

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES

PRINCE WILLIAM SOUND AREA
ANNUAL FINFISH MANAGEMENT REPORT

1981

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TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
PREFACE	i
LIST OF TABLES	ii
LIST OF FIGURES	v
LIST OF APPENDICES	vii
INTRODUCTION	1
Salmon	1
Herring	2
1981 SEASON SUMMARY	4
Copper River District	4
Subsistence Fishery	5
Bering River District	6
General Purse Seine Districts	6
Coghill and Unakwik Districts	9
Eshamy District	10
Hatcheries	10
Seine Sac Roe Fishery	12
Spawn on Kelp Fishery	14
Sac Roe Gill Net Fishery	15
Pound Kelp Fishery	16
Herring Bait/Food Fishery	16
Herring Research	16
MISCELLANEOUS	18
ACKNOWLEDGEMENTS	110

PREFACE

This is the twenty-second annual management report prepared since the State assumed control of the fisheries from the federal government in 1960. The 1980 and 1981 data is preliminary and will be finalized and corrected in subsequent reports. Data presented here supersedes information in previous management reports.

The report presents a brief description of the 1981 fishery and summarizes recent historical catch, escapement and related data on each species harvested by the commercial and subsistence salmon and herring fisheries.

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Total salmon catch by district, Prince William Sound Area, 1981	19
2. Commercial salmon catch by species from all Prince William Sound Districts, 1972-81	20
3. Expected weekly catch and escapement in the Copper River district with a forecasted season catch of 350,000 - 450,000 and an escapement goal of 250,000 - 350,000	21
4. Commercial salmon catch by period and species, Copper River district, 1981	22
5. Copper River District salmon catch by species, 1971 - 1981	23
6. Copper River king salmon age, length analysis, commercial catch, 1981	24
7. King salmon escapement index - Copper River	25
8. Copper River sonar counts, Miles Lake site, 1981	26
9. Sockeye salmon escapement estimates, Copper River District, 1970-81	27
9A. AERIAL SURVEY COUNTS, CR/BR SYSTEMS, by week, 1981 ..	27a-b
10. Copper River aerial survey index of sockeye salmon spawning escapements, 1971 - 1981	28
11. Escapement estimates, Copper River delta and Bering River, sockeye salmon, 1974 - 1981	29
12. Copper River sockeye salmon age, length analysis, commercial catch, 1981	30
13. Copper River coho salmon age, length analysis, commercial catch, 1981	31
14. Prince William Sound Area subsistence fishery, 1981	32
15. Copper River Delta gill net salmon subsistence catch and effort, 1960 - 1981	33
16. Prince William Sound salmon subsistence catch and effort, 1960-81 ..	34
17. Copper River subsistence fishing data, 1948 - 1981	35
18. Commercial salmon catch by period and species, Bering River District 1981	36
19. Bering River District salmon catch by species, 1971 - 1981	37

LIST OF TABLES

<u>Table</u>	<u>Page</u>
20. Commercial salmon catch by species, by week in the general purse seine district, Prince William Sound, 1981	38
21. Commercial salmon catch by species in the general purse seine districts, Prince William Sound, 1972-81	39
22. Commercial salmon catch by all gear, by species, Prince William Sound, 1972-81	40
23. Final pink and chum salmon returns to Prince William Sound, 1981 ...	41
24. Pink salmon runs, Prince William Sound, 1960-81	42
25. Chum salmon runs, Prince William Sound, 1960-81	43
26. Chum salmon age composition, by sex, Prince William Sound, 1981	44
27. Sockeye salmon escapement counts from selected systems in Prince William Sound, 1981	45
28. Commercial catch of salmon by species by period, by gear type in the Coghill district, Prince William Sound, 1981	46
29. Coghill District salmon catch by species and gear, 1972 - 1981	48
30. Salmon escapement by species, Coghill District, 1972-81	49
31. Coghill River weir salmon counts, 1981	50
32. Coghill and Eshamy districts sockeye salmon commercial catch and escapement age composition, Prince William Sound, 1981	52
33. Commercial catch of salmon by species, by period, by gear type in the Unakwik District, Prince William Sound, 1981	53
34. Unakwik District salmon catch by species and gear, 1972 - 1981	55
35. Eshamy District salmon catch by species and gear, 1972 - 1981	56
36. Salmon escapement from weir and stream foot survey counts, Eshamy District, 1972 - 1981	57
37. Eshamy River weir salmon counts, 1981	58
38. Prince William Sound herring fishery statistics, 1981	60
39. Daily aerial survey estimates of sac roe herring in Prince William Sound, 1981	61

LIST OF TABLES

<u>Table</u>	<u>Page</u>
40. Herring sac roe and spawn on kelp harvested in Prince William Sound, 1969 - 1981	64
41. Prince William Sound herring sac roe aerial surveys, peak estimates and seasonal harvests in metric tons, 1974 - 1981	65
42. Summary of aerial observations of sac roe herring, season high counts in Prince William Sound, 1974 - 1981	66
43. Herring for bait and food harvested in Prince William Sound, in metric tons, 1967 - 1981	67
44. Age, length, weight composition by sex, herring sac roe purse seine fishery, Port Gravina, 1981	68
45. Age, length, weight composition by sex, herring sac roe seine fishery, Rocky Bay, Montague Island, 1981	69
46. Age, length, weight composition by sex, herring sac roe gillnet fishery, Galena Bay, 1981	70
47. Age, length, weight composition by sex of herring samples from pounds in Landlocked Bay, 1981	71
48. Age, length, weight composition of the herring bait/food fishery, Prince William Sound, 1981	72
49. Calendar weeks used in reporting catch statistics in 1981	73
50. Average price paid per pound for salmon, shellfish and miscellaneous fish in the Prince William Sound Area, 1981	74
51. Average price paid to fishermen for salmon and herring in Prince William Sound, 1977-81	75
52. Average weight in pounds of salmon in commercial catches from the Prince William Sound Area, 1972 - 1981	76
53. Prince William Sound Area case pack and pounds of frozen salmon by species, by week, 1981	77
54. Prince William Sound Area case pack and pounds of frozen salmon by species, 1972 - 1981	78

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. Prince William Sound Area commercial fisheries salmon management areas	79
2. Total salmon catches for all species and districts, Prince William Sound Area, 1972-81	80
3. Chinook salmon catches in the Copper River District, 1972-81	81
4. Estimated Copper River salmon sonar counts, 1981	82
5. Sockeye salmon escapement by week at Miles Lake sonar counter, Copper River, 1981	83
6. Sockeye salmon catch by week in the Copper River district, 1981 ...	84
7. Sockeye salmon catch and escapement in the Copper River District, 1972-81	85
8. Coho salmon catches in the Copper River District, 1972-81	86
9. Sockeye salmon catch and escapement in the Bering River District, 1972-81	87
10. Coho salmon catches in the Bering River District, 1972-81	88
11. Daily pink salmon catch, Prince William Sound, 1981	89
12. Pink salmon catch and escapement in the Prince William Sound Area even years, 1962-80	90
13. Pink salmon catch and escapement in the Prince William Sound Area odd years, 1963-81	91
14. Chum salmon catch and escapement in the Prince William Sound Area, 1972-81	92
15. Sockeye salmon catch and escapement in the Coghill District, 1972-81	93
16. Sockeye salmon catch and escapement in the Eshamy District, 1972-81	94
17. Prince William Sound herring sac roe and spawn on kelp harvest areas, 1981	95
18. Prince William Sound herring harvest, all fisheries, 1970 - 1981 ..	96
19. Herring sac roe harvests and peak seasonal estimates, all districts, Prince William Sound, 1974 - 1981	97

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
20. Prince William Sound herring sac roe harvest and peak aerial estimate, Eastern District, 1974 - 1981	98
21. Prince William Sound herring sac roe harvest and peak aerial estimate, Montague District, 1974 - 1981	99
22. Prince William Sound herring sac roe harvest and peak aerial estimate, Northern District, 1974 - 1981	100
23. Herring spawn on kelp harvest, Prince William Sound, 1970 - 1981 ..	101
24. Mean standing crop of kelp during April at selected study sites, Prince William Sound, 1977 - 1981	102
25. Mean standing crop of kelp plants during April at five selected sites in Prince William Sound, 1977 - 1981	103
26. Areas of herring spawning in the Northern District, Prince William Sound, 1981	104
27. Areas of herring spawning, Eastern District, Prince William Sound, 1981	105
28. Areas of spawning, Montague District, Prince William Sound, 1981 ..	106
29. Prince William Sound herring bait/food harvest, 1970 - 1981	107
30. Prince William Sound sac roe, bait/food fish fisheries, percent contributions by age class, 1981	108
31. Prince William Sound herring seine sac roe fishery. Percent contribution by age class, 1975 - 1981	109

LIST OF APPENDICES

<u>Appendix</u>	<u>Page</u>
A. A sequential listing of finfish processors, location of operation, size of cans, lines of machinery and type of product processed in 1981	111
B. Copper River and Bering River sockeye, chinook and coho salmon escapement, 1981	116
C. Coghill River field camp climatological and stream observations, 1981	119
D. Eshamy River field camp climatological and stream observations, 1981	121

INTRODUCTION

The commercial fisheries management area encompasses all coastal waters and inland drainages entering the northcentral Gulf of Alaska between Cape Suckling and Cape Fairfield (Figure 1). The area includes the Bering River, Copper River and all of Prince William Sound along with a total adjacent land area of approximately 38,000 square miles.

Salmon

The Prince William Sound area is divided into eleven management districts which correspond to the local geography and distribution of the five species of salmon harvested by the commercial fishery.

The Bering River district includes the area between Cape Martin on the west and Cape Suckling on the east including Controller Bay and Katalia Bay. This small drift gill net salmon fishery harvests about one percent of the area's sockeye catch and about twenty-five percent of the coho catch. Small catches of king, pink and chum salmon occur and amount to less than one percent of the district catch.

The Copper River district includes all waters between Cape Martin on the east and Hook Point, Hinchinbrook Island on the west, and is separated from Prince William Sound's Eastern District by a boundary line from Boswell Rock, Hinchinbrook Island to the radio tower at Whitshed Village on the mainland shore southwest of Cordova. The Copper River district supports the major area drift gill net salmon fishery and harvests all five species of salmon although the target species of the district are sockeye during the spring and summer fishery and coho in the fall. The district fishery harvests about 97 percent of the area's king salmon catch, 65 percent of the sockeye, 72 percent of the coho, and incidental amounts of pink and chum salmon.

The Unakwik District is located in the north central part of Prince William Sound and includes the waters of Unakwik Inlet north of 61° 01' N. lat. The district was established to harvest small runs of sockeye salmon returning to Cowpen Lake and Miners Lake systems. Usually less than 10,000 sockeye are taken each year. The Unakwik season coincides with the Coghill District season.

The Coghill District, located in northwestern Prince William Sound, includes all of the water of Port Wells north of 60° 48' 30" N. lat., all the water within one nautical mile of the south shore of Esther Island including Esther Passage. (Prior to 1976 the western one-half of Port Wells was included in the Northwestern District). The Coghill District was established primarily to harvest the sockeye salmon returning to Coghill Lake; however, significant numbers of pinks and chums are taken and the numbers of these species commonly exceed the sockeye catch. There is a tremendous variation in the numbers of odd and even year pinks returning to Coghill River. Spawning escapement estimates have ranged from 552,060 in 1975 to an even year average of about 9,000 pinks. Small incidental catches of kings and cohos are taken each year. When the Coghill District season opens a large influx of gear moves into the district from the Copper River flats, and consequently, the Copper River effort is reduced by almost half.

The Eshamy District is located on the western central mainland shore of Prince William Sound. The district includes the water within one nautical mile of the mainland shore from the outer point on the north shore of Granite Bay on the south end of the district to the light on the south shore of the entrance to Port Nellie Juan on the north end of the district. The district was established to manage the run of sockeye salmon returning to the Eshamy Lake system. The Eshamy District fishery catches all five species of salmon. Sockeye is the target species; however, substantial numbers of pinks and chums are intercepted which are bound for other districts in the Sound. Small numbers of kings and cohos are caught in the district.

The General Districts of Prince William Sound include the Eastern, Northern, Northwestern, Southwestern, Montague and Southern Districts which include the remainder of Prince William Sound. The primary target species are pink and chum salmon. Forecasts of returning pinks and chums are made each year based on pre-emergent fry data, and purse seine seasons are set accordingly. Season openings are usually published in the regulations, and season closures made by emergency order. Incidental and usually insignificant numbers of kings and cohos are also taken from the General Districts.

Legal gear for the salmon fishery includes purse seines and both drift and set gill nets. Drift gill net fishermen are the most numerous and are permitted to fish in the Bering River, Copper River, Coghill, Unakwik and Eshamy Districts. In 1981, 493 drift gill net permit holders participated at least some time during the season. Set gill net gear is legal only in the Eshamy District, but this district remained closed this season. Purse seine gear is restricted to Prince William Sound proper and is utilized primarily to harvest pink and chum salmon. A total of 266 purse seine fishermen participated during the peak of that fishery this season.

The 1981 season harvest amounted to almost 23.3 million fish with an ex-vessel value of nearly \$58 million (Table 1). This compares to an annual salmon harvest for the Prince William Sound Area of approximately 8.2 million fish during the past decade (Table 2 and Figure 2). Runs of all species exceeded pre-season expectations and was highlighted by all time record returns of pink and chum salmon. This continues a three year period of phenomenal production for pink salmon with a slight dominance still persisting for the odd year cycle. The total catch was the largest in the 86 year history of the commercial fishery and exceeded the previous record for all species by 6.2 million fish held since 1979.

Escapements were optimum or above for all species including chum salmon which has been a chronic problem for a number of years.

Herring

The herring fisheries of the Prince William Sound area 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 (Figure 17) have been established for the exclusive harvest of sac roe herring, while fish for bait and food markets may be taken in the General District which includes all waters of the Sound exclusive of the sac roe districts. Wild spawn on kelp harvests can

occur in all districts, but only the kelp beds located in the 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 base of operation in a portion of Landlocked Bay in Port Fidalgo. Guideline harvest levels for each of these fisheries which collectively amount to an annual harvest equivalent to 7,500 metric tons of herring (Figure 18). The total value of these fisheries to fishermen in 1981 was approximately five million dollars.

Herring have a long history of commercial fishing in the Prince William Sound Area dating back to 1914, and until about 1958 was used almost exclusively for reduction purposes. From the demise of the reduction fishery until 1969 only occasional catches were made for bait purposes. The year 1969 was the beginning of a new fishery where herring were taken for roe which was salted in containers and sold in Japanese markets. This herring sac roe fishery grew rapidly during the past decade with a peak harvest of 12,700 metric tons in 1981 which was double the previous record reported in 1973 (Table 40).

As a result of the intensity of the herring sac roe fishery, vulnerability and potential for rapid exploitation of the herring, a guideline harvest level of 5,000 tons was established in 1974. This has been exceeded four years, (1974, 1975, 1980 and 1981) since the guideline harvest level was established.

The herring spawn on kelp fishery started in 1969 at the same time the roe fishery was initiated. The first experimental harvest of herring spawn on kelp was taken from Johnston Cove and Landlocked Bay in northeastern Prince William Sound. It has grown into an annual fishery with a peak harvest of 415.9 metric tons in 1975 (Table 40). Concern about the depletion of kelp beds resulted in regulations to limit the method of harvesting to a hand-held unpowered blade-cutting device, and required the kelp blades to be cut at least four inches above the stipe. A cyclic pattern in the amount and quality of the harvest should continue to characterize the kelp fishery due to fluctuations in herring abundance and changes in timing, location and density of spawn in traditional harvest areas.

A herring pound fishery for the controlled production of spawn on kelp began in 1979 although the first significant production didn't develop until 1980. Participation and production in this experimental fishery continued to expand rapidly in 1981.

SALMON SUMMARY

Copper River District

Returns to this district were stronger than anticipated. Pre-season run projections indicated a below average return of sockeye to both the upriver and delta areas. However, with the recent trend for increased survival of salmon to the area, it was felt that with reduced fishing periods a limited harvest in the 350,000 - 450,000 range could occur while still maintaining a desired escapement of 250,000 - 350,000 fish in upriver spawning areas (Table 3). Fishermen and processors were made aware of the management strategy and were told that as the strength of the run became apparent, as verified by sonar escapement counts and catch trends, adjustments in fishing time would be possible.

The season opened on May 18, and a single 36 hour period was permitted during the first two weeks of the season (Table 4 and Figure 6). During the season opener 392 fishermen landed over 110,000 sockeye and 7,200 king salmon, and by the end of the first week escapement counts past the sonar site had exceeded the weekly optimum range by 50,000 fish (Table 8, Figures 4 and 5). Both harvests and escapements surpassed expectations during the first two weeks of fishing and prompted an extension of fishing time in the weeks that followed. Early run timing was suspected, but by mid-season it was also apparent that the return was larger than expected. The peak catch occurred during the second week when over 115,000 sockeye were landed (Table 4). Additional fishing time of 12 hours was permitted the third week, and in the following weeks was increased by 24 hours. During the third week of the season escapements were also above anticipated levels, but this may have been caused by a storm period which lowered fishing effort. A 12 hours extension of the fishing period was allowed after the storm, but escapements during the following week remained above average. Beginning July 12 the normal three and one-half day split weekly period was reinstated and remained in effect until the opening of the coho salmon season on August 10. The season catch of 487,000 sockeye was above the 10 year average of 449,000 (Table 5).

Escapements during the tenth week of the season also exceeded expected levels. Fishing effort at that time had decreased to 59 boats although the normal fishing period of three and one-half days per week was in effect. Upriver escapements exceeded desired levels by almost 200,000 fish with large escapements during the early part of the season, more than likely the result of pre-fishing season escapements (Table 8 and Figure 7). Despite the above optimum total escapement to the main river as a whole, spawning was not well distributed (Table 10). Some systems had unusually large numbers of fish while other areas had practically nothing. For the third consecutive year escapements into spawning systems of the Copper River delta exceeded 100,000 sockeye (Tables 9 and 11). Distribution of spawners throughout spawning systems was excellent.

Age-length analysis data of sockeye, some from the commercial catch, are shown in Table 12.

King salmon are harvested more or less incidental to the sockeye salmon. However, a small percentage of the fishing fleet has fished king gear for the first few periods. In 1981 this was again the practice, but most fishermen switched from king gear to sockeye gear during the first day of the season. This was due to a better than anticipated sockeye return and what

appeared to be a somewhat earlier king salmon run. The catch of 20,782 king salmon was above average but close to the projected pre-season catch and compares to the recent ten year average of 20,000 fish (Table 5 and Figure 3).

King salmon escapements into the main river were about average.

Age-length analysis data of king salmon, some from the commercial catch, are shown in Table 6.

The coho salmon return was expected to be above average, and from the beginning of the season it was apparent, from initial catches, that the run was going to be unusually strong. Due to uncertain market conditions, all local, major processing companies discontinued buying after the first week of the season. Five cash buyers and one local fishermen's cooperative handled fish at one time or another throughout the season. The season officially opened on August 10 for 84 hours per week. Effort was somewhat sporadic peaking during the first week of September when 247 gillnetters made deliveries. The fishery continued through September 24, and although the season was never officially closed, buying was discontinued and effort ceased. The total catch of 303,801 was the highest catch recorded for the area since 1942 (Table 5 and Figure 8). Aerial surveys of coho spawning systems flown during the fall provide an index to the escapement. Inclement weather and muddy streams make comparable, annual escapement estimates difficult. Indications from this year's surveys and from information obtained from observations by sport fishermen verified that the run was strong and escapements were above average.

Age-length analysis data of coho salmon sampled from the commercial catch are summarized in Table 13.

Subsistence Fishery

Subsistence fishing for salmon in the Prince William Sound Area is permitted in the commercial fishing districts as well as in selected areas of the upper Copper River. Catches are monitored through the use of a mandatory permit system that is available to only Alaska residents.

In the commercial districts subsistence fishing is restricted to methods, means and times that are consistent with those of the commercial fishery. The number of subsistence fishermen operating in these districts has fluctuated widely over the years, but catches have remained small. The number of subsistence permits and reported catches for the Copper River delta and Prince William Sound proper in recent years are outlined in Tables 14, 15 and 16.

Subsistence fishing for salmon in the upper Copper River is permitted with dip nets and fishwheels in separate fishing districts. Although the parent year indicated a below average return for 1981, a fully adequate escapement was anticipated including sufficient numbers to provide for an unrestricted subsistence fishery. In order to assure adequate escapement, the Department advised the public that even with the anticipated return of salmon, restrictions could become necessary. A seven day per week (unrestricted) fishing time was announced in late May while acknowledging that sonar counts prior to and during the season might necessitate a reduction in fishing time. Considerable effort was expended to circulate news releases to the probable fishing schedule. Sonar counts in May verified the anticipated sockeye return, thus no restrictions were applied to the subsistence fishery and it opened June 1 as scheduled.

Throughout the entire Copper River subsistence fishing season, sonar counts indicated a run in excess of the 350,000 salmon desired escapement level, thus no restriction was contemplated or applied per the requirements of the Management Plan. The entire season went without change and closed on September 30. The final sonar count of 534,263 fish (Table 8) supports the lack of restriction in the fishery.

The 1980 season was restricted for its entire duration and had special provisions made to take the chinook salmon present in normal abundance. In 1981, since no restrictions were applied to any species, no special provision was applied to chinook salmon either.

In 1981 there were 3,555 dip net and 523 fishwheel permits issued for the upper Copper River subsistence fishery. The number of permits was significantly more for both types of gear and in total. Preliminary figures show individuals fishing these permits harvested 51,275 sockeye, 1,824 chinook, 981 cohos, 5 steelhead and 21 other species (Table 14). The total reported catch was the largest on record and 202 percent of the ten-year average (Table 17).

Bering River District

The season in this district opened on June 15. The pre-season outlook indicated a normal fishery with a projected sockeye catch in the 30,000 - 40,000 range. Fishing periods were scheduled to correspond with the Copper River to distribute effort more evenly between the two districts. During the opening period 111 fishermen delivered 18,908 sockeyes. Fishing continued, but by July 18 effort had decreased to two boats and tender support was withdrawn from the district. Total catch for the season was 56,000 sockeye which is above average for the district and above projected harvest levels (Table 18 and Figure 9). The average sockeye harvest in this district during the past ten years was 40,000 fish (Table 19).

Sockeye salmon escapements into lakes and streams were also above average with an excellent distribution of spawners throughout the district (Table 11).

Fishing effort in the Bering River district during the coho season fell below historic levels. Market conditions, decreased buyer participation and the excellent return of coho salmon to the Copper River simply made fishing in that district more attractive. Although the opening of the season in the Bering River district coincided with the opening period of the Copper River district it was not until August 17 that the district was fished. Peak effort occurred during the first week of September when 52 boats fished this district. The season harvest of 76,161 coho salmon was above the ten year average, but fell below catches made during the previous three years (Table 19 and Figure 10). Aerial surveys in this district indicated escapements were above average.

General Purse Seine Districts

This makes the third consecutive year that salmon runs have surpassed all previous records for pink salmon. Runs far exceeded pre-season expectations and, for pink salmon, continues a phenomenal production trend with a slight dominance still persisting for the odd year cycle (Tables 21, 23, 24 and Figures 12 and 13). The total return of 23.1 million pink salmon was the largest run in recorded history in Prince William Sound and surpassed the previous record set only two years ago by over four million fish (Table 22).

The run is made even more remarkable when one considers that the average weight of the fish in 1981 was 20 percent larger than the previous record year and provided the fishermen with that much additional production.

The peak effort occurred in the seine fishery during early July when 266 permit holders delivered fish, and this effort was sustained for three consecutive weeks (Table 20). There are a total of 270 permanent and interim seine permits in existence so this represents over 98 percent participation in this fishery which is unusually high.

Processing capacity was provided by the four major local canneries along with Seward Fisheries, Whitney Fidalgo, Daerim America and an assortment of other buyers who tendered fish outside of the Sound for processing elsewhere. Several loads of fish were also tendered to Canada for canning. Although local capacity was strained at times during the peak of the run, no restrictions were ever imposed on the fishermen this season. Fish tendered out of the area to Seward, Cook Inlet, Kodiak, Southeastern, Canada, etc. provided the necessary relief to keep up with it throughout. The processors anticipated a large harvest, geared for it and did a commendable job in handling the load. Daily catches exceeded 400,000 fish for almost five consecutive weeks, and the peak occurred during the week of July 20 - 24 when daily catches exceeded one million fish (Figure 11).

The pink salmon escapement index totalled 2.9 million fish with goals attained or exceeded in all districts (Table 23). This was only slightly below the historic record observed in 1979, but the distribution this year was optimum except for a few isolated sections including Eaglek Bay and west side of Port Wells. The only other negative factor included a period of torrential rains and severe flooding between August 7 and 14. By that time 30 - 40 percent of the spawning had occurred and the impact, if any, was more on the earliest stocks. To measure the full impact of this may never be possible since much of the area effected is above standard fry digging sites used in forecasting future adult returns. The strength of the early segment of the return in 1983 will be watched closely for indications of relative weakness.

Aerial escapement surveys were started on June 16, and except for two weeks in mid August when heavy rain precluded aerial surveys, weekly coverage of the entire Sound was continued until the first week of September. Pink salmon runs during the odd year cycle have been earlier than normal in recent years, and surveys were started earlier in anticipation of a continuation of this trend. A significant buildup was apparent from the start in numerous bays in the Eastern and Northern Districts. With the largest official pink salmon prediction in the history of forecasting in Prince William Sound (12 million pink salmon) and the early buildup of fish, the seine season was opened earlier than ever in the Eastern and Northern Districts on June 24. Catches were strong right from the beginning, but with the entire fleet concentrated in only two districts, the escapement of additional fish through these areas during the subsequent two weeks declined rapidly. Fortunately, there existed a good buildup in the bays and streams before the fishery started and a record run was ultimately to materialize. If the potential for this develops again in future years possible alternatives could include starting the season a little later, allowing shorter periods for the first two weeks of fishing or opening up a larger area to spread out the effort.

As the run built up in late June and early July additional districts were opened, and the fleet eventually dispersed more widely. The Southwestern District opened with the start of weekly fishing on June 29 with the Southeastern District opening the following week on July 6. The only weakness in pink escapements was evident in the Northwestern District and the west side of Port Wells in the Coghill District. The Northwestern District was finally opened on July 24 when aerial surveys revealed buildups in these areas. The Montague District opened on July 24 for a test of run strength and could have been opened earlier had it been known there would be so little effort develop there. Fishing was so good elsewhere that fishermen were reluctant to explore new areas. Port Wells continued to experience weak escapements and was closed for the duration of the season after July 27.

The overall run was several days earlier than normal, and the peak daily catches occurred on July 20 following a weekend closure. The harvest for that entire week from July 20 - 24 was also the largest for the season with almost 5.1 million fish and averaged over one million fish per day (Table 20 and Figure 11). With the trend in recent years to a fleet of larger boats, deeper gear and double pinning, an open water tow haul type of fishing, much of this peak effort concentrated in the Southwestern District. Over 9.8 million pinks came from this district and represents 54 percent of the total area catch. The tendency for the fish to come in early, mill and feed in outside and entrance areas also contributed to the pattern of fishing and distribution of catches observed this season.

As the run began to decline, selected areas were progressively closed in order to secure the desired numbers and most optimum distribution in the escapements. Sheep Bay in the Eastern District was closed on July 31 to reverse a late season lag in escapements in that area. By the end of the first week of August catches had already been declining for ten days, and additional closures were announced for the Northern, Unakwik, Northwestern and Coghill Districts to optimize escapements in these areas. The Southwestern District was also closed to protect stocks bound for the Northern and Northwestern Districts that migrate through the southwestern capes. By this time the catch of all species had reached 20.5 million fish, and although escapement patterns were progressing at acceptable rates in larger systems, late season closures of selected areas were justified to give additional protection to smaller systems and to generally improve the overall distribution of escapements. This strategy also included a closure of the west side of Valdez Arm and Port Valdez after August 7. This was closed because of lagging escapements in Sawmill Bay, the absence of any late surplus pink stocks in the vicinity of Port Valdez and the increased change of conflicts between commercial and sport fishermen in this area.

The daily catch and catch per unit of effort revealed a sharp decline with the resumption of fishing on August 10 in the areas that remained open (Eastern, Southeastern and Montague). To assure adequate escapements in smaller, later systems these districts were also shut down for the season on August 12. After that time all districts were closed in the Sound and remained closed for the duration of the season. Harvest of sales fish continued at the Prince William Sound Aquaculture Corporation hatchery at San Juan through August 25, and their harvest of pinks finally ended up at just over 707,000 fish.

The total run of chum salmon amounted to almost 2.1 million fish (Table 23). This established a new record for total run and commercial harvest. The commercial catch of nearly 1.9 million fish surpassed the previous mark in 1945 when 1.75 million chums were sold. No other historical season catch even comes close to this level. The estimated season escapement of 202,000 for all districts was the best in eight years and was at desired levels for all districts except for the Southwestern and Montague Districts (Table 25 and Figure 14). Due to the loss of spawning and rearing areas in these districts as a result of the 1964 earthquake, desired escapements in these areas are no longer possible through time and area management of the commercial fishery.

Age composition by sex of chum salmon sampled from the commercial catch is summarized in Table 26.

Efforts to manage for improved chum escapements were limited to a Wells Bay closure early in the season in the Northern District followed by extended Fidalgo subdistrict closures in the Eastern District late in the season. The early closure in Wells Bay was required to bolster escapements of early chum stocks bound for Wells River. Due to the early opening of the purse seine season in recent odd year cycles, the escapements of chums in Wells River have been less than optimum. Wells Bay was reopened on June 30 after escapements showed adequate improvement. This type of management requires some planning and on the grounds support for relocating boundary markers and to assure an orderly reopening of the fishery, but this approach may be used effectively to protect chum stocks in other places.

The Port Fidalgo subdistrict was closed on July 31, but late chum runs were much stronger than anticipated and necessitated a reopening for 36 hours during the following week on August 6 - 7.

Although chum escapements were generally acceptable in the major systems, there will probably be problems in the future securing escapements. The main reason for good escapements this year was a record run. Being an incidental catch to the more numerous pink salmon, chums can't be harvested at the same rate (9 to 1) and still come out with a surplus during most years. They are also a valuable fish (worth over \$8 million, and exceeded sockeye salmon by \$1 million), and when schooled up are targeted on in selected places with the aid of spotter planes and deep gear. They are again selected while in shallow terminal areas of the bays.

The sockeye salmon catch in the general purse seine districts was 146,000 fish (Table 21). Escapements of sockeye salmon into various systems scattered throughout the purse seine districts are summarized in Table 27.

Coghill and Unakwik Districts

Sockeye returns also materialized above average. However, a bleak outlook prior to the season indicated a total closure of the Coghill District and resulted in reduced effort when it was opened for the season earlier than expected. Gill net effort peaked during the first week of July with 171 fishermen participating, but remained far below average due to a combination of better than expected fishing in the Copper River and the second season in

a row that many gillnetters opted to fish as crewmembers on seine boats. A price agreement was reached early so there was no delay in the start of the fishery this season (Table 28). Coghill sockeye salmon returns were a surprise with an unusually high return of four-year fish to this traditionally five-year system (Table 30). The age composition of the sockeye salmon sampled from both catch and escapement is summarized in Table 32.

The Coghill and Unakwik districts were opened for the season on June 24, and soon after that it became apparent that the desired escapement goal at Coghill was assured even though the run was suspected of being as much as a week early. By this time only three days of what would have been a normal season had already passed. In order to optimize the catch rate, fishing was extended during the first week while closed water areas were reduced to within 500 yards of the terminus of Coghill River. Despite the late opening and the reduced effort the sockeye catch in the Coghill District was almost 104,000 fish and was only slightly below an average catch for this district (Tables 28 and 29 and Figure 29).

Fishing periods in the Unakwik District coincided with those in the Coghill District and although sockeye catches were below historic levels, pink and chum harvests were above average (Tables 33 and 34).

The final Coghill River escapement was 156,000 sockeye salmon and established a new record for this system (Tables 30, 31 and Figure 15). This is the second consecutive year with extremely large escapements and should provide some valuable data on carrying capacity when we see future returns from these escapements. The return information should help better define the optimum escapement. The Coghill River field camp climatological and stream observations are presented in Appendix Table C.

Eshamy District

The sockeye return to Eshamy was much stronger than anticipated, and although the surplus wasn't enough to warrant an opening of the commercial season, the final escapement of over 23,000 was near the midpoint of the desired goal of 20 - 30,000 fish (Tables 36, 37 and Figure 16). The age composition of the sockeye salmon sampled during the season is summarized in Table 32. Historic catches and fishing effort are listed in Table 35. The climatological and stream observations recorded at the Eshamy field station are presented in Appendix Table C.

Hatcheries

Returns to major hatchery facilities including Cannery Creek and San Juan were better than expected, and they were able to secure the necessary broodstock to meet their egg take goals. An expanded closed area in the vicinity of Cannery Creek remained in force throughout the season, but the benefit of this on increased escapements to the hatchery is impossible to define. No other management adjustments were required this season related to hatchery returns.

Harvests of sales fish continued beyond the closure of the general purse seine season until August 25 at Prince William Sound Aquaculture Corporation's San Juan hatchery, and resulted in a total harvest of over 700,000 salmon.

Chum salmon eggs for hatchery brood stock requirements were more difficult to secure and ultimately came from selected streams in the Northern and Eastern districts where chums were surplus to escapement requirements.

There are approximately 170 million pink and chum salmon eggs incubating at area hatcheries for release in the spring of 1982.

HERRING SUMMARY

Seine Sac Roe Fishery

The sac roe seine fishery opened as scheduled on April 1. This strategy was consistent with a two year old management plan that incorporated some major changes for the seine fishery including the establishment of the Eastern District and a regulation opening the season on April 1. These changes helped resolve difficulties experienced in the past relating to changes in the distribution of the fish and the Department's inability to locate stocks and manage for a harvest before spawning begins. Because the three sac roe districts are so large and the fleet is so effective, however, when the herring become available the catch can develop so rapidly it is difficult to monitor and manage within established guideline harvest levels over such a broad area. Assessment of the stocks using aerial survey techniques is not possible until after the fishing is already complete. Preseason biomass assessments using sonar equipment have also met with little success in past years. As a result there is very little opportunity to make inseason adjustments in harvest levels that relate to the observed abundance of fish available and within desired exploitation rates using this management approach. Aerial surveys were initiated on March 20 and on March 24 the first herring schools were observed. On that day an estimated 5,000 tons of herring were observed in the Port Gravina area of the Eastern sac roe district. Approximately 1,500 - 2,000 tons of these herring were sighted along the west shore of Port Gravina and were actively spawning, Table 39. This is one of the earliest observations of spawning herring ever recorded for the Prince William Sound Area.

Because of a wastage problem that occurred during the 1980 season as a result of inadequate tender support, all sac roe processors were alerted and informed that herring would be available on the opening day of the season and they were advised to have tenders on the grounds to accept deliveries.

Preseason hydroacoustic surveys were also conducted from the R/V Sundance. Two days of surveys were completed on March 23 and 24 in the Montague District and located two major schools of herring in Zaikof Bay and Stockdale Harbor. The fish were still deep in 40 - 75 fathoms in the middle of trenches and in tight schools. No quantified assessment was possible because the gear was not operational, but they were obviously very large schools. Echo sounding was also conducted throughout Port Gravina on March 25, but revealed very little herring remained offshore in the area. The scanning sonar was damaged the same day, and when weather deteriorated on March 26, the vessel returned to Cordova.

During the following week four more aerial surveys were flown, and it became apparent that herring were moving into the spawning grounds in waves, spawning and leaving the area. As mentioned above, hydroacoustic surveys were conducted from the R/V Sundance in conjunction with the aerial surveys. However, the herring migrating into the area were either traveling too close to the surface or too close to the beach to be detected by sonar gear.

The sac roe season opened on April 1 as mandated by the plan. Adverse weather prevented all aerial spotting and limited fishing effort until late in the afternoon of that day. Since the staff did not have a vessel available to monitor the fishery on the grounds, and the use of aircraft was not possible due

to weather, radio communications were maintained with a Department of Public Safety vessel which was patrolling the fishery. At approximately 4:00 p.m. enforcement officers reported that an estimated 200 tons of 10 percent sac roe herring had been landed up to that time.

During the evening of April 1 the R/V Montague returned to Cordova, and after reprovisioning on April 2, departed Cordova for the herring fishery at Port Gravina. Upon arrival at Port Gravina harvest information was obtained from the tender vessels on the grounds, and an announcement was made closing the sac roe season in Port Gravina at midnight on that day. Catch reports received from tenders approximated the harvest at 3,000 tons. Age, length, weight composition by sex for this fishery is presented in Table 44.

By 6:00 p.m. on April 2 the major portion of the fishing fleet had departed Port Gravina and were headed for the areas of the Montague and Northern Districts. An aerial survey of the Montague District had been flown the same day, but no surface herring activity had been observed. Another aerial survey had been scheduled for 7:00 a.m. on April 3, but a mechanical problem had delayed the flight two hours. In the meantime, catch reports from the previous day's fishing were finalized and the preliminary harvest, up to that time, was estimated at between 3,000 and 3,500 metric tons (Tables 38, 41 and Figure 20). At 8:00 a.m. on April 3 an announcement was made aboard the R/V Montague in Port Gravina closing all districts effective at 6:00 p.m. that same day. The additional fishing time was announced to help disperse the fleet to other areas and was intended to allow a limited catch and to permit a sample of the availability of fish elsewhere. An earlier closure was considered, but an aerial survey the previous day and both aerial and hydroacoustical surveys during the previous week suggested only limited amounts of herring would be readily accessible in other districts.

When an aircraft finally became available at 9:00 a.m. a survey of all sac roe districts was flown and terminated at Montague Island. Due to the numerous spotter aircraft over the Zaikof and Rocky Bays in the Montague District, and the reluctance of the survey pilot to risk the congestion of that air space, the northern portion of Montague Island was not surveyed. At this point of the survey, fuel for the survey aircraft was low, and at the request of the pilot, the staff was placed aboard a fishing vessel to await the arrival of the State research vessel. Fishing was slow at this time. However, fishing vessels and tenders from other areas were just beginning to arrive in the Montague District.

At approximately 1:00 p.m. the Department R/V Montague arrived at Zaikof Bay, and contact was initiated with all tenders to update herring catches. By 3:00 p.m., when all the available catch data was obtained, it was apparent that the guideline harvest level would be exceeded. With less than three hours left before the closure, and with the apparent rate of harvest, it was felt that the total catch would be within reasonable guideline limits. However, during the last hour of the period, herring schools became more abundant, and some of the largest catches of the day were made just prior to the closure.

On the morning of April 1 when the catch reports had been tabulated, approximately 9,000 metric tons of 10 to 13 percent sac roe herring had been harvested during a time period of less than eight hours. This harvest combined with the Eastern District amounted to 12,525 metric tons (Table 40).

Spawn on Kelp Fishery

The spawn on kelp fishery was opened by emergency order for only 12 hours on April 25. Although 305 kelping permits were issued (Table 40), only 214 divers actually participated in the fishery and managed to harvest 55 metric tons of spawn on kelp. Eleven buyers were on the kelping grounds, but only nine processed the harvest. This was the second smallest harvest on record for the fishery.

Unlike most of the past years when the herring spawn peaked over a period of seven to ten days, spawning in 1981 was very sporadic. The first spawn was observed on March 24 in the Eastern District and fish were still spawning in the Northern District on May 1. The fish also spawned in areas of unmarketable seaweed such as eel grass and elephant ear kelp. Spawning also occurred in areas, described by processors, as containing unharvestable "dirty or silty" kelp. The only alternative available was to wait until a maximum amount of spawning was observed over a seven to ten day period before eggs began to eye out, announce a short opening period and after the closure await more spawning. This was done, and as previously stated, in this single period 55 metric tons of spawn on kelp was delivered. After that initial opening very little spawning occurred and the season was not reopened.

After the closure spawning continued to be spotty, and on most days would be observed on widely separated points of land. A few days later spawning would be recorded on a reef 15 to 20 miles away. This abnormal spawning behavior of the herring made it impossible to open the season and promote an orderly harvest. If any additional openings had been announced all effort would have converged into these isolated spots as spawning occurred, completely stripping the kelp in these areas.

A composite of all daily aerial spawning observations are found in Figures 26, 27 and 28. The resultant distribution and magnitude of spawning compared favorably to what has been recorded for the Northern District in the past.

In conjunction with this fishery, preseason underwater surveys are conducted in five study areas located within or adjacent to historic kelping areas. Estimates of standing seaweed crops and species composition were obtained during these surveys. Estimates for 1981 (Figures 24 and 25) indicated that the standing crop had increased over what was available in 1980.

A cyclic pattern is expected to impact the spawn on kelp fishery in a similar fashion in future years (Table 40 and Figures 24 and 25). Due to fluctuations in herring abundance, changes in timing, location and density of spawning in traditional harvest area, there will be continued variation in the amount and quality of the harvest in the spawn on kelp fishery. The seaweed crop appears to be maintaining an annual harvestable surplus. Present observations indicate that somewhat of a harvest rotation occurs in this fishery in that a particular area may be harvested quite heavily for one or two years resulting in a removal of the fronds of the adult plants. When this occurs harvesters move into unharvested areas allowing the previously cropped beds to recover.

Age composition data from commercial catch samples are summarized in Table 45 and Figure 30, and a comparative age composition in recent years is illustrated in Figure 31.

Tonnage estimates obtained from aerial surveys flown after the seine season (Table 41 and Figure 21) indicated that at least 28,000 - 29,000 tons of herring spawned in the Montague District and was the densest spawn ever observed or recorded by the staff for that district. Massive spawning was in progress during the peak survey and allowed only minimal estimates of how many herring spawned in the area.

As indicated from the 1981 aerial surveys, age analysis studies and the record harvest, it appears that the herring stocks in the Prince William Sound Area are in strong, healthy condition.

If the present stocks maintain similar patterns of abundance (Figures 18 and 19) that have been exhibited in past cycles, all herring fisheries can be expected to produce above average catches for at least one more year. After that time a decrease in herring abundance could be expected unless another strong year class enters the fishery.

With the present rate of harvest, as dictated by observed changes in herring stock levels, and barring any abnormal natural mortalities, herring stocks can hopefully be maintained at levels similar to what has been observed over the past ten years.

Sac Roe Gill Net Fishery

The gill net harvest area of the Northern District in 1981 was restricted to the inner bay of Galena Bay.

Aerial surveys flown prior to the season opening indicated that approximately 3,000 tons of herring were available in the Galena Bay vicinity. The establishment of the inner bay gill net harvest area (Figure 17) allowed for a harvest of some of these surplus stocks in a locality isolated from traditional kelping areas.

This season was opened for 12 hours from 7:00 a.m. to 7:00 p.m. on April 16; was extended for 24 hours until 7:00 p.m. on April 17; and after an evaluation of the catch reports was again extended until 12:00 noon on April 18 when the season closed.

Overall, fishing was allowed for a total of 53 hours during which 17 permit holders harvested 213.7 metric tons of 12 to 14 percent sac roe herring (Table 40).

After the closure surveys of the district were continued in an effort to locate herring which would permit a reopening of this fishery and fulfillment of the 250 metric ton quota. However, after the closure herring were observed only in either kelp harvest areas or in deep water unavailable to the gill net fleet, and the season was not reopened. Figure 22 shows harvest and peak survey estimates from 1974 - 1981 for the Northern District. Age composition data are summarized in Table 46.

Pound Kelp Fishery

In 1981 sixteen permits were issued by March 1, the deadline date, and two individuals were allowed a late registration after the deadline. The Landlocked Bay area was designated as the pounding site for this fishery, and herring for pounding were available in the Bay throughout the season.

On April 2 it was determined that all 18 permittees had constructed pounds and the allocation of 16 tons (1,800 pounds of finished product per permit holder) was made. The 200 ton herring quota allocated for this fishery was also divided between pound operators and amounted to approximately 11 tons each.

On April 14 the announcement was made allowing the seining of herring in Landlocked Bay for introduction into pounds. Those individuals that were ready to capture fish for their pounds when the fish showed and had their pounds prepared to receive the catch were successful in this operation. Age composition data of herring samples from the pounds are summarized in Table 47. When the final production figures were received 11 of the original 18 permittees harvested 8.8 metric tons of what appeared to be a find product (Table 40).

Another operation similar to the technique of pounding of kelp was attempted by several individuals. These individuals imported *Macrocystis* sp. kelp from the Sitka area, strung the kelp on ground lines suspended by floats and introduced the kelp into areas of natural spawning herring. Because of the abnormal behavior of the herring during the season no production resulted from the experiment.

Herring Bait/Food Fish Fishery

All of Prince William Sound, except designated sac roe harvest districts, is open after September 15 for the harvest of herring for bait and food markets. This fishery is regulated by a 1,400 ton guideline harvest level.

Legal gear for this fishery consists of seines, trawls and gill nets. However, only trawls and seines have been successful in catching herring at this time of year in these areas.

The 1981 season opened as scheduled on September 15 and was closed on September 30 when the guideline harvest level was being approached.

As in past years, the entire harvest of 1,095.7 tons was taken from the Orca Bay area of the general district. During the season five boats utilizing deep seines, and two boats using one pair trawl participated in the fishery. Table 43 and Figure 29 present harvest information for this fishery. Age composition data from this fishery are summarized in Table 48.

Herring Research

Herring research in Prince William Sound includes the biological sampling of commercial harvest to assess overall population condition and recruitment of herring into the fishery. Hydroacoustic surveys are also conducted from a Department vessel to help locate pre-spawning concentration of herring and to monitor their movements prior to the sac roe season. Activities also include

ground and aerial surveys of spawning areas to document the extent and magnitude of spawning (Figures 26, 27 and 28). The 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 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 the years of low abundance. Stock samples have been collected for the past year from both the sac roe and bait fisheries and are presently undergoing laboratory analysis. Results from the analysis are not available at this time.

MISCELLANEOUS

During the course of each season miscellaneous data are collected on the commercial fisheries in Prince William that do not relate to any particular fishery but provide a valuable reference for information unavailable elsewhere. Items of this nature are discussed briefly in this section.

The 1981 calendar weeks presented in Table 49 were used in reporting catch statistics where fishing was conducted on a schedule with standard weekly fishing periods. The calendar weeks are included here as a reference for those tables in the report that summarize catches by week. Whenever possible, however, catch statistics are summarized by fishing period dates to better reflect the management strategy and catch trends that aren't evident in the more general weekly catches.

A good economic condition persists at the present time as indicated by the continuing trend of upgrading the area's fishing fleet and the addition of a number of new fishing vessels. This trend has been supported primarily by record returns of pink salmon above average catches of coho salmon and an improving trend in sockeye production. The fleet is continuing to diversify by engaging in several fisheries instead of depending on a single species or gear type.

The overall economic situation for 1981 was even better than the record harvests of the last two seasons. The Copper River and Bering River Districts were better than expected, and although production was still somewhat below average, near record harvests of the coho fishery helped balance the situation. The record odd year pink salmon catch in all Prince William Sound districts bolstered catches of other species from all districts of the management area and produced a new record catch of over 23 million fish.

Prices for salmon (Tables 50 and 51) were generally better than last year and helped offset the national inflationary trend which has impacted all phases of the fishing and processing industry. Prices for sac roe herring were on par with the previous year and were bolstered by larger than average harvests. Both prices and harvests continue to decline in the spawn on kelp fishery. The average prices paid for salmon, shellfish and miscellaneous fish are outlined in Table 50.

Average weights by species from the commercial catches are summarized in Table 52. All species were above average in weight and contributed further to the value of the record catches.

The combined case pack and frozen salmon production by all local processors are summarized in Tables 53 and 54. The list of finfish buyers and processors operating in Prince William Sound are included in Appendix Table A.

Table 1. Total salmon catch by district, Prince William Sound Area, 1981.

District	Chinook	Sockeye	Coho	Pink	Chum	Total
General Purse Seine	240	146,032	1,998	19,519,008	1,695,796	21,363,074 ¹
Coghill	148	103,840	387	549,304	158,903	812,582
Unakwik		2,565		81,584	19,903	104,052
Eshamy		C L O S E D				
P. W. S. Subtotal	388	252,437	2,385	20,149,896	1,874,602	22,279,708
Copper River	20,782	486,982	303,801	23,772	1,752	837,089
Bering River	204	55,973	76,161	10,176	8,491	151,005
AREA TOTAL	21,374	795,392	382,347	20,183,844	1,884,845	23,267,802

¹ Includes 707,037 pink salmon, 118 chum salmon and 1 sockeye salmon from hatchery harvests.

Table 2. Commercial salmon catch by species from all Prince William Sound Districts, 1972-81¹

Year	Catch by Species					
	King	Sockeye	Coho	Pink	Chum	TOTAL
1972	23,003	976,115	124,670	57,090	46,088	1,226,966
1973	22,638	473,044	199,019	2,065,844	740,017	3,500,562
1974	20,602	741,340	76,041	458,619	89,210	1,385,812
1975	22,325	546,634	84,109	4,453,041	101,286	5,207,395
1976	32,755	1,009,035	160,495	3,022,429	370,668	4,595,382
1977	22,864	953,782	179,777	4,537,808	576,395	6,270,626
1978	30,435	505,509	312,930	2,917,499	489,771	4,256,144 ²
1979	20,078	369,583	315,774	15,638,258	349,615	16,693,308 ³
1980 ⁴	8,735	230,193	331,837	14,219,566	477,699	15,268,030 ⁵
1981 ⁴	21,374	795,392	382,347	20,183,844	1,884,845	23,267,802 ⁶
10-Yr Average	22,481	660,063	216,700	6,755,400	512,559	8,167,203

¹ Includes catches by all gear types from the General purse seine, Coghill, Unakwik, Eshamy, Copper River and Bering River districts.

² Includes 133,648 pinks from hatchery harvests.

³ Includes 223,761 pinks from hatchery harvests.

⁴ Preliminary.

⁵ Includes 346,828 pinks from hatchery harvests.

⁶ Includes 707,037 pink, 118 chum and 1 sockeye salmon from hatchery harvest.

Table 3. Expected weekly catch and escapement in the Copper River district with a forecasted season catch of 350,000 - 450,000 and an escapement goal of 250,000 - 350,000.

Dates	Week	%	Anticipated Sockeye Catch ¹		Actual	Cumulative Escapement ²		Actual
			Minimum	Maximum		Minimum	Maximum	
5/17-23	21	15	52,500	67,500	111,348	11,750	16,440	66,403
5/24-30	22	21	73,500	94,500	115,451	48,750	68,230	122,837
5/31-6/6	23	19	66,500	85,500	77,661	101,000	141,370	234,585
6/ 7-13	24	11	38,500	49,500	67,430	148,650	208,210	306,312
6/14-20	25	9	31,500	40,500	34,775	176,400	247,050	342,186
6/21-27	26	7	24,500	31,500	24,666	198,650	278,190	366,919
6/28-7/4	27	5	17,500	22,500	15,832	216,150	302,680	387,638
7/ 5-11	28	4	14,000	18,000	10,870	228,150	319,470	411,529
7/12-18	29	2	7,000	9,000	10,761	237,800	333,110	435,912
7/19-25	30	1	7,000	9,000	9,909	243,900	341,500	516,819
7/26-8/1	31	1	3,500	4,500	4,622	247,650	346,740	540,163
8/ 2-8	32	+	+	+	1,590	249,400	349,870	545,886
Season Total ³			350,000	450,000	486,982 ⁴	250,000	350,000	545,886

¹ Based on average historic catches for comparable weeks.

² Sonar escapement counts at Miles Lake, includes all species. Does not include an additional 80,000 - 90,000 sockeye salmon needed for delta systems.

³ Total harvest includes historic catches occurring prior to week 21 (5%) and after week 32 (less than 1%).

⁴ Includes last three weeks of the fishery.

Table 4. Commercial salmon catch by period and species, Copper River district, 1981.

Dates	Fishing Time (Hrs)	Effort	Catch by Species					Total
			King	Sockeye	Coho	Pink	Chum	
5/18-5/19	36	392	7,255	111,348				118,603
5/25-5/26	36	409	5,825	115,451				121,276
6/ 1-6/ 3	48	373	3,884	77,661			46	81,591
6/ 8-6/10	60	392	2,654	67,430		355	823	71,262
6/15-6/17	48	250	860	34,775	3	1,854	459	37,951
6/22-6/24	60	151	216	24,666		2,444	88	27,414
6/29-7/ 1	60	72	47	15,332	5	1,472	100	17,456
7/ 6-7/ 8	60	49	8	10,870	24	2,534	49	13,485
7/12-7/18	84	43	17	10,761	48	5,092	125	16,043
7/20-7/25	84	59	6	9,909	637	4,002	27	14,581
7/27-8/ 1	84	59	7	4,622	3,075	4,881	31	12,616
8/ 3-8/ 8	84	67	1	1,590	7,997	753		10,341
8/ 9-8/15	84	94		1,373	19,659	241		21,273
8/17-8/20	84	208	1	410	52,223	144		52,788
8/24-8/27	84	178		2	65,157			65,159
8/31-9/ 3	84	247			75,146			75,146
9/ 7-9/10	84	182			51,933			51,933
9/14-9/17	84	123			17,879			17,879
9/21-9/24	84	75			9,530			9,530
Totals			20,782	486,982	303,801	23,772	1,752	837,089

Table 5. Copper River District salmon catch by species, 1971 - 1981.

Year	Catch by Species					Total
	King	Sockeye	Coho	Pink	Chum	
1971	16,486	616,801	208,915	1,762	5,287	849,251
1972	22,349	727,144	103,211	2,304	717	855,725
1973	19,948	332,816	132,272	8,964	10,173	504,173
1974	18,980	607,766	46,625	9,839	664	683,874
1975	19,644	335,384	53,805	236	807	409,876
1976	31,483	865,254	111,900	3,392	178	1,012,207
1977	22,089	619,140	131,356	23,185	335	796,105
1978	29,062	249,872	220,338	3,512	2,233	505,017
1979	17,678	80,528	194,885	1,295	107	294,493
1980 ¹	8,449	18,451	219,779	3,872	34	250,585
1981 ¹	20,782	486,982	303,801	23,772	1,752	837,089
11 Year Average	20,632	449,103	156,989	7,467	2,026	636,218

Table 6. Copper River king salmon age, length analysis, commercial catch, 1981.

Age Class	Males			Females			Total	
	Number	Percent	Average Length mm	Number	Percent	Average Length mm	Number	Percent
1.2	7	8.8	642.3				7	5.6
0.3	4	5.0	872.0	1	1.8	793.0	5	4.0
1.3	27	33.7	828.8	30	54.6	818.3	57	45.6
2.3	1	45.0	856.0				1	0.8
1.4	36	6.3	957.0	19	34.5	902.3	55	44.0
2.4	5	1.2	943.8	5	9.1	874.8	10	8.0
Total	80	64.0		55	36.0		125	100.0

Table 7. King salmon escapement index - Copper River.

Area	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	198
East Fork Chistochina R.	512	348	476	137	71	289	132	137	810	575	120	
Gulkana River	269	1,200	623	1,317	741	777	1,090	921	1,380	718	754*	
Mendeltna Creek	56	49	15	15	38*	35	73	52	5	3	51	
Kaina Creek	81	89	172	55	123*	37	91	125	279	247	191	
St. Anne Creek	4	25	26*	32	26*	15	10	24	16	8	19	
Manker Creek	30	4	17	29	19*	6	15	20	16	35	23	
Grayling Creek	45	47	47	49	48*	17	48*	92	153	66	107	
Little Tonsina R.	200	129*	100	65	161	98	35	285	285	70	191	
Indian River	20*	13	20*	4	6	61	20	9	29	24	20*	
Total without interpolated counts	1,197	1,775	1,450	1,654	979	1,335	1,446	1,665	2,973	1,746	712	
Counts missing	(1)	(1)	(2)		(5)		(2)				(2)	
Total with interpolated counts	1,217	1,904	1,496	1,654	1,233	1,335	1,514	1,665	2,973	1,746	1,486	

* Interpolated. 16,737/10 = 1,673

Table 8. Copper River sonar counts, Miles Lake site, 1981.

S O C K E Y E					S O C K E Y E				
Date	North Bank ¹	South Bank	Daily	Cum.	Date	North Bank ¹	South Bank	Daily	Cum.
MAY	17	304	5,068	5,372	JULY	1	116	2,607	2,723
	18	547	9,118	15,037		2	213	2,393	372,251
	19	646	10,763	11,409		3	190	2,358	374,799
	20	608	10,125	10,733		4	377	3,717	378,893
	21	551	9,178	9,729		5	155	4,101	383,149
	22	428	7,130	7,558		6	310	3,166	386,625
	23	352	5,862	6,214		7	246	3,617	390,488
	24	735	12,250	12,985		8	214	3,560	394,262
	25	725	12,091	12,816		9	195	3,254	397,711
	26	361	6,022	6,383		10	504	2,438	400,653
	27	161	2,681	2,842		11	147	2,124	402,924
	28	145	2,415	2,560		12	140	2,328	405,392
	29	122	2,038	2,160		13	128	2,137	407,657
	30	669	11,153	11,822		14	147	2,449	410,253
	31	631	20,495	21,126		15	209	3,482	413,944
JUNE	1	952	17,463	18,415		16	146	2,434	416,524
	2	581	23,190	23,771		17	44	736	417,304
	3	1,091	15,625	16,716		18	489	8,144	425,937
	4	552	9,203	9,755		19	1,187	19,788	446,912
	5	593	9,885	10,478		20	1,161	19,350	467,423
	6	678	11,297	11,975		21	891	14,850	483,164
	7	769	12,816	13,585		22	372	6,194	489,730
	8	816	13,596	14,412		23	328	5,459	495,517
	9	888	14,806	15,694		24	287	4,776	500,580
	10	728	12,128	12,856		25	192	3,199	503,971
	11	446	7,431	7,877		26	141	2,352	506,464
	12	274	4,570	4,844		27	139	2,312	508,915
	13	201	3,355	3,556		28	158	2,627	511,700
	14	296	4,932	5,228		29	209	3,477	515,386
	15	400	6,671	7,071		30	216	3,598	519,200
	16	706	6,179	6,885		31	215	3,587	523,002
	17	898	5,569	6,467	Aug.	1	192	3,204	526,398
	18	198	4,367	4,565		2	130	2,174	528,702
	19	169	2,816	2,985		3	108	1,805	530,615
	20	164	2,727	2,891		4	73	1,224	531,912
	21	195	3,251	3,446		5	67	1,114	533,093
	22	226	3,771	3,997		6	66	1,104	534,263
	23	125	4,238	4,363					
	24	314	4,337	4,651					
	25	153	3,245	3,398					
	26	103	2,309	2,412					
	27	73	2,434	2,507					
	28	148	2,801	2,949					
	29	381	3,040	3,421					
	30	99	2,279	2,378					

Table 9. Sockeye salmon escapement estimates, Copper River District, 1970-81.

Year	Aerial Survey Counts			Upper River Sonar Count ³
	Delta ¹	Upper River ²	District Total	
1970	36,712	73,945	110,657	
1971	45,270	70,232	115,502	
1972	49,235	32,031	81,266	
1973	26,801	64,345	91,146	
1974	18,493	29,417	47,910	
1975	32,060	11,190	43,250	
1976	41,000	24,276	65,276	
1977	40,455	72,763	113,218	
1978	65,850	23,488	89,338	194,372
1979	80,700	29,523	110,223	248,709
1980	119,150	55,595	174,745	283,856
1981	82,850	76,820	159,670	534,263
Average	53,215	46,969	100,184	315,300

¹ Peak aerial survey counts for seven index spawning areas.

² Peak aerial survey counts for twenty index spawning areas.

³ Counting station located at Miles Lake outlet and includes all species with an escapement goal of 250-350,000 fish.

TABLE 9A - COPPER RIVER DELTA AREA AERIAL SURVEY ESTIMATES, 1981

Lake/System	6/9	6/15	6/22	7/6 ¹	7/14	7/24	7/31	8/19	8/28	9/17	
Evak Lake	125	10	2,520 Delta	2,280 + 1,500 in river	2,600	3,535	Fog NS	3,900	High-NS ²	11,300 S	2,750 C
Hatchery Creek	0	NS	1,000	1,500	1,000	1,200	Fog NS	250	High-NS ²	4,750 S	2,000 S
Power Creek	0	NS	0	NC ²	50	NC ³	Fog NS	50	High-NS ²	1,100	2,500 C
Ibek Creek	NS	NS	0	NC ⁶	NS	NS	Fog NS	NS	High-NS ²	7,800 C	800 C
McKinley Lake	0	0	3,000	6,000	6,000 + 53 scis.	8,000 + 67 scis.	Fog NS	10,000	High-NS ²	1,000	10,000 C
Salmon Creek L.F.	0	0	0	0	0	0	Fog NS	8,300	High-NS ²	1,500 C	50 C
Salmon Creek #FF <i>SRM 650</i>	NS	NS	0	0	0	450	Fog NS	1,000	High-NS ²	6,500 S	200 C
26-27 Mile Creek	1,350	900	3,500	6,500	9,500	9,300 +	Fog NS	1,500	0	2,500 S	250 C
39 Mile Creek	NS ⁶	NS	NS ⁶	1,500	3,500	5,450	4,300 ²	11,000	7,000	150 C	1,900 C
Goat Mt. Creek	NS ⁶	NS	NS ⁶	NC ³	NC ³	NC ³	Fog NS	0	NC ³	6,500 S	3,000 S
Pleasant Creek	NS ⁶	NS	NS ⁶	0 ⁶	NS	NS	Fog NS	NS ²	High-NS ²	NC ²	500 C
Tokun Lake	35	500	NC ^{5/14}	6,500	1,200	1,500	Fog NS	4,400	High-NS ²	8,500 S	0
Tokun River	50	1,100	1,500	5,350	7,350	5,750	Fog NS	3,150	High-NS ²	1,700 S	600 C
Tokun Springs	0	0	0	0	0	0	Fog NS	1,800	High-NS ²	1,500 S	200 C
Little Martin LK.	NS	0	0	0	0	0	Fog NS	325	High-NS ²	1,500 C	6,000 C
Martin River	25	600	800	6,500	900	1,175	Fog NS	5,350	High-NS ²	2,500 S	4,000 C
Martin Lake	150	1,300	30,000	26,050	12,600	10,000	Fog NS	7,500	High-NS ²	NS ²	0
Martin Feeders	0	0	0	5,500	12,000	15,000	Fog NS	11,000	High-NS ²	0	NS
Pothole Lake	0	NS	0	0	0	NC Fog	Fog NS	NC ²	High-NS ²	4,500 S	NS
Pothole Outlet	0	NS	1,500	3,500	2,500	3,500	Fog NS	250	High-NS ²	0	NS
Ragged Point LK.	NS ⁶	NS	NS ⁶	0 ⁶	0 ⁶	0	Fog NS	3,500	7,000	8,000 S	200 C
Ragged Pt. Outlet	NS ⁶	NS	NS ⁶	0 ⁶	0 ⁶	1,050	2,600	3,800	1,000	1,500 S	2,500 S
Martin River SL.	20	NS	7,500	15,000	14,500	12,500 +	Fog NS	8,750	50 C	3,500+C	10,900 C

1 Poor conditions; 2 Murkey, muddy; 3 Glacial; 4 Jumpers; 5 Fish deep; 6 Early

27A

BERING RIVER AERIAL SURVEY ESTIMATES, 1981.

lake/Stream	6/9	6/15	6/22	6/29	7/6 ¹	7/14	7/24	7/31	8/19	8/28	9/17
CATELLA RIVER	NS	NS	NS	35 P	0	1,200 P	Fog NS	NS	High NS ³	15,000 P 3,000 C	3,000 C ³
BERING LAKE	2,500	2,800	23,000	23,600	<u>20,000</u>	41,300	Fog NS	10,000	High NS ³	NC ³	0
DICK CREEK	0	0	0	0	10,000	12,000	Fog NS	<u>20,000</u>	High NS ³	Fog NC ³	0
SHEPARD CREEK	0	800	8,000	3,500	<u>9,000</u>	8,500	Fog NS	NC ²	High NS ³	Fog NC ³	600 C
USHTAKA LAKE	NS ⁴	NS	NS ⁴	NS ⁴	NS ⁴	3,500	Fog NS	<u>5,500</u>	High NS ³	Fog NC ³	NS
SHOKUM CREEK	NS ⁴	NS	NS ⁴	NS ⁴	NS ⁴	2,500	Fog NS	2,500	High NS ³	Fog NC ³	NS
MARTIN LK. OUTLET	75	200	1,550	150	250	800	300	<u>3,800</u>	High NS ³	NC ³	NS
9 MILE	NS	NS	NS	NS	0	0		NC	High NS ³	NC ³	1,500 C-

Poor conditions

2 Murkey, muddy

3 Glacial

+ Early

Table 10. Copper River aerial survey index of sockeye salmon spawning escapements, 1971 - 1981.

System	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Eyak Lake	5800	12275	6000	4625	17500	8500	8000	13450	13500	22500	11300		
McKinley Lake	1200	5050	1800	2000	8000	6000	15000	18000	25000	27500	10000		
39 Mile Creek	8270	14910	5511	2400	2500	3500	4500	6500	17500	18000	9500		
Lake Tokun	20000	2000	8000	1468	1200	8500	4201	6600	6500	17000	8500		
Little Martin Lake	3000	3000	1500	1500	2000	8000	1550	4500	4000	6500	2500		
Martin Lake	2000	7000	2000	1500	460	4000	4094	10500	10000	17650	26050		
Martin River Slough	5000	5000	1990	5000	400	2500	3100	6300	4200	10000	15000		
Copper River Delta Subtotal	45270	49235	26801	18493	32060	41000	40455	65850	80700	119150	82850		
Salmon Creek	275*	0	200	400	OP	300	275*	50	450	1500	250		
Tonsina Lake	500	250	300	200	250	900	432*	4	775	650	1725		
Mahio Creek	12400	1525	4500	500	314G	600	5200	300	450	1000	1800		
St. Anne Creek	25100	1900	7400	2100	449G	1700	7000	1150	730	5000	4700		
Mendeltna Creek	870	1950	1200	332	325	900	3900	725	350	1125	4830		
Keg Creek	810*	0	1435	190	256	125	725	1050	1300	2335	320		
Dickey Lake	170	73	2500	10	25	0	650	75	13	250	20		
Swede Lake	9	400	350	15	6	10	750	80	155	400	450		
Paxson Lake Outlet	3400	2700	4300	1000	550	2100	3800	2500	1900	3800	1500		
Inlet to Mud Creek	7900	5818	10500	14300	2100	4200	6000	2700	5400	8200	2200		
Mud Creek and Lake	600	850	500	300	400	1100	650	150	460	740	810		
Mud Cr. - Summit Lake	3250	1675	5700	2700	1200	1900	5900	800	2600	3075	3400		
Fish Lake	700P	4500	6300	800	2800	900	8000	2650	1700	3175	8800		
Bad Crossing #1 & #2	6	0	9275	650	5	16	8400	600	650	75	15000		
Fish Creek	900	650	2200	450	200	250	6900	1300	350	900	10500		
Mentasta Lake	2295	800	2700	700	450	600	3500	3600	2500	3200	7400		
Susitota Lake	4550	4830	3400	400	0	100	300	1200	1000	1700	300		
Tanada Lake	4093	930	10	3100	700	6100	9100	2625	5175	13700	11200		
Long Lake	2000	3000	150	750	1100	2450	877	1425	3100	2650	1325		
Tana River	404*	180	1425	520	60	25	404*	504	465	2130	290		
Upper Copper River Subtotal	70232	32031	64345	29417	11190	24276	72763	23488	29523	55595	76820		
TOTAL	115502	81266	91146	47910	43250	65276	113218	89338	110223	174745	159670		

* = interpolated. P = poor. G = ground survey.

Table 11. Escapement estimates, Copper River delta and Bering River sockeye salmon.

Stream/Lake	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Eyak Lake	4,625	17,500	8,500	11,500	13,450	13,500	22,500	11,300		
McKinley Lake	2,000	8,000	6,000	15,000	18,000	25,000	27,550	10,000		
39 Mile	2,400	2,500	3,500	4,500	6,500	17,500	18,000	9,500		
Tokun Lake	1,468	1,200	8,500	4,201	6,600	6,500	17,000	8,500		
Tokun Outlet		2,000	2,500	700	4,000	10,000	7,100	7,350		
Martin Lake	1,000	460	4,000	4,094	10,500	10,000	17,650	26,050		
Pothole Lake		3,000	3,000	550	1,100	5,000	8,000	4,500		
Little Martin Lk.	1,500	2,000	8,000	1,550	4,500	4,000	6,500	2,500		
Martin River	4,000	1,500	1,500	1,450	3,500	8,200	3,500	5,350		
Ragged Pt. Lake	2,000	2,500	4,000	3,500	5,500	20,000	13,000	8,000		
Martin Sloughs	5,000	400	2,500	3,100	6,300	4,200	10,000	15,000		
Martin Lk. Outlet	4,000	1,500	2,500	1,450	3,500	-	9,000	3,800		
Total	27,993	42,560	54,500	51,595	83,450	123,900	159,800	111,850		
Bering Lake	20,580	4,000	40,000	8,000	7,000	13,500	12,000	20,000		
Dick Creek	6,600	1,971	2,000	1,500	6,300	11,000	11,000	20,000		
Shepard Creek	15,000	150	5,500	NC-glac.	6,000	NC-silt	7,800	9,000		
Kushtaka Lake	75	75	2,500	"	3,500	2,500	1,000	5,500		
Stillwater Creek	NS	300	NC-silt	"	-	NC-silt	NS	NS-silt		
Total	42,255	6,496	50,000	9,500	22,800	27,000	31,800	54,500		

Table 12. Copper River sockeye salmon age, length analysis, commercial catch, 1981.

Age Class	Males			Females			Total	
	Number	Percent	Average Length mm	Number	Percent	Average Length mm	Number	Percent
1.1	2	0.3	340.0				2	0.2
0.2	5	0.8	451.6				5	0.5
1.2	73	4.4	492.5	36	8.4	512.1	109	10.2
2.2	7	1.1	500.3	3	0.7	496.3	10	0.9
0.3	99	15.5	571.4	67	15.5	568.0	166	15.5
1.3	421	66.0	580.2	302	70.1	568.0	723	67.6
2.3	30	4.7	564.4	23	5.3	547.1	53	5.0
3.3	1	0.2	526.0				1	0.1
Total	638	59.7		431	40.3		1,069	100.0

Table 13. Copper River and Bering River coho salmon age, length analysis, commercial catch, 1981.

Copper River

Age Class	Males			Females			Total	
	Number	Percent	Average Length mm	Number	Percent	Average Length mm	Number	Percent
1.1	33	44.6	612.2	25	62.5	588.0	58	50.9
2.1	35	47.3	637.2	15	37.5		50	43.9
3.1	6	8.1	624.8				6	5.2
Total	74	64.9		40	35.1		114	100.0

Bering River

Age Class	Males			Females			Total	
	Number	Percent	Average Length mm	Number	Percent	Average Length mm	Number	Percent
1.1	12	48	614.1	13	65	633.3	25	55.6
2.1	13	52	648.8	7	35	633.1	20	44.4
Total	25	55.6		20	44.4		45	100.0

Table 14. Prince William Sound Area subsistence fishery, 1981.

Area	Number Permits Issued	Type of Gear	King	Sockeye	Coho	Other ²	Total
Upper Copper River ¹	3,555	Dip Net	1,410	26,763	683	16	28,872
Upper Copper River ¹	523	Fishwheel	503	26,245	166	10	26,924
Copper River Flats ³	72	Gill Net	48	145	104		297
Prince William Sound ⁴	11	Gill Net		3	29	2	34
Prince William Sound ⁵	1	Seine					0
Total	4,162		1,961	53,156	982	28	56,127

¹ Compiled from reports received through 1/7/82.

² Includes pink and chum salmon, whitefish, steelhead, cutthroat, Dolly Varden, lamprey, lingcod and grayling.

³ Catch from 26 fishermen; 21 did not fish; 21 permits were not returned; and 4 fishermen were unsuccessful.

⁴ Catch from 3 fishermen; 4 permits were not returned; 4 did not fish.

⁵ Fisherman did not fish.

Table 15. Copper River Delta gill net salmon subsistence catch and effort, 1960 - 1981.

Year	P E R M I T S					C A T C H				Total
	Issued	Unused	Returned		Successful	Total	King	Sockeye	Coho	
			Unsuccessful	No Record						
1960	13	No Record	No Record	Unknown	No Record		60	137	158	158
1961	14	"	"	"	14		44	135	99	296
1962	14	"	"	"	No Record		3	13	3	182
1963	8	0	2	6	8		14	157	157	173
1964	5	2		3						14
1965	31	5	2	13	20		12	459	85	556
1966	45	10	2	19	31		47	175		222
1967	61	19	9	28	56		83	153		236
1968	17	8	1	6	15		11	36		47
1969	49	13	7	13	33		16	63	85	164
1970	32	3	1	23	27		66	179		245
1971	29	9	12	5	26		10	32	4	46
1972	104	5		75	80		149	569	53	771
1973	94			89	89		153	326	180	659
1974	9	2	2	1	5		5	4	2	11
1975	2			2	2		0	5	0	5
1976	27			14	14		1	10	0	11
1977	23			22	22		10	71	0	81
1978	34	19		9	28		37	18	12	67
1979	49	20	4	17	41		45	26	17	88
1980	39	17	6	12	35		19	27	17	63
1981	72	21	4	26	51		48	145	104	297

Table 16. Prince William Sound salmon subsistence catch and effort, 1960-81¹.

Year	P E R M I T S		C A T C H							Total
	Issued	Returned	King	Sockeye	Coho	Pink	Chum	Unknown ²		
1960	50			139	505	1292	75	150	2,161	
1961	12		1	41	123	732	3		900	
1962	9				119	214	142		475	
1963	9		3		406	298	24		731	
1964	15			11		900			911	
1965	22	16				179	25		204	
1966	3	3		3	19	20	50		92	
1967	4	3			4	4			8	
1968	4	3			20	156		22	198	
1969	7	3			16				16	
1970	1	1				46				
1971	3	2								
1972										
1973	19	16			289				289	
1974	3	1								
1975	2	0								
1976										
1977	4	4							0	
1978	3	2							0	
1979	15	2							0	
1980	26	15		7	6				13	
1981	12	8		3	29		2		34	

¹ Includes only catches from Prince William Sound proper.

² Catches not reported by species.

Table 17. Copper River subsistence fishery data, 1948 - 1981.

Year	Catch		Permits Issued		Total	Catch by Species			
	Dip Net	Fishwheel	Dip Net	Fishwheel		Sockeye	Chinook	Coho	Other
1948	5,100								
1949	5,500					1,601	535		
1952	2,136					3,057	83		
1954	3,145					1,767	319		
1955	2,086					7,241	281	108	
1957	7,753					12,909	354		
1958	13,263					6,739	136	25	
1960	1,179	5,660	32	26	58	15,472	388	550	
1961	1,777	12,419	307	59	366	14,543	848	381	
1962	3,203	11,101	435	117	552	14,055	464	558	
1963	2,124	12,395	514	110	624	11,915	725	103	
1964	4,133	7,749	794	158	952	12,760	644	52	
1965	7,215	5,813	982	115	1,097	16,718	555		
1966	7,452	9,188	1,132	110	1,242	14,457	419		
1967	6,146	8,360	1,166	125	1,291	14,819	644		
1968	8,040	6,071	1,235	112	1,347	27,604	719	233	
1969	18,054	6,220	1,415	113	1,528	36,500	427	224	
1970	22,700	9,886	3,220	267	3,487	37,517	1,363	554	
1971	28,115	9,370	4,168	374	4,542	26,850	1,501	248	2
1972	18,996	7,854	3,485	205	3,690	27,350	1,856	51	3
1973	16,407	10,943	3,840	305	4,145	22,800	1,141	163	4
1974	15,143	7,657	3,305	288	3,593	13,320	1,705		
1975	7,694	5,626	2,452	350	2,802	20,451	2,017	17	
1976	12,130	8,321	2,512	451	2,963	35,363	2,171	454	
1977	22,612	12,751	3,526	540	4,066	19,207	2,050	633	
1978	12,569	6,638	3,313	392	3,705	22,138	2,372	705	
1979	11,887	10,251	2,730	470	3,200	21,437	2,256	636	125
1980	14,661	9,716	2,804	399	3,203	53,008	1,913	849	26
1981	28,872	26,924	3,555	523	4,078				

1981

- 1 Last use of Dip Net/Fishwheel Combination permits.
- 2 First issue of permits at Chitina.
- 3 Last year permits were denied fishermen who failed to return their previous year permits.
- 4 Issue of permits at Chitina and Glennallen only.

Table 18. Commercial salmon catch by period and species, Bering River District, 1981.

Dates	Fishing Time (Hrs)	Effort	Catch by Species					Total
			King	Sockeye	Coho	Pink	Chum	
6/15-6/17	48	111	115	18,908		1,618	6,999	27,640
6/22-6/24	60	68	33	20,341	2	2,982	474	23,832
6/29-7/ 1	60	37	44	14,695	211	4,483	849	20,282
7/ 6-7/ 8	60	9	9	1,857	100	1,093	169	3,228
7/12-7/18	84	2	2	171				173
7/20-7/24			No Effort					
7/27-8/ 1			" "					
8/ 3-8/ 7			" "					
8/10-8/14			" "					
8/17-8/20	84	20	1	1	5,410			5,412
8/24-8/27	84	21			10,484			10,484
8/31-9/ 3	84	52			28,666			28,666
9/ 7-9/10	84	51			24,578			24,578
9/14-9/17	84	14			6,710			6,710
Total			204	55,973	76,161	10,176	8,491	151,005

Table 19. Bering River District salmon catch by species, 1971 - 1981.

Year	Catch by Species					Total
	King	Sockeye	Coho	Pink	Chum	
1971	105	36,776	88,231	4		125,116
1972	107	51,445	19,825	3	1	71,381
1973	285	15,426	65,348	2	5	81,066
1974	32	4,208	28,615	7	2	32,864
1975	162	21,637	24,162			45,961
1976	228	30,908	42,423	43	1	73,603
1977	127	14,445	47,218	192	221	62,203
1978	331	33,554	91,097	266	2,391	127,639
1979	385	139,015	114,046	6,895	23,094	283,435
1980 ¹	0	0	108,535	0	1	108,536
1981 ¹	204	55,973	76,161	10,176	8,491	151,005
Average ²	197	40,339	64,151	1,954	3,801	105,709

¹ Preliminary.

² Average of years fished. In 1980 the season did not open until August 11.

Table 20. Commercial salmon catch by species, by week in the general purse seine district, Prince William Sound, 1981.¹

Week	Period	Effort	Catch by species					Total
			King	Sockeye	Coho	Pink	Chum	
26	6/24-26 ²	236	39	23,371	19	788,383	183,683	995,495
27	6/29-7/3 ³	250	90	39,454	73	784,632	296,629	1,120,878
28	7/6-10 ⁴	263	18	26,303	25	2,299,195	300,390	2,625,931
29	7/13-17	266	24	17,253	36	3,710,841	263,935	3,992,089
30	7/20-24 ⁵	266	31	18,184	261	4,884,165	238,945	5,141,591
31	7/27-31 ⁶	266	35	11,283	369	4,193,704	200,965	4,406,356
32	8/3-7 ⁷	262	3	10,079	1,103	2,008,818	196,504	2,216,507
33	8/10-12 ⁸	68		99	112	142,233	14,627	157,071
TOTAL ⁹			240	146,031	1,998	18,811,971	1,695,678	20,655,918

- 1 The general purse seine districts include the Eastern, Northern, Northwestern, Southwestern, Montague and Southeastern. The season is opened by emergency order with weekly fishing periods from 6 am, Monday through 9 pm Friday unless altered by emergency order.
- 2 The Eastern and Northern districts were opened at 6 am on Wednesday, June 24. Expanded local closures in the Northern district were also imposed in Wells Bay and adjacent to the F.R.E.D. hatchery at Cannery Creek. Wells Bay was reopened after 12 noon Tuesday, June 30 while the Cannery Creek closure continued throughout the remainder of the season.
- 3 The Southwestern district was opened with the start of the regular weekly period at 6 am on Monday, June 29.
- 4 The Southeastern district was opened with the start of the regular weekly period at 6 am on Monday, July 6.
- 5 The Northwestern and Montague districts were opened at 6 am on Friday, July 24.
- 6 The Port Fidalgo subdistrict and all of Sheep Bay in the Eastern district were closed with the end of the regular weekly period at 9 pm on Friday, July 31.
- 7 The Port Fidalgo subdistrict was reopened for a 36-hour period from 9 am Thursday, August 6 until 9 pm Friday, August 7. The Northern, Northwestern, Southwestern and the west side of Valdez Arm in the Eastern district were closed for the duration of the season with the close of regular weekly fishing at 9 pm on Friday, August 7.
- 8 The Montague, Southeastern and the remainder of the Eastern district were closed for the duration of the season after 6 pm Wednesday, August 12.
- 9 Total doesn't include 707,037 pink, 118 chum and 1 sockeye salmon caught for hatchery sales in the Southwestern district.

Table 21. Commercial salmon catch by species in the general purse seine districts, Prince William Sound, 1972-81.¹

YEAR	Catch by Species					TOTAL
	King	Sockeye	Coho	Pink	Chum	
1972 ²	396		192	2		590
1973	2,151	22,223	995	1,905,012	617,488	2,547,869
1974 ²	1,215		548	4		1,767
1975	1,744	29,842	5,753	4,208,074	65,410	4,310,823
1976	855	43,888	6,070	2,897,535	250,424	3,198,772
1977	450	104,863	961	3,861,972	395,329	4,363,305
1978	340	9,177	1,392	2,793,938	354,839	3,159,686 ³
1979	769	61,990	4,942	15,329,777	263,500	15,660,978 ⁴
1980 ⁵	88	150,150	2,283	13,691,427	403,549	14,247,497 ⁶
1981 ⁵	240	146,031	1,998	18,811,971	1,695,678	20,655,918 ⁷
10-Year . Average ⁸	829	71,020	3,016	7,927,463	505,777	8,518,106

¹ Includes purse seine catches from the Eastern, Northern, Northwestern, Southwestern, Montague and Southeastern Districts. Also includes troll catches during 1972-76.

² Purse seine season closed. Catches were made by troll gear.

³ Includes 133,648 pink salmon from hatchery harvests.

⁴ Includes 214,930 hatchery sales fish.

⁵ Preliminary.

⁶ Includes 346,828 pink salmon and 6 chum salmon from hatchery harvests.

⁷ Includes 707,037 pink, 118 chum and 1 sockeye salmon from hatchery harvests.

⁸ Average does not include 1972 or 1974.

Table 22. Commercial salmon catch by all gear, by species, Prince William Sound, 1972-81.¹

Year	Catch by Species					Total
	King	Sockeye	Coho	Pink	Chum	
1972 ²	547	197,526	1,634	54,783	45,370	299,860
1973	2,405	124,802	1,399	2,056,878	729,839	2,915,323
1974 ²	1,590	129,366	801	448,773	88,544	669,074
1975	2,519	189,613	6,142	4,452,805	100,479	4,751,558
1976	1,044	112,809	6,171	3,018,991	370,478	3,509,493
1977	648	310,358	843	4,513,082	572,610	5,397,541
1978	1,042	222,083	1,495	2,913,721	485,147	3,623,488 ³
1979	2,015	150,040	6,843	15,630,068	326,414	16,115,380 ⁴
1980 ⁵	386	198,049	3,523	14,202,079	477,664	14,881,601 ⁶
1981 ⁵	388	252,437	2,385	20,149,896	1,874,602	22,279,708 ⁷
10-Year Average	1,248	188,708	3,124	6,744,108	507,115	7,444,303

¹ Includes purse seine, drift gill net and set gill net catches from the general purse seine, Coghill, Unakwik and Eshamy Districts in Prince William Sound proper. Also includes troll gear catches during 1972-76.

² General purse seine season closed.

³ Includes 133,648 pink salmon from hatchery harvests.

⁴ Includes 223,761 pink salmon from hatchery harvests.

⁵ Preliminary.

⁶ Includes 346,828 pink salmon and 6 chum salmon from hatchery harvests.

⁷ Includes 707,037 pink, 118 chum and 1 sockeye salmon from hatchery harvests.

Table 23. Final pink and chum salmon returns to Prince William Sound, 1981.

District	Catch	Pink Salmon		Total Run
		Escapement Goal	Estimated Escapement	
Eastern		403,750 - 484,500	768,000	
Northern		140,000 - 168,000	259,850	
Northwestern & Coghill		262,500 - 315,000	588,880	
Southwestern & Eshamy		112,500 - 135,000	193,750	
Montague		106,250 - 127,500	506,140	
Southeastern		225,000 - 270,000	594,890	
TOTAL	20,149,896 ¹	1,250,000 - 1,500,000	2,911,510	23,061,406

District	Catch	Chum Salmon		Total Run
		Escapement Goal	Estimated Escapement	
Eastern		87,200 - 109,000	92,240	
Northern		29,400 - 36,750	39,740	
Northwestern & Coghill		48,600 - 60,750	47,590	
Southwestern & Eshamy		3,400 - 4,250	770	
Montague		11,400 - 14,250	0	
Southeastern		20,000 - 25,000	21,890	
TOTAL	1,874,602 ¹	200,000 - 250,000	202,230	2,076,832

¹ Catches are preliminary and include 707,037 pink salmon and 118 chum salmon from hatchery harvests.

Table 24. Pink salmon runs, Prince William Sound, 1960-81.

Year	ESCAPEMENTS							Commercial Catch	Total Run
	Eastern	Northern	Coghill	Northwestern Southwestern	Eshamy	Montague Southeastern	Total		
1960	475,073	133,653	203,575	155,788	214,987	167,747	1,350,823	1,841,896	3,192,719
61	706,790	123,900	448,180	133,990	289,290	496,830	2,198,980	2,298,218	4,497,198
62	650,300	253,490	417,190	107,950	317,360	271,720	2,018,010	6,742,316	8,760,326
63	378,050	77,760	354,230	49,760	78,750	417,190	1,355,740	5,295,378	6,651,118
64	485,470	349,010	353,030	172,800	121,220	360,150	1,841,680	4,206,896	6,048,576
1965	258,680	54,970	187,760	62,720	77,000	255,930	897,060	2,460,471	3,357,531
66	489,800	255,710	200,940	110,980	42,050	201,150	1,300,630	2,699,418	4,000,048
67	321,520	167,300	544,080	109,750	23,800	300,270	1,466,720	2,626,340	4,093,060
68	360,300	136,630	201,790	165,510	44,100	183,440	1,091,770	2,452,168	3,543,938
69	328,960	147,880	264,750	132,510	63,470	218,060	1,155,630	4,828,579	5,984,208
1970	328,730	109,240	170,130	69,260	73,190	139,640	944,190	2,809,996	3,754,186
71	529,820	161,540	614,530	104,080	337,540	373,900	2,121,410	7,310,964	9,432,374
72	317,450	91,610	66,270	27,680	28,860	75,550	607,420	54,783	662,203
73	264,850	44,840	563,510	66,030	106,340	184,340	1,229,910	2,056,878	3,206,798
74	229,370	186,130	200,520	141,750	11,800	89,170	858,740	448,773	1,307,513
1975	570,830	44,270	580,170	77,860	110,950	234,210	1,618,290	4,452,805	6,071,095
76	446,470	123,380	116,730	51,200	12,260	115,560	865,600	3,018,994	3,884,594
77	465,970	62,150	426,670	226,060	196,970	315,510	1,693,330	4,514,431	6,207,761
78	268,940	159,870	200,950	220,610	48,680	156,830	1,055,610	2,780,073 ¹	3,835,683
79	782,420	223,580	241,120	264,710	323,490	1,091,970	2,927,290	15,393,223 ¹	18,320,513
1980	515,380	171,410	338,100	134,860	114,170	302,190	1,576,110	13,855,251 ¹	15,431,361
81	768,000	259,850	588,880	193,750	506,140	594,890	2,911,510	19,442,859 ¹²	22,354,369

¹ Does not include hatchery harvests.

² Preliminary.

Table 25. Chum salmon runs, Prince William Sound, 1960-81.

Year	ESCAPEMENTS										Commercial Catch	Total Run
	Northwestern					Southeastern						
	Eastern	Northern	Coghill	Eshamy	Montague	Eastern	Northern	Coghill	Eshamy	Montague		
1960	92,100	24,729	40,458	4,800	16,782	23,008	201,877	381,858	583,735			
61	117,950	50,420	70,940	4,750	34,380	59,910	338,350	224,401	562,751			
62	238,660	67,670	96,020	10,610	34,190	39,690	486,840	891,880	1,378,720			
63	148,090	68,390	114,250	5,330	15,070	20,030	371,160	942,900	1,314,060			
64	176,840	64,750	136,590	3,560	31,650	29,160	442,550	539,047	981,597			
1965	69,180	20,980	39,690	1,840	17,500	46,480	195,670	201,043	396,713			
66	85,480	39,440	42,150	3,420	32,720	20,160	223,370	426,628	649,998			
67	97,420	50,930	15,290	2,360	11,060	10,700	187,760	274,234	461,994			
68	99,350	31,530	37,310	5,100	1,590	21,400	196,280	342,939	539,219			
69	81,140	9,770	43,390	2,170	1,710	26,310	164,490	320,977	485,467			
1970	58,180	6,100	22,000	770	3,370	11,910	102,330	230,661	332,991			
71	79,930	16,190	34,570	1,210	25,620	9,260	166,780	574,265	741,045			
72	134,780	79,030	50,520	2,850	5,190	29,310	301,680	45,370	347,050			
73	267,210	143,420	89,790	1,130	2,930	42,110	546,590	729,839	1,276,429			
74	92,840	53,830	45,010	200	90	2,910	194,880	88,544	283,424			
1975	28,220	7,820	7,410	580	0	2,760	46,790	100,479	147,269			
76	17,870	26,520	38,460	90	0	950	83,890	370,478	454,368			
77	53,200	36,360	41,640	4,480	560	8,370	144,610	575,839	720,449			
78	102,290	25,410	27,650	500	0	6,030	161,880	485,147	647,027			
79	57,450	17,040	18,660	80	0	4,450	97,680	324,040	421,720			
1980	32,160	34,250	14,460	40	280	6,230	87,420	477,658 ¹	565,078			
81	92,240	39,740	47,590	770	0	21,890	202,230	1,874,484 ²	2,076,714			

¹ Preliminary. Does not include 6 chums harvested at San Juan hatchery.

² Preliminary. Does not include 118 chums harvested at San Juan hatchery.

Table 26. Chum salmon age composition, by sex, Prince William Sound, 1981.

Sex	Age Class				Total
	3	4	5	6	
Males					
Number	139,040	950,760	30,587	0	1,120,387
Percent	12.41	84.86	2.73	0.00	53.95
Females					
Number	69,525	867,389	19,413	0	956,327
Percent	7.27	90.70	2.03	0.00	46.05
Sexes Combined					
Number	208,565	1,818,149	50,000	0	2,076,714 ¹
Percent	10.04	87.55	2.41	0.00	100.00

¹ Catch data preliminary. Age composition based on commercial catch sampling only.

Table 27. Sockeye salmon escapement counts from selected systems in Prince William Sound, 1981.¹

SYSTEM	Number	Date of count										TOTAL ²			
		7/2	7/8	7/15	7/20	7/21	7/23	7/29	7/30	8/17	8/23		8/25		
Robe River	137			450 ³											450
Billy's Hole	218	0			0			0							0
Red Lake	300					1,500	560 ³	25							1,500
Shrode Lake	476		125			800		350				400			800
Jackpot Lakes	608							4,800		4,000			4,000		4,800
Bainbridge	630				450			250		500			650		650
TOTAL															8,200

¹ All counts are aerial estimates unless indicated otherwise.

² Peak count accepted as season escapement.

³ Ground count.

Table 28. Commercial catch of salmon by species by period, by gear type in the Coghill district, Prince William Sound, 1981.¹

PERIOD	Effort	Catch by species					TOTAL
		King	Sockeye	Coho	Pink	Chum	
<u>DRIFT GILL NET</u>							
6/24-26 ²	92	49	28,532		3,025	3,047	34,653
6/29-7/3	130	18	46,096	6	18,475	19,519	84,114
7/6-10	171	22	16,872	213	108,906	37,198	163,211
7/13-17	170	7	5,436	91	108,113	26,786	140,433
7/20-24 ³	145	8	2,978	21	167,913	25,353	196,273
7/27-31 ⁴	129	22	1,640	26	99,165	19,832	120,685
8/3-7	77	22	540	30	24,401	4,227	29,220
Total Gill Net		148	102,094	387	529,998	135,962	768,589
<u>PURSE SEINE</u>							
6/24-26 ²	2		199		257	279	735
6/29-7/3	15		1,153		8,521	8,752	18,426
7/6-10	5		386		3,820	10,935	15,141
7/13-17	0						
7/20-24 ³	1				4,160	2,229	6,389
7/27-31 ⁴	1		3		1,631	732	2,366
8/3-7	2		5		917	14	936
Total Purse Seine			1,746		19,306	22,941	43,993

continued

Table 28. (continued)

PERIOD	Effort	Catch by Species					TOTAL
		King	Sockeye	Coho	Pink	Chum	
<u>COMBINED GEAR</u>							
6/24-26 ²	94	49	28,731		3,282	3,326	35,388
6/29-7/3	145	18	47,249	6	26,996	28,271	102,540
7/6-10	176	22	17,258	213	112,726	48,122	178,352
7/13-17	170	7	5,436	91	108,113	26,786	140,433
7/20-24 ³	146	8	2,978	21	172,073	27,582	202,662
7/27-31 ⁴	130	22	1,643	26	100,796	20,564	123,051
8/3-7	79	22	545	30	25,318	4,241	30,156
Total All Gear		148	103,840	387	549,304	158,903	812,582

- ¹ The season opened in the Coghill district at 6 am on Wednesday, June 24 and remained open for regular weekly periods from 6 am Monday through 9 pm Friday until the season ended with the close of the weekly period at 9 pm on Friday, August 7.
- ² Fishing was permitted to within 500 yards of the mouth of Coghill River and the regular weekly fishing period was extended 24 hours until 9 pm Friday, June 26. These changes are normally not in effect until July 1.
- ³ Effective with the start of the regular weekly period at 6 am on Monday, July 20, fishing was permitted up to the mouth of Coghill River.
- ⁴ Effective with the start of the regular weekly period at 6 am, Monday, July 27 all of Port Wells west of a line from Pt. Pakenham to Pigot Point was closed to fishing for the duration of the season.

Table 29. Coghill District salmon catch by species and gear, 1972 - 1981.

Year	Peak Effort	Catch by Species					Total
		King	Sockeye	Coho	Pink	Chum	
<u>Drift Gill Net</u>							
1972	142	67	134,628	296	5,961	18,503	159,455
1973	160	144	74,426	237	61,328	68,311	204,446
1974	212	156	95,610	103	98,149	51,428	245,446
1975	311	525	142,864	357	99,492	32,438	275,676
1976	229	102	54,334	72	53,219	89,140	196,897
1977	207	124	154,342	49	332,859	127,476	614,850
1978	420	469	193,899	64	49,527	100,679	354,638
1979	247	543	75,753	1,837	259,372	56,916	394,421
1980 ¹	111	196	54,679	1,028	357,967	66,221	480,091
1981 ¹	171	148	102,094	387	529,998	135,962	768,589
10 Year Average		247	108,263	443	184,787	75,710	369,451
<u>Purse Seine</u>							
No Fishing							
1972			2,856	18	68,918	16,403	88,235
1973	73	40	4,273	22	54,268	7,720	66,475
1974	45	192	4,985	30	145,155	2,561	152,977
1975	45	246	6,159	29	56,967	30,328	93,566
1976	111	83					
1977	47	40	16,436	50	230,215	37,102	283,843
1978	25	206	9,623	34	13,059	14,007	36,929
1979	29	692	3,047	55	38,560	5,709	48,063
1980 ¹		2	2,699	146	147,243	6,555	156,645
1981 ¹	15		1,746		19,306	22,941	43,993
10 Year Average		150	5,182	38	77,369	14,333	97,073
<u>Combined Gear</u>							
1972	142	67	134,628	296	5,961	18,503	159,455
1973	233	184	77,282	255	130,246	84,714	292,681
1974	257	348	99,883	125	152,417	59,148	311,921
1975	356	771	147,849	387	244,647	34,999	428,653
1976	340	185	60,493	101	110,186	119,498	290,463
1977	254	164	170,778	99	563,074	164,578	898,693
1978	445	675	203,522	98	62,586	124,686	391,567
1979	276	1,235	78,800	1,892	297,932	62,625	442,484
1980 ¹		198	57,378	1,174	505,210	72,776	636,736
1981 ¹	186	148	103,840	387	549,304	158,903	812,582
10 Year Average		398	113,445	481	262,156	90,043	466,524

¹ Preliminary

Table 30 . Salmon escapement by species, Coghill District, 1972-81.

Year	Sockeye ¹	Pink ²	Chum ²
1972	16,392	24,050	25,890
1973	13,281	561,200	78,810
1974	22,333	42,660	39,700
1975	34,855	570,950	7,100
1976	9,056	50,930	35,750
1977	31,562	387,310	41,640
1978	42,284	75,270	13,550
1979	48,281	66,230	13,150
1980	142,253	182,430	12,610
1981	156,112 ³	275,813	1,188 30,740
10 Year Average	51,640	223,684	26,938

¹ Coghill River only. Aerial count in 1971. Weir-tower estimates during 1972-73. Total weir count after 1974.

² District totals include the west side of Port Wells.

³ Includes 4,748 sockeye jacks.

Table 31. Coghill River weir salmon counts, 1981.

Date	Sockeye		Pink		Chum		King	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
5/31								
6/ 1								
2								
3								
4	1	1						
5	36	37						
6	17	54						
7	49	103						
8	161	264						
9	321	585						
10	128	713						
11	324	1,037						
12	4,070	5,107			1	1		
13	3,236	8,343			6	7		
14	1,804	10,147			6	13		
15	3,024	13,171			11	24		
16	3,654	16,825	8	8	9	33		
17	1,464	18,289	1	9	1	34		
18	5,853	24,142	19	28	9	43	1	1
19	8,424	32,566	14	42	11	54	1	2
20	3,024	35,590	24	66	2	56	0	2
21	5,663	41,253	40	106	1	57	0	2
22	8,574	49,827	31	137	2	59	0	2
23	5,008	54,835	100	237	1	60	0	2
24	7,064	61,899	119	356	13	73	0	2
25	2,787	64,686	111	467	1	74	1	3
26	2,044	66,730	73	540	0	74	0	3
27	2,901	69,631	297	837	2	76	0	3
28	7,846	77,477	617	1,454	10	86	0	3
29	5,326	82,803	695	2,149	4	90	0	3
30	7,852	90,655	1,027	3,176	6	96	0	3
7/ 1	7,082	97,737	2,119	5,295	16	112	2	5
2	3,516	101,253	1,378	6,673	15	127	0	5
3	3,211	104,464	1,177	7,850	3	130	1	6
4	6,910	111,374	4,901	12,751	15	145	0	6
5	5,751	117,125	4,702	17,453	9	154	2	8
6	9,164	126,289	10,566	28,019	19	173	0	8
7	3,237	129,526	11,524	39,543	71	244	0	8
8	4,043	133,569	16,754	56,297	22	266	0	8
9	5,676	139,245	21,909	78,206	44	310	0	8
10	4,780	144,025	19,763	97,969	240	550	0	8
11	983	145,008	6,485	104,454	68	618	0	8
12	2,071	147,079	18,961	123,415	13	631	0	8

continued

Table 31. (continued)

Date	Sockeye		Pink		Chum		King	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
7/13	2,219	149,298	23,879	147,294	53	684	0	8
14	1,570	150,868	17,910	165,204	31	715	0	8
15	1,578	152,446	27,739	192,943	60	775	0	8
16	929	153,375	19,852	212,795	138	913	0	8
17	393	153,768	9,358	222,153	167	1,080	0	8
18	337	154,105	7,411	229,564	27	1,107	0	8
19	437	154,542	13,498	243,062	18	1,125	1	9
20	998	155,540	14,928	257,990	37	1,162	0	9
21	572	156,112	17,823	275,813	26	1,188	0	9
TOTAL		156,112 ¹		275,813		1,188		9

¹ Total includes 4,748 sockeye jacks.

Table 32. Coghill and Eshamy districts sockeye salmon commercial catch and escapement age composition, Prince William Sound, 1981.

District	Age class					Total
	1.1	1.2	1.3	2.2	2.3	
<u>Coghill</u>						
Catch						
Number	0	48670	43810	6490	4870	103840 ¹
Percent	0.00	46.87	42.19	6.25	4.69	39.15
Escapement						
Number	678	91802	58354	6489	4100	161423
Percent	0.42	56.87	36.15	4.02	2.54	60.85
Total						
Number	678	140472	102164	12979	8970	265263
Percent	0.26	52.97	38.50	4.89	3.38	100.00
<u>Eshamy²</u>						
Escapement						
Number	0	9686	7310	5485	584	23067
Percent	0.00	41.99	31.70	23.78	2.53	100.00

¹ Preliminary.

² Eshamy district closed to commercial fishing in 1981.

Table 33. Commercial catch of salmon by species, by period, by gear type in the Unakwik District, Prince William Sound, 1981.¹

Period	Effort	Catch by Species					Total
		King	Sockeye	Coho	Pink	Chum	
<u>DRIFT GILL NET</u>							
6/24-26	2		313			20	333
6/29-7/3	7		1,686		436	487	2,609
7/6-10	4		375		446	150	971
7/13-17	0						
7/20-24	0						
7/27-31	2		45		1,863	604	2,512
8/3-7	2		26		1,743	108	1,877
Total Gill Net			2,445		4,488	1,369	8,302
<u>PURSE SEINE</u>							
6/24-26	0						
6/29-7/3	1		41		70	573	684
7/6-10	0						
7/13-17	3		45		24,974	3,025	28,044
7/20-24	3		18		30,713	7,331	38,062
7/27-31	2		7		15,646	5,800	21,453
8/3-7	5		9		5,693	1,805	7,507
Total Purse Seine			120		77,096	18,534	95,750

Continued

Table 33. (Continued)

Period	Effort	Catch by Species					Total
		King	Sockeye	Coho	Pink	Chum	
<u>COMBINED GEAR</u>							
6/24-26			313			20	333
6/29-7/3			1,727		506	1,060	3,293
7/6-10			375		446	150	971
7/13-17			45		24,974	3,025	28,044
7/20-24			18		30,713	7,331	38,062
7/27-31			52		17,509	6,404	23,965
8/3-7			35		7,436	1,913	9,384
Total All Gear			2,565		81,584	19,903	104,052

¹ The season opened in the Unakwik district at 6 am on Wednesday, June 24 and remained open for weekly periods from 6 am Monday, through 9 pm, Friday until the season ended with the close of the regular weekly period at 9 pm on Friday, August 7. This included a 24 hour extension during the first week of fishing from 9 pm, Thursday, June 25 until 9 pm, Friday, June 26 which is normally closed prior to July 1.

Table 34. Unakwik District salmon catch by species and gear, 1972 - 1981.

Year	Peak Effort	Catch by Species					Total
		King	Sockeye	Coho	Pink	Chum	
<u>Drift Gill Net</u>							
1972	13	2	10,010		3,445	859	14,316
1973	12	1	8,858		119	91	9,069
1974	16	5	10,449	3	10,911	500	21,868
1975	14	4	11,922		84	70	12,080
1976	15	4	8,421		2,744	331	11,500
1977	16	3	7,912	2	257	141	8,315
1978	22	24	9,116		2,082	597	11,819
1979	30	11	9,250	9	2,359	289	11,918
1980 ¹			1,124	3	3,621	483	5,231
1981 ¹	7		2,445		4,488	1,369	8,302
10 Year Average		6	7,950	4	3,011	473	11,444
<u>Purse Seine</u>							
1972							No Fishing
1973							No Fishing
1974							No Fishing
1975							No Fishing
1976	4		7		8,526	225	8,758
1977							No Fishing
1978	24	3	268	5	55,115	5,025	60,416
1979							No Fishing
1980 ¹			429		10,105	592	11,126
1981 ¹	5		120		77,096	18,534	95,750
10 Year Average		3	206	5	37,711	6,094	44,016
<u>Combined Gear</u>							
1972	13	2	10,010		3,445	859	14,316
1973	12	1	8,858		119	91	9,069
1974	16	5	10,449	3	10,911	500	21,868
1975	14	4	11,922		84	70	12,080
1976	19	4	8,428		11,270	556	20,258
1977	16	3	7,912	2	257	141	8,315
1978	46	27	9,384	5	57,197	5,622	72,235
1979	30	11	9,250	9	2,359	289	11,918
1980 ¹			1,553	3	13,726	1,075	16,357
1981 ¹	12		2,565		81,584	19,903	104,052
10 Year Average		6	8,033	4	18,095	2,910	29,048

¹ Preliminary

Table 35. Eshamy District salmon catch by species and gear, 1972 - 1981.

Year	Peak Effort	Catch by Species					Total
		King	Sockeye	Coho	Pink	Chum	
<u>Drift Gill Net</u>							
1972	53	49	15,117	626	20,362	15,663	51,817
1973	42	41	7,470	71	11,777	16,632	35,991
1974	146	18	12,640	114	217,141	23,488	253,401
1975			C L O S E D				
1976			C L O S E D				
1977	53	22	16,916	49	63,036	8,344	88,367
1978			C L O S E D				
1979			C L O S E D				
1980 ¹	14		661	25	2,960	130	3,776
1981 ¹			C L O S E D				
10 Year Average ²		26	10,561	177	63,055	12,851	86,670
<u>Set Net</u>							
1972	11	33	37,771	520	25,013	10,345	73,682
1973	15	28	8,969	78	9,724	10,914	29,713
1974	10	4	6,394	11	68,300	5,408	80,117
1975			C L O S E D				
1976			C L O S E D				
1977	12	9	9,889	2	24,743	4,218	38,861
1978			C L O S E D				
1979			C L O S E D				
1980 ¹	5		2,000	38	2,371	134	4,543
1981 ¹			C L O S E D				
10 Year Average ²		15	13,005	130	26,030	6,204	45,383
<u>Combined Gear</u>							
1972	64	82	52,888	1,146	45,375	26,008	125,499
1973	57	69	16,439	149	21,501	27,546	65,704
1974	156	22	19,034	125	285,441	28,896	333,518
1975			C L O S E D				
1976			C L O S E D				
1977	65	31	26,805	51	87,779	12,562	127,228
1978			C L O S E D				
1979			C L O S E D				
1980 ¹	19		2,661	63	5,331	264	8,319
1981 ¹			C L O S E D				
10 Year Average ²		41	23,566	307	89,085	19,055	132,054

¹ Preliminary

² Only the five years open to fishing during this period were used to calculate averages. The general purse seine season was also closed during the 1972 and 1974, and is reflected in the larger catches during those years.

Table 36. Salmon escapement from weir and stream foot survey counts, Eshamy District, 1972 - 1981.¹

Year	King	Sockeye ²	Coho	Pink	Chum
1972		28,683	71	1,510	70
1973		10,202	205	5,390	170
1974		633		6,330	
1975		1,724	41	5,720	440
1976		19,367	125	5,500	
1977		11,746	230	32,080	
1978		12,580	20	5,690	
1979		12,169		12,860	
1980	5	44,263	128	13,813	2
1981	1	23,048 ³	249	21,490	13
Average		16,441	107	11,038	70

¹ Number of streams surveyed varies from 3 to 5 for pink and chum salmon, (See Technical Data Report No. 35 and Data Report No. 9).

² Weir count.

³ Assuming the run was 90% complete, an additional 2,600 sockeye are estimated to have escaped following the removal of the weir.

Table 37. Eshamy River weir salmon counts, 1981.

Date	Sockeye		Pink		Chum		King		Coho	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/16										
17										
18	8	8								
19	0	8								
20	5	13								
21	3	16								
22	27	43								
23	24	67								
24	20	87								
25	40	127								
26	0	127								
27	0	127								
28	0	127								
29	0	127								
30	19	146								
7/ 1	12	158								
2	0	158								
3	17	175								
4	36	211								
5	12	223								
6	19	242								
7	29	271								
8	0	271								
9	6	277								
10	14	291								
11	3	294								
12	0	294								
13	19	313								
14	0	313								
15	28	341								
16	75	416								
17	105	521								
18	135	656	2	2						
19	221	877	3	5						
20	108	985	0	5	1	1				
21	355	1,340	1	6	0	1				
22	3	1,343	0	6	0	1				
23	111	1,454	0	6	0	1				
24	91	1,545	0	6	0	1				
25	267	1,812	1	7	0	1				
26	245	2,057	1	8	0	1				
27	60	2,117	0	8	0	1				

continued

Table 37. (continued)

Date	Sockeye		Pink		Chum		King		Coho	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
7/28	101	2,218	0	8	0	1				
29	131	2,349	5	13	0	1				
30	145	2,494	8	21	0	1				
31	72	2,566	3	24	0	1				
8/ 1	50	2,616	1	25	0	1				
2	2,983	5,599	621	646	0	1				
3	716	6,315	74	720	2	3				
4	620	6,935	27	747	4	7				
5	465	7,400	18	765	1	8	1	1		
6	2,191	9,591	127	892	0	8	0	1		
7	1,793	11,384	547	1,439	3	11	0	1		
8	343	11,727	48	1,487	0	11	0	1		
9	661	12,388	77	1,564	0	11	0	1		
10	157	12,545	22	1,586	0	11	0	1		
11	391	12,936	88	1,674	0	11	0	1		
12	391	13,327	83	1,757	0	11	0	1		
13	817	14,144	244	2,001	0	11	0	1		
14	973	15,117	154	2,155	0	11	0	1	63	63
15	971	16,088	406	2,561	2	13	0	1	40	103
16	409	16,497	171	2,732	0	13	0	1	26	129
17	685	17,182	276	3,008	0	13	0	1	30	159
18	1,312	18,494	367	3,375	0	13	0	1	9	168
19	931	19,425	322	3,697	0	13	0	1	5	173
20	751	20,176	313	4,010	0	13	0	1	7	180
21	445	20,621	222	4,232	0	13	0	1	6	186
22	618	21,239	330	4,562	0	13	0	1	30	216
23	367	21,606	203	4,765	0	13	0	1	9	225
24	641	22,247	341	5,106	0	13	0	1	7	232
25	269	22,516	150	5,256	0	13	0	1	8	240
26	360	22,876	503	5,759	0	13	0	1	6	246
27	172	23,048	197	5,956	0	13	0	1	3	249
TOTAL		23,048 ¹		5,956		13		1		249

¹ Assuming the run was 90% complete, an additional 2,600 sockeye are estimated to have escaped following the removal of the weir.

Table 38. Prince William Sound herring fishery statistics, 1981

Fishery	District	Effort	Harvest (MT)	Fishing Duration
Sac Roe Seine	Eastern	101	3523.1	4/ 1 - 4/ 2 (42 hours)
Sac Roe Seine	Montague	101	9002.1	4/ 3 (18 hours)
Sac Roe Gill Net	Northern	18	213.7	4/16 - 4/18 (53 hours)
Spawn on Kelp	Northern	305 ¹	54.9	4/25 (12 hours)
Herring Pounds	Northern	18 ²	8.8	4/24 - 5/ 1 (168 hours)
Herring Bait/Food	General	7 ³	1095.7	9/15 - 9/20 (372 hours)

¹ Permits issued. Only 192 actual deliveries of spawn on kelp made. There were 19 fishermen without harvest permits who made deliveries.

² 18 permits issued. Only 11 permittees actually harvested pound kelp.

³ Five seine boats and 2 boats using 1 pair trawl participated.

Table 39. Daily aerial survey estimates of sac roe herring in Prince William Sound, 1981.

Date	Area or District ¹	No. Schools			Estimated Tonnage ²	Daily Total
		Small	Med.	Lge.		
3/24	Port Gravina	3	9	14	5,290	5,290
3/25	Port Gravina	3	6	15	5,520	5,520
3/27	Port Gravina	5	6	17	6,240	6,240
3/29	Port Gravina	9	4	12	4,450	4,450
3/31	Port Gravina	7	4	3	1,280	
	Galena Bay		1		40	
	Port Valdez	3	1		70	1,390
4/ 2	Port Gravina	3			30	30
4/ 3	Port Fidalgo	1			10	
	Port Valdez	3	1		70	80
4/ 4	Montague Island	7	17	36	13,700	
	Glacier Island	1			10	13,710
4/ 5	Montague Island	1	2		90	90
4/ 6	Montague Island	2	1	1	410	
	Port Valdez	4	2	3	1,170	1,580
4/ 8	Port Gravina	2			20	
	Port Valdez		2	1	430	450
4/11	Ellamar	3	3	3	1,200	
	Galena Bay	8	8	12	4,600	
	Port Valdez	1			10	5,810
4/12	Galena Bay	5	10	38	13,750	
	Rocky Point	3	3	3	1,200	
	Ellamar	5	4		210	
	Tatitlek Narrows	3	1		70	
	Boulder Bay	3	3	3	1,210	
	Port Fidalgo			1	350	16,790
4/13	Boulder Bay		1	3	1,090	
	Tatitlek Narrows	2	10	19	7,070	
	Black Point			1	350	
	Galena Bay	2	9	9	3,530	12,040
4/14	Port Valdez	2	1		60	
	Galena Bay	8	11	16	6,120	
	Fairmount Island		2	1	430	6,610
4/15	Green Island	2	1	6	2,160	
	Montague Island	1			10	
	Boulder Bay	4			40	
	Tatitlek Narrows	4			40	
	Ellamar	3	3	2	850	
	Black Point	1	2	1	440	
	Rocky Point	3	6	1	620	
	Galena Bay	8	10	7	3,650	7,810

continued

Table 39. Continued

Date	Area or District ¹	No. Schools			Estimated Tonnage ²	Daily Total
		Small	Med.	Lge.		
4/16	Galena Bay	11	10	5	2,260	
	Tatitlek Narrows	8	6		320	
	Landlocked Bay	9	5		290	
	Boulder Bay	6	5	3	1,340	
	Ellamar	3	3	2	850	
	Black Point	5	7	2	1,030	
	Rocky Point			1	350	
4/17	Knowles Bay	2			20	6,460
	Boulder Bay		1	1	390	
	Black Point	1	1		50	
	Johnson Cove		1	1	390	
	Jack Bay			1	350	
	Port Valdez	4	1		80	
	Galena Bay	1	2		90	1,350
4/18	Galena Bay	1	1		50	
	Jack Bay	1			10	
	Port Valdez	1	1	3	1,100	
	Ellamar	1	2	1	440	1,600
4/20	Green Island		2	1	430	
	Valdez Arm	2	1		60	490
4/21	Landlocked Bay	3	1		70	
	Boulder Bay	1	1		50	
	Tatitlek Narrows	3	1	2	770	
	Port Valdez	2			20	
	Olsen Bay	1			10	920
4/22	Port Fidalgo		1		40	
	Tatitlek Narrows	1	1		50	
	Rocky Point	1		1	360	
	Entrance Jack Bay	1			10	
	Port Valdez	1	1	3	1,100	
	Montague Island	6	25	51	18,910	20,470
4/23	Montague Island	25	27	62	23,030	
	Tatitlek Narrows		1		40	
	Galena Bay	1	1	2	750	
	Johnson Cove	1			10	
	Port Valdez	2			20	
	Landlocked Bay	4	2	1	470	24,320
4/24	Rocky Point	1			10	
	Galena Bay	3			30	
	Montague Island		3		120	
	Knowles Bay	4	3		160	
	Landlocked Bay	4			40	360

continued

Table 39. Continued

Date	Area or District ¹	No. Schools			Estimated Tonnage ²	Daily Total
		Small	Med.	Lge.		
4/25	Valdez Arm	7	2		150	
	Jack Bay		2	1	430	
	Valdez Narrows - Port Valdez	8	2	7	2,610	
	Tatitlek Narrows	1		7	360	
	Landlocked Bay	1	2	2	790	
	Boulder Bay	1	1	1	360	4,700
4/26	Galena Bay	2	1	1	410	
	Johnson Cove	1			10	
	Jack Bay	4	1		70	
	Valdez Narrows - Port Valdez	2	2		100	
	Montague Island		3		120	
	Black Point	1			10	720
4/27	Montague Island	7	7	4	1,750	
	Green Island	1			10	
	Knowles Bay		1		40	
	Landlocked Bay	1			10	
	Galena Bay	1	3		130	
	Johnson Cove	1			10	
	Valdez Arm	6			60	
	Port Valdez	3	1		70	2,080
4/28	Galena Bay	3	4		190	
	Johnson Cove	1			10	
	Valdez Arm	2	1		60	
	Port Valdez	4	3		160	
	Montague Island	8	11	5	2,270	2,690
4/30	Goose Island	2	1		60	
	Galena Bay	4	2		120	
	Port Valdez	2			20	
	Valdez Arm		1		40	
	Montague Island	20	12	6	2,780	3,020
5/ 1	Galena Bay	1	1		50	
	Johnson Cove	1	2		90	
	Port Valdez		1		40	180
5/ 5	Valdez Arm	2	3	2	840	
	Jack Bay		1		40	
	Port Valdez	1	1		50	930

¹ Daily observations include only those areas where herring were actually observed.

² Estimated tonnage based upon school size: small - up to 50 feet in diameter equals 10 tons; medium - 50 - 100 feet in diameter equals 40 tons; large - 100 feet in diameter equals 350 tons.

Table 40. Herring sac roe and spawn on kelp harvested in Prince William Sound, 1969 - 1981.

Year	Sac Roe			Spawn on Kelp		Herring ¹ Utilized (MT)	Total Utilization (MT)
	Effort Seines	Harvest (MT)	Effort Gill Nets	Harvest (MT)	Effort (MT)		
1969	6	322.6			3	2.4	341.5
1970					29	86.3	681.7
1971	12	833.8			34	348.9	3590.1
1972	16	1607.8			397	271.8	3755
1973	28	6335.1			176	138.9	7432.4
1974	72	5776.1	3	3.48	166	250.4	7757.8
1975	76	5516.1			437	415.9	8801.7
1976 ²	66	2344.2			357	219.9	4081.4
1977 ³	60	2070.7	1	1.42	164	189.1	3566
1978	75	1206	38	56	66	63.9	1766.8
1979	89	3753.8			198	214.6	5449.1
1980	74	5481.4 ⁴	16	239.87	469	277.7	7915.1
1981	101	12525	18	213.68	214	54.3 ⁵	13162.2

¹ Equivalent weight of herring utilized calculated from 10% roe recovery and 79% weight of eggs to kelp.

² No sac roe fishery in the Northern district.

³ No sac roe fishery in the Montague district.

⁴ 350 - 500 tons dead loss.

⁵ Does not include 8.8 metric tons from 11 pounds.

Table 41. Prince William Sound herring sac roe aerial surveys, peak estimates and seasonal harvests in metric tons, 1974 - 1981.

Year	Fishing District	Harvest	Peak Estimate
1974	Northern	2,628	35,000
1975	"	990	1,200
1976	"	No Fishery	7,830
1977	"	2,071	16,790
1978	"	1,210	8,310
1979	"	1,032	9,830
1980	"	240	24,550
1981	"	214	16,430
1974	Montague	3,135	9,110
1975	"	4,319	0 ¹
1976	"	1,966	70
1977	"	No Fishery	120
1978	"	" "	60
1979	"	" "	1,000
1980	"	4,441	20,400
1981	"	9,002	23,670
1974	Eastern	No Fishery	0 ¹
1975	"	" "	0 ¹
1976	"	379	90
1977	"	No Fishery	0 ¹
1978	"	" "	0 ¹
1979	"	2,721	17,860
1980	"	509	260
1981	"	3,523	6,240

¹ Surveys flown, no herring schools observed.

Table 42. Summary of aerial observations of sac roe herring, season high counts in Prince William Sound, 1974 - 1981.

Date	District	Number of Schools Observed			Estimated Tonnage ¹	
		Sm.	Med.	Lg.		
<u>1974</u>						
4/19	Northern	100	45	92	35,000	
4/18	Montague	1	4	10	3,670	
4/24	Montague	3	4	15	5,440	
<u>1975</u>						
4/23	Northern	24	24		1,200	
<u>1976</u>						
4/14	Northern	5	7	20	7,830	
<u>1977</u>						
4/18	Northern	18 extra large schools	22	35	13,290 3,500	16,790
<u>1978</u>						
4/17	Northern	128	34	13	7,230	
5/ 3	Northern	47	21	20	8,310	some juveniles
6/12	Northern	150	42	6	5,280	
<u>1979</u>						
4/18	Eastern	40	34	46	17,860	
4/20	Northern	21	13	26	9,830	
4/28	Montague	10	5	2	1,000	
4/28	Hinchinbrook Island	18	6	2	1,120	
<u>1980</u>						
4/ 9	Montague	12	17	56	20,400	
4/15	Northern	62	47	49	24,550	
<u>1981</u>						
3/27	Eastern	5	6	17	6,240	
4/12	Northern	19	21	41	16,790	
4/23	Montague	25	27	62	23,030	

¹ Estimated tonnage based upon school size: Small - up to 50 feet in diameter - 10 tons; Medium - 50 feet to 100 feet in diameter = 40 tons; Large - 100 feet and over in diameter = 350 tons.

Table 43. Herring for bait and food harvested in Prince William Sound, in metric tons, 1967 - 1981.¹

Year	Seine		Pair Trawl		Mid-Water Trawl		Otter Trawl		Total MT
	Effort	Harvest MT	Effort	Harvest MT	Effort	Harvest MT	Effort	Harvest MT	
1967 ²		27.2							27.2
1970	1	5.1							9.1
1971	2	18.1							18.1
1972	1	4.4							4.4
1973	1	7.7							7.7
<u>Season</u>									
1977-78	2	15.4	2	131.8	1	82			147.2
1978-79 ³	2	177.2	2	896.9	1	93.6	1	2.3	1156.1
1979-80 ⁴	1	463.4	2	131.6					691
1980-81 ⁵	3	934.7	3	350.1					1184.8
1981-82 ⁶	6	1029.4	2	66.3					1095.7

¹ No harvest in years not listed.

² No effort data available.

³ Fishery opened by emergency order on 10/16/79 and extended on 1/7/80. Deliveries made through March 2.

⁴ Fishing season opened by emergency order 9/15, closed 12/31, and reopened by emergency order from 2/16-28.

⁵ Fishing season opened by regulation on September 15 and closed by emergency order on 11/7.

⁶ Fishing season opened by regulation on September 15 and closed by emergency order on 9/30.

Table 44. Age, length, weight composition by sex, herring sac roe purse seine fishery, Port Gravina, 1981.

Age Group	Year Class	Males			Females			Combined Sexes Frequency Percent
		Frequency Number	Mean Length mm	Mean Weight grams	Frequency Number	Mean Length mm	Mean Weight grams	
III	1978	3	177.7	70.0	1	190.0	85.0	(4) 3.1
IV	1977	11	193.7	81.5	12	183.5	113.2	(23) 18.0
V	1976	45	199.3	116.6	46	200.4	114.3	(91) 71.1
VI	1975	5	207.0	119.2	4	208.3	121.5	(9) 7.0
VII	1974	1	215.0	158.0				(1) .8
Total Number		65			63			128
Average Length			198.2			200.7		
Average Weight				105.9			114.1	

Sex Composition: Males - 50.8
Females - 49.2

Table 45. Age, length, weight composition by sex, herring sac roe seine fishery, Rocky Bay, Montague Island, 1981.

Age Group	Year Class	Males			Females			Combined Sexes Frequency Percent			
		Frequency Number	Frequency %	Mean Length mm	Mean Weight grams	Frequency Number	Frequency %		Mean Length mm	Mean Weight grams	
III	1978	2	2.9	86.0	63.5			(2)	1.8		
IV	1977	16	23.5	193.0	94.0	7	15.5	191.9	95.1	(23)	20.4
V	1976	46	67.6	199.9	105.6	35	77.8	205.8	115.0	(81)	71.7
VI	1975	4	5.8	201.8	113.3	2	4.4	193.0	111.0	(6)	5.3
VII	1974					1	2.2	228.0	164.0	(1)	.9
Total Number		68				45				113	
Average Length				197.7				203.0			
Average Weight					102.1				111.7		

Sex Composition: Males - 60.2
Females - 39.8

Table 46. Age, length, weight composition by sex, herring sac roe gillnet fishery, Galena Bay, 1981.

Age Group	Year Class	Males			Females			Combined Sexes Frequency Percent		
		Frequency Number	Frequency %	Mean Length mm	Mean Weight grams	Frequency Number	Frequency %		Mean Length mm	Mean Weight grams
IV	1977	1	1.6	207.0	120.0			(1)	.7	
V	1976	25	40.3	217.1	128.0	39	47.6	214.0	123.2	(64) 44.4
VI	1975	17	27.4	217.8	129.0	27	32.9	216.5	128.1	(44) 30.6
VII	1974	15	24.2	224.5	131.5	9	10.9	224.0	144.0	(24) 16.7
VIII	1973	3	4.8	221.0	132.7	6	7.3	223.7	139.7	(9) 6.2
IX	1972	1	1.6	119.0	120.0	1	1.2	226.0	162.0	(2) 1.3
Total Number		62				82				144
Average Length				210.5				219.3		
Average Weight					124.5				129.9	

Sex Composition: Males - 43.1
Females - 56.9

Table 47. Age, length, weight composition by sex of herring samples from pounds in Landlock Bay, 1981.

Age Group	Year Class	Males			Females			Combined Sexes Frequency Percent	
		Frequency Number	Frequency %	Mean Length mm	Mean Weight grams	Frequency Number	Frequency %		Mean Length mm
III	1978	1	1.2	188.0	78.0			(1)	.8
IV	1977	13	16.0	205.2	75.6	4	10.9	201.0	101.8
V	1976	51	62.9	204.8	98.4	27	72.9	203.9	110.7
VI	1975	11	13.6	202.1	125.7	2	5.4	216.5	101.0
VII	1974	4	4.9	208.0	107.5	3	8.1	208.3	103.3
VIII	1973	1	1.2	225.0	128.0	1	2.7	239.0	116.0
Total Number		81				37			118
Average Length				204.7				205.6	
Average Weight				94.7				108.7	

Sex Composition: Males - 68.6
Females - 31.4

Table 48. Age, length, weight composition of the herring bait/food fish fishery, Prince William Sound, 1981.

Age Group	Year Class	Males			Females			Combined Sexes			
		Frequency Number	Frequency %	Mean Length mm	Mean Weight grams	Frequency Number	Frequency %	Mean Length mm	Mean Weight grams	Frequency Percent	
II	1979	8	3.5	160.6	58.0	6	3.4	161.7	65.0	(14)	3.4
III	1978	41	18.0	177.4	77.1	29	16.2	181.4	73.4	(70)	17.2
IV	1977	61	26.8	183.0	90.4	53	29.6	176.7	82.4	(114)	28.0
V	1976	63	27.6	186.5	99.8	56	31.3	181.9	91.1	(119)	29.2
VI	1975	36	15.8	194.2	95.6	21	11.7	188.8	95.9	(57)	14.0
VII	1974	8	3.5	194.6	111.3	5	2.8	195.0	100.4	(13)	3.2
VIII	1973	10	4.4	188.8	108.7	8	4.5	194.9	105.3	(18)	4.4
IX	1972	1	.4	196.0	126.0	1	.6	155.0	76.0	(2)	.5
Total Number		228				179				407	
Average Length				184.6				181.2			
Average Weight					91.4				85.9		

Sex Composition: Males - 56
Females - 44

Table 49. Calendar weeks used in reporting catch statistics in 1981.

Weeks	From	Through	Weeks	From	Through
1	Jan. 1	3	29	Jul. 12	18
2	4	10	30	19	25
3	11	17	31	26	Aug. 1
4	18	24	32	Aug. 2	8
5	25	31	33	9	15
6	Feb. 1	7	34	16	22
7	8	14	35	23	29
8	15	21	36	30	Sep. 5
9	22	28	37	Sep. 6	12
10	Mar. 1	7	38	13	19
11	8	14	39	20	26
12	15	21	40	27	Oct. 3
13	22	28	41	Oct. 4	10
14	29	Apr. 4	42	11	17
15	Apr. 5	11	43	18	24
16	12	18	44	25	31
17	19	35	45	Nov. 1	7
18	26	May 2	46	8	14
19	May 3	9	47	15	21
20	10	16	48	22	28
21	17	23	49	29	Dec. 5
22	24	30	50	Dec. 6	12
23	31	June 6	51	13	19
24	June 7	13	52	20	26
25	14	20	53	27	31
26	21	27			
27	28	Jul. 4			
28	Jul. 5	11			

Table 50. Average price paid per pound for salmon, shellfish and miscellaneous fish in the Prince William Sound Area, 1981.

SALMON				
King	Sockeye	Coho	Pink	Chum
\$1.65 ¹	\$1.40 ¹	\$.44 - \$.95 ²	\$.44	\$.50

SHELLFISH					
King Crab	Dungeness Crab	Tanner Crab	Trawl	Shrimp Pot	Razor Clams (Bait)
\$1.10	\$.65	\$.65	\$.29	\$3.00 - \$5.00	\$.80

MISCELLANEOUS FISH					
Herring Sac Roe	Herring Spawn on Kelp	Herring (Bait)	Halibut	Bottom Fish (Bait)	Octopus (Bait)
\$.20 ³	\$1.00 ⁴	\$.125	\$1.00	\$.40 - .45	\$.50

- ¹ Contract price was \$1.25 for Sockeye and \$1.40 for Kings but payments from cash buyers raised the average price to this level.
- ² The settlement price reached for coho salmon caught in Prince William Sound was \$.35 and \$.95 for Copper River and Bering River.
- ³ Based on \$400/ton for 9% recovery seine caught fish while gill net recoveries of 13% averaged about \$550-600/ton.
- ⁴ Based on average price of \$.85 for sieve kelp (60% of production), \$1.25 for ribbon kelp (38% of production) and \$.60 for hair kelp (2% of production).

Table 51. Average price paid to fishermen for salmon and herring in Prince William Sound, 1977-81¹.

Species	1977	1978	1979	1980	1981 ⁷
King salmon	\$ 1.40	\$ 1.39	\$ 1.62	\$ 1.40	\$ 1.65 ⁸
Sockeye salmon	.97	1.23	1.40	.85	1.40 ⁸
Coho salmon					
Copper-Bering Rivers	.70	1.10	1.10	.95	.95
Prince William Sound	.37	.39	.39	.39	.44
Pink salmon	.3575 ²	.3701 ³	.3777 ⁴	.4229 ⁵	.44
Chum salmon	.3992 ²	.4258	.53	.50	.50
Herring					
Sac Roe	.14	.363	.625	.1625	.20 ⁹
Spawn on Kelp	.69	1.247	1.74	1.09 ⁶	1.00 ¹⁰

¹ Source; Processors Annual Reports. Prices are per pound unless indicated otherwise.

² The sliding scale percentage paid after sale of the pack was .0167 for pinks and .0281 for chums.

³ The egg recovery adjustment paid was .007 percent.

⁴ The egg recovery adjustment was \$.07275 per pound.

⁵ The egg recovery adjustment was \$.0642 per pound.

⁶ Based on average price of \$.85 for sieve kelp (40% of production) and \$1.25 for ribbon kelp (60% of production).

⁷ Preliminary.

⁸ Contract price was \$1.25 for sockeyes and \$1.40 for kings but payments from cash buyers raised the average price to approximately this level.

⁹ Based on estimated \$400/ton for 9% recovery seine caught fish while gill net recoveries were about 13% and prices averaged \$550-600/ton.

¹⁰ Based on average price of \$.85 for sieve kelp (60% of production), \$1.25 for ribbon kelp (38% of production) and \$.60 for hair kelp (2% of production).

Table 52. Average weight in pounds of salmon in commercial catches from the Prince William Sound Area, 1972 - 1981.¹

Year	King	Sockeye	Coho	Pink	Chum
COPPER RIVER - BERING RIVER					
1972	30.1	6.1	8.4	4.2	6.7
1973	32.3	6.9	9.4	4.3	6.7
1974	33.4	6.8	9.1	4.7	7.9
1975	27.8	6.6	9.3	5.3	6.0
1976	28.4	6.8	10.2	4.3	7.4
1977	28.4	7.3	10.6	4.6	7.3
1978	27.3	6.2	9.3	4.2	7.0
1979	27.4	6.9	9.2	4.4	7.9
1980 ³	28.0	7.0	9.7	5.0	7.9
1981 ³	26.2	6.8	10.3	4.4	7.1
10 Year Average	28.9	6.7	9.6	4.5	7.2
PRINCE WILLIAM SOUND					
1972 ²	13.1	7.4	8.4	4.5	8.9
1973	12.1	7.5	7.0	4.0	9.5
1974 ²	13.3	7.3	8.2	4.7	9.0
1975	11.2	7.6	7.9	3.6	7.2
1976	11.5	7.4	8.4	4.2	9.1
1977	15.1	7.9	8.1	4.4	9.0
1978	12.3	8.1	8.5	3.6	8.5
1979	11.0	7.1	7.9	3.7	9.1
1980 ³	10.0	7.4	9.0	3.4	8.0
1981 ³	17.5	6.6	8.1	4.3	8.5
10 Year Average	12.7	7.4	8.2	4.0	8.7

¹ Data from Alaska Department of Fish and Game Commercial Fisheries Statistical Leaflets in 1974-75 while all other years are from fish ticket data. Data from Prince William Sound includes all districts and gear types.

² General purse seine season closed.

³ Preliminary

Table 53. Prince William Sound Area case pack and pounds of frozen salmon by species, by week, 1981.¹

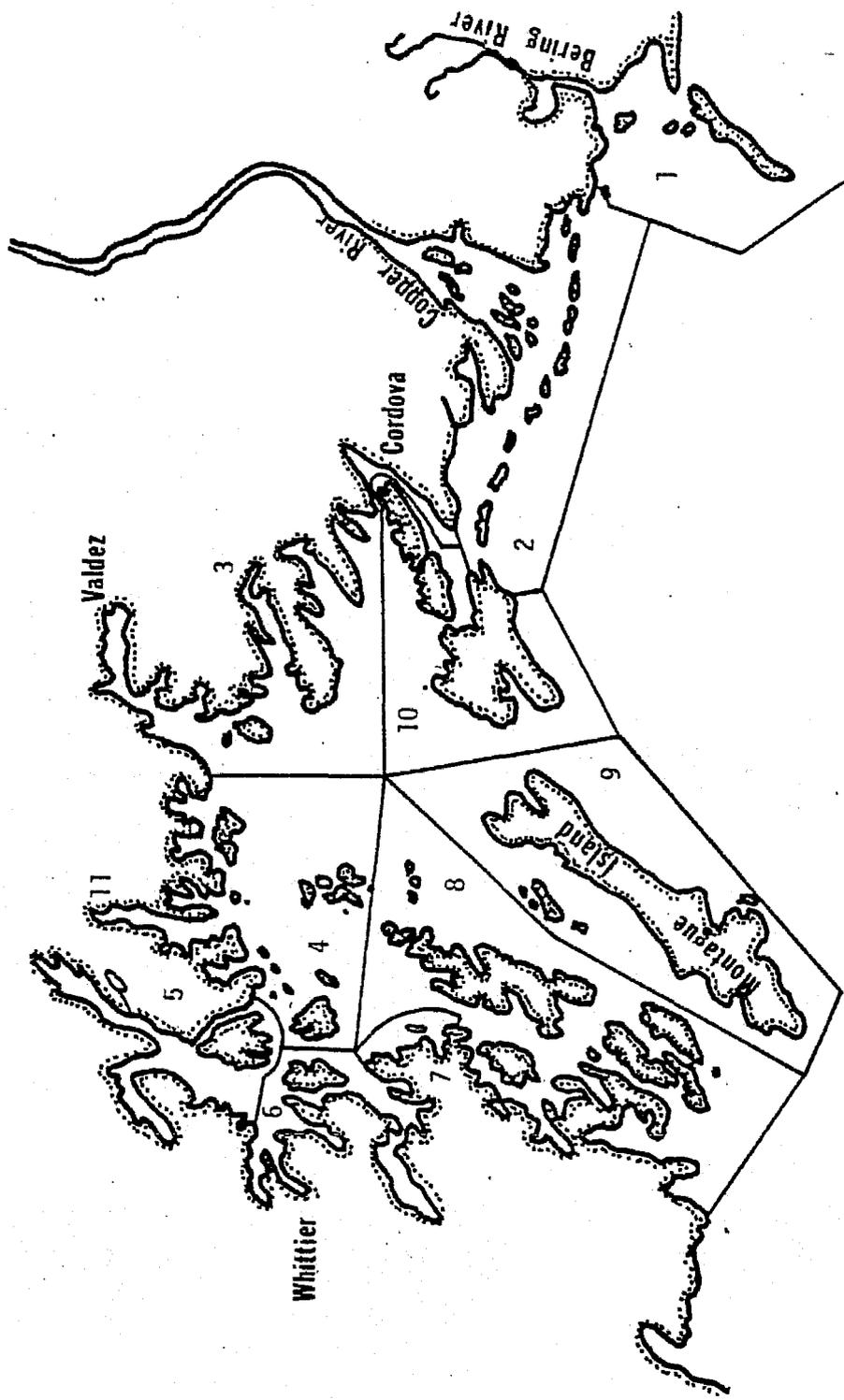
Week Ending	King		Sockeye		Coho		Pink		Chum	
	Frozen	Cases	Frozen	Cases	Frozen	Cases	Frozen	Cases	Frozen	Cases
5/23	112123	75	334677	651						
5/30	110206	17	497604	1308						
6/ 6	67451	15	272596	13111					101	4
6/13	69386	7	272587	511	7		316	26	900	106
6/20	5630	12	165136	23075			1682	6159	4335	12814
6/27	18656	41	215603	3720			816	33737	37553	22370
7/ 4	14165		281362	9431		101	14226	39108	86690	41866
7/11	2808		183046	8602		135	8000	96463	353495	29173
7/18	1682		258100	2309		120	44709	138598	310621	20953
7/25	2218		201371	890	1447	241	144143	197456	127142	18851
8/ 1			20096	552	10401	326	136550	125868	193064	16031
8/ 8			15752	484	7391	930	43245	98618	118634	14284
8/15			3736	389	122795	747	4832	24235	22827	4963
8/22				24	362624	567		10502		272
8/29				10	279636	35		5745		27
9/ 5					407002					
9/12					317242					
9/19					195812					
9/26					82500					
TOTAL	404325	167	2721666	65067	1786850	3202	398519	776515	1255362	181714

¹ From weekly reports of processors. Frozen salmon reported in processed weight, and cases on a basis of 48 one pound cans.

Table 54. Prince William Sound Area case pack and pounds of frozen salmon by species, 1972 - 1981.¹

Year	King		Sockeye		Coho		Pink		Chums	
	Frozen	Cases	Frozen	Cases	Frozen	Cases	Frozen	Cases	Frozen	Cases
1972	839638	177	40736	81632	672305	5523	23586	3102	19673	5684
1973	611482	164	222978	40850	1293847	6053	39584	73635	292380	59284
1974	408662	1507	62725	68576	2620	14127	0	30335	1187	10925
1975	293657	183	553541	24281	564579	1254	0	133358	63154	6266
1976	758172	151	1294110	99436	918509	5564	351944	121762	514854	2302
1977	356567	253	2741166	41860	861761	2420	1232766	178151	931911	38850
1978	581353	139	2518147	15664	1690871	4482	229744	117863	705796	39376
1979	302419	158	1466938	3669	1782175	3970	1769191	474084	305315	24347
1980	176124	215	347049	46716	865893	3059	76891	384353	433536	42813
1981	404325	167	2721666	65067	1786350	3202	398519	776515	1255362	181714

¹ Case pack on the basis of 48 one pound cans per case. Frozen salmon in round weight 1972 - 77. From 1978 frozen salmon reported in processed weight.



Fishing Districts

- | | |
|-----------------|------------------|
| 1. Bering River | 6. Northwestern |
| 2. Copper River | 7. Eshamy |
| 3. Eastern | 8. Southwestern |
| 4. Northern | 9. Montague |
| 5. Coghill | 10. Southeastern |
| | 11. Unakwik |

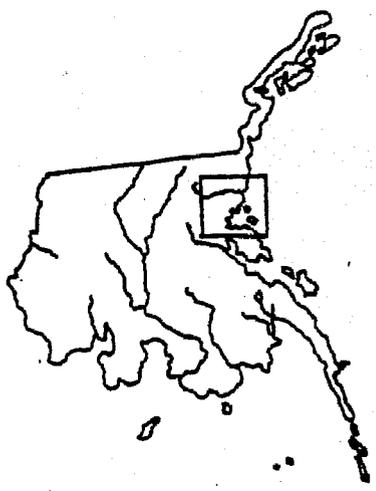


Figure 1. Prince William Sound Area commercial fisheries salmon management areas.

ALL SPECIES SALMON CATCH, PRINCE WILLIAM SOUND

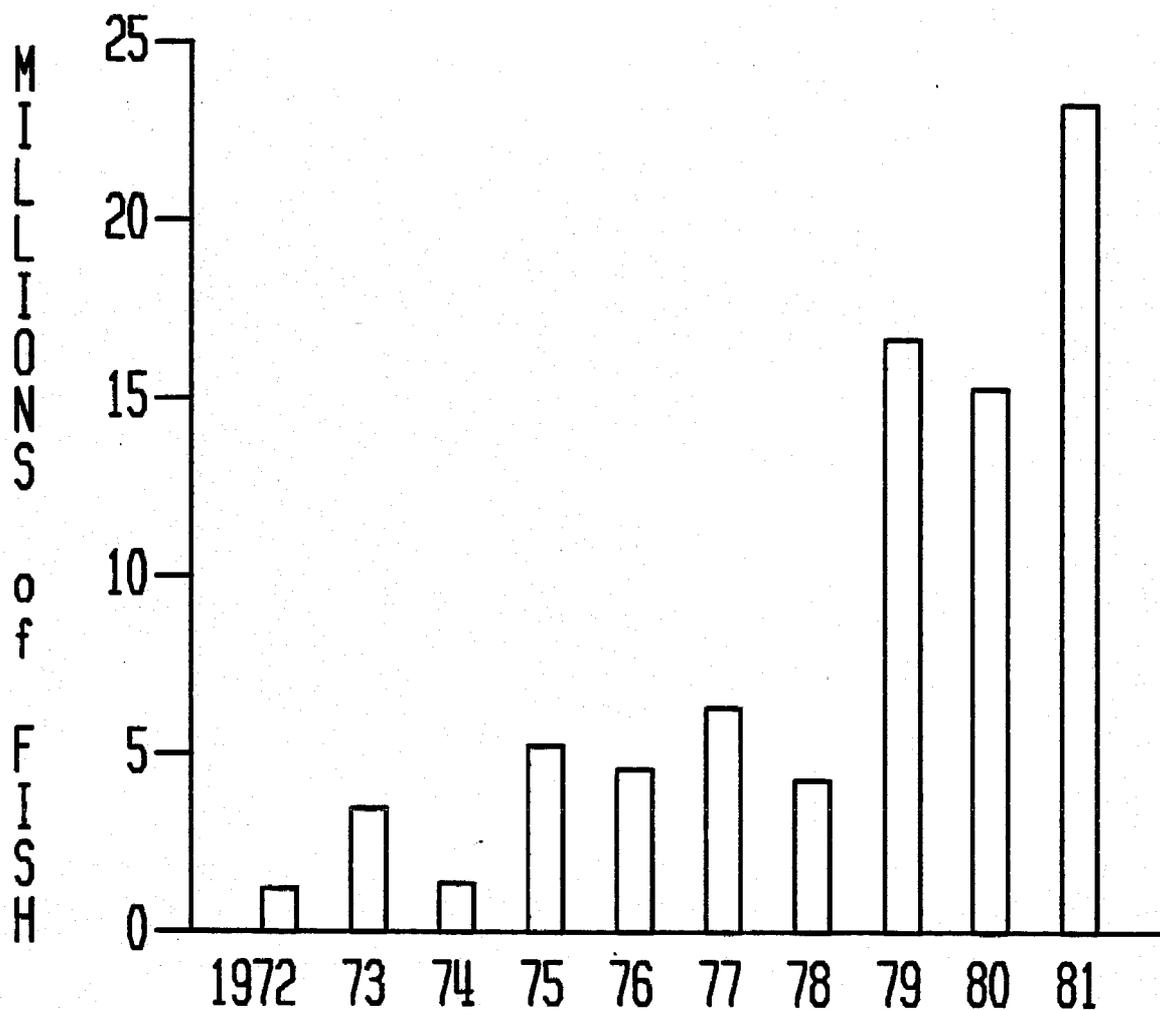


Figure 2. Total salmon catches for all species and districts, Prince William Sound Area, 1972-81.

CHINOOK SALMON CATCH, COPPER RIVER DISTRICT

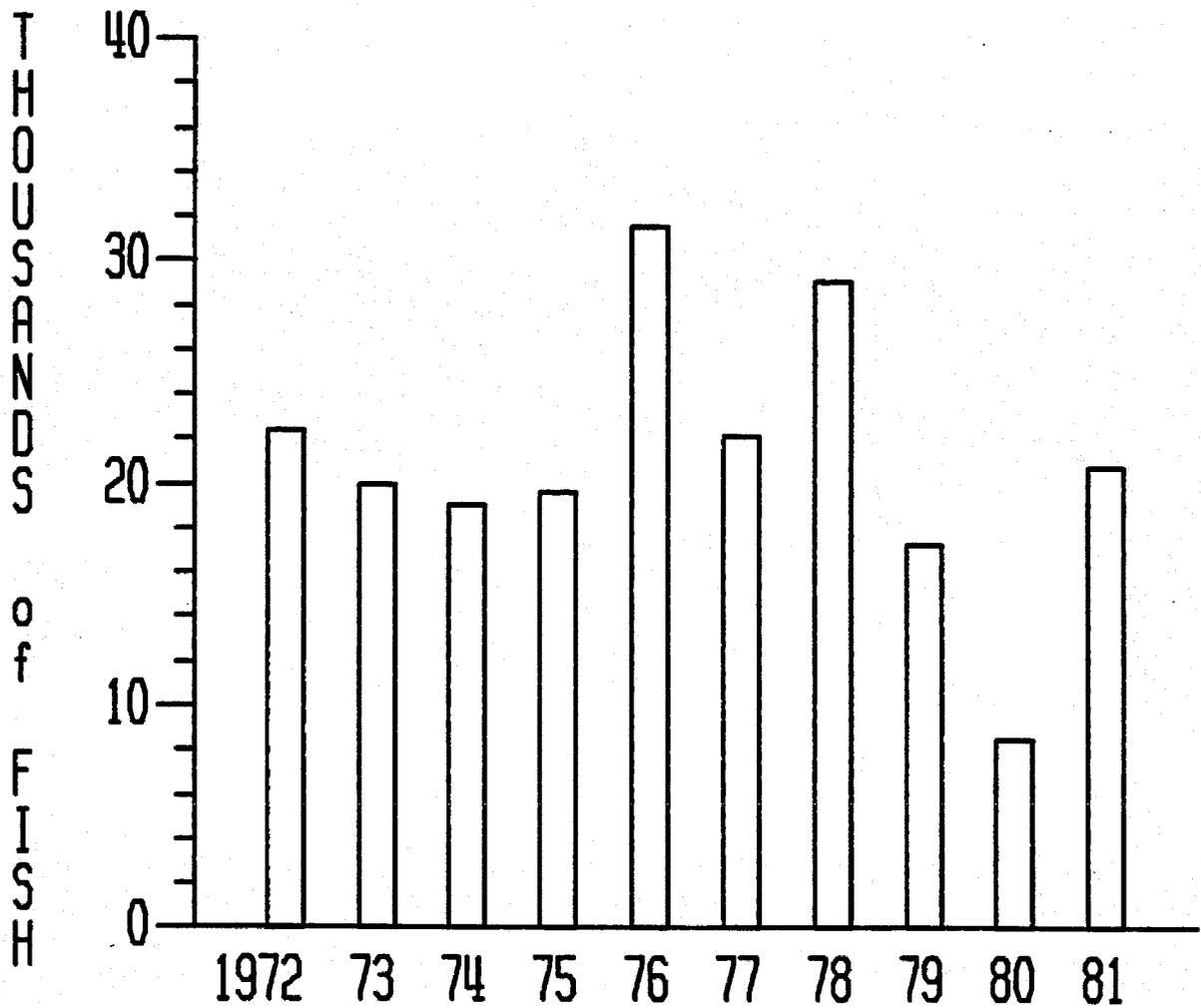


Figure 3. Chinook salmon catches in the Copper River District, 1972-81.

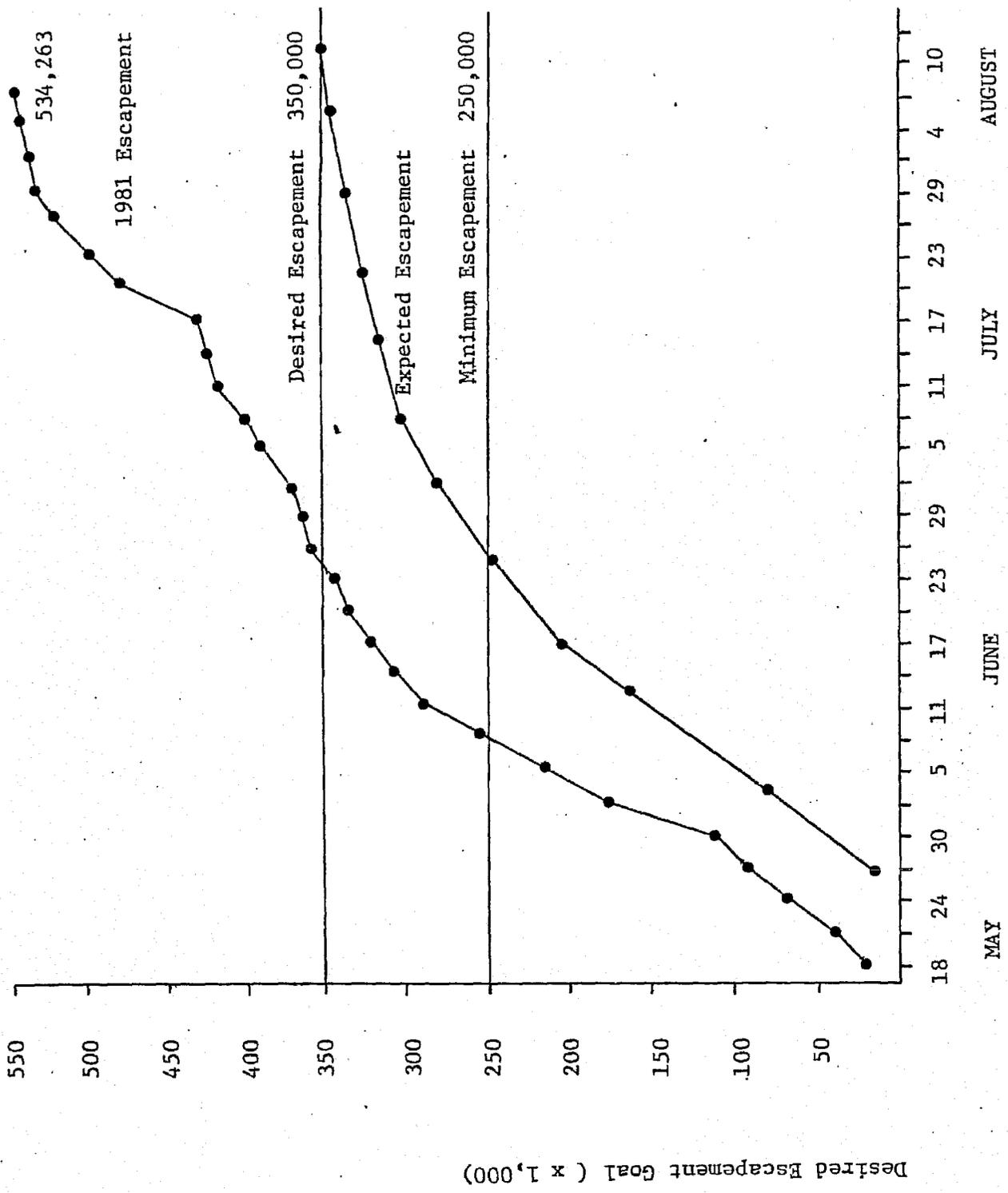


Figure 4. Estimated Copper River Salmon Sonar Counts, 1981.

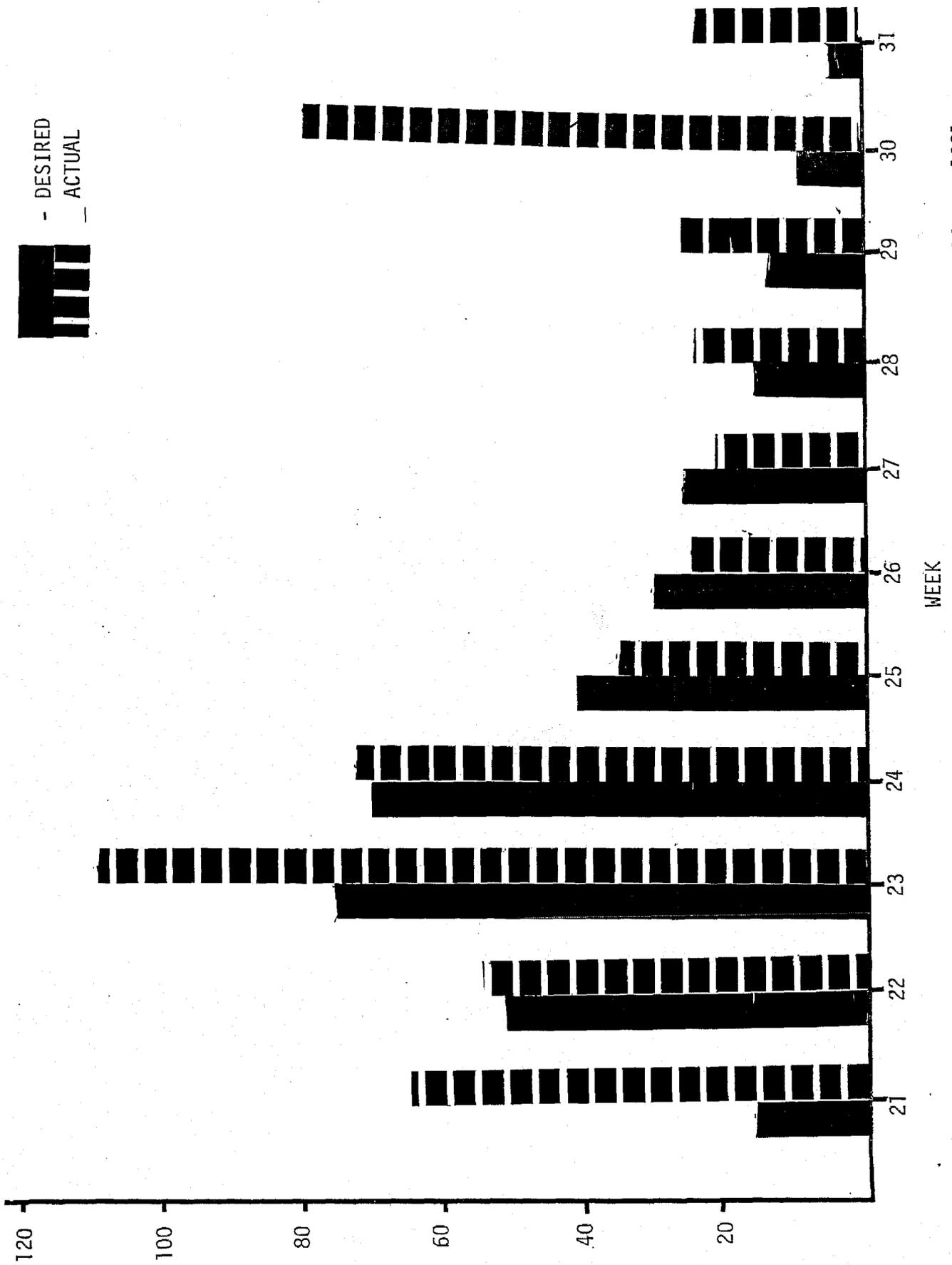


Figure 5. Sockeye salmon escapement by week at Miles Lake Sonar counter, Copper River, 1981.

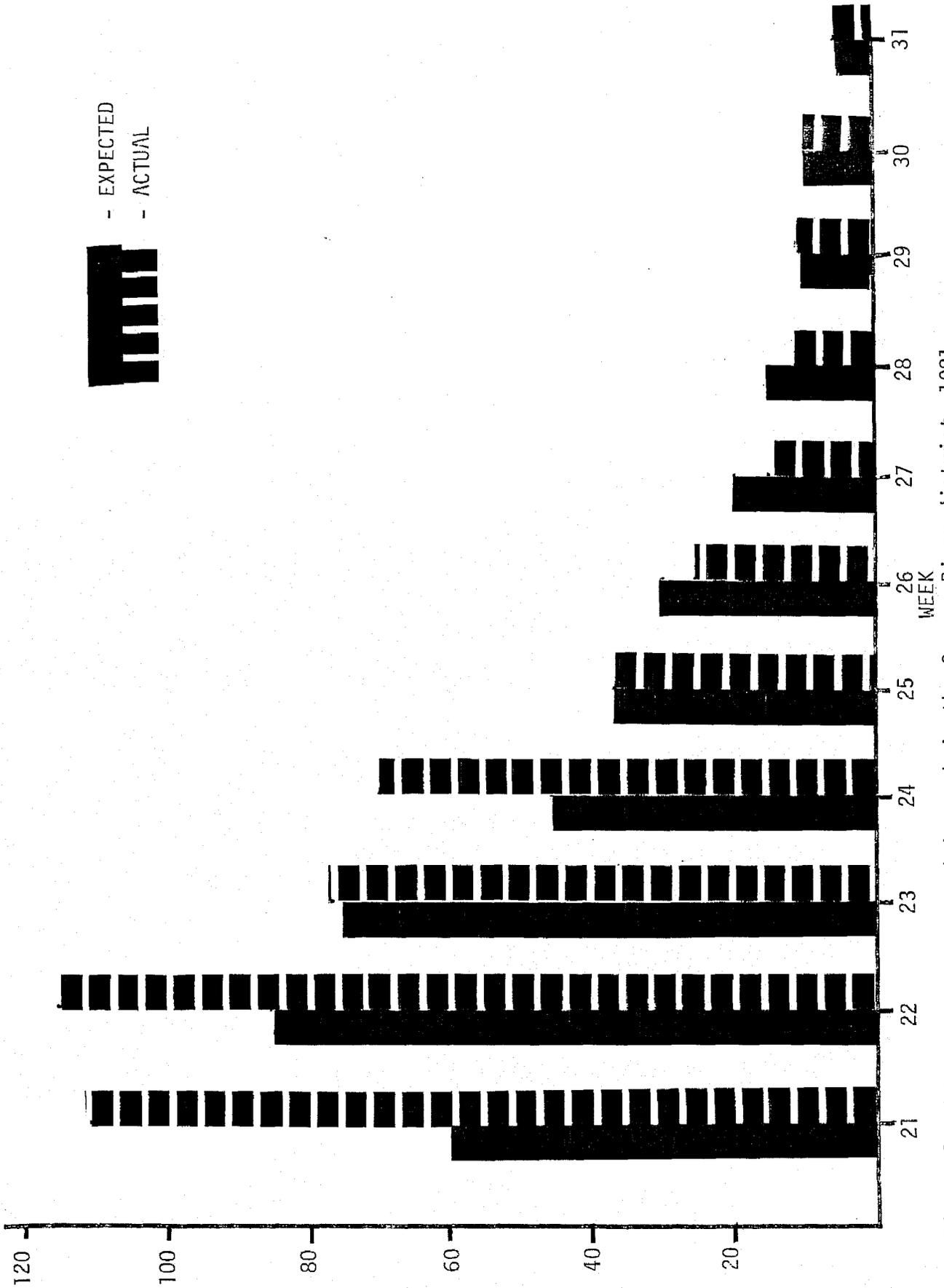
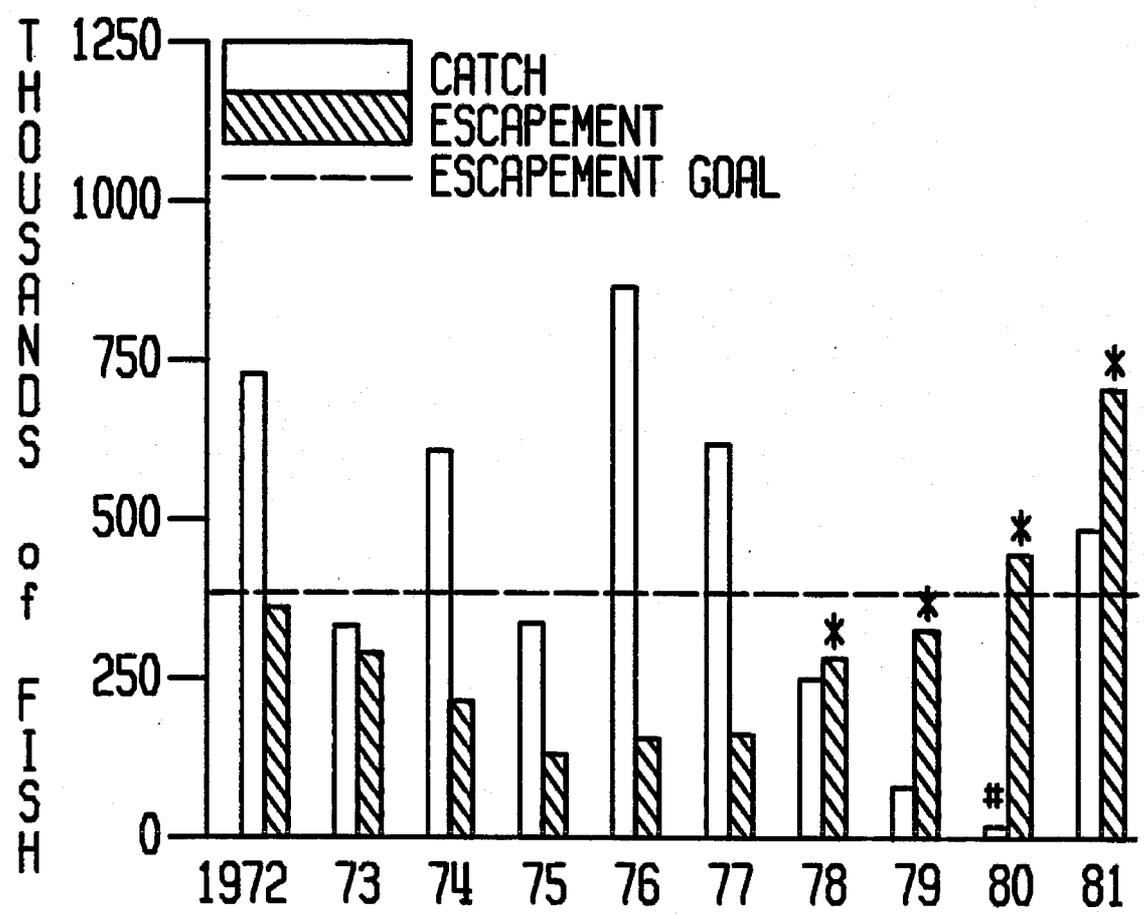


Figure 6. Sockeye salmon catch by week in the Copper River district, 1981.

SOCKEYE SALMON CATCH and ESCAPEMENT COPPER RIVER DISTRICT



* includes sonar counts
no sockeye fishery in 1980

Figure 7. Sockeye salmon catch and escapement in the Copper River District, 1972-81.

COHO SALMON CATCH, COPPER RIVER DISTRICT

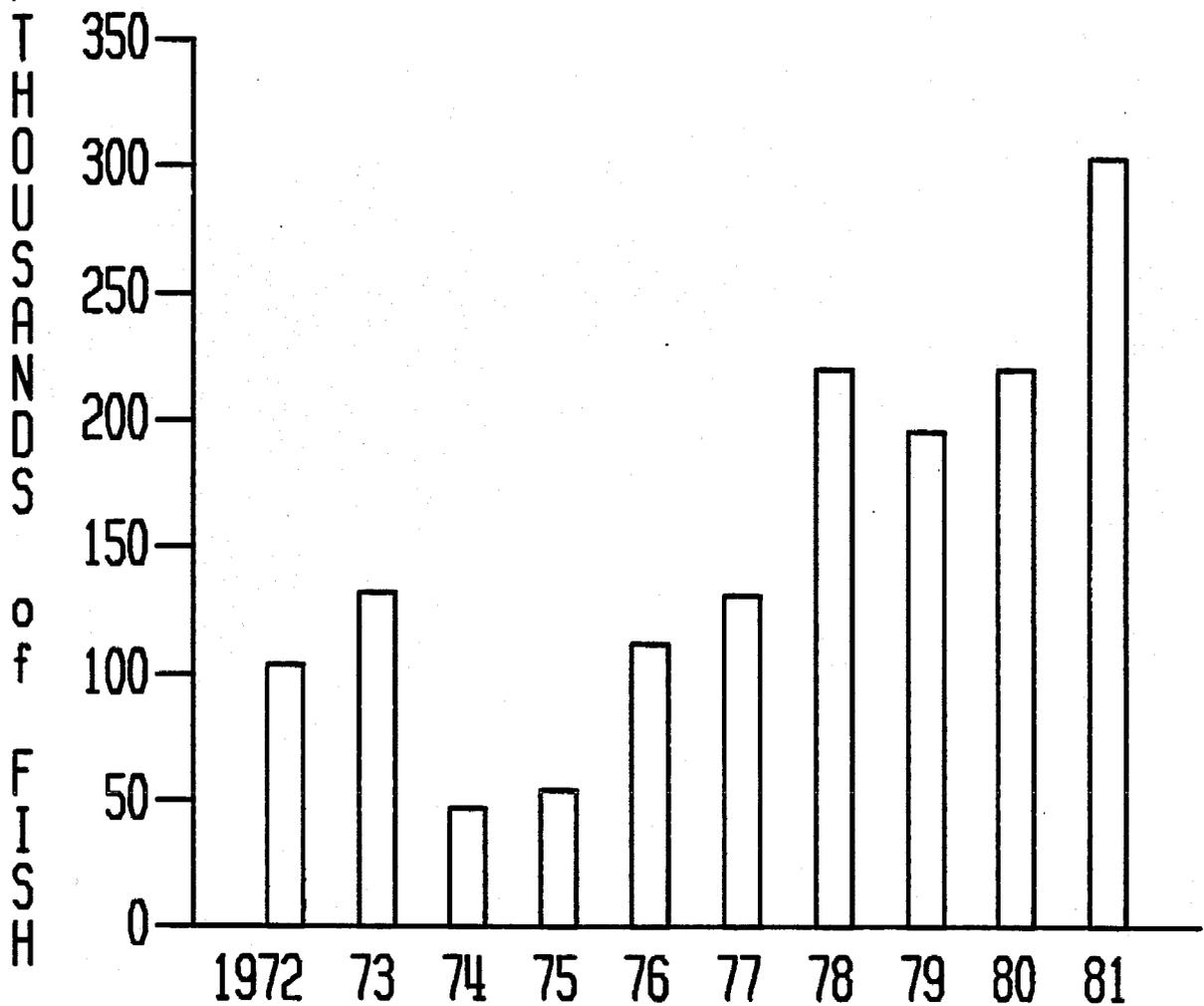


Figure 8. Coho salmon catches in the Copper River District, 1972-81.

SOCKEYE SALMON CATCH and ESCAPEMENT BERING RIVER DISTRICT

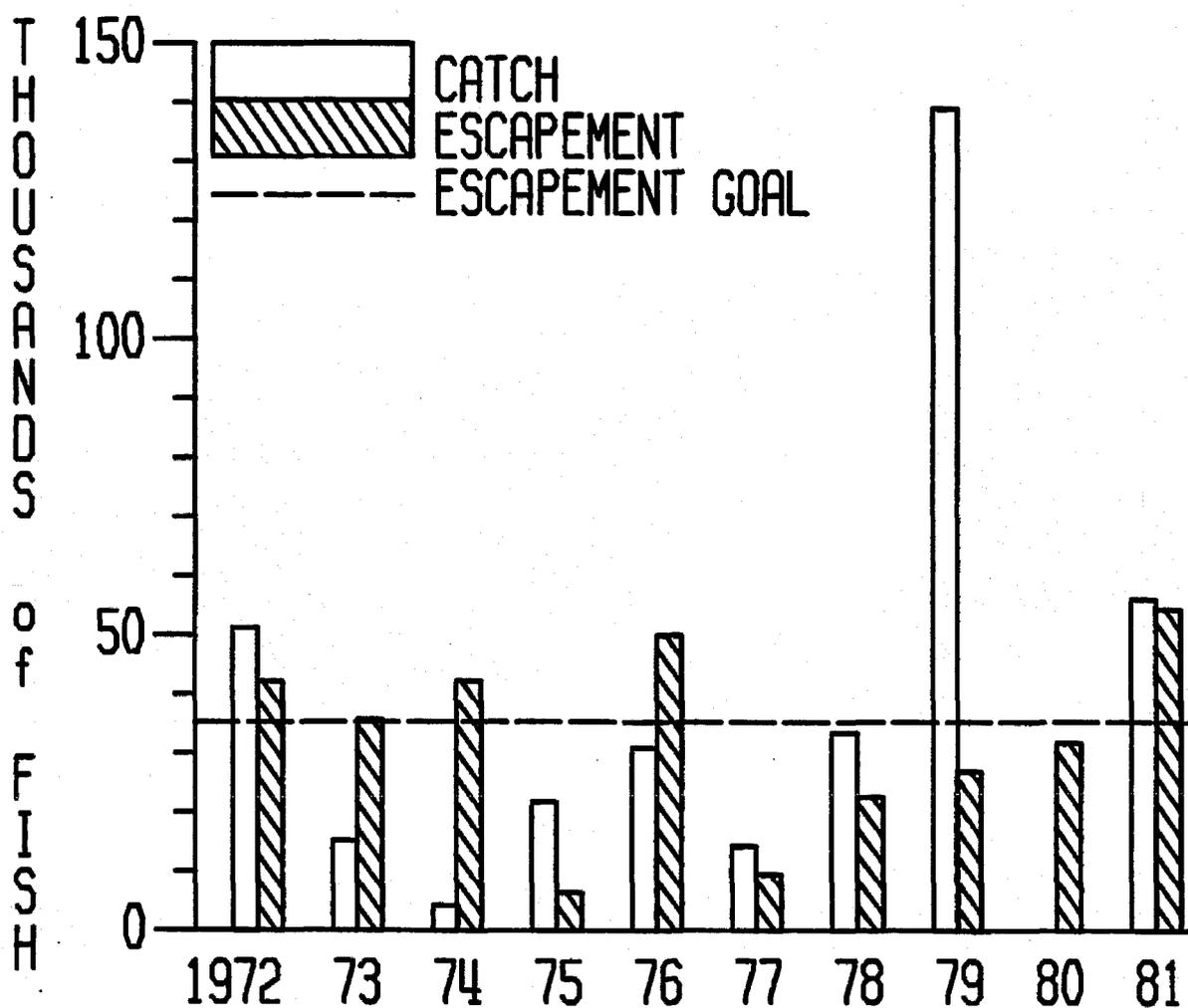


Figure 9. Sockeye salmon catch and escapement in the Bering River District, 1972-81.

COHO SALMON CATCH, BERING RIVER DISTRICT

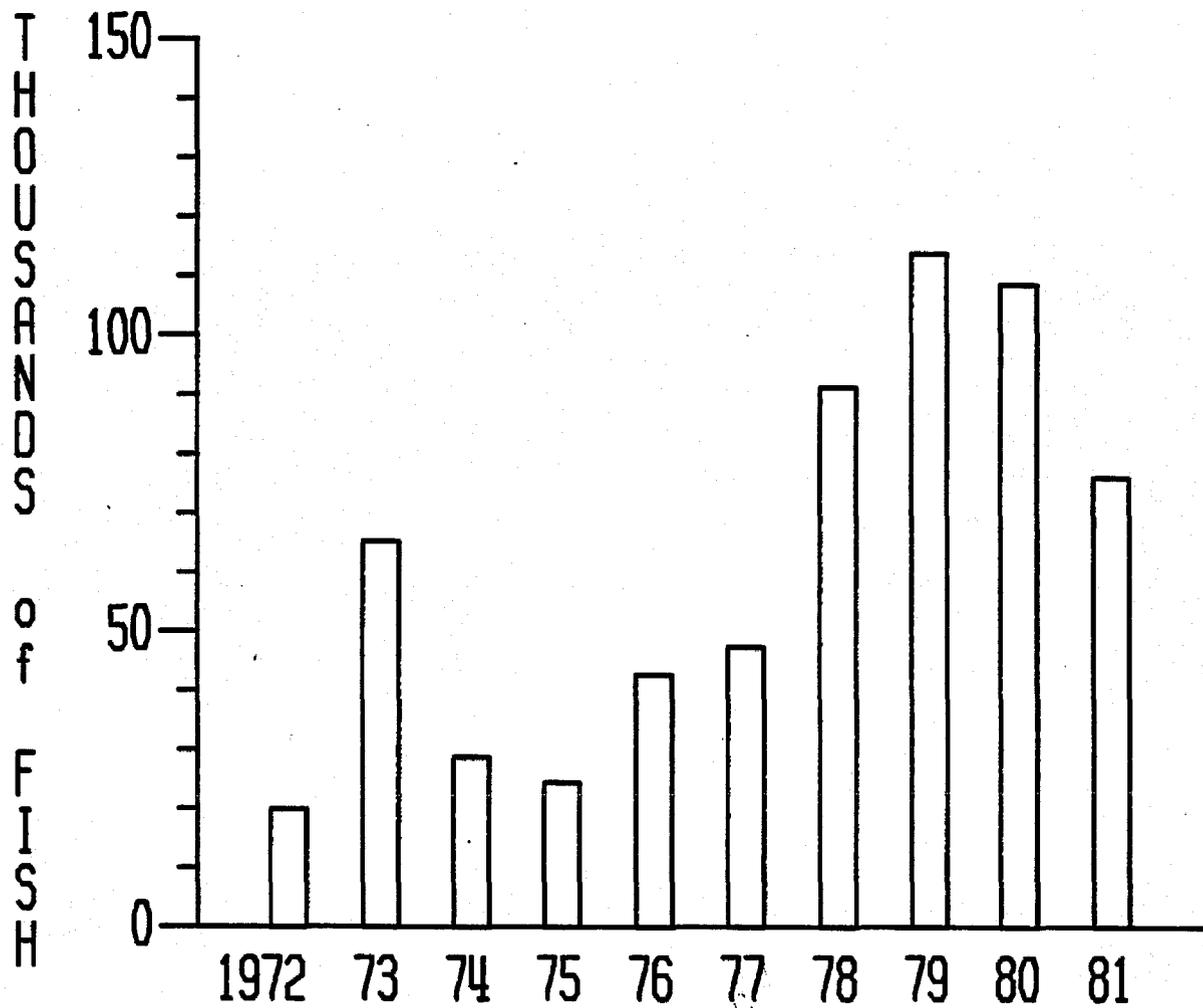


Figure 10. Coho salmon catches in the Bering River District, 1972-81.

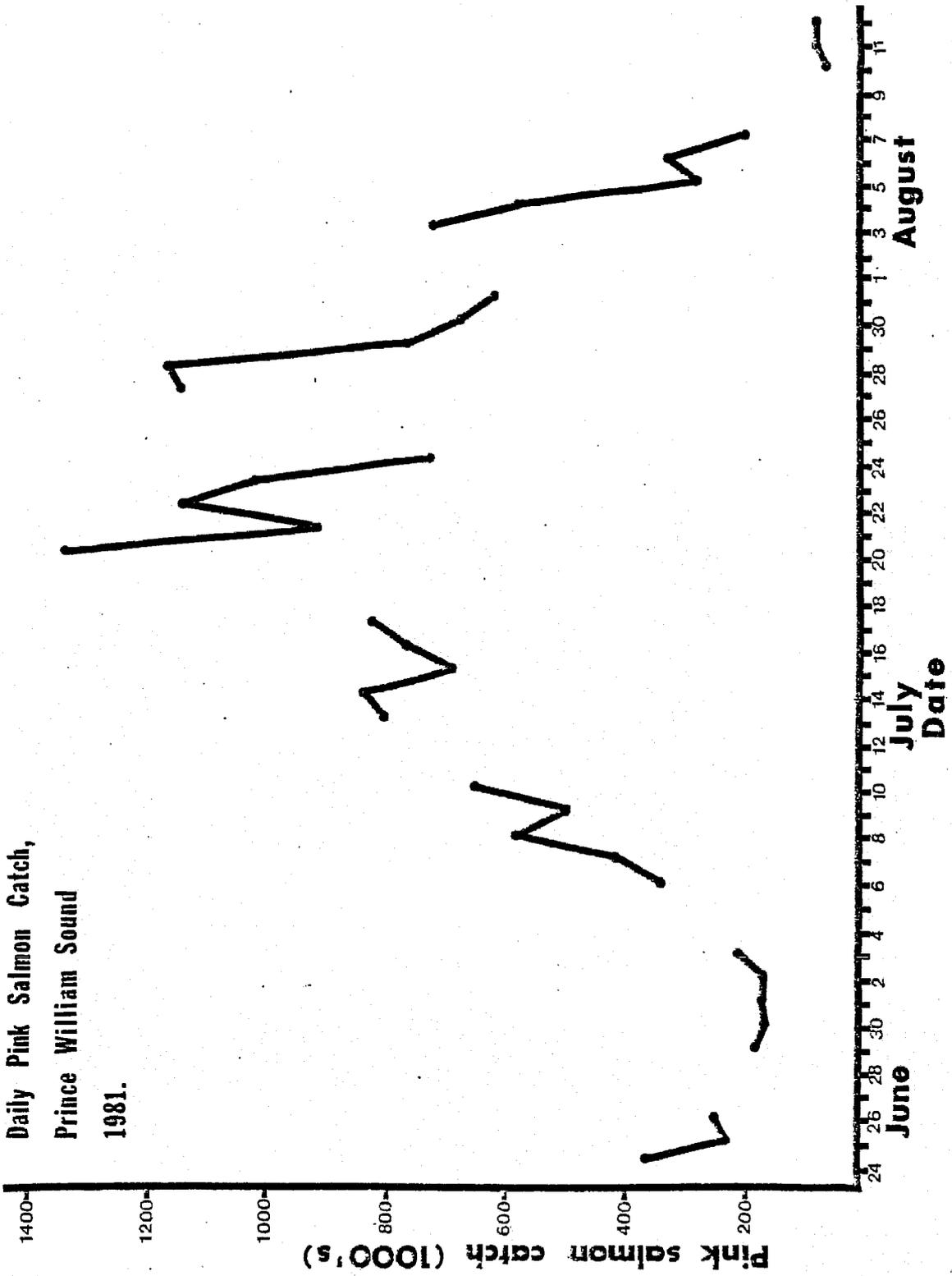
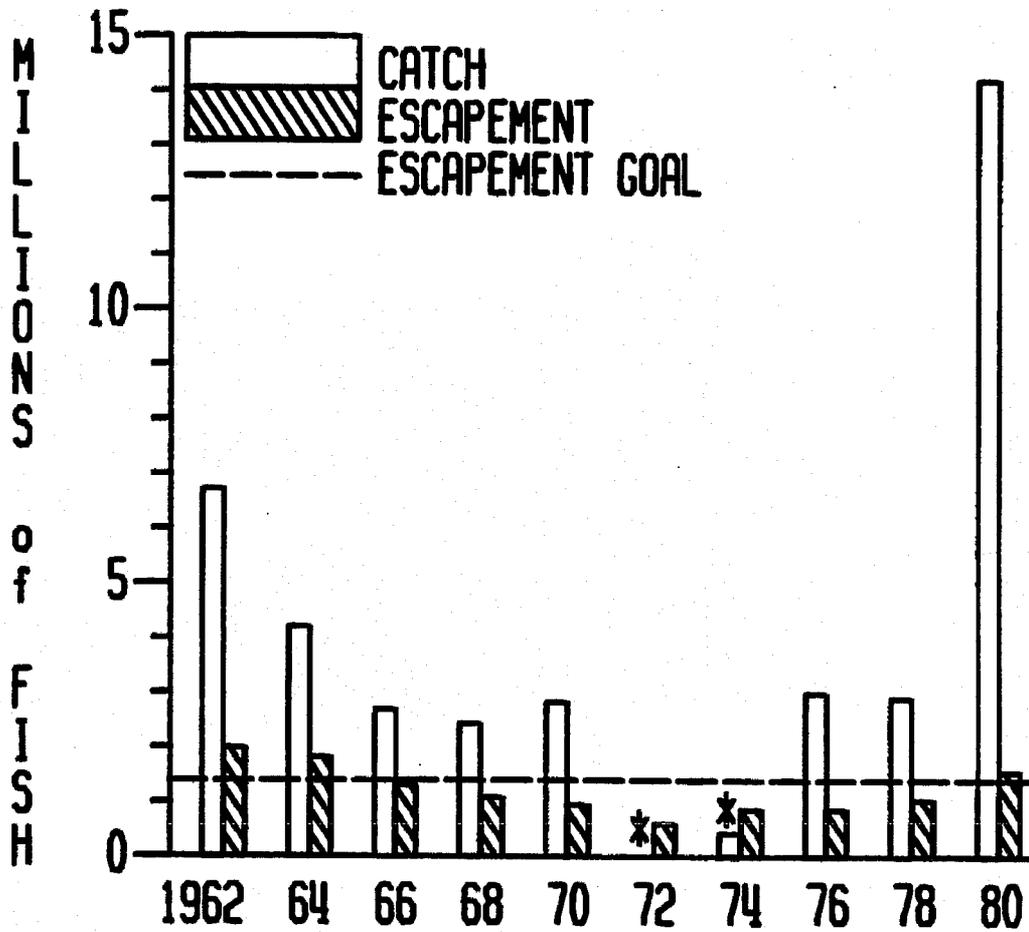


Figure 11. Daily pink salmon catch, Prince William Sound, 1981.

PINK SALMON CATCH and ESCAPEMENT, PRINCE WILLIAM SOUND EVEN YEARS



* general purse seine season closed

Figure 12. Pink salmon catch and escapement in the Prince William Sound Area even years, 1962-80.

PINK SALMON CATCH and ESCAPEMENT, PRINCE WILLIAM SOUND ODD YEARS

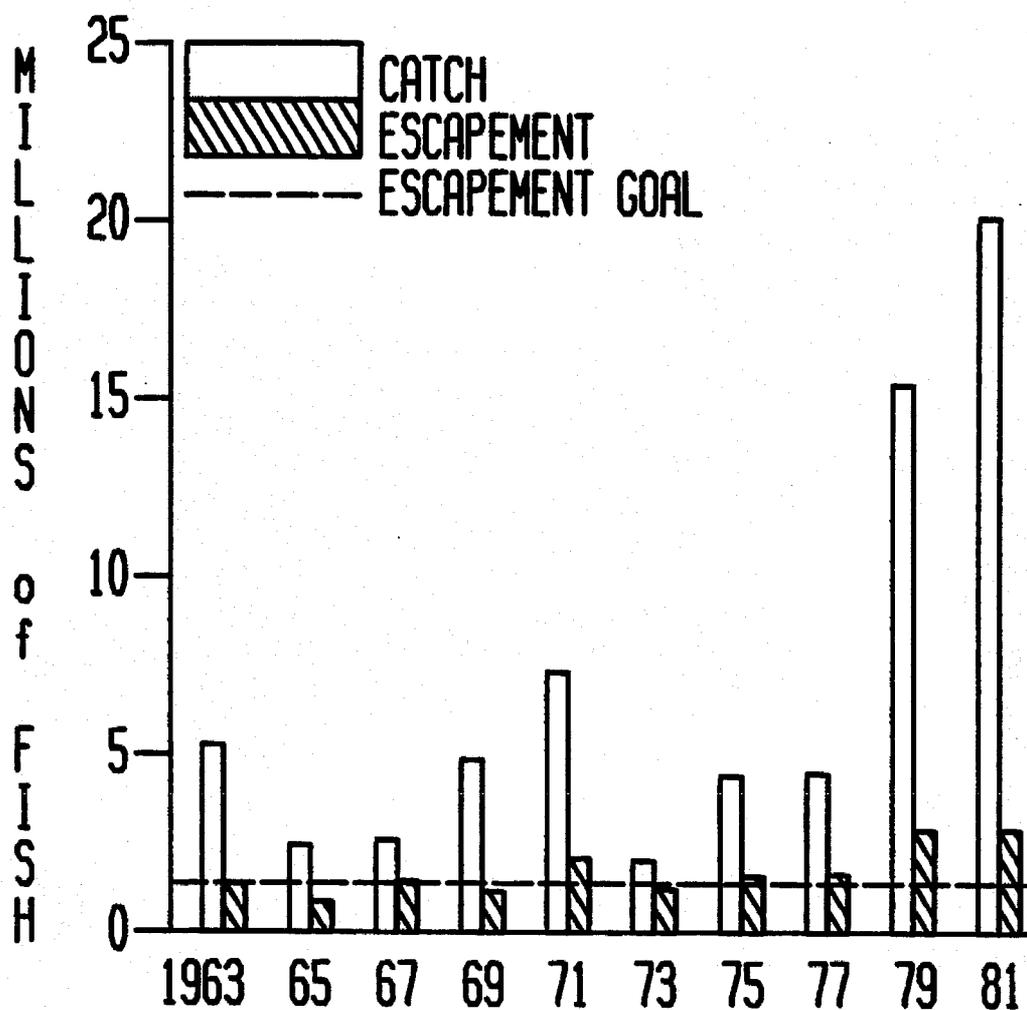


Figure 13. Pink salmon catch and escapement in the Prince William Sound Area odd years, 1963-81.

CHUM SALMON CATCH and ESCAPEMENT PRINCE WILLIAM SOUND

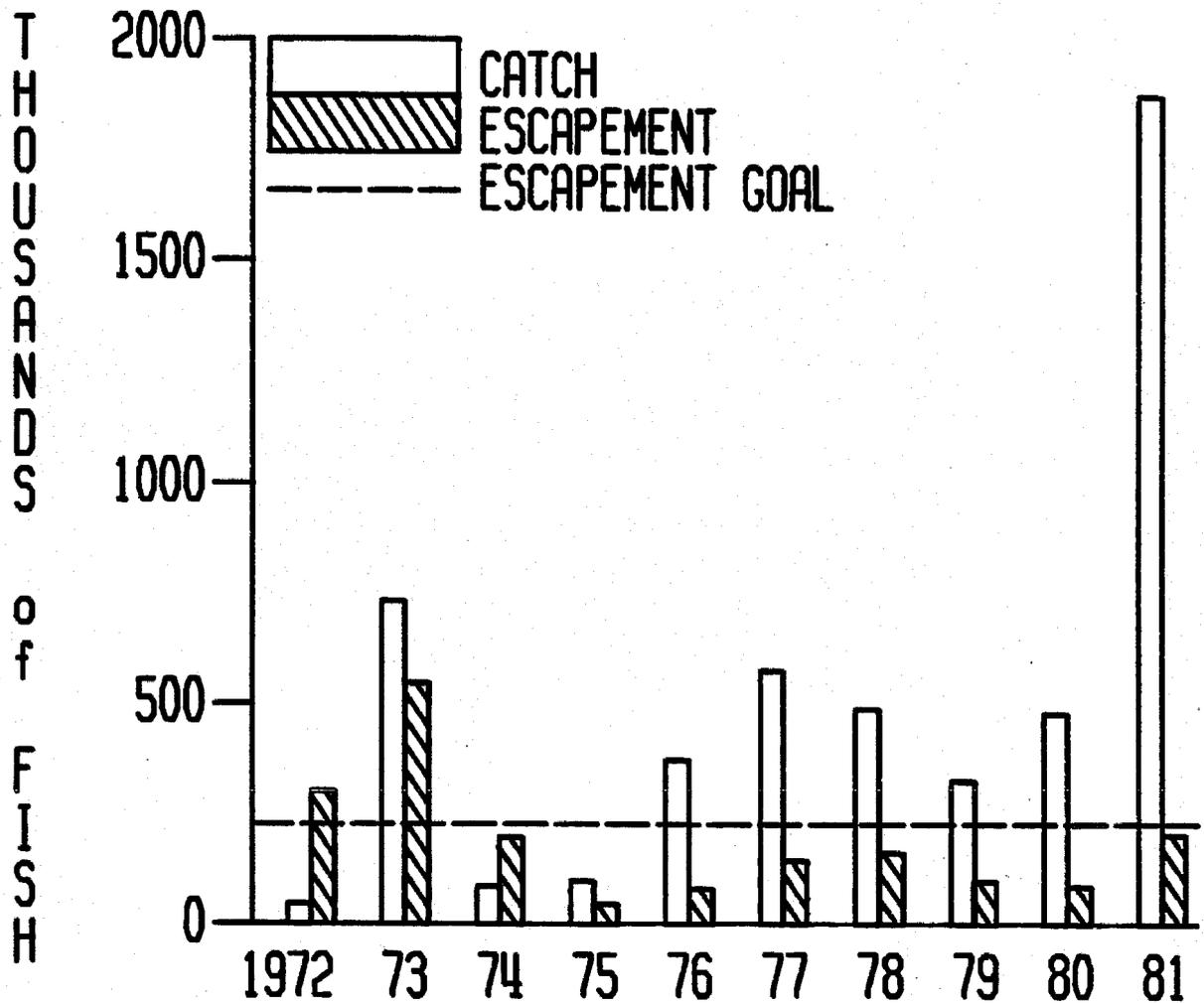


Figure 14. Chum salmon catch and escapement in the Prince William Sound Area, 1972-81.

SCKEYE SALMON CATCH and ESCAPEMENT COGHILL DISTRICT

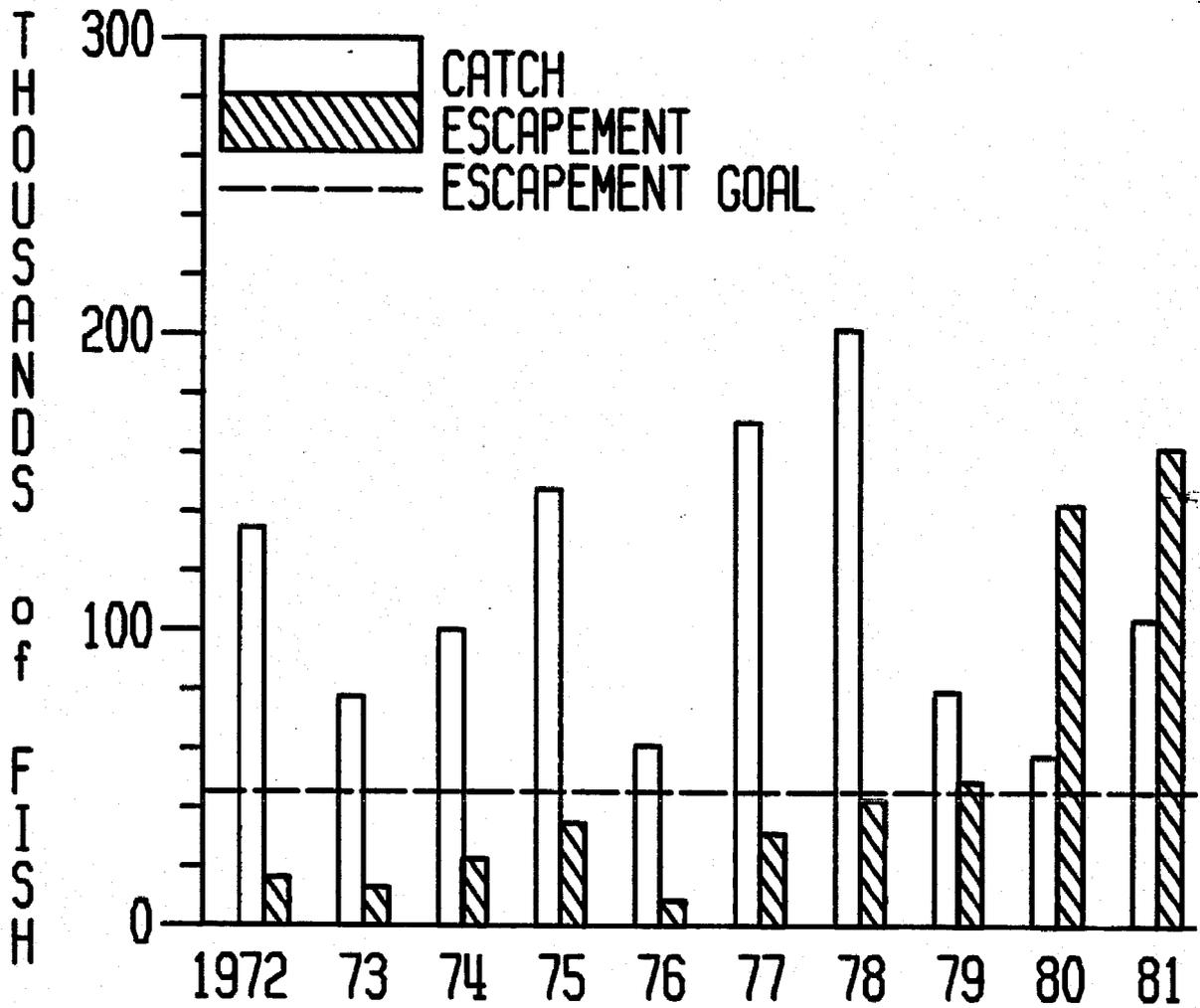


Figure 15. Sockeye salmon catch and escapement in the Coghill District, 1972-81.

SOCKEYE SALMON CATCH and ESCAPEMENT ESHAMY DISTRICT

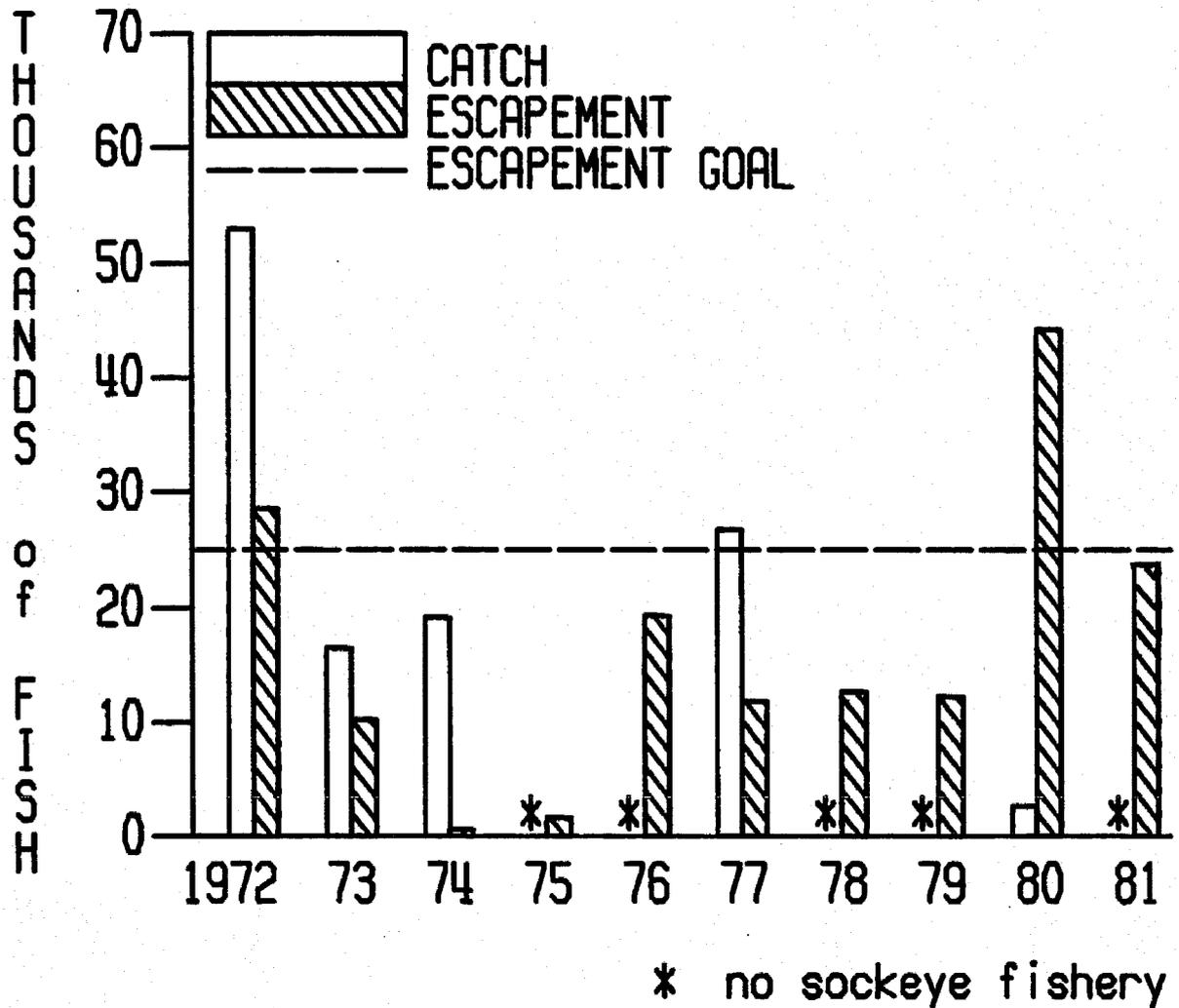


Figure 16. Sockeye salmon catch and escapement in the Eshamy District, 1972-81.

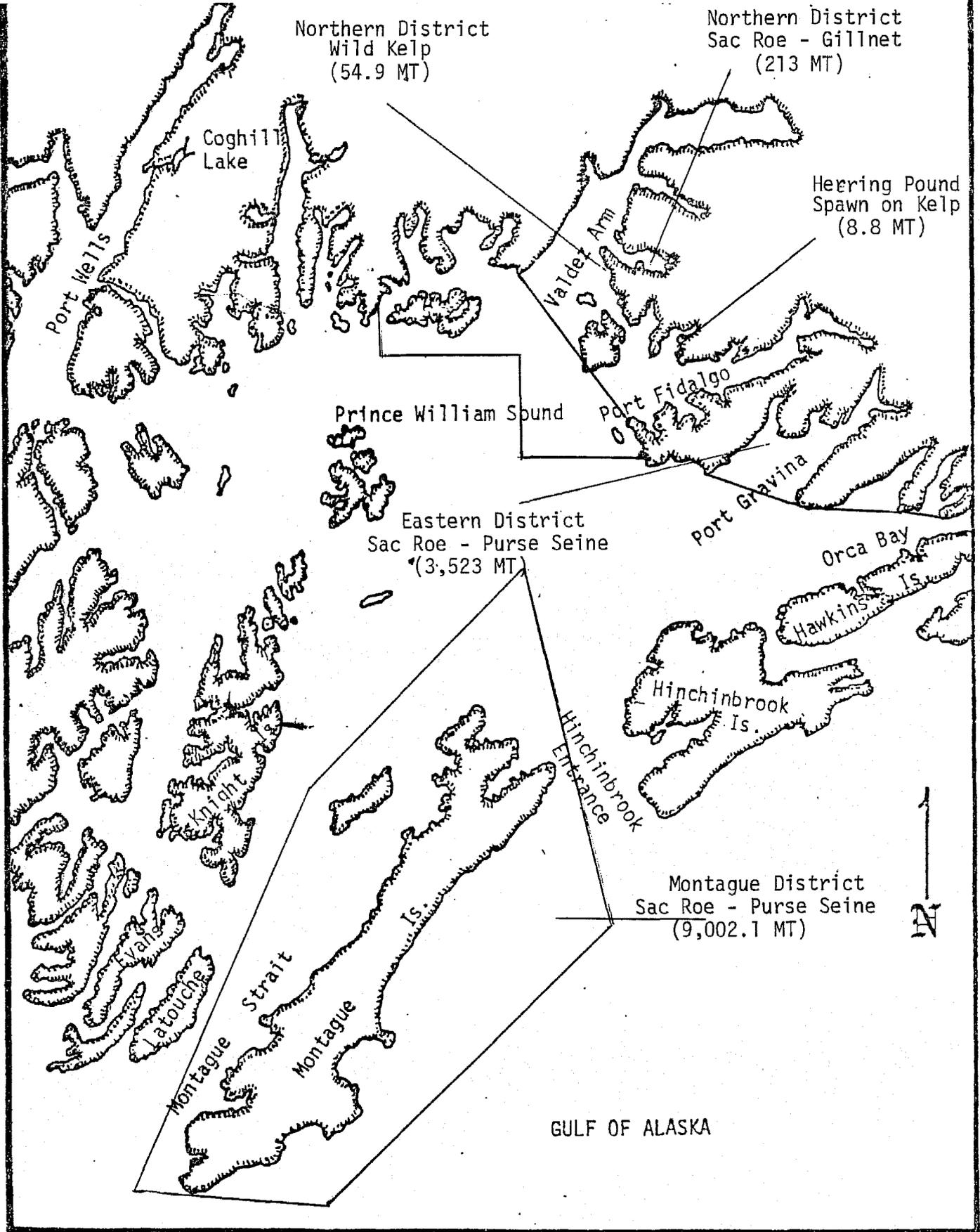


Figure 17. Prince William Sound herring sac roe and spawn on kelp harvest areas, 1981. () = tonnage harvested by district.

ALL FISHERIES HERRING HARVEST, PRINCE WILLIAM SOUND

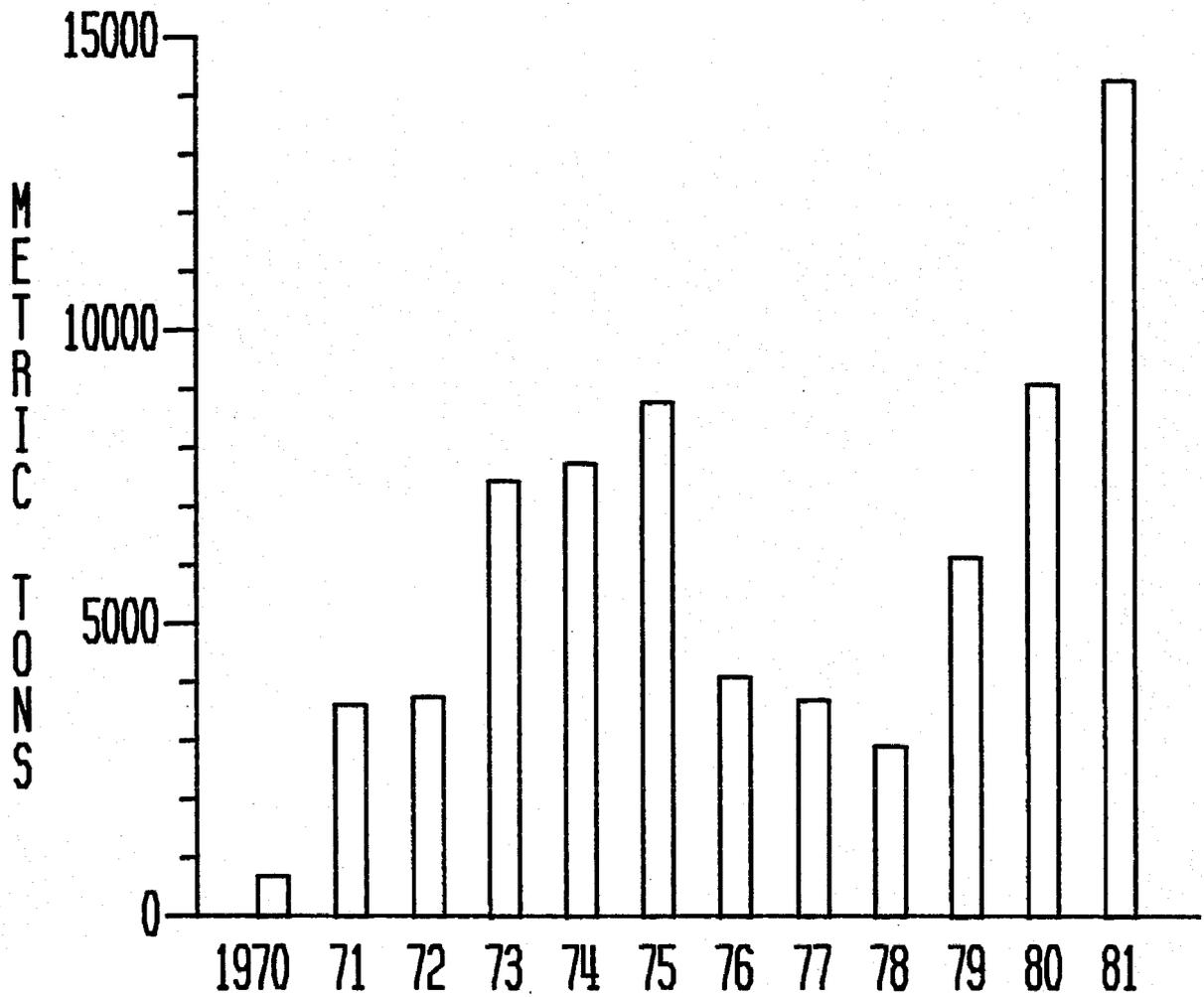


Figure 18. Prince William Sound herring harvest, all fisheries, 1970 - 1981.

HERRING SAC ROE HARVEST and PEAK ESTIMATE PRINCE WILLIAM SOUND

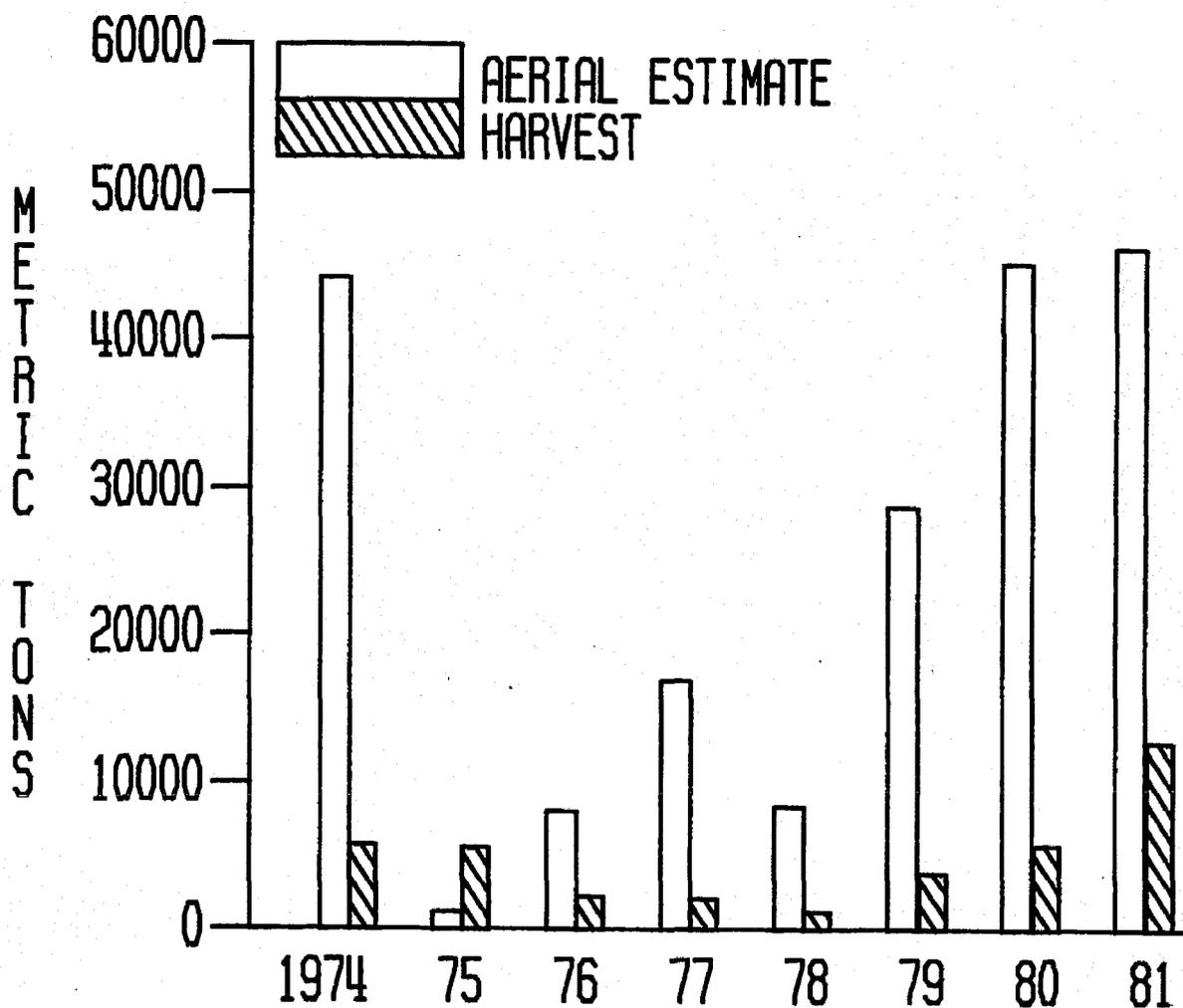


Figure 19. Herring sac roe harvests and peak seasonal estimates, all districts, Prince William Sound, 1974 - 1981.

HERRING SAC ROE HARVEST and PEAK ESTIMATE EASTERN DISTRICT

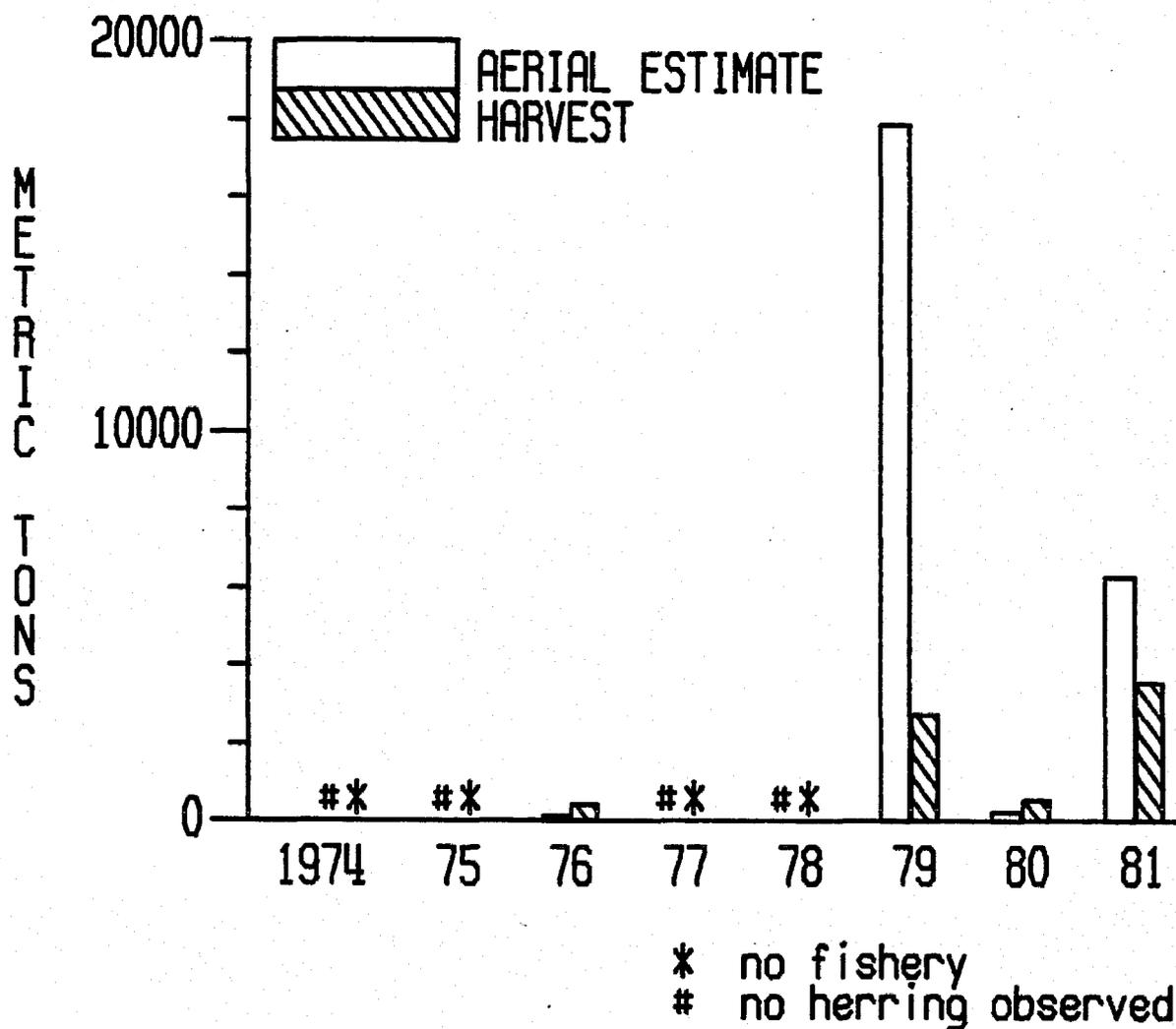


Figure 20. Prince William Sound herring sac roe harvest and peak aerial estimate, Eastern District, 1974 - 1981.

HERRING SAC ROE HARVEST and PEAK ESTIMATE MONTAGUE DISTRICT

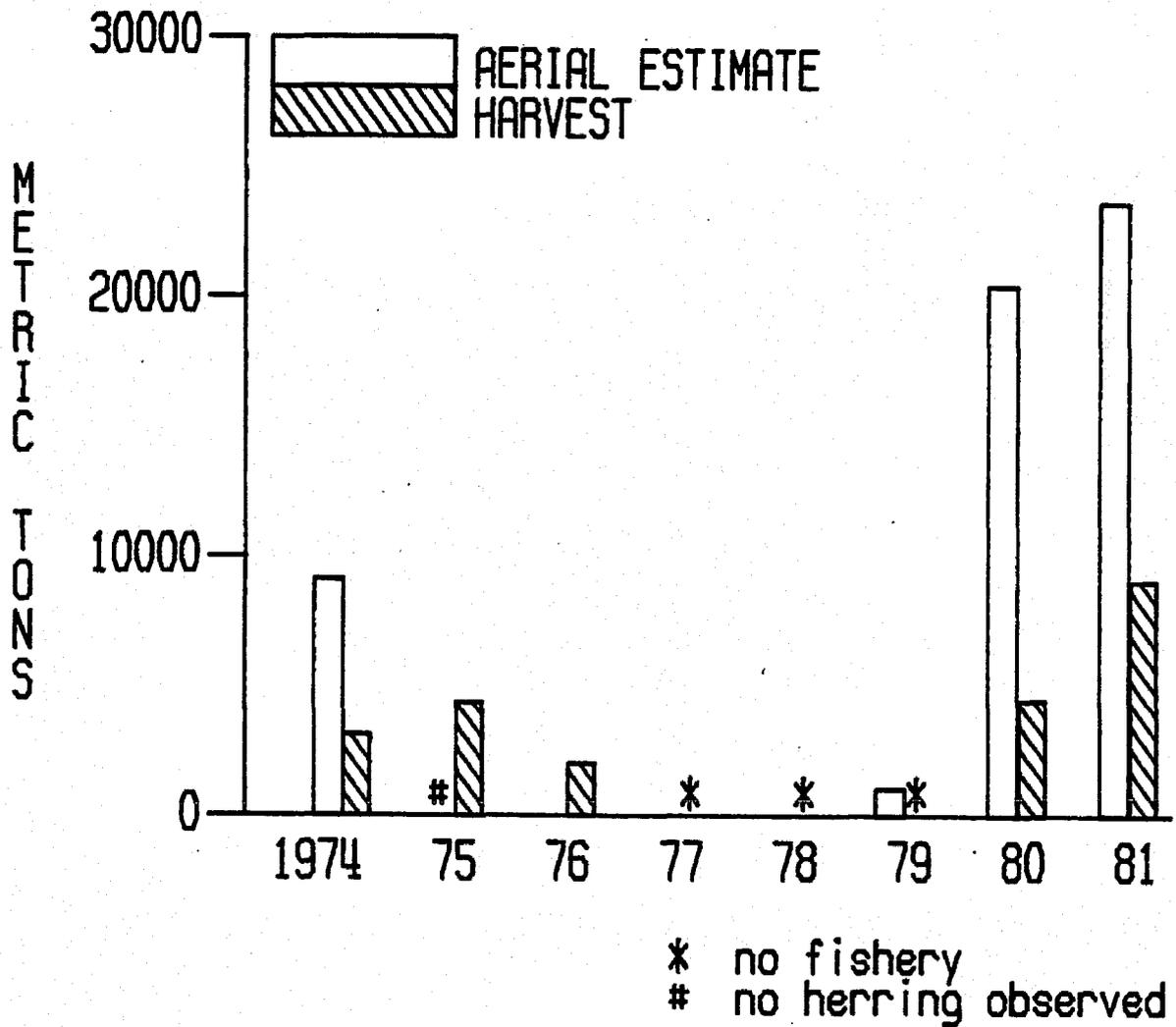


Figure 21. Prince William Sound herring sac roe harvest and peak aerial estimate, Montague District, 1974 - 1981.

HERRING SAC ROE HARVEST and PEAK ESTIMATE NORTHERN DISTRICT

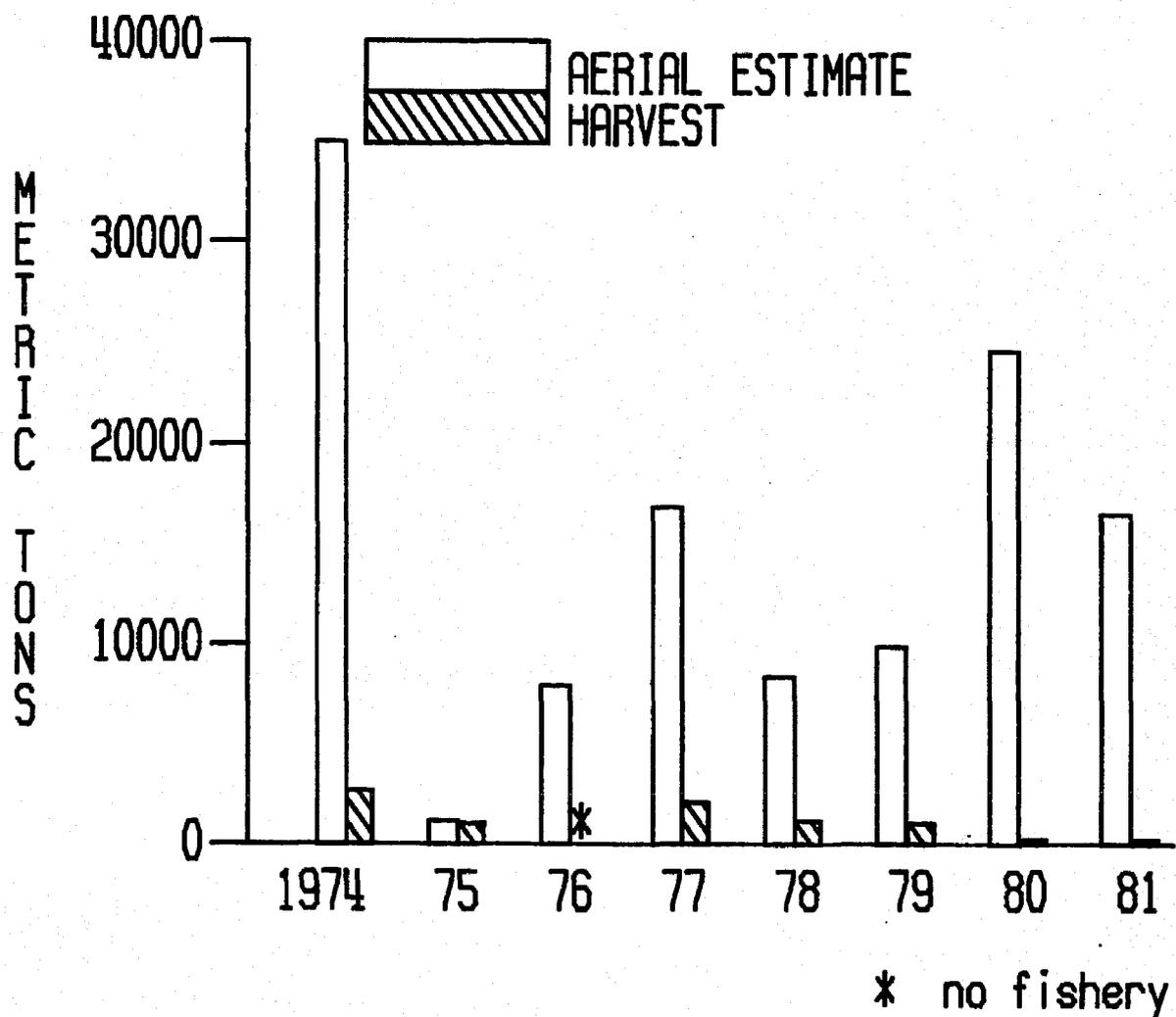
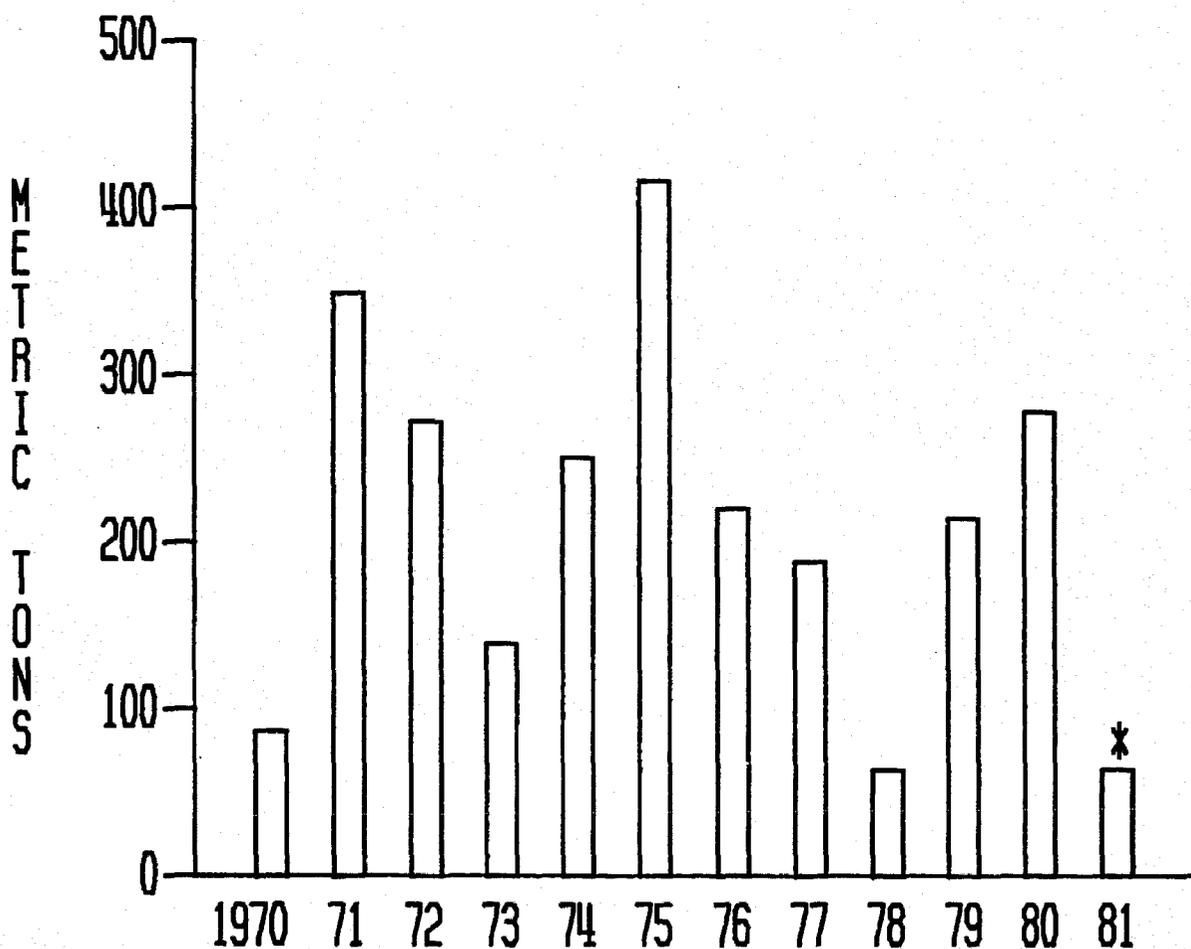


Figure 22. Prince William Sound herring sac roe harvest and peak aerial estimate, Northern District, 1974 - 1981.

HERRING SPAWN on KELP HARVEST, PRINCE WILLIAM SOUND



* includes 8.8 m.t. harvested from herring pounds

Figure 23. Herring spawn on kelp harvest, Prince William Sound, 1970 - 1981.

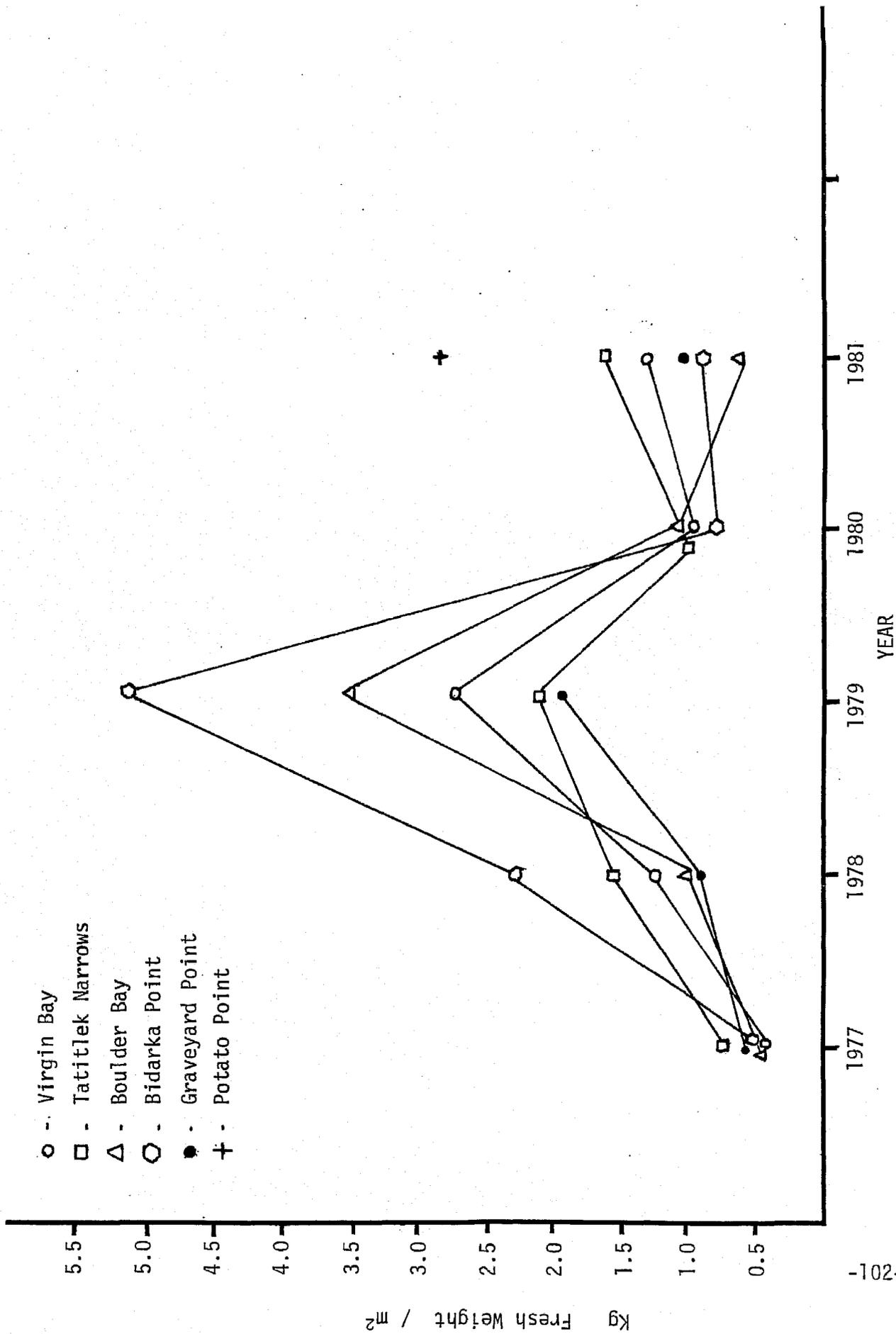


Figure 24. Mean standing crop of kelp during April at selected study sites, Prince William Sound, 1977 - 1981.

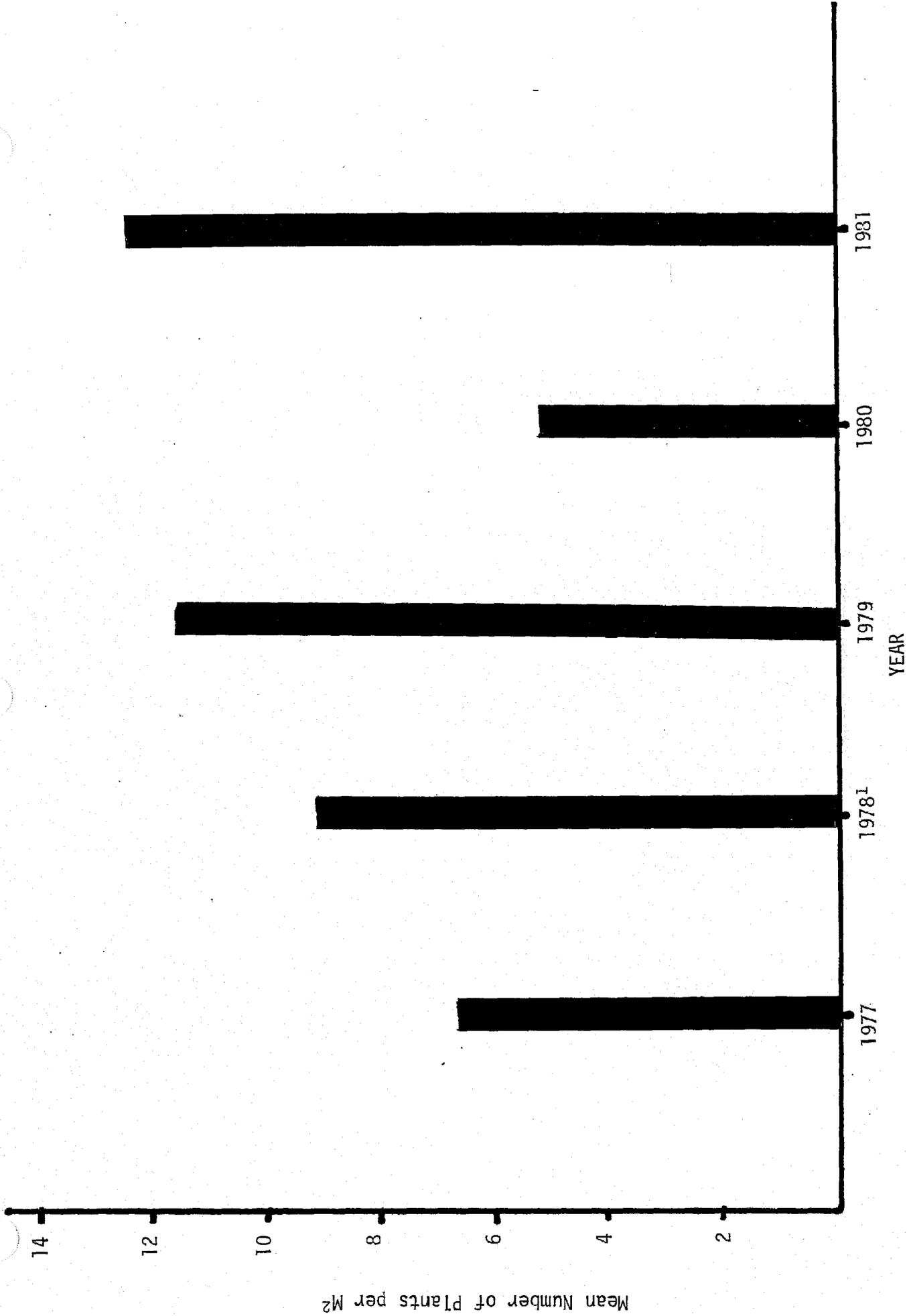
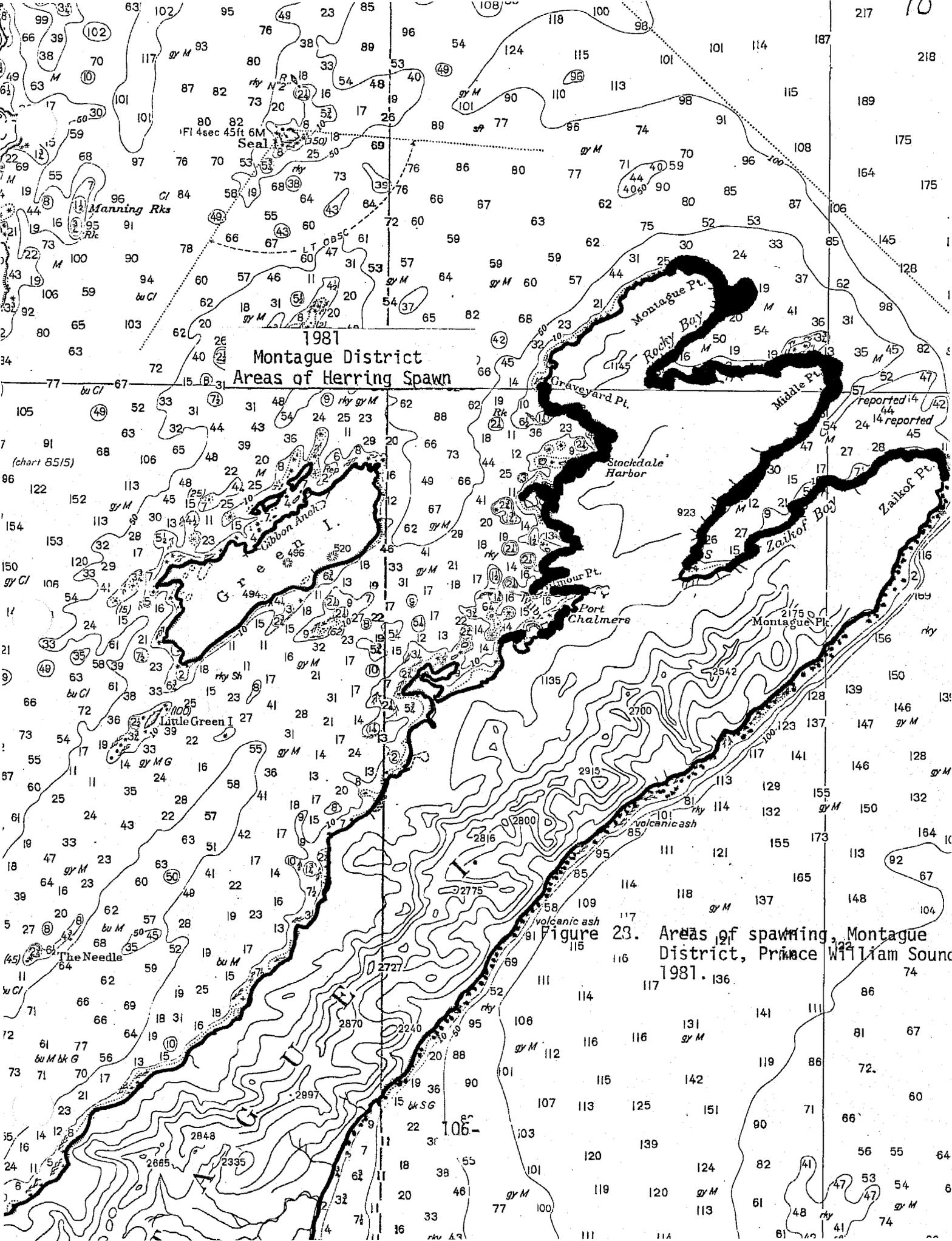


Figure 25. - Mean standing crop of kelp plants during April at five selected sites in Prince William Sound, 1977 - 1981.

¹ Preliminary



BAIT HERRING HARVEST, PRINCE WILLIAM SOUND

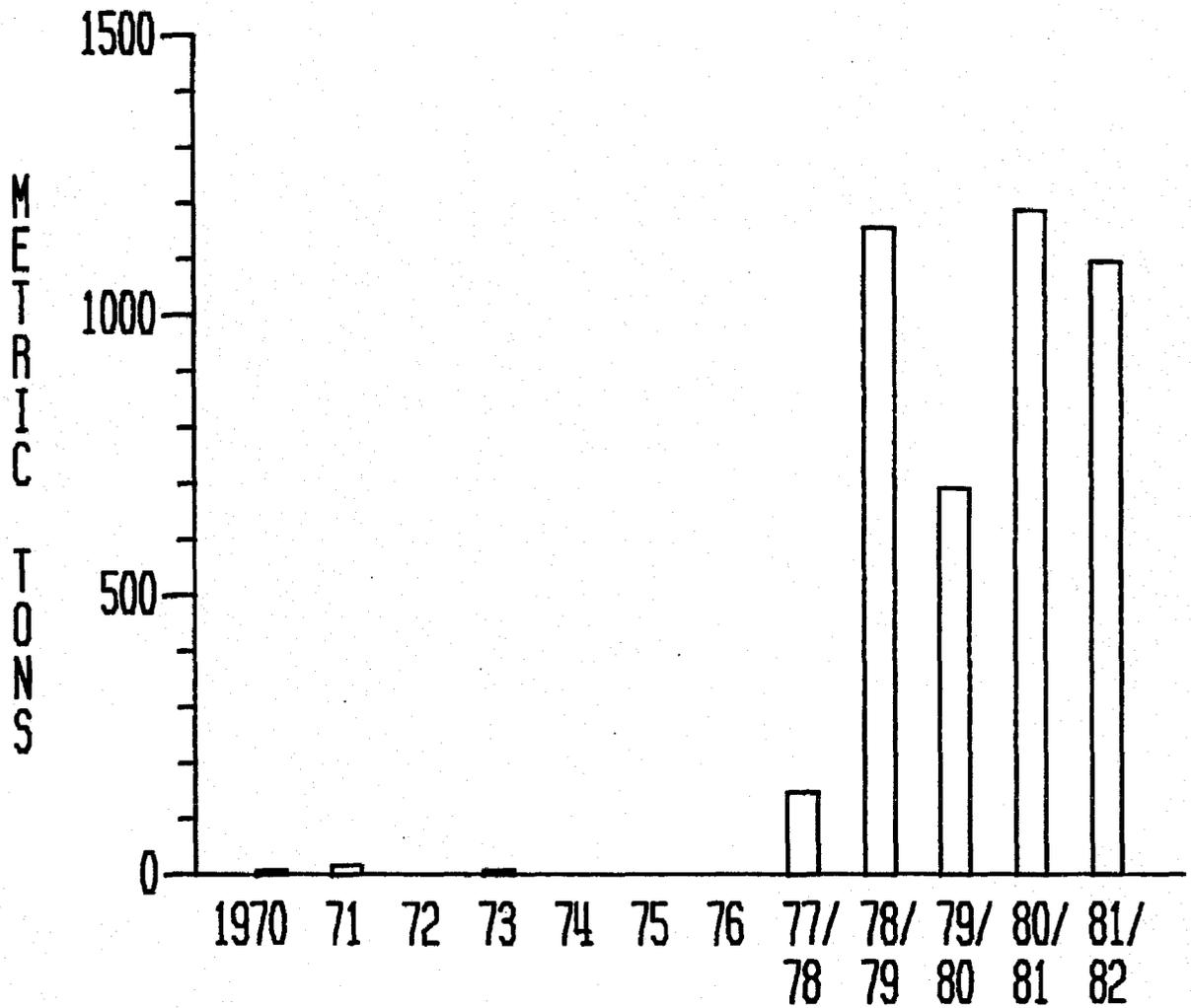


Figure 29. Prince William Sound herring bait/food harvest, 1970 - 1981.

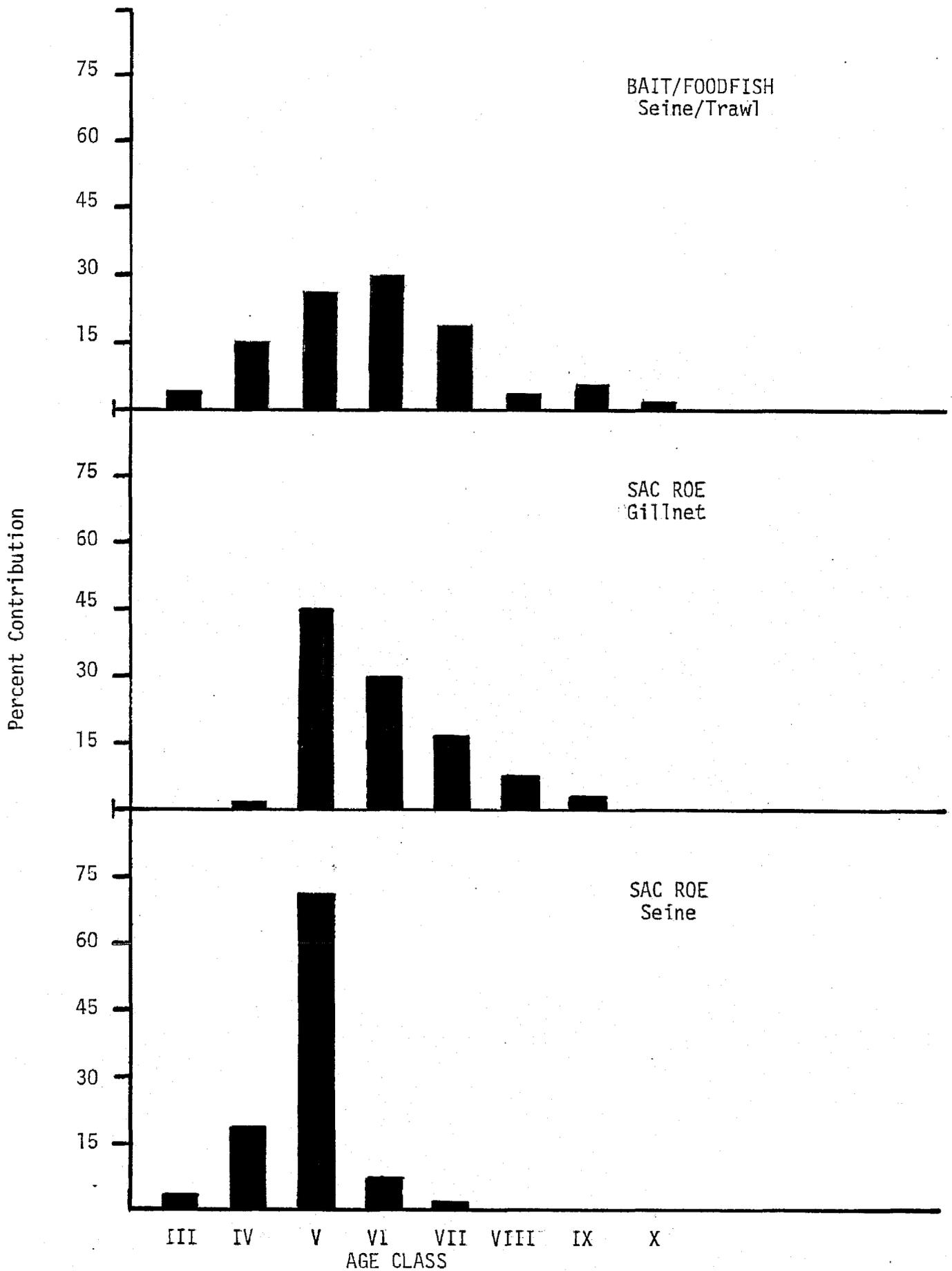
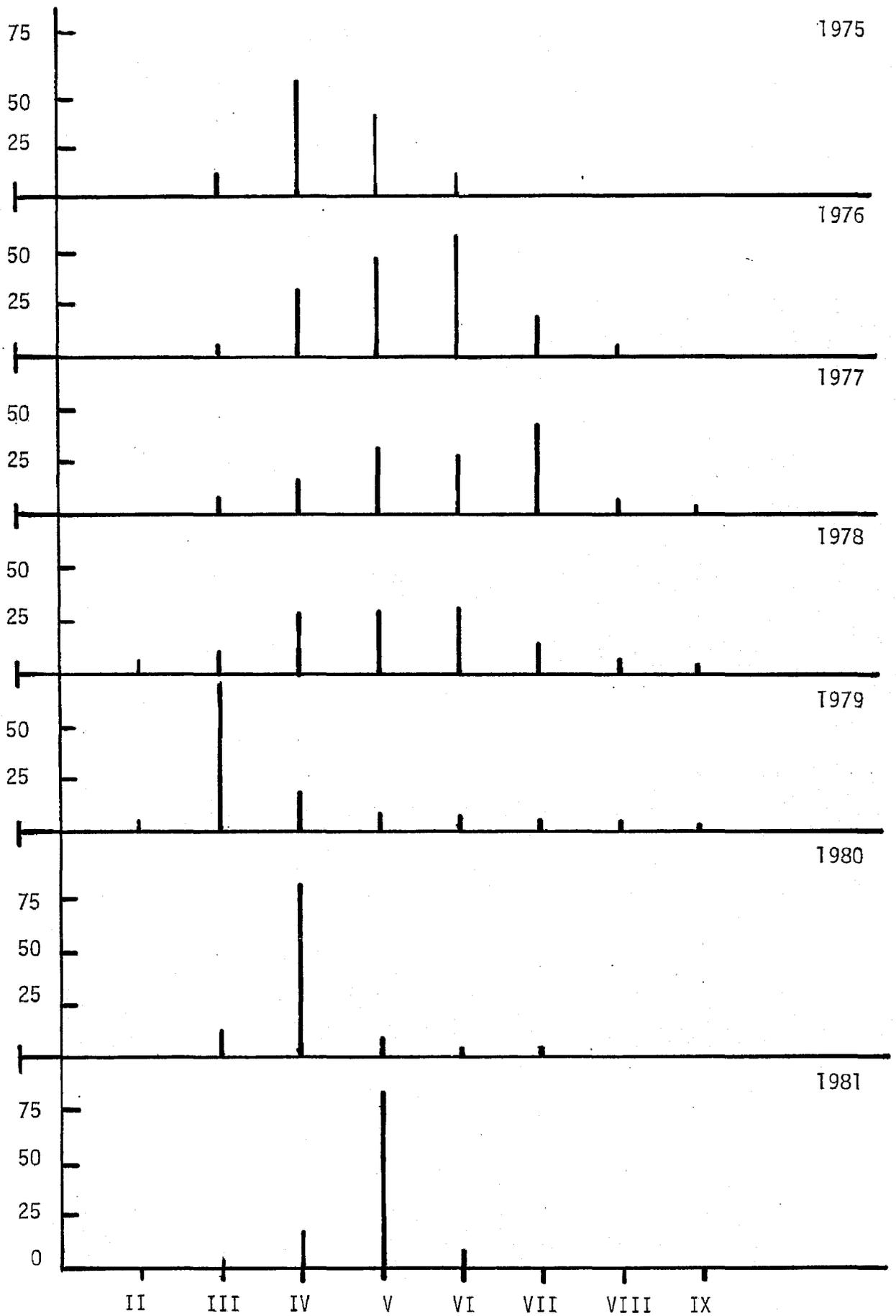


Figure 30. Prince William Sound sac roe, bait/food fish fisheries, percent contributions by age class, 1981.

Figure 31. Prince William Sound herring seine sac roe fishery. Percent contribution by age class, 1975 - 1981.



ACKNOWLEDGEMENTS

The Commercial Fisheries Division, Finfish Section, Prince William Sound Area, employed 9 permanent employees and 19 permanent/seasonal employees in 1981 who participated in various area management programs.

Thanks is extended to all personnel for a successful 1981 fisheries season.

Special acknowledgement is given to Peter J. Fridgen and Michael McCurdy for their contribution in preparation of the contents of this report. Also, to Jeannette Bailey for editorial comments and the task of typing and collating this report.

Following is a list of personnel, general duty assignments and duties of employment.

Permanent Employees

Richard C. Randall	Area Management Biologist
Peter J. Fridgen	Assistant Area Management Biologist
Michael McCurdy	Research Biologist, Project Leader
Kenneth Roberson	Research Biologist, Project Leader
Peggy Merritt	Research Biologist, Project Leader
John M. Jackson	Fisheries Technician V
Robert Gaylor	Fisheries Technician III
Jeannette Bailey	Clerk - Stenographer III
Audrey Denison	Clerk Typist III

Permanent/Seasonal Employees

John Burns	Eshamy Lake Weir	6/16 - 8/28
Ted Calahane	Tag and Recovery Program	7/26 - 9/ 3
Alfred Clayton	* Subsistence Fishery	6/ 1 - 8/15
Cynthia Dube	Coghill Lake Weir	6/ 1 - 7/24
Bruce Gordon	* Subsistence Fishery	6/ 1 - 8/15
Janet Hall	* Miles Lake Sonar	5/19 - 8/ 7
Randy Hughes	* Subsistence Fishery	6/ 1 - 8/15
Robin Lappi	* Clerk Typist II	3/16 - 6/30
Carol Maxwell	Data Control Clerk I	4/ 1 - 12/31
Dennis Moore	Eshamy Lake Weir	6/16 - 7/ 8
Becky Odell	* Clerk Typist II	7/ 1 - 12/11
Issac Queral	Fry Dig	3/16 - 4/ 3
Robert Ritchie	Tag and Recovery Program	7/ 1 - 8/18
Dale Russell	* Miles Lake Sonar	5/ 7 - 8/ 7
Randall Rust	Herring Spawn on Kelp	4/ 7 - 5/ 1
	Coghill Lake Weir	5/ 2 - 9/13
	Stream Surveys	
John Stadmiller	* Miles Lake Sonar	4/20 - 8/ 7
Stewart Thompson	* Miles Lake Sonar	5/ 7 - 8/ 7
Kenneth Treb	Tag and Recovery Program	7/26 - 9/ 4
Charles Trowbridge	* Miles Lake Sonar	5/ 7 - 5/29

* Projects under Kenneth Roberson's supervision.

Appendix
Table A.

A sequential listing of finfish processors, location of operation, size of cans, lines of machinery and type of product processed in 1981.

Names, Executive, Address, Location of Operation	Size of Cans Lines of Machinery	Type of Product
Alaska Packers Association ¹ Merle Wickett, Supt. P.O. Box 380 Cordova, AK 99574		Salmon Herring Sac Roe
Alaska Coast Fisheries Rout 2 Soldotna, AK 99669		Herring Sac Roe
Alaska International Fisheries 9361 Bothwell Circle Anchorage, AK 99502		Salmon
Anchorage Sea Foods Box 10-614 Anchorage, AK 99511		Salmon
Bayside Cold Storage Fred Pettingill, Supt. P.O. Box 636 Cordova, AK 99574		Salmon Herring Sac Roe
Beran Fisheries 302 Grow Avenue Winslow, Washington 98110		Salmon
Bergit Fishing Company Stanley Samuelson, Supt. P.O. Box 936 Cordova, AK 99574		Herring Sac Roe Herring Eggs on Kelp
Blake's Canning Company Margaret Blake, Supt. P.O. Box 94 Cordova, AK. 99574		
Chugach Alaska Fisheries Jim Forsell, Supt. P.O. Box 120 Cordova, AK 99574	1 Line -- 1/4 lb. 2 Lines - 1/2 lb. 2 Lines - 1 lb.	Salmon Herring Sac Roe

Appendix Table A, continued.

Name, Executive, Address, Location of Operation	Size of Cans Lines of Machinery	Type of Product
Cold Water Harvesters 5650 11th Avenue N.E. Seattle, WA 98105		Herring Eggs on Kelp
Consolidated Fish Company Box 3135 Bellingham, WA 98227		Herring Sac Roe
Copper River Fishermen's Cooperative P.O. Box 90 Cordova, AK 99574		Salmon
Copper River Products P.O. Box 456 Cordova, AK 99574		Salmon
Daerim America, Inc. P.O. Box 826 Kodiak, AK 99614		Salmon Herring Sac Roe
Dagnet Fisheries P.O. Box 3993 Kenai, AK 99611		Herring Sac Roe
Glacier Castle P.O. Box 992 Seward, AK 99664		Herring Sac Roe
Glacier Packing Company Barbara Jensen, Supt. P.O. Box 294 Cordova, AK 99574	6 1/2 oz. - hand pack 7 1/2 oz. - hand pack	Salmon
Hamco American River Processors P.O. Box 745 Kodiak, AK 99615		Herring Sac Roe
Kodiak King Crab, Inc. P.O. Box 145 Kodiak, AK 99615		Herring Sac Roe
L & T Fisheries, Inc. P.O. Box 4080 Mt. Edgecumbe, AK 99835		Salmon

Appendix Table A, continued.

Name, Executive, Address, Location of Operation	Size of Cans Lines of Machinery	Type of Product
Mohr & Johannsen P.O. Box 494 Cordova, AK 99574		Salmon
M.S.P. Corporation C. Ross Mullins, Supt. P.O. Box 1249 Cordova, AK 99574		Herring Eggs on Kelp
Morpac, Inc. ¹ John Hewitt, Supt. P.O. Box 368 Cordova, AK 99574		Salmon Herring Sac Roe
Mystic Way, Incorporated 1415 N.W. 49th Seattle, WA 98107		Salmon
Nelbro Packing Company P.O. Box 341 Northgate Station Seattle, WA 98125		Salmon
North Coast Seafood Processors, Inc. James Nagai, Supt. P.O. Box 1262 Cordova, AK 99574		Herring Eggs on Kelp Herring Sac Roe
North Pacific Processors, Inc. Ken Roemhildt, Supt. P.O. Box 1040 Cordova, AK 99574	1 line - 1/4 lb. 1 line - 1/2 lb. 1 line - 1 lb.	Salmon Herring Sac Roe Herring Bait
Northwind Fisheries, Inc. 3601 Gilman Ave. W. Seattle, WA 98121		Salmon
Ocean Enterprises P.O. Box 8192 Ketchikan, AK 99901		Herring Eggs on Kelp
Offshore Fisheries Inc. 3601 Gilman Ave. W. Seattle, WA 98117		Herring Sac Roe

Appendix Table A, continued.

Name, Executive, Address, Location of Operation	Size of Cans Lines of Machinery	Type of Product
Sagaya Orient Richard A. Newby, Supt. 3309 Spenard Rd. Anchorage, AK		Herring Eggs on Kelp
Samho - Internation Sea Foods of Alaska 29306 11th Place S. Federal Way, WA 98003		Herring Sac Roe
Sea Catch, Incorporated P.O. Box 3171 Kenai, AK 99611		Herring Sac Roe
Sea Hawk Seafoods R.L. Cesarini, Supt. P.O. Box 151 Valdez, AK 99686		Salmon
Seward Fisheries, Inc. Bob Giles, Supt. P.O. Box 516 Seward, AK 99664		Salmon Herring Bait Herring Sac Roe
Seward Marine Services Margaret Anderson, Supt. P.O. Box 335 Seward, AK 99664		Herring Sac Roe
Sitka Sound Sea Foods P.O. Box 830 Sitka, AK 99835		Herring Eggs on Kelp
St. Elias Ocean Products Jim Poor, Supt. P.O. Box 548 Cordova, AK 99574	1 line - 1/4 lb. 1 line - 1/2 lb. 1 line - 1 lb. 1 line - 4 lb.	Salmon Herring Bait Herring Sac Roe
Sterling Seafoods, Inc. P.O. Box 1847 Sitka, AK 99835		Herring Eggs on Kelp

Appendix Table A, continued.

Name, Executive, Address Location of Operation	Size of Cans Line of Machinery	Type of Product
Taylor Aquatic Enterprises Gary Taylor, Supt. P.O. Box 1313 Cordova, AK 99574		Herring Eggs on Kelp
Trident Seafoods Corporation J.R. Jacobson, Supt. 5355 28th Ave. N.W. Seattle, WA 98107		Herring Sac Roe
Virgin Bay Kelp Company Steve Smith, Supt. P.O. Box 277 Cordova, AK 99574		Salmon Herring Eggs on Kelp
Waterkist Corporation 221 Warehouse Ave. Anchorage, AK 99501		Salmon
Western Alaska Fisheries P.O. Box 667 Kodiak, AK 99615		Herring Sac Roe
Whitney-Fidalgo Seafoods, Inc. Art Aspass, Supt. P.O. Box 670 Cordova, AK 99574		Salmon Herring Sac Roe

¹ Morpac, Inc. customed canned salmon for Alaska Packers Association.

Appendix Table B. Copper River and Bering River sockeye, chinook and coho salmon escapement^{1/}, 1981 (cont.).

Locations	Survey Conditions ^{2/}	Date ^{3/}	Method ^{4/}	Sockeye	Chinook	Coho
Bremner River						
Peninsula Lake		8/24	A	250		
Salmon Creek		8/24	A	250		
Steam Boat Lake		8/24	A	0		
Unnamed Creek		N.S.				
Tiekel River Lake		8/24	A	1		
Swan Lake		8/24	A	0		
Tonsina River *						
Lower Tonsina Creek		N.S.				
Little Tonsina River		7/31	A		191	
Tonsina Lake	*	11/5	A	1,725		
Bernard Creek		7/31	A		21	
Grayling Creek		7/31	A		107	
Klutina River *						
Manker Creek		7/31	A		33	
Mahlo Creek		7/31	A	1,800	1	
Unnamed Creek		8/24	A	2,900		
1884 Lake		8/24	A	1		
Hallet Slough	*	7/31	A	400		
Curtis Creek		7/31	A	0		
St. Anne Creek		7/31	A	4,700	19	
Tazlina River *						
Mendeltna Creek		8/24 / 7/31	A	4,830	51	
Kiana Creek		7/31	A	50	191	
Tazlina Lake		7/31	A	0		
Gulkana River						
Mouth to West Fork						
West Fork		7/18	A	95		
Moose Creek		7/18	A		4	
Keg Creek		7/18	A	320		
Victor Creek		7/18	A	180		
West Fork to Middle Fork		8/17	A	80		
Middle Fork		7/20	A	100	51	
Dickey Lake		8/17	A	20		
Swede Lake		8/17	A	450		
Hungry Hollow Creek		9/14 / 7/20	A	25	22	
East Fork						
East Fork to Paxson Lake		9/1	A	1,500		
Paxson Lake						
Paxson Lake Inlet		9/14	A	1,000		
Inlet to Mud Creek		8/17	A	2,200		

Appendix Table B. Copper River and Bering River sockeye, chinook and coho salmon escapement^{1/}, 1981 (cont.).

Location	Survey Conditions ^{2/}	Date ^{3/}	Method ^{4/}	Sockeye	Chinook	Coho
Mud Creek		8/17	A	800		
Mud Lake		8/17	A	10		
Mud Creek to Summit Lake		8/17	A	3,400		
Fish Lake		9/1	A	8,800		
Summit Lake		8/17	A	0		
Gunn Creek		7/20	A	0		
Gakona River						
Spring Creek		N.S.				
Caribou Lake Creek		7/20	A	40		
Chistochina River						
East Fork		7/20	A		120	
Eagle Creek		7/20	A	4		
Mankomen Lake		7/20	A	0		
Slana River *						
Mentasta Lake		7/20	A	7,400		
Fish Creek		7/20	A	10,500		
Bad Crossing #1		7/20	A	5,500		
Bad Crossing #2		7/20	A	9,500		
Bone Creek		7/20	A	1,100		
Slana Sloughs		7/20	A	3,250		
Suslota Lake		9/1	A	300		
Indian River N.S.						
Ahtell Creek N.S.						
Tanada Creek						
Tanada Lake		9/1	A	5,300		
Tanada Lake Outlet		9/1	A	5,900		
Copper Creek						
Copper Lake		9/1	A	49		
Tebay River 8/24 A 3						
Choskosna River 8/24 A 0						
Lakina River *						
Long Lake		11/5	A	1,325 ^{5/}		
Clear Creek (Chitina R.) N.S.						
Tana River *						
Tana River Clear Channels		8/24	A	150		
Tana Lake Inlet	*	8/24	A	0		
West Fork Clear Channels		8/24	A	140		

Appendix Table B. Copper River and Bering River sockeye, chinook and coho salmon escapement^{1/}, 1981 (cont.)

Locations	Survey Conditions ^{2/}	Date ^{3/}	Method ^{4/}	Sockeye	Chinook	Coho
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1/ Escapement refers to peak survey.

2/ * denotes glacial.

3/ Date refers to peak sockeye salmon escapement; it may or may not apply to peak chinook or coho salmon counts.

4/ A = air
W = weir
G = ground

5/ Long Lake Weir Count - 12,687

Appendix

Table C. Coghill River field camp climatological and stream observations, 1981.

Date	Temperatures				Precip. 0900	Cloud ¹ Cover		Water Gauge (in.) 0900
	Air (F°)		Water (F°)			0900	2100	
	Min.	Max.	0900	2100				
5/31								
6/1								
6/2								
6/3							4	
6/4	2	14	5	6	.02	4	4	17.25
6/5	0	16	5	5	.03	3	2	17.50
6/6	1	15	6	7	0	4	3	17.00
6/7	6	17	6.5	7	.05	3	4	16.00
6/8	6	11	7	7	.12	3	2	15.50
6/9	-1	16	7.5	7.5	.15	3	2	15.00
6/10	1	19	8	8	.02	1	1	14.00
6/11	0	21	8	8.5	0	3	1	13.75
6/12	1	21	8	9.5	0	1	2	13.75
6/13	3	21	8	10	0	1	1	13.50
6/14	11	18	8.5	9	0	3	3	13.25
6/15	2	18	8	8	.03	4	3	13.75
6/16	2	22	9	11	.01	1	2	13.25
6/17	10	22	9	11	0	2	4	13.25
6/18	4	19	8	9	0	3	4	14.00
6/19	2	23	8	10	0	1	1	14.50
6/20	9	18.5	9.5	9.5	0	1	4	14.75
6/21	8	18	9.5	10	0	4	4	14.75
6/22	3	21	8	10.5	0	4	1	14.75
6/23	9	22	9.5	11	0	1	3	14.75
6/24	8	14	9.5	9.5	.27	4	4	15.00
6/25	8	16	9.5	10	.08	4	4	15.50
6/26	13	13	10	10	.01	4	4	15.75
6/27	14	15	10	10	.10	4	4	16.00
6/28	1	13	10	10.5	.30	4	3	15.75
6/29	14	12	9	9.5	.02	4	4	15.00
6/30	7	18	10	10	.37	3	4	14.75
7/1	13	14	9.5	10	.08	4	4	14.50
7/2	13	14	9	10	.73	4	4	15.25
7/3	13	17	9.5	10	.26	4	4	15.25
7/4	3	18	10	10	.23	4	2	15.00
7/5	2	17	10	11	.08	3	3	14.75
7/6	7	16	10	10.5	.01	4	4	14.25
7/7	6	15	10	9.5	0	4	4	14.00
7/8	7	16	10	9.5	.01	4	4	13.00
7/9	8	14	8.5	9.5	.06	4	4	13.25
7/10	8	13	9.5	10	1.35	4	4	15.50
7/11	8	17	10.5	8.5	1.62	4	4	23.50

Appendix
Table C. (continued)

Date	Temperatures				Precip.	Cloud ¹ Cover		Water Gauge (in.) 0900
	Air (F°)		Water (F°)			0900	2100	
	Min.	Max.	0900	2100				
7/12	8	16	9	9	.05	4	4	24.00
7/13	8	19	8.5	8.5	.01	4	4	22.50
7/14	8	15	8	8.5	.05	4	4	20.75
7/15	9	15	9	9	.63	4	4	19.50
7/16	8	17	9	9	2.03	4	4	25.75
7/17	8	15	8.5	8.5	.35	4	4	27.00
7/18	8	15	8	8	.46	4	4	24.50
7/19	8	15	8	8	.27	4	4	23.50
7/20	8	14	8	8.5	.20	4	4	22.00
7/21	9	19	8.5	8	.03	2	3	20.50

¹ Cloud Cover: 1 = Clear
 2 = Less than 1/2 cloud cover
 3 = Greater than 1/2 cloud cover
 4 = Complete cloud cover

Appendix

Table D. Eshamy River field camp climatological and stream observations, 1981.

Date	Temperatures				Precip.	Cloud ¹ Cover		Water Gauge (Ft.) 0900
	Air (F°)		Water (F°)			0900	2100	
	Min.	Max.	0900	2100				
6/16					0	2	2	
6/17					0	2	4	.20
6/18					0	4	3	.20
6/19	12	19		16	0	3	4	.19
6/20	13	20	16	16	0	3	4	.16
6/21	12	19	16		0	4	2	.15
6/22	11	20	16		0	2	1	.15
6/23	10	18	16		0	2	2	.13
6/24	12	15.5	16		0	4	3	.10
6/25	12	16.5	16		0	4	4	.10
6/26	9	14.5	16		0	4	3	.08
6/27	10	15.5	17		.09	4	3	.08
6/28	8	12	17		.08	4	4	
6/29	10	12	15		.22	4	4	.04
6/30	10	15.5	15		0	3	2	.04
7/1	9	11	15		1.09	4	4	.04
7/2	10	12	15		.20	4	4	.08
7/3	9.5	13.5	15		.015	4	4	.09
7/4	11.5	14.5	15		0	3	2	.08
7/5	11	14.5	16		0	2	3	.06
7/6	12	15.5	16		0	3	4	.06
7/7	11	13.5	15		.05	4	4	.04
7/8	11	13.5	15		.028	4	4	.03
7/9	11	13.5	15		.62	4	4	.02
7/10	11	13.5	15	15	1.28	4	4	.04
7/11	11	14	15		.01	4	4	.16
7/12	12	14.5	15	15	0	4	4	.17
7/13	11.5	14.5	15	15	.03	4	4	.16
7/14	12	13.5	15	15	.68	4	4	.16
7/15	12	13.5	15	15	1.85	4	4	.18
7/16	13	14.5	15	15	.25	4	4	.42
7/17	12	14.5	15	15	.15	4	4	.47
7/18	12	14.5	15	15	.15	4	4	.44
7/19	13.5	14.5	15	15	.22	4	4	.42
7/20	13.5	14.5	15	15	.04	4	4	.40
7/21	13.5	15.5	16	16	0	4	3	.36
7/22	13.5	15.5	16	16	.5	3	4	.30
7/23	13	14.5	16	16	.42	4	4	.30
7/24	13	13.5	15	15	1.70	4	4	.32
7/25	12	14.5	15	15	.34	4	4	.54
7/26	10	19	15	15	0	4	2	.58
7/27	12	19	15	15	0	1	2	.52
7/28	10	18	16	16	.18	4	4	.42

Appendix
Table D. (continued)

Date	Temperatures				Precip.	Cloud ¹		Water Gauge (Ft.)
	Air (F°)		Water (F°)			0900	2100	
	Min.	Max.	0900	2100				
7/29	11	15.5	16	16	0	3	3	.36
7/30	13.5	15.5	16	16	0	4	4	.32
7/31	13.5	14.5	16	16	.05	4	4	.30
8/1	12	13.5	16	16	2.70	4	4	.26
8/2	10	13.5	15	15	.84	4	4	.54
8/3	10	15.5	16	16	0	3	4	.66
8/4	11	23.5	16	16	.29	1	1	.56
8/5	12	13.5	16	16	1.55	4	4	.50
8/6	12	13.5	16	16	2.15	4	4	.66
8/7	13.5	14	16	16	1.25	4	4	.96
8/8	11	14.5	15	15	1.24	4	4	1.08
8/9	12	14.5	15	15	.34	4	4	1.1
8/10	10	14.5	15	15	.17	4	4	1.0
8/11	11	13.5	15	15	1.5	4	4	.86
8/12	10	13.5	15	15	1.0	4	4	.84
8/13	11	13.5	15	15	.10	4	4	.96
8/14	10	11	15	15	.64	4	4	.90
8/15	10	13.5	15	15	.07	4	4	.80
8/16	11	14.5	15	15	0	3	2	.74
8/17	10	12	15	15	1.65	4	4	.64
8/18	9	11.5	15	15	1.67	4	4	.72
8/19	10	12	14	14	2.00	4	4	.84
8/20	9	10	13	13	2.35	4	4	1.12
8/21	10	12	13	13	.65	4	4	1.48
8/22	11	13.5	13	13	0	4	4	1.34
8/23	12	16.5	13	13	0	1	1	1.14
8/24	9	21	13	13	0	1	1	.94
8/25	11	22	13	13	0	2	1	.80
8/26	11	18	14	14	0	1	4	.68
8/27	12	19	14	14	0	2	4	.62

- ¹ Cloud Cover: 1 = Clear
 2 = Less than 1/2 cloud cover
 3 = Greater than 1/2 cloud cover
 4 = Complete cloud cover