julius - recreational angler
Nourse, Rod - troller
NOYO Commercial Fishermen's Wives
NOYO Harbor Commission
Orey, George - Oregon Coast Charter Boat Association
Pacific Coast Federation of Fishermen's Associations
Pacific Coast Fishermen's Wives Coalition
Pasco, George
Patlan, Servando B. - student, Humboldt State University
Pavelek, Henry J.
Pawlus, Lloyd - troller
Peters, Brian Siemroth - charter boat operator
Peters, Thomas H. - Secretary, Humboldt Fisherman's Marketing Association
Petersen, Dale R. - troller
Petersen, Ken - Washington Kelper's Association
Porterfield, Russ - troller
Port of Ilwaco
Prest, Jackie -Federation of Independent Seafood Harvesters (FISH)
Pryce, Roger - commercial fisherman
Pyle, Ernest L.
Quileute Indian Nation
Quinault Indian Nation
Rainsberger, Frank - charter sports angler
Redwood Empire Production Credit Association
Reese, Julius J.- recreational angler
Rhoad, John H. - processor
Richardson, Harold W. - troller
Ridenhour, Richard - fishery biologist
Ritz, Ed - troller
Rolland, Bernard E. - troller
Ross, Al - troller
Rupp, John A.
Russell, Clarence
Salmon Trollers Marketing Association
Samuelson, Blair - Peterson Seafoods, Inc.
Saucier, Thomas L. - commercial fisherman
Scarrow, Gerald - President, Jerome Rod and Gun Club
Schiro, Paul - troller
Schloredt, Conrad A.
Schruder, Helen
Scott, Wayne - troller
Seaport Fish, Inc.
Seattle Poggie Club
Sebern, Clarence M. - Brookings Fishermen's Marketing Association

Seelig, Al - troller
Setzer, George - troller
Sheehan, Jack - troller
Sierra Club, Redwood Chapter - North Group
Silva, Floyd - recreational angler
Sjolund, James A. - salmon fisherman
Smallsreed, C. J.
Smith, Mr. and Mrs. Gordon J.
Souza, Ted W.
Spech, Frederick H.
Spencer, Earl - charter boat operator
Stafne, Scott - troll advisor
Stair, Dan - troller
Standard Fisheries Corporation
State of Oregon, Executive Department, Intergovernmental Relations Division
Stebbins, Catherine
Stockwell, Lois - troller
Stutsman, Fred - charter boat owner
Suggs, David R. - troller
Teeters, A. R.
Teitge, Gary - troller
Terdal, Leif
The Sportsman News Letter
Thomas, Paul - troller
Thomas, R. - Golden Gate Sportsfishers
Towsley, Chuck - troller
Ullery, Kenneth G. - Washington Kelpers Association
Umeda, Yuko - student, Humboldt State University
U. S. Environmental Protection Agency
U. S. Department of Interior (FSW)
U. S. Department of Transportation (USCG)
Van Kirk, Robert R. - Faculty, Humboldt State University
Wagar, Paul and Helen
Washington Department of Fisheries
Washington Kelpers Association
Washington State Commercial Passenger Fishing Vessel Association
Washington Trollers Association
Washington Trollers Auxiliary
Webster, Jackie - gillnetter
Weller, Joseph G. - Bureau of Indian Affairs
Welsh, Ray - recreational angler
Whitman, Maurice E. - recreational angler
Wienecke, Frank - Crescent Marine Supply
Wilhelmi, David - troller
Wilson, Leo - troller
Wood, Paul - commercial fisherman
Wright, LeRoy F. - troller
Yeaman, John - recreational angler
Yeck, Fred A.
Zerr, David and Diane - commercial fishers
Zuck, Don - President, Idaho Wildlife Federation

Commentors Inadvertently Omitted From The Alphabetized List

Bentley, Ralph - troller
Brock, Bill - conservationist
Consani, Roger - troller
Danbom, Dave - troller
Duarte, Richard - troller
Gable, Francis - recreational angler
Harman, Charles
Little, Robert L. - troller
Louie, Jim K. - troller
Payne, Ken - troller
Rieden, Kurt - troller
Silva, Mike - troller
Steele, Bob - troller
Vitrano, Vince - recreational angler

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS:
U.S. COAST GUARD (G-WEP-7/73)
WASHINGTON, D.C. 20590
PHONE: 202-426-3300

17 JAN 1979

Pacific Fishery Management Council
526 S.W. Mill Street
Portland, Oregon 97201

Gentlemen:

On behalf of the U. S. Department of Transportation the concerned operating administrations and staff of the Coast Guard have reviewed the draft supplement to the FEIS/FMP for the Commercial and Recreational Salmon Fisheries off California, Washington and Oregon. We have neither comments nor objections to offer regarding this document.

The opportunity to review this draft supplement to the FEIS/FMP is greatly appreciated.

Sincerely,

J. R. KIRKLAND
Captain, U.S. Coast Guard
Chief, Marine Environmental
Protection Division
By direction of the Commandant

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION X
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

REPLY TO ATTN OF: M/S 443

JAN 2[illegible] 1979

Donald R. Johnson, Director
Northwest Region
National Marine Fisheries Service
1700 Westlake Avenue, North
Seattle, Washington 98109

Dear Mr. Johnson:

We have reviewed the supplemental draft environmental impact statement prepared by the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration on its Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California, Commencing in 1978.

We have attached two letters sent to the Environmental Protection Agency by a private citizen expressing his concerns about the adequacy of the impact statement. Since the issues he raises are outside EPA's purview, we are forwarding his letters so that you can address them in the Final Supplement.

We have rated this draft supplement LO-1 (LO - Lack of Objections; 1 - Adequate Information). This rating will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions under Section 309 of the Clean Air Act, as amended.

Thank you for the opportunity to review this draft environmental impact statement.

Sincerely,

Alexandra B. Smith, Chief
Environmental Evaluation Branch

cc: George J. Lachner
22601 - 62nd West
Mountlake Terrace, Washington 98043

JAN 23 1979

ROBERT W. STRAUB
GOVERNOR

Executive Department
INTERGOVERNMENTAL RELATIONS DIVISION
ROOM 306, STATE LIBRARY BLDG., SALEM, OREGON 97310

January 22, 1979

Donald R. Johnson
Director, Northwest Region
National Marine Fisheries Service
1700 Westlake Avenue, North
Seattle, WA. 98109

Dear Mr. Johnson:

RE: Fishery Management Plan,
Commercial and Recreational
Salmon Fisheries
PNRS 7812 4 310

Thank you for submitting your Supplement to the Final Environmental Impact Statement for State of Oregon review and comment.

Your Supplement was referred to the appropriate state agencies for review. It adequately described the environmental impact.

Sincerely,

Kay L. Wilcox

Kay Wilcox
A-95 Coordinator

KW:cb

United States Department of the Interior

OFFICE OF THE SECRETARY

PACIFIC NORTHWEST REGION
500 N.E. Multnomah Street, Suite 1692, Portland, Oregon 97232

February 9, 1979

ER-79/3

Mr. Donald R. Johnson
Northwest Regional Director
National Marine Fisheries Service
1700 Westlake Avenue North
Seattle, Washington 98109

Dear Mr. Johnson:

This is in regard to the supplement to the Final Environmental Impact Statement/Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the coasts of Washington, Oregon, and California, commencing in 1978. The attached letter from Secretary Andrus to Chairman Martinis details this Department's concerns and position on the proposal.

Thank you for the opportunity to review the document.

Sincerely yours,

Charles S. Polityka

Charles S. Polityka
Regional Environmental Officer

Attachment

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

FEB - 1 1979

The Honorable John Martinis, Chairman
Pacific Regional Fishery Management Council
526 S.W. Mill Street
Portland, Oregon 97201

Dear Mr. Martinis:

The Department of the Interior has reviewed the Pacific Council's November 1978 report entitled "Assessment of 1978 Commercial and Recreational Salmon Fisheries off the Coast of Washington, Oregon, and California with Recommendations for the 1979 Salmon Fisheries." The review indicates that substantial problems exist with many of the Pacific salmon stocks.

I also understand that specific data documenting the predicted low abundance levels of natural Pacific coho and chinook stocks have been brought to your attention through a report submitted by the Washington Department of Fisheries. The Fish and Wildlife Service of this Department has carefully reviewed the data in that report and generally agrees with its findings. Public statements and correspondence from the California and Oregon Departments of Fish and Game indicate that they are equally, if not more, alarmed over the potential conservation problems.

After reviewing the available fishery information, I would like to emphasize two of the issues with which I have a particular concern: conservation of the fishery and the allocation between ocean and inside fishermen.

I believe that significant reductions in the impact of the ocean fisheries beyond those proposed are required to reduce the serious conservation and management problems anticipated in the coastal streams and rivers and the Puget Sound system. If management proceeds on the same basis as in 1977-1978, natural stock escapements past the ocean fisheries will, in most instances, be far below the level needed to meet spawning requirements. This is certainly the case for Washington and Oregon coastal streams, the Columbia River, and Willapa Bay. At this time, inadequate information is available from Northern California for Interior to make an independent determination about Northern California stocks. However, California through public statements has acknowledged that a serious problem exists. In Puget Sound, sufficient coho are likely to enter the Juan de Fuca Strait to meet spawning requirements.

Nevertheless the incidental catch of coho in net fisheries there and in Northern Puget Sound, targeting on the huge pink salmon runs, is likely to reduce that level to less than spawning requirements. This will reduce the reproductive capacity of these natural stocks and is likely to result in a continuation of the severe conservation problem for at least another cycle.

Hatchery runs are expected to be sufficiently large to support limited fisheries in the Columbia and Quinault Rivers, Willapa Bay, and in some Puget Sound areas, and a few small-scale net fisheries could still occur on these stocks. Yet, it should be recognized that in harvesting hatchery stocks, particularly in the Columbia River, an over-harvest of natural stocks is likely to occur.

As a policy matter and as a budget matter, this Department prefers a fishery management system which emphasizes sustaining or improving natural salmon production. State, Federal, and Tribal enhancement projects engaged in improvement of natural spawning conditions and in artificial production were not designed and funded for the exclusive benefit and support of any single group. From this perspective, the proposal to extend the 1977-1978 Salmon Plan through the 1979 season could be disastrous.

I have a deep personal concern for the inequitable allocation of the conservation burden to Indian and non-Indian net fisheries and inside sport fisheries which would necessarily result if the ocean troll and recreational fisheries are allowed to proceed as in prior years. The ocean fishery should not maintain its economic position at the unfair expense of the other legitimate segments of the fishery.

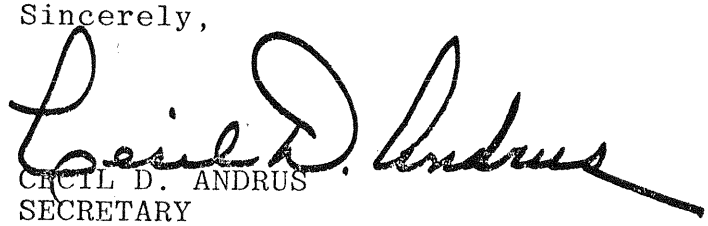
As all of us know from information collected by our professional staff scientists, the recent runs entering the Columbia River have been only a fraction of the average size during the years 1971-1974, the levels anticipated for the river when the multi-party five-year plan for Columbia River salmon allocations was agreed and entered as a decree of the Federal court. The failure of the United States, as a party to that agreement, to accommodate the river fisheries by ocean management has nearly resulted in its demise.

Your statutory mandates under the Fishery Conservation and Management Act of 1976 require you to take account of conservation requirements of the resource and other applicable law, including those which provide for certain of the fisheries in

inside waters. We cannot expect the California river's, Columbia River and Puget Sound recreational and net fisheries to bear the conservation burden for all. This becomes particularly serious and potentially explosive in years such as this, when many of the returning salmon runs are expected to be smaller than normal, perhaps not meeting escapement targets even if net fisheries are closed. Fairness alone requires that the ocean fisheries bear their fair share of the conservation burden.

I urge you to reconsider your proposal for 1979 by further limiting the ocean troll and recreational fisheries. It is apparent that comments from your scientific advisory committee and from state agencies have already brought these issues to your attention. However, I wanted to express my personal interest to the Council as you review and finalize the 1979 salmon plan.

Sincerely,



CECIL D. ANDRUS
SECRETARY

STATE OF
WASHINGTON

Dixy Lee Ray
Governor

DEPARTMENT OF FISHERIES
115 General Administration Building, Olympia, Washington 98504 206/753-6600

February 28, 1979

PACIFIC FISHERY MANAGEMENT COUNCIL HEARING STATEMENT
Olympic Hotel, Seattle, Washington

Mr. Chairman,

I'm Peter Bergman, representing the Washington Department of Fisheries. I have an 18-page statement on proposals for commercial and recreational salmon fisheries off the coasts of Washington, Oregon, and California in 1979. With your permission, Mr. Chairman, I'd like to summarize this material orally and turn over to you a detailed copy for the record.

Additionally, I'd like to ask that two documents presented to the Council at their January and February, 1979, meetings, respectively, be included in the official hearing record. These documents are an integral part of the position presented here, and they are:

1. Preseason forecasts for abundance of chinook, coho, and pink salmon stocks expected off the coast of Washington in 1979: A January 1979 analysis by the Washington Department of Fisheries Harvest Management Division.

2. Staff Proposals by the Harvest Management Division, Washington Department of Fisheries, for 1979 ocean fishing regulations off the coasts of Washington, Oregon, and California.

Washington Fisheries Director Gordon Sandison asked three questions of NOAA legal counsel at the February Council meeting. The purpose of these questions was to clarify the basic objectives that the 1979 salmon regulations must achieve. The questions were:

1. Do the Council and Secretary of Commerce have the authority to manage ocean salmon fishing so that inadequate fish remain to meet spawning escapement objectives established by the states? (If so, the Secretary is actually setting escapement goals, not the states.)

2. Do the Council and Secretary of Commerce have the authority to manage ocean salmon fishing so that no harvestable fish remain to be taken in subsequent inside fisheries managed by the state? (If so, the Secretary has the power to selectively eliminate state-managed traditional salmon fisheries.)

3. Do the Council and Secretary of Commerce have the option to not provide certain treaty fishing opportunities as described in U.S. v. Washington and U.S. v. Oregon and Washington? (They never give us this option in our management of inside non-treaty fisheries.)

While we await NOAA counsel's answers to these questions at the March meeting, we must, in order to present our position, respond to these questions now from our point of view.

To question No. 1, we believe the answer is "no". The Council and Secretary of Commerce should not be establishing spawning escapement objectives. We believe that these objectives should be established through documented methodology by the respective state management agencies, certainly not indirectly by the process of inadequate regulatory controls on ocean fishing rates.

To question No. 2, we believe the answer is also a definite "no". The fourth objective on page 61 of the 1978 Salmon Plan is to "provide all ocean and 'inside' fisheries the continuing opportunity to harvest salmon". We do not believe that the FCMA gives the Secretary of Commerce authority to manage ocean fisheries in such a manner that no harvestable surpluses of salmon remain to support long-established inside fisheries traditionally managed by the state. If the answers to questions 1 and 2 are affirmative, the state simply becomes an unwilling subordinate inheriting the "left-overs" (if any) from a Federally-managed ocean fishery.

For question No. 3, we believe that there cannot continue to be a "double standard" with respect to Indian treaty right obligations. The Federal Government, as plaintiff in both U.S. v. Washington and U.S. v. Oregon and Washington, has never given the Department of Fisheries any option of selectively or partially providing treaty fishing rights to Indians. When we examine examples of Federal management, however, the double standard is clear. Examples include IPSFC management and Makah tribal troll regulations inside and outside of State jurisdiction.

Having provided our views on how critical questions of resource management responsibility should be answered and having provided specific objectives for escapements of salmon from the ocean in 1979, we can now respond to specific management options at hand. With respect to fisheries off California and Oregon that are based primarily on California and Oregon coastal salmon stocks, we have no definite recommendations. Thus, we will confine our subsequent comments to fisheries on Washington and Columbia River salmon stocks, and to pertinent "spin-off" effects from fisheries on other stocks. Our ocean fishery management proposals, which are intended to meet the ocean escapement objectives specified in this document, are as follows:

Ocean troll fishery

In terms of "Selected Options for Managing 1979 Ocean Fisheries off Washington, Oregon, and California" by the Salmon Management Plan Development Team, Pacific Fisheries Management Council: we recommend Option IV. The essentials of this option are:

1. An early-season chinook-only commercial troll fishery north of Cape Falcon from May 1 through May 31.

2. An all-species commercial troll fishery season off the coasts of Oregon and Washington north of Cape Falcon from July 10 through September 1.

South of Cape Falcon, seasons must be set to avoid shifting effort from the north to the south and to avoid disproportionately high catch of coho stocks which tend to be available later in the north.

All other 1979 troll regulations would remain the same as in 1978: chinook size limit 28 inches north of Cape Falcon; barbless, single hooks during the early, chinook-only seasons; and 16-inch coho minimum size.

Ocean sport fishery

In terms of the Salmon Management Team's options, we recommend Option III. The essentials of this option are:

1. Open season for all species the first Saturday closest to May 1, through September 15.

2. Daily bag limit, 3 salmon, no more than 2 of which can be chinook or coho.

All other aspects, including size limits, the same as in 1978.

Quotas

We have stated the need to develop regulations intended to achieve certain objectives. However, we recognize the possibility that these regulations might not achieve these objectives, because of lack of experience with regulations similar to those proposed. Since the basic purpose of the regulations is to limit catch relative to stock size, we recommend that a numerical catch limit be established.

Such a quota system is fully explored in our statement, and I will not go into detail here, except to say that the quota is based on major stocks of coho and not on other species. It is also related to the desire to avoid harvest rates above 75% on key wild coho stocks.

We have some concern, especially if regulations different from those we have recommended are adopted, that one fishery or another - sport or troll - might gain a major advantage over the other and secure an inordinate proportion of the catch. Thus the Council should consider the possibility of quota by gear as well as by region.

Thank you, Mr. Chairman.

PROPOSED AMENDMENTS TO ENVIRONMENTAL IMPACT STATEMENT AND FISHERY MANAGEMENT PLAN FOR COMMERCIAL AND RECREATIONAL SALMON FISHERIES OFF THE COAST OF WASHINGTON, OREGON AND CALIFORNIA COMMENCING IN 1978

1. Section 9.4 and pages ii through iv of the summary of the FMP and section 1.4 of the FEIS are supplemented as follows:

The 1978 ocean salmon regulations are amended to include the following seasons, sizes and bag limits for commercial and recreational fisheries in 1979:

COMMERCIAL SEASONS AND SIZE LIMITS

		Size Limit	Season	
California	Chinook:	26"	All salmon except coho:	May 1 thru May 23
	Coho:	22"	All salmon:	May 24 " Jun. 15 Jul. 1 " Sep. 30
Oregon South of Cape Falcon	Chinook:	26"	All salmon except coho:	May 1 " May 31 Sep. 16 " Oct. 31
	Coho:	16"	All salmon:	Jul. 1 " Sep. 15
Washington & Oregon North of Cape Falcon	Chinook:	28"	All salmon except coho:	May 1 " May 31
	Coho:	16"	All salmon:	Jul. 1 " Sep. 8

RECREATIONAL SEASONS AND SIZE LIMITS

		Size Limit	Bag Limit	Season
California	Chinook & Coho:	22"**	2	Feb. 17 - Oct. 14
Oregon South of Cape Falcon	Chinook:	22"	2	May 12 - Sep. 16
	Coho:	16"		
Washington & Oregon North of Cape Falcon	Chinook:	24"	2+1*	May 12 - Sep. 16
	Coho:	16"		

* 3 fish, no more than 2 of which may be chinook or coho.

** One chinook or coho salmon per day may be less than 22 inches, but not less than 20 inches.

Figure 1 compares the 1979 seasons, sizes and bag limits with those in effect in 1978. All other portions of the 1978 regulations are extended to the 1979 season without change.

2. Section 10.5 of the plan (Limited Access of the Commercial Fishery) is deleted with the understanding that the Council continues to endorse its recommendation of August 10, 1978 to the states for limited entry.

3. Sections 13.5 and 13.6 are replaced with the following:

13.5 U.S. Harvesting Capacity and Extent of Harvest

At the highest conceivable level of present or future abundance, the salmon stocks can be harvested by U.S. fisheries. The domestic harvesting and processing capacity is sufficient to handle the entire anticipated allowable domestic salmon harvest in 1979. There is no recent record of processors refusing fish from fishermen due to inadequate processing capacity.

13.6 Allowable Level of Foreign Fishing

In view of the adequacy of the domestic fishing industry to harvest the highest conceivable level of abundance, the total allowable level of foreign fishing is zero. The United States historically has allowed Canadian fishing in U.S. waters under a reciprocal agreement until 1978. Negotiations between the two governments are continuing to seek a resolution of all salmon issues. These negotiations are aimed at stabilizing and reducing where possible the interception by fishermen of one country of salmon originating from the other country. No U.S. - Canada reciprocal salmon fishing is presently contemplated for 1979.

4. Three appendices are added as follows:

Appendix VIII - Assessment of 1978 Commercial and Recreational Salmon Fisheries Off the Coast of Washington, Oregon and California with Recommendations for the 1979 Salmon Fisheries--December 1978 (attached).

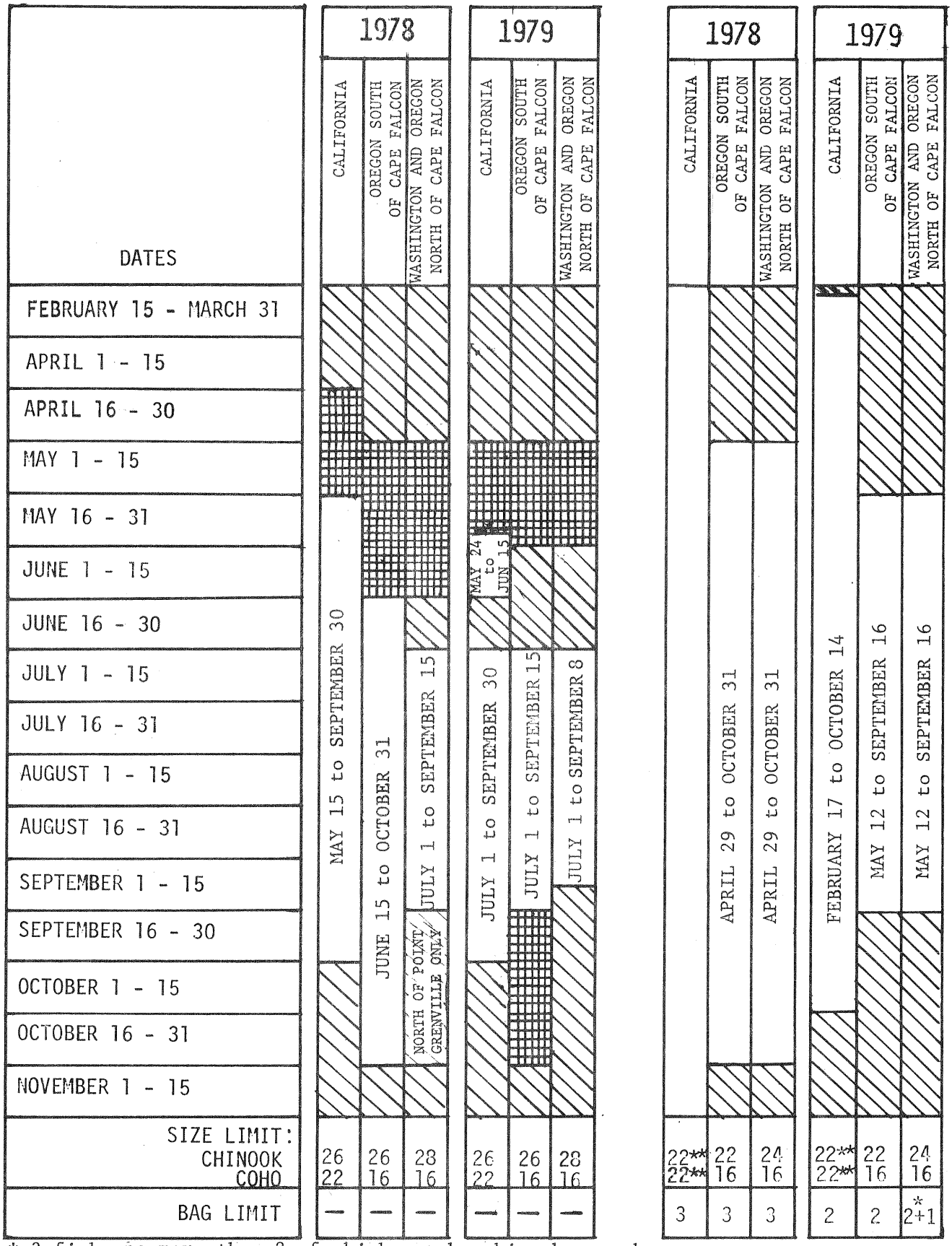
Appendix IX - Updated Status Report of Stocks Contributing to the 1979 Salmon Fisheries as of January 22, 1979 (attached).

Appendix X - Selected Options for Managing 1979 Ocean Salmon Fisheries off the Coasts of Washington, Oregon and California (attached).

Figure 1. COMPARISON OF 1978 AND 1979 REGULATIONS

3/13/79

1979 — TROLL RECREATION



* 3 fish, no more than 2 of which may be chinook or coho

** One chinook or coho salmon per day may be less than 22" but not less than 20".

APPENDIX VIII

ASSESSMENT OF 1978 COMMERCIAL AND RECREATIONAL SALMON FISHERIES OFF THE COAST OF WASHINGTON, OREGON AND CALIFORNIA WITH RECOMMENDATIONS FOR THE 1979 SALMON FISHERIES

NOVEMBER 1978

Pacific Fishery Management Council
526 SW Mill Street
Portland, Oregon 97201

TABLE OF CONTENTS

INTRODUCTION

The management plan for 1979 continues the basic plan approved by the Council in March 1978, entitled, "Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coast of Washington, Oregon and California, Commencing in 1978."

The purpose of this assessment of the 1978 salmon fisheries is to evaluate the need for any changes in regulations for 1979 and to take any action necessary for the conservation and preservation of the salmon resources. Time constraints set by administrative and legal procedures that require processing proposed plans and regulations at an early date to allow adequate review before implementing any regulations prevent complete consideration of the impact of the 1978 fishery. The spawning stocks cannot be fully addressed at this time, hence this assessment is based on incomplete data, yet they are the best available.

If analysis of additional data collected at the end of the season indicates that other regulatory changes are needed to preserve the resource and to meet management objectives for 1979, changes may be proposed prior to or during the 1979 season.

The development of a comprehensive plan for the management of the fishery has been undertaken by the Council, with a target date of completion prior to the 1980 season. This plan will encompass a thorough review of past fishing seasons under FCMA regulations, additional data and computer model capability, as well as results from new studies. Oregon State University is completing a socio-economic study of the fishery. This study, as well as other economic studies, will be available in early 1979. A task force has made a survey of the status and problems of salmon freshwater habitat. Additional studies have been made of artificial and ocean ranching production. Of further import are potential judicial and congressional actions relative to treaty Indian fishing rights.

Since these factors have not developed far enough to be included in a 1979 plan, the Council has chosen to delay implementation of the comprehensive plan until after the 1979 season. This comprehensive plan is intended to be a long-range management program that will serve as a foundation for yearly regulations that will be governed by the comprehensive plan as well as by changes required by unforeseen fluctuations in environment, stocks and fisheries.

STATUS OF THE 1978 OCEAN SALMON FISHERIES

California

Troll Fishery. Preliminary estimates of 1978 California troll salmon landings are 6.6 million pounds, 5.3 million pounds of chinook and 1.3 million pounds of coho. This is down from the recent 5-year (1971-75) average of 7.8 million pounds, but ahead of 1977 landings of 5.9 million pounds.

Chinook landings of 5.3 million pounds will be less than 1977 landings of 5.7 million pounds as well as the 5-year average of almost 5.8 million pounds (Table 2 and Figure 2).

Coho landings of 1.3 million pounds are significantly higher than 1977 landings of only 204,000 pounds (the worst landings in over a decade), but still well below the 5-year average of 2.2 million pounds (Table 2 and Figure 2).

Although specific effort data will not be available for several months, visual observation of north coast ports (Crescent City to Fort Bragg) indicate higher fishery pressure than usual during the early part of the season.

By July 1, 80 percent of north coast chinook landings had been made (79.5 percent during May and June alone). Eureka received 41 percent of the north coast season's landings; the remainder was split almost equally between Fort Bragg and Crescent City. During July many boats turned to the albacore fishery and others pursued coho into Oregon. During August inclement weather kept effort down. In spite of improved weather during September catch per effort remained low and except for Fort Bragg most boats still working fit the part-time-skiff fisherman category. During the last two weeks of September nearly all northern California effort has been centered off Fort Bragg. Boats have been averaging less than 5 chinook per day.

North coast coho landings were also high during the early season. Over 79 percent of the coho catch was made during May and June. However, only 17 percent of the coho catch was landed in the Fort Bragg area, with the remaining 83 percent divided between Eureka and Crescent City.

Recreational Fishery. Preliminary estimates of ocean sport landings through September indicate that landings are only 104,200 salmon, less than half the 5-year (1971-75) average of 218,000 as well as last year's landings of 112,000.

Chinook landings through September totaled 58,100 fish, well below the 5-year (1971-75) average of 170,000 (Table 1 and Figure 1). The comparable figure for 1977 is 100,150 chinook. The main reason for the decline in 1978 is exceptionally poor chinook landings off the San Francisco Bay area, which accounts for the majority of California's chinook landings.

Coho landings of 45,100 fish through September are running slightly behind the 5-year (1971-75) average of 48,289, however, landings are almost four times 1977 landings of only 11,805 coho (Table 1 and Figure 1). The bulk of the coho, almost 40,000, were landed by north coast (Crescent City to Fort Bragg) anglers.

TABLE 1. CALIFORNIA OCEAN SPORT CHINOOK AND COHO IN NUMBERS OF FISH FOR THE YEARS 1977 AND 1978 AND THE 5-YEAR (1971-75) AVERAGE*

CHINOOK

		February	March	April	May	June	July	August	September	October	November	Season
1971-75 AVERAGE	MONTHLY	17,233	26,389	16,659	10,586	17,290	30,806	25,390	12,981	8,796	3,454	169,584
	CUMULATIVE	17,233	43,622	60,281	70,867	88,157	118,963	144,353	157,334	166,130	169,584	169,584
1977	MONTHLY*	4,108	5,510	15,808	5,892	10,082	35,581	15,046	8,123	4,059	1,496	105,705
	CUMULATIVE*	4,108	9,618	25,426	31,318	41,400	76,981	92,027	100,150	104,209	105,705	105,705
1978 1/	MONTHLY*	6,000	6,600	4,000	4,000	12,000	13,000	6,500	6,000			
	CUMULATIVE*	8,000	12,600	16,600	20,600	32,600	45,600	52,100	58,100			

COHO

		February	March	April	May	June	July	August	September	October	November	Season
1971-75 AVERAGE	MONTHLY	1	109	1,315	3,971	8,555	24,938	8,532	821	41	6	48,289
	CUMULATIVE	1	110	1,425	5,396	13,951	38,889	47,421	48,242	48,283	48,289	48,289
1977	MONTHLY*	0	0	65	303	47	7,676	3,161	490	63	0	11,805
	CUMULATIVE*	0	0	65	368	415	8,091	11,252	11,742	11,805	11,805	11,805
1978 1/	MONTHLY*	0	100	500	3,000	19,000	20,000	3,000	500			
	CUMULATIVE*	0	100	600	3,600	21,600	41,600	44,600	45,100			

1/ Rounded to nearest 1,000 lbs.
* 1977 and 1978 data are preliminary.

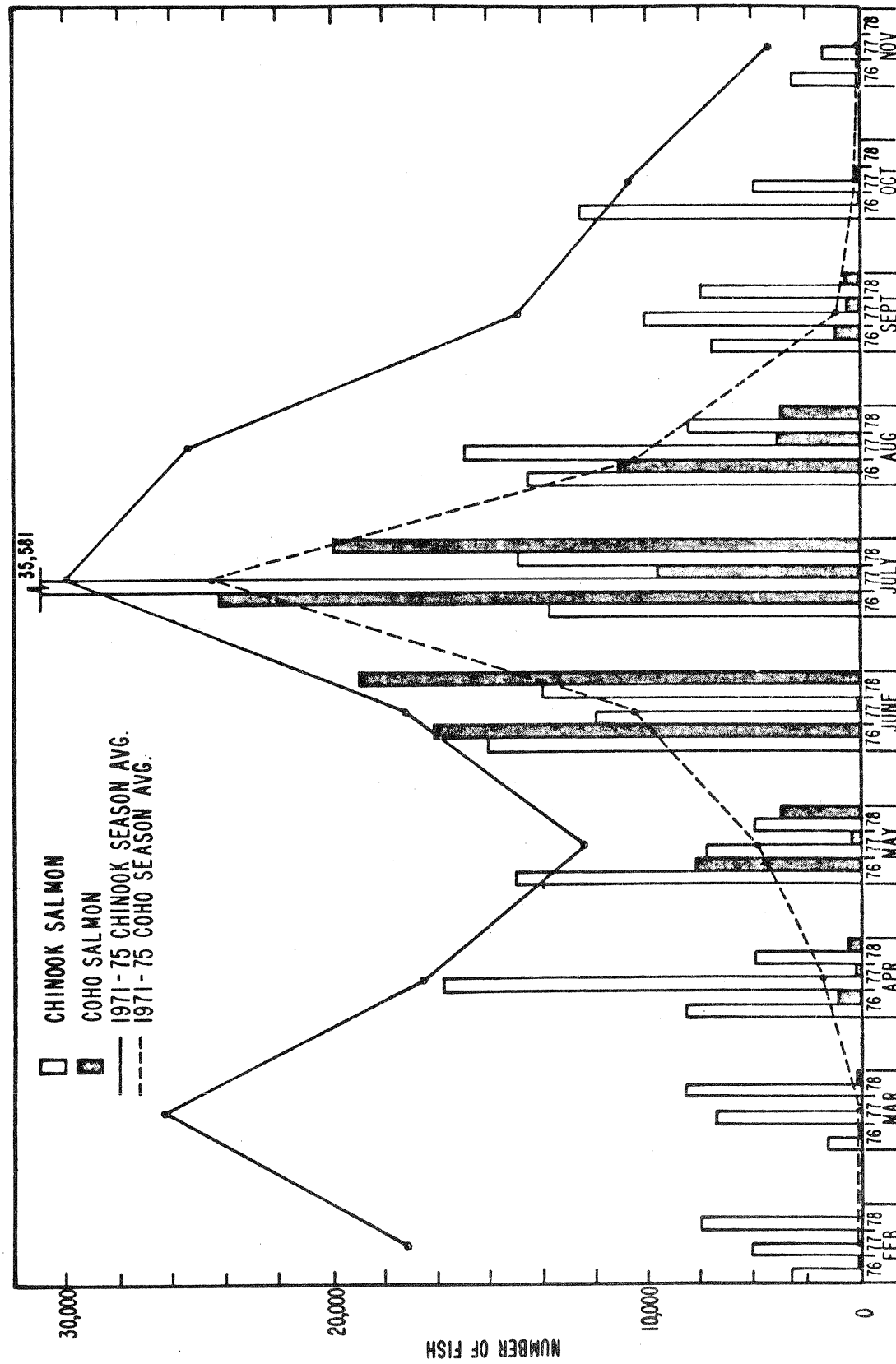


Figure 1. California Ocean Sport Chinook and Coho Landings in Numbers of Fish for the Years 1976, 1977, and 1978 by Month compared to the 5-Year (1971-75) Average*.

* 1977 and 1978 data are preliminary.

TABLE 2. CALIFORNIA OCEAN TROLL CHINOOK AND COHO LANDINGS IN POUNDS DRESSED WEIGHT FOR THE YEARS 1977 AND 1978 AND THE 5-YEAR (1971-75) AVERAGE*

CHINOOK

		April	May	June	July	August	September	Season
1971-75 AVERAGE	MONTHLY	340,278	1,365,515	1,653,994	1,411,124	686,114	285,169	5,742,194
	CUMULATIVE	340,278	1,705,793	3,359,787	4,770,911	5,457,025	5,742,194	5,742,194
1977 1/	MONTHLY*	1,169,000	1,134,000	928,000	1,472,000	687,000	338,000	5,728,000
	CUMULATIVE*	1,169,000	2,303,000	3,231,000	4,703,000	5,390,000	5,728,000	5,728,000
1978 1/	MONTHLY*	186,000	1,939,000	1,783,000	965,000	288,000	99,000	5,260,000
	CUMULATIVE*	186,000	2,125,000	3,908,000	4,873,000	5,161,000	5,260,000	5,260,000

COHO

		April	May	June	July	August	September	Season
1971-75 AVERAGE	MONTHLY	0	396,623	775,959	807,382	214,354	16,539	2,210,857
	CUMULATIVE	0	396,623	1,172,582	1,979,964	2,194,318	2,210,857	2,210,857
1977 1/	MONTHLY*	0	44,000	100,000	50,000	9,000	1,000	204,000
	CUMULATIVE*	0	44,000	144,000	194,000	203,000	204,000	204,000
1978 1/	MONTHLY*	0	158,000	842,000	234,000	37,000	6,000	1,277,000
	CUMULATIVE*	0	158,000	1,000,000	1,234,000	1,271,000	1,277,000	1,277,000

1/ Rounded to nearest 1,000 pounds.
* 1977 and 1978 data are preliminary.

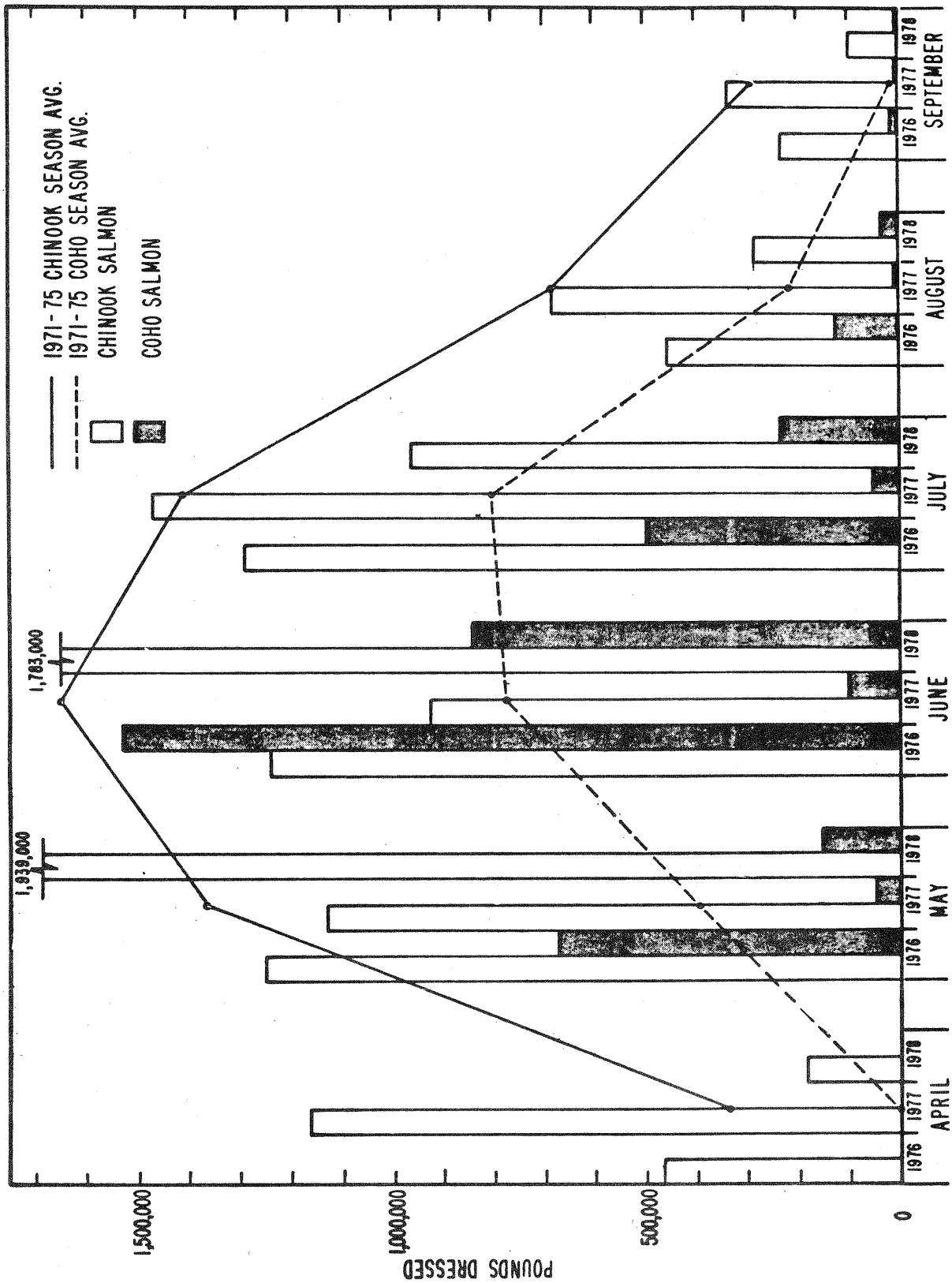


Figure 2. California Ocean Troll Chinook and Coho Landings in Pounds Dressed Weight for the Years 1976, 1977 and 1978 Compared to the 5-Year (1971-75) Average.*

*1977 and 1978 data are preliminary.

Oregon*

Troll Fishery - Effort: The sale of commercial salmon boat licenses in Oregon continued to increase in 1978 (Table 3). The 1978 license sales through September totaled 3,750 representing an increase of 355 over 1977.

Although precise estimates of troll effort off the Oregon coast are not available, it appears that overall effort in 1978 was down somewhat from previous years. During the early season (May 1-June 15) much of the trip boat fleet fished California waters and so less effort was directed off Oregon. During the closure north of Cape Falcon from June 15-30, there was a considerable shift of effort south by Washington boats into Oregon waters, however, by late June there was a general movement of boats back north (Table 4). Concentrations of boats were not observed in 1978 in the immediate vicinity of Cape Falcon-Tillamook Head as was the case in 1977 since better fishing was available in other areas. By early July much of the troll fleet converted to albacore fishing which decreased fishing effort on salmon. Most of the late season effort concentrated in the vicinity of coastal ports by small boats primarily day fishing since most of the larger and many of the medium sized vessels were out after tuna.

Table 3. Commercial salmon boat licenses[1/] issued in Oregon, 1972-78.

Year	Licenses issued
1972	2,614
1973	2,867
1974	2,278
1975	2,367
1976	2,852
1977	3,395
1978	3,750[2/]

1/ Number of boat licenses issued reduced by the estimated number of shrimpers, trawlers, gill netters and other miscellaneous.

2/ Through September.

*The statistics presented were derived from three main sources. Troll fishery landings were obtained directly from commercial fish buyer records and represent actual landings except for late September through November which were estimated. Sport fishery landings and effort were estimated from field samplings at nine coastal ports by ODFW personnel. Effort distribution was obtained by direct observation during flights along the coast once just prior to the June closure and twice during the closure. Escapement information, where available, was obtained from ODFW hatchery and management staff.

Table 4. Observation flight summary of troll fleet distribution.

Area	1976			1977	1978		
	22 Jun*	26 Jul	27 Aug	24 Jun	13 Jun	21 Jun	27 Jun
Col. R. Mouth to Tillamook Head	77	24	RAIN	5	7	3**	11**
Tillamook Head to Cape Falcon		40	38	93	1	2**	4**
Cape Falcon to Cape Lookout				102	2	79	125
Cape Lookout to Cascade Head	-	26	49	129	0	78	95
Cascade Head to Yaquina Head	-	20	38	127	0	14	29
Yaquina Head to Heceta Head	-	5	178	116	6	115	51
Heceta Head to Cape Blanco	-	15	163	242	14	288	31
Cape Blanco to Ore-Calif. Border	-	1	37	68	22	232	46
Totals	77	131	503	882	52	811	392

* Flew Col. R. Mouth to Tillamook Head only.

** Running

Troll Fishery - Catch: Commercial troll coho landings in 1978 totaled 628,400 fish weighing 3,107,000 pounds (round weight) compared with the 1971-75 average of 980,900 fish and 6,917,700 pounds (Table 5). The 1978 landings were down 36 percent in numbers and 55 percent in weight in comparison to the 5-year average. Landings were somewhat improved over 1977 but below 1976. The proportionate greater reduction in catch by weight was due to the poor growth and small size of coho in the fishery.

Table 5. Commercial troll salmon catch (thousands) off Oregon, 1971-1978.

Year	Coho		Chinook	
	No.	Lbs (round)	No.	Lbs (round)
1971	1,490.1	10,079.9	102.9	1,150.8
1972	824.6	5,584.8	127.3	1,499.3
1973	795.5	5,907.6	363.3	3,980.5
1974	1,137.2	8,315.5	224.1	2,634.0
1975	657.4	4,700.7	224.7	2,970.8
Average 1971-75	980.9	6,917.7	208.4	2,447.1
1976	1,827.0	10,420.3	184.3	2,209.8
1977a/	450.0	3,002.0	336.0	3,930.0
1978a/	628.4	3,107.0	186.1	1,894.0

a/ Preliminary catch statistics

The monthly distribution of troll coho catches was skewed toward the early part of the season (Table 6). Monthly catches in numbers of fish were above average in June but below average from July through September. Forty-eight percent of the total catch occurred during the first two weeks of the season (June 15-30) largely due to the shift of effort during the closure north of Cape Falcon. Eighty-four percent of the total catch occurred during June and July.

Table 6. Monthly distribution of 1978 Oregon troll salmon landings (numbers of fish) compared to the 1971-75 average.

	Monthly landings (Numbers)								
Year	March April	May	June	July	Aug.	Sept.	Oct.	Nov.	Total
Chinook									
Avg. 1971-75	532	8,324	27,528	56,647	69,725	31 442	13,701	1,406a/	208,460
1978	--	3,575	41,087	69,791	52,782	12,848	5,000b/	1,000b/	186,100
Coho									
Avg. 1971-75	--	--	227,843	414,383	305,753	29,691	3,286	--	980,956
1978	--	--	299,556	224,885	94,676	8,350	1,000b/	--	628,467

a/ Extended ocean season Elk-Chetco Rivers 1974 and 1975

b/ Estimated

Commercial troll chinook landings in 1978 were also below the 5-year average (Table 5). Total chinook landings numbered 186,100 fish weighing 1,894,000 pounds compared to the 1971-75 average of 208,400 fish and 2,447,100 pounds. The 1978 landings were down 11 percent in numbers and 23 percent in weight when compared to the 5-year average. Landings were comparable to 1976 but below 1977. Again, as with coho, there was a greater reduction in catch by weight than by numbers.

Chinook landings in numbers of fish were well below average in May, above average during June and July, and below average for the remainder of the season (Table 6). Reduced landings in May reflected the fact that the Oregon trip boat fleet was fishing California waters. Increased chinook landings in June to levels above the 5-year average appeared to be the result of additional fishing pressure off Oregon during the closure north of Cape Falcon.

The landed value of the 1978 salmon catch by the Oregon troll fishery was well below 1976 and 1977 but comparable to the 5-year average (Table 7). Preliminary estimates of dollar value of the 1978 catch was $6,715,000 compared to the 1971-75 average of $5,695,800. No adjustments have been made for inflation making it difficult to compare landed value between years.

Table 7. Landed value of the salmon catch by the Oregon troll fishery 1971-78.

Year	Average price paid per pound Chinook	Coho	Dollar value (Thousands)
1971	0.59	0.36	$ 3,746
1972	0.75	0.51	3,457
1973	1.02	0.78	7,532
1974	1.05	0.76	7,938
1975	1.04	0.77	5,806
1976	1.77	1.26	14,868
1977a/	2.10	1.30	10,800
1978a/	1.83	1.36	6,715

a/ Preliminary

Recreational Fishery - Effort: Angler effort expended in the 1978 recreational fishery off the Oregon coast was above the 5-year average (Table 8). Effort in 1978 totaled 410,300 angler trips compared to the 1971-75 average of 345,800 trips representing a 19 percent increase in effort. Effort was comparable to 1977 levels but well below the peak experienced in 1976.

Seasonal distribution of effort was above the 1974-77 average early in the year but dropped below average after mid-July (Table 9). The peak early season effort corresponded with maximal catch rates. Reductions in salmon catch rates and availability of albacore close inshore shifted some sport effort, particularly charter boats, to tuna and also bottomfish in August and September. Bad weather and rough ocean conditions also limited fishing in September.

An analysis of the distribution of the 1978 Oregon recreational ocean salmon effort by port revealed some changes in distribution of effort (Table 10). Most Oregon ports were near or below the 1975-77 average effort levels with the exception of Brookings and Newport where significant increases were noted. A large reduction in effort was observed on the Oregon side of the Columbia River where effort dropped 34 percent below the previous 3-year average. It is not certain what portion of this reduction can be attributed to the more restrictive chinook regulations in effect for this area. In general, effort showed the greatest reduction at north coast ports.

Table 8. Recreational ocean salmon effort and catch (thousands) off Oregon 1971-78.

Year	Effort (Angler trips)	Catch			Fish per angler
		Coho	Chinook	Total	
1971	303.7	311.7	29.6	341.3	1.12
1972	331.7	248.4	44.1	292.5	0.88
1973	350.4	234.1	61.0	295.1	0.84
1974	335.8	311.0	40.3	351.3	1.05
1975	407.5	253.4	75.7	329.1	0.81
Avg. 1971-75	345.8	271.7	50.1	321.8	0.93
1976	538.4	506.2	74.4	58.5	1.08
1977	414.2	196.4	60.2	256.6	0.62
1978a/	410.3	277.5	22.9	300.4	0.73

a/ Preliminary

Table 9. Bi-weekly distribution of the 1978 recreational ocean salmon catch and effort off Oregon compared to the 1974-77 average.1/

Year	Bi-weekly period						Total
	June 15-June 30	July 1-July 15	July 15-July 31	Aug 1-Aug 15	Aug 15-Aug 31	Sept 1-Sept 15	
Effort							
Avg. 1974-77	27,635	60,547	63,663	68,793	69,608	40,383	330,630
1978	43,700	73,734	59,745	49,706	57,339	23,303	333,901
Chinook							
Avg. 1974-77	4,142	7,264	10,504	12,452	11,097	5,267	50,727
1978	1,643	2,499	3,390	3,218	5,535	1,009	17,294
Coho							
Avg. 1974-77	21,587	49,775	55,219	52,177	50,100	19,588	248,448
1978	50,871	48,379	36,236	22,387	39,614	8,288	205,775

1/ Figures are from statistical creel sampling program and do not include salmon-steelhead tag returns.

Table 10. Distribution of the 1978 Oregon recreational ocean salmon catch and effort by port compared to the 1975-77 average.[1/]

Port	Effort (angler trips)		Catch			
			Coho		Chinook	
	1978	3-yr Avg.	1978	3-yr Avg.	1978	3-yr Avg.
Columbia River (Oregon side)	45,296	69,105	43,370	60,357	5,997	31,888
Garibaldi	17,873	27,239	5,378	16,312	291	944
Depoe Bay	29,302	43,022	18,036	29,760	431	1,386
Newport	81,609	54,912	44,361	34,119	1,834	2,095
Winchester Bay	57,421	65,362	48,620	57,758	3,029	8,791
Coos Bay	28,705	32,257	24,558	29,272	1,145	4,874
Gold Beach	11,837	9,425	8,422	1,884	2,706	1,700
Brookings	61,858	55,059	38,566	21,439	3,667	7,222
Total	333,901	356,381	231,311	250,901	19,100	58,900

1/ Figures are from statistical creel sampling program and do not include salmon-steelhead tag returns.

Recreational Fishery - Catch: The recreational ocean catch of coho salmon in 1978 totaled 277,500 fish compared to the 1971-75 average of 271,700 (Table 8). The 1978 catch was 2 percent above the 5-year average mainly due to increased effort. The catch level exceeded 1977 but was still well below the excellent year experienced in 1976. The overall catch rate for coho in 1978 was 0.68 fish per angler trip which is below the 5-year average.

The seasonal distribution of coho catches paralleled that of effort (Table 9). Above or near average catches occurred prior to mid-July, however, catch levels fell below average for the remainder of the season in response to declining effort and catch rates.

Considerable variation was observed in coho catches by port (Table 10). All ports reported below average catches of coho with the exception of Brookings, Gold Beach and Newport where significant increases were noted primarily in response to increased effort.

The recreational ocean catch of chinook salmon in 1978 totaled 22,900 fish which is 54 percent below the 5-year average (Table 8). The catch was also well below that reported in both 1976 and 1977. The overall catch rate for chinook was 0.06 fish per angler, well below the 5-year average. Chinook catches were below average throughout the season (Table 9). The chinook catch was below average at all ports, however, the greatest reduction occurred on the Oregon side of the Columbia River where catches were 81 percent below the previous 3-year average (Table 10). The observed reduction is probably the result of reduced chinook availability as well as the more restrictive minimum size limit for chinook in that area.

Washington

Troll Fishery. Most fish-receiving tickets for the troll fishery through October 8 are included in the present evaluation of the 1978 salmon troll fishery. The Washington troll salmon fishery north of Point Grenville closed after September 15, while the fishing south of Point Grenville continued through October 31, both as scheduled. Season catch and effort data are shown in Table 11 and Figures 3 to 5, for the 1971-75 base period and the 1976-78 fishery. The 1977-78 statistics are preliminary.

Table 11. Washington commercial troll fishery statistics for entire season, 1971-78 (1977-78 preliminary).

Year	Effort (days fished)	Chinook catch (no. fish)	Coho catch (no. fish)
1971	68,300	252,200	1,264,100
1972	54,300	202,900	575,300
1973	51,200	317,300	702,200
1974	58,500	353,100	1,038,300
1975	53,600	274,200	774,300
1971-75 mean	54,400[1/]	279,900	870,800
1976	62,000	361,400	1,384,800
1977	56,100	253,600	708,500
1978[2/]	44,000	145,000	591,000

[1/] Effort mean for 1973-75 base period. For comparable fishing time to 1978 season, the adjusted 1973-75 average is 46,073 days fished.

[2/] Preliminary projection of season total, based on effort and catches recorded through October 8, 1978.

Effort: Troll fishing effort for 1978 is below levels experienced in recent years. The preliminary estimate of effort through October 8 is 41,700 fishing days. The final fishing effort in 1978 will be less than 44,000 days. For comparable fishing periods in 1973-75, the average effort was 46,073 days. In 1977, effort during the comparable period was 56,123 days. During the entire troll season (including periods closed in 1978) troll effort averaged 54,400 fishing days in 1973-75. As in 1977, peak effort occurred after the June closure. Unlike 1977, the effort did not continue at a high level but fell off rapidly to below the 1973-75 adjusted average until the first week of September. Since September, the weekly total effort has reflected that shown for 1977 (Figure 8).

Chinook catch: The total Washington troll chinook catch recorded through October 8 is 141,000 (preliminary estimate) including over 15,000 landed in Washington from Southeastern Alaska. The average season's total catch (under current regulations) should be approximately 145,000 chinook (or 2.4 million pounds round weight). The weekly catch pattern approximately reflects that which was shown for 1977 (Figure 9).

The average number of chinook landed in Washington during comparable fishing periods for 1971 through 1975 seasons is 226,300. The average number landed during the entire season (including current closed periods) is 279,900 chinook. The total chinook catch in numbers of fish will be the lowest since 1967. The number of chinook caught in 1978 is approximately 52 percent of the entire season base period average. Total poundage landed is 70 percent of the average (see Figure 4), while the average round weight per fish is the largest recorded in recent years at 16.1 pounds (Table 12).

Table 12. Average round weight for Washington Coastal troll caught chinook and coho, 1967-78.

Year	Chinook	Coho
1967	12.9	7.9
1968	11.5	6.4
1969	12.3	7.1
1970	11.9	8.2
1971	12.1	6.2
1972	12.7	6.8
1973	12.0	6.2
1974	12.2	6.2
1975	12.0	6.6
1976	12.1	5.2
1977 1/	12.4	7.1
1978 1/	16.1	5.4

1/ Preliminary.

Coho catch: The 1978 troll coho catch recorded through October 8 totals 591,000 fish. The season total catch is expected to be approximately 593,000 (3.2 million pounds round weight). This is the lowest coho catch since 1972 and only 68 percent of the 1971-75 average of 870,800 fish for the entire season. Total poundage landed is only 58 percent of average (see Figure 7). The average round weight of troll coho in 1978 is approximately 5.4 pounds. This is the second smallest seasonal average size recorded in this state's troll fishery. The 1976 average round weight was smaller at 5.2 pounds. The 1971-75 adjusted average catch during that part of the season comparable to 1978 open periods was 677,142 coho. At the July opening, above average catches were immediately followed by poor catches throughout July and August. A relatively strong second peak occurred in early September (Figure 10).

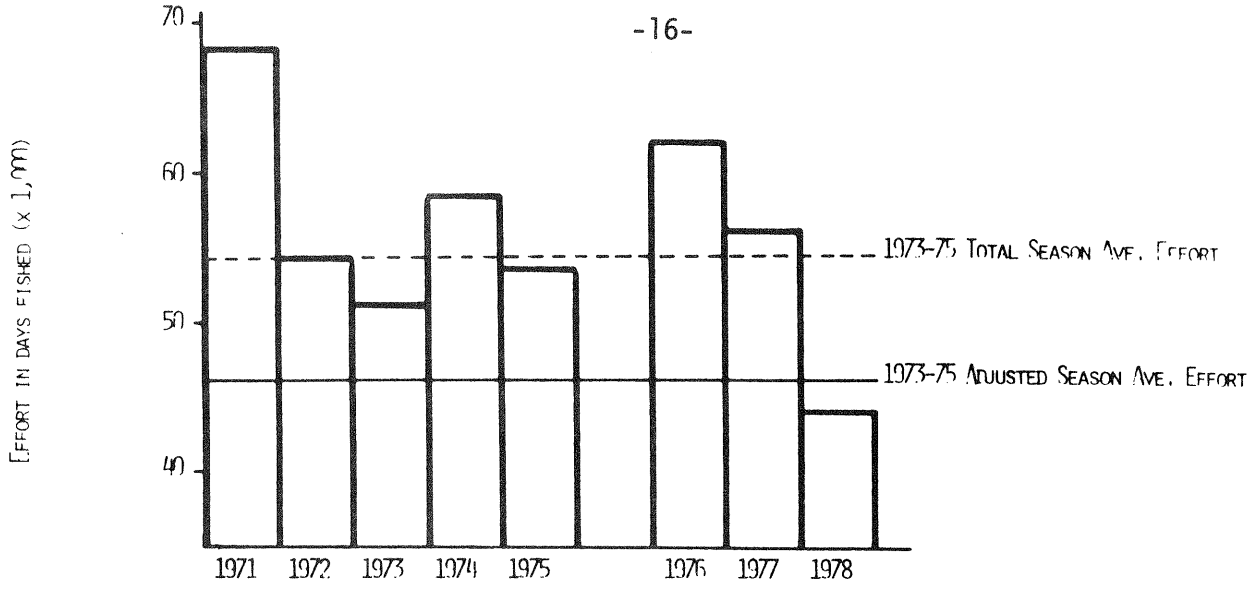


FIGURE 3. WASHINGTON ANNUAL COMMERCIAL TROLL SALMON FISHING EFFORTS, 1971 - 1977 AND PRELIMINARY 1978.

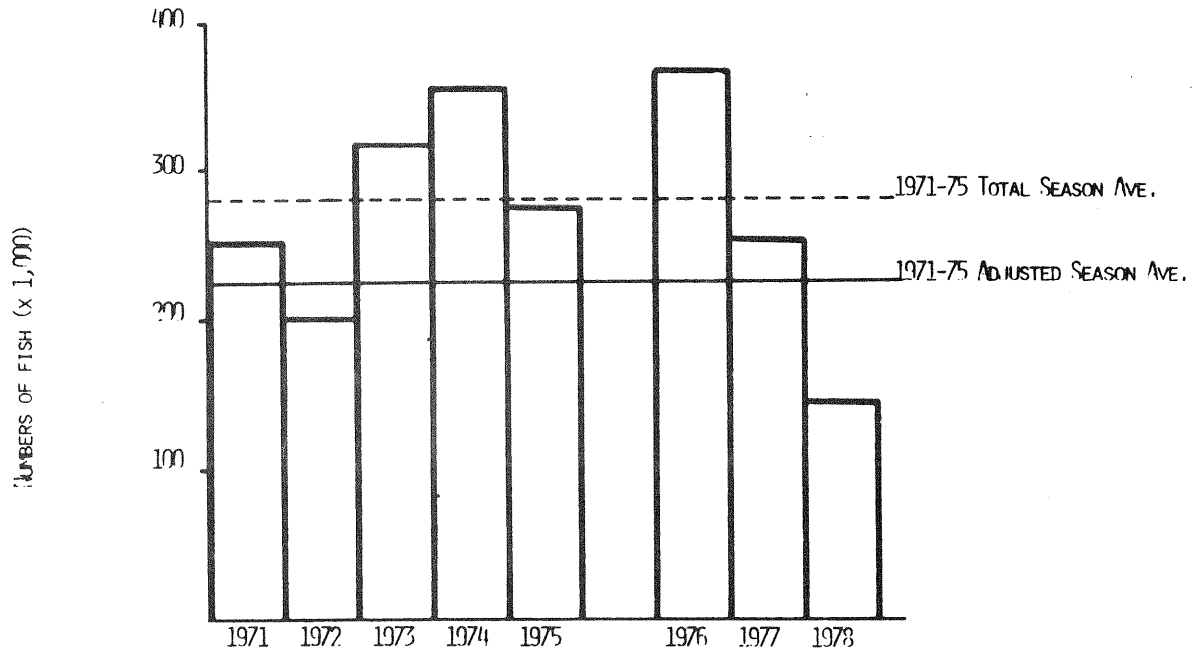


FIGURE 4. WASHINGTON ANNUAL COMMERCIAL TROLL CHINOOK SALMON CATCH, 1971 - 1977 AND PRELIMINARY 1978.

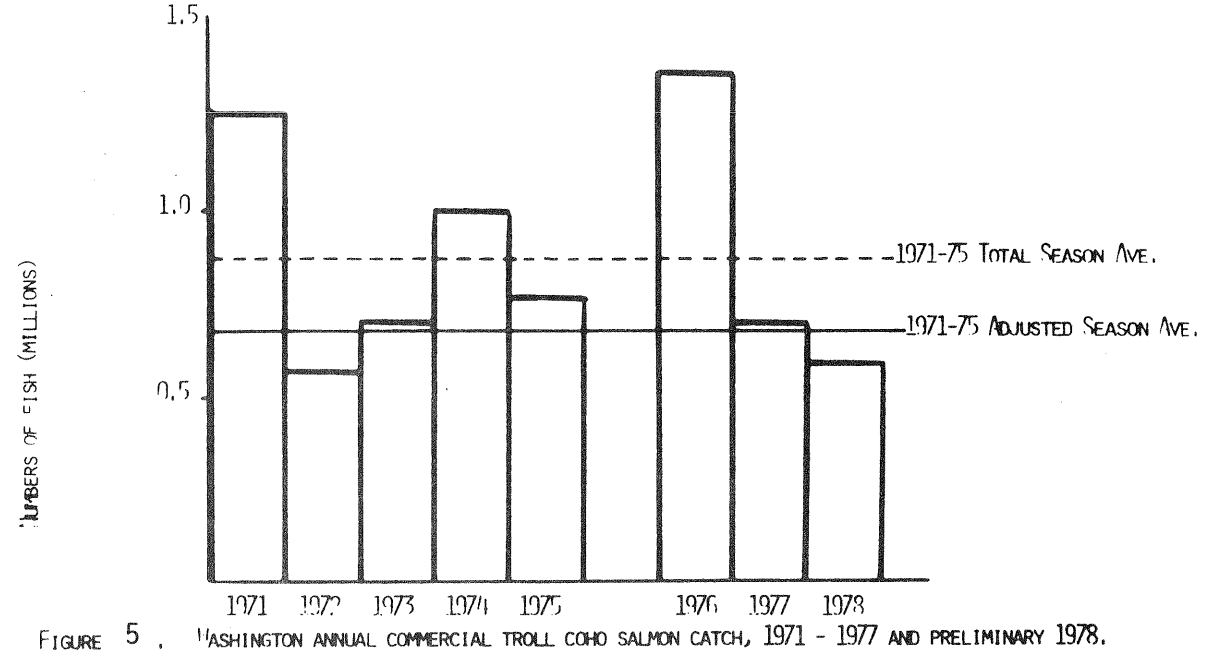


FIGURE 5. WASHINGTON ANNUAL COMMERCIAL TROLL COHO SALMON CATCH, 1971 - 1977 AND PRELIMINARY 1978.

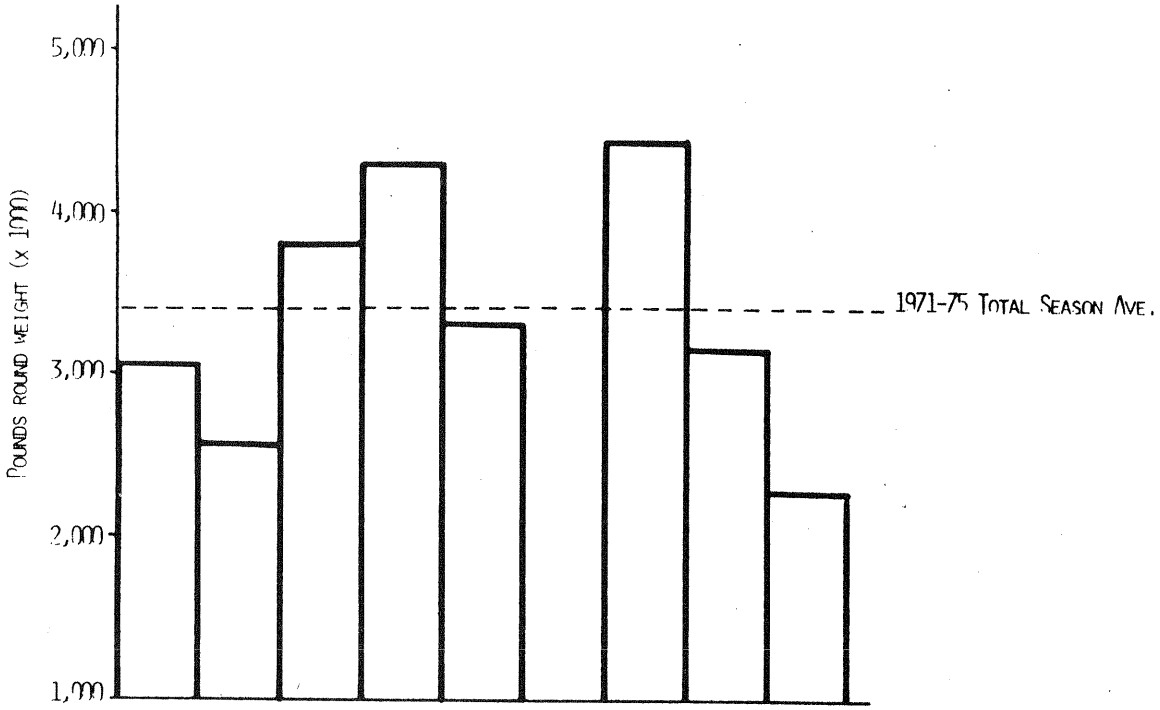


FIGURE 6. WASHINGTON ANNUAL COMMERCIAL TROLL CATCH IN POUNDS OF CHINOOK SALMON, 1971-1977 AND PRELIMINARY 1978.

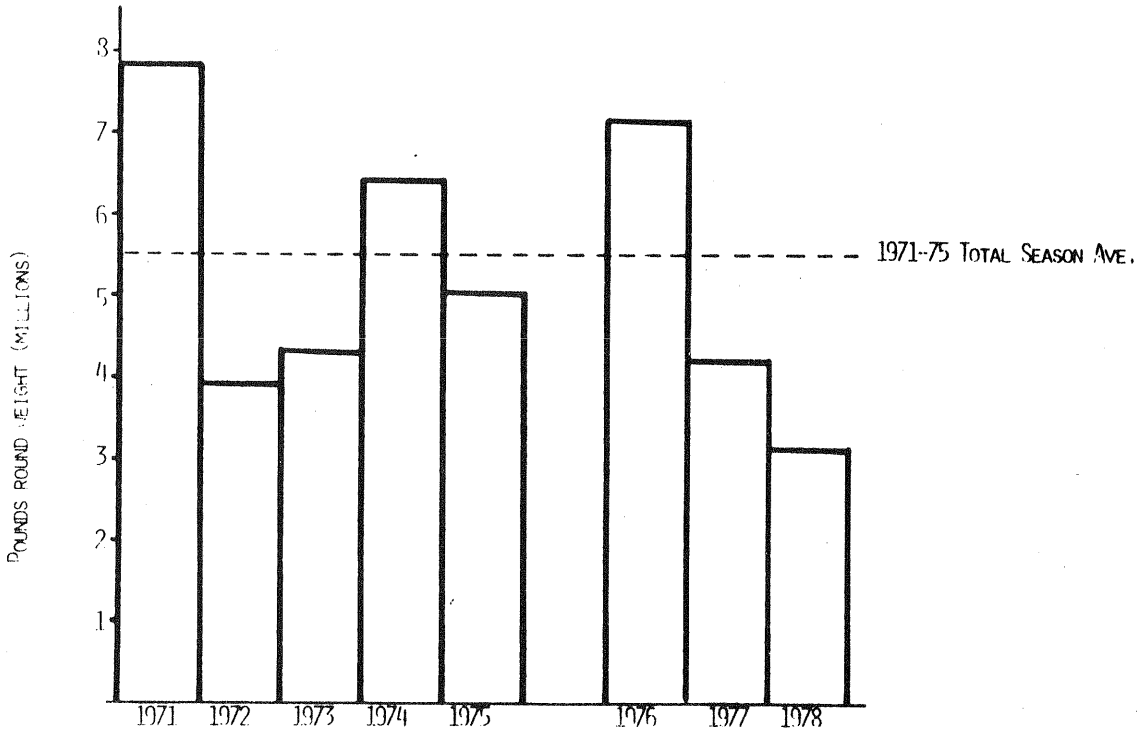


FIGURE 7. WASHINGTON ANNUAL COMMERCIAL TROLL CATCH IN POUNDS OF COHO SALMON, 1971-1977 AND PRELIMINARY 1978.

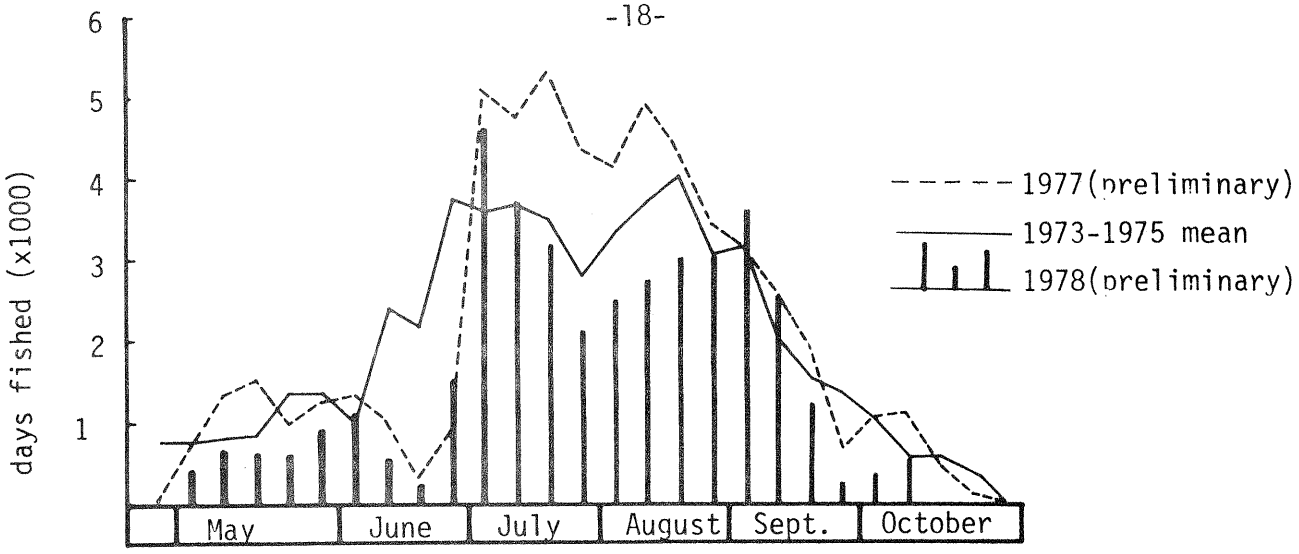


Figure 8. Washington commercial troll salmon fishing effort,1973-1975 mean, 1977 and 1978 (preliminary).

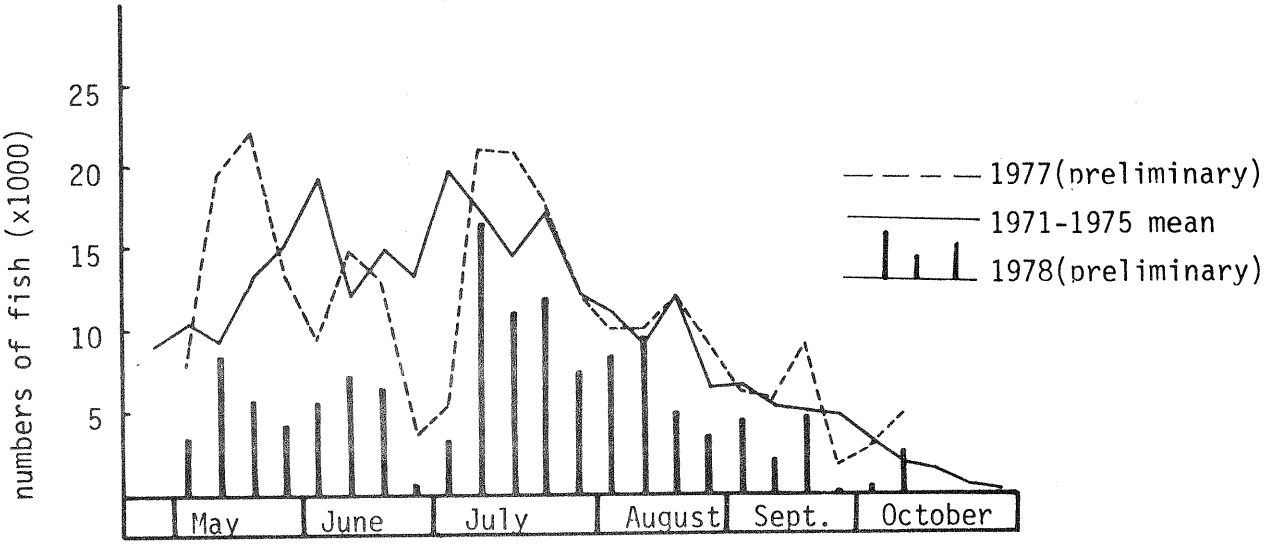


Figure 9. Washington commercial troll chinook salmon catch 1977(preliminary), 1978(preliminary), and 1971-1975 mean.

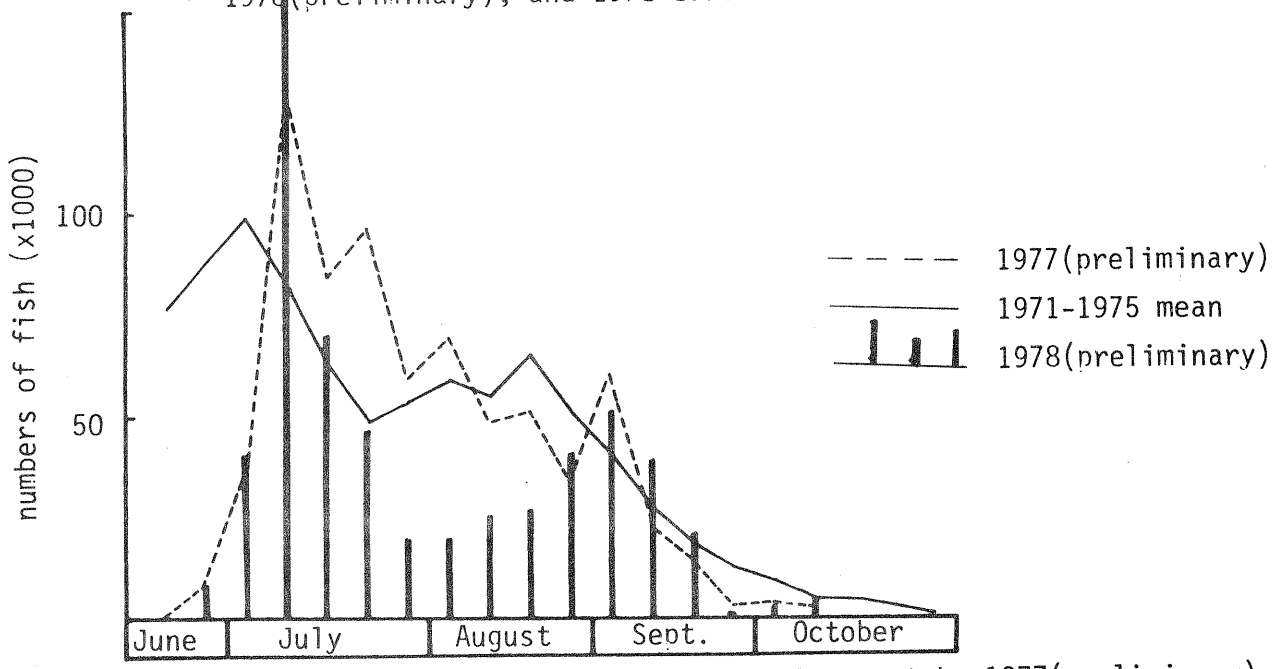


Figure 10. Washington commercial troll coho salmon catch, 1977(preliminary), 1978(preliminary), and 1971-1975 mean.

Recreational Fishery. Preliminary estimates of the 1978 ocean sport fishery are complete through Week 41 (October 8). Table 13 and Figures 11 to 13 show season catch and effort for the 1971-75 base period and the 1976-78 fishery. The 1978 statistics are preliminary. In August 1978, the 1977 sport fishery statistical report was finalized.

Table 13. Washington ocean sport fishery data (in thousands), 1971-77 and preliminary 1978.

Year	Angler Trips	No. chinook caught	No. coho caught
1971	443.3	160.0	747.3
1972	490.5	212.3	541.8
1973	479.7	203.8	471.7
1974	464.9	214.6	593.3
1975	535.9	261.6	481.1
1971-75 mean	493.5[1/]	210.5	567.0
1976	538.1	170.7	942.8
1977	530.0	175.0	490.2
1978	450.0	90.1	480.0

[1/] 1973-75 mean.

Effort: Following a period of above average fishing effort in late June and early July, intensity fell well below the 1973-75 mean angler trips. Total effort for 1978 is expected to be approximately 450,000 angler trips in coastal waters. This is 91 percent of the mean effort level relative to the 1973-75 base period. Weekly effort did not reflect the pattern as shown in the 1973-75 base period or in 1977. This was attributed to poor angler success from Mid-July to mid-August (Figure 14).

Chinook catch: The 1978 chinook sport catch along coastal Washington was the lowest since 1962. The season total catch will be less than 91,000 fish. This is only 43 percent of the 1971-75 average. Prior to the first week of July, the catch pattern shown by the 1978 fishery was not unlike that shown during 1971-75 base period or during the 1977 fishery. However, after the fourth week of June the catches fell to a low level and stayed there for the remainder of the season (Figure 15).

Coho catch: Better than average coho catches in late June and early July were largely offset by poorer success in late July and August (Figure 16). The preliminary catch estimate for the coastal coho fishery is 480,000. This is 85 percent of the 1971-75 level and the lowest since 1973.

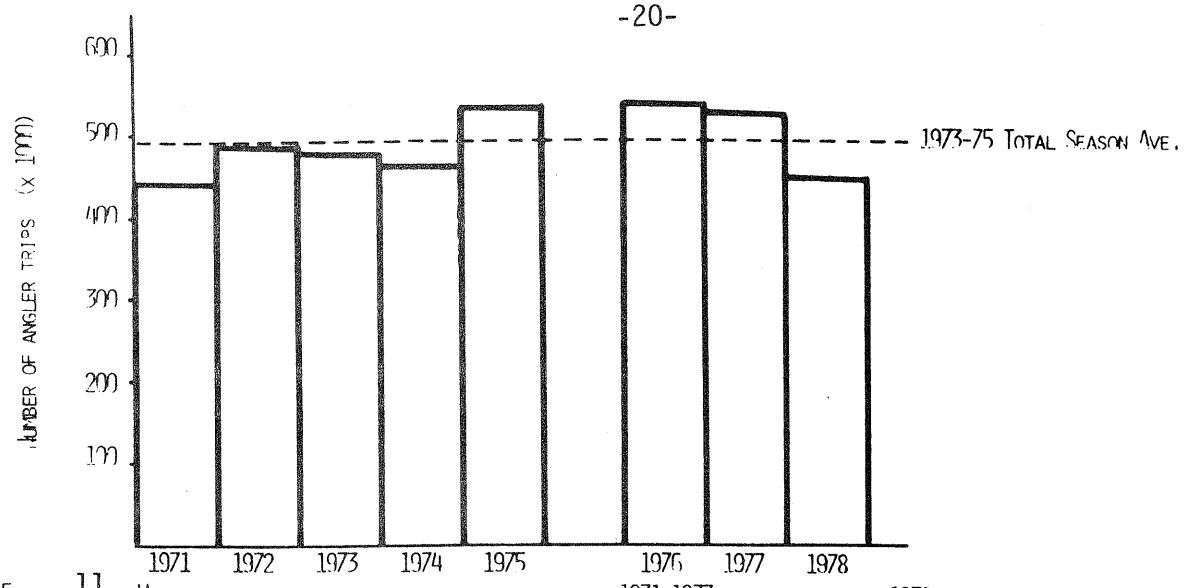


FIGURE 11. WASHINGTON ANNUAL OCEAN SPORT FISHING EFFORT, 1971-1977 AND PRELIMINARY 1978

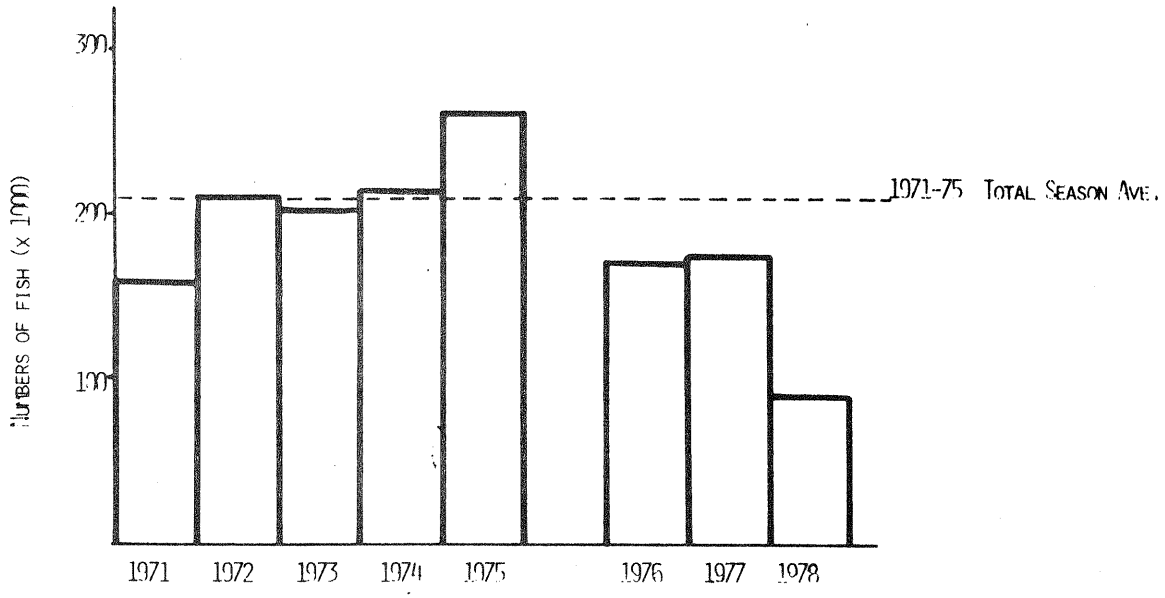


FIGURE 12. WASHINGTON ANNUAL OCEAN SPORT CATCH OF CHINOOK SALMON, 1971-1977 AND 1978 PRELIMINARY.

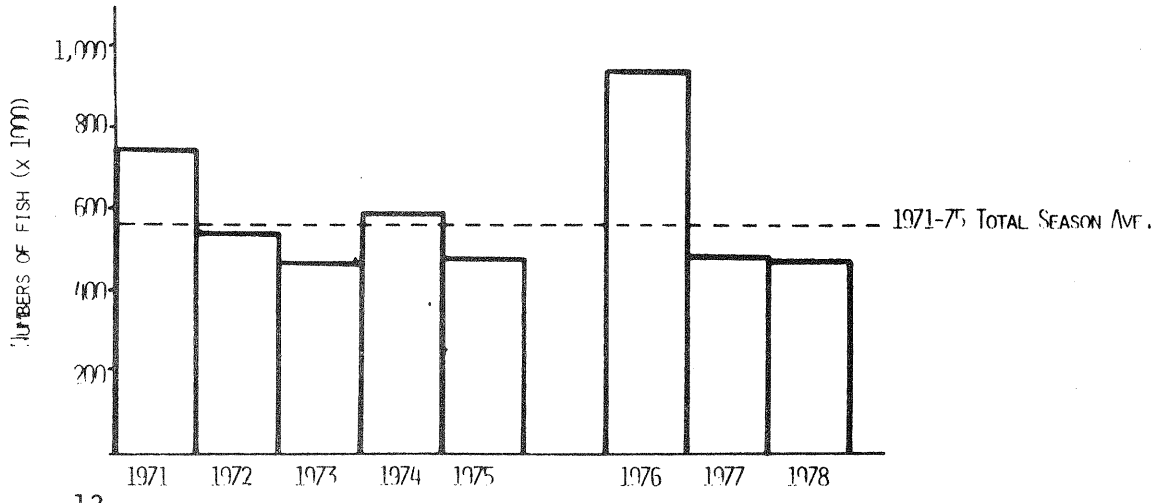


FIGURE 13. WASHINGTON ANNUAL OCEAN SPORT CATCH OF COHO SALMON, 1971-1977 AND PRELIMINARY 1978.

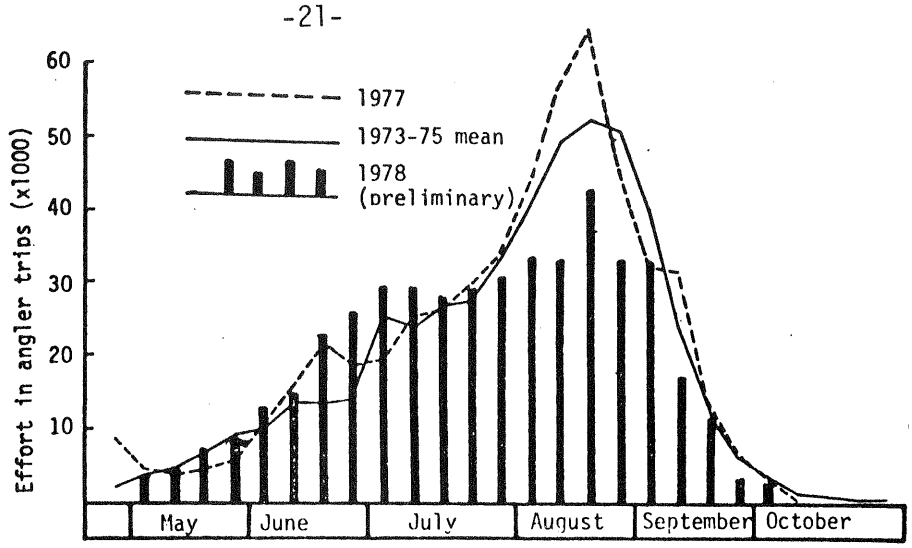


Figure 14. Weekly Washington coastal sport fishing effort; 1977, 1978 (preliminary), and 1973-75 mean.

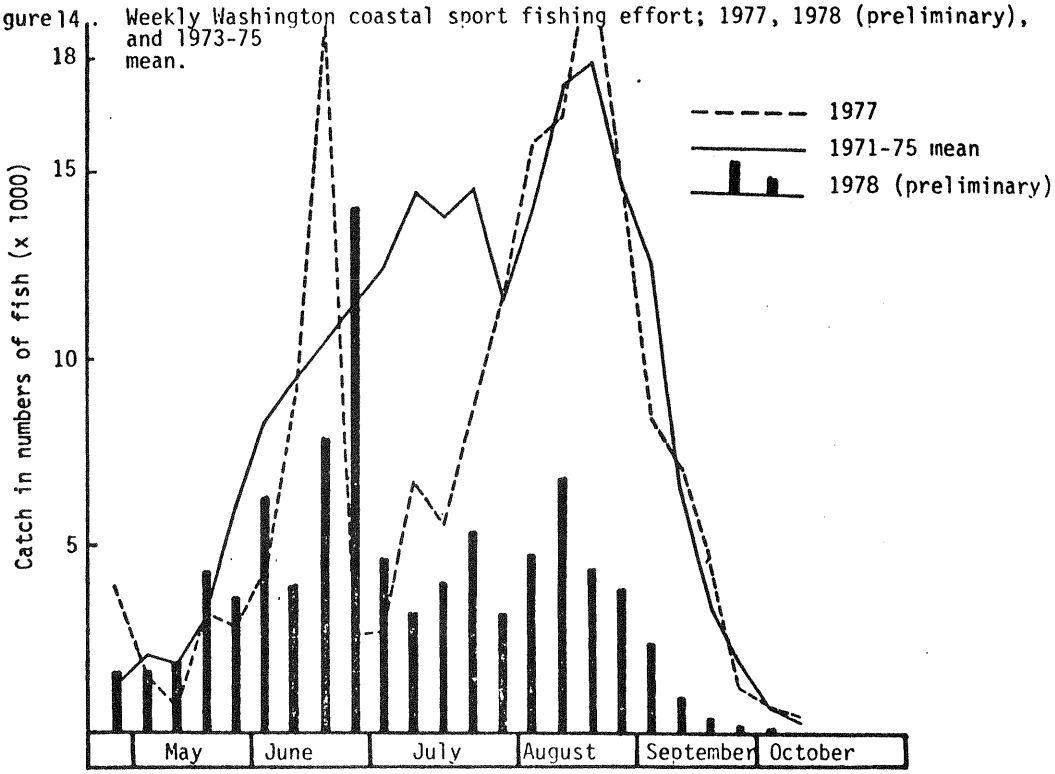


Figure 15. Washington coastal sport chinook salmon catch; 1977, 1978 (preliminary), and 1971-1975 mean.

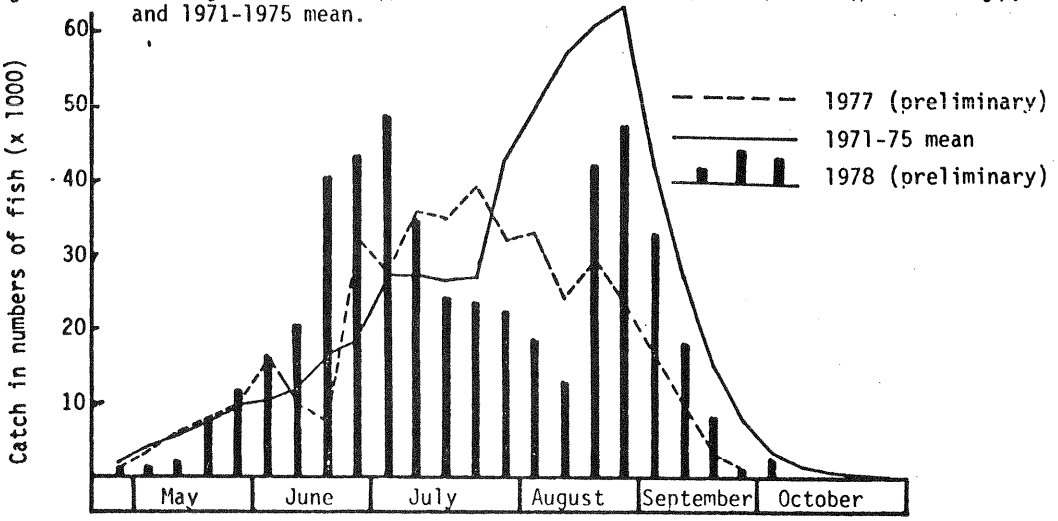


Figure 16. Washington coastal sport coho salmon catch, 1977 (preliminary), 1978 (preliminary), and 1971-75 mean.

OCTOBER 1978 REVIEW OF THE INSIDE SALMON FISHERIES

Introduction

All-citizen commercial net fisheries within Washington-Oregon jurisdiction occur in the Columbia River, Willapa Bay, Grays Harbor, and Puget Sound. These areas, plus over 100 tributary streams, have recreational salmon fisheries. In addition, the Columbia River, Grays Harbor, a number of north coastal rivers, and Puget Sound have treaty-Indian commercial net fisheries. Since all of the commercial fisheries are currently in various stages of active, day-to-day management (designed to meet specific spawning escapement objectives), it is impossible to present a cohesive, detailed summary for these fisheries. However, general status and preliminary harvest data are available for each of these commercial fisheries. Washington data are obtained mainly through WDF's Auxiliary Fish Catch Record System (AFCRS), which provides real-time in-season catch and effort statistics for all actively managed fisheries in the state.

Sport catch statistics are gathered for internal state waters through use of the sport salmon punch card. However, final statistics are not available until May or June of the following year. As a result, separate in-season estimates are made for all major sport fisheries such as Puget Sound marine areas and the main Columbia River. These estimates are made using catch and effort data obtained through field monitoring of the ongoing fisheries. In addition, real-time sport catch estimates are frequently made for specific river fisheries whenever these data are needed for active management situations.

Columbia River (Oregon and Washington) Fisheries and Fish Runs.

In 1978, a number of restrictions were placed on recreational angling as well as treaty and non-treaty commercial net fishing in the Columbia River. These were required to protect certain spawning stock populations, or to comply with the "Management Plan" adopted by the Federal Court in 1977.

The Management Plan was negotiated between Oregon, Washington and the four Columbia River treaty Indian tribes and was adopted, for a five-year period, by Federal Judge Robert Belloni in February 1977. The plan deals only with adult salmon entering the Columbia River system that are destined to migrate above Bonneville Dam. Major considerations include (1) protection for spawning stocks, (2) assurances for tribal ceremonial and subsistence fishing, (3) assurances for harvestable escapement levels of salmon and steelhead to the Snake River, and (4) development of a sharing formula between treaty and non-treaty fisheries for the harvest of those fish that are determined to be above levels required for spawning escapement plus upriver harvest.

The plan currently provides catch sharing formulas for upriver-bound spring chinook and fall chinook salmon. For harvestable spring chinook, the plan calls for a 60 percent allocation to the non-treaty catch (sport plus commercial) below Bonneville Dam and 40 percent to the treaty catch in established fishing areas above Bonneville Dam. For harvestable fall chinook salmon, 40 percent go to the non-treaty fishery below Bonneville Dam, and 60 percent go to the treaty fishery above. The plan calls for protection of other species or races of upriver-bound runs, most of which are in a generally depressed condition (Table 14). Steelhead trout are designated as a non-target species for any fishery other than sport.

Table 14. Run size estimates for salmon[1/] and steelhead destined to migrate above Bonneville Dam (in 1,000's of fish).

	Spring chinook	Summer chinook	Sockeye	Fall chinook	Coho	Steelhead
1971	168.1	90.1	150.5	296.1	75.4	239.2
1972	284.9	78.7	123.3	233.8	65.9	230.0
1973	238.1	48.9	58.4	316.5	54.6	191.8
1974	108.0	34.0	35.6	238.2	61.0	151.5
1975	104.1	44.4	55.4	373.0	58.3	84.1
Average 1971-75	180.6	59.2	84.6	291.5	63.0	
1976	78.3	42.1	33.7	358.6	51.9	122.4
1977	142.8	41.0	93.7	281.0	38.9	193.4
1978[2/]	120.0	44.0	20.0	239.0	50.0	113.2

[1/] Includes adult and jack salmon.
[2/] Preliminary.

For management purposes, the various Columbia River salmon runs are separated by seasons which reflect run timing through the standard treaty and non-treaty fishing zones, both above and below Bonneville Dam. Following is a current status for each of five seasonal fisheries.

Winter Season (January-March). The "winter season" is primarily a non-treaty fishery designed to harvest the early arriving segments of spring chinook salmon destined for several lower river tributaries, with Willamette River fish predominating. Although these stocks are not covered under the Management Plan, care must be taken to assure that the season does not unduly impact the upriver spring chinook run during the latter part of March. The 1978 winter season commercial catch of just under 13,000 fish was below the 1971-75 average, but considerably better than the two previous seasons (Table 15). This year's catch was considered quite good in view of the brief eight-day season allowed. Through the early 1970's, the winter season averaged more than 12 days per year. The favorable lower river sport harvest through March of 4,700 chinook was indicative of high effort and good river conditions for sport angling (Figure 17).

Table 15. Columbia River winter season landings (in 1,000's).

Year	Commercial		Sport
	Nos.	Pounds	Nos.
1971	13.4	278.0	6.5
1972	15.8	331.0	.2
1973	17.2	337.5	7.4
1974	13.3	277.0	2.2
1975	9.1	184.8	2.4
Average 1971-75	13.8	281.7	3.7
1976	4.7	96.0	3.2
1977	7.5	145.0	3.1
1978[1/]	12.8	256.0	4.7

[1/] Preliminary.

Spring Season (April-May). Spring seasons below Bonneville Dam involve upriver-bound spring chinook salmon, as well as many spring chinook destined for lower river tributaries. All mainstem Columbia fisheries during this season are conducted under guidelines of the Management Plan.

The 1978 upriver-bound spring chinook run to the Columbia River did not provide any harvestable numbers of fish to be shared between treaty and non-treaty fishermen. Consequently, there was no commercial season above or below Bonneville Dam (Table 16). Sport salmon fishing was closed from April 1 through the entire spring season along the lower and middle Columbia reaches (Figure 18).

Table 16. Columbia River spring season landings (1,000's).

	Non-treaty			Treaty	
	Commercial		Sport	Commercial	
Year	Nos.	Pounds	Nos.	Nos.	Pounds
1971	22.6	363.3	20.0	12.7	162.5
1972	69.9	1,076.5	28.9	42.8	637.9
1973	60.5	928.5	35.5	34.1	533.9
1974	8.4	135.1	13.3	17.5	270.8
1975	0	0	0	0	0
Average 1971-75	32.3	500.7	19.5	21.4	321.0
1976	0	0	0	0	0
1977	9.3	144.0	14.0	17.1	258.2
1978[1/]	0	0	0	0	0

[1/] Preliminary.

Summer Season (June-July). Summer seasons involve runs of upriver-bound summer chinook and sockeye salmon, and require management considerations for the early running "Group A" summer steelhead destined for the Snake River system. Each of these stocks falls under specific Management Plan guidelines.

Because of greatly reduced run strengths in recent years, each of these summer running stocks requires continued protection to achieve even minimal spawning escapement objectives. Consequently, in 1978 as in the past several years, no sport or treaty and non-treaty commercial net fisheries were allowed.

Early Fall Season (August below Bonneville Dam; August-October Above). The early fall season deals with upriver-bound fall chinook salmon. Both below and above Bonneville Dam, this run's timing coincides to varying degrees with Snake River runs of "Group A" and "Group B" summer steelhead. All fisheries conducted in August below Bonneville Dam and from August through October above Bonneville are under the Management Plan sharing formula for fall chinook.

The upriver adult fall chinook run destined above Bonneville totaled 184,000 fish in 1978 which is below the expected run of 250,000 fish.

This is less than the minimum average run size of 300,000 upriver fall chinook that was set by the Columbia River Management Plan. The total catch by Indian and non-Indian fisheries was 105,000 leaving the spawning escapement of upriver fall chinook above all fisheries at 79,000 adult fish which is somewhat short of the goal of 100,000 set by the Columbia River Management Plan. The 1978 non-treaty commercial harvest of 38,000 fish during the early fall season was far below average and one of the smallest catches on record (Table 17). This resulted from a severe reduction in August fishing time. That restriction was necessary to comply with the 60 percent treaty allocation as well as the Columbia River Management Plan stipulation of requiring a make-up during succeeding years of a treaty fishery deficit of 20,000 fish carried over from 1977. The 1978 treaty fishery took just over 67,000 fall chinook, thus the Indian fishery met its 63,000 fish (60%) allocation and was able to make up 4,000 fish from the 1977 deficit of 20,000.

Table 17. Columbia River early fall season landings (in 1,000's).

Year	Non-treaty		Treaty	
	Nos.	Pounds	Nos.	Pounds
1971	93.8	2,044.7	56.5	953.6
1972	96.3	2,177.5	42.9	634.5
1973	105.4	2,350.9	67.9	1,148.3
1974	52.2	1,225.6	54.9	980.1
1975	95.9	2,257.8	140.6	2,665.6
Average 1971-75	88.7	2,011.3	72.6	1,276.4
1976	33.3	746.3	134.9	2,553.5
1977	75.0	1,376.1	60.1	1,025.1
1978[1/]	38.0	910.0	67.1	1,200.0

[1/] Preliminary.

Late Fall Season (September-November). The late fall season establishes a non-treaty fishery below Bonneville Dam to harvest fall chinook and coho salmon destined for lower river tributaries. To a large degree these stocks are of hatchery origin. The season generally runs from September through early November, thus eliminating most harvesting conflicts with upriver bound fall chinook, late running summer steelhead, and early running winter steelhead. Consequently, the late fall season does not come directly under any Management Plan guidelines. However, precautions must be taken during early September fishery openings in order to minimize incidental catches of upriver-bound chinook and steelhead.

The 1978 late fall season opened somewhat later than in recent years. In addition, less fishing area was available to fishermen through mid-September due to a Federal Court Order imposing a closure between the Willamette River and the Bonneville deadline, 5 miles below Bonneville Dam. This was done to provide maximum protection for any upriver-bound chinook still moving through that area. Due to predictions for only a moderate lower river chinook return and for a relatively poor abundance of coho, the late fall season was restricted to seven 4-day weeks extending to November 2. Through mid-October, salmon runs and harvest

rates were about as expected, and projected catches should be approximately 56,000 chinook and 85,000 coho (Table 18, Figures 20 and 21). The gillnet fishery for coho is below the projected catch of 150,000 but well above the 1977 catch of 35,400.

Table 18. Columbia River late fall season commercial landings (in 1,000's).

Year	Chinook		Coho	
	Nos.	Pounds	Nos.	Pounds
1971	122.1	2,027.3	264.3	2,191.5
1972	43.4	715.4	131.3	1,177.5
1973	165.3	3,201.4	183.7	1,823.2
1974	44.7	748.5	266.2	2,391.0
1975	77.4	1,478.1	156.6	1,530.8
Average 1971-75	90.6	1,634.1	200.4	1,822.8
1976	114.2	2,174.4	164.6	1,269.4
1977	95.5	1,814.5	35.4	270.5
1978[1/]	56.0		90.0	

[1/] 1978 projection through season's end.

Willapa Bay

The early season gillnet fishery in Willapa Bay for non-local chinook stocks and sturgeon extended from July 6 through August 26. Chinook catches during this season were low, with a preliminary estimate of 3,900 fish. The fishery continued without weekly closures through August 20.

Local stock chinook catches in the regular fall season (after August 26) totaled approximately 6,400 fish through October 22. Coho catch for the same period is approximately 5,900. A one day per week fishery is currently being permitted during the chum management period. Recent year catches are found in Table 19. Willapa Bay is managed primarily on the basis of hatchery run strength of chinook and coho and natural run strength for chum.

Table 19. Willapa Bay chinook and coho catches in numbers of fish by gillnet gear.

Year	Early season chinook[1/]	Regular fall season	
		Chinook	Coho
1971	2,059	7,830	14,462
1972	2,376	8,562	10,755
1973	27,857	12,586	16,716
1974	4,997	8,727	15,821
1975	6,791	8,759	7,393
1976	15,685	12,654	9,021
1977[2/]	21,804	9,561	3,073
1978	3,900[3/]	6,400[4/]	5,900[4/]
1971-75 mean	8,816	9,293	13,029

[1/] Prior to August 26.
[2/] Subject to minor change.
[3/] Preliminary.
[4/] Partial only.

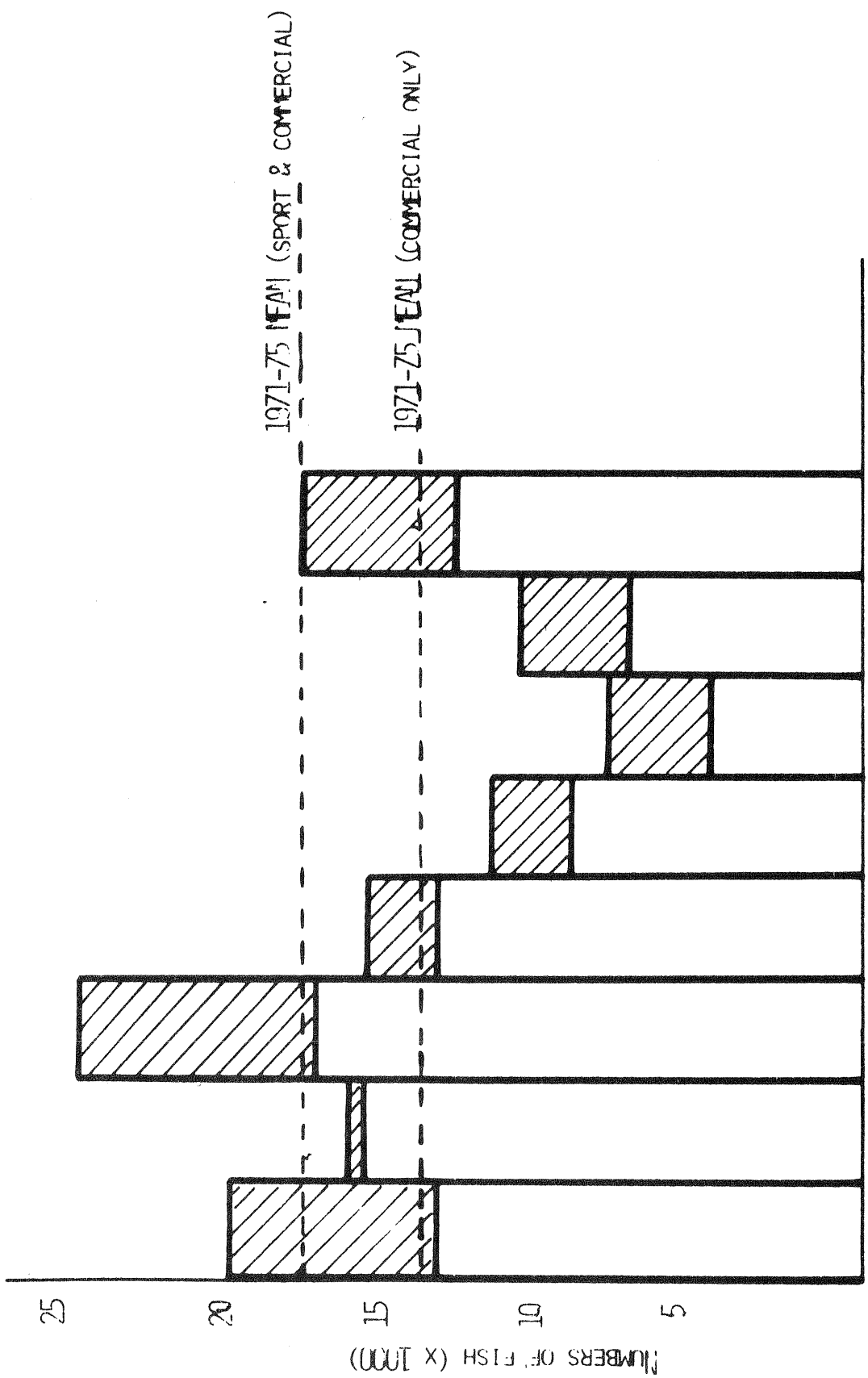


FIGURE 17. COLUMBIA RIVER WINTER SEASON LANDINGS, COMMERCIAL AND SPORT (SHADED REGION) 1971 TO 1977, 1978 (PRELIMINARY)

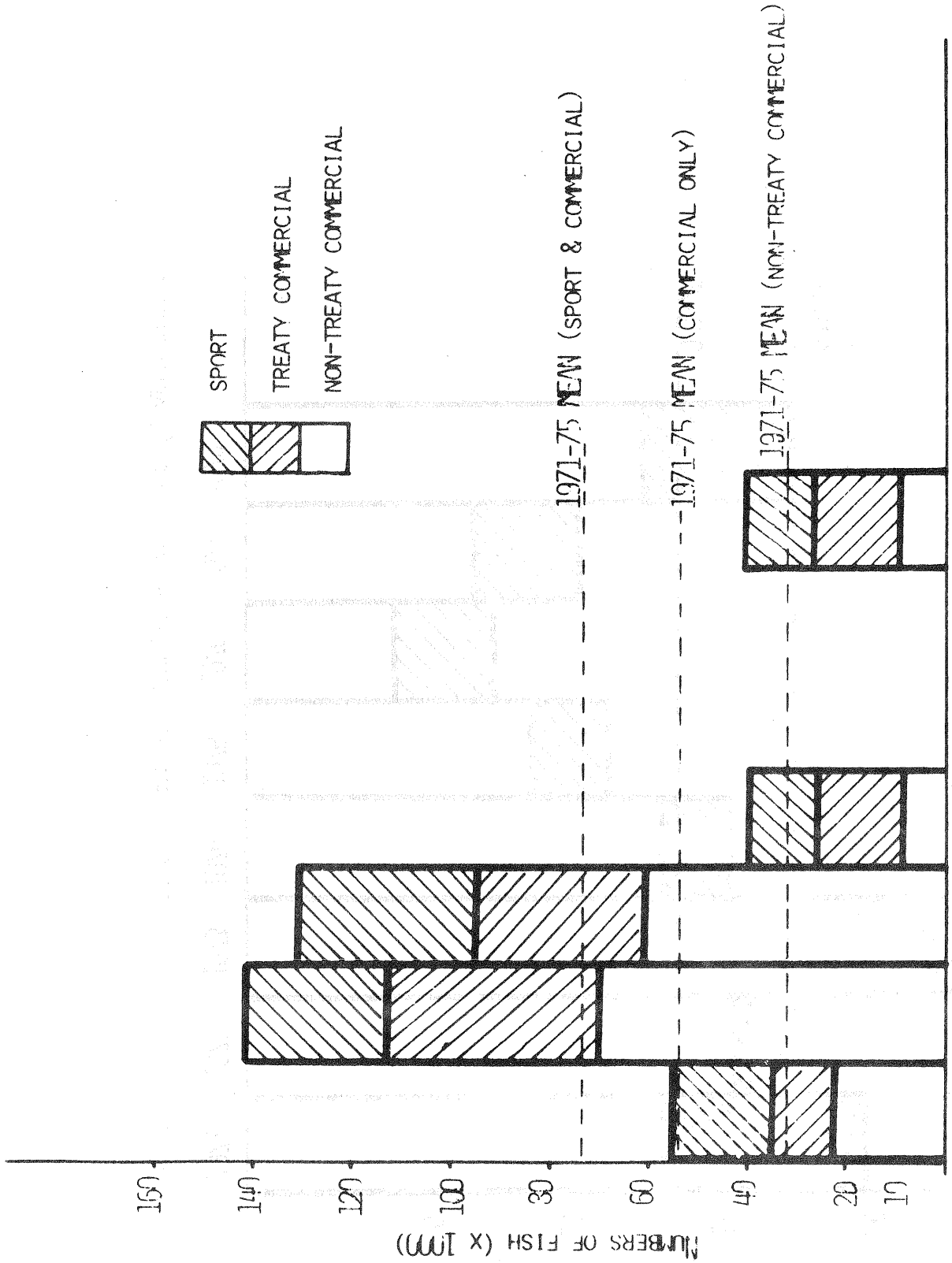


FIGURE 18. COLUMBIA RIVER SPRING SEASON LANDINGS, INCLUDING SPORT & COMMERCIAL (TREATY & NON-TREATY) TOTALS, 1971 TO 1977, 1978 (PRELIMINARY) (NO OPEN SEASON 1975, 1976 and 1978)

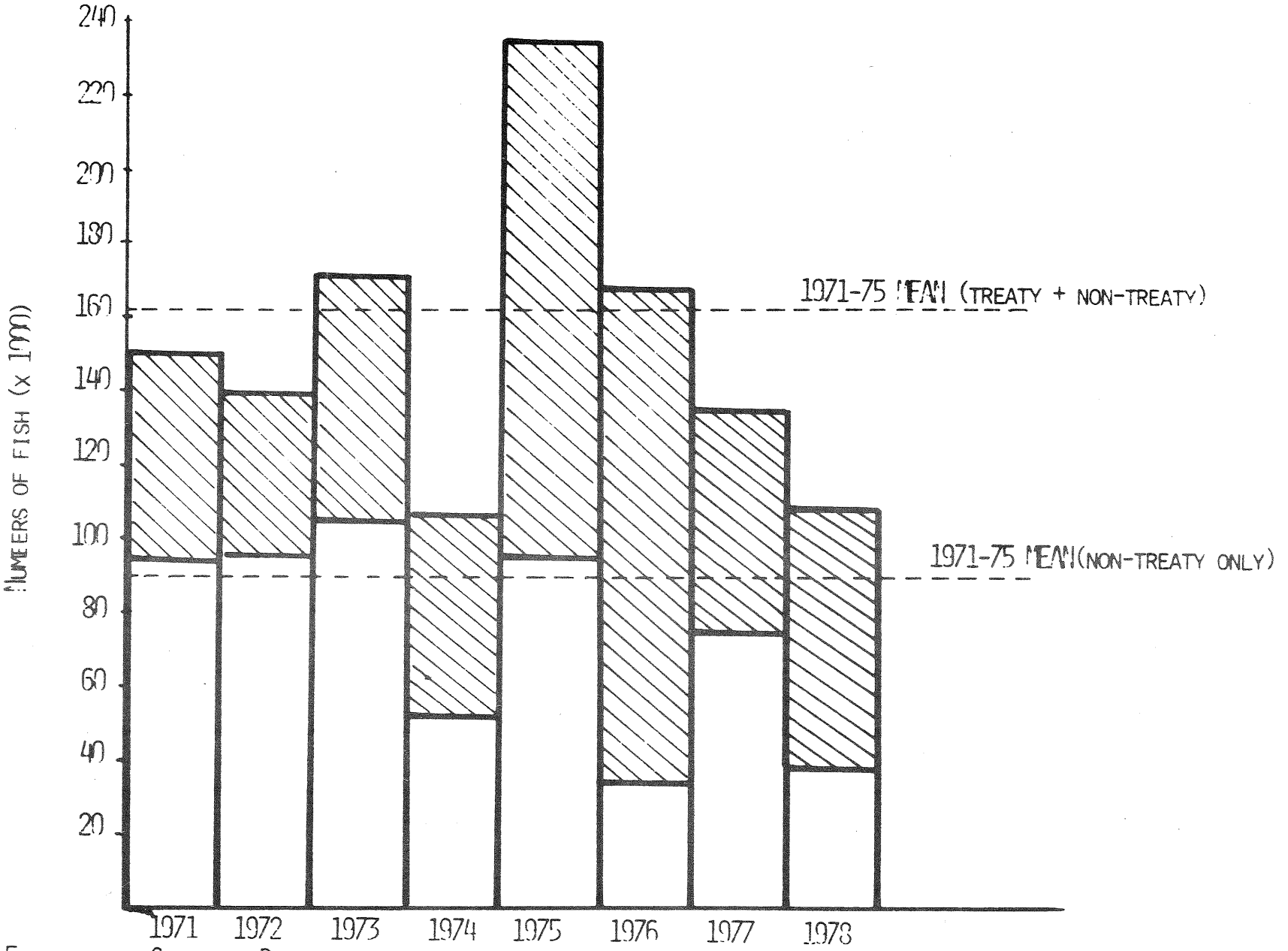


FIGURE 19. COLUMBIA RIVER EARLY FALL SEASON LANDINGS, TREATY (SHADED REGIONS) AND NON-TREATY, 1971 TO 1977, 1978 (PRELIMINARY)

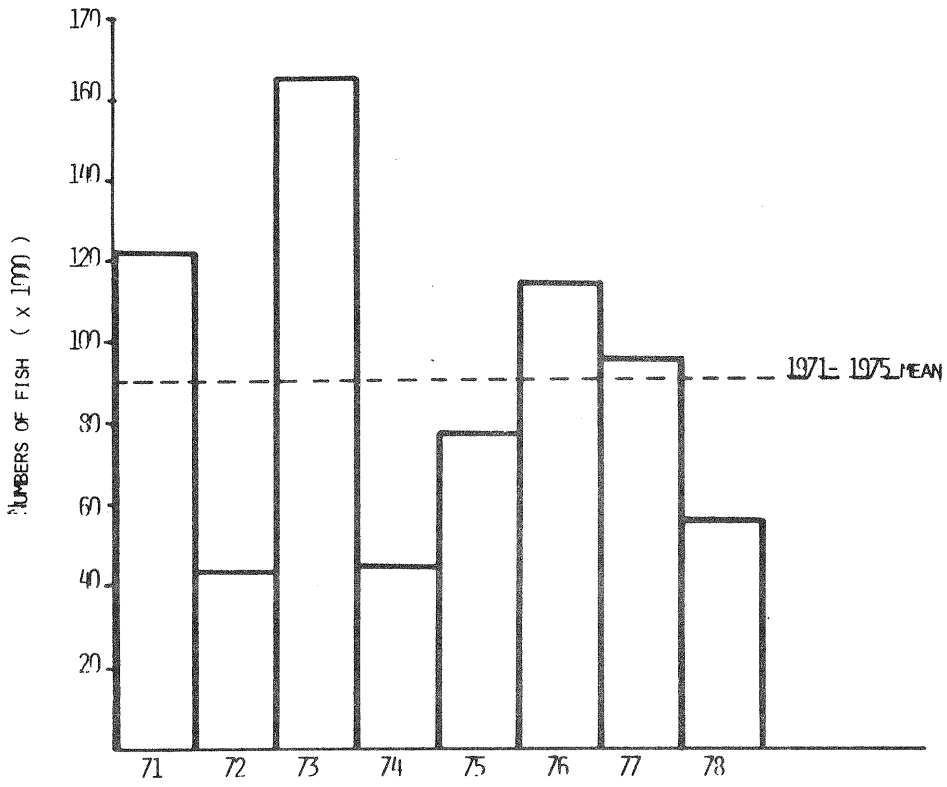


FIGURE 20 COLUMBIA RIVER LATE FALL SEASON CHINOOK LANDINGS, 1971 TO 1977, 1978 (PRELIMINARY)

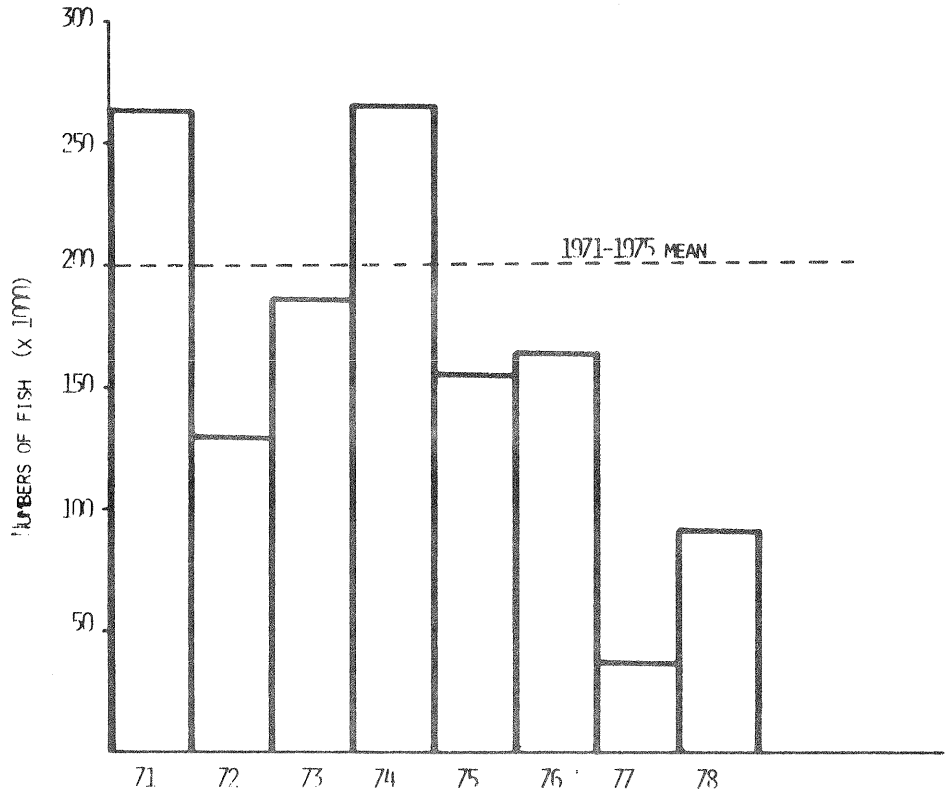


FIGURE 21 COLUMBIA RIVER LATE FALL SEASON COHO LANDINGS, 1971 TO 1977, 1978 (PRELIMINARY)

The 1971-75 average chinook catch for Weeks 36 through 43 (comparable to August 26 through October 22, 1978) is 7,910. The average coho catch for this period is 10,316. Catches in 1978 will be below the 1971-75 average for both chinook and coho (Figures 22 and 23).

Grays Harbor

The early gillnet fishery in Grays Harbor for non local chinook stocks and sturgeon extended from July 6 through August 14. The preliminary estimate of chinook catch during this period is 900 fish (Table 20).

The 1978 predictions for fall run chinook and coho salmon returning to Grays Harbor were for only 14,700 chinook and 42,000 coho, with escapement objectives of 15,000 and 38,000 fish, respectively. The entire 4,000 harvestable coho were allocated to the treaty Indian fishery by Federal Court order. No fisheries were permitted to target on chinook. Thus, any local stock fall chinook catch is taken incidental to other target species. Total treaty and non-treaty chinook and coho catches for recent years are shown in Table 20 and Figures 24 and 25. The 1978 catches shown are projected numbers. The runs are presently being fished by treaty Indians only. A chum fishery may be allowed for non-treaty fishermen. Grays Harbor is managed primarily on the basis of natural run strength for all species.

Due to anticipated Federal Court orders, the entire 1978 non-treaty gillnet fishing season on local salmon stocks will probably be less than 24 hours.

Table 20. Grays Harbor Indian and non-Indian chinook and coho catches in number of fish by gillnet gear.

Year	Early season chinook[1/]	Regular fall season					
		Coho			Chinook		
		Non-Indian	Indian	Total	Non-Indian	Indian	Total
1971	369	58,698	--	58,698	9,000	--	9,000
1972	397	46,552	--	46,552	10,156	--	10,156
1973	5,479	40,162	--	40,162	11,051	--	11,051
1974	1,712	49,515	--	49,515	7,968	--	7,968
1975	377	20,985	3,975	24,960	7,037	1,958	8,995
1976	5,280	13,863	14,317	28,180	2,874	3,023	5,897
1977[2/]	13,438	1,345	2,581	3,926	1,827	4,006	5,833
1978	900[3/]	--	--	4,000[4/]	--	--	1,000[5/]
1971-75 mean	1,667	43,182		43,977	9,042		9,434

1/ Includes small treaty Indian catch.
2/ Preliminary, subject to minor change.
3/ Preliminary.
4/ Projection only.
5/ Projected catch incidental to coho and chum salmon fisheries.

Chehalis River (Grays Harbor Tributary)

A non-treaty Indian fishery is conducted by the Chehalis Tribe on their Chehalis Reservation. Despite the fact that no such gillnet fisheries (treaty or non-treaty) were permitted to intercept Chehalis River runs, the September chinook catch was average, and the coho catch was only 25 percent of average. Season total catches cannot be projected at this time, but are expected to be poor. Catches for recent years are tabled below (Table 21).

Table 21. Chehalis Indian Reservation Catches, 1971-77.

Year	Fall chinook[1/]	Coho
1971	489	3,607
1972	1,655	1,604
1973	2,262	3,288
1974	547	4,715
1975	591	1,131
1976	773	3,988
1977[2/]	1,417	1,603
1978[3/]	151	122
1971-75 mean	1,109	2,869

[1/] August through December.
[2/] Preliminary, subject to minor change.
[3/] Partial only through September.

Quinault River

Quinault River chinook and coho runs in recent years have relied increasingly upon hatchery returns (Table 22). Early indications for 1978 returns are for an above average run of chinook, but a below average return of coho. Both runs are managed primarily on the basis of hatchery run strength.

Table 22. Quinault River Indian Catches[1/].

Year	Fall chinook	Coho
1971	2,112	11,805
1972	2,938	13,021
1973	1,596	9,276
1974	2,458	14,807
1975	1,578	4,738
1976	3,236	5,604
1977	5,763	1,862
1978[2/]	5,440	3,934
1971-75 mean	2,136	10,729

[1/] 1973-77 data provided by the Quinault Indian Tribe.
[2/] Partial catches only.

Queets River

Quinault tribal net fisheries are also conducted on the Queets River. Catches shown for 1978 are preliminary estimates to late October (Table 23). Recent year's catches for the entire season are also provided. Complete closure of the 1978 fishery was necessary recently to protect coho spawning escapements. The fishery relies primarily on natural production of both chinook and coho.

Table 23. Queets River Indian catches, 1971-1977[1/].

Year	Fall chinook	Coho
1971	2,322	5,842
1972	2,527	5,068
1973	3,629	9,000
1974	3,063	12,015
1975	2,052	2,883
1976	1,274	2,849
1977	1,016	1,001
1978[2/]	1,018	2,137
1971-75 mean	2,719	6,962

[1/] Data provided by Quinault Indian Tribe.
[2/] Preliminary catches through October 20.

Total returns of coho to the Queets River system have exceeded the spawning escapement objective of 9,700 fish in only one of the past six years (Table 24). Given the three brood year cycles presented in this table (1972-75, 1973-76, 1974-77), a harvest rate of approximately 20 percent would probably perpetuate the run at its present level. Despite this fact, harvest rates from 0.35 to 0.83 have occurred. If these harvest rates were allowed to continue, this run will cease to be a viable segment of the coho resource. This example illustrates the need to provide sufficient escapement from the ocean fishery for an inside fishery plus meeting the spawning escapement objective. It also illustrates the equally important need to manage properly inside fisheries to obtain the necessary spawning escapement objective when such escapement (plus any additional harvestable fish) leave the ocean fishery.

Table 24. Data on Queets River coho salmon (provided by the Quinault Tribe at a U.S. District Court Fishery Advisory Board meeting on October 19, 1978.

	Number of Fish					
Year	Treaty Indian Catch	Escapement Index	Exploitation Rate	Total Run	Spawning Escapement	Total Returns
1972	4,471	3.46	0.56	7,984	3,513	3,473 (in 1975)
1973	4,074	3.79	0.52	7,835	3,761	5,814 (in 1976)
1974	12,015	2.61	0.82	14,652	2,637	2,860 (in 1977)
1975*	2,883	0.6	0.83	3,473	590	-- (in 1978)
1976	2,849	2.87	0.49	5,814	2,965	-- (in 1979)
1977	1,001	1.83	0.35	2,860	1,859	-- (in 1980)

* Escapement index believed to be unrealistically low due to survey conditions.

(NOTE: Actual escapement estimated at 1,125 fish from other data. Spawning escapement objectives proposed by the Quinault Tribe is 9,700 fish.)

Hoh River

In-season catch and effort data are used as indicators of returning run sizes in the Hoh River. The latest update on run sizes (October 25, 1978) forecasted a total return of 2,700 fall chinook (escapement objective: 2,700) and 7,770 coho (escapement objective: 4,700). Recent catches are shown in Table 25. The fishery is managed on the basis of natural run strengths.

Table 25. Hoh Indian catches, 1971-78.

Year	Fall chinook[1/]	Coho
1971	1,128	5,187
1972	668	2,886
1973	2,187	6,701
1974	812	5,630
1975	666	2,272
1976	462	1,742
1977[2/]	1,563	911
1978[3/]	0 (446)	3,070 (1,304)
1971-75 mean	1,092	4,535

[1/] Chinook catches after August 31.

[2/] Preliminary estimate, subject to minor change.

[3/] Allowable catch based on in-season run size estimates of October 25, 1978. (Actual catch to date--partial data.)

Quillayute River

Quileute tribal fisheries have been closed for conservation purposes since October 13. Conservation closures have also been imposed by WDF on all ocean sport fishing within three miles of the river mouth since October 9. The river and its tributaries are closed to the taking of adult salmon by the sport fishery (a 24-inch maximum size limit allows the harvest of jack salmon to continue).

A two-week fishery conducted by the Quileute Tribe indicated a total coho return of 12,300 fish and a chinook return of 7,000 fish. The coho spawning escapement objectives of 18,000 fish for natural spawning and 1,600 fish for hatchery needs will not be met. The chinook escapement objective of 6,000 natural spawners will not be attained. Catches during the limited 1978 fishery are tabled below (Table 26). The fishery closures are effective for the remainder of the season.

Table 26. Quileute Indian catches, 1971-78.

Year	Fall chinook[1/]	Coho
1971	2,941	6,301
1972	3,523	7,771
1973	3,507	43,982
1974	3,849	29,625
1975	2,290	8,140
1976	2,246	8,762
1977[2/]	5,377	6,168
1978[3/]	1,700	4,600
1971-75 mean	3,222	19,146

[1/] Catches after 8/31.
[2/] Preliminary estimate, subject to minor changes, USFWS data.
[3/] Preliminary.

Fall salmon runs in the Quillayute River system are managed on the basis of natural run strengths. Exceptionally good returns of hatchery coho in 1973 and 1974 have not been repeated. Fall chinook production at the existing hatchery facility has not been emphasized.

Puget Sound - Commercial

Harvest management for chinook and coho salmon within Puget Sound is based upon specific allocation requirements between non-treaty and treaty fisheries as a result of the "Boldt Decision" (U.S. vs. Washington, Civil No. 9213). This allocation occurs on a stock by stock basis depending upon prior interceptions (ocean troll, ocean sport and Puget Sound sport) plus subsistence-ceremonial and on-reservation allowances for catch of treaty Indian tribes. These allocations, current through in-season run size estimates of October 18, 1978, are presented in Table 27. Since catches of both chinook and coho are still continuing, harvests shown are only projected season end totals.

For comparison purposes, total projected Puget Sound harvests by all commercial gear types for chinook and coho salmon are 210,000-220,000 and 710,000-750,000 fish respectively. These total projected catch figures include salmon of both Puget Sound and Canadian origin which are caught in Puget Sound waters. The 1971-75 comparable average catches are 158,000 chinook and 748,000 coho. The slightly below average coho catch is the product of a poor abundance of Candaian coho (which provide a significant percentage of the northern Puget Sound catches, and an above average Puget Sound return.

Table 27. Harvests of Puget Sound origin chinook and coho salmon anticipated for 1978 (as of October 18, 1978).

Management Unit	Summer/fall chinook		Coho	
	Harvestable (nos. of fish)	Treaty Indian allocation	Harvestable (nos. of fish)	Treaty Indian allocation
Strait of Juan de Fuca	200	No allocation prescribed	20,300	82%
Nooksack-Samish	99,000	63%	84,400	76%
Skagit	6,300	91%	29,900	81%
Stillaguamish-Snohomish	9,500	96%	118,600	75%
South Puget Sound	26,600	93%	327,000	67%
Hood Canal	10,300	80%	57,800	82%
Total	151,900		638,000	

Puget Sound - Sport

In-season Puget Sound marine sport fishery catch projections are available through September 17, 1978. These statistics are only estimates and will be subject to change as salmon punch card returns are analyzed. The area is defined as all of Puget Sound easterly of the Sekiu River mouth, but does not include any river sport fishery catch estimates. The majority of river catches are small jack salmon which are surplus to spawning escapement needs (this is primarily a result of restrictive regulations and not the selectivity of sport gear). In 1978, preliminary estimates through September 17 are that 171,000 chinook and 219,000 coho have been harvested by the Puget Sound marine sport fishery.

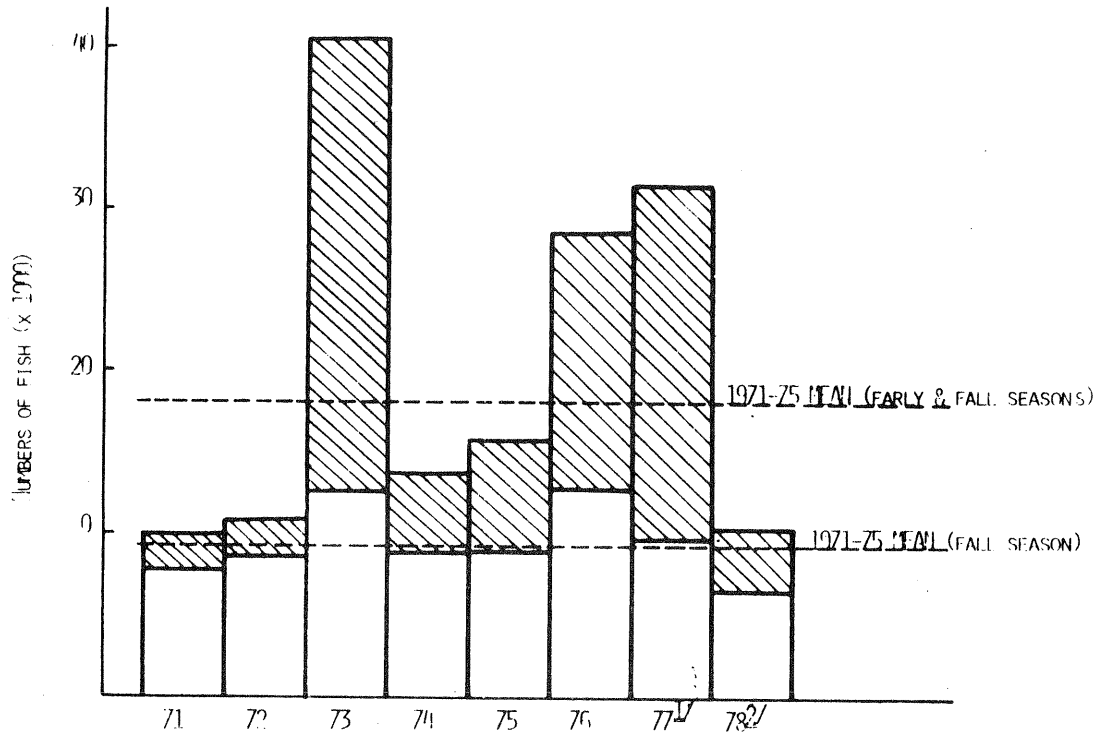


FIGURE 22 WILLAPA BAY CHINOOK CATCH BY GILL NET 1971 TO 1978 (77,78 PRELIMINARY) WITH 71-75 MEAN EARLY SEASON CATCH REPRESENTED BY SHADED AREAS.

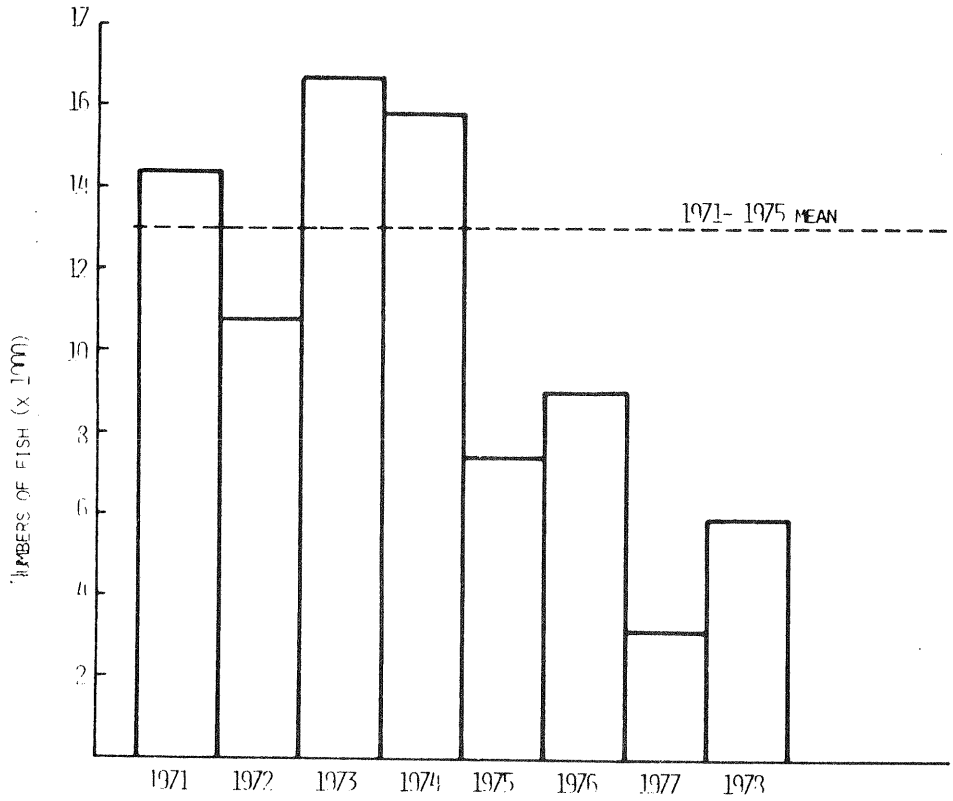


FIGURE 23 WILLAPA BAY COHO CATCH BY GILL NET 1971 TO 1978 WITH 1971-1975 MEAN (1977, 1978 PRELIMINARY).

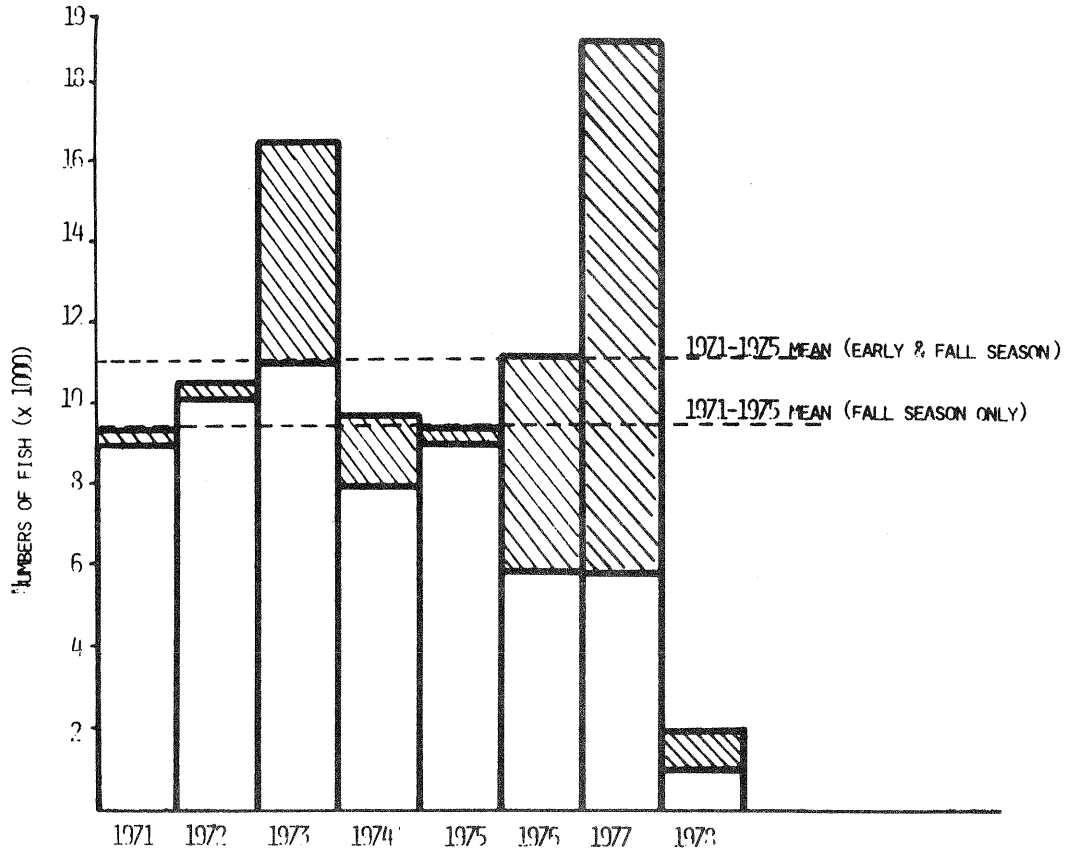


FIGURE 24 GRAYS HARBOR INDIAN AND NON-INDIAN CHINOOK CATCH BY GILL NET 1971 TO 1978 (1977 AND 1978 PRELIMINARY) WITH 1971-1975 MEAN. EARLY SEASON CATCH REPRESENTED BY SHADED REGIONS.

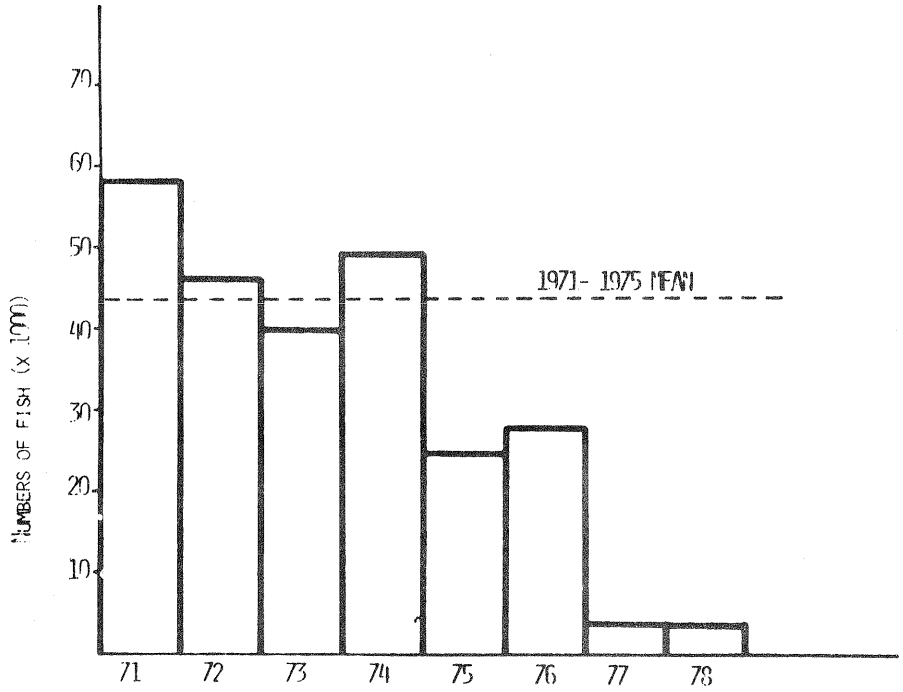


FIGURE 25 GRAYS HARBOR INDIAN & NON-INDIAN COHO CATCH BY GILL NET, 1971-1978, WITH 1971-1975 MEAN (77,78 PRELIMINARY)

SPAWNING ESCAPEMENTS

Introduction

Field crews are presently checking spawning escapement levels through regular "index area" counts on major spawning grounds. These surveys are made by air, by boat and on foot. This information will not totally be analyzed until spring. Final escapement estimates will be available at that time.

For California and the Oregon coast, escapement data are not available yet because spawning has not been completed. For Washington, present information available for both hatchery and natural spawning escapement levels is even more preliminary than that available for the internal state water's fisheries. Due to variability of chinook and coho salmon run timing between and within regions, best estimates at this time are what should be achieved given magnitude of runs as indicated by in-season run size updating methods. These rely primarily on commercial net fishery catch and effort data. During this current active management period, real-time hatchery return figures are obtained by repeatedly phoning the hatcheries for estimates of "fish-on-hand". Final returns as well as actual numbers of eggs taken will not be available until early 1979.

Columbia River. General status of upriver-bound salmon runs to the Columbia River were described in a previous section of this report. Status of salmon stocks originating below Bonneville Dam can be seen in indices of escapement to lower river tributaries (Table 28).

Table 28. Indices of escapement to Washington tributaries below Bonneville Dam.

	Spring chinook	Fall Chinook		Coho	
Year	Hatchery return (1,000's)	Hatchery return (1,000's)	Natural spawning (1,000's)	Hatchery return (1,000's)	Natural spawning (1,000's)
1971	6.2	30.4	20.3	128.3	9
1972	2.2	18.7	16.5	65.1	13
1973	5.6	18.3	22.8	47.9	3
1974	15.2	12.0	25.4	99.3	7
1975	16.7	17.1	24.5	56.7	5
Average 1971-75	9.2	19.3	21.9	79.5	7.4
1976	19.5	13.3	15.5	39.4	2/
1977	15.9	14.6	10.0	22.9	2/
1978 1/	9.3	19.0	10.0	Not available	2/

1/ 1978 figures are preliminary..

2/ Poor survey conditions -- counts not comparable.

In the lower Columbia River system both the spring and fall chinook runs have been good and the agencies have met their escapement goals. For the most part, upriver spring and summer run chinook remain in a depressed state. Even though the 1978 spring chinook return was well below returns of the past four years, it was more than adequate to achieve required hatchery egg takes. Surplus eggs from Cowlitz River Hatchery are being used to make up shortages at some upriver facilities.

Spawning escapements of upriver fall chinook above all fisheries was 79,000 adult fish which is somewhat short of the goal of 100,000. However, a return of over 19,000 fall chinook to Washington hatcheries provided total egg-take requirements. A number of individual stations did come up short, but surpluses at other facilities provided the required make up. Early natural spawning ground surveys indicate relatively low escapements, much the same as in 1977.

Early stock coho salmon that spawn in October returned in good numbers during 1978. Required egg takes have been achieved for this stock. The later running stock, which makes up the major segment of Washington's Columbia River hatchery coho production, is just beginning to arrive at lower river stations. Harvest results in the late fall fishery, along with early arrivals at some lower river hatcheries, indicate that the total coho return will be considerably better than in 1977. Last year's record low return did not provide necessary coho egg supplies for some Washington-Columbia River hatcheries, whereas Oregon met minimal egg requirements in all their Columbia River hatcheries.

Oregon. The status of coho harvest in 1978 can be assessed by reviewing the ocean harvest in the Oregon production index area compared with the predicted index of total adult abundance. The Oregon production index includes Columbia River and Oregon coastal stocks accounted for in: (1) ocean fisheries south of Ilwaco, (2) hatchery and dam escapements, and (3) Columbia River gillnet catch. The total adult production for the index area can be predicted with a high degree of accuracy ($r = 0.985$) from the abundance of coho jacks of the previous year. Based on the above relationship the total adult production index for 1978 was predicted to be 2,030,000 (standard error 202,000).

The ocean fisheries will harvest an estimated 1,608,300 coho from the production index area (Table 29). Comparing the ocean total of 1,608,300 with the predicted 2,030,000 for the total adult production index (Table 30) it appears escapement will be adequate to meet hatchery needs and provide for a Columbia River gillnet fishery.

Preliminary jack returns of coho to Columbia River hatcheries this fall have been low. Although the jack returns are incomplete, numbers are expected to remain below last year. Both jack returns and the upwelling index appear to be good predictors of adult abundance the following year. Based on the low jack returns this year and poor upwelling along the Oregon coast during the spring of 1978, it is possible that adult availability in 1979 will be depressed.

Table 29. Estimate of the 1978 ocean catch of coho from the Oregon production index area[1].

Area	Fishery		
	Recreational	Troll	Total
California	43,400	308,100	351,500
Oregon	277,500	628,400	905,900
Washington	227,900	123,000	350,900
Total	548,800	1,059,500	1,608,300

1/ Oregon production index area includes California, Oregon and Ilwaco, Washington

Table 30. Oregon index of production of adult coho in thousands of fish, 1961-78.

Adult Production Year	Adult Production Index Areas[1]				
	Ocean			Oregon	
	Troll	Sport	Columbia	coast	Total
1961	525	174	69	24	792
1962	449	273	110	31	863
1963	757	343	107	29	1,236
1964	947	361	359	53	1,720
1965	1,195	509	385	46	2,135
1966	1,270	404	582	41	2,297
1967	1,652	641	592	53	2,948
1968	1,372	479	331	40	2,222
1969	907	426	309	42	1,684
1970	1,374	475	868	51	2,768
1971	2,403	682	522	63	3,670
1972	1,208	534	266	21	2,029
1973	1,251	424	284	31	1,990
1974	1,987	633	453	40	3,113
1975	1,016	423	279	7	1,725
1976	2,779	872	269	38	3,958
1977[2]	(650)	(310)	(85)	(15)	(1,060)
1978[3]	(1,060)	(548)			(2,030) predicted

1/ Components are troll: California, Oregon, Ilwaco
sport: California, Oregon, Ilwaco
Columbia: Gill-net catch, hatchery, and dam escapements
Oregon coast: Hatchery and wild escapement

2/ Preliminary

3/ Estimated

Escapement of coho to Oregon coastal hatcheries is not complete at this time although no problems are anticipated in obtaining adequate numbers of adults to meet hatchery production needs. Spawning surveys will not be completed until December and, therefore, trends of wild escapement in 1978 are not yet known for Columbia River or Oregon coastal streams although the trend has been downward in recent years.

Escapement of chinook to Oregon coastal hatcheries is incomplete but no problems are anticipated in meeting escapement needs. As with coho, status of wild stocks will not be known until spawning surveys are completed sometime in December.

Washington - Coastal. It is difficult to assess coastal escapements at this time due to the later timing of the runs on the spawning grounds and at hatchery facilities. Available run size information, however, is indicated in Table 31.

Table 31. Comments on Washington coastal salmon escapements for 1978.

Area	Comments
Willapa Bay	Hatchery returns of chinook and coho are poor to date. Egg take needs will not be met.
Grays Harbor	Early fall chinook escapements appear to be low. It is too early to assess coho escapements. However, coho escapement is likely to be below the spawning objective of 38,000 fish.
Quinault River	Natural spawning escapements expected to be low.
Queets River	Chinook run is not expected to meet escapement objective. Coho escapement will fall far short of the objective of 9,700 fish.
Hoh River	Both chinook and coho escapement needs can be met.
Quillayute River	Despite a complete closure of all fishing since early October, escapement of chinook will be slightly below the escapement objective. Native coho escapement will be less than half of the number required.

Puget Sound. Although final figures are not now available for either hatchery or wild escapement, it is anticipated that natural spawning and artificial production objectives will be achieved for all major stocks of fall chinook and coho.

EFFECT OF 1978 REGULATIONS

The regulations in effect during 1978 were intended to achieve the objectives of the plan. The gains or losses because of these regulations are based on the 5-year average (1971-1975). Due to a number of complex interacting variables, catches and escapements in any single year cannot be expected to match the predictions of the plan. With these constraints in mind, the following observations are presented:

1. Ocean Stock Assessment: The 1978 ocean landings (both recreational and troll) were below the 1971-75 average (Table 32). Low stock abundance or availability as well as 1978 regulations contributed to this decline.

2. Indian Treaty Fisheries: Generally, the management effort for 1978 moved toward fulfilling Indian treaty obligations in accordance with the stated objectives of the Salmon Management Plan. For the most part, Indian fisheries in the Columbia River and in Washington inside waters achieved the court-ordered proportion of the catch between Indian and non-Indian fisheries. The Indian fishery for upper Columbia River fall chinook, above Bonneville Dam, was able to make up 4,000 fish from the 1977 deficit of 20,000, but the goal for increasing the harvestable upriver fall chinook salmon run was not met. Low returns to Grays Harbor and certain Washington coastal streams necessitated severe restrictions on inside catches. It must be recognized that the full benefits of 1978 regulations were not expected to be achieved in a single year.

3. Inside Commercial Fisheries: The inside fishery landings were below average with the exception of Puget Sound chinook which were slightly above average. In the mainstem Columbia River, the spring and summer chinook seasons were closed due to the small run size; harvest during the other chinook seasons was low. Preliminary data on coho show the catch to be better than in 1977, but still below average.

4. Spawning Escapements: Spawning escapement data for 1978 are not yet available for California and Oregon coastal streams. For the Columbia River, it appears that chinook and early stock coho returns were adequate to fulfill hatchery egg taking requirements. Downriver spring and fall chinook escapements appear to be good, whereas upriver spring and summer stocks remain in a depressed state. Early returns from late running coho stocks indicate the total Columbia River coho returns for 1978 will be considerably better than 1977.

   Although difficult to assess at this time, it appears that natural spawning and artificial production objectives will not be met for some Washington coastal areas, but will be achieved for major Puget Sound stocks.

5. MSY-OY: At this date, it is too early in a preliminary analysis with incomplete data from the 1978 fishery to determine whether the OY poundage figures were achieved in 1978. Due to a number of interacting variables that affect stock abundance, MSY and OY cannot be expected to match predictions of the plan in any single year. There is no information available which indicates the Council needs to change OY for 1979.

Table 32. Summary of salmon fisheries off coasts of California, Oregon and Washington. Base years for management plans of 1977 and 1978 were 1971 to 1975. (in thousands of fish)

	California						Oregon					
	Troll			Ocean Sport			Troll			Ocean Sport		
Year	Chinook	Coho	Total	Chinook	Coho	Total	Chinook	Coho	Total	Chinook	Coho	Total
1971	434	442	876	188	67	255	103	1,490	1,593	30	312	342
1972	492	158	650	200	45	245	127	825	952	44	248	292
1973	816	348	1,164	198	32	230	363	796	1,159	61	234	295
1974	491	655	1,146	157	77	234	224	1,137	1,361	40	311	351
1975	578	204	782	103	21	124	225	657	882	76	253	329
Average 1971-75	562	361	923	169	48	217	208	981	1,189	50	272	322
1976	540	622	1,162	80	58	138	184	1,827	2,011	74	506	580
1977*	544	37	581	106	12	118	336	450	786	60	196	256
1978*	500	233	733	58	45	103	186	628	814	23	278	301

	Washington						Total					
	Troll			Ocean Sport			Troll			Ocean Sport		
Year	Chinook	Coho	Total	Chinook	Coho	Total	Chinook	Coho	Total	Chinook	Coho	Total
1971	252	1,264	1,516	160	747	907	789	3,196	3,985	378	1,126	1,504
1972	203	575	778	212	542	754	822	1,558	2,380	456	835	1,291
1973	317	702	1,019	204	472	676	1,496	1,846	3,342	463	738	1,201
1974	353	1,038	1,391	215	593	808	1,068	2,830	3,898	412	981	1,393
1975	274	774	1,048	262	481	743	1,077	1,635	2,712	441	755	1,196
Average 1971-75	280	871	1,151	211	567	778	1,050	2,213	3,263	430	887	1,317
1976	361	1,385	1,746	171	943	1,114	1,085	3,834	4,919	325	1,507	1,832
1977*	254	709	963	175	490	665	1,134	1,196	2,330	341	698	1,039
1978*	145	591	736	90	480	570	831	1,452	2,283	171	803	974

*Preliminary

6. Cape Falcon Dividing Line: The dividing line intended to control ocean effort on chinook stocks was moved south from Tillamook Head to Cape Falcon on the northern Oregon coast in 1978. Present data are incomplete to assess the effects of the new dividing line. Coded wire tag recoveries collected during the 1978 season have not been analyzed yet to determine stock composition of chinook in the corridor between Tillamook Head and Cape Falcon.

   Fishing effort during the closure north of Cape Falcon (June 15-30) shifted south off California and the Oregon coast in both 1977 and 1978. In 1978 the shift was farther south due to the availability of coho stocks. Whereas in 1977 fishing effort was concentrated primarily on chinook near the dividing line.

RECOMMENDATIONS FOR 1979

Based on the most current information, much of which is necessarily incomplete, no change in regulations for the 1979 ocean salmon fisheries is recommended. However, potential problems still may exist for the 1979 ocean salmon fisheries which may require emergency regulations. Factors contributing to these potential problems are:

1. the 1976-77 drought in California;
2. poor survival of 1976 brood year coho;
3. 1975 brood year Columbia River fall run chinook.

1. California Drought and Possible Effects on Salmon Production

Coastal Streams. The 1976 and 1977 spring outflows of three major north coast rivers (Klamath, Smith and Eel) were significantly reduced when compared with 1974 and 1975. For example, mean monthly outflows measured at Klamath Glen on the Klamath River during the March-June period was 58,000 cfs in 1975, 18,000 cfs in 1976 and 5,418 cfs in 1977 (Table 33).

If the correlation of spring outflow and adult production 2.5 and 3.5 years later holds true on the north coast streams as it does on the San Joaquin River, we should see a decrease in the numbers of adult salmon in the ocean fishery and spawning escapement in 1978, 1979 and 1980.

San Joaquin River System. San Joaquin River chinook salmon face undesirable environmental conditions almost every year. Any effects the drought might have had are probably insignificant in relation to an impact on the ocean fishery, especially considering the low numbers generally produced in the drainage.

Sacramento River System. The chinook salmon population was affected by the drought conditions in the Sacramento River system in 1976 and 1977. However, the extent of the impact is unknown at this time.

Chinook salmon populations that were affected are listed as follows:

1976 BROOD YEAR

Sacramento River Winter Run - an estimated spawning population of 33,000 fish experienced water temperatures in excess of 60°F during the June and July 1976 spawning period and egg incubation period throughout the summer. The majority of this brood year production was eliminated.

Sacramento River Spring Run - Because of high water temperatures during the summer holding period and early fall spawning period, the production from the 25,000 fish escapement in 1976 was severely reduced.

Sacramento River Fall Run - Water temperatures in the Sacramento River at Red Bluff did not reach desirable levels (<58°F) until late October 1976. Consequently, the early part of the fall run production was affected. Also, low spring flows in 1977 probably will result in low survival of all fall run production.

TABLE 33

MEAN MONTHLY FLOW IN CFS
Source: USGS - Eureka

Klamath at Glen	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1973	22,190	17,100	12,700	5,075	2,719	2,007	2,538			
1974	56,530	60,400	25,680	15,260	5,541	3,265	2,893	3,297	5,098	10,650
1975	54,590	30,770	38,850	21,420	6,352	3,414	3,553	3,297	5,098	10,650
1976	21,850	15,220	11,980	5,446	3,012	3,348	3,030	3,334	5,012	3,942
1977	6,954	5,448	5,638	3,630	1,782	1,441	2,858			
Smith River Crescent City										
1974	11,100	6,944	1,702	877	418	273	222	216	555	4,629
1975	13,080	4,353	3,506	1,046	491	323	257	1,754	4,904	5,721
1976	4,422	3,507	1,534	692	423	533	284	244	388	264
1977	3,539	1,406	1,801	691	353	270	892			
Eel River Scotia										
1974	36,300	19,640	2,830	1,004	464	193	126	140	607	4,690
1975	45,330	9,689	5,810	1,543	438	205	152	1,225	3,557	5,767
1976	9,287	6,234	1,576	582	199	218	126	114	252	169
1977	2,607	848	623	255	70	322	187			

Feather River Spring and Fall Run - Water flows and temperatures were adequate for spawning and egg incubation during the fall of 1976. However, releases from the Orville Project were severely curtailed during the spring months of 1977. Normal releases in excess of 2,000 cfs were cut to 750 cfs. The low spring flows may have reduced 1976 brood year juvenile survival and this could result in reduced numbers of adults in the fishery and escapement in 1979 and 1980.

American River Fall Run - The 1976 brood year fall run faced similar conditions as the Feather, adequate flows and spawning temperatures but low spring outflow. The 2,000 plus cfs spring outflow was reduced to 250 cfs. Again, we might expect reduced numbers of adults in the fishery and escapement in 1979 and 1980.

1977 BROOD YEAR

Sacramento River Winter Run - Again, these fish (16,470) faced high water temperatures during spawning and egg incubation. It is doubtful that many of the eggs or fry survived.

Sacramento River Spring Run - Because of high water temperatures and the threat of heavy metal contamination in the upper river area, 720 adults were hauled to tributary streams. In addition, 11,703 migrated past Red Bluff Diversion to spawn in the upper area. They faced water temperatures in excess of 65°F during the spawning and egg incubation periods. Again, little survival is expected.

Sacramento River Fall Run - The majority of the run was either hauled from Red Bluff Diversion Dam to Coleman and Feather River hatcheries or delayed below the Dam because of the threat of heavy metal pollution from Spring Creek. The fish that spawned in the Sacramento River were subjected to water temperatures in excess of 60°F. Adequate temperatures ($\leq$58°F) were not reached until early November. A substantial loss of the production of an estimated 60,000 spawners in the main stem Sacramento River resulted from high water temperatures. Effects of this low production will show in the 1980 and 1981 fishery and escapement.

Feather River Spring and Fall Runs - Salmon production was not adversely affected in 1977. The California Department of Water Resources released cooler water from the low level outlet of Orville Dam starting in October which prevented a near disaster.

American River Fall Run - It is predicted that half of the run in the river was affected by high water temperatures and the total run affected by low spawning flows (250 cfs). Temperatures did not decline to adequate levels until November 15; half of the fish spawn by this date. The 1980 and 1981 fishery and escapement will show the effects of the drought condition.

In summary, the ocean fishery and inland escapements will undoubtedly feel the effects of drought conditions in 1979, 1980 and 1981. The extent of reduction of the adult population is unknown.

2. Coho Survival: Columbia River and Oregon coastal coho stocks may be depressed in 1979. Both jack returns and coastal upwelling appear promising as predictors of adult abundance. A poor jack return coupled with poor upwelling along the Oregon coast in 1978 could indicate poor smolt survival in 1978 and subsequent reduced adult coho abundance in 1979.

3. Columbia River Chinook Survival: Washington commercial ocean chinook catches were at record low numbers in 1978 but the fish were a recent year record size (16.1 pounds round weight). This is a size which would not have been anticipated as a result of the 28-inch minimum size limit. In addition, the numbers of chinook caught by the ocean sport fishery was at the lowest level since 1962 despite a 24-inch minimum size limit which would have allowed them to catch larger numbers of 3-year old fish. This information seems to indicate that the 1975 brood chinook (3-year old in 1978 fishery, 4-year old in 1979 fishery) may be in low abundance. Poor survival of 1975 brood Columbia River fall run chinook may be attributed to the poor environmental conditions (high nitrogen content of river water) experienced by the outmigrants during the spring of 1976. This assumption will be evaluated relative to scale analysis for age composition of the 1978 catch. However, this analysis will not be complete until early spring of 1979.

HARVESTING AND PROCESSING CAPACITY AND TALFF

Historical experience of the salmon fishery indicates the domestic harvesting and processing capacity is sufficient to handle the anticipated allowable salmon catch in 1979. This situation was true in 1977 and 1978. There is no recent record of processors refusing fish from fishermen due to inadequate processing capacity.

In view of the adequacy of the domestic fishing industry to harvest the highest conceivable level of abundance the total allowable level of foreign fishing is zero. The United States historically has allowed Canadian fishing in U.S. waters under a reciprocal agreement until 1978. It is not known if this will be restored.

NEW INFORMATION

Information is becoming available from studies of the Council which will be of value in developing the Comprehensive Plan. There has not been sufficient time to review and analyze this material for the benefit of the present report, however, preliminary consideration indicates no justification for changes in 1979. This new information includes a socio-economic study by Oregon State University and an environment/habitat report by a special task force of the Council.

MORATORIUM AMENDMENT

The 1978 plan declared the intent to limit access in the salmon fisheries of the commercial troll and commercial passenger fishing vessels beginning in 1979. Subsequently, the Council decided to defer further consideration of limited access or a federal moratorium on entry into the fishery in order to permit the coastal states to institute moratoria by state law for the 1980 fishing season. In view of this action, it is recommended that the 1978 plan be amended to delete reference to implementation of limited entry considerations for the 1979 season.

Table 32. *(Revised)* Revised summary of salmon fisheries off coasts of California, Oregon and Washington. Base years for management plans of 1977 and 1978 were 1971 to 1975. (in thousands of fish)
Revisions (in italics) include data not available when report was originally issued in November 1978.

Year	California						Oregon					
	Troll			Ocean Sport			Troll			Ocean Sport		
	Chinook	Coho	Total	Chinook	Coho	Total	Chinook	Coho	Total	Chinook	Coho	Total
1971	434	442	876	188	67	255	103	1,490	1,593	30	312	342
1972	492	158	650	200	45	245	127	825	952	44	248	292
1973	816	348	1,164	198	32	230	363	796	1,159	61	234	295
1974	491	655	1,146	157	77	234	224	1,137	1,361	40	311	351
1975	578	204	782	103	21	124	225	657	882	76	253	329
Average 1971-75	562	361	923	169	48	217	208	981	1,189	50	272	322
1976	540	622	1,162	80	58	138	184	1,827	2,011	74	506	580
1977*	544	37	581	106	12	118	*340*	*446*	786	60	196	256
1978*	500	233	733	*82*	45	*127*	*212*	*645*	*857*	23	278	301

Year	Washington						Total					
	Troll			Ocean Sport			Troll			Ocean Sport		
	Chinook	Coho	Total	Chinook	Coho	Total	Chinook	Coho	Total	Chinook	Coho	Total
1971	252	1,264	1,516	160	747	907	789	3,196	3,985	378	1,126	1,504
1972	203	575	778	212	542	754	822	1,558	2,380	456	835	1,291
1973	317	702	1,019	204	472	676	1,496	1,846	3,342	463	738	1,201
1974	353	1,038	1,391	215	593	808	1,068	2,830	3,898	412	981	1,393
1975	274	774	1,048	262	481	743	1,077	1,635	2,712	441	755	1,196
Average 1971-75	280	871	1,151	211	567	778	1,050	2,213	3,263	430	887	1,317
1976	361	1,385	1,746	171	943	1,114	1,085	3,834	4,919	325	1,507	1,832
1977*	254	709	963	175	490	665	*1,138*	*1,192*	2,330	341	698	1,039
1978*	*142*	*596*	*738*	90	480	570	*854*	*1,474*	*2,328*	*195*	803	*998*

*Preliminary

APPENDIX IX

Updated Status Report of Stocks Contributing to the 1979 Salmon Fisheries as of January 22, 1979

Salmon Plan Development Team
Pacific Fishery Management Council

January 22, 1979

UPDATED STATUS REPORT OF STOCKS CONTRIBUTING TO THE 1979 SALMON FISHERIES AS OF JANUARY 22, 1979

Introduction

The purpose of this assessment is to provide the most current information available relative to the salmon stocks which will contribute to the 1979 salmon fisheries. This is a continuation of the commitment made by the Salmon Plan Development Team in December 1978.

The commitment was necessitated due to time constraints and administrative and legal procedures required by the FCMA, which resulted in the "Team" writing a status report prior to completion of 1978 spawning and evaluation of data collected from the 1978 salmon fisheries.

This report contains information that has become available since the last status report was written on December 7, 1978.

OREGON COASTAL AND COLUMBIA RIVER COHO STOCKS

These coho stocks are important to ocean fisheries off the southern Washington coast as well as to fisheries off the coasts of northern California and Oregon. A definite conservation problem is expected in 1979 for natural spawning populations.

The abundance of adult coho in the Oregon production index area is predicted to be depressed in 1979. The Oregon production index includes Columbia River and Oregon coastal stocks accounted for in: (1) ocean catches from Ilwaco south, (2) certain Columbia River and Oregon coastal hatcheries and dam escapements, and (3) Columbia River gillnet catch. The total adult production for the index area can be predicted with a high degree of accuracy ($r = 0.977$) from the abundance of coho jacks of the previous

year. Jack returns during the fall of 1978 were low. Based on the relationship of jacks to adults, the total adult production for 1979 is predicted to be 1.3 million fish (Table 1). This estimate is 18% above the poor year experienced in 1977 but much below the average of recent years.

The predicted low abundance of coho in 1979 is supported by low coastal upwelling and average weight information. Positive relationships have been developed between adult abundance and both the coastal upwelling index and average weight of adults during the previous year. Both the poor upwelling experienced along the Oregon coast during the spring of 1978 and the small average weight of adults in 1978 (8.1 lbs) tend to support the prediction of depressed adult coho abundance in 1979.

A continuing decline has been observed during the 1970's in the abundance of natural spawning stocks of coho in Oregon spawning index areas. The number of coho counted in Oregon coastal streams dropped from the 1961-70 average of 48 fish/mile to 10 fish/mile in 1977. A preliminary assessment of the 1978 spawning escapement indicated only 11 coho/mile in the coastal index areas. This dramatic decline has taken place during a time of general improvement in the freshwater habitat.

The 1979 forecast is for coho abundance to be similar to the near failure of 1977. There is special concern for natural stocks returning in 1979 because the drought conditions in the winter of 1976 and spring of 1977 prevented parent spawners from reaching the upper spawning areas in many streams and provided a poor rearing environment for the juveniles. As a result poor freshwater production of natural coho is anticipated at a time when ocean survival is also predicted to be poor. A poor return of adults in 1979, coupled with low escapements in 1977 and 1978, would mean the reproductive failure of three successive broods of coho, or one complete cycle.

Table 1. Relationship of total accountable Columbia and coastal coho jacks to the adult production index in thousands of fish, 1966-79.

Year of adult production	Jacks[1] of Previous Year			Adult Production Index[2]	
	Columbia	Coastal	Total	Predicted[4]	Actual
1966	82	22	104	2,249	2,297
1967	105	31	136	2,777	2,948
1968	85	46	131	2,696	2,222
1969	57	17	74	1,721	1,684
1970	125	28	153	3,064	2,768
1971	150	63	213	4,074	3,670
1972	87	13	100	2,342	2,029
1973	74	6	80	1,824	1,990
1974	105	19	124	2,992	3,113
1975	67	4	71	1,567	1,725
1976	132	26	158	3,872	3,958
1977	43	7	50	1,036	(1,094)[3]
1978	88	2	90	2,080	(1,803)[3]
1979	(54)[3]	(6)[3]	(60)[3]	(1,287)[3]	

1/ Components of jacks are ODFW hatcheries below Bonneville, Cowlitz Hatchery, Bonneville and Willamette dam counts, Oregon coastal hatcheries and Tenmile Lakes counts.

2/ Oregon production index includes catches in the ocean and Columbia River, hatchery escapement and dam counts for the area from California to Ilwaco and the Columbia River.

3/ Preliminary data.

4/ 1966-71 predictions based on 1966-78 data base and 1972-79 predictions based on 1972-78 data base.

WASHINGTON COASTAL COHO STOCKS

Natural Runs

The 1979 coho runs, where natural escapement objectives and natural run sizes dictate management activities, are expected to be similar to 1978 returns which would not support in-river fisheries. An exception to this is the Humptulips River where improved natural runs are predicted and a limited commercial harvest is anticipated. Poor returns in 1979 will result from less than desired escapement and low flow conditions in 1976. The latter prevented adults from reaching normal spawning areas. The 1976 parent year run sizes ranged from 53 to 79 percent of spawning escapement objectives prior to any in-river fisheries.

Hatchery Runs

Several river systems and/or parts of runs are managed primarily on hatchery returns. These include the Quinault, Sooes-Waatch, early run Quillayute, early run Chehalis and Willipa Bay. Little information is presently available to forecast Quinault and Sooes-Waatch returns. The 1978 jack return to Quillayute system was very good, thus a good return is forecast for 1979. Returns to the Humptulips Hatchery will be needed at the Simpson and Skookumchuck hatcheries where returns will not meet egg requirements. A commercial fishery is anticipated for Willipa Bay hatchery coho at a level near the 1971-75 average of 13,000 fish.

PUGET SOUND COHO STOCKS

Coho of Puget Sound origin are the predominate stock in ocean fisheries off northern Washington.

Puget Sound coho stocks consist of two components, natural and hatchery fish. About 75% of the natural coho production areas are managed to achieve spawning escapement necessary to utilize available rearing habitat. The remaining 25% of natural runs are mixed with hatchery fish in terminal areas and are purposely "overfished" to fully harvest artificial stocks.

Natural Runs

Evidence indicates that the 1979 natural coho runs entering the Strait of Juan de Fuca will be low, possibly at levels needed entirely for spawning escapement. The 1976 brood year coho experienced extremely adverse water conditions in early stages of their life history. The 1976-77 drought commenced about October 1976 and continued into June 1977. Adult spawning in the fall-winter of 1976-77 was the first segment to be affected. Stream flows were extremely low during the entire spawning season. Many streams were completely inaccessible to coho spawners (Johns Creek on the Hamma Hamma system, Stimson Creek in Hood Canal, etc.) while many others had various portions which were inaccessible, particularly upper watersheds. These conditions resulted in a delayed and lengthened spawning season (much spawning took place a month or more later than normal in Puget Sound) and in a poor distribution of spawners within drainages and streams. Low flows and the resultant poor spawner distribution meant that some spawning took place in marginal areas and a poor egg to fry survival ensued. Low flows also meant that sections of rearing area normally utilized by coho were barren of fry because little or no spawning took place in the upper reaches of many streams. These conditions had an adverse effect on smolt production. Additionally, total natural escapement was only 57% of the desired level.

That the aforementioned effects of the drought resulted in poor 1976 brood year coho smolt production is borne out by 1977 electrofishing data and spring 1978 counts of downstream migrants. In nine streams for which comparable electrofishing data exist, five showed substantially reduced levels of coho abundance in 1977 as compared to 1976 levels. In 1978, downstream migrant counts at all trapping facilities were at the lowest levels recorded. Three of these streams, Little Pilchuck, Mill and Big Beef Creeks, are large systems and major coho producers.

The coho pre-season forecast methodology consists of relating summer stream flows to Puget Sound natural runs. The flows experienced during the summer of 1977 indicate that a natural run of about 278,000 coho will enter the Strait. This prediction reflects the average stream flows experienced during the summer and fall of 1977; it assumes seeding has occurred to utilize available rearing area. It does not take into account earlier stream flow and its effects on smolt production nor the effects of not utilizing available rearing area. When these factors are considered, it is likely that a number lower than the mid-point will return. The Washington Department of Fisheries estimates that the 1979 return will be approximately 189,000 coho, or the lower end of the 80% confidence interval (189,000-367,000). With an escapement objective of 182,000 coho, it appears that little commercial net fishing on naturally produced stocks would be warranted unless ocean fisheries are restricted.

Hatchery Runs

For hatchery coho, a favorable return to Puget Sound is indicated since a significant relationship exists between pounds of juvenile planted and resultant brood year returns. However, pounds planted of 1976 brood year juveniles was only 678,480 lbs, the least planted since the 1967 brood

releases. The 1979 run (590,500 fish predicted) should be comparable to the 1976 return but considerably less than the 1977 run.

PINK SALMON

Fraser River Stocks

At the Annual Meeting of the International Pacific Salmon Fisheries Commission on December 8, 1978, in Bellingham, Washington, a detailed presentation was given entitled "Predictions of 1979 Pink Salmon Runs to the Fraser River." The report concludes with a prediction for 15 million Fraser River pink salmon in 1979 with a good possibility it will be more. If true, this will be by far the largest pink salmon run in many years.

Puget Sound Pink Stocks

The Washington Department of Fisheries preliminary forecast of the 1979 Puget Sound pink salmon return is 1.9 million fish. This is based on recent returns per spawner information and observed 1977 escapements. A return of this magnitude would be a considerable improvement over poor runs of recent years.

The good expectations for Fraser River and Puget Sound origin pink salmon will be an important factor in planning 1979 ocean fisheries. Off northern Washington, pink salmon will be the most abundant salmon species present in July and August. Although there is no minimum size limit for pinks and they can be retained by commercial trollers as early as May 1, the bulk of any catch can be expected to occur in the 50-day period from July 10 to September 1. During 1963, Washington trollers landed 630,000 pink salmon and a catch of similar or greater magnitude could occur in 1979.

COLUMBIA RIVER CHINOOK STOCKS

The 1975 and 1976 brood year fall-run chinook salmon are the major contributors to the 1979 salmon fisheries. This stock is the predominate chinook salmon found north of Cape Falcon. There are strong indications that the 1975 brood year Columbia River fall-run chinook salmon had a below average survival rate which will result in poor 4-year-old abundance in 1979. This conclusion is based on the following factors:

1. The Washington coastal sport catch of 3-year-old fish in 1978 from the same 1975 brood year was only 54% of the 1971-75 base year average. The increase in minimum size limit from 20 to 24 inches total length had little impact on the sport catch of 3-year-olds. The 1978 sport catch of 4-year-olds was 88% of the 1971-75 mean.

2. The Washington coastal troll catch of 3-year-old fish in 1978 from the same 1975 brood year was only 28% of the 1971-75 base year average. The increase in minimum size limit from 26 to 28 inches total length accounted for some of this decline but a reduction in 3-year-old catch of 50% or more would have occurred even with a 26-inch limit. The troll catch of 4-year-olds was 94% of the 1971-75 mean.

3. The return of mature 3-year-old 1975 brood year fish to the Columbia River in 1978 was below average. Salmon scale samples from the commercial gill net fishery are currently being read by the Oregon Department of Fish and Wildlife, but their staff has indicated that a cursory examination of early readings showed

a heavier than normal 4-year-old component. In addition, Oregon's fall chinook hatchery returns had proportionately more females in 1978 which would also indicate a reduced run of 3-year-old fish.

4. Other Columbia River salmon stocks that migrated downriver (as juveniles), through the estuary and into the ocean during the spring of 1976 have experienced some of the same river and estuary environmental conditions as the fall chinook. Conclusions were as follows:

   a. 1974 Brood Year Spring Chinook

      In 1977, only 4,000 spring chinook jacks were counted at Bonneville Dam, the lowest count since 1964. Over the past ten years, the spring chinook jack count at Bonneville Dam has ranged from 6,200 to 20,800, averaging about 10,600 per year.

      The spring chinook test fishery in the lower river in 1978 resulted in better than average catches, but showed an exceptional reduction in numbers of 4-year-old fish. Through the spring test fishing period, 4-year-olds comprised from 18-48% of individual day's catches, averaging out at a cumulative total of 34% 4's for the season, the lowest percentage ever recorded. Over the previous seven years, the daily percentage of 4-year-olds has averaged 47-79%, with cumulative season totals generally well over 60%.

      Preliminary age analysis on lower river spring chinook in 1978 (in tributary sport fisheries and at hatcheries) does not show a discernible lack of 4-year-old fish as found in the upriver spring run.

b. 1974 Brood Year Sockeye

The 1978 return of just over 18,000 sockeye salmon was the third lowest in the history of counting on the Columbia River. Since 1970, this run has fluctuated between 34,000 and 150,000, averaging nearly 80,000 fish per year.

There is concern that the 1976 brood year Columbia River fall run chinook salmon has also experienced a below average survival rate. This second poor brood year will result in poor abundance of 3-year-old fish in the 1979 fishery. Thus, the two brood years which contribute to the 1979 fishery are depressed to below average levels.

The following are indices which cause concern for the 1976 brood year Columbia River fall run chinook salmon:

1. General observation by both trollers and sportsmen that few "shakers" were caught in 1978.

2. Few "shakers" were encountered by WDF research crew off the mouth of Columbia River, an area where they are normally abundant.

3. Analysis of interviewed Washington recreational anglers indicates the "shaker" catch in 1978 was similar to that experienced in 1977, a year of known low abundance, of 2-year-old fish.

4. A significant (r^2 = .741) correlation exists between 1969-74 catch of 2-year-old chinook by combined troll and sport fishery off southern Washington (Columbia River-Grays Harbor) and the following year's total Washington coastal catch of 3-year-old chinook the following year.

5. Increased "jack" counts at Bonneville Dam for upriver fall run chinook occurred in 1976 and 1977. This appeared to result from the increased sport size limit in 1976. The 1978 Bonneville count, however, was the lowest since 1972 and only slightly above the 1971-75 average.

It is not unusual for 1 of the 2 major brood year components of the ocean fishery to be weak. This has occurred several times in the past. However, it is very ususual for two broods to be depressed in the same year. If this occurs in 1979, the resulting returns, without additional regulatory curtailments, will cause concern for achieving escapement objectives and will not meet any reasonable allocation to inside fisheries.

Forecasting efforts will continue for both the 1975 and 1976 brood year fall run chinook salmon but are complicated by a data base developed under a variety of regulatory controls plus changes in fishing effort and the presence of non-Columbia River chinook stocks with different age, growth and maturity characteristics.

OREGON COASTAL CHINOOK

Oregon coastal chinook stocks primarily contribute to the ocean fisheries off Washington, British Columbia and Southeastern Alaska. Portions of these runs are also harvested off Oregon and northern California.

These stocks remain in a generally favorable status showing recent upward trends in spawning escapement. Despite the increasing trends in escapement, coastal chinook are still well below historic levels and the 1976 escapement was 35% below the goal of 266,000 fish. Preliminary spawning survey counts for 1978 indicate a continuing upward trend in these stocks. Extended ocean fishing seasons have been conducted from 1974-78 near the mouths of the Elk and Chetco Rivers to harvest surplus hatchery stocks from Elk River hatchery.

CALIFORNIA CHINOOK STOCKS

Sacramento River System Fall Chinook Spawning Escapements

Preliminary spawning escapements of 1978 fall-run Sacramento River chinook are 217,000 fish, down from 1977 escapement of 226,000 as well as the 1974-78 average of 240,500 (Table 1). All of these figures are well below the Sacramento River system goal of 340,000 fall-run spawners.

Total escapement in the Sacramento River system is down 123,000 chinook from escapement goals, of which 95,000 is attributable to the upper Sacramento River. Most of the decline in the upper Sacramento is attributed to environmental problems. Four major problem areas have been identified. These are:

1. Loss of spawning gravel below Keswick Dam,
2. Heavy metal contamination below Keswick Dam,
3. Altered fish passage at Red Bluff Diversion Dam, and
4 Stream flow manipulation and/or fluctuation below Keswick Dam.

Klamath River System Fall Chinook Spawning Escapements

The Klamath River fall chinook escapement goal is 115,000 adults. The run size in 1977, estimated in a mark-recapture study, was 128,000 adult salmon. From this number the river fisheries--including boats and shore fishing as well as Indian subsistence and Indian commercial fisheries--took over 30,000 adults. How much over 30,000 is not known. We do know the Indian commercial fishery, based on sales receipts, took over 20,000 adults. We have no maximum estimate of spawning escapement, but we do know the escapement goal of 115,000 adult salmon was not met.

Table 1. Sacramento River system fall Chinook spawning escapements and goals (in thousands).

	Goals	1977	1978*	1974-78 Average
Upper Sacramento River System	244	122	149	140
Feather River	41	47	39	51.5
Yuba River	25	9	7	9
American River	30	48	22	40
TOTALS	340	226	217	240.5

*Preliminary

The estimated run size in 1978 was 114,000 adults. The river fisheries, based on landings sampling and tag returns, took 27,000 adults leaving an escapement of 87,000 chinook. As in 1977 escapement goals were not met. Until inland fishing problems are resolved meeting escapement goals in the Klamath will continue to be a problem.

OUTLOOK FOR 1979-80 CALIFORNIA SALMON FISHERIES

California Drought (1975-77) and Possible Effects on Salmon Production

The drought flows for California coastal streams as well as a discussion of the effects of the drought were updated in detail in the 1978 Salmon Management Plan, consequently only a brief summary will be discussed in this report.

A comparison of spring outflow with escapement 2.5 years later for the San Joaquin River system chinook produces a high positive correlation. Spring outflow might also influence year-class strength in the Sacramento and major north coast streams, although not to the degree of the San Joaquin.

If spring outflow is a controlling factor for Sacramento River system production then total Delta spring outflow would indicate year-class strength. The following is the mean Delta outflow in cfs for February through June:

1972 - 11,240 cfs
1973 - 43,820 cfs
1974 - 56,780 cfs
1975 - 42,020 cfs
1976 - 6,340 cfs
1977 - 3,516 cfs

The flows in our coastal streams (Klamath, Smith, and Eel) were significantly reduced when compared to 1974 and 1975. For example, the mean monthly outflows measured at Klamath Glen on the Klamath River during the March-June period was 58,000 cfs in 1975, 18,000 cfs in 1976 and 5,418 cfs in 1977.

We also know that desirable spawning temperatures ($<58^{o}F$) did not occur until late October on the upper Sacramento in 1976 and that low spring flows occurred in 1977 throughout the entire Sacramento River drainage. Both of these factors will result in depressed production of the 1976 brood year fall-run Sacramento River chinook. These fish will be 3-year-olds in the 1979 ocean fisheries.

1978 Ocean Landings

Although the major effects of the drought will be felt in the 1979-81 ocean salmon fisheries, the 1978 season should have been slightly impacted by the beginning of the drought which started in 1975.

The majority of the Sacramento River chinook production are caught in the San Francisco-Monterey (south coast) area. Troll landings in 1978 for this area were 2.7 million pounds, down 16% from the recent 5-year average. Updated ocean sport landings for the Monterey-San Francisco area show that sport anglers landed only 78,000 chinook, down 40% from the 5-year average for this area of 129,000 chinook.

A large percentage of the south coast sport catch is 2-year-old chinook salmon. The exceptionally low sport landings off Monterey and San Francisco in 1978 might indicate a depressed 1976 brood year of Sacramento River fall run chinook.

In conclusion, the drought had a negative impact upon California chinook stocks, however, we do not know how negative that impact is going to be. Additionally, in some streams California is not meeting escapement goals, however, a major part of this problem can be attributed to environmental factors and inland fishing rates.

SUMMARY

1. Oregon coastal and Columbia River coho stocks are predicted to be depressed in 1979. Total adult production for 1979 is predicted at 1.3 million fish, only 18% above the poor year experienced in 1977 but much below average levels of recent years.

2. A continuing decline has been observed in the abundance of natural spawning stocks of Oregon coastal coho. A poor return of adults in 1979, coupled with low escapements in 1977 and 1978, would mean the reproductive failure of three successive broods of coho, or one complete cycle.

3. Poor returns of natural runs of Washington coastal coho stocks are forecast for 1979. However, hatchery returns will be variable in strength depending upon the area. A commercial fishery is anticipated for Willipa Bay hatchery at a level near the 1971-75 average of 13,000 fish.

4. Natural runs of Puget Sound coho will be low, possibly at levels needed entirely for spawning escapement. However, in 1979 a favorable return of hatchery coho is expected comparable to 1976 but below 1977.

5. Predictions for pink salmon range from excellent for Fraser River stocks to "considerably improved" for Puget Sound stocks. Overall 1979 should be an excellent pink salmon year and this factor will be an important consideration in planning the 1979 ocean salmon regulations.

6. Columbia River fall chinook stocks contributing to the ocean fishery in 1979 are predicted to be depressed as a result of weak age classes of 3- and 4-year-old fish. Without additional regulatory curtailments, escapement objectives and reasonable allocation of the resource to inside fisheries cannot be achieved.

7. Oregon coastal chinook stocks generally remain in a favorable status, showing recent upward trends in spawning escapement. However, the populations are still well below historic levels.

8. California chinook stocks were negatively impacted by the 1975-77 drought, but the precise effect on stock abundance is not known. Major effects of the drought will be felt in the 1979-81 ocean salmon fisheries.

APPENDIX X

Selected Options for Managing 1979 Ocean Salmon Fisheries off Washington, Oregon, and California

(For public review until February 28, 1979)

Pacific Fishery Management Council

February 9, 1979

INTRODUCTION

The Salmon Plan Development Team prepared, for the Council's consideration, an evaluation of six regulatory options for 1979 ocean recreational and troll salmon fisheries. These options provide for fishing rates ranging from those experienced in 1978 to well below that level. In terms of fishery landings, impacts range from slight to significant decreases. Resulting ocean fishery escapements vary from below those achieved in 1978 to increases of several times over those achievable in the absence of regulation changes, depending on the species and regulations considered.

In the northern portion of the Fishery Conservation Zone, intensive terminal fisheries and legal mandates dictate reductions in fishing rates which are unnecessarily restrictive for the southern portion of the zone.

There are critically important complications with the selection of regulatory options varying significantly from one management area to another. Extensive closures in one area will result in effort shifts to other areas where more liberal regulations are in place. The effects of such effort shifts cannot be quantified, but the Team believes that they would be sufficient to produce unacceptably high fishing rates.

Among the options evaluated, I through V attempt to minimize the effects of effort shifts insofar as possible. However, each is imperfect in that regard, and each presents the danger of excessive fishing rates in more liberally regulated areas.

The Team is able to offer the Council three general management schemes:

1. Adopt a uniform regulation set for the entire Fishery Conservation Zone. This would assure protection where needed most, but would likewise assure inappropriately restrictive regulations over a large portion of the Zone.

2. Adopt a regulation set which varies from area to area, but does not positively address the issue of fleet mobility. This would assure protection where needed most, but would contain a very real risk of producing significantly excessive fishing rates in more liberally regulated areas.

3. Adopt a regulation set which varies from area to area, but which positively limits effort shifts between areas. This would assure protection where needed most, and would provide some assurance that excessive fishing rates would not defeat goals in other areas.

OPTION VI - AREA REGISTRATION CONCEPT

Option VI addresses the issue of effort shifts by requiring that troll fishermen decide at the season's outset the single area in which they will fish prior to August 1, 1979. It would provide some degree of assurance that the goals established for each major stock will not be endangered by fleet shifts from one open area to the next.

QUOTA CONCEPT

Any analysis of regulatory effects in 1979 is hampered by an inability to project (1) effort shifts, (2) coho and chinook catch reductions due to targeting on pink salmon, and (3) sport effort reduction due to a 2-fish bag limit. Thus, the actual effect of regulations may vary greatly according to the value that is assigned to these factors in the regulation development process. It is primarily for this reason that the Washington staff proposed the use of the "quota system" as a means of building into the regulations more assurance of achieving any specific objective.

Without attempting to document all pros and cons of the quota system, such a system for coho only would work as follows:

(1) A total harvest quota would be developed for the coast. This would consists of the Oregon Production Index (ocean harvest segment) plus increments for Westport and the area off Washington north of Point Grenville. Using the desired harvest rate for Oregon Production Index, the desired harvest level would be defined.

(2) The resulting harvest quota could be divided by region (California; Oregon south of Cape Falcon; Oregon-Washington north of Cape Falcon, but south of Point Grenville; and Washington north of Point Grenville) and by gear type (troll vs. sport).

(3) Regulations would be adopted which are perceived as achieving a specific quota without need for emergency in-season adjustments.

(4) During the season, all fisheries would be closely monitored and compared to the harvest quota.

(5) If the quota was being exceeded despite regulations, emergency in-season closure for coho would be necessary or management objectives might not be met. States would need to develop the ability to determine catch or accurately project catch for comparison with a quota on a weekly basis approximately 3-5 days after the fact. Prior to the beginning of the season, adoption of a harvest quota would be necessary by the Council.

EXPLANATION OF TABLE

In the following table the predicted effects of Options I to VI are shown in a general way by (+) and (-) symbols. These indicate the nature of the gain or loss of each option over regulations that were in effect in 1978. A single (+) sign represents a gain in the range of 1 to 10% in the ocean troll or sport fishery indicated, or in the escapement to the inland fisheries and/or spawning areas. A symbol of (++) represents 11 to 20%. Similarly, a (-) sign represents a corresponding reduction over the 1978 regulations. The value of the (+) and the (-) signs is shown at the bottom of the table.

This evaluation of the optional management regulations is very general in nature and subjective. More detailed analysis of specific options will be made by the Salmon Team prior to the March 8-9 meeting of the Council. These general indications of impacts are presented only for the specific combination of troll and recreational regulations shown. In addition, the troll and recreational options could be intermixed to achieve other desired results.

Evaluation of Options I through VI Showing Percentage Gains to Spawning Escapement and Percentage Gains and Losses to Ocean Landings Compared to Regulations which were in Effect in 1978

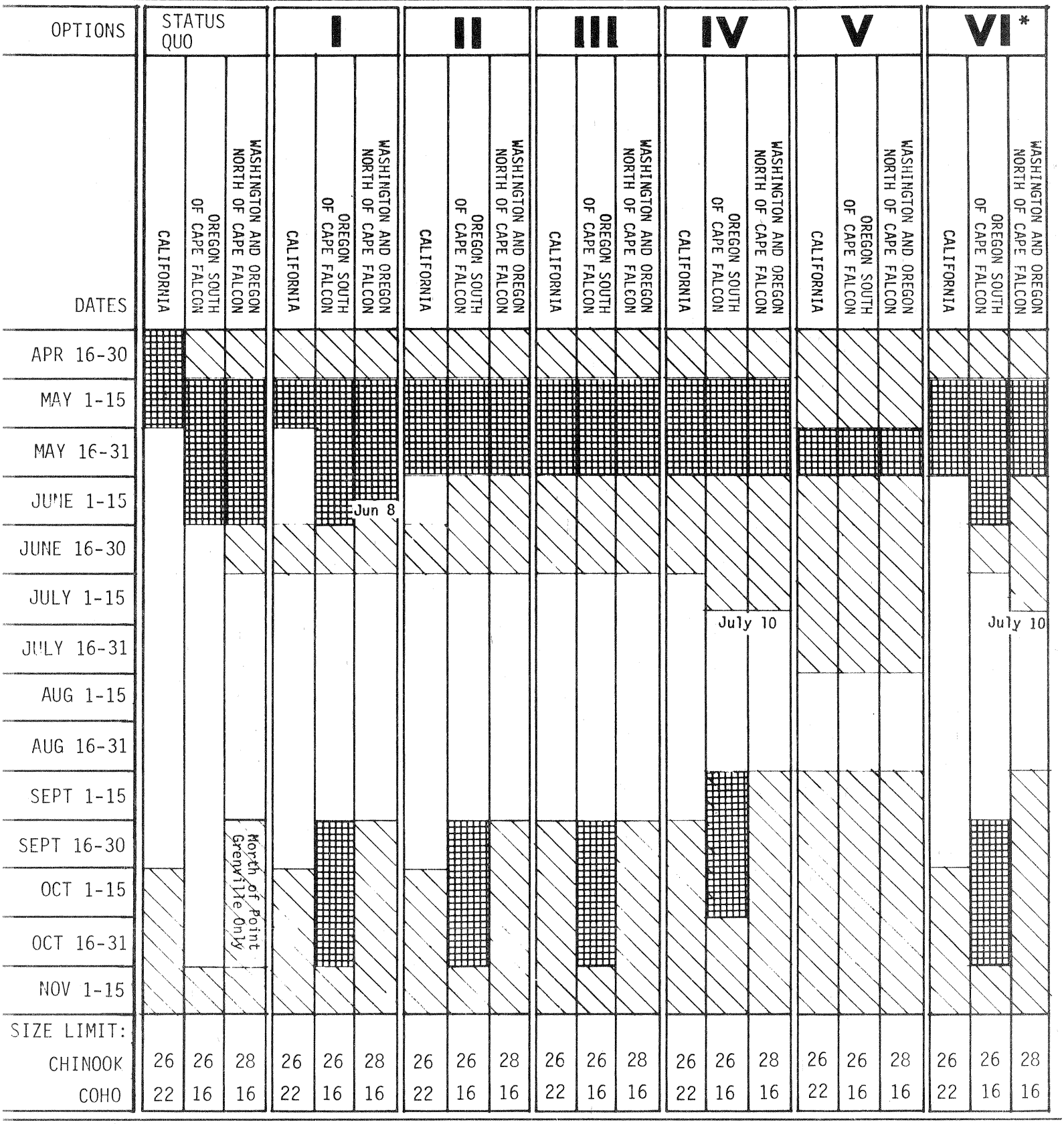
OPTION	FISHERY	AREA	TROLL CATCH*	SPORT CATCH*	ESCAPEMENT*
I	Chinook	California	--	o	++
		Oregon South of Cape Falcon	-	-	++
		Wash. & Ore. No. of Cape Falcon	+	-	-
	Coho	California	---	-	+++
		Oregon South of Cape Falcon	-	-	++
		Wash. & Ore. No. of Cape Falcon	+	-	-
II	Chinook	California	---	---	+++
		Oregon South of Cape Falcon	-	-	++
		Wash. & Ore. No. of Cape Falcon	o	-	-
	Coho	California	----	-	++++
		Oregon South of Cape Falcon	-	-	++
		Wash. & Ore. No. of Cape Falcon	o	-	-
III	Chinook	California	----	+	++++
		Oregon South of Cape Falcon	-	+	++
		Wash. & Ore. No. of Cape Falcon	o	-	+
	Coho	California	----	-	++++
		Oregon South of Cape Falcon	-	-	++
		Wash. & Ore. No. of Cape Falcon	o	-	-
IV	Chinook	California	----	+	++++
		Oregon South of Cape Falcon	--	o	+++
		Wash. & Ore. No. of Cape Falcon	-	-	+
	Coho	California	----	-	++++
		Oregon South of Cape Falcon	--	-	+++
		Wash. & Ore. No. of Cape Falcon	-	-	+
V	Chinook	California	----	o	++++
		Oregon South of Cape Falcon	----	-	++++
		Wash. & Ore. No. of Cape Falcon	---	---	+++
	Coho	California	----	o	++++
		Oregon South of Cape Falcon	----	-	++++
		Wash. & Ore. No. of Cape Falcon	---	---	+++
VI	Chinook	California	-	o	+
		Oregon South of Cape Falcon	-	-	++
		Wash. & Ore. No. of Cape Falcon	-	-	+
	Coho	California	-	o	+
		Oregon South of Cape Falcon	-	-	++
		Wash. & Ore. No. of Cape Falcon	-	-	+

*LEGEND:

+	1-10% -
++	11-20% --
+++	21-50% ---
++++	Over 50% ----

PFMC
2/9/79

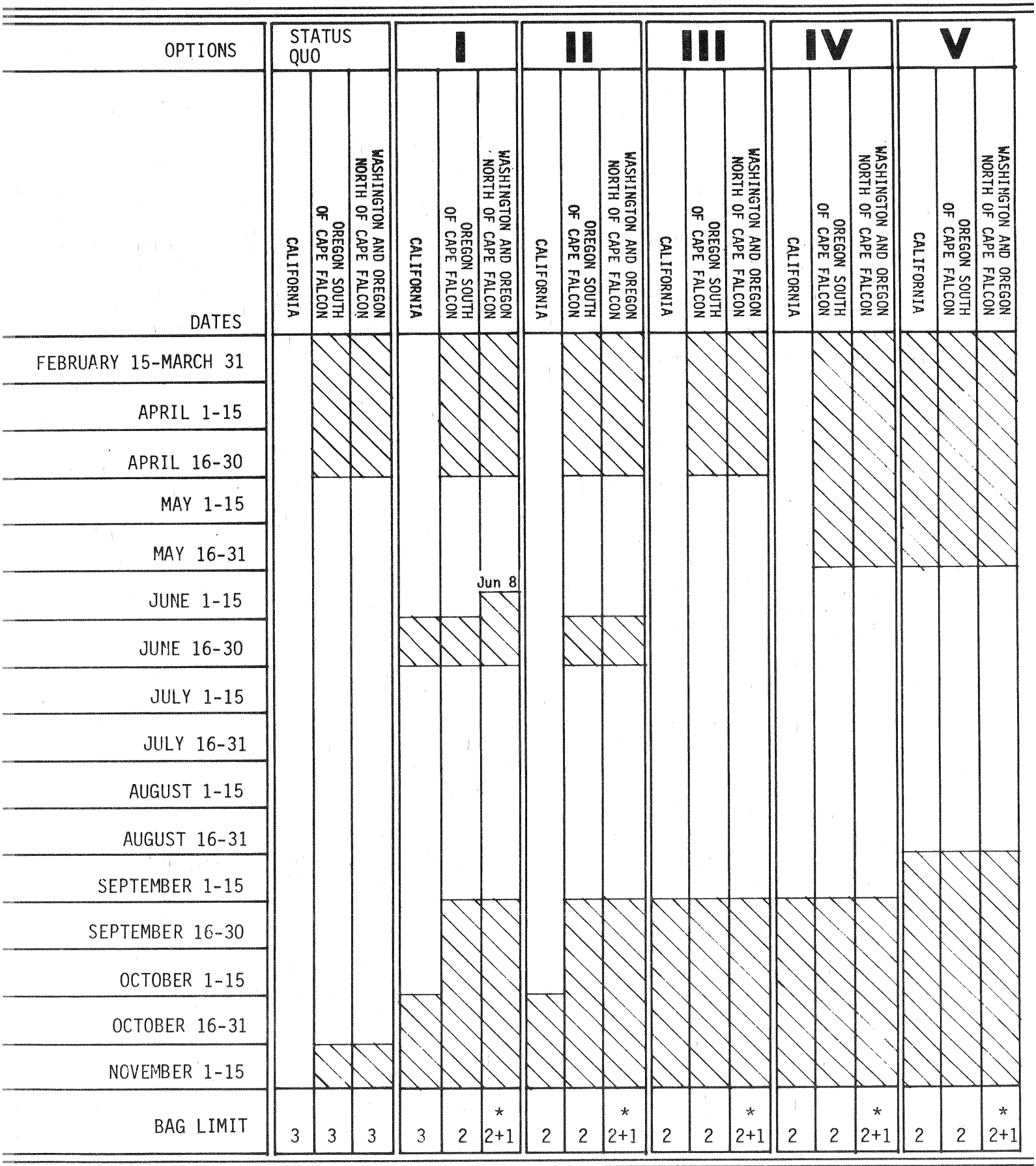
1979 TROLL



*with area restriction

CLOSED CHINOOK ALL SALMON

1979 RECREATIONAL



CLOSED

ALL SALMON

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