COASTAL FISHERIES ASSISTANCE PROGRAM:

The Status of Alaska's Fisheries and Their Management

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March, 1981

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INTRODUCTION

Alaska has been and still remains closely tied to the living marine resources along its shores. The earliest inhabitants of Alaska depended upon the living resources present in the coastal waters. The first incursions into Alaska by European man were spurred by the wealth of the marine mammal and fishery resources of the area. Alaska's commercial fisheries have been the single most stabilizing influence upon the economy of the State since the turn of the century. The recent flurry of activity associated with petroleum development and the subsequent recession has served to emphasize the importance of the fishing industry as a stabilizing influence upon the State.

Conservation and rational use of coastal living marine resources are major objectives of the 1972 Coastal Zone Management Act and the 1980 amendments to the Act. The Federal Office of Coastal Zone Management created the Coastal Fisheries Assistance Program (CFAP) in order to give States a vehicle for achieving their objectives regarding their fisheries resources. The objectives of CFAP are to 1) help establish a comprehensive approach to fisheries management; 2) to bring the operations and objectives of State and Federal coastal and fisheries management closer together; 3) to provide better information and data for decision making regarding living marine resources; and 4) to improve management of fish stocks. In order to determine the possible applications of the CFAP in Alaska, the Alaska Coastal Management Program and the Department of Fish and Game initiated a one year study of the status of the State's fisheries and their management.

The study has four objectives 1) to review the status of fisheries and fisheries management in Alaska's Territorial Sea; 2) to identify public and private agencies and organizations which are involved in managing or developing fisheries resources or their habitat; 3) to identify the issues, and weaknesses concerning the use and management of these resources; and 4) to determine the feasibility of establishing a fishery planning component within the Alaska Coastal Management Program. The work program has been divided into two stages. The first stage of the project focused on preparing information to satisfy the first two objectives and to establish the foundation for the analysis of issues and weaknesses during the second stage of the study. The second stage of the study focuses on fulfilling the second two objectives.

This report presents the materials produced during the first stage of the study. Chapter one, reviews the history and current status of the State's fisheries. Chapter two identifies the different State, Federal and private organizations which are involved in fisheries management, development and habitat protection. Chapter three examines the role which the Alaska Coastal Management Program plays with regards to fisheries. Chapter four describes the State and Federal regulatory and management systems for fisheries. These last two chapters establish a foundation for analyzing the desirability of expanding the ACMP's fisheries role and more closely coordinating the fisheries and coastal management programs during the second stage of the study.

INTRODUCTION

Alaska ranks first of all states in the value of commercial fishery products landed and second in total number of pounds. In 1979, 40,000 individual commercial fishermen participated in the harvest which was sold to approximately 800 processors. Some 10,300 subsistence users indivually, or as heads of family, participated in the salmon fishery.[1] This section reviews the history and status of this important natural resource.

This review is divided into statewide and regional presentations. The statewide presentation briefly discusses domestic commercial fisheries and the State's aquaculture programs. Recent performance in the domestic fisheries are contrasted with the historical catch and the State's short and long-range management objectives. The regional presentation focuses entirely upon the domestic fisheries managed by the Department of Fish and Game and contains information on the value, the number of participants, the management programs, and program needs for each fishery. Important recreational and subsistence fisheries are identified in this more detailed presentation.

STATEWIDE REVIEW

COMMERCIAL SALMON FISHERIES AND MANAGEMENT OBJECTIVES

Salmon have been commercially harvested in Alaska since 1883 (Figure 1). Harvest levels peaked between 1915 and 1945 and thereafter, catch rates rapidly declined until the 1950's. Decline of individual stocks, rampant overharvest, a poor biological data base, and little or no management and enforcement were responsible for this decline. Prior to the late 1950's, ignorance of resource requirements, lack of the ability to monitor run status, and a lack of in-season management flexibility guaranteed that overharvest and inclement survival effects would not be compensated for in-season or during the next few years (due to poor brood stock escapements). By the late 1950's biological data bases were improved and in-season management became more flexible. Severe fishery restrictions were enforced to improve brood stock escapements. By Statehood, these improvements resulted in higher salmon returns. Survival conditions also improved and the 1960 to 1971 average harvest was 52 million salmon per year as compared to only 41 million salmon harvested per year during the 1950's. Although improved, the 1960 era salmon harvest was only about sixty percent of the 30 year historical high average harvest of 83 million salmon.

In the early 1970's, cold climatic conditions adversely affected salmon survival rates, and despite adequate parental escapements, returning runs between 1972 and 1975 were at an all-time low. However, an improved biological data base and total run monitoring programs in at least some fisheries enabled fishery managers to detect weak runs and protect them from additional harvest by regulatory management. The average annual harvest of only 25 million salmon between 1972 and 1975 reflected both the poor runs and the effort to provide adequate escapement. The effort was largely successful and these good brood stock escapements coupled with improved survival conditions since 1973 have resulted in an average annual harvest of 75 million salmon between 1976 and 1980. The 1978 harvest of 80 million salmon, the 1979 harvest of almost 90 million salmon, and the 1980 harvest of over 110 million salmon were the largest salmon harvests since the 1940's.

1/ Unless otherwise noted the material in this presentation was excerpted from Summary and Description of the Program and Component Projects in the Commercial Fisheries Division FY82 Budget Request, AK. Dept. of Fish & Game, March, 1980

Table 1. Alaska commercial salmon harvest averages and objectives, in thousands of fish, by fishery unit[1].

Fishery unit	30-year historical high average harvest[2]	10-year harvest averages: 1950-1959[2]	1960-1969	1970-1979	1980 harvest	Harvest objectives:[3] Short-term[4]	Long-term[5]
Southeastern Alaska and Yakutat	39,245.0	16,402.8	17,091.2	13,566.9	18,592.7	19,688.0	24,555.0
Copper-Bering Rivers	1,019.9	829.4	880.2	821.4	359.2	830.0	1,050.0
Prince William Sound	7,192.1	2,310.5	4,125.5	4,841.9	14,908.8	6,848.0	6,848.0
Cook Inlet	4,285.0	3,550.8	4,001.9	3,520.4	5,187.8	6,230.0	12,558.0
Kodiak	11,282.5	6,304.9	8,971.1	8,154.4	19,158.4	8,551.0	13,427.0
Chignik	2,103.1	773.8	1,732.5	1,819.2	2,303.3	1,781.0	2,741.5
South Peninsula	6,812.3	3,582.5	2,718.6	3,161.6	12,878.4	3,252.0	5,079.0
Aleutians	323.5	158.2	405.7	130.2	2,626.0	308.0	1,515.0
North Peninsula	1,102.7	847.2	483.4	714.4	2,539.1	685.0	1,168.0
Bristol Bay	18,208.1	6,760.0	10,713.6	10,724.5	28,077.7	14,500.0	18,600.0
Kuskokwim Bay	208.9	0.8	98.5	114.8	267.4	160.0	275.0
Kuskokwim River	208.9	0.8	98.5	313.9	714.7	415.0	660.0
Yukon River	404.8	62.6	163.3	840.7	1,519.9	1,320.0	2,140.0
Norton Sound	141.1	0	124.7	254.0	445.6	433.0	766.0
Kotzebue	116.2	0	45.2	266.7	376.3	150.0	250.0
Statewide	82,464.5[6]	41,583.4[7]	51,561.3[7]	49,245.0[7]	110,165.4[7]	65,202.0	92,032.5

[1] Compiled March 31, 1980. Natural stock data only (1978 and 1979 data is preliminary).
[2] Shorter periods used for some new fisheries in the Arctic-Yukon-Kuskokwim region.
[3] Where even-year - odd-year objectives apply, the larger objective is shown on this table.
[4] Based on average survival conditions, current level of funding and present management technology.
[5] Based on average survival conditions and increased funding and technological abilities for fishery management.
[6] Less than the sum of the individual fishery unit 30-year high average harvests since not all high periods were coincidental.

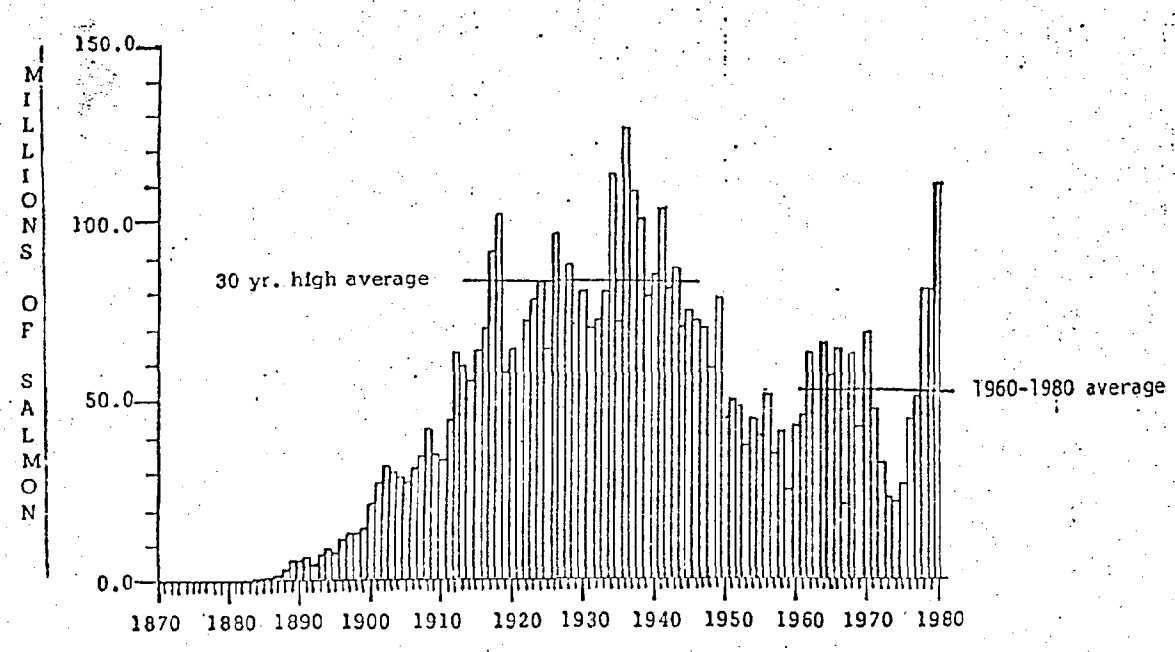

Figure 1. Alaska commercial salmon harvest, 1882-1980.

Despite the favorable 1976 to 1980 harvests, the average condition of stocks is still well below that of the historical period and some individual stocks are either still declining, in danger of declining (due to changing levels of fishing effort), or presently are at levels below that of the 1960's. In nearly all developing fisheries, there is an early period of high harvest which is not sustained or again achieved. During this period, production of older and weaker stocks is realized, whereas, during later periods, production is based upon younger more productive stocks. It is improbable that the average annual harvest of 83 million Alaskan salmon during this historical period can again be achieved by regulation of natural stocks alone. However, improved regulation can provide significant gains in sustainable production, provided that average survival conditions as experienced in the 1960 to 1979 period do not deteriorate. Short and long-term objectives for harvest of salmon stocks total 65 and 92 million salmon respectively. Table 1 summarizes these objectives for specific fishery units and compares these goals to the 1980 harvest, the ten-year averages for the past three decades, and the thirty-year historical high average harvest. The 1980 harvest exceeded the short and long-term objective in 12 and 8 fishery units respectively.

Salmon returns for the near future (1981 to 1986) are already somewhat determined by present escapement levels and present management program development. Harvest gains and economic stability will largely be the result of better in-season detection of surpluses. Long-term objectives will only be realized after new innovative and sophisticated management techniques are tried and proven.

These new innovative techniques for management are needed in several salmon fisheries. Southeastern pink salmon stocks are still depressed below the 1960 harvest rate levels. Salmon stocks continuing to decline or in danger of decline due to increasing fishing effort include Southeastern king, coho, and chum stocks, Copper River sockeye, Cook Inlet coho salmon and Kotzebue chum salmon. Southeastern salmon stocks are well below historical levels. Cook Inlet and Southeastern salmon stocks have the greatest allocation difficulties between competing user groups. Arctic-Yukon-Kuskokwim chum and king salmon and Aleutian salmon stocks may yield larger harvests than at present if management by individual stock can be refined to take advantage of run surpluses.

COMMERCIAL SHELLFISH FISHERIES AND MANAGEMENT OBJECTIVES

Exploitation of Alaska's shellfish resources was not substantial prior to the mid 1950's. Between 1955 and 1966, harvest of king crab steadily increased from 10 million pounds to a high of about 175 million pounds. Between 1966 and 1970, king crab harvest decreased to a low of about 60 million pounds, and since that time the harvest has been increasing slightly each year with a present harvest being over 100 million pounds. The harvest of Tanner crab has been increasing since the mid 1950's to a current level of about 100 million pounds, and during the same time period, harvest of shrimp increased to an average level of about 100 million pounds and then decreased. Tables 2, 3, and 4 summarize management objectives and five-year averages for the last 15 years for the king crab, Tanner crab, and shrimp fisheries. Some shellfish fisheries exhibited high initial harvest levels which have not been duplicated, but most stocks are assumed to be in good condition. Northern Bering Sea king crab and Bering Sea Tanner crab are still developing, and various other shellfish fisheries are yet to be developed. The majority of the crab and shrimp stocks in the Gulf of Alaska are under full utilization. The shrimp stocks of

Table 2. Alaska king crab harvest averages, in thousands of pounds, by fishery unit[1].

Fishery unit	5-year averages 1965-1969	1970-1974	1975-1979	Short term harvest objective[2]	Long term harvest objective[3]
Southeastern Alaska	1,070	710	490	700	900
Prince William Sound	60	160	70	115	125
Cook Inlet	3,340	4,320	2,490	4,000	5,000
Kodiak	53,200	15,360	15,980	18,000	25,000
Chignik-South Pen.	15,970	4,000	2,340	4,400	6,600
Aleutians	34,800	24,700	10,420	17,000	31,000
Bering Sea	5,210	24,400	83,700	75,000	85,000
Alaska Total[4]	113,650	73,650	115,490	119,215	153,625

1 Compiled 1/15/81. 1977, 1978, and 1979 data preliminary.

2 Based on average survival conditions, current level of funding, and present management technology.

3 Based on average survival conditions and increased funding and technological abilities for fishery management.

4 Alaska total may not equal the sum of individual fishery unit entries because of rounding.

Table 3. Alaska Tanner crab harvest averages, in thousands of pounds, by fishery unit[1].

Fishery unit	5-year averages 1965-1969	1970-1974	1975-1979	Short term harvest objective[2]	Long term harvest objective[3]
Southeastern Alaska	80	1,320	3,280	4,000	5,000
Prince William Sound	240	6,480	5,100	5,500	7,500
Cook Inlet	330	4,880	5,430	5,500	7,000
Kodiak	3,180[5]	16,810	24,820	21,000	31,000
Chignik-South Pen.	260[5]	5,480	12,700	12,000	22,000
Aleutians	10	160	1,210	2,000	4,000
Bering Sea	210	1,420	45,100	92,000	92,000
Alaska Total[6]	4,310	36,540	97,640	142,000	168,500

1 Compiled 1/15/81. 1977, 1978, and 1979 data preliminary.

2 Based on average survival conditions, current levels of funding, and present management technology.

3 Based on average survival conditions and increased funding and technological abilities for fishery management.

5 Only 1967-1969 data.

6 Alaska total may not equal the sum of individual fishery unit entries because of rounding.

Table 4. Alaska shrimp harvest averages, in thousands of pounds, by fishery unit[1].

Fishery unit	5-year averages 1965-1969	1970-1974	1975-1979	Short term harvest objective[2]	Long term harvest objective[3]
Southeastern Alaska	2,650	950	990	1,100	2,000
Prince William Sound	2	10	280	350	500
Cook Inlet	600	5,490	5,640	6,000	7,500
Kodiak	30,470	64,430	33,470	30,000	48,000
Chignik-South Pen.	268	25,680	48,920	26,000	60,000
Aleutians	0	2,100[5]	3,800	2,000	5,000
Alaska Total[6]	33,927	98,660	93,100	65,450	123,000

1 Compiled 1/15/81. 1977, 1978, and 1979 data preliminary.

2 Based on average survival conditions, current level of funding, and present mangement technology.

3 Based on average survival conditions and increased funding and technological abilities for fishery management.

5 Fishery began in 1967.

5 Fishery began in 1972.

6 Alaska total may not equal the sum of individual fishery unit entries because of rounding.

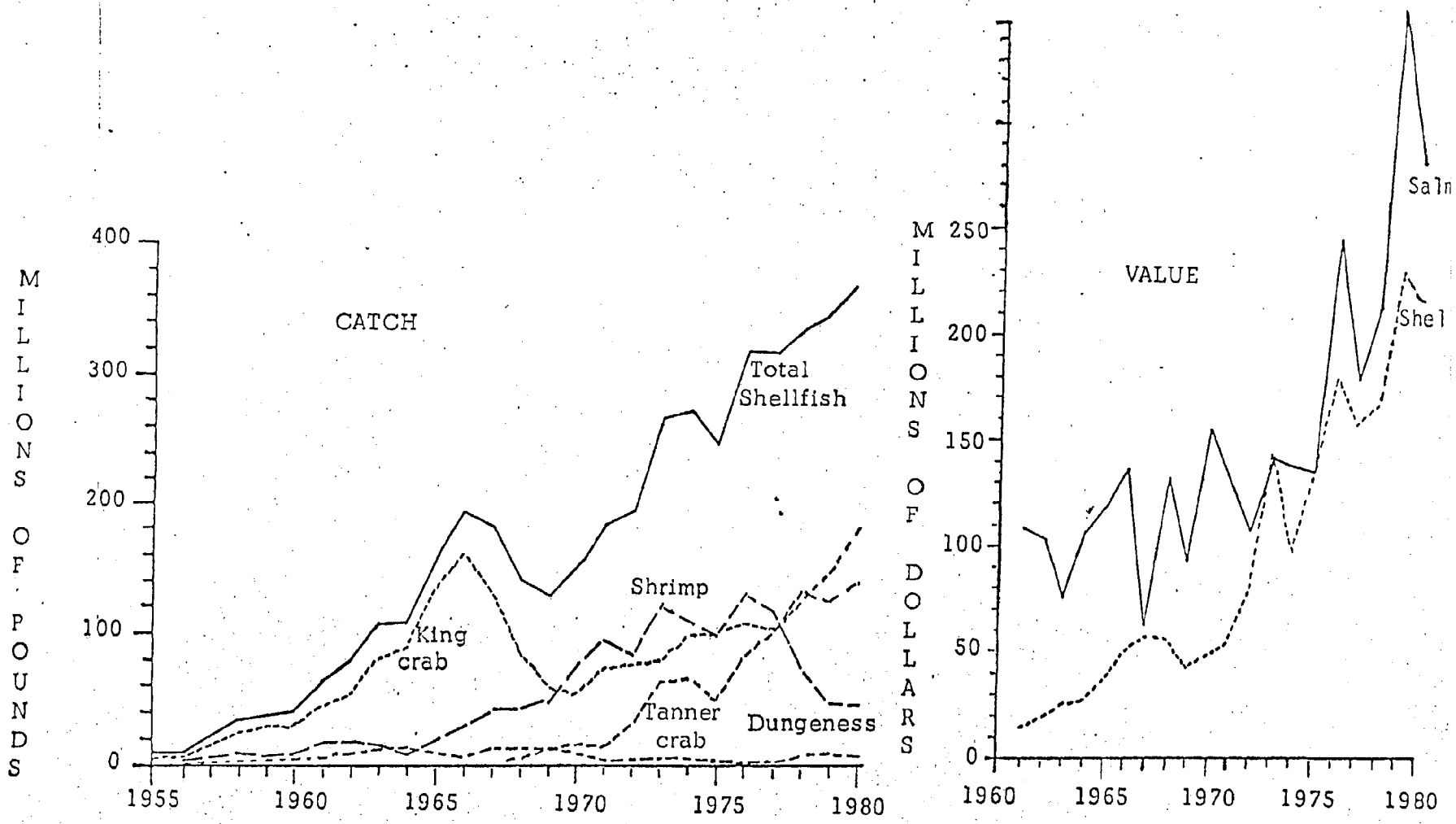

Figure 2. Alaska shellfish catch in millions of pounds and value in millions of dollars, 1955-1980.

the Gulf of Alaska have recently declined in abundance and additional funding is needed and included in the Division budget request to better assess stocks. Harvest of other shellfish stocks is still inconsequential compared to king and Tanner crab and shrimp. Figure 2 compares the value of the State's shellfish and salmon fisheries.

It is desirable to allow maximum utilization of available shellfish surpluses without triggering declines in the stocks. To this end a conservative management policy has been initiated in most areas consisting of quotas, size limits, seasons and other restrictions. More precise information on stock abundance in the future may allow adjustment of harvests in response to natural variation in survival rates to increase average annual yield and to safeguard against overharvest in the more recently exploited stocks. Shellfish fisheries have developed so quickly that long-term sustainable yield is difficult to estimate. Whether or not the current data base is adequate to maintain present levels of harvest is largely unknown. Until the data base is greatly expanded the Division's management policy will continue to be conservative.

COMMERCIAL HERRING FISHERIES AND MANAGEMENT OBJECTIVES

The statewide harvest of herring decreased from a high of almost 80 million pounds in 1960 to a low of less than 10 million pounds in 1970 (Figure 3). The harvest level remained between 30 and 40 million pounds between 1974 and 1977. Interest in additional utilization of Alaska's herring stocks has increased substantially in recent years leading to rapid development of herring fisheries in the Bering Sea and in the Kodiak and Alaska Peninsula area. Harvest of herring in 1980 totaled almost 90 million pounds. Southeastern, Prince William Sound, and Cook Inlet herring stocks have been at low levels of abundance, but stronger year classes of juveniles are evident that should result in increased harvests provided market conditions are adequate (Table 5).

It is important to be able to regulate the herring harvest according to annual stock abundance in order to preserve reproductive capacity when stocks are at a cyclic low. To develop techniques for managing the State's herring resources, a pilot research project was begun in the late 1960's and early 1970's in Southeastern Alaska where the major harvest of herring occurred. The primary objective of this project was to develop a means of locating and assessing herring populations. Hydroacoustical equipment was developed for this purpose and is presently being used for management of Southeastern and Prince William Sound herring stocks. Assessment ability is fairly good in Southeastern, but has been accomplished at the expense of the salmon program and the herring research program. Coverage of more remote areas is not adequate. Cook Inlet and Prince William Sound herring fisheries are monitored inadequately and lack research assessment improvement efforts. Bering Sea herring fisheries have rapidly developed, and even with rapid development, the research-managment program has been adequate due to initial federal support funding and subsequent State support.

The Kodiak and Alaska Peninsula area herring fisheries are rapidly expanding and budget support for assessment, surveillance, and research of these stocks has been almost nonexistant. The Kodiak and Alaska Peninsula area herring fisheries require new funding for development of an acceptable management regime.

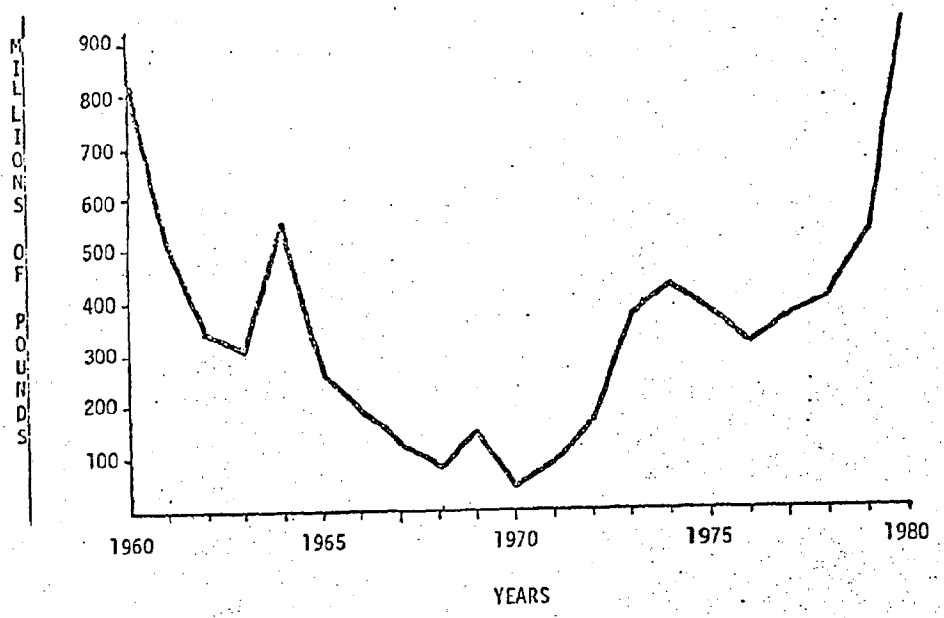

Figure 3. Alaska statewide herring harvest in millions of pounds, 1960-1980.

Table 5. Alaska commercial herring harvest averages and harvest objectives, by fishery unit, in millions of pounds[1].

Fishery unit	10-year harvest averages: 1950-1959	1960-1969	1970-1979	1980 harvest	Harvest objectives: Short-term	Long-term
Southeastern Alaska	41.3	29.1	13.1	18.4	15.0	25.0
Prince William Sound	16.9	0.2	7.4	14.9	12.5	21.0
Cook Inlet	7.0	2.7[2]	4.7	0.3	0.8	10.0
Kodiak-Alaska Peninsula	18.3	1.8	1.1	7.1	10.0	20.0
Bering Sea[4]	-	82.6	96.0[3]	47.8	50.6	77.0
Alaska Total	76.5	116.4	122.3	88.5	88.9	153.0

[1] Compiled 1/15/81. Includes food, bait, and roe catches.

[2] 1969 only.

[3] 1970-1978.

[4] Includes U.S. and foreign catches in the Bering Sea.

COMMERCIAL GROUNDFISH FISHERIES AND MANAGEMENT OBJECTIVES

The U.S. commercial groundfish fisheries started in the mid 1800's with a fishery for Pacific cod in the Bering Sea and along the Alaska Peninsula. By 1900 fisheries for halibut and sablefish (black cod) were actively expanding in Southeastern Alaska. Recently, the domestic groundfish fisheries, excluding halibut, showed the first signs of a sustained increase since the groundfish fishery decline of the 1940's. Since 1977 the domestic catches have increased geometrically, approximately doubling each year with the total domestic catch in 1979 totaling about 20 million pounds (Table 6). Including joint venture operations (U.S. fishermen delivery to foreign processor ships) the 1980 catch will easily exceed 40 million pounds.

Recent groundfish fisheries have been dominated by foreign fishing and processing fleets. The Fishery Conservation and Management Act of 1976 provided the mechanism to transfer the benefits of these fisheries to domestic fishermen. While the majority of the harvestable surplus from these stocks is outside of State waters, the initial development of the fishery has been nearshore adjacent to Petersburg, Sitka, Kodiak and Akutan. Although increased harvests of bottomfish will significantly benefit the State's economy, bottomfish fishing can impact the harvest of salmon, halibut, and crab in present fisheries if such fishing is not properly regulated. Additionally, while potential harvests are much greater than present harvests, the danger of overharvest of individual stock units already exists due to fleet effort and distribution. The fisheries must be regulated and stocks need to be assessed and sampled. While the Federal government is responsible for managing much of the groundfish fishery the State must remain an active participant in the development of a management regime for these fisheries.

COMMERCIAL HALIBUT FISHERIES

The commercial halibut fishery began in the last two decades of the nineteenth century off the coast of Washington. The fishery spread up the Canadian coast and includes the Gulf of Alaska and the Bering Sea. Canadian and United States fishermen jointly developed the fishery together and has been managed since 1925 by the International Pacific Halibut Commission (IPHC), which was created by these two countries.

Figure 4 illustrates the historical catch of the halibut fishery.[2] The United States catch has declined steadily from over 40 million pounds in the early 1940's to under 20 million pounds in the 1970's. This resulted from overfishing during the early years as well as the incidental harvest of halibut by Japanese and Russian vessels targeting on other species. Biologists of IPHC believe that the stocks in most areas are still below optimum levels but are responding favorably to the strict harvest levels which have been imposed upon the fishery.

AQUACULTURE

The State aquaculture program was initiated in 1971 in response to the tremendous decline of the salmon fishery in the late 1960's and early 1970's. Hatcheries were planned and operated solely by the Department of Fish and Game, F.R.E.D.

2/ Final Environmental Impact Statement and Fisheries Management Plan for the Pacific Halibut Fishery, North Pacific Fishery Management Council, 1979.

Table 6. Alaska domestic groundfish harvests and harvest objectives in millions of pounds by fishery unit.

Fishery unit	Annual harvest in number of pounds[1] 1978	1979	1980	Average	Short term objective[2]	Long term objective[3]
Southeastern	7.15	7.89	5.44	6.82	15.0	104.6
Central	0.21	0.62	0.24	0.35	7.0	91.8
Westward	2.96	7.54	8.33[4]	6.27	44.0	3,945.3
Statewide	10.32	16.05	14.01	13.44	66.0	4,141.7

[1] Compiled 1/15/81; harvest data preliminary.

[2] Based on average survival conditions, current level of funding, present management technology, and anticipated level of fishery development by 1982 to 1984.

[3] Based on average survival conditions, increased level of funding, and management capability, and recommended optimal yield from the Gulf of Alaska apportioned by distance of continental shelf edge within NMFS regulatory areas.

[4] Excludes joint venture catch.

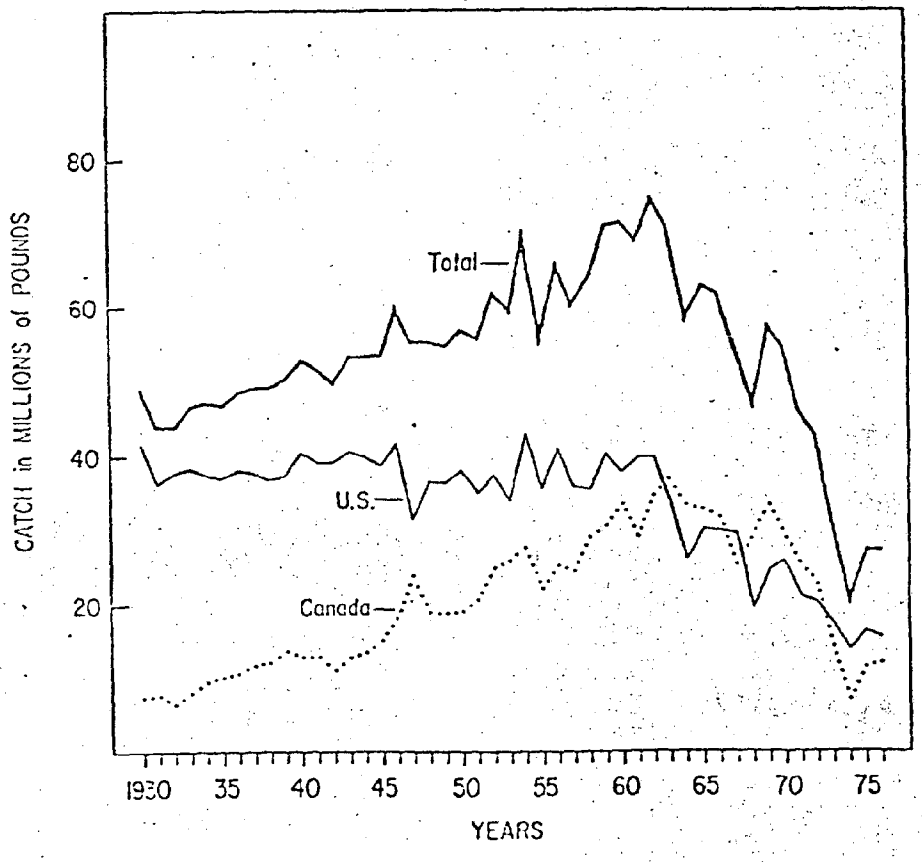

Figure 4. Total Canadian and United States Catch of Pacific Halibut, 1930- 1976

Table 7. Value of Alaska's commercial fisheries to fishermen (ex-vessel value) in millions.

Species	1976	1977	1978[a/]	1979[a/]	1980[a/]
Salmon	$118.0	$170.8	$215.0	$350.0	$270.0
Shellfish	97.5	158.7	154.6	228.0	215.2
Halibut	20.5	17.6	17.2	32.9	13.5
Herring	2.5	2.7	8.9	24.0	9.5
Groundfish	1.1	1.6	3.6	5.1	8.9
All Commercial Fisheries	$239.6	$351.4	$399.3	$640.0	$517.1

a/ Preliminary data.

Division until 1974. At that time the Legislature authorized the Department of Fish and Game to issue hatchery permits to qualified private non-profit corporations (PNP's). In 1976 the Legislature authorized the creation of Regional Aquaculture Associations to coordinate private sector aquaculture planning on a regional basis. Coordination between private and public sector aquaculture planning is also occurring on a regional basis. The Department of Fish and Game conducts other forms of enhancement such as fish ladders and lake fertilization; however, the following summary is confined to the status and objectives of the State and private hatchery programs.

Figures 5 and 6 illustrate the location of State and private hatcheries. Production statewide and from these hatcheries are summarized in Figure 7 and Tables 9 and 10. The 1980 returns to State and PNP hatcheries were approximately 879,000 and 1,504,880 salmon respectively.

The long-term salmon production objectives of the State's program were established in 1975 and are summarized in Table 11. Long-term objectives for the combined public and private programs are being established.

Policy on location/types of private hatcheries?

3/ FRED Annual Report, Division of Fisheries Rehabilitation, Enhancement, and Development, ADF&G, 1980.

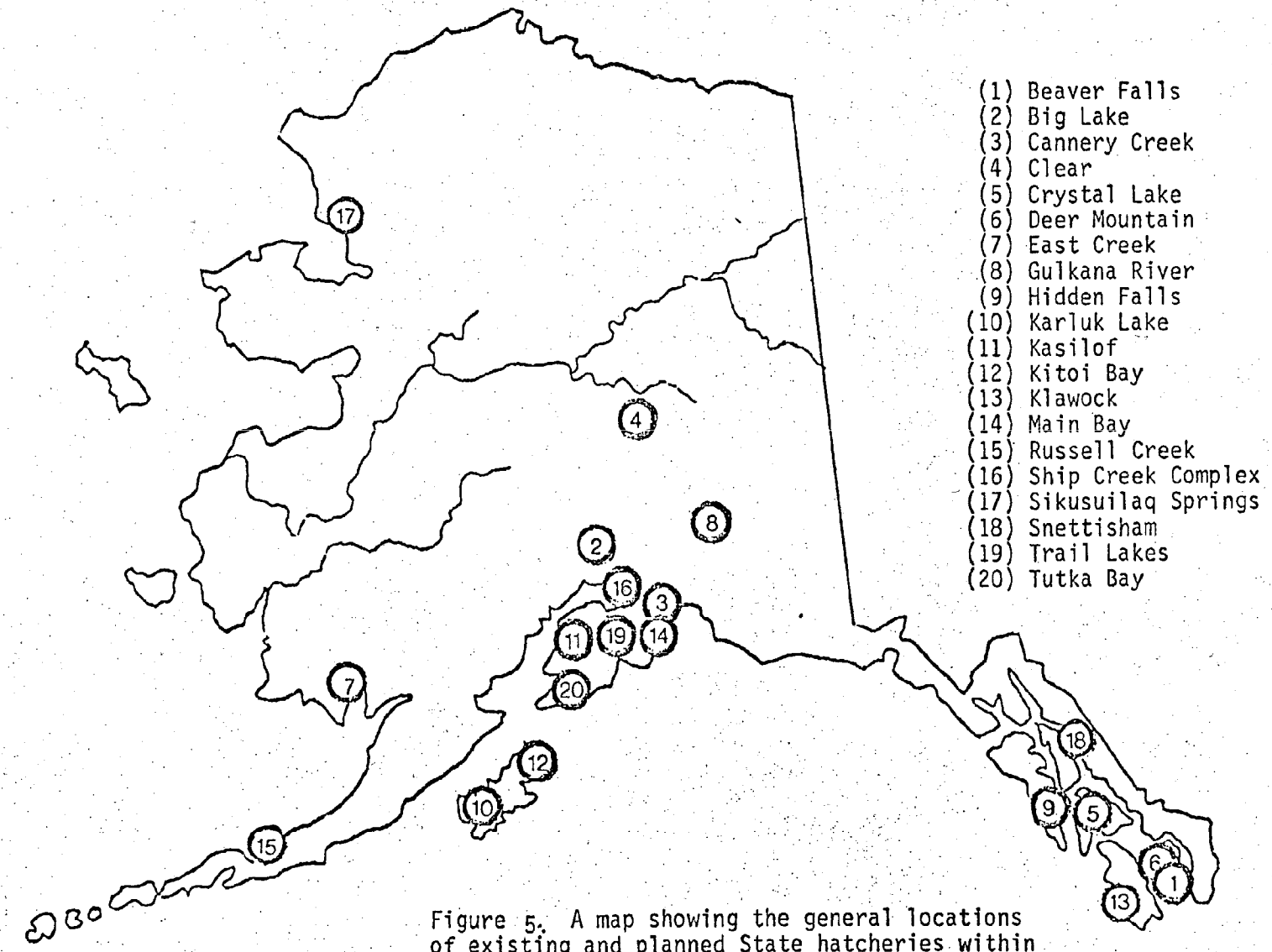

Figure 5. A map showing the general locations of existing and planned State hatcheries within Alaska, 1980.

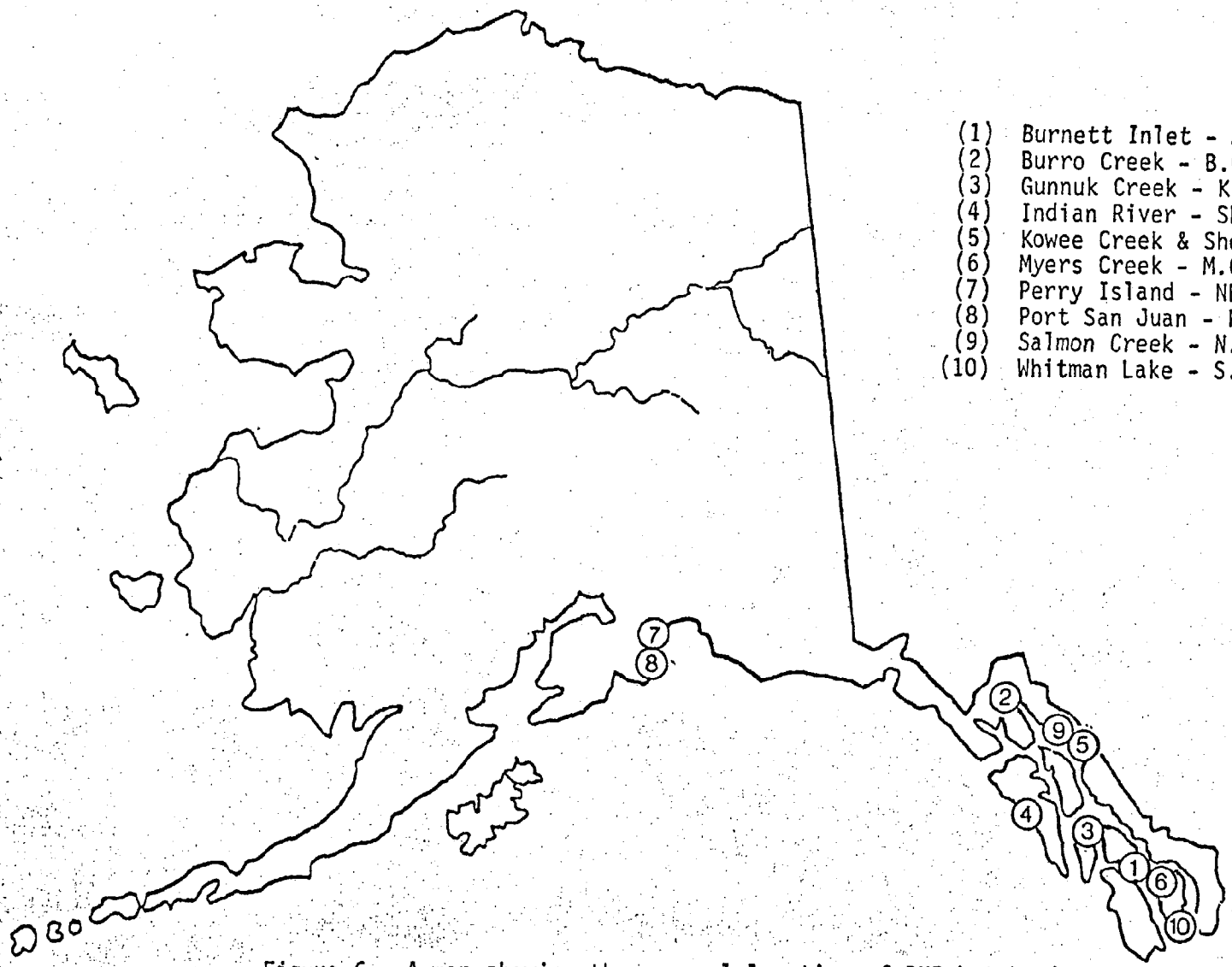

Figure 6. A map showing the general location of PNP hatcheries within Alaska, 1980.

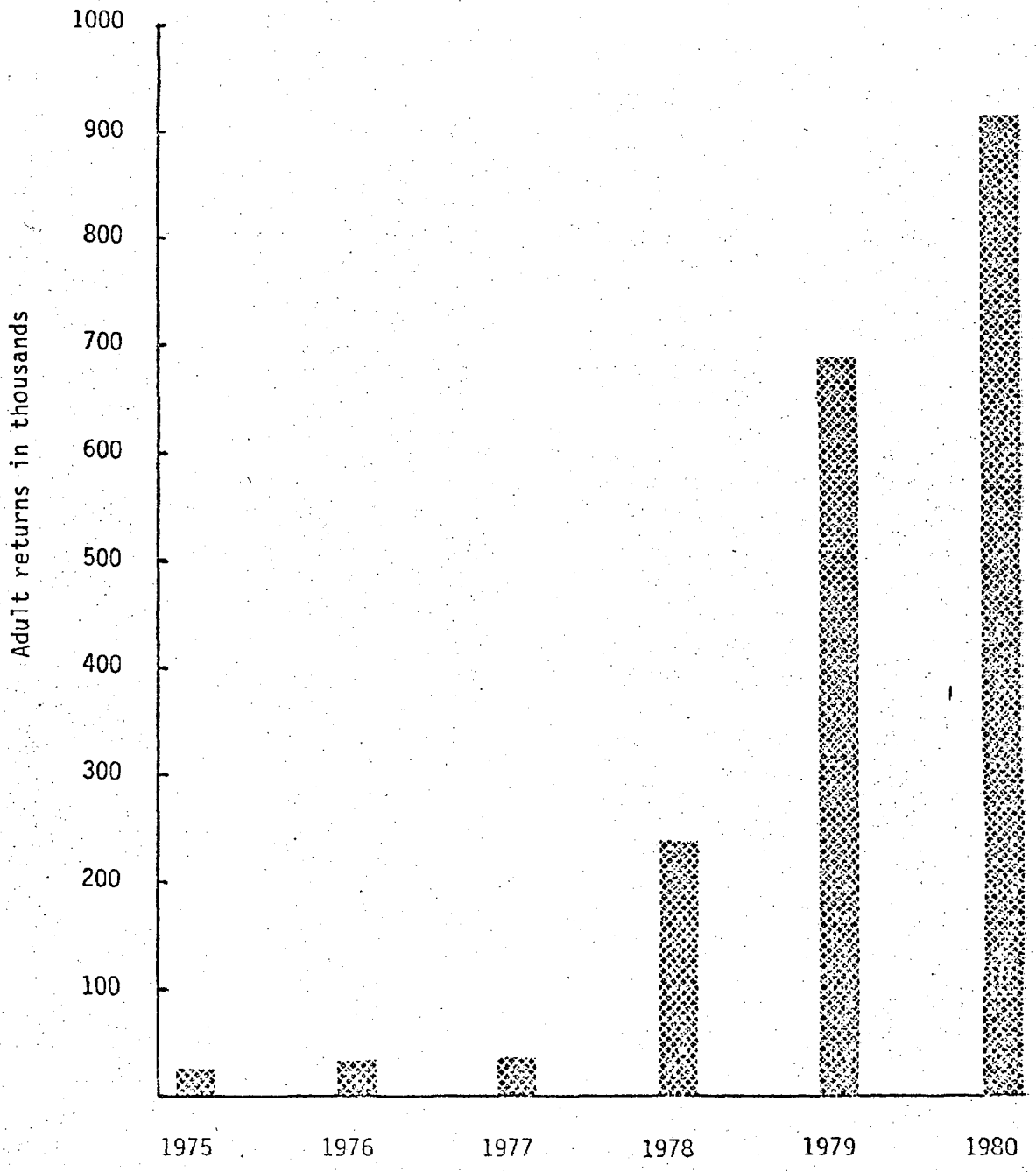

Figure 7. Number of salmon produced at FRED hatcheries that returned as adults to the hatcheries and fisheries from 1975 through 1980. Figure for 1980 is preliminary.

Table 8. Preliminary count of salmon and steelhead trout produced at FRED facilities that returned as adults to the fisheries and facilities in 1980.

Project	General location	King	Coho	Sockeye	Pink	Chum	Steelhead
Beaver Falls	Ketchikan	-	-	-	-	17,000	-
Big Lake	Wasilla	-	1,463	2,057	-	-	-
Cannery Creek	Prince William Sd.	-	-	-	125,300	-	-
Crystal Lake	Petersburg	10,138	82	-	-	-	50
Deer Mountain	Ketchikan	163	4,200	-	-	-	-
East Creek	Dillingham	-	-	1,500	-	-	-
Fish Creek	Juneau	251	-	-	-	-	-
Fritz Creek	Homer	-	500	-	-	-	-
Halibut Cove	Homer	250	400	-	-	-	-
Hidden Falls	Baranof Island	-	-	-	-	20	-
Hidden Lake	Kenai Peninsula	-	-	10,897	-	-	-
Kasilof	Kasilof	608	-	-	-	-	-
Kitoi Bay	Afognak Island	-	-	-	359,205	-	-
Leisure Lake	Homer	-	-	14,000	-	-	-
Seward	Seward	-	5,476	-	-	-	-
Snettisham	Juneau	-	-	-	-	278	-
Starrigavan	Sitka	295	5,849	-	-	-	-
Tustumena Lake	Kenai Peninsula	-	-	Unassessed	-	-	-
Tutka Bay	Homer	-	-	-	315,000	-	-
Whittier	Whittier	-	4,500	-	-	-	-
	TOTAL:	11,705	22,470	28,454	799,505	17,298	50
	GRAND TOTAL:	879,482					

Table 9. Preliminary count of salmon produced at PNP hatcheries that returned as adults to the common property fisheries and hatcheries in 1980. [a/]

Facility	Pink	Chum	Coho
Burnett Inlet	800		
Indian River	5,540	200	14
Kowee Creek	5,000		
Perry Island	450		
San Juan	1,493,090	1,390	
Total	1,504,880	1,590	14

a/ Returns to the San Juan Hatchery include an estimation of the contribution of hatchery fish in the common property fishery.

Table 10. Long-term salmon production objectives of the state's FRED program as expressed in the draft "Alaska Salmon Plan," 1975.[a/]

Area	King salmon adults (millions)	Coho salmon adults (millions)	Sockeye salmon adults (millions)	Pink/Chum salmon adults (millions)
Southeastern	.037	.500	1.300	13.000
Prince William Sound	-	.100	.500	6.000
Cook Inlet	.100	.900	3.000	4.800
Kodiak	.010	.010	1.000	6.400
Alaska Peninsula-Chignik	-	-	-	7.000
Bristol Bay	-	-	3.000	-
Arctic/Yukon/Kuskokwim	-	-	-	Test facility and investigations in Kotzebue area.
Totals	.147	1.510	8.800	37.200

REGIONAL REVIEW

The status of the State's fisheries and their management may be examined at several levels of detail. Management responsibilities are divided among four regional offices: The Southeast, Central, Arctic-Yukon-Kuskokwim and Westward Regional offices. Within each region, the fisheries are divided into fishery units. Each fishery unit is composed of several distinct fisheries. For example, the Southeast Regional Office has management responsibilities for salmon, shellfish, herring, and groundfish fishery units and the salmon fishery unit is divided further into pink, chum, coho, chinook, and sockeye salmon fisheries.

This review contains information at each level of detail. The presentation for each region begins with a tabular summary which lists all of the fishery units within the region. The table itemizes for each unit, the number of management projects and employees, the management budget, recent commercial harvests, short-term harvest objectives, the harvest value and the number of participating fishermen.

Each unit is then described in narrative form. The narrative generally contains some historical information, a summary of the management strategy being employed by the Department and an identification of management needs for the fisheries within the unit. For more detail about specific fisheries the reader should refer to the Summary and Description of the Program and Component Projects Included in the Commercial Fisheries Division FY 82 Operational Budget Request prepared by the Commercial Fisheries Division of the Department of Fish and Game.

THE SOUTHEASTERN REGION

Table 12 Southeast Region Fishery Units:

Component	Fishery Unit Name	Number of Projects	Number of PFT Employees	Operational Budget Request a/	Most Recent Commercial Harvest b/	Short-Term Harvest Objective c/	Commercial Harvest Value in Millions of Dollars d/	Estimated Number of Fishermen e/
Salmon	S.E. Salmon	23	27.7	2,276.1	18,592.60	19,688.0	$53.97	9,000
	S.E. Admin.	3	10.0	413.5	-	-	-	-
Shellfish	S.E. Shellfish	4	1.3	119.7	6.42	8.50	5.00	475
Herring	S.E. Herring	5	4.7	298.6	18.40	15.00	3.10	416
Groundfish	S.E. Groundfish	6	2.3	222.1	5.44	15.00	2.50	500
Grand Total	S.E. Region	41	46.0	3,330.0	-	-	$64.57	10,391

a/ FY 82 CIP request totals $425,000 (salmon @ $300,000 and shellfish @ $125,000).
b/ Salmon data are in millions of salmon harvested in 1980; shellfish data are 1975-1979 average harvests listed in millions of pounds; herring and ground fish data are in millions of pounds harvested in 1980.
c/ Based on average survival conditions, current level of funding and present management technology.
d/ Based on value determined by using 1980 average price by species and short-term harvest objectives.
e/ Some fishermen may fish within more than one fishery unit and hence the total component estimates may actually be overestimates.

The Southeastern Salmon Fishery

Commercial salmon management in Southeast is directed at regulating three commercial gear groups, troll, purse seine and gill net, to achieve needed escapements. The highly mixed condition of many stocks of the same species within fisheries, as well as the mixing of different species, makes management of Southeast Alaska fisheries very complicated.

The troll fishery targets primarily on coho and king salmon areas composed of Alaskan as well as non-Alaskan stocks. Proliferation in the size of the hand troll fleet in recent years has increased the need for more precise management practices, and many native coho and king salmon stocks are believed to be overharvested at present. Migration and temporal distribution studies and determination of escapement requirements should enhance production of both king and coho by allowing for better management of individual stocks. Tag recovery and rapid tag data processing is becoming a critical factor related to managing mixed hatchery and wild stock coho fisheries.

The drift gill net fishery operates in six discrete locations in Southeast, while set nets are operated in the Yakutat area only. The gill net fishery targets mostly on sockeye, fall chum, and coho depending on the area and time of season. Management of gill net fisheries in some areas is complicated because fisheries must be held well in advance of the time when spawning stocks can be counted in the rivers. Data on stock separation within the gill net areas are needed as well as better understanding of optimum escapement requirements, forecasting by smolt indices, and relationships of catch to escapement.

The purse seine fishery usually targets on pink salmon during the summer and chums in the fall. Ongoing stock separation work continues to be a key factor which will determine the future ability to manage the highly mixed pink salmon fishery. Test fishing and better forecasting are needed to determine pink salmon run strength upon which critical management decisions must be based early in the season.

Specific program needs which should over the long-term improve harvests by more effectively meeting escapement requirements are: (1) initiation of southern Southeastern pink salmon stock separation studies and the initiation of expanded stock and/or species separation for chum, sockeye, coho and king salmon; (2) microwire tagging and port sampling of coho and king salmon stocks; (3) Chilkat and Chilkoot sockeye smolt indexing and forecasting, (4) sockeye temporal distribution studies, (5) summer chum optimum escapement and escapement assessment studies, (6) Chilkat fall chum escapement assessment, and (7) evaluation of pink and chum salmon marine survival factors related to improved forecasting.

The Southeast Shellfish Fishery

Southeast king crab management strategy basically follows that specified by the Board of Fisheries and the Alaska Department of Fish and Game in their policy statement on management of the king crab resource. Prior to the 1979 season, management decisions were based upon historic catch data, dockside

sampling information and subjective stock analysis information derived from industry data. A pilot indexing-tagging project was conducted in 1978 and expanded during 1979 to include portions of all major districts of Southeastern Alaska. Resulting data provided:

(1) Quantitative crab abundance data for all major districts;
(2) Research cruise CPUE indices to compare to prior years and to compare to commercial fleet performance;
(3) Estimates of fishing mortality (exploitation rate);
(4) Migration patterns;
(5) Growth rates; and
(6) Population data (sex, size, fecundity, shell condition).

These data, in conjunction with continued analysis of dockside sampling, fishermen interviews, and historic catch information allows the staff to manage Southeastern king crab stocks with an acceptable degree of precision for the first time since the inception of the fishery.

Tanner crab are managed in the same manner as king crab, but with little data, no tagging information, and with a very incomplete index program. Additional data is needed to rationally manage Tanner crab and consequently a new project budget request for FY 82 has been submitted.

Dungeness crab and shrimp management is based on historical catch information, dockside sampling, limited CPUE information, and available life history information. Improvements in the dungeness crab and shrimp data base in the future would provide for a more precise management regime. Proposals for FY 82 are not being submitted, but proposals will be drafted over the next few years.

Miscellaneous species including abalone, geoduck, and razor clams in most cases are managed without any quantifiable fishery information. The only considerations are to the biology of the organisms involved when some data is available and consequently most regulatory regimes are ultra-conservative. Management of these species is reactionary to crisis situations. Additional data concerning abalone and geoducks is needed, but funding limitations prevented such a project budget for FY 82 from being submitted.

The Southeast Herring Fishery

Pacific herring stocks are continuous throughout Southeast Alaska. Presently these stocks support two district commercial fisheries, a food and bait herring fishery which occurs during the winter months, and a sac roe herring fishery which occurs during the spring spawning season. Purse seine fishing gear dominates the food and bait fishery while purse seine and gill net gear harvest sac roe herring. Herring pounds account for a small portion of the food and bait harvest. Individual stocks are managed so that they are exposed to only one of the two fisheries.

Management strategy for the Southeastern Alaska herring fisheries is based upon the determination of the abundance of good quality herring available on a stock by stock basis and allowing a portion of the stock to be harvested if the population size meets minimum threshold levels. The successful accomplishment of this management approach is dependent upon the determination of the size of herring populations, the age and growth characteristics of these populations and the monitoring spawning success on a stock by stock basis.

The determination of stock size is based on biomass estimates derived from hydroacoustic and spawning ground success. Age and growth information is obtained by sampling the commercial catch and by trawling surveys conducted in conjunction with hydroacoustic surveys from State vessels.

A major need of the Southeastern herring management program is the expansion of spawning ground surveys. This includes both increased efforts in aerial surveys to determine the linear miles of beach used for spawning and dive surveys to determine the amount of spawn deposited. Both of these methods provide estimate of mature herring biomass that are stock specific. In many instances it is not possible to obtain hydroacoustical estimates of stock size and therefore, spawn surveys provide the only method to access stock size. This is particularly true for small stocks located in remote areas. Although a spawn survey project is not included in the FY 82 budget, a proposal is currently being prepared for inclusion in the FY 83 budget process.

The Southeast Groundfish Fishery

The Southeastern Region groundfish unit was created in 1979 through a special appropriation. In FY 80 special funding from the Office of the Governor provided funding for a sablefish tagging project near Ketchikan and an expansion of the port sampling project in cooperation with the State's new bottomfish development program. As part of the State's bottomfish development program, the Region's management and research unit budget was increased in FY 81 through a capital budget appropriation.

The Southeastern groundfish program now manages the inside sablefish, starry flounder, cod gill net, and pollock fisheries and through a cooperative management agreement with the National Marine Fisheries Service collects all domestic groundfish fisheries data for the Region. The Department's groundfish program collects catch data for both the Fisheries Conservation Zone (FCZ) and State waters and has implemented a skipper interview program obtaining CPUE and catch area information for the sablefish fishery.

In order to optimally manage the Region's groundfish resources, assessment programs and trawl surveys and tagging are necessary to determine stock status. Through short-term grants from the Governor's Office sablefish tagging and a nearshore rockfish survey have been completed. However, some stocks such as starry flounder and the Clarence Straits sablefish are depressed, while others such as coastal sablefish are of questionable status. The FY 82 request provides a small increase for the resource assessment projects while maintaining adequate observer and port sampling coverage. A trawl survey for flounder, a hydroacoustic survey for pollock and opportunistic tagging of sablefish will be completed at the requested level of funding.

Table 13 Central Region Fishery Units:

Component	Fishery Unit Name	Number of Projects	Number of PFT Employees	Operational Budget Request[a/]	Most Recent Commercial Harvest[b/]	Short Term Harvest Objective[c/]	Commercial Harvest Value in Millions of $'s[d/]	Estimated Number of Fishermen[e/]
Salmon	Copper River	9	2.7	$293,800	0.4	0.8	$ 6.0	600
	Prince Wm. Sound	6	4.2	283,200	14.9	6.8	10.9	1,200
	L. Cook Inlet	5	2.3	237,900	1.1	1.8	3.3	250
	U. Cook Inlet	7	4.7	565,000	4.1	4.5	17.8	3,000
	Bristol Bay	15	7.8	1,236,700	28.1	14.5	43.9	5,000
	Region.Admin.	3	12.0	590,200	--	--	--	--
Total Component		45	33.7	$3,206,800	48.6	28.4	$81.9	10,050
Herring	Prince Wm. Sound	2	0.6	$ 67,400	14.9	12.5	$ 2.5	950
	Cook Inlet	1	0.3	52,600	0.3	0.8	0.2	100
	Bristol Bay[f/]	5	2.2	264,500	39.2	41.5	4.4	1,500
Total Component		8	3.1	$384,500	54.4	54.8	$ 7.1	2,550
Shell-fish	Prince Wm. Sound	3	1.5	$ 92,400	6.4	6.8	$ 5.0	500
	Cook Inlet	5	1.7	215,800	14.4	16.4	14.0	500
Total Component		8	3.2	$308,200	20.8	23.2	$19.0	1,000
Ground-fish	Central Region[g/]	1	1.0	$ 59,300	0.2	7.0	$ 2.0	30
Grand Total	Central Region	62	41.0	$3,958,800	--	--	$110.0	13,630

a/ FY 82 CIP request totals $575,000.
b/ Salmon data are in millions of salmon harvested in 1980; herring data are in millions of pounds harvested in 1980; shellfish data are 1975 to 1979 average harvests listed in millions of pounds; groundfish data are in millions of pounds harvested in 1980.
c/ Based on average survival conditions, current level of funding and present management technology.
d/ Based on the value determined by using 1980 average price by species and short term harvest objectives.
e/ Some fishermen may fish within more than one fishery unit and hence the total and component estimates may actually be overestimates.
f/ That portion of the Bering Sea herring unit attributable to Bristol Bay and Central Region.
g/ Refers to Prince William Sound and Cook Inlet.

The Copper and Bering River Salmon Fisheries

Both the Copper River and Bering River commercial fisheries are drift gill net fisheries that target on sockeye and coho salmon. Of the two river systems, the Copper River commercial fishery is by far the larger. In addition, the Copper also supports a saltwater subsistence king salmon fishery, an upstream subsistence fishery on kings, sockeye, and cohos along with a limited sport fishery mainly targeting on kings.

Prior to 1978 the in-season management of the Copper River commercial fishery was based on catch and catch per unit of effort information. This method, while imprecise, was all that was possible until side scanning sonar units capable of enumerating escapements were developed. Escapement level was unknown until

sockeye returns reached the subsistence fishery in the Chitina area, upstream 30 or more days in travel time above the commercial fishery. Aerial surveys of upriver and delta spawning areas are conducted annually, however, the upriver surveys are not timely enough to assist in-season management. Funding was provided to install the first sonar counter in 1978. This counter, installed at Miles Lake approximately 7 days in sockeye travel time above the commercial fishery, verified in 1978 that a decrease in the run strength had occurred. The 1978 season was opened and closed throughout the fishery as dictated by sonar counts and catch data to the benefit of realized escapement levels.

In 1979 two sonar units were installed at Miles Lake. The season opened on May 15 with the first fishing off the mouth of the Copper River occurring on May 24. Sonar counts verified a below desired level of sockeye salmon escapement which collaborated catch data well below normal. The Copper River fishery was closed on May 29 with no additional fishing until early August when the coho salmon season began. A minimum escapement goal of 250,000 with an optimum of 350,000 has been established for this system. Following the close of the 1979 commercial fishery the escapement reached 237,173 sockeye salmon.

The fishery was never opened in 1980 for sockeye salmon due to an anticipated weak return from the parent year. The sonar escapement enumeration system was again installed at Miles Lake and monitored from May 18 through August 9. The season escapement for the upper Copper River totaled over 283,000 fish, thus reaching the lower end of the escapement goal. Without the capability of sonar, along with aerial surveys, the past three years would have suffered an exploitation rate that would likely have resulted in a long-term and potentially serious biological decline.

Because of the 1979 closure on the Copper River a greater effort was realized on the Bering River. The sockeye salmon catch was the highest catch reported since 1922. In 1980 this district was closed based on a forecasted weak return along with the realized possibility of preventing interception of Copper River sockeye as they passed through the Bering River District. Aerial surveys are used to assess escapement to this system.

The 1980 subsistence fishery on the upstream Copper River was managed on a plan adopted by the Board of Fisheries based on the escapement level determined at the sonar site. A total of 3,203 permits were issued in 1980 resulting in a harvest of 24,455 salmon. This fishery is monitored daily at Chitina by a Department crew responsible for issuing permits, collecting data, and overseeing the fishery. Aerial surveys are made to count fishwheel effort upstream above the dip net fishery.

Program needs identified relate to additional information concerning identity of individual sockeye salmon stocks involved in both the Copper River and Bering River commercial catches and run strength assessment in or very closed to the fishing area for sockeye and coho salmon. Run timing between the commercial fishery and Miles Lake and the subsistence fishery need additional refinement. Stock identification techniques to identify delta vs. upriver stocks on the Copper River needs to be developed. The small king salmon run needs special attention in terms of assessing run strength and escapement rate to assist in management of the subsistence, sport, and commercial harvest.

The Prince William Sound Salmon Fishery

Salmon management in Prince William Sound is directed at three major species (sockeye, pink and chum) in nine separate management districts. Fisheries are managed on an emergency order basis in accordance with fishery management plans and escapement goals established by the Board of Fisheries and the Alaska Department of Fish and Game. These responsible and rational salmon management plans are based on exploitation of individual stocks at desired levels to produce optimal sustained yield. Timely data on catch and escapement levels throughout Prince William Sound is critical information needed to execute those fishery management plans. Catch information is obtained through industry catch reporting and fish ticket analyses. Actual guarantee of adequate escapement levels is dependent upon emergency order authority and upon reliable and timely in-season escapement data provided by aerial surveys, ground surveys, and weir counts on important spawning streams. Resultant catch and escapement information provides estimation of potential spawning surpluses for all major spawning areas as well as allowing the Department to make in-season management adjustments in fishing time and location so that the surpluses can be harvested. Age-weight-length and sex data characterizing individual runs, catch compilations by area and species, and estimation of run strength and timing is also provided through the catch and escapement monitoring efforts. As such data accumulates year by year, age composition of the runs, spawning success, and spawner-recruit relationships are derived and used with fry index data to predict or forecast the total return in future years. Although Prince William Sound salmon runs have been steadily improving since the 1964 earthquake through protective regulatory management, continuation of the aerial and ground surveys, weirs, forecast, and catch monitoring projects by the Department is essential to insure that maximum sustained yield of the stocks continues.

The recent development of pink and chum salmon hatcheries in Prince William Sound has required a management policy for both hatchery and natural salmon stocks. Management should provide for the harvest of hatchery returns to insure a quality catch and yet provide a sufficient and timely escapement to the hatchery for its financial and brood stock requirements. Since hatchery produced fish can withstand a much higher harvest rate than natural stocks, special information and techniques are required in order to develop appropriate management strategies compatible with differential harvest rates. Information on individual stock timing and migration routes through the various fishing districts is needed to accomplish these somewhat competing objectives of full utilization of surplus natural and hatchery stocks. A tagging study initiated in 1980 should be continued for three more years to provide for identification of timing and migration routes of hatchery salmon stocks in Prince William Sound and the project should continue to emphasize its other goal of preventing overharvest of wild stocks in or near hatchery waters while insuring optimum harvest and escapement of hatchery stocks. A funding request to support this three year study can be found in the Department's FY 82 CIP budget, and the research should be considered as an integral and important portion of the overall Department program for management of Prince William Sound salmon.

Management of the natural pink salmon stock fishery is also complicated by the fact that the commercial fleet fishing in some districts intercepts stocks that are bound for other districts of Prince William Sound. Development of a fishery model based on catch timing and fleet effort by management district should assist

in efforts to optimize harvests and better insure optimum escapements for each management district. With the increased strength of the pink salmon run exhibited in the 1979 and 1980 fishing seasons and the recent large fishing effort exerted by the purse seiners in Prince William Sound, the State should seriously consider funding a fishery modeling project to enhance the regulatory program of the Sound and hence insure that any harvestable surplus can be made available to commercial fishermen in a timely manner.

The Lower Cook Inlet Salmon Fishery

Salmon management in Lower Cook Inlet is directed at three major species (sockeye, pink and chum) with additional emphasis on coho being added in recent years because of subsistence importance. Lower Cook Inlet has four salmon districts and 24 subdistricts and sections within those districts. Salmon returns to streams within these subdistricts are managed separately on an emergency order basis in accordance with escapement goals, management plans and policies adopted by the Department and the Board of Fisheries. Timely and accurate aerial surveys and ground surveys of spawning streams and bays are essential for optimum management of the returns. Additional weirs are needed at four streams to achieve more precise escapement objectives to those locations. The lack of these weirs has resulted in the loss of over 225,000 salmon in the past six years with an estimated value of $350,000. In the case of two of these systems, spawning escapements may be below optimum levels and increased escapements through fishery closures would result in increased production in the long run. Age-weight-length and sex data have not been collected for any Lower Cook Inlet returns in a standard consistent manner. Such data could result in better forecasting methods for certain species.

Evaluation of various pink and chum salmon spawning escapements occurs through pre-emergent fry sampling of index streams. This sampling also produces an annual forecast of expected adult pink salmon returns to two districts. While considerable variation in accuracy has occurred in the past, this project has provided valuable information for management of the fisheries.

The Lower Cook Inlet area has been a prime candidate for aquaculture projects because of the strong demand for additional salmon by recreational, subsistence and commercial user groups and because the area has numerous bays and streams that are ideal for managing these returns separately from naturally produced returns. While Tutka Lagoon is the best known enhancement facility in the area, other major enhancement projects at Halibut Cove, Leisure Lake, Caribou Lake, Seldovia Lake, Chenik Lake, Scurvey Creek, Fritz Creek and Paint River are producing fish or will be in the very near future. The Paint River project alone has the potential of producing more sockeye, pink, and chum salmon than the Lower Cook Inlet average commercial catch for the last 27 years. Additional time and funding ability to adequately assess and manage the returns to various enhancement facilities is needed and should be a high priority in future fiscal requests.

The Upper Cook Inlet Salmon Fishery

Upper Cook Inlet consists of that portion of Cook Inlet north of the latitude of Anchor Point and is divided into the Central and Northern districts. The Central District consists of six subdistricts and the Northern District contains two subdistricts. Dividing such large districts into subdistricts allows for more flexible management of the fisheries. Gill nets are the only legal gear used in Upper Cook Inlet. Set gill nets are the only legal gear allowed in the Northern District, while both set and drift gill nets are permitted in the Central District, except in the Chinitna Bay Subdistrict where hand purse seines are also allowed.

All five species of salmon are harvested in Upper Cook Inlet as they migrate to their stream of origin. The four major spawning systems are the Kenai, Susitna, Kasilof, and Crescent rivers. Most of the salmon migrate through Cook Inlet at about the same time, thus creating a mixed species and mixed stock fishery. The major salmon producing systems in Upper Cook Inlet are typically of glacial origin and heavily silted. This high turbidity makes in-season escapement enumeration very difficult. Through recent advancements in modern technology, salmon have been counted or indexed in these glacial systems with sonar counters since the mid 1970's. Three projects recently developed (stock separation, offshore test fishing, and district test fishing) have been used together to provide additional in-season assessment of the sockeye salmon run. The information obtained from these projects has been used in conjunction with the escapement data from the four major river systems to provide a reasonably accurate model of the sockeye salmon run. Such a model has enabled the staff to make logical management decisions as the season progressed. As a result of the run modeling effort, and the resource monitoring programs, the standard fishing time of two 12-hour periods per week and/or the normal fishing areas has been frequently altered by emergency order to better achieve fishery objectives. In 1980, 21 emergency orders were issued in-season. Although new project proposals were not developed for the FY 82 budget submission, future development of the program will be necessary to refine the management program particularly for the non-sockeye salmon species.

The Bristol Bay Salmon Fishery

Salmon management in Bristol Bay is directed primarily at sockeye salmon in five separate management districts. King and pink salmon runs are managed independently of sockeye in the Nushagak district because of their run sizes and timing. The salmon fisheries are managed strictly on an emergency order basis from late June to mid-July to achieve escapement objectives in eight key river systems. The fishing districts and management strategies are designed to be as stock specific as practical. Timely catch and escapement data is essential in the high volume and short-term sockeye fishery. Attaining escapement goals is achieved by emergency order adjustments of fishing time and is dependent upon timely in-season run strength analysis and escapement data provided by a broad array of projects such as test fishing, catch analysis and run modeling, stock separation, aerial survey, and sonar and tower escapement counts. Rapid analysis of such data provides the necessary management capability and response time to continuously adjust fishing time and area schedules in order to attain escapement objectives and harvest salmon surplus to these reproductive needs.

Basic data such as age composition of spawning populations and smolt production from specific brood years are collected through the catch sampling, escapement sampling and smolt projects, and these data are utilized to develop long range forecasts of probable production. These data are also basic to establishing and evaluating escapement goals.

Adherence to escapement objectives, cycle escapement management strategy (whereby goals are varied for certain years) in the important Kvichak River system, and a continuing evaluation and examination of old and new methodologies appears to be paying off as current production matches any high point in the history of the fishery.

Immediate and long term program needs relate to improvements and expansion of existing projects to refine management capability in order to more precisely achieve escapement objectives and consequently provide a resultant increase in allowable catch. Some key areas that need further refinement are: (1) quantifiable estimates of numbers of fish in a fishing district at any given time; (2) ability to determine which specific stocks of fish are involved with district catches on a real-time basis, especially in the Nushagak district; (3) more exact estimates of escapements entering major rivers just above the fishing districts; (4) more precision in estimates of numbers and stock origins of salmon passing Port Moller seven days before entering the fishery; and (5) more accurate forecasts for the next season's run, particularly on a district basis.

The Prince William Sound Herring Fishery

The herring fisheries of Prince William Sound include: (1) a spring sac roe fishery; (2) a spring wild spawn on kelp fishery; (3) a pound herring spawn on kelp fishery; and (4) a fall and winter bait and food fish fishery. The Northern, Eastern and Montague Districts have been established for the exclusive harvest of sac roe herring, while herring for bait and food markets may be harvested from the general district which includes all waters of the Sound exclusive of the sac roe districts. Wild spawn on kelp harvests are allowed in all districts, but only kelp beds located in bays and beach areas of Valdez Arm and Port Fidalgo have contributed significantly to this fishery. The pound herring spawn on kelp fishery has been restricted to a portion of Landlocked Bay in Port Fidalgo. Guideline harvest levels regulate the harvest for each of these fisheries which presently total to an annual harvest equivalent of 16 million pounds of herring.

Resource surveys, age class analysis studies, and recent harvests indicate that the herring stocks of the Prince William Sound area are in a strong healthy condition. If the stocks maintain patterns of abundance similar to those exhibited in past cycles, the herring fisheries can be expected to produce above average catches for at least two more years. Following the 1982 season, a decrease in herring abundance could be expected unless another strong year class enters the fishery. Such cyclic patterns are expected to impact the spawn on kelp fishery in a similar fashion. The seaweed crop is maintaining an annual harvestable surplus. Studies imply that a particular kelping area is harvested quite heavily for one of two years resulting in removal of the fronds of the adult plants. After this occurs, harvesters move into unharvested areas allowing the previously cropped beds to recover. With the present program level and rate

of harvest (as dictated by guideline harvest levels), and barring any abnormal natural mortalities, the Department believes that the Prince William Sound herring stocks will be maintained at levels similar to those observed over the past ten years.

The herring monitoring program in Prince William Sound includes biological sampling of the commercial harvest to assess overall population condition and to determine recruitment of herring into the fishery. Hydroacoustic surveys are conducted from a Department vessel to locate pre-spawning concentrations of herring and to monitor their movements prior to the sac roe season. Activities also include ground and aerial surveys of herring spawning area to document the extent and magnitude of spawning. Ground observations include pre- and post-season underwater surveys which are aimed at evaluating effects of past kelp harvests and growth and recruitment of the kelp in harvested areas. A new project funded by the University of Alaska Sea Grant Program is examining the herring stocks utilized in the bait and sac roe fisheries to determine whether or not the stocks exploited are the same individual stock or two entirely different stocks. If a single stock contributes substantially to both fisheries, management strategies can be developed to protect against overharvest during years of low abundance.

Program expansion may be needed in future years, but it appears that the current level of program is adequate to monitor fisheries and optimize yield at this time.

The Cook Inlet Herring Fishery

Commercial herring fishing began in Cook Inlet in 1914 as a gill net fishery in the Halibut Cove area of Kachemak Bay. The industry expanded rapidly and by 1925 there were eight salteries in Cook Inlet. Gillnetting remained the chief method of catching herring until 1923 when purse seining was introduced. In 1927 the stocks were depleted and the fishery ceased to exist by 1928. Average annual harvest from 1914 to 1928 was 5.7 million pounds. The next major herring fishery to occur in Cook Inlet was a purse seine operation for reduction purposes in the Day Harbor-Resurrection Bay area. This fishery began in 1939 and lasted through 1959 and the annual average catch was 7 million pounds.

The present commercial fishery in Cook Inlet began as a purse seine operation in 1969 targeting on the sac roe market. The roe fishery in Cook Inlet lasts from early May through mid-June. The catch from this fishery peaked in 1970 when 9.6 million pounds were taken. The catch dropped in 1971 to 2 million pounds taken mostly in the Eastern District and to only 200 thousand pounds in 1972 with most of the catch again coming from the Eastern District. A large reduction in the catches during 1971 and 1972 appeared to be due to a combination of late, cold spring weather experienced in those years and overfishing in 1970. Fair weather and good prices in 1973 allowed fishermen to search for herring in areas that had rarely, if ever, been fished before. Fair concentrations of herring were located in several bays in the Outer District and in the northern end of the Kamishak Bay District. A new herring fishery also subsequently developed in the Central District where set gill nets were utilized. Prior to the 1973 season, an 8 million pound quota was set for the entire Cook Inlet area. Since 1973, guideline harvest levels have been established for various districts.

The 1978 commercial herring season operated under a new set of regulations. The most significant change was the complete closure of the Southern, Eastern, Outer, and Kamishak Bay districts to herring fishing from April 15 through June 30 unless opened by emergency order. This change in management strategies, e.g., switching from an "open season until closed" to a "closed season until opened," required the Department to assess the abundance of herring in an area on a regular basis to determine when a commercial herring fishery should occur and how many tons of herring could be harvested within guidelines set by the Board and Department. To accomplish this objective, aerial surveys were made on a daily basis, weather permitting, in the Kamishak Bay District. Less frequent flights were made over the remaining districts due to their lesser contribution to the herring fishery. The regulations governing the 1979 and 1980 commercial herring fishery in the Eastern, Outer, Southern, and Kamishak Bay districts were essentially the same as in 1978, although both set and drift gillnetting were allowed.

The basic history of Cook Inlet herring fisheries is one of erratic fluctuations of harvest due to variable year class strength of the resource and periodic overharvest by the commercial fishery. Often, herring fisheries have been more monitored than managed due to a lack of available personnel and program development. The recent emergency order based regulations have improved this unacceptable situation to some extent and a minimal level of program has developed over the last few years. In 1979 alone, 10 emergency orders were issued by the Department. In future years, as the resource more fully recovers from the effects of overfishing, an improved program of resource and fishery monitoring and management will have to be developed, implemented, and maintained to insure optimal sustained yield from the Cook Inlet herring resource.

The Bering Sea Herring Fishery

During the 1960's and early 1970's a foreign offshore fishery harvested massive numbers of Bering Sea herring. The Fisheries Conservation and Management Act passed in 1976 provided the mechanism to transfer this available yield from the offshore foreign fishery to an inshore domestic fishery capable of harvesting discrete spawning stocks. The developing domestic fishery started harvesting a significant tonnage of herring in 1977 when 5.6 million pounds of sac roe and bait herring were harvested. The domestic bait, food, and sac roe fishery harvested 16.1 million pounds in 1978, 25.9 million pounds in 1979, and 47.6 million pounds in 1980. As the catch increased over the last four seasons, fishing effort expanded to the north until in 1980, herring were harvested in every district from Togiak to Norton Sound. Subsistence fisheries in the Yukon-Kuskokwim delta area also harvest herring each year and the 1980 harvest was approximately 240 thousand pounds or about one half of one percent of the commercial harvest. A largely resident roe-on-kelp fishery in the Togiak district has developed since the late 1960's and the average annual harvest has been approximately 170 thousand pounds of product. While the volume of herring exploited in 1980 by the domestic fishery increased substantially from the 1978 and 1979 levels, the value of the catch declined due to weakness of the market. Additionally, a decline in abundance of herring was observed which reflected a rather drastic decline of most spawning stocks south of the Yukon River.

Stocks of herring spawning along the eastern Bering Sea Coast are assessed on an annual basis. Repeated aerial surveys are conducted over the spawning grounds to determine number, size, and location of fish schools. Occurrence and extent of spawn or milt are also noted, as well as fishing effort and visibility factors affecting the quality of each survey. Test fishing with variable mesh gill nets has been conducted on the Togiak, Security Cove, Cape Romanzof, and Cape Denbigh (Norton Sound) fishing grounds to collect herring samples for age, weight, sex and maturity analysis and also to determine relative abundance of other schooling fishes (capelin, smelt, sand lance and cod) which might be mistaken for herring by aerial observers. This sampling program was expanded to include Nelson Island, Kotzebue, and southern Norton Sound for the 1981 season. In the Togiak District, commercial purse seine vessels and crews have been contracted to set on herring schools of known surface area to develop a data base for surface area-biomass conversion factors. Additional information pertinent to stock assessment is also annually obtained through monitoring magnitude, timing, location and composition of commercial harvests of both herring and herring spawn-on-kelp.

The 1980 stock assessment program provided data in-season which indicated that excessive harvests were occurring. In all districts which produced reliable aerial biomass estimates, the in-season exploitation rates approached or exceeded 20%. Department managers, following Board of Fisheries guidelines to maintain the exploitation rate between 10-20%, consequently closed the seasons in each of the districts from Togiak to Norton Sound by emergency order. A surface area-biomass conversion factor was used to calculate final (post-season) estimates, which resulted in lower biomass estimates in all districts. Thus actual exploitation rates were even greater than those determined in-season and ranged up to 57% for Security Cove. The exploitation rate for the Togiak fishery was 37%, including both commercial harvest and an updated estimate of wastage.

The inshore commercial fishery developed without the need of major regulatory restrictions from 1977 through 1979 when herring abundance was steadily increasing in most districts. Based on the observed decline in herring biomass and apparent year class failures in the younger age herring, a more conservative management approach is being implemented during the 1981 season for the Togiak, Security Cove, and Goodnews Bay districts. Conservative regulatory measures to insure that harvestable surpluses are not exceeded and recent population declines are reversed include the following:

(1) fishing seasons and periods will be regulated by emergency order,

(2) season openings will be delayed until minimum biomass levels are observed,

(3) the number and length of fishing periods will be dependent on herring abundance and fishing effort,

(4) provided that minimal biomass levels are observed, exploitation rates of 10-20% will be maintained except that exploitation rate exerted on identifiable younger aged fish will be decreased.

Management strategies in the Cape Romanzof and Norton Sound districts will be similar to the aforementioned measures except that the fishing seasons will open on established dates and minimum biomass levels required to open the season have not yet been identified. Periodic season closures will probably be required to maintain proper harvest levels if fishing effort increases in these districts. Various restrictions are being recommended to drastically reduce or eliminate the foreign offshore fishery from targeting on Western Alaska herring stocks as well.

Program development and budget support for the Division's Bering Sea herring fishery unit has been very adequate during the last two fiscal years. Many new projects and activities were added during FY 81 and the FY 82 request reflects the continuation costs of these projects only as new program development is not as important at this time as is full development and utilization of the existing program.

The Prince William Sound Shellfish Fisheries

Prince William supports a new and relatively productive fishery for Tanner crab, an older established fishery for Dungeness crab which was much reduced by the 1964 earthquake, a limited blue king crab fishery with incidental catches of red king crab, a small pot shrimp fishery, a larger trawl shrimp fishery, a razor clam fishery, and minor fisheries for octopus and neptuneid snails. The current data base to manage these fisheries is built from analysis of fish tickets, some dockside sampling of the catch, a low level crab resource assessment survey and fishermen and processor interviews. Only limited data is available for decision-makers to design optimal regulatory regimes for any of these fisheries. Lack of exact life history data for definition of legal size limits and lack of adequate resource assessment to determine harvest levels for Tanner and blue king crab stocks has led to less than desirable resource management strategies.

A new project request is being prepared for FY 83 to address the Tanner and blue king crab data gaps. Future proposals will be drafted for subsequent fiscal years to address the other data gaps such that future management regimes can become better planned and less reactionary to crisis situations.

The Lower Cook Inlet Shellfish Fisheries

The Lower Cook Inlet king crab management strategy basically follows the Board of Fisheries and Department of Fish and Game policy for a multiple age class king crab fishery. Prior to 1975, seasons lasted 7-1/2 months, but since establishment of stock monitoring programs in 1974, the fishery has been managed on more objective and precise data concerning stock abundance and condition. The king crab index and catch monitoring projects now provide estimates concerning: population abundance information by year class; legal size crab population strength; recommended catch levels; fishing mortality levels; migration pattern; growth rates; crab condition; shell condition; and fecundity. Trawl surveys are being initiated to further refine estimates of age class abundance. Harvest rates exerted upon various age classes of legal crab are analyzed to determine the range of harvest rates that can be applied to an age class of crab with varying population conditions while still maximizing the reproductive potential of the population. These research efforts and data coupled with dockside sampling, fishermen interviews and historic catch information allow the staff to manage the Lower Cook Inlet king crab stocks with precision.

Although Tanner crab management strategy is similar to king crab management strategy, the overall data base is much weaker. Aging of Tanner crab once they reach legal size is imprecise, thus it is more difficult to apply a differential harvest rate strategy to the species. Estimates concerning maximum sustainable harvest rate and the optimal size of male Tanner crab to harvest while maintaining the populations reproductive potential are still being developed. Additional research in three districts of Lower Cook Inlet is needed to determine population levels and characteristics such that the harvests in these districts can be optimized.

The Dungeness crab fishery in Lower Cook Inlet is highly dependent on west coast fishery production and market conditions. Although the 1978 to 1980 Dungeness fishery had a higher ex-vessel value than either the king or Tanner crab fisheries from the Southern district, relatively little research on population abundance has been conducted. Minimal dockside sampling and CPUE data have been gathered. Some tagging has been conducted to determine migration patterns and fishing mortalities. Additional basic life history, population abundance, and distribution data are needed for this species. Dungeness crab populations appear to be cyclical and in-season and pre-season abundance data is needed to provide fishermen with future harvest forecast information.

Lower Cook Inlet supports both a trawl fishery and a pot fishery targeting on shrimp. While the fisheries concentrate on separate species, significant harvests of the "pot shrimp species" by the trawl fleet occur throughout the year. The Cook Inlet pot shrimp fishery has been very cyclical due to the availability of markets. Population abundance data for shrimp are derived from trawl surveys conducted in the spring and fall and from pot surveys conducted three times a year. Although the pot survey is a new project, it should provide a better indication of potential fishery performance. Data on actual fishery performance, population abundance and life history are still being gathered and analyzed for future use in management decision-making.

The Cook Inlet trawl fishery is the most stable trawl shrimp fishery in the State. While this was accomplished primarily through the establishment of a very conservative guideline harvest level at the beginning of the fishery, data on population abundance, species composition and growth have provided needed information to allow refined in-season management.

The Central Region Groundfish Fishery

The Central Region groundfish fishery unit program was first developed in FY 81 due to the increasing interest by fishermen in developing groundfish fisheries in Prince William Sound and Cook Inlet during 1978, 1979, and 1980. In FY 81 a modest budget was secured and a full-time biologist was hired in December to implement a resource and fishery monitoring and management program. Although recent harvest levels have only been moderate, the State, the Alaska Fisheries Development Foundation, and private industry are all investing in bottomfish development projects in Cook Inlet and Prince William Sound. Investments include new and upgraded processing facilities, maintenance of harbors, and other support

facilities, and fishing trial grants to vessel operators for both nearshore and offshore demonstration projects. In 1980, a substantial food fish fishery for rockfish took place in the Outer and Eastern districts of Lower Cook Inlet along with a trawl fishery for bait in both Prince William Sound and Lower Cook Inlet. Automatic jigging machines and bottom trawls have been the most productive gear type used thus far in Central Region. Sunken gill nets have also been tried in Cook Inlet with little success.

The nearshore stocks of rockfish and lingcod, which are the main targets of the Alaskan small boat fleet, are especially vulnerable to overharvest because of their slow growth and low reproductive capacity. The large sport fishery centered in Seward has already depleted these groundfish stocks in areas adjacent to Seward. Although within State waters, the State until FY 81 did not have the ability to initially monitor any Central Region groundfish fisheries let alone manage them. During FY 80 the Department was able to provide a close fishery monitoring program for the rockfish fishery.

Cannery sampling and on-board catch sampling was initiated in FY 81 and these activities will continue to be the primary means for gathering otolith samples, scale samples and weight lnegth measurements from commercially harvested groundfish stocks. The Central Region groundfish biologist will continue to conduct sampling aboard the State vessels "Montague" and "Pandalus" during bottomfish trawling charters as well as during shrimp and crab index cruises. Two 400 Eastern bottom trawls have been purchased for bottomfish sampling. Sampling may also be conducted aboard commercial fishing vessels to maximize project efficiency. Logbooks distributed to each fishing vessel will contribute information concerning fishing location, depth and gear type, as well as catch per unit of effort data. The FY 82 budget request basically represents maintenance of the FY 81 program.

Table 14. AYK Region Fishery Units

Component	Fishery Unit Name	Number of Projects	Number of PFT Employees	Operational Budget Request	Most Recent Commercial Harvest[a]	Short Term Harvest Objective[b]	Commercial Harvest Value in Millions of $'s[c]	Estimated Number of Fishermen[d]
Salmon	Kuskokwim Bay	5	1.5	$108,900	0.267	0.160	$0.391	500
	Kuskokwim River	7	2.6	295,600	0.715	0.415	1.346	1,500
	Yukon River	11	6.5	687,100	1.520	1,320	4.749	2,000
	Norton Sound	4	2.2	182,800	0.446	0.433	0.416	350
	Kotzebue	5	1.2	163,100	0.367	0.150	0.591	350
	Region Admin.	1	5.0	229,800	--	--	--	--
Total Component		33	19.0	$1,667,300	3.315	2.478	$7.493	4,700
Herring	AYK Herring[e]	10	1.0	$259,700	8.6	9.1	$1.000	1,000
Grand Total		43	20.0	$1,927,000	--	--	$8.493	5,700

The Kuskokwim Bay Salmon Fishery

Until the current fiscal year the Department has had the financial resources to only provide sporadic and sometimes imprecise fisheries management to this remote portion of western Alaska. When this newly funded program becomes fully implemented within the next two years the following will occur:

(1) A professional fisheries biologist will be stationed in Kuskokwim Bay during the fishery, spending time at both Goodnews Bay, and Quinhagak to monitor catches and effort, and to provide assistance to the fishermen and processor/buyer in those communities.

(2) A sonar salmon counter in the main salmon producing stream in the Quinhagak district; the Kanektok River. This project, supervised by the permanent biologist for Kuskokwim Bay will provide accurate and timely escapement figures for this stream system.

(3) A counting tower on one fork of the Goodnews River, will provide an escapement index for this important stream.

Fisheries in both districts have been regulated in the past by scheduled weekly fishing periods unless extremely obvious trends in resource abundance were apparent. With the expanded program of escapement and fishery monitoring it should be possible to detect those trends much earlier and to greatly refine management capabilities beyond what has been previously possible.

The Kuskokwim River Salmon Fishery

Management employs both emergency order and scheduled fishing periods to regulate harvests in the lower Kuskokwim River where an intense drift gill net fishery occurs. Fleet capacity in the lower river district is capable of severely overharvesting salmon stocks passing upriver. Management is stiffly challenged to achieve optimum utilization while providing sufficient brood stock into tributary streams, especially since reliable in-season abundance estimates by species and stock are very difficult to obtain. Tributary escapement data, while important, are obtained after the major fishery has been completed, and are therefore of limited use in regulating in-season effort.

Management in this fishery unit relies upon gill net test fishing information and comparative catch and effort statistics as an indicator of abundance and timing. Long range forecasts have not been developed because of the lack of data by which to contruct them.

Better assessment of stock strength and timing will be needed to achieve fishery unit goals. This will be partially realized by new sonar devices capable of enumerating salmon in the main lower river, yielding an index of abundance that can be used from year to year. Run modelling to construct reliable estimates of current year run strength may be possible by using the prior year data base for predictions, based on current year test fishing and fishery statistics.

Several major new activities were first funded in this fishery unit during FY 81 and these new efforts need to be fully developed before further new projects are initiated such that an orderly evaluation of management ability occurs. Therefore, new project requests were not prepared for the 1982 fiscal year but will probably be prepared in the future.

The Yukon River Salmon Fishery

The Yukon area is divided into six management districts. The area management biologist stationed in Anchorage and his assistant stationed in St. Mary's are responsible for the lower three districts, below the confluence of the Bonasila River. The area management biologist stationed in Fairbanks is responsible for the upper three subdistricts. Fishing effort is restricted to gill net and fishwheel gear, and regulated by weekly fishing periods. Three research biologists stationed in Anchorage and Fairbanks monitor salmon escapements in important tributary spawning streams by aerial survey and sonar and tower counting projects. Run magnitude and timing are indexed by test fishing the Lower Yukon near Emmonak, and in the Upper Yukon at Kaltag and Ruby. King, chum and coho salmon are sampled both from the catches and spawning grounds throughout the drainage for age, sex and size data. Experimental studies are being conducted to test the feasibility of counting salmon with a fan scan sonar counter in the main Yukon River near Pilot Station, and to identify discrete king salmon stocks based on scale pattern analysis.

Program Needs Include:

(1) Maintain and expand escapement enumeration of tributary spawning stocks.

(2) Refine identification of discrete king and chum salmon stocks in the Yukon River to allow for management on a more stock-specific basis.

(3) Develop data files and computer programs to improve the efficiency and precision of the management program.

The Norton Sound Salmon Fishery

Salmon management in Norton Sound is directed toward all five species in the following order of importance: chum, pink, coho, king, and sockeye. Separated management districts exist in Norton Sound. The basic management regime is the scheduled fishing period, although the Moses Point fishery was regulated by emergency order in 1980 because of a chum salmon stock conservation problem.

An area biologist and an assistant stationed in Nome are responsible for the entire program in Norton Sound. Abundance during the season is primarily assessed by comparative catch per unit of effort statistics. Escapement information is gathered primarily by aerial survey, except in the Moses Point district where escapement counting towers are in place on the two major tributaries.

Scheduled fishing periods remain in effect until a stock conservation problem is detected from escapement monitoring or reduced catch per unit effort estimates.

Because of the large geographic extent of this fishery unit, and the lack of intensive monitoring in all the districts and major spawning streams, the largest need is for more timely catch and escapement data. This need is particularly felt in district 6, Unalakleet, where the major fishing effort occurs, but where the Department has only a seasonal fishery technician available to handle fish tickets, sample catches, and monitor the fishery.

Norton Sound, because of its location and size has not received sufficient funding support to adequately monitor escapements in its major producing salmon streams. Although new projects were not requested for FY 82, management capability will have to be enhanced during future budget cycles.

The Kotzebue Salmon Fishery

The Kotzebue fishery is managed by an area biologist stationed in Nome. The basic regulatory scheme consists of short weekly scheduled fishing periods in July, and longer (36-48 hours) periods in August. This affords some protection to the weaker and earlier Kobuk River stock in July and maximizes the harvest of Noatak River stocks. The entire harvest consists essentially of chum salmon. An effective and large set gillnet fishery (about 180 boats in 1979 and 1980) uses outboard skiffs and 150 fathom gillnets to capture the chum salmon in Hotam Inlet.

Run assessment and timing is currently estimated by using: (1) comparative catch and catch per unit of effort statistics; (2) Noatak River sonar enumeration and test fishing; (3) aerial escapement surveys of the Kobuk River, its tributaries, and the Noatak River; (4) long range forecasting (still in the development stage), which may become more useful after several years of refinement. Intensive monitoring is required during the season to compile current year commercial statistics, and for post-season subsistence catch compilation.

The major challenge for management in the fishery unit is to separately manage and protect the weaker Kobuk River component of the run, while allowing harvest of the nine abundant Noatak stocks. This challenge will become more severe if the proposed Noatak hatchery successfully produces a major chum salmon run. Development of improved fishery management and monitoring techniques will be necessary in the future.

Table 15. Westward Region Fishery Units

Component	Fishery Unit Name	Number of Projects	Number of PFT Employees	Operational Budget Request[a]	Recent Commercial Harvest[b]	Short-Term Harvest Objective[c]	Commercial Harvest Value in Millions of $s[d]	Estimated Number of Fishermen[e]
Salmon	Kodiak	7	1.5	$284,400	19,158.4	8,551.0	$16.50	2,000
	Chignik	7	2.0	209,400	2,303.3	1,781.0	8.00	450
	S. Penin.	6	1.0	120,600	12,878.4	3,252.0	6.20	500
	Aleutians	4	0	20,600	2,626.0	308.0	0.44	75
	N. Penin.	6	1.0	145,700	2,539.1	686.0	2.30	500
	Reg.Admin.	1	2.4	147,700	-	-	-	-
Total Component		31	7.9	$928,400	39,505.2	14,578.0	$33.44	3,525[e]
Shrimp	Kodiak	3	2.7	$149,400	33.47	30.00	$ 8.70	300
	Chignik	4	1.8	275,400	48.92	26.00	7.54	300
	Aleutians	2	0.5	25,600	3.80	2.00	0.58	10
Crab	Kodiak	4	3.5	450,700	41.51	40.50	30.54	1,900
	Chignik	3	1.0	128,800	15.06	16.50	10.78	650
	Aleutians	3	0.5	183,700	11.63	19.00	15.49	500
	Bering Sea	3	2.0	268,700	128.80	167.00	93.75	1,600
	Reg. Admin.	3	15.0	774,900	-	-	-	-
Total Component		25	27.0	$2,257,200	283.19	301.00	$167.38	5,260[e]
Herring Westward Reg.		5	2.1	$330,000	7.07	10.0	$3.50	750[e]
Groundfish West. Reg.		6	3.0	$282,800	8.35	44.0	$7.04	184
Grand Total		67	40.0	$3,798,400	-	-	$211.36	9,719[e]

a/ FY 82 CIP request totals $451,300.
b/ Salmon data are in millions of salmon harvested in 1980; shellfish data are 1975-1979 average harvests listed in millions of pounds; herring and groundfish data are in millions of pounds harvested in 1980.
c/ Based on average survival conditions, current level of funding and present management technology.
d/ Based on value determined by using 1980 average price by species and short-term harvest objectives.
e/ Some fishermen may fish within more than one fishery unit and hence the total and component estimates may actually be overestimated.

The Kodiak Salmon Fishery

The Kodiak management area includes the Kodiak-Afognak group of islands as well as the south side of the Alaska Peninsula from Cape Douglas to Kilokak Rocks. The Kodiak area is characterized by a rugged coastline with numerous bays and capes. There are approximately 300 salmon streams within the nine districts. The center of activity is the City of Kodiak where nine salmon processors are located. A few small villages are located on the islands. Six canneries operate in the outlying areas.

All five species of salmon are harvested in the Kodiak area, with pink salmon being the most important. Ranges of catches within the last ten years are as

follows: Kings, 529-3,228; sockeye, 135,418-1,071,782; cohos, 3,573-140,226; pinks, 511,708-17,290,488; and chums, 84,431-1,541,227.

The 1980 pink salmon catch was the highest ever recorded. Recent chum and coho catches have also been very good. The sockeye runs have steadily been rebuilding in terms of escapement, catches are remaining at favorable levels, and most stocks are considered to be in good shape.

The fisheries are managed with the aid of weir counts, catch analysis, commercial catch reports, forecasts, and aerial surveys. Sockeye escapements need to continue to build in the long-term in those systems where production is below optimum. Tagging will continue as this building process goes on. It will provide necessary information on the degree of interception or exploitation by various fisheries. A long-term need for the chum and coho salmon fishery is to improve surveys and escapement counts and to initiate chum salmon forecasts. For pink salmon the long-term strategy will be to maintain the runs at current high levels using the same management strategy as in recent years.

The Chignik Salmon Fishery

The Chignik management area extends from Kilokak Rocks to Kupreanof Point on the south side of the Alaska Peninsula. The Chignik area is characterized by a rugged coastline with numerous bays and capes. There are approximately 80 salmon streams within the five districts. The center of activity is within the Chignik Bay district where three villages, two processing plants and a fish camp are located. Chignik River supports by far the largest and most important run of salmon in the area.

All five species of salmon are taken in the Chignik area, with sockeye being the most important. Ranges of catch within the last ten years are as follows: Kings, 255-2,322; sockeye, 378,669-1,972,219; cohos, 12,245-119,484; pinks, 25,445-2,056,999; and chums, 8,701-353,952. The Chignik salmon stocks have produced well in the last five years after recovering from low production in 1972-1975. The 1980 catch level was above average on all species except sockeye.

Annual construction and maintenance of the 400 ft. pile driven Chignik River weir requires a major logistical effort. Weir counts, catch analysis and commercial salmon catches are some of the major tools used in regulating the fisheries which key on the two runs of sockeye salmon in the Chignik River system. Methods of separating magnitude of fish in Chignik Lagoon are needed to more accurately manage this fishery as well as that at Cape Igvak where Chignik bound sockeye are intercepted. Aerial surveys and catch analysis continue to be the major sources of information used for in-season management decisions of the fisheries in the outside districts.

Better management and increased sockeye production are expected from improvements in run forecasting and the development of analysis methods for more accurate separation of the two distinct sockeye runs into the Chignik River system. This will provide the ability to achieve more exact escapements to the different spawning segments. Long-term objectives for the pink and chum fisheries are to improve forecasting accuracy and to provide better protection of the resource from the standpoint of law enforcement.

The South Peninsula Salmon Fishery

The South Alaska Peninsula management unit includes the Alaskan waters from Kupreanof Point to Unimak Pass including the offshore islands. The South Alaska Peninsula area is characterized by a rugged coastline with many bays and capes. There are numerous salmon streams in the area. The fishing fleet operates primarily out of Sand Point, King Cove and False Pass. Salmon processors are located in each of these villages.

All five species of salmon are harvested on the South Peninsula. In June the fisheries occur mostly on migrant fish, primarily sockeye, and chum, whereas the July and August fisheries target on local pinks, chums, and cohos. Ranges of catches within the last ten years are as follows: Kings, 415-4,800; sockeye, 311-700-3,588,300; cohos, 200-272,300; pinks, 58,051-7,816,100; and chums, 71,834-1,365,957.

All the local stocks of salmon on the South Peninsula appear to be in good condition having produced record or near record returns in the last three years. The fisheries are managed primarily with the aid of aerial surveys, commercial catch reports, forecasts and stock analysis. Day to day fishery management decisions are made with input from these projects as well as other information.

A long-term goal of this fishery unit is to continue to maintain the current high level of salmon production. Improved forecasting of returns for pink and chum salmon and increased coverage of late chum and coho escapements would provide needed data to increase harvest levels without substantially hurting the overall reproductive capacity of the stocks. Although the coho harvest has been strong for the past two years, this species is often not harvested at the maximum level due to the late timing of the return.

The Aleutian Island Salmon Fishery

The Aleutian Islands management unit includes the waters of the Aleutian Islands from Unimak Pass west to Attu. The Aleutian Islands area is characterized by a rugged coastline with many bays and capes. Some of the larger islands have several good salmon streams, but little has been done in terms of surveying and cataloging many of these streams. Some salmon processing is done at Unalaska, however most of the catch is exported to the South Peninsula.

Since statehood all salmon cathces for the area have come from Unalaska Island. All five species of salmon have been reported in the area, however, most of the salmon caught are pink salmon with sockeye being second most important. Ranges of catches within the last ten years are as follows: Kings, 0; sockeye, 100-12,200; cohos 1-100; pinks, 2,800-2,611,900; chums, 100-4,900.

The stocks of pink salmon on Unalaska Island are currently in excellent condition have produced a record return in 1980. Very little information is available on salmon stocks west of Unalaska Island.

The salmon fisheries of the Aleutian Islands have been managed with the aid of aerial surveys which are limited due to funding and logistics. Commercial catch data also is an important tool for management of these fisheries.

The long-term goal is to continue to maintain the high pink salmon production to increase and stabilize this production as well as that of other species through additional surveillance and monitoring. It is hoped that additional funding will become available so that work can be expanded beyond Unalaska Island and that the potential salmon production of many islands to the west will be realized.

The Kodiak Shrimp Fishery

The Kodiak Area shrimp fishery began in 1958 when 2.9 million pounds of shrimp were harvested and the fishery continued to develop until a peak harvest of over 82 million pounds occurred in 1971. Commercial shrimp fishing gear has included smaller beam trawlers as well as larger single and double rigged otter trawlers. Efficient trawl gear has in some instances resulted in overharvest leading to depressed stock conditions.

A series of regulating measures have been implemented over the last few years to better protect the reproductive potential of the stock. In 1972, harvest quotas were established limiting the total yearly harvest. In 1973, a complete egg hatch closure for the district was established, thus creating a biological fishing season of May 1 through February 28.

In 1979, the Alaska Board of Fisheries approved the Department's overall management plan to respond to the continuing severe decline of shrimp stocks within the Kodiak District. This new regulatory program or approach considered stock status criteria in various fishing sections. The current shrimp stock condition and abundance was determined by comparison with a historic "representative level index" (after initial exploitation). Subsequently, each section was determined as stable depressed (40 - 100 percent of representative level), or severely depressed (less than 40 percent of representative level). After these initial evaluations were determined seasons were adjusted or fine tuned for depressed stocks to take fuller advantage of existing reproductive potential. Subsequent fishing exploitation rates were based on several factors including growth rates, age of shrimp at sexual maturity, and biomass. Major portions of the Kodiak district (Kiliuda Bay, Two-Headed Island, Inner Marmot Bay, Marmot Island, Uyak Bay, and Uganik Bay) remained closed for the entire 1979-1980 season due to their severely depressed status. In other sections (Alitak Bay, Chiniak Bay, Kukuk Bay, Olga Bay, and Uyak Bay) a season of June 1 - September 30 was established to maximize protection of females while they were ovigerous, mating, extruding eggs, and heavily schooled. Remaining fishing seasons in sections (West Afognak, North Afognak, Wide Bay, and Puale Bay) was from June 1 - February 28. Guideline harvest levels were established and fisheries were managed within these guidelines.

Three major needs exist relative to developing and maintaining a definitive management strategy for Kodiak shrimp success. First is the continuation of the existing abundance estimates obtained by trawl surveys accomplished by Department vessels or chartered vessels. The trawl survey program needs additional funding to assess stocks recently found by the fishing fleet such as the Alitak Flats

area which produced 10,000,000 pounds in 1980. Secondly, accurate definition is needed of those areas inhabited by discrete shrimp stocks. Third, the ability to accurately assess species composition and age of shrimp in a timely fashion needs to be developed and more fully utilized for day-to-day management decisions.

The Chignik and South Peninsula Shrimp Fisheries

The Chignik and South Peninsula shrimp fisheries has produced some of the largest shrimp harvests in the State. The Chignik District encompasses all waters west of Kilokak Rocks to Kupreanof Point and the South Peninsula District includes all waters west of Kupreanof Point to Cape Sarichef. The Chignik District is further subdivided into seven subdistricts and the South Peninsula District has eight subdistricts.

The origin of the Alaska Peninsula shrimp fishery dates back to the 1967-1968 season when 900,000 pounds were landed. Seasonal catches escalated rapidly from 5.3 million pounds landed during the 1968-69 season to 71.6 million pounds landed during the 1977-78 season. Catches from the South Peninsula have dropped from 45.0 million pounds harvested in 1977-78 to 3.1 million pounds during the 1979-80 season, and in 1980-81 the fishery was closed. Chignik District catches have also decreased from 25 million pounds per year during the late 1970's to only 12.8 million pounds during the last season.

Season catches, vessel effort, and processing capacity remained fairly stable from the 1968-69 season through the 1971-72 season. During this period a single processor in the Shumagin Islands, with five peelers, took deliveries from three vessels. Alaska Peninsula shrimp fishing expanded rapidly as a result of increased processing capability in the area and harvest limits placed on the Kodiak area. Between two and five processors operated up to fifty-six peelers in a single year during the past six years.

The highest recorded harvest for the area came in 1977-78 when 26.4 million pounds and 4.5 million pounds were taken from Chignik and South Peninsula respectively. Most of this product was processed in Kodiak.

During April 1978, the Alaska Board of Fisheries adopted a shrimp management policy concerning depressed shrimp stocks as recommended by the Department. The Department staff documented that certain shrimp sections had shown an historic decline in abundance and the staff recommended that these stocks were in need of greater protection. All historic production areas have a two month egg hatch closure. In addition, depressed stocks were further restricted by a closure during the entire mating and egg bearing period. Starting with the 1979-80 season, certain Chignik and South Peninsula sections were designated as being opened only by emergency order. Stepovak Bay, Unga Straits, and Beaver Bay were placed in this classification during the 1979 Board of Fisheries meeting. Prior to the opening of the 1979 season, Ivanof Bay was added to this group.

The trend of increasingly depressed stocks of shrimp in the South Peninsula District shows up in the decreasing length of seasons. South Peninsula's 1979-80 season lasted only three months compared to ten months in the 1977-78 season.

The most urgen need of the Chignik-South Peninsula shrimp fishery unit program

is to expand the present level of trawl surveys. The survey program has never recovered since NMFS withdrew their funds from the survey program, and inadequate surveys are still being made because of funding level. The present management strategy requires increasing accurate and timely abundance estimates and although an increase in funding level is requested for FY 82, additional increases will be required in FY 83.

The Aleutians Shrimp Fishery

The Aleutians shrimp fishery began in the early 1970's. By 1978, the shrimp harvest totaled 6.6 million pounds. Unalaska Bay, Makushin Bay, Uguf Bay, and Beaver Inlet support developed fisheries at this time. The Unalaska Bay stock is considered to be depressed. Lack of available funds have prevented the Department from conducting a annual population assessment, therefore management has been primarily dependent upon catch statistics. Because knowledge of the strength of these shrimp populations is so deficient, a new project proposal is being prepared for submission as part of the FY 83 budget submission.

The Kodiak Crab Fishery

The Kodiak crab fishery unit program is comprised of the Division of Commercial Fisheries resource and fishery monitoring and regulation program for king, Tanner, and Dungeness crab stocks of the Kodiak area. The Kodiak king crab fishery began in the late 1940's and throughout the 1950's approximately 5.2 million pounds of king crab were harvested annually by salmon purse seine type vessels in bays and nearshore areas. Since 1960, the fishery has changed to a pot fishery and has expanded rapidly growing to a historic high harvest of approximately 95 million pounds during the 1965-66 fishing season. Continued increase in vessels, effort and gear efficiency coupled with declines in stock abundance during the late 1960's and early 1970's resulted in lowered harvests, with a low commercial catch of 10.9 million pounds occurring during the 1971-72 fishing season. More recently, successive years of good recruitment produced catches of approximately 24 million pounds in the 1974-75 and 1975-76 seasons. Lowered stock abundance during the period 1976-78 caused a reduction in the seasonal harvests. However, an increase in recruitment observed recently has reversed this downward trend resulting in an upswing in the commercial harvest during the most recent season.

The Tanner crab fishery has been in existence since 1967. Through the 1971-72 fishing season, harvest was less than 10 million pounds. As king crab abundance declined in the late 1960's and early 1970's markets opened up, prices increased, and more vessels participated in the fishery.

By the 1972-73 season, Tanner crab had established itself as the dominate winter and spring shellfishery. During the 1973-74 and 1974-75 seasons a harvest level of 30 million pounds was set by the Alaska Board of Fish and Game as a conservation measure, based on the Department's best biological information. The low catch of 13.6 million pounds caught during the 1974-75 season was a result of a prolonged strike. Recent harvests range from 15 to 35 million pounds.

The Kodiak Dungeness crab fishery began in 1962 with a catch of 1.9 million pounds. As a result of favorable market conditions and unexploited stocks, commercial harvest increased and peaked in the four year period from 1967 through 1970 with an average annual harvest of 6.3 million pounds. During the early 1970's the fishery declined due to biological and environmental factors accompanied sometimes by adverse marketing conditions. In recent seasons, weak markets and other more lucrative alternative fisheries have kept the Dungeness production at a low level.

The Kodiak king crab resource and fishery monitoring program has been in existence in some form since statehood beginning with life history studies in the early years to the present multi-age class management strategy. The program consists of two major components which are fishery monitoring and population assessment. The fishery is managed under the concept of discrete stocks. Maximum harvest allowed within each catch district is based on abundance estimates gathered from population assessment cruises. The present funding level is adequate for the king crab management program if vessel charter rates do not increase substantially in FY 82. The major program need at this time is to better assemble the historic data base for further analysis and publishing.

Tanner crab resource and fishery monitoring is similar to the above outlined program for king crab. A Tanner crab tag release/recovery program has been developing each year during the crab stock assessment charter. During the 1979 July charter, 1,339 Tanner crab were tagged and during the 1979-80 season, 337 of these tags were recovered (25 percent). This is the highest percentage of Tanner crab tags returned during a season since the program was initiated and it has allowed the staff to better analyze exploitation rates. In addition to the pot index program, an exploratory trawl survey is being initiated to assess Tanner crab abundance. An initial feasibility test provided results which were very encouraging and continuation and expansion of this abundance estimate is of high priority and is possible due to an FY 82 CIP budget request.

Dungeness crab are managed with catch statistics derived from the fishery monitoring project. Expanded program needs for an improved regulatory regime for the Kodiak Dungeness crab stocks would be expensive and are presently not warranted given the level of resource utilization compared to king or Tanner crab fishing.

The Chignik-South Peninsula Crab Fishery

The Chignik-South Peninsula crab fishery unit area includes all waters bounded by a line extending south from Cape Kumlik on the east and a line extending south from Scotch Cap light on Unimak Island on the west to the 200 fathom depth contour. The area includes three districts used for king crab management (Unimak Bight, Central and Chignik) and two subdistricts for management of Tanner crab (South Peninsula and Chignik).

King crab fishing began in the Chignik-South Peninsula area in 1947 when 141,000 pounds of crab were landed. Trawl gear was used extensively between 1941 and 1961 when it was finally prohibited. The Chignik-South Peninsula's harvest peaked in 1966 at 22.5 million pounds. Thirteen million pounds of this record catch came from the newly exploited Unimak Bight and Davidson Bank areas. Prior

to 1966 most of the catch came from Pavlof, Stepovak, and Balboa bays.

During the 1970's 60-90 percent of the South Peninsula king crab harvest came from the Central District. Unimak Bight has produced little more than 1.5 million pounds in any of the last nine years. Chignik District has been characterized by small catches of primarily post-recruit king crab. King crab abundance estimates are obtained by using pot index surveys in the area from Scotch Cap to Kupreanof Point. Where population abundance estimates are available they have proven quite reliable.

Tanner crab fishing in the South Peninsula District began in 1967 when 5,000 pounds were landed. Catches gradually increased until the 1973-74 season when 13.7 million pounds were harvested district wide. Since the 1973-74 season the district harvest has fluctuated between 8.8 and 18.1 million pounds. During the past five years South Peninsula district catches have fluctuated between 5.2 and 1.2 million pounds while the Chignik subdistrict catches have fluctuated between 3.6 and 6.9 million pounds.

Currently population abundance estimates are obtained for the South Peninsula Tanner crab stocks on an annual basis. These estimates are used to set preseason guideline harvest levels. Fishery performance is monitored and compared with estimates which ultimately result in management decisions on the appropriate level of allowable harvest. No population abundance estimates exist for the Chignik District which is managed by comparing fishery performance to the historical data base. The Department is initiating stock assessment efforts in the Chignik District using trawls begining in July of 1981 with CIP funding. At this time, no urgent priority needs exist for improvement or expansion of budget level for any aspect of the Chignik-South Peninsula crab program.

The Aleutians Crab Fishery

The Aleutians king crab fishery unit includes both Dutch Harbor and Adak. The Dutch Harbor area contains fuve fishing districts along the Eastern Aleutian Islands between Scotch Cap and 170° W. longitude. A king crab fishery began in the Dutch Harbor area during 1961 and the fishery was fully developed by the 1966-67 season, when 32.9 million pounds of king crab were taken. Fishing effort began to reach significant proportions during the 1964-65 season, and continued to increase through 1966-67. After peaking in 1966-67 the Dutch Harbor catches declined until 1969-70. Catch and effort were stabilized during the early 1970's by inception of a quota system. Since 1973-74 the fishery has again sustained increased harvests. The Adak area king crab fishery initially developed during the same time frame that the Dutch Harbot fishery was developing although recent harvests have been substantially less than harvests made during the late 1960's and early 1970's. Tanner crab fisheries in both the Adak and Dutch Harbor areas are insignificant in comparison to king crab fisheries.

Standard crab fishery management techniques are employed in both areas. Population estimates of crab in the Dutch Harbor area are made available when funds are available. Population abundance estimates for the Adak area have not been done since 1978 because of funding limitations. The Dutch Harbor area should probably be sampled at least every other year to monitor changes in population

abundance.

The North Alaska Peninsula Salmon Fishery

The North Alaska Peninsula management unit includes all waters of Alaska on the north side of the Alaska Peninsula from Cape Menshikof to Unimak Pass. The North Alaska Peninsula has a relatively straight coastling facing the Bering Sea and is indented by few bays. There are approximately fifty salmon streams in this management unit. The fisheries are primarily operated out of the villages of Port Moller, Nelson Lagoon and Port Heiden. A processing plant is located at Port Moller, but much of the catch is exported out of the management unit and processed in the South Peninsula management unit.

Very few pink salmon enter streams on the North Peninsula. In June, king salmon are taken with emphasis of the fleet changes and the fleet targets on chums and sockeye with coho catches increasing in August. Ranges of catches within the last ten years are as follows: Kings, 1,792-16,900. Sockeye, 172,112-1,975,100. Cohos, 8,222-127,000. Pinks, 50-485,300. Chums, 8,770-698,800.

All the local stocks of salmon on the North Peninsula appear to be in very good condition at this time having produced record or near record runs in recent years. The fisheries are managed with the aid of aerial surveys, commercial catch reports, tower counts and stock analysis. Day to day management decisions are made with information from these projects.

A major long-term goal is to continue to maintain the current high level of salmon production. Improved and increased coverage of late chum and coho escapements will provide needed information to allow the Department to manage less conservatively and hence increase the harvest of these species. The coho harvest level, although favorable in the last few years, can be potentially larger.

The Bering Sea Crab Fishery

The Bering Sea king crab area, statistical area "Q" includes waters of the Bering and Chukchi Seas north of Cape Sarichef and east of the U.S. - Russian Convention Line of 1867. The area is separated into three fishing districts; Southeastern, Pribilof and Northern. Commercial king crab fishing in the Bering Sea began with the Japanese in 1930. The Japanese left the fishery in 1940, returned in 1953, and remained until 1974. A Russian king crab fleet operated in the eastern Bering Sea from 1959 through 1971. U.S. fishermen entered the Bering Sea king crab fishery with trawl gear in 1947. Effort and catch declined in the 1950's, and there was no catch at all in 1959. A period of fluctuating, low catches followed through 1966 before expanding to the current full scale pot fishery.

The Bering Sea fishery has traditionally taken red king crab from Bering Sea and Bristol Bay waters north of Unimak Island and the Alaska Peninsula from Cape Sarichef to Port Heiden. However, in 1973 a fishery began for blue king crab in the Pribilof Islands, and in 1977 fisheries began for red king crab in Norton Sound and blue king crab near St. Matthew and St. Lawrence Islands.

Responsibility for development of a management regime that regulates both king and Tanner crab of the Bering Sea is shared by the Department, the Board of Fisheries, and NMFS. The Department recommends regulatory changes, monitors the fishery and issues closure announcements. NMFS provides population estimates using the Area Swept Technique while the Department has initiated pot surveys in some areas of the Bering Sea. This data is utilized by the Department to set pre-season guidelines.

Currently funds are adequate to monitor the 20 landbased processors taking crab from the Bering Sea, but no funding is available to monitor catch on floating processors also fishing the area. The Department is dependent upon NMFS for trawl survey population assessments. Presently if NMFS cuts this program, as was the case for their Gulf of Alaska shrimp stock assessment program, replacement funding would have to be found for the present management strategy to continue.

The Westward Herring Fishery

The herring roe, bait, and food fisheries as well as other forage fish fisheries are currently in a state of expansion and development throughout the nearshore waters of Kodiak and the Alaska Peninsula. Historically, large quantities of herring were harvested primarily for food and reduction in both the Kodiak and Unalaska areas. Substantial herring catches have been made incidental to shrimp trawling in the fall both along the Alaska Peninsula and near Kodiak.

The increasing demand for herring for bait and food prompted a trawl fishery to develop during the spring of 1978. Although this fishery developed during a time when the herring did carry roe, it was basically a bait and food fishery.

In 1978 a total of 29 seiners, 11 gill-netters and two trawlers harvested 904 tons of herring between March and October. This harvest was entirely from the Kodiak area. Only incidental herring trawl catches were made along the Alaska Peninsula west of Kodiak. Total value to the fishermen was approximately $323,000 for the roe herring and $80,000 for the bait and food herring.

During 1978 one beach seiner, 58 seiners and 114 gill-netters participated in the Kodiak fishery. Prior to 1978, no gill net gear had participated in the fishery. Expressed in percent, the effort on Kodiak roe herring stocks has increased 427% since 1978 and 1500% since 1977. The average roe season effort prior to 1978 was 13 seiners. The total value to Kodiak fishermen in 1979 was approximately $2,500,000.

The roe fishery is presently limited by a guideline harvest level of 2,400 tons. The food and bait fishery is expected to expand drastically not only as a target species, but also incidental to developing bottomfish fisheries. Other forage species are also expected to be exploited along with development of the bottomfish fisheries.

In order to manage fisheries targeting on these stocks it is necessary to have information regarding individual stock size, migration patterns, age structure, mortality rates and spawning areas. Until better information is available, the fisheries will continue to be managed on the basis of limited historic catch

data and "conservative" guideline harvest levels. Consequently, the major need of this fishery unit is to develop a useable data base concerning both fishery performance and resource abundance such that the management regime can be improved and provide fishermen the opportunity to achieve optimal utilization of herring stocks. Implementation of the FY 82 budget request will provide the fiscal needs for the Division to build this needed data base.

The Westward Groundfish Fishery

The Westward Region groundfish unit was created in 1976 with general fund monies. In 1977 additional money from the North Pacific Fishery Management Council was used to develop an observer program aboard U.S. trawlers to obtain fisheries data and estimate the impact on prohibited species such as crab and halibut. Until 1980 the Westward Region conducted this observer program on a statewide basis. As part of the State's bottomfish development program, the Region's management and research unit budget was increased in FY 81 through a capital budget appropriation.

Besides the catch reporting and direct management functions of the program the observer program retains the highest priority and remains the program's major function. With the large expansion of the groundfish fishery in the Bering Sea the importance of the observer project becomes more critical with increasing chances of over-exploitation of the target species and impact on prohibited species. Because a major portion of the catch is taken in the joint venture fishery (U.S. fishermen/foreign processors) and delivered to foreign processors, a logbook project is being initiated which will document catch rates and area of catch for this fishery and for the shore-based fleet. The logbook and observer programs will provide the major portion of required management data from the domestic fishery. Additionally several small resource assessment surveys will be conducted on the Kodiak area groundfish stocks to determine stock status. Major offshore assessment surveys will continue to be done by the National Marine Fisheries Service.

Data from the observer and logbook projects are reported to both the Alaska Board of Fisheries and the North Pacific Fishery Management Council.

In order to optimally manage the groundfish resource the observer and logbook programs must expand in proportion to the expansion of the fishery. Additional resource assessment surveys such as hydroacoustic surveys of pollock in Shelikof Strait and trawl surveys of cod near Akutan will also be needed as the fisheries intensify and management becomes necessary.

THE ROLES OF GOVERNMENTAL, SEMI-GOVERNMENTAL, AND PRIVATE AGENCIES AND ORGANIZATIONS IN COASTAL FISHERIES

INTRODUCTION

A principal objective of the CFAP study is to identify agencies and organizations which are affected by or have responsibilities regarding coastal fisheries. The following presentation begins with a review of land use and fisheries planning efforts being conducted within the State. This review is followed by three inventories which catalog State, Federal and nongovernmental agencies and organizations respectively. Each inventory describes the organizations' responsibilities or concern with fisheries resources and its enabling legislation. This document will serve as the basis for examinations of weaknesses in existing programs during the second phase of the study.

RESOURCE PLANNING IN ALASKA

A number of the organizations listed in the following inventories are conducting formal planning programs. An understanding of these programs will contribute to the final evaluation of the need for a comprehensive fisheries planning element within the ACMP. Although the products of these planning efforts vary they usually result in a formal document which states long range goals and objectives and specific regulations, strategies, or programs for achieving these ends. The following discussion groups planning efforts into four categories: land use planning, fisheries management planning, fisheries development planning, and aquaculture planning.

Land Use Planning

No mention of DEC/OCM role

A number of State and Federal agencies, in addition to the ACMP, are developing land use plans which are essential to the protection of fisheries habitat. At the State level the Department of Natural Resources (DNR) has a major land use planning program underway. Land use plans have been completed for the Haines-Skagway area and initiated for the Susitna area, Tanana drainage, and North Slope. In the completed plan, management zones are established within 200 feet of major salmon spawning streams. Timber cutting practices within these zones are to be determined on a case by case basis by the State Forester after consulting with the Department of Fish and Game. The Department of Fish and Game is initiating a regional planning program within Native Regional Corporation boundaries which will result in fish, wildife and habitat management plans for these areas.

At the Federal level, every agency with land management responsibilities has prepared some type of management plan. Additional planning documents will need to be prepared as a result of the Alaska National Interest Lands Conservation Act (ANILCA). The Forest Service prepares ten year management plans for the lands under their jurisdiction. The most important feature of these plans is the designation of specific areas for different levels of development and guidelines for habitat protection in the areas where development is greatest. The National Park Service develops plans for each park service unit. Statements about fisheries management in these plans tend to be broad and lacking in specific management objectives. The Fish and Wildlife Service must prepare comprehensive conservation plans which specify programs

for conserving fisheries for all National Wildlife Refuges.

The ANILCA requires the creation of a Land-Use Council, co-chaired by the Governor and a Federal appointee, consisting of the several State agency heads and the Alaska regional directors for several Federal offices. A primary function of the Council will be to coordinate land use planning. The bill also mandates the development of a cooperative State/Federal plan for the Bristol Bay region.

Fisheries Management Planning

Fisheries Management Planning is occuring at State and Federal levels. The State's primary planning effort with regards to fisheries management is carried out within the Commercial Fisheries Division as part of its budget process. Program summaries for all major fisheries managed by the Department of Fish and Game include long range goals and specific management objectives. These summaries also identify the major problems in each fishery. This planning effort differs from the others described thus far since the budget documents are used primarily for internal purposes. The materials presented in the first section of this report were excerpted from this document.

In addition to the budgeting process noted above there have been other instances of management planning. First, in 1976 a draft Statewide Salmon Plan was produced by the Department which reviewed the history and current status of the salmon fisheries by region and species and established midrange and long range harvest goals in each case. Second, Comprehensive Salmon Plans are being produced for each region as mandated by aquaculture legislation passed recently by the Legislature. These plans include goals and objectives for managing natural stocks and increasing productivity via hatcheries and other enhancement efforts. Third, the Commercial Fisheries Division is currently preparing a Stock Status Report which reviews in detail the biological health of all major fisheries, management practices, and their effectiveness, and management problems. The final document will most likely be published for distribution to the public. Finally, the Board of Fisheries with help from the Department prepared a salmon management plan for the Copper River Salmon Fisheries. This document established total escapement goals, specific harvest levels for the subsistence, fishery, openings and closing dates, and a mechanism for allocating the resource among subsistence, recreation, and commercial users which could be adjusted depending upon the size of the returning runs for a given year. Formal planning documents, such as the Copper River Salmon Management Plan, have not been produced regularly by the Board, but are likely to become more common as a result of the need for better documentation of the rationale for Board actions which has been created by the Subsistence Law and through interaction with the North Pacific Fishery Management Council (NPFMC).

Federal fisheries management planning is conducted by the NPFMC and is described in Chapter Four. Fishery management plans have been approved or are pending approval for five fisheries off the Coast of Alaska.

Fisheries Development Planning

Development of domestic fisheries for underutilized species and those currently

being harvested by foreign fleets has been the focus of State and Federal development programs. The State Bottomfish Program prepared a twenty year development plan which establishes development goals and outlines programs for resource and environmental protection, development of support infrastructure, information and technology transfer, and the promotion of Alaskan enterprise. The bottomfish program also funded the preparation of a long range plan for curriculum development by the University of Alaska and a comprehensive port study by the Department of Transportation and Public Facilities.

The majority of Federal development funding is passed through to the non-profit Alaska Fisheries Development Foundation (AFDF). The Foundation has submitted a regional development plan for the past three years. The format for the plan has changed each time and is presently being revised. A fisheries development plan for Western Alaska fisheries (principally those fished by Alaskan Natives) is being developed in conjunction with the AFDF plan.

Aquaculture Planning

Aquaculture planning is presently being conducted on a statewide basis by the Fisheries Rehabilitation Enhancement and Development Division of the Department of Fish and Game and on a regional basis by Regional Planning Teams which are composed of commercial fishermen and representatives from the Department of Fish and Game. These plans establish over all management and enhancement goals for each species of salmon and establish broad guidelines for the siting of enhancement facilities within the region. A draft plan for the Southeast Region has been completed. Plans for other regions are at various stages of completion.

The second phase of this study will examine the extent to which the planning programs from the four categories are coordinated with one another, means of improving these plannings processes, and the need for and feasibility of establishing a comprehensive fisheries planning component within the ACMP.

INVENTORY OF STATE AGENCIES

A. Office of the Governor

1. Special Assistant on Natural Resources - Provides guidance on State policy regarding fisheries and other natural resource issues.

2. Division of Budget and Management - Analyses budget proposals for fishery related departments and programs.

3. Division of Policy Development and Planning

a. Policy and Program Specialist for Fisheries

1. Responsibilities

a. Monitors compliance of fisheries development projects with program policies.

b. Develops options for regional planning process in Aleutian Islands.

b. Office of Coastal Management

1. Oversees the development of coastal management plans by local governments. These plans identify sites which are used for subsistence, recreation or commercial fishing, important habitat, or suitable for fisheries related facilities.

2. Coordinates State review of Federal permitting processes which regulate activities which may impact fisheries habitat.

4. Alaska Fisheries Council - The Council is composed of the Commissioners of Fish and Game and Commerce and Economic Development; State legislators; the Director of FRED Division (Department of Fish and Game); representatives from the National Marine Fisheries Service, the Board of Fisheries and the Office of the Governor; and private citizens. The Council played an active role in developing the State's private non-profit hatchery program and presently monitors the progress of fisheries enhancement and development programs. The special Projects Coordinator, Office of the Governor, coordinates the Council and for this reason the Council is described here.

B. Department of Commerce and Economic Development

1. Commercial Fisheries Development Division

a. Lead agency for fisheries development, coordinates programs in other agencies which deal with development. The State's Tokyo and Copenhagen offices previously under the Office of International Fisheries and External Affairs will be directed by this division.

b. Present and planned programs include:

1. Mustad autoline production trial

2. Prince William Sound jigging system trial (with Alaska Fisheries Development Foundation)

3. Marketing of food herring (with Danish consultant)

4. Production and marketing of herring (with Alaska Federation of Natives)

5. Marine Advisory System (with Bering Straits Fishermen's Association)

6. Quality control for Bristol Bay sockeye (with IMAKPIAK Regional Aquaculture Association)

7. Bottomfish profiles - review of stock information by species to help fishermen locate large concentrations of bottomfish.

2. Division of Business Loans

a. Commercial Fishing Loan Program - Up to $50,000 may be loaned at 9.5% for the construction, purchase, or renovation of fishing vessels.

b. Fisheries Enhancement Loan Program - Up to $6,000,000 to regional associations and $1,000,000 for other nonprofit hatchery corporations, at 9.5% for 30 years for hatchery preconstruction and and construction activities and operating costs.

3. Commercial Fisheries and Agriculture Bank (CFAB) - Makes loans to commercial fishermen and farmers. The Bank has been established as a public corporation with a legal existence independent of the State. It is, by statute, also an instrument of the Department of Commerce and Economic Development and for this reason is listed here.

C. Department of Community and Regional Affairs

1. Commissioner's Office - Rural Development Council -

a. Composed of 3 commissioners, 3 federal officials, 2 legislators, the Director of DPDP, and 6 representatives from rural areas.

b. Responsibilities. Newly formed, it is not yet clear what role the Council will play in fisheries.

2. Division of Community Planning

a. Assists communities in planning for infrastructure needs resulting from development. Administers Coastal Energy Impact Program (CEID) which provides funding for studies which determine the effects of energy development.

b. Recent and current programs include:

1. an evaluation of 5 communities as potential sites for support facilities for the bottomfish industry. Evaluation of 5 more communities is underway.

2. funding planners in Unalaska, Sand Point, King Cove, and Yakutat.

3. funding wildlife evaluations and salmon tagging program.

D. Department of Education, Adult and Continuing Education Unit - Development and coordination of fisheries education programs (not including the University of Alaska), talent bank of technical specialists, and educational materials.

E. Department of Environmental Conservation

1. Coordinates State's environmental management efforts. Establishes water quality standards and reviews and certifies development projects which may impact salmon spawning streams.

2. Meat and Seafood Inspection Program - Inspects quality of seafood produced in Alaska. Products which are contaminated are confiscated.

F. Alaska Board of Fisheries - The seven member Board of Fisheries is appointed by the Governor to establish seasonal fishing regulations. The Board's activities are coordinated by a staff located within the Department of Fish and Game.

G. Department of Fish and Game

1. Commercial Fisheries Division

a. Implements and maintains the State's commercial and subsistence management programs.

b. Conducts management related research covering domestic fisheries with particular emphasis on stock status and fishery performance.

c. Serves as scientific staff to the Board of Fisheries which establishes fisheries regulations.

d. Coordinates interaction between the State and the North Pacific Fishery Management Council.

2. Fisheries Rehabilitation Enhancement and Development

a. Develops, maintains and coordinates State plan for present and long range rehabilitation.

b. Operates State hatchery facilities and other enhancement projects such as fish ladders, lake fertilization and stocking and stream clearances.

c. Conducts research on fish culture technology, genetics and pathology.

3. Sports Fish Division

   a. Manages and develops sport fish resource.

   b. Stocks fish in freshwater systems.

   c. Conducts harvest, life history, and land use studies.

4. Habitat Section

   a. Responsible for the protection, maintenance and improvement of fish and wildlife, habitat.

   b. Regulates by permit process activities in anadromous streams, game refuges and critical habitats. Reviews and monitors projects associated with pipeline and Haul Road.

   c. Participates in land use planning and coastal management program.

   d. Solicits nominations for critical habitat areas.

5. Subsistence Section

   a. Compiles existing data and conducts studies on the role of subsistence activities in lives of State residents.

   b. Provides information and anlysis to the public, agencies, and other organizations.

   c. Assists the Department and Boards of Fisheries and Game in classifying subsistence users, uses, and methods of harvest.

6. Public Communication Section

   a. Issues news releases and prepares public service announcements.

   b. Publishes Fish Tails and Game Trails, the Department's magazine.

7. Commercial Fisheries Entry Commission (The Commission is grouped with ADF&G for administrative purposes, but functions autonomously). Responsible for determining optimum gear levels for sustaining economic viability of the State's fisheries.

   a. Application Section - Evaluates initial permit applications.

   b. Permit Section - Permit renewal and vessel licensing.

   c. Data Processing Section

   d. Research and Planning Section - Last year helped develop limited entry program for hand troll fishery. This year will review capitalization trends and classification by fishery, gear type, and resident/nonresident status.

8. Alaska King Crab Marketing and Quality Control Board (The Board is grouped with Fish and Game for administrative purposes, but functions autonomously) - Promotes king crab through marketing and quality control programs.

H. Department of Labor

1. Commissioner's office - Responsible for mediating price disputes when asked by industry to participate. The Bristol Bay strike was the only dispute they were brought into formally this year.

2. Wage and Hour Division - Responsible for bonding of fish buyers and processors to ensure that they will pay employees and fishermen. A $10,000 bond must be posted by all buyers and processors.

3. Employment Security Division, Employment Services - Administers program for placing Alaskan residents in processing jobs. Focus is on identifying problems with hiring residents and rural recruitment.

4. Research and Analysis

   a. Conducted survey on the intent of fishermen and processors to participate in bottomfish fisheries.

   b. Conducted survey of fisheries education programs.

   c. Plans to develop employment statistics to aid in policy analysis and decision making.

I. Department of Law - Provides legal council to the State on fisheries related issues. One AG will be stationed in Washington D.C., with NOAA General Council to provide a liason with the State on fisheries issues.

J. Department of Natural Resources

1. Division of Forest, Land, and Water Management

   a. Classifies State lands, sale of State lands, mineral resources, sand, gravel and timber.

   b. Develops land use plans which include designation of fish and wildlife habitats (plans for two areas have been completed).

2. Division of Parks - Responsible for park management. Conducting a comprehensive outdoor recreational plan which will include assessment of the importance of sports fisheries to the State's park system.

K. Department of Public Safety, Division of Fish and Wildlife Protection - Enforces fish and game, entry commission, and some environmental regulations.

L. Department of Revenue

1. Administers fish taxation programs.

2. Alaska Renewable Resources Corporation - Serves as a venture capital bank to finance development of the State's renewable resources. Over $18 million have currently been invested in various fisheries projects. ARRC operates independently from the Department of Revenue, but is associated with the Department for administrative purposes.

M. University of Alaska

1. College of Environmental Sciences, Sea Grant - Conducts programs in education, research and public service dealing with marine science, fisheries harvesting and processing, and food technology. Long term plans include upgrading bachelor's and creating a masters degree program in fisheries and developing a fisheries technology center.

2. Marine Advisory Program - Serves as a communication link between scientific, educational and marine industrial communities. Has provided technical assistance and training to aquaculture industry, harvestors and processors.

INVENTORY OF FEDERAL AGENCIES

A. Department of Agriculture

1. Forest Service, Wildlife and Fisheries Habitat Management Unit.

a. Enabling Legislation

1. Creative Act 1891
2. Weeks Law Act 1911
3. Multiple Use-Sustained Yield Act 1960
4. Wilderness Act 1964
5. Land and Water Conservation Fund Act 1964
6. Endangered Species Act 1973
7. Forest and Range Land Renewable Resources Planning Act 1974
8. Sikes Act 1974
9. National Forest Management Act 1976
10. Federal Land Policy and Management Act 1976

b. Responsibilities

1. Manages fisheries habitat on National Forest Lands.
2. Develops ten year management plans and guidelines for land use on National Forest Land.

B. Department of Commerce

1. Economic Development Administration

a. Enabling legislation - Public Works and Economic Development Act of 1965.

b. Responsibilities - established to help generate employment opportunities in areas with high unemployment or low family incomes.

c. Programs

1. Business Development Assistance

a. Direct loans and loan guarantees to finance costs of fixed assests and to provide working capital.

b. Has been used for financing processing facilities and aquaculture facilities.

2. Technical Assistance - Jointly funded with the National Marine Fisheries Service a comprehensive strategic plan for fisheries development in Alaska.

3. Grants for Public Works and Development Facilities

a. Provides grants and loans for acquiring and developing land and improvements for public works.

b. Has been used in developing processing facilities, docks, and water systems .

4. A requirement of the enabling legislation was that Economic Development plans be prepared and updated annually for areas receiving aid. Plans have been prepared for thirty one Alaskan communities.

2. National Oceanic and Atmospheric Administration (NOAA)

a. National Marine Fisheries Service

1. Enabling legislation

a. Marine Mammal Protection Act of 1972, PL 92-522
b. Endangered Species Act of 1973, PL 93-205
c. Commercial Fishries Research and Development Act, PL 88-309
d. Anadromous Fish Conservation Act, PL 89-304
e. Fisheries Conservation and Management Act

2. Programs

a. Law Enforcement

1. Provides information on foreign fisheries between three and 200 miles of the Alaskan Coast.

2. Enforces regulations promulgated by the Secretary of Commerce.

b. Marine Mammals and Endangered Species

1. implements and enforces provisions of Marine Mammal Protection and Endangered Species Acts.

c. Fisheries Management Operations

1. Implements, evaluates, and updates fishery management plans developed by the NPFMC.

2. Provides information to and participates in NPFMC plan development team.

3. Administers grant-in-aid programs which provide for cooperative studies for conservation and enhancement of anadromous fisheries.

d. Environmental Assessment

1. Monitors developments which may alter habitat associated with marine resources.

2. Reviews federal permits for the Corps of Engineers, EPA, Coast Guard, and BLM.

3. Prepares resource assessments and identifies potential resource use conflicts and critical habitats in oil and gas lease sales.

e. Fisheries Development

1. Administers fishery development grants to industry.

2. Provides information on fisheries financial support services (Fishing Vessel and Gear Damage Fund, Vessel Construction Subsidies, and the Fisheries Loan Fund.

3. Provides marketing information.

f. Northwest and Alaska Fisheries Center

1. Conducts resource surveys and aquaculture research.

2. Monitors and studies the catch composition of foreign fishing fleets beyond three miles.

3. Biologists participate on plan development teams and the Scientific and Statistical Committee of the NPFMC.

OCZM?

3. North Pacific Fishery Management Council (NPFMC)

a. Enabling Legislation - Fisheries Conservation and Management Act of 1976.

b. Responsibilities - formulates fishery management plans for fisheries from three to 200 miles seaward of Alaska. These plans are subject to approval by the Secretary of the Department of Commerce.

(Note - The NPFMC is a quasi-governmental agency composed of State and Federal officials and private citizens. The Council is however, administered through the Department of Commerce and for this reason is included here.)

C. Department of Defense

1. Army Corps of Engineers

a. Enabling Legislation

1. River and Harbor Act
2. Federal Water Pollution Control Act of 1972
3. Clean Water Act of 1977

b. Responsibilities - Administers permit programs specified in Section 10 of the River and Harbor Act and Section 404 of the Federal Water Pollution Control Act. These permits regulate development within navigable waters, wetlands and other sensitive aquatic habitats.

D. Department of Interior

1. Fish and Wildlife Service

a. Identifies endangered species and places them on the Secretary of the Interior's official lists.

b. Evaluates effects of pollutions on fish populations and studies major resource development programs for their impact on fish populations.

c. Manages and prepares conservation plans for National Wildlife Refuges.

d. Reviews permit applications required by the Rivers and Harbors Act and Clean Water Act.

e. Represents the Fish and Wildlife Service on the North Pacific Fishery Management Council.

2. National Park Service

a. Responsibilities

1. Manages fisheries resources within National Parks, has recently recommended that commercial fishing be phased out within National Parks.

2. Develops Natural Resource Management Plans for each unit of the National Park System, including those created by the Alaska National Interest Lands Act of 1980 (ANILCA)

3. Heritage Conservation and Recreation Service

a. Responsibilities

1. Administers Land and Water Conservation Fund (matching grants to States for acquisition and development of public recreation are and facilities).

2. Development of Nationwide Outdoor Recreation Plan.

3. Bureau of Indian Affairs

a. Fisheries Management Program

1. Manages trap, gillnet, and purse seine fisheries within the Annette Island Reserve.

2. Operates area hatchery.

3. Conducts fisheries development feasibility studies.

b. Subsistence Program

1. Serves as advocate of subsistence users.

2. Plans to conduct a village by village assessment of subsistence practices, uses and needs.

4. Bureau of Land Management

a. Enabling Legislation

1. Federal Land Management Policy Act of 1976, PL 94-579

2. Sikes Act

b. Resource Division, Fisheries Biologist

1. Prepares general and site specific habitat management plans for BLM lands.

2. Coordinates aquaculture programs on BLM lands.

5. Subsistence Regional Advisory Councils.

a. Enabling Legislation - Alaska National Interest Lands Conservation Act 1980

b. Responsibilities

1. Reviews and evaluates proposed regulations, policies, management plans, and other matters relating to subsistence uses.

2. Prepares annual report to the Secretary of Interior which identifies current and subsistence uses and needs of fish and wildlife populations and recommends strategies for management.

(Note - the Advisory Council are composed of residents from the six Alaska subsistence regions defined by the Act; these councils are discussed here since they are administered by the Department of Interior.)

6. Alaska Land Use Council

a. Enabling legislation - Alaska National Interest Lands Conservation Act 1980.

b. Responsibilities - The Alaska Land Use Council will serve as a coordinating mechanism for land and resource planning and use within the State.

(Note - This Council is an intergovernmental body, co-chaired by the Governor of Alaska and a Presidential appointee, which consists of the agency heads from State and Federal natural resource and transportation agencies and representatives from Native Corporations.

The Council is described here because of its role in implementing ANILCA which is administered primarily by the Department of Interior.)

E. Department of State

1. Enabling legislation and International conventions

a. International Convention for High Seas Fisheries of the North Pacific Ocean, 1952.

b. Convention for the Protection, Preservation and Extension of the Sockeye Salmon Fishery of the Frazer River System, 1937.

c. Convention for the Preservation of the Halibut Fisheries of the Northern Pacific Ocean and Bering Sea, 1925.

d. Fishery Conservation and Management Act 1976.

2. Responsibilities

a. Serves on the North Pacific Fishery Management Council as a non-voting member.

b. Allocates foreign fisheries quotas among foreign fishing nations.

c. Administers United States participation in three International Commissions which are involved in North Pacific Fisheries. The roles of these commissions are discussed below.

1. International Pacific Halibut Commission (IPHC) - Established by the United States and Canada to regulate the halibut fishery off the coasts of Washington, Alaska, and Canada.

2. International North Pacific Fisheries Commission (INPFC) - Established by the United States, Canada, and Japan to coordinate fisheries research and to manage fisheries in the North Pacific. The enabling treaty was renegotiated in 1976 and the INPFC present management role is confined to the Japanese salmon fishery which occurs beyond the 200 mile limit.

3. International Salmon Commission - In the process of being established by the United States and Canada to coordinate management and allocate transboundary salmon stocks.

F. Department of Transportation

1. Coast Guard

a. Enabling Legislation

1. Coast Guard Act of 1949
2. Fisheries Conservation and Management Act of 1976

b. Responsibilities

1. Enforces fisheries regulations on foreign and domestic vessels in the Fishery Conservation Zone.

G. Environmental Protection Agency

1. Enabling Legislation

a. Federal Water Pollution Control Act
b. Clean Water Act of 1977
c. National Environmental Policy Act

2. Responsibilities

a. General pollution control and abatement through monitoring, research, and regulations.

b. Prepared the guidelines for 404 permit review, included protection of shellfish beds.

c. Regulates the discharge of processing wastes.

PRIVATE INSTITUTIONS [1/]

Institution	Active In The Following			
	(1) Rehabilitation of existing salmon runs	(2) Enhancement of salmon runs	(3) Advocacy activities	(4) Other related activities
Alaska Aquaculture Foundation, Inc. P.O. Box 1288 Wrangell, Alaska 99929 Tod Jones 907/874-2013	X	X		X
Alaska Chapter Sierra Club P.O. Box 2025 Anchorage, Alaska 99510 Jim Barnett 907/265-0432 or 907/349-1720			X	
Alaska Conservation Society P.O. Box 80192 College Branch Fairbanks, Alaska 99708 Mr. Ed Murphy, President 907/452-2240				X
Alaska Federation of Natives 1675 C. Street Anchorage, Alaska 99501 Byron Mallott 907/586-1512			X	X
Alaska Independent Fishermen's Marketing Association 6333 Sugar Maple Street Olympia, Washington 98503				X

1/ Source for Private Institution Section is An Analysis of Selected Elements of the Alaska Salmon Resource Development Program, Miller and Associates, December 1979.

Institution	Active In The Following			
	(1) Rehabilitation of existing salmon runs	(2) Enhancement of salmon runs	(3) Advocacy activities	(4) Other related activities
Alaska Trollers Association P.O. Box 825 Ketchikan, Alaska 99901 Sharon Newsome			X	
Alaska Wildlife Federation and Sportsmen's Council 1700 Glacier Avenue Juneau, Alaska 99801	X	X	X	X
Aleutian/Pribilof Island Association 1689 C. Street Anchorage, Alaska 99501 James D. Milne, Phd., Director Fisheries Program 907/276-2700			X	X
Association of Village Council Presidents P.O. Box 219 Bethel, Alaska 99559 Carl Jack, John Malone, Harold Sparcks	X	X		
Bristol Bay Native Association P.O. Box 237 Dillingham, Alaska 99576 Ted Angasan, Executive Director 907/842-5258	X			

Institution	Active In The Following			
	(1) Rehabilitation of existing salmon runs	(2) Enhancement of salmon runs	(3) Advocacy activities	(4) Other related activities
Bristol Bay Native Association P.O. Box 179 Dillingham, Alaska 99576 Andrew Golia 907/842-5257/5258	X	X	X	X
Burro Creek Farms P.O. Box 8324 Ketchikan, Alaska 99901 Eugene Richards Home 907/225-2405 Bus. 225-9696	X			
Central Council of Tlingit and Haida Indains of Alaska Division of Fisheries and Natural Resources One Sealaska Plaza, Suite 200 Juneau, Alaska 99803 Dr. Nayudu 907/586-1432		X		
Cook Inlet Aquaculture Association P.O. Box 850 Soldotna, Alaska 99669 Floyd Heimbuch 907/262-4441 Ex 257	X	X		X
Cook Inlet Native Association 1057 West Fireweed Lane Anchorage, Alaska 99503 Jake Lestenkof, Executive Director			X	

Institution	Active In The Following			
	(1) Rehabilitation of existing salmon runs	(2) Enhancement of salmon runs	(3) Advocacy activities	(4) Other related activities
Copper River Native Association Drawer H. Copper Center, Alaska 99573 Tom Craig, Executive Director 907/822-3949			X	
Cordova District Fisheries Union P.O. Box 939 Cordova, Alaska 99574 Bob Blake 907/424-3447 or 7473	X	X	X	X
Douglas Island Pink & Chum, Inc. RR 4, Box 4754 Juneau, Alaska 99803 Ladd Macaulay 907/789-9443	X			
Fairbanks Environmental Center 431 Steese Highway Fairbanks, Alaska 99701 John Adams, Executive Director 907/452-5021			X	X
Fish Fry, Inc. Southeast Gillnet Federation 583 Basin Road Juneau, Alaska 99801 Jev Shelton 907/586-2242	X	X		

Institution	Active In The Following			
	(1) Rehabilitation of existing salmon runs	(2) Enhancement of salmon runs	(3) Advocacy activities	(4) Other related activities
Haida Corporation Box 91 Hydaburg, Alaska 99929				X
Halibut Producers Cooperative P.O. Box 1235 Bellingham, Washington 98225 206/733-0120				X
Huna Totem Corporation Box 290 Hoonah, Alaska 99829 John Hinchman, Jr., President 907/945-3330		X		X
Hungwitchim Corporation Eagle, Alaska 99738			X	X
Ingalik, Inc. Anvik, Alaska 99558 907/462-8001				X

Institution	Active In The Following (1) Rehabilitation of existing salmon runs	(2) Enhancement of salmon runs	(3) Advocacy activities	(4) Other related activities
Izaak Walton League 336 East 23rd Avenue Anchorage, Alaska 99503 907/279-1923			X	X
Juneau Audubon Society P.O. Box 1725 Juneau, Alaska 99801	X	X	X	X
Juneau Group of the Sierra Club Route 6, P.O. Box 3552 Juneau, Alaska 99803 Dr. Clifford Lobaugh, Chairman				X
Kake City Schools Kake, Alaska 99830 Chuck Larson 907/785-3741				X
Kake Nonprofit Fishery Development Corporation P.O. Box 263 Kake, Alaska [illegible] Clarence [illegible] 907/785-3221				

Institution	Active In The Following			
	(1) Rehabilitation of existing salmon runs	(2) Enhancement of salmon runs	(3) Advocacy activities	(4) Other related activities
Kenai Peninsula Fishermen's Cooperative Association Rt. 2, P.O. Box 752 Soldotna, Alaska 99669	X	X		X
Klawock Heenya Corporation P.O. Box 25 Klawock, Alaska 99925			X	
Kodiak Area Native Association P.O. Box 172 Kodiak, Alaska 99615 Bill Osborne			X	X
Kuitsarak, Inc. Goodnews Bay, Alaska 99620				X
Mauneluk Association P.O. Box 256 Kotzebue, Alaska 99752 Bob Knoll, EDA Planner 907/442-3311			X	X

Institution	Active In The Following			
	(1) Rehabilitation of existing salmon runs	(2) Enhancement of salmon runs	(3) Advocacy activities	(4) Other related activities
Meyers Chuck Aquaculture Association P.O. Box 15 Meyers Chuck, Alaska 99903 Robert Meyer	X			
National Park Service 540 West 5th Avenue Anchorage, Alaska 99501 Ross C. Kavanagh 907/271-4215				X
Nerka, Inc. P.O. Box 80165 College, Alaska 99708 Dr. Jack Van Hyning 907/479-2476		X		X
Nondalton Native Corporation Nondalton, Alaska 99640		X		
Northern Southeast Regional Aquaculture Association P.O. Box 786 Sitka, Alaska 99835 Dr. Derek Poon 907/747-6850		X	X	X

Institution	Active In The Following (1) Rehabilitation of existing salmon runs	(2) Enhancement of salmon runs	(3) Advocacy activities	(4) Other related activities
Nunam Kitlutsisti P.O. Box 267 Bethel, Alaska 99559 907/543-2956			X	
Petersburg Gillnet Association P.O. Box 535 Petersburg, Alaska 99833 Alan Stein 907/772-3151			X	X
Pacific Seafood Processors Association 120 West First Street Juneau, Alaska 99801 Richard B. Lauber, Alaska Manager 907/586-6366	X	X	X	
Prince William Sound Aquaculture Association P.O. Box 1110 Cordova, Alaska 99574 907/424-7511	X	X	X	X

Institution	Active In The Following			
	(1) Rehabilitation of existing salmon runs	(2) Enhancement of salmon runs	(3) Advocacy activities	(4) Other related activities
Ruralcap P.O. Box 3-3908 Anchorage, Alaska 99501 Norman Cohen 907/279-2511			X	
Sand Point Aquaculture Association P.O. Box 132 Sand Point, Alaska 99661 Robert W. Barclay 907/383-3545			X	
Sealaska Corporation One Sealaska Plaza Juneau, Alaska 99801 907/586-1512			X	
Shee Atika, Inc. P.O. Box 578 Mt. Edgecumbe, Alaska 99835 907/747-3534	X	X	X	X
Sheldon Jackson College Aquaculture Program P.O. Box 479 Sitka, Alaska 99835 Mel Seifert	X	X		

Institution	Active In The Following			
	(1) Rehabilitation of existing salmon runs	(2) Enhancement of salmon runs	(3) Advocacy activities	(4) Other related activities
Sierra Club Legal Defense Fund 419 Sixth Street, Suite 321 Juneau, Alaska 99801 Stephan C. Volker, Esq. 907/586-2751			X	X
Southeast Alaska Conservation Council, Inc. P.O. Box 1692 Juneau, Alaska 99802 Leonard Steinberg			X	X
Southeast Alaska Seine Boat Owners & Operators 728 Water Street Ketchikan, Alaska 99901 Michelle Zerbetz 907/225-6618			X	X
Southern Southeast Regional Aquaculture Association 307 Mill Street, #5 Ketchikan, Alaska 99901 Ron Wendte	X	X		X
Stikine Gillnet Association P.O. Box 131 Wrangell, Alaska 99929 Bill Byford	X			

Institution	Active In The Following			
	(1) Rehabilitation of existing salmon runs	(2) Enhancement of salmon runs	(3) Advocacy activities	(4) Other related activities
Tanana Valley Sportsmen Club SR, Box 30202 Fairbanks, Alaska 99701 Joe Nava			X	
Tenana Chiefs Conference, Inc. First & Hall Fairbanks, Alaska 99701 Eddie Mayo or Henry Mitchell 907/452-8251 ext. 65	X	X	X	
Tongess Conservation Society P.O. Box 7282 Ketchikan, Alaska 99901 Peter Mjos 907/225-2275			X	X
Twin Creek Salmon Ranch, Inc. P.O. Box 90 Petersburg, Alaska 99833 Darline M. Clausen 907/772-3282		X		
United Fishermen of Alaska 197 South Franklin Juneau, Alaska 99801 907/586-2820			X	X

	Active In The Following			
	(1) Rehabilitation of existing salmon runs	(2) Enhancement of salmon runs	(3) Advocacy activities	(4) Other related activities
United Fishermen of Alaska 197 South Franklin Juneau, Alaska 99801 907/586-2820			X	X
United Southeastern Alaska Gillnetters Association 328 West 10th Juneau, Alaska 99801 Geron Bruce 907/586-3864	X	X	X	
Yugtuk Corporation P.O. Box 666 Bethel, Alaska 99550 Thad Tikiuw 907/543-2647				X

COASTAL FISHERIES IN STATE AND LOCAL COASTAL MANAGEMENT PLANS

INTRODUCTION

This section discusses the manner and extent to which fisheries resources and their utilization are addressed by the Coastal Management Program at the local, regional, and state levels. This discussion provides the foundation for the analyses of weaknesses in the current program and the possibilities for expanding the program's fisheries role during the second phase of the study. It is assumed that the reader is familiar with the Alaska Coastal Management Program and the process of coastal plan development. Background information on these subjects may be found in the series of guidebooks on the program produced by the Department of Community and Regional Affairs. The discussion is divided into an examination of seven local plans and brief review of planning at the regional and state levels.

FISHERIES PLANNING AT THE LOCAL LEVEL

The focus of the Alaska Coastal Management Program is the development of coastal management plans by local communities (coastal districts). Table 11 summarizes the progress which has been made in developing district plans. The following discussion is based on an examination of the plans from the following coastal districts which were either complete or in advance draft form as of November 1980: Annette Island, Anchorage, Haines, Cordova, the Kenai Borough, Yakutat, and Skagway. The last four plans are still subject to change and are included to provide a broader base for discussion.

The fisheries planning role played by district plans is to a large extent dictated by guidelines and standards established by the Coastal Policy Council for plan development. According to the guidelines, district plans must include ten elements. The following seven of these are discussed in this paper in terms of their relevance to fisheries planning: 1) a resource inventory; 2) a resource analysis; 3) a boundary definition; 4) a statement of community needs, objectives and goals; 5) a discussion of the uses which are subject to the Council's standards; 6) a discussion of proper and improper uses; and 7) land and water use policy statements. The Council's standards will be described during the discussion of the fifth element listed above.

The standards and guidelines allow considerable flexibility in plan development. The following discussion examines each of the above plan elements using examples from specific plans to illustrate the range of applicatons of each element to fisheries issues. The discussion concludes with a summary statement of the fisheries planning role played by the district plans.

The Resource Inventory

The Alaska Coastal Management Act (ACMA) requires a resource inventory which describes the habitats covered by the habitat standards, the major land and water uses and activities in the area, land ownership and resource management responsibilities. The need for additional information and the emphasis to be placed on different aspects of the inventory are specified in the contracts between the Department of Community and Regional Affairs and the districts (or their consultants).

Table 11. PROJECTED DISTRICT COASTAL MANAGEMENT PROGRAM MILESTONES 10/1/80 -- MINOR REVISIONS 12/19/80

Prepared by OCM in Cooperation with DCRA

DISTRICT	1980 1st	1980 2nd	1980 3rd	1980 4th	1981 1st	1981 2nd	1981 3rd	1981 4th	1982 1st	1982 2nd	1982 3rd	1982 4th	1983 1st	1983 2nd	1983 3rd	1983 4th	1984 1st	1984 2nd	1984 3rd	1984 4th
Aleutian CRSA(s)				A		B		1		2	3	4	5	6						
Anchorage, Municipality of	5	6			7,8															
Annette Island	5	6																		
Bering Straits CRSA		B					1			2			3		4	5	6			
Bethel, City of					1			2		3		4	5	6	7					
Bristol Bay Borough		1		2		3		4	5	6	7									
Bristol Bay CRSA			A		B				1			2		3	4	5	6			
Cordova, City of		3	4	5	6		7													
Craig /Klawock, Cities of				3	4	5,3a	4a	5a	6	7										
Dillingham, City of*																				
Haines, City of	5	6,7	8																	
Hoonah, City of							1		2		3	4	5	6	7					
Hydaburg, City of				1		2			3	4		5	6	7						
Juneau, City & Borough of				3	4	5			6	7										
Kake, City of		1			2		3	4	5	6	7									
Kenai Peninsula Borough	3						4	5	6		7									
Ketchikan Gateway Borough		2		3	4	5,3a	4a	5a	6	7										
King Cove, City of**																				
Kodiak Island Borough	1					2			3		4	5	6		7					
Matanuska- Susitna Borough							3	4	5	6		7								
Nana CRSA			1				2			3		4	5	6						
Nome, City of		1			2		3	4	5				6	7						
North Slope Borough		1				2		3		4		5	6	7						
Northern Southeast CRSA(s)	(UNCERTAIN)																			
Pelican, City of							1		2		3	4	5	6	7					
Petersburg, City of				1		2	3	4	5	6	7									
Pribilof Islands CRSA				A		B		1		2	3	4	5	6						
Prince William Sound CRSA(s)	(UNCERTAIN)																			
SandPoint, City of**																				
Sitka, City & Borough	2					3	4	5	6	7										
Skagway, City of		3	4	5	6	7														
Southern Southeast CRSA(s)	(UNCERTAIN)																			
Unalaska, City of**																				
Valdez, City of				2	3	4	5		6	7										
Wrangell, City of			1	2		3	4	5	6	7										
Yakutat, City of			2	3,4	5				6	7										
Yukon/ Kuskokwim CRSA		1				2					3	4	5				6			

* The City of Dillingham has tentatively indicated its desire to remain part of the Bristol Bay CRSA.

** Will probably be included in the Aleutians CRSA(s).

KEY:
A. Education
B. Organization
1. Program Development Grant
2. Issue Identification
3. Draft Program
4. Concept Approval
5. Council Action
6. Legislative Action
7. Local Adoption
8. Federal Action
a Amendment

In general, the inventories provide much detailed information about the local fisheries. For example, the Kenai Borough Plan uses data from the Department of Fish and Game, Commercial Fisheries Entry Commission, International Halibut Commission and Department of Labor to describe the commercial, sport and subsistence fisheries. The plan reviews the status of stocks, harvest trends, fishing effort and fishermen's income and describes in detail the area's processing sector. The other plans describe local harvesting and processing sectors also, although not in as great detail as the Kenai Plan. Maps are usually provided which identify anadromous fish streams and lakes, hatchery sites, distribution of marine fish and shellfish, and important harvest areas.

Most plans inventory their area's habitats using maps which identify the different types of habitat and narratives which give examples of the different categories. All of the plans discuss the relationship of fisheries resources to specific habitats, although to varying degrees.

The following excerpt illustrates one extreme, a very general description of habitat/resource dependency: "estuaries are highly productive and are extensively used by fish and shellfish as nursery grounds." More detail is provided in the following case since specific areas are identified: "there are important herring spawning areas at the offshore area at the head of Puget Cove!" And at the other extreme a quantitative appraisal is provided; as seen in this excerpt from the Annette Island plan's description of the area's eelgrass ecosystem. "Approximately 55% of the island's documented herring spawn was depasited on eelgrass." Another example of the quantitative approach is found where plans indicate annual returns to or the contribution to annual salmon harvest of specific river systems (see for example the Yakutat and Cordova Plans).

In general, the discussions of habitat-resource relationships contain a level of detail somewhere between the first and second examples. The level of detail of these discussion in this section of the plan may determine the usefulness of the resource inventory for planning purposes because later sections of the plan deal almost entirely with land use policies and planning. If the relationship is not established to a degree which enables the reader to evaluate the impact of these policies and regulations upon the resource than the extensive inventory of fishing activities has little value. For example, there is little value in knowing the annual harvest of salmon if the reader is unable to determine to what extent anticipated developments might alter that harvest level. The guidelines for plan development provide a vehicle for this type of assessment in the "Resource Analysis".

The Resource Analysis

The guidelines require the Resource Analysis to 1) assess potential changes in the demand and use patterns for the habitats and resources which were described in the inventory and 2) evaluate environmental capability and sensitivity of these resources and habitats for land and water uses. Although it is not stated it should be assumed that the environmental sensitivity evaluation should, to some extent, address the anticipated changes in demand and use patterns.

The plans generally assess changes in demand and use patterns for resources but fail to discuss these changes for habitats or adequately evaluate environmental capabilities to accommodate such changes. The analysis of changes in use patterns, the demand for habitats and environmental capability are examined below in greater detail.

Changes in Demand and Use Patterns for Resources

The plans provide a diverse range of information on use patterns and demand for fisheries resources. One of the seven plans makes no forecast of changes in the areas fishing industry. A second, notes the absence of commercial fishing in the area and discussess the growing demand for recreational fishing and the opportunity for meeting this demand through enhancement projects.

Four plans discuss allocation problems created by increased recreational demand, or introduction of new gear types or fishermen from other areas into a fishery upon which community residents rely. While these problems are beyond the scope of the district planning process, they indicate the kind of problems created by management of fish populations which concern coastal districts.

Some assessment of the likely expansion into new fisheries is provided in the plans which address fisheries. The effects of a possible expansion of the bottom-fish fishery are discussed by the Kenai, Cordova, Yakutat and Annette Island plans. These discussions generally summarize the results of studies conducted by the Department of Community and Regional Affairs and consultants hired by the communities themselves. Fisheries for other underdeveloped species such as clams, scallops and dungeness crab are also addressed by some plans.

It is difficult to determine how useful these discussions are for planning purposes. It was noted above that allocation problems are beyond the scope of the district plans so the discussions on these topics are not used for planning. There are limitations to the remaining information which are illustrated by the following two examples. The Yakutat plan concludes in its resource analysis that there is not likely to be further development of king crab or shrimp fisheries in the area. Shortly after the draft plan was circulated, development in both these fisheries had occurred and was of concern to the community.

The second example concerns planning for fisheries development within the Kenai Area. The plan discusses the possibilities of a domestic groundfish industry but does not forecast the bankruptcy of a major processor in the area. In both of these examples significant occurrences within the industry which directly effected the community were not addressed by the resource analysis. This shortcoming may be difficult to overcome since information from the private sector may be difficult to obtain.

Changes in Demand for and Use of Habitats

Only one plan assesses the changes in the demand for and use of different habitats and that assessment is limited to the observation that "continued residential, commercial and light industrial activity [adjacent to an estuary] should not cause any serious changes or demands on this habitat." The ommission of even such a limited evaluation in the other plans weakens them considerably.

In addition, this ommission is unnecessary in many cases. For example, one plan recommends in its introductory discussion that a tideland area be filled to permit expansion of processing operation. It would not have been difficult to discuss the desired fill and other likely demands for tidelands in the resource analysis.

Evaluation of Habitat and Resource Sensitivity

Three of the seven plans have no evaluation of the sensitivity of resources and habitats and their capacity to absorb changes in demand. One plan briefly discusses the sensitivity of the local fish stocks noting that herring are "particularly vulnerable to environmental changes"and have been subjected to "intense fishing pressure" in the area. With regards to salmon this plan states that there is not enough escapement data for local streams to determine whether or not the local fishery has a significant impact on local runs.

The three remaining plans provide limited discussions of habitat sensitivity . The first of the remaining plans for example discusses possible development problems in each habitat category. The following excerpt indicates the level of detail in these discussions: "Lake fronts and stream banks are attractive for and sensitive to residential and recreational development".

The second of the remaining plans does not discuss the sensitivity of specific habitat per se. The plan instead describes the methodology it uses for judging the compatability of specific uses with specific areas. One of the criteria for this judgement is the "vulnerability" of each area to different uses. The classification system which results from this methodology categorizes the following habitat as the most sensitive to change: selected freshwater wetlands, tidal creeks and falts, saltwater marshes and coastal habitats which are used for spawning and rearing.

The third plan contains a land and water classification system which is similar to the above. In addition this plan reviews fifteen major industrial development projects ranging from offshore oil exploration and coal development to fisheries processing facilities. Brief descriptions of the anticipated impacts in terms of jobs created, new construction required, demand on community facilities and services, and environmental risks are provided for each project. While this review was a good idea it does not provide much additional information on either the demands which these projects will place on specific habitat or the capacity of the environment to absorb these developments. By the time the reader is through with this presentation he knows little more than that these development will have some impact on habitat and that two proposed hydroelectric projects will effect salmon populations.

The absence of detailed habitat sensitivity information weakens the plans in two ways. First, the remaining sections lack support and there is no apparent justification for policies and land use designations. Second, the inventory is devalued since much of the information cannot be used. These weaknesses have been recognized and at least three projects have been undertaken to collect information to enable site specific coastal planning. These studies deal with the Kenai wetlands, Homer Spit area in Kachemak Bay, and the urbanized area in the Muncipality of Sitka.

Boundary Definition

Each plan must define the boundaries within which the plan will apply. The boundaries cannot be larger than the political boundaries of the district or municipality. Before the plan is approved by the Council the boundaries must conform with boundaries established by the Department of Fish and Game for each coastal area. Final boundaries may diverge provided that they are broad enough to manage uses and activities which influence coastal waters and include all transitional and intertidal areas, salt marshes, saltwater wetlands, islands and beaches.

In three of the plans the coastal management boundaries are the same as the political boundaries for that coastal district. The remaining plans adopt landward boundaries which are narrower than the initial boundaries established by the Department of Fish and Game. These narrower boundaries, however, include streams for anadromous fish and a 50-200 foot buffer zone around these streams. In all cases the seaward boundary is the broadest which is allowed. The justification for narrow boundaries is that they focus the program on the most cirtical areas in the coastal zone.

The process of defining coastal boundaries has certain implications in planning for fisheries. In the smaller districts such as Haines, Yakutat Skagway, and Cordova much of the commercial, subsistence, and recreational fishing as well as development activities which impact fisheries habitats occur beyond the planning boundaries. The Yakutat plan explicitly addresses this problem by adopting the broadest permitted planning boundaries and declaring the communities intent to use the ACMA's consistency clause, the coastal plan and specific policies to influence State and Federal timber and hydrocarbon lease sales.

Goals and Objectives

The guidelines for plan development require district plans to include a statement of the district's goals and objectives with regards to coastal management. All but one of the plans state goals and objectives which pertain to fisheries. These fisheries goals and objectives are usually quite general. The following list illustrates these more general goals and objectives:

1) to promote the sustained yield management of fisheries resources;

2) to resolve conflicts between fisheries and other resource utilization and development;

3) to balance conservation and development;

4) to encourage the development and diversification of processing facilities; and

5) to support subsistence, recreational, and commercial fishing in the area.

In some cases more specific objectives are stated. For example, the Skagway Plan specifies the intent to encourage tourism by developing their recreational fisheries. Yakutat Plan states the communities objective of having public lands management in the area give a priority to traditional uses and the conservation of

fish and wildlife. These examples are exceptional, however, and the level of generality in the statement of goals and objectives may limit their value in focusing the plans.

Subject Uses

The ACMA establishes standards for the following three uses and activities which are directly related to fishing: recreation, siting of facilities related to commercial fishing and seafood processing, and subsistence. The standards and guidelines require that district plans include descriptions of these uses and identify areas where they presently occur and locations which are suitable for expansion of these uses. While coastal districts must designate subsistence and recreation areas where no development or other disturbing activities may occur, they cannot directly control the harvesting of fisheries resources which occur in the coastal area.

The plans have almost uniformally satisfied these use standards by the descriptions in the resource inventory. In three cases no subsistence activity occurred within the planning boundaries. Most of the plans describe or map recreation areas. There is a great deal of interest in describing fisheries related facilities such as boat harbors and cold storage plants.

The remaining use standards deal with a range of development activities. These standards are intended to restrict development of non-water dependent activities in the coastal area and to minimize the environmental impact of all developments. For example the standard for timber harvesting requires that free passage and movement of fish be assured, and that other impacts on fish resources be minimized. Similarly, energy facilities must be sited to allow free passage and minimize spills that would affect fishing grounds.

Proper and Improper Uses and Use Policies

The guidelines for plan development require district plans to include a description of proper and improper uses for the coastal area and land and water use policies.

The Cordova, Kenai and Anchorage plans combine these elements by establishing land and water use classifications with policies which are applied to each category. For example, the Cordova plan defines fish spawning areas as a conservation area and specifies which uses are proper and improper for the conservation areas. The Skagway and Haines plans zone for commercial, industrial and residentail uses and specify proper and improper uses for particular areas.

The most noteworthy plan in terms of its approach to fisheries is the Yakutat Plan which adopts a broad regional policy that assigns first priority to conservation of fish and wildlife habitats. Under this policy the plan requires that detailed resource evaluations and timber management plan must be prepared before logging or hydrocarbon development may occur. As noted earlier the community hopes to use these regulations to influence timber and hydrocarbon sales beyond their planning boundaries.

While local districts are required to specify appropriate uses for the coastal area they may not arbitrarily or unreasonably restrict a number of activities which have been designated by the ACMA and the Policy Council as "Uses of State Concern".

These uses include uses of national interest such as the siting of ports, energy facilities, national defense installations and uses which influence an area greater than a single coastal district.

The following fisheries related activities in the coastal area have been defined as Uses of State Concern: the harvesting, management, and enhancement of fisheries resources; the conservation of anadromous fish waters; and uses in area established as State parks, recreational or critical habitat areas. The Department of Fish and Game reviews all plans to insure that these uses and activities are not restricted.

Areas Meriting Special Attention

District plans must recommend and propose management guidelines for areas which merit special attention (AMSAs). Six of the seven plans recommend AMSAs which are concerned with fisheries. In general these areas are designated for their habitat value or desirability as locations for fisheries related facilities such as processing operations and boat harbors. The Skagway Plan creates a recreational park in the area surrounding a put and take sport salmon fishery which is being established by the Department of Fish and Game.

The management guidelines in these areas may be very specific. For example, the Yakutat Plan establishes 300 feet buffer zones around Ophir Creek, an anadromous fish stream. The Annette Island Plan identifies two marine areas and their supporting watersheds within which logging, mining, and dredging are prohibited.

Summary of Local Level Fisheries Role

The district planning process plays a role in fisheries planning which is intentionally limited to habitat protection and the identification of areas which are suitable for facilities which support the fishing industry and areas which are important to subsistence, recreational, and commercial harvesting.

Individual plans may emphasize particular aspects of this fisheries role. The Haines, Kenai and Cordova plans use the plan primarily to encourage the development of processing and harbor facilities. The Anchorage Plan creates a classification system which may further protect anadromous fish waters. Skagway plans primarily for a recreational park which enhances a put and take sport fishery established by ADF&G. The Yakutat and Annette Island plans apply both the habitat protection and fisheries development tools provided by the standards and guidelines.

The preceding discussion has also noted some of the weaknesses in the plans as planning documents. These included the lack of continuity between plan elements and the inadequacy of the resource analysis in many cases. These and other weaknesses will be further analyzed in the second stage of this project.

FISHERIES PLANNING AT THE REGIONAL LEVEL

The ACMA directs the Coastal Policy Council to initiate an interagency regional planning program (Sec. 44.19.893 and 6 AAC 80.030); however, to date there has been no fisheries planning at the regional level under the Coastal Management Program. The discussion of weaknesses issues, and opportunities and final recommendations to the Coastal Policy Coundil (Tasks E and F) will analyze the fesibility and desirability of using the regional planning process to address fisheries habitat management, fisheries infrastructure development, and other uses of State

concern (Fisheries enhancement, management, and harvesting).

FISHERIES PLANNING AT THE STATE LEVEL

There is presently no statewide planning process for fisheries within the ACMP. However, the ACMP has established habitat standards and coordinates State review of Federal activities, permitting and licensing programs and therefore plays a fisheries role at the State level.

The program defines eight types of habitat which are subject to the ACMP. The following six are important to maintaining fisheries population: offshore areas; estuaries; wetlands and tideflats; exposed high energy coasts, rivers, streams, and lakes; and important uplands. Each standard is designed to maintain the natural processes associated with each area. For example, estuaries are to be managed so as to assure adequate water flow, nutrients and oxygen levels and avoid the destruction of important habitat, and the discharge of boxic substances. The standards increase the ability of the Department of Fish and Game to monitor and guide development in areas where they previously had little authority. For example, dredging or other alterations of herring spawning areas may now be prohibited since such actions violate the habitat standard for offshore areas.

The ACMP coordinates the State review of Federal activities in the coastal area; Federal permitting, leasing, and licensing programs for activities occurring in Coastal areas, and proposals for Federal assistance such as loan, grants or subsidies. Such coordination may be useful in protecting important fisheries habitat or expediting the approval of fisheries related facilities or activities such as the construction of processing facilities or small boat harbors.

What stds is review based on?

STATE AND FEDERAL FISHERIES MANAGEMENT AND REGULATORY SYSTEMS

INTRODUCTION

One objective of the Coastal Fisheries Assistance Program is to use the Coastal Management Program as a means of coordinating State and Federal fisheries management and regulatory processes. The purpose of this section is to briefly describe these State and Federal systems. The following discussion makes a distinction between regulatory and management agencies. The former promulgates the regulations for the harvesting sector, while the latter implements them. The discussion is divided into three main sections. First, the structure, process, and sources of information used in the regulatory and management systems are described. Second, sources of descriptive statistics on social and economic aspects of coastal fisheries are reviewed. Finally, the topic of the relationship of State and Federal Systems is introduced. This presentation is introductory in scope. Weaknesses in the present systems, opportunities for improvement, and the applicability of the ACMP to these problems will be discussed during the next phase of the study.

STATE REGULATORY AND MANAGEMENT SYSTEMS

There are two state systems for regulating and managing the harvesting sector of the fishing industry. The first system regulates harvesting activities and is responsible for the promulgation and implementation of all allocations, time-area closures, gear specifications, and harvest levels. This system consists of the Board of Fisheries, Department of Fish and Game, and sixty local advisory committees and is called the "Board System" for purposes of discussion. The second system, which consists of the Commercial Fisheries Entry Commission, regulates entry into the fishery and is responsible for determining the proper number of vessels for each fishery, establishing the criteria for allocating fishing permits among fishermen, and administering the permitting process. Although there is coordination between the Board and Commission, they are distinct systems and are discussed separately.

The Board System: Regulatory Structure, Process, and Information Sources

The Board of Fisheries is composed of seven unsalaried members appointed by the Governor and confirmed by the Legislature. The Board is responsible for determining the regulations for the fisheries within State jurisdiction (three miles) and for selected domestic fisheries beyond three miles. The Department of Fish and Game conducts stock assessment and other management related research. The Department serves as scientific staff to the Board. The Department is the primary agency responsible for implementing the Board's regulations. This management function will be described later in the discussion. There are sixty local advisory committees throughout the State. Any community may request that such a committee be established for their area. These committees propose regulations for the fisheries in their area and provide feedback to the Board on proposed regulations.

Two major meetings are held by the Board each year with the fall and spring meetings devoted respectively to formulating the regulations for finfish and shellfish. These meetings generally last from three to six weeks. Three months before each meeting proposals for regulations for the upcoming season are solicited from the general public, advisory committees, and the management staff from the Department. These proposals are distributed to interested parties before the meeting so that comments may be prepared.

Regulatory decisions are based upon the testimony presented during the meeting. The testimony of the Department constitutes the biological information upon which the decisions are based. This presentation usually includes a discussion of the past season's experience and the forecast of the stock abundance for the coming season. In the crab and herring fisheries, data provided to the Department by the National Marine Fisheries Service may also be considered. The public may also provide biological information.

Information on social and economic aspects of the fisheries is provided almost exclusively through public testimony. Advisory Committee representatives play a lead in providing this imput but everyone is permitted to testify. This method of providing information to the Board insures the maximum participation from those directly effected by the regulations but greatly lengthens the meetings. In general descriptive statistics or other systematic presentations of social and economic data are not used by the Board to formulate regulations.

An important exception to the above generalization exists with regards to subsistence. The Subsistence Law, which established subsistence fishing as a priority use of the resource, has created a demand for new categories of social and economic information. As a result of the law the Board must evaluate fishing patterns and determine whether they should be classified as "customary and traditional" and given priority. The following types of information are useful or necessary in making this determination: harvest areas, times, methods, species, stocks and levels of productivity and efficiency. Much of this information is obtained through public testimony, however the Department's Subsistence Section has initiated a program for systematically collecting social and economic data for the Board's use.

Following the testimony by the Department staff, Advisory Committees, and the general public, proposed regulations are discussed and voted upon by the Board in open session. Regulations for the coming season are established by the end of the meeting. The democratic nature, the accessibility and high visibility of the decision makers, and the ability for the industry to plan seasonal operations due to the certainty as to when regulations will be finalized are positive aspects of the Board system. The Board and the Department, however, are currently exploring means of shortening the Board meetings without losing vital local imput and establishing a clear record of the basis upon which decisions are made. These efforts will be examined further during the discussion of issues, weaknesses, and opportunities.

The Board System: Management Structure, Process and Sources of Information

The Commercial and Sport Fisheries Divisions of the Department of Fish and Game are responsible for implementing the Board's regulations. In-season monitoring of fisheries is conducted by field stations. Management biologists in these stations

and the Department's regional offices evaluate catch data collected from fishermen on fish tickets and observe the fishery to determine whether the stocks are as healthy as indicated by the preseason forecast and whether these stocks will sustain the rate of harvest for the duration of the season. The Commissioner of Fish and Game is authorized to change the opening or closing dates established by the Board if this in-season monitoring indicates that stock abundance, fishing pressure, or in the case of salmon fisheries, the timing of the return for spawning requires a shorter or longer season.

The Entry Commission System: Structure, Process, and Information Sources.

The Commercial Fisheries Entry Commission was established by the State Legislature in 1973.

The Entry Commission consists of three full time salaried Commissioners and a support staff. The Commission determines which fisheries need to be limited, establishes the maximum number of vessels allowed in a fishery and the criteria to be used in allocating permits for those fisheries.

The legislation which created the Commission specified several fisheries which were to be limited, as well as, the formula for setting the maximum number of vessels to be allowed in the fishery (the number of vessels was not to exceed the highest number of vessels which had fished during the four years before 1973). Additional fisheries have been limited, often at the recommendation of the Department of Fish and Game or the Board of Fisheries. In general, the Commission has used the same formula (highest number of vessels in the four preceding years) for determing the maximum number of vessels permitted in these fisheries.

The Commission relies on a number of sources for information. Extensive public hearings are held during the determination of permits to be granted for the fishery and the criteria for allocating those permits. Formal sources of data include the Department of Fish and Game records and the Processor's Annual Report and the NMFS "Fisheries Market News" which includes the market prices for different species. The Commission's research section has developed a file on the gross earnings for specific fisheries using the above sources.

FEDERAL REGULATORY SYSTEM: STRUCTURE, PROCESS AND INFORMATION SOURCES.

Since 1976 when the Fishery Conservation and Management Act was passed, the federal govenment has had the authority to manage fisheries between 3 and 200 miles. An interim and permanent regulatory processes were established by the Act. The interim process was created to establish regulations for the foreign fisheries during the period when the more lengthy permanent process was still deliberating. Presently the Bering Sea Herring and Bering Sea Groundfish fisheries are being managed under regulations formulated with the interim process. The following three fisheries are subject to regulations formulated by the permanent regulatory process: the Southeast Troll Salmon fishery, the Tanner Crab fishery and the Gulf of Alaska Groundfish fisheries.

A key player within the Federal system is the North Pacific Fishery Management Council (NPFMC). State officials from Washington, Oregon and Alaska fisheries agencies, the Alaska Regional Director of the NMFS, and seven members appointed by the Secretary of Commerce are voting members on the NPFMC. Of these seven,

five must be from the State of Alaska. Nonvoting members include representatives from the Pacific Marine Fisheries Commission, the State Department, the Coast Guard, and the United States Fish and Wildlife Service. The Council is responsible for proposing regulations in formal planning documents called Fisheries Management Plans. These plans must be approved by the Secretary of Commerce before the regulations become effective. The Secretary of Commerce has delegated the authority for plan review to the Assistant Administrator of NOAA for Fisheries who has authority for the National Marine Fisheries Service.

The plans are prepared by ad hoc Plan Development Teams whose members are appointed by the Council. These teams have generally consisted of biologists from the Department of Fish and Game and NMFS, and representatives from the the fishing industry, but have included biologists from the Washington Department of Fisheries and the International Pacific Halibut Commission in cases where this expertise was necessary.

Draft plans are reviewed by two standing committees of the Council, the Scientific and Statistical Committee (SSC) and the Advisory Panel (AP). The SSC is composed of biological and social scientists from the Alaska and Washington state fisheries agencies, NMFS, and the Universities of Alaska, Oregon, and Washington. The Act requires this body to review plans to insure that the "best available data" is used in formulating the regulations. The AP consists of experts from different sectors of the fishing industry. Panel members may serve on Plan Development Teams and are supposed to review proposed regulations and evaluate their impact on the industry. The process may seem linear, proceeding step wise from plan development under the team to plan review by the SSC and AP, approval by the Council and finally review and approval by NMFS and the Secretary of Commerce. In practice the process is much more iterative. The SSC and AP, and representatives of NMFS may be involved at any stage of plan development. In many cases the Secretary of Commerce may provide comments on a specific regulation which has been approved by the Council before the final plan has been submitted.

In general, biological data used in formulating regulations are obtained from the NMFS and the Department of Fish and Game. Additional sources of such data vary from fishery to fishery. The Alaska Troller's Association and the Washington Department of Fisheries provide input for the Southeast Troll Salmon Plan. The latter agency has been recently influential by providing information supporting a lower quota for chinook salmon in Southeast. In the foreign fisheries (Tanner crab and groundfish) data from the Fisheries Agency of Japan may be used. The International Pacific Halibut Commission provides data for the groundfish fisheries.

The FCMA and its implementing guidelines have increased the demand for information on social and economic aspects of the fisheries. The Act recognizes the validity of social and economic goals in fisheries management but requires the use of "the best available scientific information" in achieving these ends. In addition federal guidelines requires a regulatory analysis which assesses the impact of proposed regulations on the fishing industry and coastal communities.

Much of the required information is provided to the Council by industry experts on the AP and through public testimony. For example, AP experts from the halibut and domestic groundfish industry negotiated regulations between themselves which would minimize the incidental catch of halibut by groundfish fishermen without

completely closing the groundfish fishery. Public testimony on a proposed closure of the salmon troll fishery was influential in preventing the closure. During the hearing virtually the entire community of Pelican testified against the closure, claiming that this action would result in the closing of local processing facilities which provided the major source of employment for the community. In many cases this nonsystematic form of information is the only available information for decision making.

The Council and the NMFS, however, are trying to more systematically evaluate social and economic factors. Economists have been hired by these agencies to conduct in-house research. An example of this research and its influence on regulatory decision making is the recent Council paper which evaluated the structure for marketing Tanner crab and its effect upon the development of a domestic fishery for this species. The analysis concluded with recommendations to eliminate the Japanese fishery in order to increase demand for the domestic product. In addition to this in-house research the Council has obtained social and economic information by contracting with universities and consulting firms on an issue by issue, fishery by fishery basis. It should be noted that these studies do not all rely on descriptive statistics in their analyses.

Federal Management: Structure, Process, and Information Sources.

The NMFS is technically responsible for implementing federal regulations. However, the actual responsibility for in-season monitoring of the fishery may be assumed by the Department of Fish and Game. The National Marine Fisheries Service plays the lead role in monitoring the foreign fisheries. The principal source of information used in the management process is the catch data collected by NMFS observers which are stationed on foreign fishing vessels. The State plays the lead role in managing the troll salmon, herring, and domestic Tanner crab fisheries. Sources of information used for inseason management used by the State were discussed earlier.

SOURCES OF DESCRIPTIVE STATISTICS ON THE SOCIAL AND ECONOMIC ASPECTS OF COASTAL FISHERIES

The preceeding discussion described the increased demand for social and economic data and the sources of information which have been used in filling this demand. It was noted that this information has been provided usually either by public testimony or in discussion papers which had little statistical support. There are, however, some of sources of descriptive statistics which are used in the regulatory process. These sources are discussed below.

Data on Harvesting and Processing Sectors

The Department of Fish and Game, the Entry Commission and the United States Department of Commerce routinely collect economic data on the harvesting and processing sectors of the fishing industry.

The Department of Fish and Game produces a summary of annual catch and production statistics for the commercial fisheries. The catch data is compiled from the fish tickets completed by the fishermen for each sale of fish to a processor and include the 1) catch and value to the fishermen, by area, region and gear type and 2) fifteen-year comparative catch summaries which list the weight and value for each species of salmon and shellfish. The production statistics are produced from the Commercial Operator's Annual Reports which are submitted by the processors to the Department at the close of the season. These data include 1) the number of operating plants and employees for the year; 2) production figures and wholesale values for a variety of processed products (fresh, frozen, salted, pickled); 3) a ten-year summary of shellfish production and value by species and region; and 4) fifteen year comparisons of canned shellfish and canned salmon production and value by region.

The Entry Commission maintains a number of computer files which are used for analyzing fishermen's gross earnings. These files include gross earnings for individual vessels and permit holders, specific fisheries, gear types and regions, and categories of vessel sizes. Other files enable analysis of the residency of permit holders. Much of this information is confidential, but may be used in aggregated forms to protect privacy.

The Entry Commission, has completed a number of studies on specific fisheries using these files and material collected from field surveys. These include 1) summaries of cost and net return information for the Cook Inlet, Prince William Sound and Bristol Bay drift gill net fisheries; 2) a bioeconomic data base for Alaskan shellfish fisheries; 3) a description of income distribution from Alaska fisheries; and 4) participation in the commercial salmon fisheries of the Upper Yukon.

Data from the Entry Commission is used in economic studies conducted by or for the Legislature, the University of Alaska, fishermen's associations, and the North Pacific Fishery Management Council. These studies may be considered sources of statistical information, although the statistical series are limited to specific issues and time periods.

The U.S. Department of Commerce has several sources of statistical information. The NMFS publishes the "Fishery Market News" three times a week. This newsletter containing information on imports and exports of fish products into and from the Pacific Northwest and ex-vessel wholesale and primary producer wholesale prices for a variety of species and processed products . Annual summaries of these types of information are compiled in NMFS publications entitled Fisheries of the U.S. and Fisheries Statistics of the U.S.

The Fisheries Management Plans developed by the North Pacific Fishery Management Council are also a source of statistical information produced under the auspices of the Department of Commerce. This information is generally obtained from one of the sources already discussed and usually includes income, product value, and marketing information.

Data on Community and Regional Economics

A principal concern in analyzing the social and economic aspects of coastal fisheries is a determination of the role of the fishing industry and specific industry sectors in local and regional economies. An understanding of this role is needed in order to evaluate the impact of regulatory decisions upon coastal communities. The most systematic attempt to provide the statistical information used for such evaluations is a study recently completed by Economist George Rogers (Measuring the Socioeconomic Impacts of Alaska's Fisheries, Institued Social and Economic Research, University of Alaska, April 1980). This study provides income, employment, and other demographic information for eight Alaskan coastal regions. Industries of importance to the economics of these regions are examined in sufficient detail to determine the contribution of harvesting and processing sectors in each case.

The study includes a useful discussion of the sources of information used in assembling the data. In addition, to the Department of Fish and Game and Entry Commission data discussed earlier, the study used population, employment and income data from the U.S. Bureaus of the Census and Economic Analysis and the Alaska Department of Labor.

Data on International Markets and Trade

Fisheries development in the State of Alaska is focused upon species currently being harvested by foreign fleets. An understanding of international market structures and trade patterns is needed in making decisions on foreign allocating which will promote domestic development of these fisheries. Statistical information of this type is limited. The Department of Commerce sources which were noted earlier are one source. A major effort to compile marketing and trade data for king crab, and Tanner crab, salmon and groundfish is currently being undertaken by the Sea Grant Program at the University of Alaska and University of Oregon.

THE RELATIONSHIP OF STATE AND FEDERAL SYSTEMS.

The need for coordination between the State and Federal regulatory and management is obvious. Fisheries resources do not recognize the boundary which divides State and Federal jurisdiction. The fact that before 1976 the State managed the domestic

fisheries beyond three miles has created the need to define State and Federal regulatory and management roles.

A degree of coordination between the two regulatory systems is insured by the inclusion of the Alaska Commissioner of Fish and Game on the Council and State scientists on the SSC. In addition, the State has sought a prominent role in the Federal regulatory process by assuming the lead in plan development for the troll salmon, Tanner and King crab, and Bering Sea herring fisheries. Joint meetings between the NPFMC and Board of Fisheries to discuss proposed regulations and to hear public testimony are increasing in frequency.

The NMFS has recently initiated a formal planning process to pursue better coordination between the State and Federal systems. The State/Federal action plans which are to be produced by the State will identify "measurable short-term, intermediate and long-term objectives, programs and activities." These will be used by NMFS in their budgeting process. A plan was prepared this year and accompanied the NMFS budget request for $800,000. Most of this funding if it is received will be passed through to the State.

Although there are these mechanisms for coordination between State and Federal systems, there are several unresolved issues between them. A constant problem has been the lack of coordination between the timetables used for promulgating regulations under the two systems. State regulations are generally established by the end of the Board Meeting at which they were discussed. Federal regulations, on the other hand, are not regularly produced and it is difficult to predict when the process of review and Secretarial approval will be completed for a specific fishery. A second source of difference between the two systems is the extent to which they rely on different sources of data for decision making. This problem has been particularly significant in preparation of the Bering Sea Herring Fishery where State and Federal estimates of the biomass available for harvesting are considerably different.

The most serious conflicts between the two systems have occurred where the State had traditionally managed the domestic fisheries beyond three miles (specifically in the troll salmon, Tanner and king crab fisheries. These problems in coordinating the State and Federal regulatory processes will be examined further during the second half of the CFAP study.