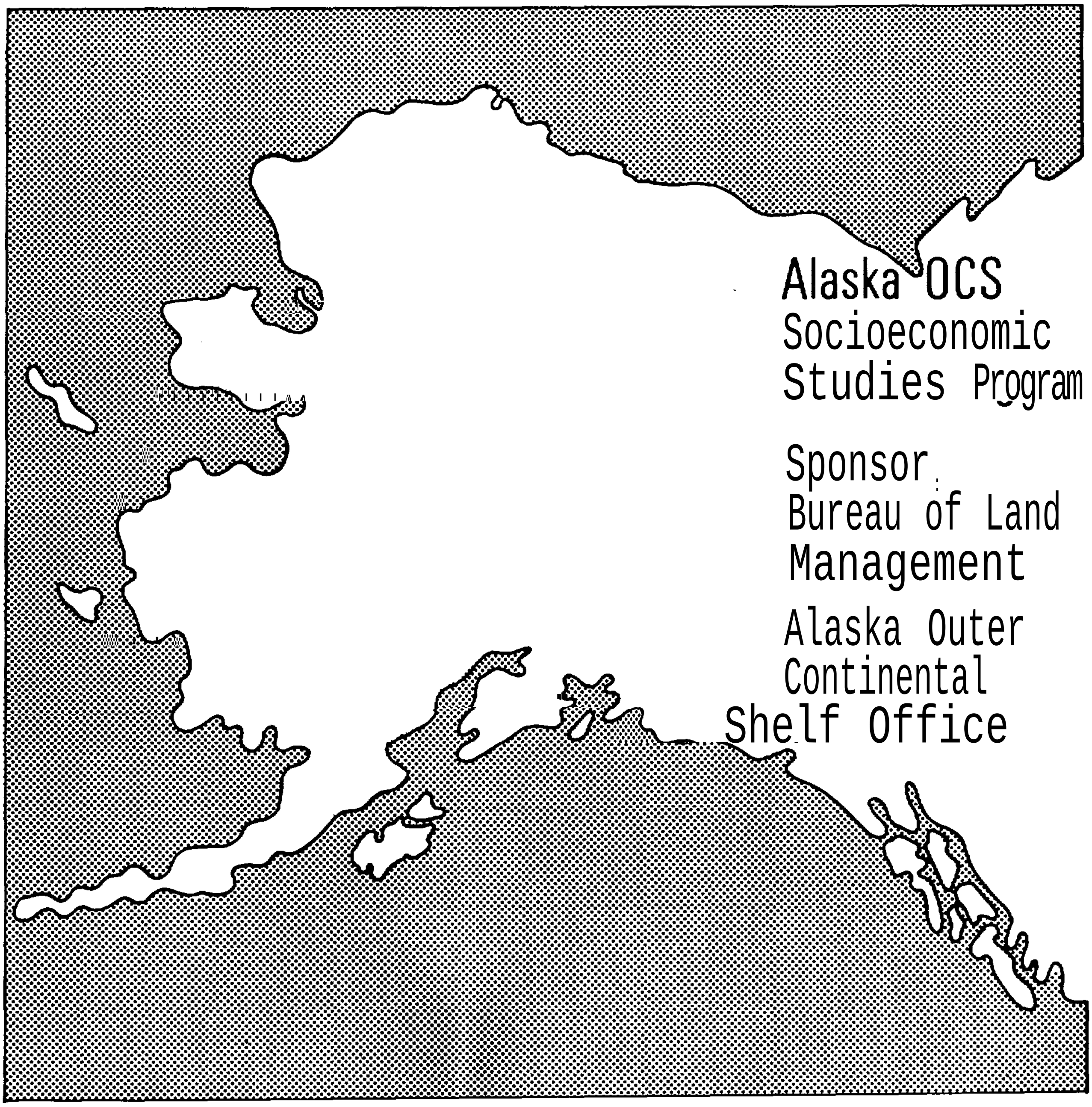
TECHNICAL REPORT
NUMBER 60



Alaska OCS
Socioeconomic
Studies Program

Sponsor:
Bureau of Land
Management
Alaska Outer
Continental
Shelf Office

ST. GEORGE BASIN AND NORTH ALEUTIAN SHELF COMMERCIAL FISHING ANALYSIS

The United States Department of the Interior was designated by the Outer Continental Shelf (OCS) Lands Act of 1953 to carry out the majority of the Act's provisions for administering the mineral leasing and development of offshore areas of the United States under federal jurisdiction. Within the Department, the Bureau of Land Management (BLM) has the responsibility to meet requirements of the National Environmental Policy Act of 1969 (NEPA) as well as other legislation and regulations dealing with the effects of offshore development. In Alaska, unique cultural differences and climatic conditions create a need for developing additional socioeconomic and environmental information to improve OCS decision making at all governmental levels. In fulfillment of its federal responsibilities and with an awareness of these additional information needs, the BLM has initiated several investigative programs, one of which is the Alaska OCS Socioeconomic Studies Program (SESP).

The Alaska OCS Socioeconomic Studies Program is a multi-year research effort which attempts to predict and evaluate the effects of Alaska OCS Petroleum Development upon the physical, social, and economic environments within the state. The overall methodology is divided into three broad research components. The first component identifies an alternative set of assumptions regarding the location, the nature, and the timing of future petroleum events and related activities. In this component, the program takes into account the particular needs of the petroleum industry and projects the human, technological, economic, and environmental offshore and onshore development requirements of the regional petroleum industry.

The second component focuses on data gathering that identifies those quantifiable and qualifiable facts by which OCS-induced changes can be assessed. The critical community and regional components are identified and evaluated. Current endogenous and exogenous sources of change and functional organization among different sectors of community and regional life are analyzed. Susceptible community relationships, values, activities, and processes also are included.

The third research component focuses on an evaluation of the changes that could occur due to the potential oil and gas development. Impact evaluation concentrates on an analysis of the impacts at the statewide, regional, and local level.

In general, program products are sequentially arranged in accordance with BLM's proposed OCS lease sale schedule, so that information is timely to decisionmaking. Reports are available through the National Technical Information Service, and the BLM has a limited number of copies available through the Alaska OCS Office. Inquiries for information should be directed to: Program Coordinator (COAR), Socioeconomic Studies Program, Alaska OCS Office, P. O. Box 1159, Anchorage, Alaska 99510.

TECHNICAL REPORT NO. 60

CONTRACT NO. AA851-CTO-34

ALASKA OCS SOCIOECONOMIC STUDIES PROGRAM

ST. GEORGE BASIN AND NORTH ALEUTIAN SHELF COMMERCIAL FISHING INDUSTRY ANALYSIS

PREPARED FOR

BUREAU OF LAND MANAGEMENT
ALASKA OUTER CONTINENTAL SHELF OFFICE

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OCTOBER, 1981

BLM-YK-P/T-81-009-333 1

NOTICE

ALASKA OCS SOCIOECONOMIC STUDIES PROGRAM
ST. GEORGE BASIN AND NORTH ALEUTIAN SHELF
COMMERCIAL FISHING INDUSTRY ANALYSIS

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OCTOBER, 1981

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ABSTRACT

The OCS lease sale program will likely lead to interaction between the seafood production industry and the oil and gas industry. In Alaska and especially in the Bering Sea OCS activities will operate in some of the richest fishing grounds in the world. Estimating the likely impacts of OCS on commercial fisheries in the area is the objective of this study. The process of estimation drew on existing methods of analysis as well as on methods developed especially for this work. In all, five sub-areas of impacts were examined. They include: loss of access to fishing grounds, loss of and damage to fishing gear, competition for available labor, collisions among vessels, and increased recreational fishing stemming from the influx of OCS related populations.

The St. George Basin was used as a case study. Detailed impacts analyses were conducted and their results quantified. Drawing on the similarity between this area and the North Aleutian Shelf, the comparable impacts of OCS activities in this region were estimated.

Commercial fisheries are estimated to lose access to 2.8 - 10.7 square nautical miles of fishing grounds in the St. George Basin. Under certain assumptions this would result in a loss of $196,000 to commercial fisheries at the first wholesale level. Losses for the North Aleutian Shelf are estimated not to exceed this level.

Loss of and damage to fishing gear (nets, etc.) as a result of OCS related debris was projected. At the height of domestic fishery development a possible 12 claims per year will be made by fishermen claiming loss of or damage to their fishing gear. This loss will cost about $216,000. To make this projection, the experience of fisheries and OCS interaction in the North Sea was used. It is projected that as the two industries become more familiar with the area and operation of one another, incidence will be minimized. Based upon estimations of similar levels of activity in the North Aleutian Shelf area, the number and value of claims should not exceed those estimated for the St. George Basin.

A big portion of fishery related labor in the region of interest is made up of fishermen whose earnings are lower than may be paid to unskilled workers in the oil and gas industry. This is likely to lead to a high willingness of this labor pool to transfer to OCS employment. However, because the number of jobs to which they would be attracted is limited and because there is a considerable excess in the

number of crewmen for the available fishing jobs, the impact due to labor competition is minimized in both the St. George Basin and the North Aleutian Shelf lease sale areas.

Attempts by domestic fishermen to exploit the hitherto foreign dominated bottomfish resources will introduce new vessel traffic. Similarly, the OCS supply and support vessels will bring in additional traffic leading to increased chances of vessel collisions. In the St. George Basin collision problems will be minimized because of the large ocean areas involved. In areas of more restricted space (especially in Unalaska Bay and around Dutch Harbor) the probabilities of collision will be relatively higher. Overall, one collision in twenty years is projected. This estimate would be an upper bound for the North Aleutian Shelf.

Another possible impact on commercial seafood production is due to recreational fishing stemming from the influx of OCS-related populations. There are some recreationally attractive species available in these areas. However, the impacts are relatively small with the possible exception of localized dislocations from certain salmon fisheries.

The methods adapted or developed for use in the analyses described in the foregoing are in a form that facilitates application to other areas. In most cases, however, modification aimed at adjusting for local conditions or special cases would be required.

1.0 INTRODUCTION

1.1 PROGRAM BACKGROUND

This report is one of a series produced under the Alaska Outer Continental Shelf (OCS) Socioeconomic Studies Program (SESP). The program stems from the national concern regarding energy resources and the resultant need to explore the outer continental shelf for oil and gas. The program is sponsored and administered by the U.S. Bureau of Land Management, Alaska OCS office. A major aim of the program is to provide baseline information and to assess the impacts of probable future OCS oil developments. The specific areas addressed by this report are the impacts of OCS development on commercial fisheries in the St. George Basin and North Aleutian Shelf lease sale areas.

1.2 PURPOSE AND SCOPE

The purpose of the study from which this report is derived is to assess the future possible OCS oil impacts on commercial fisheries in the St. George Basin, Lease Sale No. 70 and the North Aleutian Shelf, Lease Sale No. 75. The study addresses both an update of the baseline data or conditions projected to exist in the absence of OCS development, and the impacts of OCS development on commercial seafood production activities. The scope of the impacts analyses includes an assessment of labor competition, possible collisions among vessels, changes in recreational demand, and conflicting use of ocean space.

1.3 OUTLINE OF REPORT PRESENTATION

This report contains four chapters. Following this introduction, Chapter 2.0 presents a summary of conclusions. Chapters 3.0 and 4.0 contain, respectively, the data base update and the impacts analyses.

The data description in Chapter 3.0 is organized in two parts. The first is a discussion of the types of data and the sources used in the analyses of fishery conditions. The other part deals with the data reorganization procedures employed and the assumptions pertaining to this reorganization. Also contained in this part is a brief description of how the data was used and the purpose for which it was used.

The impact analyses are described in Chapter 4.0. Each type of impact is dealt with separately. In each case the methods used are described, including any major assumptions made. An example of results is presented, usually in tabular form, for a selected year (generally the year 2000). Results are also presented for other years at five year intervals starting in 1985.

Detailed analyses were conducted in each case for the St. George Basin. Because of the similarities between the North Aleutian Shelf and the St. George Basin, the impacts for that area are described qualitatively, relative to those stated quantitatively for the St. George Basin. The data base update is completed in detail for both areas.

2.0 CONCLUSIONS

This chapter discusses the major conclusions arrived at during this analysis. The conclusions are arranged by type of impact analyzed. First, the impacts are presented of loss of access to fishing grounds and damage to or loss of fishing gear due to OCS related structures and debris. Next, the impacts are assessed due to competition for labor where fishery employees might be lured to higher paying OCS jobs. Then the impacts due to possible collisions among vessels at sea are examined. Finally, recreational impacts of OCS development are projected.

2.1 LOSS OF ACCESS TO FISHING GROUNDS

The proportional area method indicates that installation of oil and gas rigs and platforms in the St. George Basin will lead to loss of fishing grounds ranging from 1.6 to 5.6 square nautical miles by 1985 and 2.8 to 10.7 square nautical miles in the year 2000. According to this method an estimated 184.41 m.t. of groundfish resources would possibly be inaccessible to commercial fishing operations in the year 2000. This is to be compared with the over 2 million m.t. estimated to be available in the Bering Sea and Aleutians. In terms of those operations expected to be based in the Bering Sea and Aleutians (1.7 million m.t.) this loss constitutes less than one hundredth of one percent (less than 0.01%). Other resources potentially lost include 2.21 m.t. of king crab and 1.67 m.t. of Tanner crab.

In terms of processed products groundfish loss could amount to about $188,000 in 1980 dollars. This assumes a 33% yield and a real product price of $1.40 per pound. The corresponding values for king and Tanner crab are respectively $5,260 and $2,271 per year at first wholesale prices. As argued in Chapter 4, it does not seem likely that loss of access to some fishing ground should necessarily lead to loss of catch. This is particularly true in the case under discussion where fish and shellfish resources are known to be mobile and where they are managed based upon the concept of sustainable physical yield as modified under the Fisheries Conservation and Management Act (FCMA).

Impacts in the North Aleutian Shelf area where similar resources exist will be comparable. It is not expected that the magnitude of these impacts will exceed those for the St. George Basin.

2.2 LOSS OF AND DAMAGE TO GEAR

The experience in the North Sea where oil and gas developments have had some impacts on the fishing industry was used to gain some insight as to what might be expected in the St. George Basin. It may be noted that with few exceptions, both the resources and harvest methods in the North Sea are similar to those in the St. George Basin. A variety of demersal fish species occur in both regions. The harvest methods common to both fisheries are mostly those involving trawl operations. There are some exceptions including pot fishing for crab in the St. George Basin and purse seining for herring and sprat in the North Sea which appear in one and not the other region. Nonetheless, enough similarity exists to allow analysis of potential gear loss and damage in the St. George Basin based upon the North Sea experience.

Number of claims per unit effort per Oil and Gas Installation (OGI) in the North Sea were used to derive similar measures for the St. George Basin. According to this analysis an estimated 5 claims per year can be expected from fishermen alleging damage to and loss of their fishing gear in 1985. Claims will likely grow to about 12 by the year 2000 as the level of harvest comes to a maximum with full fishery development in the region. On an annual basis the corresponding claimed value would be approximately $90,000 and $216,000 (1980 dollars) for 1985 and 2000, respectively.

It may be noted that the total number of claims in the North Sea has decreased after an initial steady increase to a high of 116 claims in 1977. In 1980 there were 74 claims. Expressed in terms of claims per OGI per 1,000 hrs. of effort, there has been a steady decrease from 0.234 claims per OGI per 1000 hrs. of effort in 1976 to 0.034 in 1980. This is likely due to changes in awareness, provision and use of better charts and markings. Careful planning, adequate transfer of information, and maintenance of charts and equipment by both industries in the St. George Basin may help reduce the number of incidence.

Similar arguments are appropriate for the North Aleutian Shelf and losses are not likely to exceed those stated above.

2.3 COMPETITION FOR LABOR

The propensity of labor to transfer from the fishing industry to the higher paying OCS jobs will be quite high for certain unskilled labor categories. However, the fact that only a few jobs will be available to skills transferable from fisheries, places a limit to what the fishery impact will be. In total, an estimated 3,042 people would prefer to transfer in 1985, and 9,971 in the year 2000. The number of OCS jobs available to such people is only 87 and 101, respectively. The highest number of OCS jobs available in the appropriate skill categories is 258 which is projected to occur in 1988. Consequently, the maximum impact would be a transfer of 258 people from commercial seafood production activities to OCS jobs in the St. George Basin.

Most of the labor which would prefer to transfer, assuming OCS jobs to be available, is from the processing industry. These tend to be younger, transient people. Fish harvesting labor is generally paid better than they would expect at unskilled OCS jobs; this is especially true in the crab fisheries. Only a few crew member categories such as from certain salmon fisheries and those on the smaller crab vessels would find OCS wages attractive enough to want to leave the fishing industry. Even then, only 258 are estimated at maximum to be able to do so. This is to be compared with the 21,841 crew members registered statewide in 1978.

Not all registered crew members are employed at the same time. For example, in 1978 the peak employment for crews in Alaska was 3,396 people. This means that in any given month one out of six registered crew members is likely to be engaged in fishing. Since many of the traditional fisheries are seasonal with less than a full year's employment available on a per fishery basis, some people in the harvesting sector could possibly work in both industries in a given year. The desire to join higher paying OCS jobs in the unskilled category is likely to be high among the lower paid portion of fishery labor, but because of a limited number of OCS vacancies the large supply of fishery labor, and the seasonal nature of fishery jobs, the effects of competition for labor will not be as great as would otherwise be expected.

These considerations exist for both the St. George Basin and the North Aleutian Shelf lease sale areas.

2.4 COLLISION IMPACTS

Both the ‘free gas” analogy and the parallel path collision models were applied to estimate the number of collisions to be expected from encounters of the fishing and OCS support/supply vessels. Results show that the number of potential collisions among all vessels of the two fleets would grow each year as the traffic volume increased. However, in the year 2000 when the highest potential exists, the collision probability would amount to only 0.045 or about one collision every twenty-two years. Of this the incremental change due to introduction of OCS activity in the St. George Basin would be 0.031 or one collision in 32 years.

For every collision of this kind, i.e. overtaking, passing, while anchored, docking, and in fog, there must be at least two vessels. Annual casualty statistics show that in all U.S. waters there are on average 2.9 vessels for every collision casualty. For the years 1970/71 and 1972/73 through 1977/78, there were an average of 472 collisions each year. On an annual basis 1,367 vessels were involved in these collisions. Recognizing that most of the vessels in the St. George Basin will be fishing vessels, and therefore assuming that two out of every three vessels in a collision will be fishery vessels, the estimated impact on fisheries is $94,000 to $198,000 per year. This assumes that a fishery vessel sinks every 32 years.

However, as not every collision results in a sinking, the more likely impact would be much less and will be measured in terms of repairable damage. Statistics of casualties in U.S. waters show that the average value lost per vessel involved in a collision is approximately $22,137 (1980 dollars). If two fishery vessels get involved in such a casualty once every 32 years the annual loss equivalent would be $1,384.

With the expectation that Dutch Harbor will be the primary support base for OCS vessels, it is likely that the collision estimates for the North Aleutian Shelf will not exceed those estimated above.

2.5 RECREATIONAL IMPACTS

Examination of the resources of the St. George Basin (especially those in the vicinity of Unalaska where OCS and other populations will be centered) shows that the recreational fishing in the area will be limited. This is primarily due to the fact that there are few attractive species which would become a target of recreational fishermen. About 75% of the effort will be directed at salmon, especially pink salmon. The remainder of the effort would target on halibut and result in incidental catches of cod, flounder, rockfish and other groundfish. The impacts of additional effort due to OCS related population are estimated for the year 2000 to be:

Salmon - 4,032 fish (about 14,516 lbs.) or a first wholesale value of $49,000 in 1980 dollars.

Halibut - 448 fish (about 4,928 lbs.) valued at $34,000 at the first wholesale level.

Bottomfish - 8,960 lbs. of various species for a first wholesale value of $4,400.

The salmon catch may to some degree affect a local fishery. However, the bottomfish catch would come out of a vast resource that Is measured in terms of ❑illions of metric tons.

According to the statistics of the International Pacific Halibut Commission, a halibut vessel on an average makes between 2.5 an 3.0 trips each year for a total catch of 5,000-6,000 lbs. The loss of 4,928 lbs., therefore, would represent the equivalent displacement of one vessel. Recreational impact on commercial fishing could more likely come from populations related to growth in the seafood production industry which are estimated to be at least 15 times their OCS counterparts for the City of Unalaska.

2.6 THE NORTH ALEUTIAN OCS IMPACTS

As discussed in detail in various sections of Chapter 4.0, inferences were made about the likely impacts of the North Aleutian Shelf lease sale. The general conclusion is that impacts on commercial fishing due to this lease sale would tend to be similar to those estimated for the St. George Basin OCS activities. This conclusion draws on the fact that activity levels (both fishing and oil related) will be similar in both lease sale areas. If anything, the intensity of activity will be lower in the North Aleutian Shelf. Thus the impact estimates due to OCS operations in the St. George Basin can be taken as ceilings for counterpart impacts due to the North Aleutian Shelf lease sale.

3.0 DATA BASE

In this chapter the fisheries data base used in the analysis of impacts is described. The first part of this chapter contains a detailed account of the data included in the appendix. Tables in the appendix are described as to the information they contain and the sources of the data. The second portion of this chapter describes some of the procedures used to organize and reorganize the data for purposes of the analyses that follow.

3.1 DATA DESCRIPTION

The information is arranged in two convenient categories. Foreign catch and effort information and domestic fisheries data make up these two categories. The two also conveniently refer to groundfish and traditional species, respectively. For purposes of this report, ‘traditional species” include salmon, halibut, king crab, Tanner crab, shrimp and herring. Groundfish or bottomfish refer to a complex of species including primarily Alaska pollock, Pacific cod, Pacific ocean perch, various rockfish and various flatfish. These species have been harvested predominantly by foreign entities, yet they offer potential opportunities to Us. industry. The description that follows deals first with foreign catch data and lastly with domestic fisheries information.

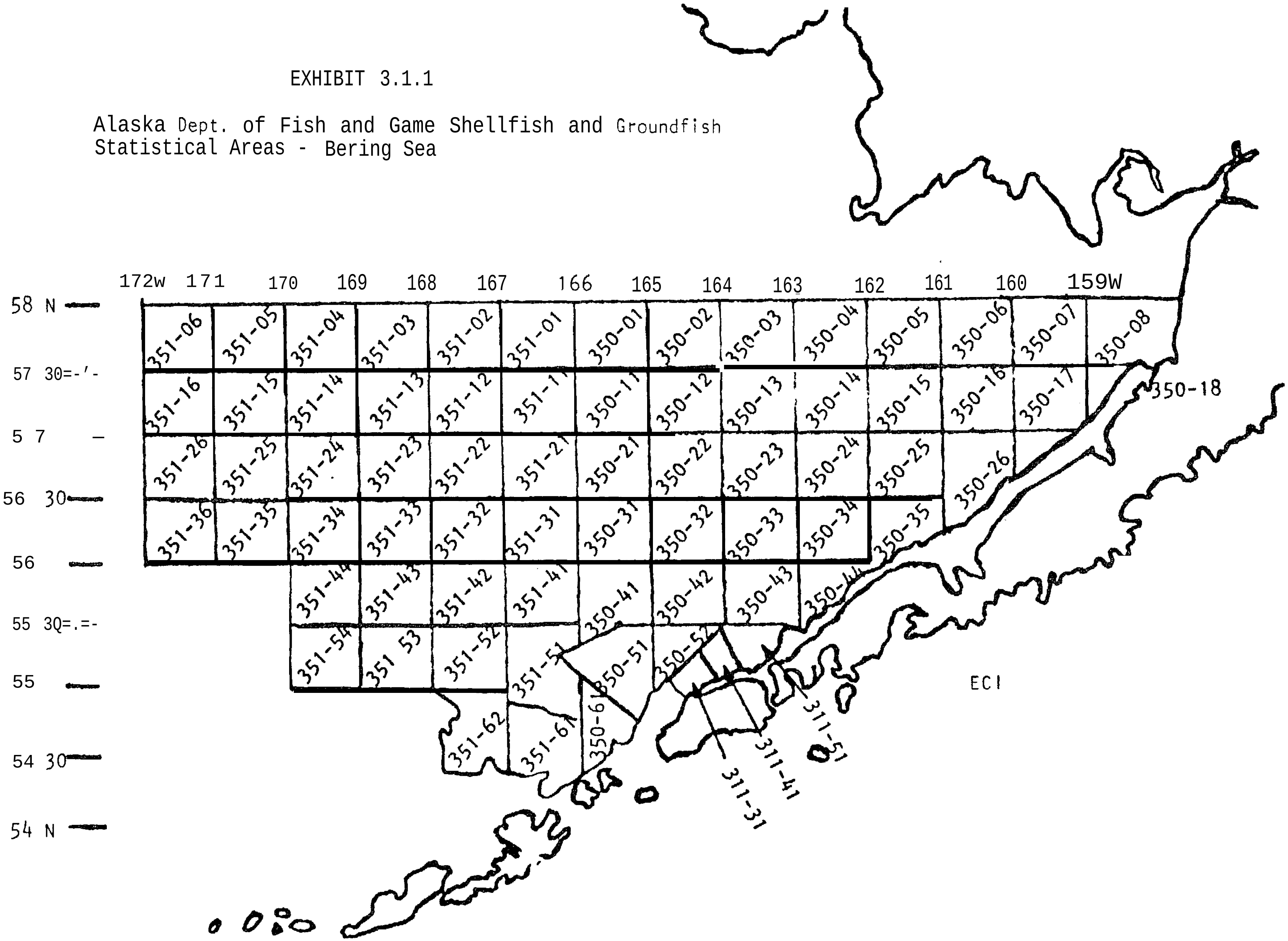
3.1.1 Foreign Catch and Effort

The tables that refer to 1978 foreign operations in the Bering Sea area were arranged into three groups. Only 1978 information is included as it was the most current available at the time of this analysis. It is indicative of post-FCMA allocations and use patterns, and updates existing data bases without re-reporting information provided under previous contracts. The first group refers to Appendix tables A-1 to A-13. These tables display foreign catch by species of all nations for all gear types in metric tons. The catch is shown according to the 1 degree longitude by 1/2 degree latitude areas which for the most part correspond to the Alaska Department of Fish and Game (ADF&G) 5-digit statistical areas for shellfish and groundfish. See Exhibit 3.1.1.

The second group includes Appendix tables A-14 to A-22. These tables display information by nation. For each nation, Japan, USSR and South Korea, catch of all species in metric tons is arranged by gear type and quarter of the year.

EXHIBIT 3.1.1

Alaska Dept. of Fish and Game Shellfish and Groundfish
Statistical Areas - Bering Sea



The information is again displayed according to the 1 degree by 1/2 degree areas. These tables show the seasonality of catch and certain types of gear on an annual basis.

The third group is essentially effort information. Appendix tables A-23 to A-30 provide effort information in number of hours by gear type. To maintain the distinction among effort of the different nations, nation specific information is tabulated. To maintain the area and seasonal specificity the tables show both the 1 degree by 1/2 degree areas and the quarter of the year. Each of the three data groups contains information specific to assessing the impacts for the St. George Basin lease area. The boundaries of this area for these purposes were estimated as 158 degrees W to 172 degrees W and 54 degrees N to 58 degrees N. To indicate the relative overall importance of the various types of gear, a summary table for Japanese catch and effort for the whole of the Bering Sea and Aleutians area is provided (Appendix Table A-31). The Japanese catch has been and still is by far the largest of any participating nation, and the corresponding effort information is representative of the bulk of the effort applied in the region. Additional foreign catch and effort information is provided for the area covering the Aleutian Islands up to 172 degrees West in Tables A-32 to A-40.

3.1.2 Domestic Fisheries

The 1978 domestic catch, effort and value of catch were tabulated. This information is arranged by geographic regions covering Bristol Bay, the northern side of the Alaska Peninsula, and the Bering Sea regions up to 172 degrees West. See Exhibits 3.1.2a and 3.1.2b and also Exhibit 3.1.1 as previously mentioned. Only 1978 information was included for reasons stated in the previous section on foreign fisheries. The tables pertaining to the Bristol Bay region are Appendix Tables A-41 through A-64. For the northern edge of the Alaska Peninsula the corresponding tables are Appendix Tables A-65 through A-79. The Bering Sea information is contained in Appendix Tables A-80 through A-97.

For each region information is arranged according to species and gear. In the regions of concern the species and gear covered are as follows:

Region	Species or Target Resource	Gear
Bristol Bay	Salmon	Drift Gillnet Set Gillnet

EXHIBIT 3 2a

Alaska Dept of Fish and Game Finfish Statistica Areas - Bristol Bay

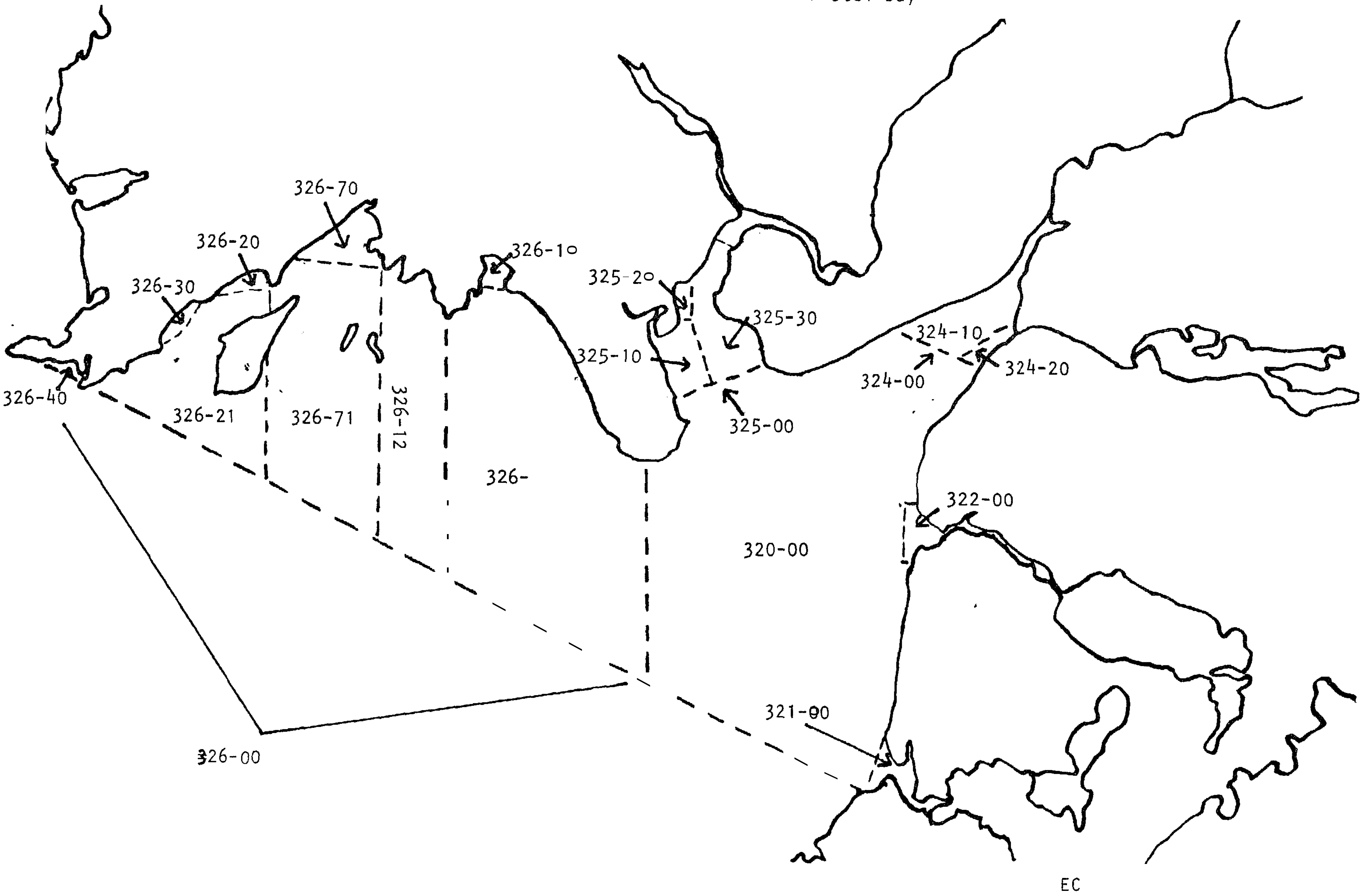


EXHIBIT 3.1.2b

Five-digit fishing statistical areas off the Alaska Peninsula and Aleutian Islands

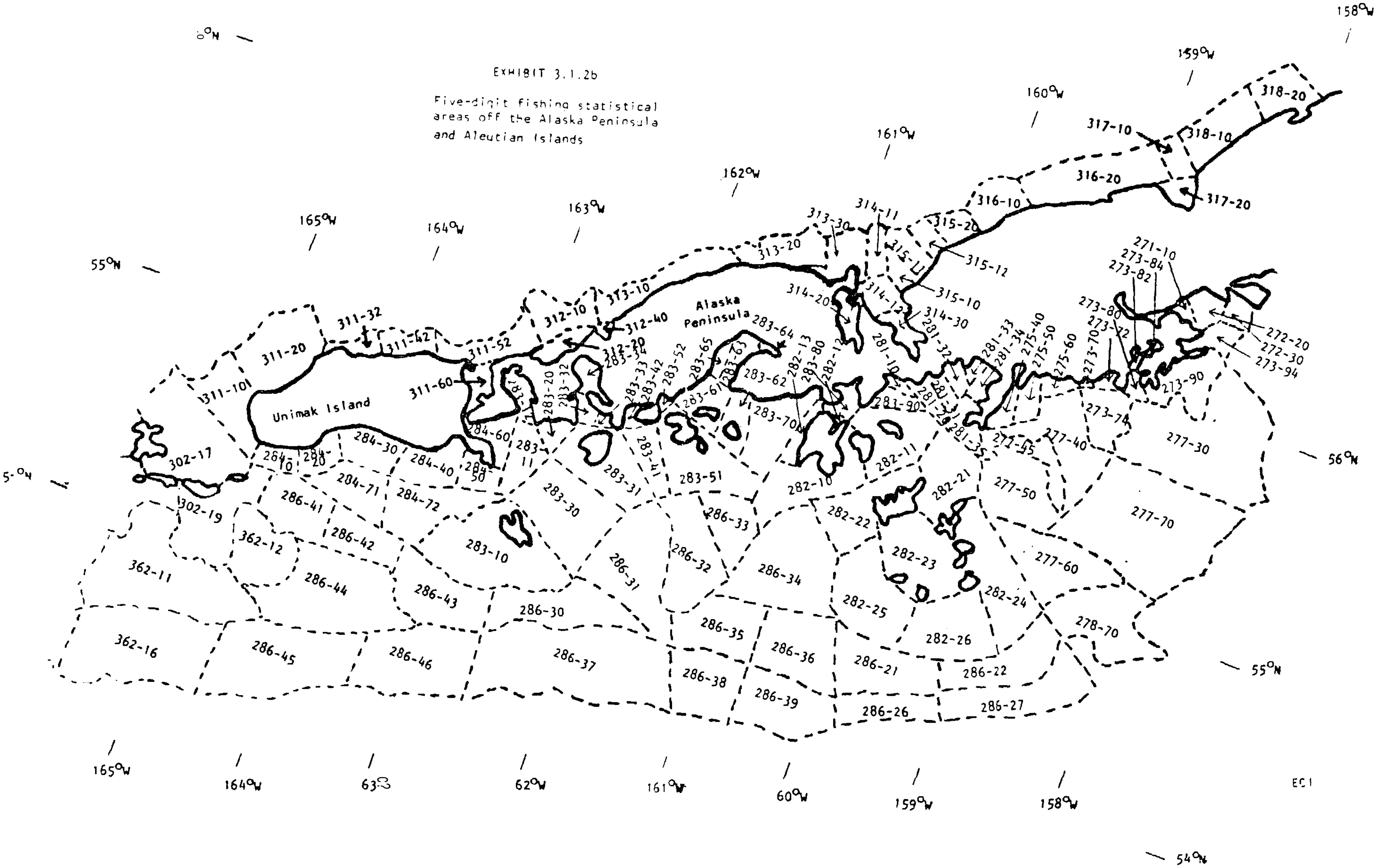
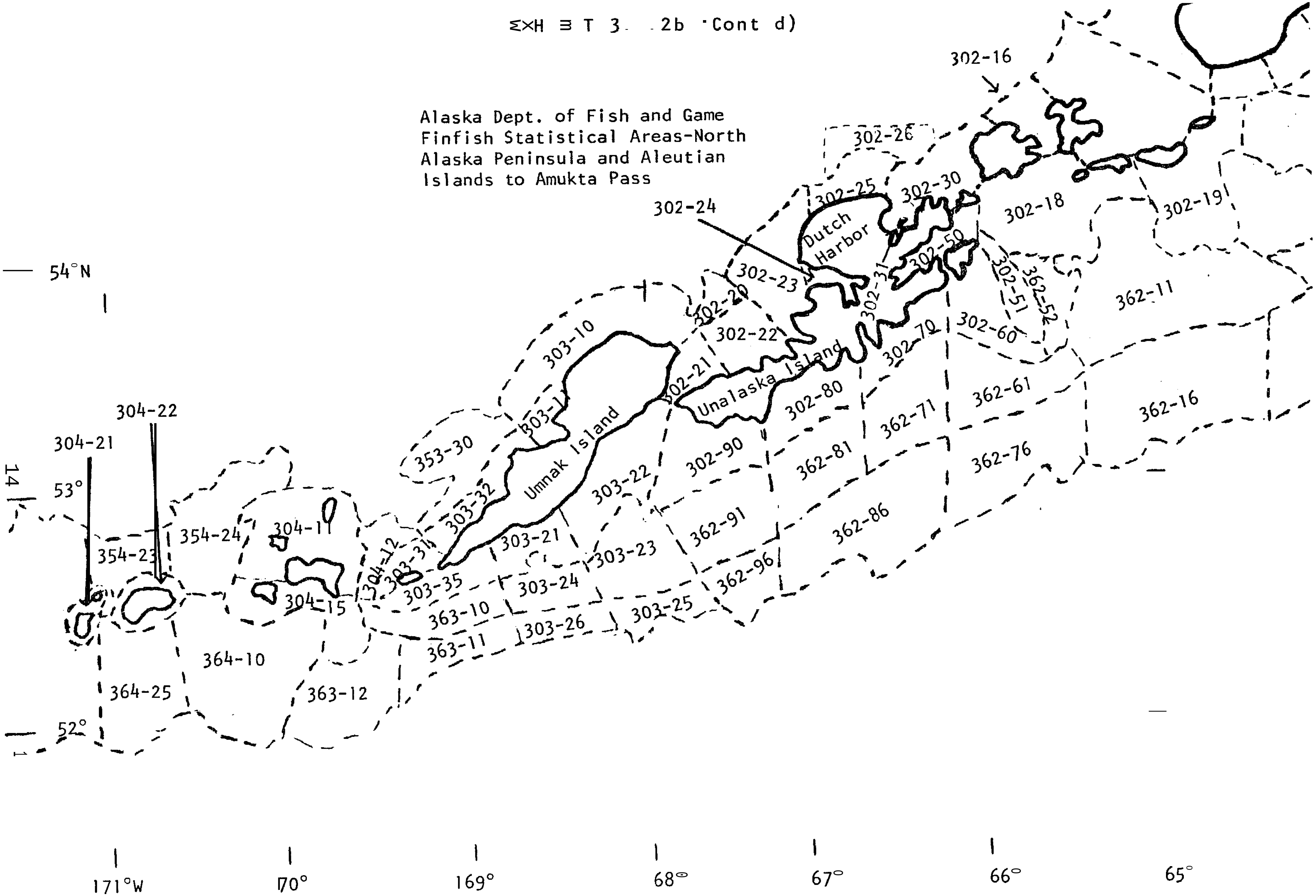


EXHIBIT 3.2b (Cont'd)



	Herring	Drift Gillnet Set Gillnet Purse Seine
Alaska Peninsula (northern portion)	Salmon	Drift Gillnet Set Gillnet Purse Seine
	King Crab	Pot Gear
	Tanner Crab	Pot Gear
Bering Sea	King Crab	Pot Gear
	Tanner Crab	Pot Gear
	Shrimp	Otter Trawl
	Pacific Cod	Otter & Double Otter Trawl
	Alaska Pollock	Otter & Double Otter Trawl
	Other Bottomfish	Double Otter Trawl

The above arrangement of species and gear is used in the tables to present catch weight, value landed and effort. Catch in metric tons is provided first for each species and gear type. This is followed by tables that show landed value in thousands of 1978 dollars. Next, information on effort is presented, again keeping the same order of species and gear type. All the information described so far for domestic fisheries is also specific to ADF&G 5-digit statistical areas. A final set of tables (Appendix Tables A-98 to A-143) rearranges the above tonnage and effort data by month of year. These tables, however, are organized on a regional basis and do not give detail by statistical area. As was done for foreign catch statistics, the additional Tables A-144 to A-176 give data pertaining to the area south of 54 degrees North in the Aleutian Islands including the area just south of Unimak Island and extending to 172 degrees West. Unless otherwise stated, information for this area was not used for impacts analysis. For the most part this area is outside the range of impacts from OCS activities in the St. George Basin.

The major portion of the data described thus far and contained in Appendix tables A-1 to A-176 is important to the analysis of impacts of OCS activities not only in the St. George Basin but also in the North Aleutian Shelf. However, additional information of particular relevance to understanding the fishing industry to the south of the Alaska Peninsula is included in Appendix B. The information as contained in tables B-1 to B-45 is of particular importance to the North Aleutian Shelf lease sale. It includes both catch and effort data pertaining to activities of domestic fishermen. The tables are arranged to display catch in metric tons and effort in number of landings according to vessel size group for each 5-digit statistical area (See Exhibit 3.1.1). As in the other tables of domestic fisheries statistics, gear types are also identified.

It's important to note that in constructing these tables on domestic fisheries two data sources were used for cross-checking and also to fill the data gaps in the principal source. The following is a discussion of the procedure used to compile the tables.

Estimation of Catch and Exvessel Value:

The primary data came from two sources, the Commercial Fisheries Entry Commission (CFEC) and ADF&G. The CFEC's computer printout, which was the principal source of detailed data, shows the number of vessels and number of landings made from each 5-digit statistical area according to vessel length, species and gear type. However, because of confidentiality considerations, total catch by vessel length was not always directly available from this data source. Catch and exvessel value for each statistical area were listed only when four or ❑ore vessels fished in a statistical area. This necessitated some estimation to fill the data gaps. The first step was to fill in some of these gaps using ADF&G data where possible.

The ADF&G computer printout includes the number of vessels and number of landings made in each 5-digit statistical area by species and by gear type, but not by detailed vessel length categories, nor does it contain the exvessel value. However, unlike the CFEC computer printout, the ADF&G statistics listed all the catches made in each statistical area where even one vessel fished. It was therefore possible to fill a considerable number of gaps in the data particularly for areas where only a few vessels of the same length group fished.

Secondly, the remaining gaps were filled by use of catch per unit effort (CPUE) statistics. CPUE's vary by vessel size, season and area fished. In general, four large regions were examined for CPUE determination. In this report these are referred to as Bristol Bay, Bering Sea, the Northern portion of the Alaska Peninsula, and the Southern portion of the Alaska Peninsula.

In estimating weighted CPUE by species, by vessel length and by gear type for each of the above mentioned regions, the identified catch per landing in each statistical area was utilized. In order to make a reasonable estimation of catch in some 5-digit statistical areas, where data gaps were still apparent, the identified statistics Of catch per landing by species, by vessel length and by gear type were utilized. Once a weighted average CPUE (lbs./landing) was set by group of species, vessel length and gear type, this was applied to an appropriate statistical area where catch data by vessel length required estimation. Since the number of landings and total catches in lbs. can be tabulated for each statistical area by utilizing the two data sources, estimation of catch by vessel length could be made. Estimation of exvessel value for the same statistical area was then made by applying unit prices for the closest statistical area for which both catch and value were available.

The process just described revealed some special characteristics in terms of species harvested and most productive vessel sizes used in each region. The king crab fisheries in the Bering Sea and the Northern portion of the Alaska Peninsula display a peculiar CPUE characteristic. Unit catch rates in these regions increase with vessel size and reach a maximum for the 101'-110' length category. Thereafter the catch rates fall. In the Southern portion of the Alaska Peninsula the maximum CPUE is reached by the 71' - 80' vessel length category. Tanner crab and shrimp fisheries have characteristics similar to those of the king crab fishery. For the crab fisheries the peculiarity may be explained in part by the fact that the larger vessels are both harvesters and processors. This means that they can take deliveries from smaller vessels that only harvest the catch. In the salmon fishery, no discernible vessel size influence on catch rates could be identified. Therefore, in some of the statistical areas where estimates of salmon catch were necessary, total catch was divided equally by the number of landings regardless of vessel length.

3.1.3 Market considerations and Factors of Change

The appendix that contains the data base also contains some information regarding market conditions for seafood products and factors of change. The outlook for groundfish, salmon, herring, halibut and shellfish markets are discussed. Generally, the outlook is favorable for continued production of traditional species. Groundfish products have established markets, yet access to foreign markets is often denied to U.S. producers. Several factors of change are explored. The factors likely to influence fisheries conditions include the limited entry provisions, technology, the 200-mile limit legislation, joint ventures, enhancement measures, and political and economic trends. Economic trends pose the largest concern for future development in seafood production by the U.S. industry.

3.2 DATA REORGANIZATION

Based on the 1978 landings figures by species and by gear type in each five digit statistical area from ADF&G and CFEC sources, the number of vessel movements were determined by ❑ultiplying the number of landings by two in order to get two way measures of vessel traffic in each statistical area (1 degree x 1/2 degree block). An important consideration is that a vessel may fish in more than one statistical area during one trip. This is one source of difficulty when trying to determine an accurate number of vessels involved in a certain fishery and at the same time work from a data source that is as detailed as was used in this case. However, the CFEC data internally eliminates double counting of trips by assigning catch for a trip to one statistical area. This is done by requiring the fishermen to report the one statistical area where most of the catch in a landing was made. For future domestic bottomfish vessel trips and movements, the estimating procedure was based on foreign catch experience in the area. The number of movements were classified by type of vessel: Crabbers for traditional fisheries in the Bering Sea and the Northern portion of the Alaska Penisula, and trawlers and catcher/processors for bottomfish resources. There is very little catch of salmon included in the statistical base for the area of concern for the St. George Basin impact analysis. Consequently, no salmon vessels are included in the estimates in this area.

3.2.1 Bottomfishery

Since the bottomfish resources in the Bering Sea are underutilized by domestic fishermen, the 1978 foreign catch information was utilized to allocate future domestic bottomfish harvest activities in the proposed area of lease sale No. 70. In 1978, the foreign catch of bottomfish in the Bering Sea and Aleutians was 1.34 million m.t., of which 43.758% or 586,919 m.t. were caught in the area of interest to the St. George Basin lease sale area (54 degrees N to 58 degrees N and 163 degrees W to 172 degrees W.). We may note here that the source of this data (The National Marine Fisheries Service, Northwest and Alaska Fisheries Center) has two sets of data that do not always agree exactly. One computer print-out gives monthly, quarterly and annual catch by country and by gear. This is the source of the 586,919 m.t. figure. The other print-out tabulates catch for each gear type by species for each country. The corresponding catch figure from this source is 587,131 m.t. Detailed examination of both print-outs reveals that the discrepancy of 212 m.t. can be traced to Japanese catch statistics.

According to the University of Alaska Sea Grant's bottomfish harvest scenario (Tech. Rep. 51) 2.0 million m.t. will be harvested by the year 2000; of this, 1.7 million m.t. will be harvested and processed in the Bering Sea and Aleutians by the operations based in these regions. One-half of this is assumed to be processed in shore plants and the other half at sea. Therefore, of this 1.7 million m.t. of future bottomfish harvest, 43.758% or 743,886 m.t. were assumed to be available in the area of interest for harvesting by Bering Sea and Aleutians based operators.

Based on the 1978 foreign catch statistics in 1 degree x 1/2 degree block, future domestic bottomfish catch potential was estimated and used to measure the required number of vessels and trips in each block under the assumption that domestic fishermen would eventually achieve similar catch patterns as did foreign fishermen in 1978. These potential catch estimates are also the basis for estimates of groundfish catch loss due to loss of access to fishing grounds as discussed in Section 4.1. The expected landing ports in the Bering Sea and along the Alaska Peninsula are St. Paul, Chernofski/Ft. Glenn, Dutch Harbor and Akutan for trawlers, and Dutch Harbor and other locations outside of the lease sale area for sea based processors. For purposes of this impacts analysis, the catcher/processors not landing at Dutch Harbor were assumed to transit from the fishing grounds through Unimak Pass.

The measurement of number of trips and vessel ❑ovements by year for trawlers and catcher/processors for bottomfish was based on the bottomfish harvest scenario as contained in Technical Report 51. Also following an approximately normal distribution growth curve 11.8% of full development is projected to occur by 1985, 44.1% by 1990, 79.4% by 1995 and 100% or 743,886 m.t. by 2000 in the area of interest to the St. George Basin. The distribution of number of trips attributed to fishing for bottomfish in this area was then displayed on a map indicating the required number of trips by 1 degree x 1/2 degree block.

Bottomfish landings for the above four ports were developed using arcs of approximately 150 mile radii extending from each port on the assumption that trawlers can fish within approximately 150 miles from the port of landing, and that areas beyond the 150 mile arcs will be exploited by seabased production systems only. Also, the area within 150 miles from each port not covered by trawlers will be fished by catcher/processors. The result shows that, of the total catch of 371,943 m.t. (50% of 743,866) by trawlers in the year 2000, 38,427 m.t. could be landed in St. Paul, 19,141 m.t. in Chernofski/Ft. Glenn, 229,478 m.t. in Dutch Harbor, and 84,897 m.t. in Akutan.

The employment figures projected in Tech. Rep. 59 show that there will be nine catcher/processors in the Dutch Harbor area. The estimated total number of catcher/processors required for operations based in the Bering Sea and harvesting resources in the area of interest is estimated at 41. Therefore, nine catcher/processors were assigned to Dutch Harbor and 32 to other ports. This means that landings of 81,900 m.t. to Dutch Harbor and 290,043 m.t. to other ports by year 2000 would be by catcher/processors.

The 150 mile arc extending from St. Paul does not overlap the oil lease area. It was therefore assumed that land based fishing operations associated with St. Paul would not be affected by traffic volume stemming from OCS type vessels based in the Dutch Harbor area which is expected to be the land base for OCS activities.

3.2.2 Traditional Fishery

Most of the salmon in this region have traditionally been fished and landed in the Bristol Bay area. A certain amount is also caught and/or landed in Port Moller, Port Heiden and Makushin Bay. Since the salmon fishery will not be directly affected by oil supply and support vessel movements of the St. George lease sale area because of geographical separation, the number of trips attributed to salmon fisheries were not considered in the collision model as used in Section 4.3. The same is true for the halibut fishery. However, consideration has been given to these fisheries in the job transfer ❑odel. As a result, the only traditional species considered in the collision impact analysis are king and Tanner crab. In light of resource availability and number of existing vessels for king and Tanner crab fisheries in the Bering Sea, it was assumed that the crab fishery fleet will remain constant at 1978 levels.

Historically, king and Tanner crab caught in the area of interest have been landed at several ports including Dutch Harbor/Unalaska, Captaints Bay, Akutan, and other places in the Aleutians/Bering Sea region. However, since there were less than three processing facilities at some of the locations, the data by location was considered confidential. The following approach was used to mitigate this circumstance.

The number of processors (including floaters), weight and value of fish landed and processed by each location were tabulated only for those locations that have more than three processors. In cases where there were less than three processing plants in a specific location, data on these were added to and reported with those of the next nearest location.

For example, one grouping of processors' activity shows that in 1978 and 1979 there were eight processing plants (including floaters) in five locations: Port Moller/Port Heiden/King Cove/False Pass/Squaw Harbor. The respective king and Tanner crab landings were 5,626 m.t. and 3,661 m.t. It is not possible to match specifically the landings by port, but it is most likely that crab were landed at a location on the South side of the Alaska Peninsula or in the Shumagin Islands. Vessel traffic to these locations was assumed to transit through Unimak Pass.

The fishery traffic directly affected by OCS vessel activity is that from Dutch Harbor/Unalaska/ Captain's Bay, Akutan and a general area termed Aleutians/Bering Sea by ADF&G. Because of confidentiality requirements, the processors' activities in the above ports were summarized in the four groupings: Dutch Harbor/Unalaska, Captaints Bay, Akutan and Aleutians/Bering Sea. For purposes of estimating collision impacts, Dutch Harbor/Unalaska and Captain's Bay are considered as one location, and the traffic attributable to Akutan and the remainder in the Aleutians/Bering Sea are considered to be located at Akutan. The processors in the Aleutians/Bering Sea data set are all floaters. Considering them based at Akutan would yield neither overly optimistic or overly pessimistic traffic approximations for purposes of collision estimates.

The 1978 and 1979 average statistics show that of the total king and Tanner crab caught in the areas between 54 degrees N by 58 degrees N and 163 degrees W by 172 degrees W, 76.3% were landed in the Dutch Harbor area including Unalaska and Captain's Bay, and 23.7% in the Akutan area including Aleutians/Bering Sea. Given the number of vessels and number of landings in each statistical area for the same year, these proportions were applied to estimate approximate trips attributable to each port.

From the above discussion on bottomfish and traditional fisheries, it is possible to measure the number of vessels and trips associated with each statistical area and each port.

In fisheries, two types of collision impacts are analyzed: Collision while fishing in an oil lease area and collision while traveling to and from the fishing grounds and the landing port. In the former case, vessel speed while fishing, days fishing per trip, number of trips per year are analyzed by type of vessel, and, in the latter case, vessel speed while traveling and total number of movements passing through a particular block located in the oil lease area where possible collision with oil vessels could occur are measured.

3.2.3 Oil Development

According to the mean base case scenario for the St. George Lease Sale, exploration of oil/gas and production will start in 1983 and 1989, respectively. During both the exploration and development periods, oil vessels are projected to be stationed in Dutch Harbor. The numbers of proposed production platforms and exploratory rigs in the St. George Basin are respectively 1 and 5 in 1985, and a total of 11 platforms starting in 1990 (exploration will have eased so no rigs are projected) and continued beyond the year 2000. From the proposed station, two oil vessels will make trips to each platform or rig an estimated 13 trips per month for 12 months each year.

The ADF&G 5-digit statistical areas where oil exploration and production will occur and where possible vessel collision between oil and fishing vessels and other interactions will occur are 302-25 and 30, 350-41, 350-51, 350-61, 351-41, 351-51, 351-61, 351-22, 351-32, 351-42, 351-52, 351-62, 351-23, and 357-33. Each of the above 14 statistical areas has been analyzed for collision impacts as described in Chapter 4.0.

4.0 FISHING AND OCS ACTIVITIES CONFLICTS

Impacts on commercial fisheries of the OCS activities in the St. George Basin are estimated as below. From this analysis the impacts of the North Aleutian Shelf OCS activities on commercial fisheries are then discussed in terms of the similarity or lack of similarity between the two. Four types of impacts were assessed. They include loss of fishing grounds and gear loss or damage; competition for labor by the oil industry and commercial fisheries; increased potential collisions among vessels at sea and in harbor areas; and competition for fish and shellfish resources between commercial and recreational fisheries.

These different types of impacts depend primarily on two factors. The first factor relates to the level or volume of activity of the anticipated oil and gas development. This factor affects all the types of impacts mentioned. The second factor concerns the fish and shellfish resources themselves which determine the level of fishing activity in a given area. This factor, when combined with the first, produces the interaction between OCS and commercial fishing activities. When both factors are large the interaction between the two industries would generally tend to be greater. In the following sections discussions of the levels of fishing and the anticipated oil and gas activities in the North Aleutian Shelf are qualitatively compared to those relating to the St. George Basin. Inferences are then made about the likely impacts of the North Aleutian Shelf OCS development on commercial fisheries. The format of discussion is to consider each type of impact in turn.

4.1 LOSS OF GEAR AND ACCESS TO FISHING GROUNDS

4.1.1 Loss of Access And Catch Loss Estimates

In previous reports and analyses regarding oil activity in the North Sea, loss of fishing grounds has been considered an impact if it results in a reduction of total catch. However, measurement of loss of catch is not an easy task. Several methods of estimation with varying degrees of merit are available. In this section, three methods are discussed; they include the proportional area, the time series, and the cross section methods.

1) Proportional Area Method

This method is based on the simplistic assumption that the loss in catch is proportioned to the area rendered inaccessible to fishing due to oil and gas installations (OGIs). The estimation procedure, therefore, centers on equating the proportion of fishing area lost to the proportion of catch lost. In short, area lost is estimated and expressed as a proportion of total fishing area. This ratio is multiplied by total potential catch (or historical catch before the OGIS are in place) to estimate potentially lost catch.

The merits of this method depend on many factors. For this method to be valid it must be assumed that total harvestable biomass normally available is reduced by installation of OGIs. This means that fish and shellfish are not able to move from the OGI area to areas where these resources can still be intercepted and/or contribute to standing biomass. If this is not the case then loss of some fishing grounds will not necessarily result in lost catch. In fact, in some cases it may be possible to increase catch if lost areas act as temporary rehabilitation refuges for fish and shellfish that eventually, in rejuvenated numbers, move out and are intercepted by fishermen.

2) Time Series Analysis Method

In this method, historical catch in an area before the existence of OGIs is used to project future catches. Catches in the same area after installation of OGIS are then examined to see how closely they relate to the projected trend. Major deviations from the trend are then taken as an indication and a measure of the OGIs' impact.

Unlike the proportional area ❑ethod, time series analysis is only useful as an 'after-the-fact' tool to measure what the impact of OGIs has been, rather than to anticipate the impact. Furthermore, since biological abundance of living resources can fluctuate sometimes quite radically, it is difficult to know how much of the deviation from trend may be due to natural causes or to changes in exploration patterns.

3) Cross Section Data Method

Methods using cross section data attempt to avoid the problems associated with use of simple time series. In this method, one compares catch from the areas with OGIs to catch from areas that have no OGIs. Plotting catch data (time series) of the two areas on the same chart allows examination of two general trends at the same time. Theoretically, the two plots should move up and down together in the periods before the OGIs. Thereafter, plots of the catch in the OGI affected area should show more steep downward or less steep upward movements than those of the unaffected area. From this divergency, a measure of OGI impact can be derived.

The cross sectional method, like the simple time series approach, is only useful after the fact. Of the three methods considered here it has been recommended (University of Aberdeen, 1978) as perhaps the most accurate; however, this method is of no immediate use since our analysis requires that we estimate anticipated or the expected impacts of OGIs.

The University of Aberdeen (1978) applied both the proportional area and cross section methods to situations in the North Sea. The proportional area method produced positive estimates of catch loss. However, the cross section method which was applied to selected oil fields produced inconclusive results. The best results attained by this method were for the fishing grounds associated with the Auk and Argyll oil fields. Even in this case the fall in catch following the OGIS lagged in time. It was not until the second year after the OGIS were in place that the catch plot in the area deviated from that of neighboring unaffected areas. In the case of the Forties and Piper fields catches in the affected areas rose faster than catches in neighboring areas following the OGIs. Most of the other applications were hampered because catches in the affected and unaffected areas did not have similarly fluctuating time series plots prior to the placement of OGIs. Perhaps the level of effort needs to be corrected for in such analyses. It is concluded herein that in spite of its theoretical attractiveness the cross section method has limited practical applicability. Further application and modification of the approach may yield useful results; however, for this analysis the approach does not appear useful. This leaves the proportional area method as the immediate choice.

Catch Loss Estimates

Catch loss estimates in the St. George Basin were made using the proportional area method. As mentioned before, as long as access to some fishing area is assumed lost, this method provides a positive value for catch loss. Before describing the estimates obtained, we would like to point out that much evidence exists to suggest that in the case of the resources in the Bering Sea and Aleutians, positive catch loss estimates may not reflect reality. In the first instance, according to the North Pacific Fishery Management Council (NPFMC), bottomfish species in the region have seasonal movements that are determined by wintering, feeding and spawning requirements. Also both king and Tanner crabs are said to have migration patterns in which, for spawning and other purposes, they will move to deeper or shallower waters as need be. It follows that such migrations are likely to move these fish and shellfish resources to areas unaffected by OGIs, at least for part of the year, where they may be intercepted and harvested by fishermen. Certain species may take shelter under an OGI once it is in place. While fishermen may not be able to access this portion of the resource for a temporary period, the fish and shellfish will still be considered a part of the total reproductive biomass. Hence, they are included in the calculation of sustainable yield and subsequent allocations. In effect, if these fish are spared, others will be caught and there should be no reason to assume a loss in catch availability. These considerations are generally applicable to the species in the area of concern. Therefore, the estimates presented below should be viewed in this context.

Two levels of estimates were used to provide low and high range estimates for the St. George Basin. Estimates of the first kind were obtained by assuming that each OGI, including production platforms and exploratory rigs, would lead to loss of access to a circular area of 532 meters radius including 500 meters as a buffer zone and 32 meters as an average radius for the structure. The University of Rhode Island (1977) used a similar (100 ft) radius for platforms. The total area lost for each OGI is 0.259 square nautical miles. Using a total number of OGIs of 6 in 1985 and 11 in each one of the years 1990, 1995 and 2000, area lost was estimated.

First the total number of OGIS was assumed to be uniformly distributed in the lease area. Then the number of OGIs falling in a single fishing statistical area (stat. area) were multiplied by 0.259 to assess the area lost. For each one of the affected stat. areas an estimate of total catch potential was made based on foreign catch experience (groundfish) and domestic catch (crab resources). Each stat. area was assumed to be approximately 35 x 30 nautical miles 01 1,050 square nautical miles. The proportion lost is given by the area lost divided by 1,050. The proportion lost was then multiplied by the total stat. area catch potential to get a catch loss estimate. Results of this exercise are shown in Tables 4.1.1 to 4.1.3 for the conditions in the year ?985 and

Tables 4 .1.4 to 4 .1.6 for the conditions of 1990 and thereafter. It is estimated that in the year 2000, loss of access could lead to loss of catch potential amounting to 46.97 m.t. of groundfish, 0.62 m.t. of king crab and 0.44 m.t. of Tanner crab. At first wholesale value this impact is respectively $47,9o8; $1$476; and $598 in 1980 dollars. Groundfish product value is based on a 33% yield and a real price of $1.40 per pound. Crab product values are based on a 22% yield and prices are 3.5 and 2.0 times as high as groundfish prices for king and Tanner, respectively. These price ratios are based on observed historical prices during the past 20 years. The real price of groundfish was obtained from the report ‘System Strategy to Support Fisheries Development" by Earl R. Combs, Inc., 1980.

The calculations discussed above are based on the assumption that either concrete gravity or steel jacket platforms will be employed. Because of the nature of these platforms the area lost tends to be minimized as they don't require’ to be supported in place by anchoring materials that project too far sideways from the site of the installation. There are other types of platforms, especially the ‘tension-leg” type which require tethering lines that may extend well beyond the position of the platform. Fishing activities may have to be excluded from a much larger area than calculated above. The high range estimates of area loss under such conditions have been made for the time when all the production platforms will be in place and are shown in tables 4.1.7 to 4.1.9. Again it was assumed that each structure would have an average radius of 32 meters (35 yards). In addition a buffer zone of 1 ,000 meters (1,094 yards) was assumed to be required. Under these assumptions each structure could be responsible for a total loss of 0.976 square nautical miles. For the entire area in which OGIS appear the loss in catch would then be estimated at 184.41 m.t of groundfish, 2.21 m.t. of king crab and 1.67 m.t. of Tanner crab. In the year 2,000 the corresponding real (1980 dollar) values are estimated to be $188,095; $5,260; and $2,271.

As discussed above, it is estimated that for the St. George Basin 2.8 to 10.7 square nautical miles could be preempted from fishing by the presence of oil and gas installations (OGIs) at full OCS development in the year 2000 and result in a dollar value loss of $195,500 per year. The number of OGIs projected for the North Aleutian Shelf is slightly lower than those of the St. George Basin (4 rigs and 9 platforms compared to 6 rigs and 11 platforms). Furthermore, loss of access in the St. George Basin is predicated on vast quantities of groundfish; past catch

TABLE 4. 1.1 .

LOSS OF ACCESS TO FISHING

GROUNDFISH - 1985

Stat. Area	No. of Platforms and Rigs	Area Lost[1] to Fishing (sq miles)	Fraction of[2] Area Lost	Catch Potential[3] m.t.	Loss in Catch m.t.
350 - 41	2	.518	0.0005	22,108	11.05
- 51	—	—		—	—
- 61	—	—		82,333	
351 - 41	1	.259	0.0002	12,639	2.53
- 51	1	.259	0.0002	32,180	6.44
- 61 -	—	—		52,585	
- 22	1	.259	0.0002	21,394	4.28
- 32	1	.259	0.0002	22,845	4.57
- 42	—	—	—	9,916	—
- 52	—	—		53,664	
- 62	—	—		6,316	
- 23	—	—	—	19,497	—
- 33	—	—		19,393	
- 43	—	—		32,500	
301 - 25 & 30	—	—	—	1,443	
TOTAL	6	1.554		388,813	28.87

[1] Assumes a circular area of radius 547 yards (500 meters) around each struct plus a 35 yard radius for the structure itself.

[2] Each 1° x ½° statistical area is approximately 35 x 30 land miles.

[3] 1978 percent foreign catch in the statistical area times estimated resource potential in the region.

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TABLE 4. 1.2

LOSS OF ACCESS TO FISHING

KING CRAB - 1985

Stat. Area	No. of Platforms and Rigs	Area Lost[1] to Fishing (sq miles)	Fraction of[2] Area Lost	Catch Potential[3] m.t.	Loss in Catch m.t.
350 - 41	2	.518	0.0005	1,040	.52
- 51	—	—		119	—
- 61	—	—			—
351 - 41	1	.259	0.0002		—
- 51	1	.259	0.0002		—
- 61	—	—			—
- 22	1	.259	0.0002		—
- 32	1	.259	0.0002		—
- 42	—	—	—		—
- 52	—	—			—
- 62	—	—	—		—
- 23	—	—	—	189	—
- 33	—	—	—	17	—
- 43	—	—			—
301 - 25 & 30	-	—	—	91	—
TOTAL	6	1.554		1,456	.52

[1] Assumes a circular area of radius 547 yards (500 meters) around each structure plus a 35 yard radius for the structure itself.

[2] Each 1° x ½° statistical area is approximately 35 x 30 land miles.

[3] 1978 estimated catch.

TABLE 4.1.3

LOSS OF ACCESS TO FISHING

TANNER CRAB - 1985

Stat. Area	No. of Platforms and Rigs	Area Lost[1] to Fishing (sq miles)	Fraction of[2] Area Lost	Catch Potential[3] m.t.	Loss in Catch m.t.
350 - 41	2	.518	0.0005	495	.25
- 51	—	—	—	328	—
- 61	—	—	—	8	—
351 - 41	1	.259	0.0002	15	—
- 51	1	.259	0.0002	—	—
- 61	—	—	—	—	—
- 22	1	.259	0.0002	31	.01
- 32	1	.259	0.0002	13	—
- 42	—	—	—	15	—
- 52	—	—	—	—	—
- 62	—	—	—	—	—
- 23	—	—	—	82	—
- 33	—	—	—	—	—
- 43	—	—	—	—	—
301 - 25 & 30	—	—	—	65	—
TOTAL	6	1.554		1,052	.26

[1] Assumes a circular area of radius 547 yards (500 meters) around each structure plus a 35 yard radius for the structure itself.

[2] Each 1° x ½° statistical area is approximately 35 x 30 land miles.

[3] 1978 estimated catch.

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TABLE 4. 1.4

LOSS OF ACCESS TO FISHING

GROUNDFISH 1990, 1995, 2000

Stat. Area	No. of Platforms and Rigs	Area Lost[1] to Fishing (sq miles)	Fraction of[2] Area Lost	Catch Potential[3] m.t.	Loss in Catch m.t.
350 - 41	2	.518	.0005	22,108	11.05
- 51	2	.518	.0005	—	—
- 61	—	—	—	82,333	—
351 - 41	1	.259	.0002	12,639	2.53
- 51	2	.518	.0005	32,180	16.09
- 61	—	—	—	52,585	—
- 22	—	—	—	21,394	—
- 32	2	.518	.0005	22,845	11.42
- 42	1	.259	.0002	9,916	1.98
- 52	—	—	—	53,664	—
- 62	—	—	—	6,316	—
- 23	1	.259	.0002	19,497	3.90
- 33	—	—	—	19,393	—
- 43	—	—	—	32,500	—
301 - 25 & 30	—	—	—	1,443	—
TOTAL	11	2.849		388,813	46.97

[1] Assumes a circular area of radius 500 meters (547 yards) around each structure plus a 35 yard radius for the structure itself.

[2] Each 1° x $\frac{1}{2}$° statistical area is approximately 35 x 30 nautical miles.

[3] 1978 percent foreign catch-in the statistical area times estimated resource potential in the region.

TABLE 4. 1.5 ,

LOSS OF ACCESS TO FISHING

KING CRAB 1990, 1995, 2ooo

Stat. Area	No. of Platforms and Rigs	Area Lost[1] to Fishing (sq miles)	Fraction of[2] Area Lost	Catch Potential[3] m.t.	Loss in Catch mot.
350 - 41	2	.518	.0005	1,040	.52
- 51	2	.518	.0005	119	.06
- 61	—	—	—	—	—
351 - 41	1	.259	.0002	—	—
- 51	2	.518	.0005	—	—
- 61	—	—	—	—	—
- 22	—	—	—	—	—
- 32	2	.518	.0005	—	—
- 42	1	.259	.0002	—	—
- 52	—	—	—	—	—
- 62	—	—	—	—	—
- 23	1	.259	.0002	189	.04
- 33	—	—	—	17	—
- 43	—	—	—	—	—
301 - 25 & 30	—	—	—	91	—
TOTAL	11	2.849		1,456	.62

[1] Assumes a circular area of radius 500 meters (547 yards) around each structure plus a 35 yard radius for the structure itself.

[2] Each 1° x ½° statistical area is approximately 35 x 30 nautical miles.

[3] 1978 estimated catch.

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TABLE 4.1.6

LOSS OF ACCESS TO FISHING

TANNER CRAB 1990, 1995, 2000

Stat. Area	No. of Platforms and Rigs	Area Lost[1] to Fishing (sq miles)	Fraction of[2] Area Lost	Catch Potential[3] m.t.	Loss in Catch m.t.
350 - 41	2	.518	.0005	495	.25
- 51	2	.518	.0005	328	.16
- 61	—	—	—	8	—
351 - 41	1	.259	.0002	15	—
- 51	2	.518	.0005	—	—
- 61	—	—	—	—	—
- 22	.	—	—	31	—
- 32	2	.518	.0005	13	.01
- 42	1	.259	.0002	15	—
- 52	—	—	—	—	—
- 62	—	—	—	—	—
- 23	1	.259	.0002	82	.02
- 33	—	—	—	—	—
- 43	—	—	—	—	—
301 - 25 & 30	—	—	—	65	
TOTAL	11	2.849		1,052	.44

[1] Assumes a circular area of radius 500 meters (547 yards) around each structure plus a 35 yard radius for the structure itself.

[2] Each 1° X ½° statistical area is approximately 35 x 30 nautical miles.

[3] 1978 estimated catch.

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TABLE 4.1.7

LOSS OF ACCESS TO FISHING

GROUNDFISH - 1990, 1995, 2000

Stat. Area	No. of Platforms and Rigs	Area Lost[1] to Fishing (sq miles)	Fraction of[2] Area Lost	Catch Potential[3] m.t.	Loss in Catch mot.
350 - 41	2	1.952	0.0019	22,108	42.01
- 51	2	1.952	0.0019		——
- 61	—			82,333	
351 - 41	1	.976	0.0009	12,639	11.38
- 51	2	1.952	0.0019	32,180	61.14
- 61	—			52,585	
- 22	—			21,394	——
- 32	2	1.952	0.0019	22,845	43.41
- 42	1	.976	0.0009	9,916	8.92
- 52	·			53,664	
- 62	—			6,316	——
- 23	1	.976	0.0009	19,497	17.55
- 33	—			19,393	
- 43	—			32,500	
301 - 25 & 30	—			1,443	
TOTAL	11	10.736		388,813	184.41

1 Assumes a circular area of radius 1094 yards (1,000 meters) around each structure plus a 35 yard radius for the structure-itself.

2 Each 1° x ½° statistical area is approximately 35 x 30 land miles.

3 1978 percent foreign catch in the statistical area, times estimated resource potential in the region.

TABLE 4.1.8

LOSS OF ACCESS TO FISHING

KING CRAB - 1990, 1995, 2000

Stat. Area	No. of Platforms and Rigs	Area Lost[1] to Fishing (sq miles)	Fraction of[2] Area Lost	Catch Potential[3] m.t.	Loss in Catch m.t.
350 - 41	2	1.952	0.0019	1,040	1.98
- 51	2	1.952	0.0019	119	.23
- 61	—	—	—	—	—
351 - 41	1	.976	0.0009	—	—
- 51	2	1.952	0.0019	—	—
- 61	—	—	—	—	—
- 22	—	—	—	—	—
- 32	2	1.952	0.0019	—	—
- 42	1	.976	0.0009	—	—
- 52	—	—	—	—	—
- 62	—	—	—	—	—
- 23	1	.976	0.0009	189	—
- 33	—	—	—	17	—
- 43	—	—	—	—	—
301 - 25 & 30	—	—	—	91	—
TOTAL	11	10.736		1,456	2.21

[1] Assumes a circular area of radius 1094 yards (1000 meters) around each structure plus a 35 yard radius for the structure itself.

[2] Each 1° x ½° statistical area is approximately 35 x 30 land miles.

[3] 1978 estimated catch.

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TABLE 4. 1.9

LOSS OF ACCESS TO FISHING

TANNER CRAB - 1990, 1995, 2000

Stat. Area	No. of Platforms and Rigs	Area Lost[1] to Fishing (sq miles)	Fraction of[2] Area Lost	Catch Potential[3] m.t.	Loss in Catch mot.
350 - 41	2	1.952	0.0019	495	.94
- 51	2	1.952	0.0019	328	.62
- 61	—	—	—	8	—
351 - 41	1	.976	0.0009	15	.01
- 51	2	1.952	0.0019	—	—
- 61	—	—	—	—	—
- 22	—	—	—	31	—
- 32	2	1.952	0.0019	13	.02
- 42	1	.976	0.0009	15	.01
- 52	.	—	—	—	—
- 62	—	—	—	—	—
- 23	1	.976	0.0009	82	.07
- 33	—	—	—	—	—
- 43	—	—	—	—	—
301 - 25 & 30	—	—	—	65	—
TOTAL	11	10.736		1,052	1.67

[1] Assumes a circular area of radius 1094 yards (1000 meters) around each structure plus a 35 yard radius for the-structure itself.

[2] Each 1° x ½° statistical area is approximately 35 x 30 land miles.

[3] 1978 estimated catch.

experience in the North Aleutian Shelf area shows lower concentrations of these resources. Consequently, the impacts of lost access should not be in excess of those estimated for' the St. George Basin.

It must be recognized, however, that the North Aleutian Shelf lease sale area contains both the crab pot sanctuary and a portion of the winter halibut saving area. Although the lease tracts themselves are mostly located to the north of the Amak island area of important crab fisheries, the presence of both crab and juvenile halibut make this general area a particularly sensitive environment.

4.1.2 Gear Loss, Gear Damage, Time and onvenience Losses

Fishing gear can be damaged or lost by coming into contact with OCS related debris or submerged structures. Submerged structures ❑ay include suspended wellheads and pipelines which have not been buried. When areas around such structures are well known to the fishermen, damage to gear may be avoided. This, however, may result in overall loss of access to some fishing grounds and must be evaluated as discussed earlier.

Predicting the amount and value of gear loss or damage is a formidable undertaking. Usually one does not know where the debris or submerged structures are going to be. The amount of debris and number of submerged, unmarked structures to be expected cannot be known. Also, it is not known before hand what the extent of damage is likely to be in any given case. In this study estimation of gear loss or damage was done by drawing on the experience of the North Sea oil and fishing industry interaction.

Fish harvest experience in the North Sea areas affected by OGIS was documented. This included British catch data according to 1 degree x 1/2 degree catch areas that correspond to the International Convention for the Exploration of the Sea (ICES) statistical areas. The number of OGIs in each such area was noted. For the lease sale in the St. George Basin, similar information was recorded. This included potential catch estimates in the 1 degree x 1/2 degree catch areas. Also, the potential number of OGIS (platforms and rigs) was recorded. The information used for the North Sea is contained in Tables 4.1.10 and 4.1.11. This information shows for the 1976-1980 period the number of OGIS in place, number of gear loss and inconvenience claims filed by fishermen, catch in metric tons and fishing effort in hours. The method

TABLE 4.1.10

North Sea Catch[1] (in Metric Tons) of Demersal Fish in Statistical Areas Affected by OGI's

Stat. Area ID	1976	1977	1978	1979	1980
51 F1	9	0	108	75	0
50 F0	n.a.	n.a.	2,193	2,766	2,911
50 F1	n.a.	n.a.	0	136	196
48 F1	873	256	1,167	2,147	2,683
48 F2	n.a.	12	83	119	112
46 E9	n.a.	1,420	3,196	6,359	3,642
45 E6	1,226	1,180	605	578	2,400
45 E9	n.a.	2,662	2,749	3,079	2,833
45 F0	2,277	3,969	4,053	2,278	3,047
44 F0	1,380	2,052	6,485	3,759	2,792
43 F1	149	401	1,493	2,963	1,455
41 F2	404	455	1,427	1,503	942
40 F1	275	123	249	316	174
39 F0	92	29	133	194	314
Total	6,685	12,559	23,941	26,272	23,501

[1] Refers to Catch Landed by Both Scottish and English Fishermen North of 55′

* n.a.: Not applicable

Source: Dept. of Agriculture and Fisheries for Scotland.

TABLE 4.1.11

North Sea Fishing Effort' (in Hours) in

Statistical Areas Affected by OGI's

Stat. Area I D	1976	1977	1978	1979	1980
51 F]	42	0	340	189	0
50 FO	n.a.	n.a.	1,123	2,399	3,985
50 Fl	n.a.	n.a.	0	446	443
48 Fl	2,557	776	3,604	3,543	2,814
48 F2	n.a.	28	214	436	512
46 E9	n.a.	3,180	5,613	4,353	4,657
45 E6	3,443	3,215	1,669	2,765	7,568
45 E9	n.a.	3,492	5,628	3,602	4,346
45 FO	3,768	3,991	5,376	3,889	4, 894
44 FO	2,960	4,852	5,243	7,34'0	4,480
43 Fl	336	1,235	3,707	4,318	3,624
41 F2	843	1,490	2,908	2,860	2,757
40 Fl	590	315	771	1,267	727
39 FO	252	54	563	725	1,360
Total	14,791	22,628	36,759	38,132	42,167
No. OGI's	30	40	46	50	51
No. Claims	104	116	104	68	74

1 Refers to Effort of Both Scottish and English Fishermen North of 55°N.

* n.a.: Not applicable

Source: Dept. of Agriculture and Fisheries for Scotland.

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used to translate this information is based on four main premises:

(1) Assume that the greater the number of OGIS in place the larger will be the number of gear damage claims. This is reasonable to suppose since more production platforms would tend to account for more debris and be associated with more wellheads. Obviously if platform operators are all careful about disposal of debris and if all pipelines are properly buried then more platforms may not necessarily increase the level of damage claims. Still, with a greater number of platforms and intensity of oil and gas activity it is not likely to result in less claims, except perhaps as years go by and allow for better and safer technology and methods.

(2) For a single fishing trip, the longer the vessel stays out on the fishing grounds and the larger the area fished, the higher are the chances of sustaining some damage to gear if obstructions exist. This assumption may also be qualified by assuming a fixed state of knowledge concerning the whereabouts of existing obstructions. For if one knew where all potential hazard positions are, the time spent and total area covered while fishing may be less relevant concerning gear damage.

(3) The third major premise is that similar fish resources exist and that similar harvest methods are employed in the North Sea and St. George Basin. The major resources in both areas are as given below to show the general similarity rather than a species by species comparison which may or may not be appropriate.

St. George Basin	North Sea
Pacific cod	Atlantic cod
Alaska pollock	Saith (European pollock)
Yellowfin sole	Common sole
Pacific ocean perch	Whiting
King crab	Plaice
Tanner crab	Mackerel
Other	Herring
	Sprat
	Other

The various trawl methods are commonly employed in both areas. They include both demersal and midwater trawl. There are, however, methods employed which are not common to both areas. In the St. George Basin there are pot fisheries for crab and longline fisheries for halibut. In the North Sea there are seine methods for herring, mackerel and sprat. Pot fisheries and longlining are not as susceptible to gear damage from debris although they may be damaged by spills and dragging by oil exploratory vessels. Off-bottom seining may have similar characteristics. We have not included these techniques for this calculation of impacts. However, enough similarity of species and gear exists to justify use of the North Sea experience for the St. George Basin estimates regarding demersal fish species. Toward this end only the catch and effort data for demersal species in the North Sea as contained in Tables 4.1.10 and 4.1.11 was used. It represents fishing activities and damage claims that correspond to one another for both the Scottish and English fishermen in areas affected by OGIS north of 55 degrees N. This seems reasonable since gear loss and damage by debris and wellheads are more likely to apply to bottom dragging gear than to surface passive (gillnets), bottom passive (pots or longlines) or surrounding nets (seines). These latter gear may be subject to damage especially in the case of fouling from an oil spill. No quantitative estimate of losses due to fouling from oil spills are included in this analysis.

(4) Catch per unit effort (CPUE) is an indicator of productivity; for two similar vessels fishing for similar species but in two different areas that have different catch potentials, the CPUEs thus obtained (if expressed in ratio form) provide an indicator of an inverse relationship between the time (effort) required to obtain a unit catch in one area and that required in another. This indicator can be used as a scale factor in projecting the level of damage claims in one area based on claims in another.

Using the above assumptions and suppositions the number of claims projected for fisheries in the St. George Basin were estimated. The number of ‘claims per 1,000 hours of fishing effort per OGI in the North Sea during the period 1976-1980 was estimated. Only information for the statistical areas under dual utilization by fisheries and OGIS was included. Total effort in thousands of hours was estimated for the statistical areas of the St. George Basin area which are assumed to be future locations of platforms. This was done using estimates of fleet size, trips per year, days fishing per trip and hours fishing each day. Potential catch in the same stat. areas was also estimated. The catch and effort are estimated for the year 2000 at respectively 119,185 m.t. and 78,098 hrs., giving a CPUE of about 1,500 m.t. per thousand hours.

To estimate the number of claims for the St. George

Basin three factors were multiplied. These include:

1) Claims per thousand hours per OGI in the North Sea;

2) Estimated fishing effort in future OGI affected areas of the St. George Basin; and

3) Future number of OGIS in the St. George Basin.

Experience in the North Sea has shown that the number of claims per platform per unit effort will decline over time. In 1976 when experience with offshore oil activities was relatively low, fishermen filed 0.234 claims per platform per thousand hours of fishing effort. Within 5 years, however, this had dropped to 0.034. There was a distinct trend in this decline which was not affected by the fact that new OGIs were installed during this period. The decline is perhaps due to several factors all combining to produce the observed result. One such factor is likely to be changes in awareness and provision and use of better charts and markings. A similar pattern is likely for the St. George Basin activities.

For OCS development in the St. George Basin, only one platform and six exploratory rigs are expected to be in place in 1985. Within 4 years thereafter the number of platforms will increase to 11 and there will be no more exploratory rigs. It is reasonable to suppose that during the first 5 years after 1985 fishermen will be unfamiliar with the most hazardous areas and will perhaps make a relatively high number of claims per unit effort per platform. Beyond 1990 the number of claims per unit effort should start to decline.

For purposes of this impacts analysis the claims rate used in years 1985 to 1989 is 0.234 claims per platform per thousand hours of fishing effort while the claims rate in 199C and thereafter is 0.034.

Another consideration necessitates modification of the approach to determining potential year losses. Comparison of CPUEs shows that the St. George Basin would tend to be much more productive for the fishermen than its North Sea counterpart. If we suppose that when the CPUE is low, the vessel tends to spend more time searching and is also likely to cover more ground on each trip; then, as argued before, lower CPUEs would by inference result in relatively more claims per unit effort. Consequently, we know there is need to scale the claims estimate for the St. George Basin. Here this is done by multiplying the first level estimate of claim: by the ratio of North Sea CPUE to the St. George Basin CPUE.

The CPUE in the St. George Basin is estimated at 1.5 m.t. /hr. Since 1976 the CPUE in the OGI affected areas of the North Sea has varied between 0.5 and 0.7 m.t./hr. and averaged 0.6 m.t./hr. for the 1976-1980 five year period. The scale factor was therefore calculated to be 0.6/1.5 or 0,4.

The above procedure estimates the total number of claims at 12 per year for the year 2000. To add substance to this determination a dollar value of the potential year loss is estimated. Fishing gear vendors in the Pacific Northwest indicate that a set of trawl gear may cost anywhere between $26,000 to $37,000. This would include all of the netting material (including a cod end), a pair of doors as well as the rigging. According to Mr. Thomas Croker of Northeastern Trawl Systems, Inc. (personal communication) the net alone costs between $14,000 and $18,000 depending on the size of the vessel, horsepower, and the species sought. It's unlikely that encounters of debris on the fishing grounds will generally result in loss of a complete set of gear including the doors and warps. More likely, nets will get torn and need repair or be damaged beyond repair.

In the case where a net is totally lost such damage would result in a loss of $14,000 to $18,000. If we assume that each claim will represent a requirement to replace a whole net then the total annual claims would represent $168,000 to $216,000 in lost or damaged gear in the year 2000. The procedure described above was applied to project the following claims by 5 year increments.

	Claims per 1,000 hrs. per OGI	Projected claims per year	Range of dollar Values per year
1985	0.234	5	$ 70,000-$ 90,000
1990	0.034	5	$ 70,000-$ 90,000
1995	0.034	9	$126,000-$162,000
2000	0.034	12	$168,000-$216,000

These projections do not directly include an estimate of cost of inconvenience and time lost to repair gear. No data basis exists from which to make an estimate of time loss, however, it is expected that vessels will usually carry spare nets and be able to continue their operations after removing the damaged gear. In view of the fact that all projected claims have been treated as corresponding to total loss of the net, the dollar values contained here are clearly on the higher end of likely impacts. In actual practice some nets will sustain only minimal damage so that after onboard repair they can be used again. In these cases value per claim should be much lower than calculated here.

4.1.3 Loss of Gear And Access in the North leutian Shelf

Loss or damage of fishing gear due to the presence of oil and gas activities in the fishing grounds can be thought of as being proportional to the levels of fishing and petroleum activity. It is anticipated that development of the North Aleutian OCS will require 4 drilling rigs during exploration and a total of 9 platforms during the development phase. This reflects a slightly lower level of activity than in the St. George Basin where 6 drilling rigs and 11 platforms are projected for the exploration and development phases respectively. The level of fishing activity in the North Aleutian Shelf should be lower than that in the St. George Basin since available data, especially on the vast groundfish resources (See Figure A-1) shows higher resource concentrations in the St. George Basin. It is estimated that a full development of the fishery (in the year 2000), gear loss or damage claims against OCS oil operators in the St. George Basin would total 12 for a dollar value of $166,000 to $216,000 (in 1980 dollars). The range of projected impacts in the North Aleutian Shelf should be lower than this figure, according to the discussion of relative activity levels.

4.2 LABOR IMPACTS

The labor impacts analysis was done for the mean base case scenario including the exploration, construction and development phases of OCS activities in the St. George Basin. The ❑ajor assumption in this analysis was that OCS oil activities would tend to compete with commercial fisheries for labor. The task then was to compute the impacts in terms of number of fishery related employees that would likely transfer to OCS oil employment. This computation was achieved through a labor transfer probability model to be described later. Here, it is sufficient to say that the expected number of transfers was computed to be dependent upon the number of fishery related employees and their wages as compared to the number of OCS related jobs and their wages at transferable skill levels.

The number of fishery people who can transfer must necessarily be limited by the number of OCS jobs available. It was necessary, therefore, to estimate the number of OCS positions that could be filled by skills similar to those of fishery labor., It must be noted that for the most part OCS related jobs are held by highly specialized personnel. The types and levels of skills required by such jobs are generally not possessed by commercial fisheries labor. However, a certain portion of the jobs can be filled by unskilled workers who could be drawn from fisheries. This portion of available employment was therefore estimated.

The total employment requirements for OCS are detailed in Table 4.2.1. This information which was obtained from the BLM/Alaska OCS office was rearranged according to the applicable industrial classification (i.e. mining, transportation and construction) in Table 4.2.2. The next step was to assess the percentage of this employment that would be unskilled. To make this assessment, existing technical reports were reviewed. Most especially Technical Report 56 was examined for the types of labor requirements and activities during the exploration, construction and development phases. This review provided the basis for the following skilled/unskilled labor mix assumptions.

Skilled/Unskilled Labor Mix

Assume the following percentages of workers are unskilled, by phase and task:

TABLE 4.2.1

OCS EMPLOYMENT IN MAN MONTHS MEAN BASE SCENARIO, DEVELOPMENT

	(MIN) Development Drilling	TRA Aircraft & Vessels	(MIN) Shore Bases	(MIN) Headquarters	TRA Oil Terminals	TRA LNG Terminal	(MIN) Productions Operations	Total Man-Months	Average Monthly
1982									
83									
84									
85		720						720	60
86		2,160						2,160	180
87	5,655	4,320	360					10,335	861
88	8,678	5,400	360	187	720	1,920		17,265	1,439
89	5,519	6,000	360	375	1,440	3,840	7,524	25,058	2,088
90	3,679	3,360	360	1,210	1,440	3,840	7,524	21,413	1,784
91	1,932	3,360	360	1,591	1,440	3,840	7,524	20,047	1,671
92	3,679	3,360	360	1,591	1,440	3,840	7,524	21,794	1,816
93	5,887	3,360	360	1,591	1,440	3,840	7,524	24,002	2,000
94	4,415	3,360	360	1,591	1,440	3,840	7,524	22,530	1,878
95	2,944	3,360	360	1,591	1,440	3,840	7,524	21,059	1,755
96	1,564	3,360	360	1,591	1,440	3,840	7,524	19,679	1,640
97	3,679	3,360	360	1,591	1,440	3,840	7,524	21,794	1,816
98	5,887	3,360	360	1,591	1,440	3,840	7,524	24,002	2,000
99	4,415	3,360	360	1,591	1,440	3,840	7,524	22,530	1,878
2000	2,944	3,360	360	1,591	1,440	3,840	7,524	21,059	1,755

Source: BLM/Alaska OCS Office (1980) ECI

TABLE 4.2. (cont'd)

OCS EMPLOYMENT IN MAN MONTHS MEAN BASE SCENARIO, CONSTRUCTION

	Platform Installation	Shore Bases	Pipeline Construction	Oil Terminal	LNG Terminal	Total Man-Months	Average Monthly
1982							
83		444				444	37
84		,332				,332	111
85	6,375	2,664				9,039	753
86	21,675					21,675	1,806
87	3[illegible],[illegible]50		5,855	12,348	5,301	56,654	4,721
88	22,950		5,855	12,348	5,301	46,454	3,871
89	11.475			12,348	5,301	29,124	2,427
90	2.550			12,348		4,898	1,242
91							
92							
93							
94							
95							
96							
97							
98							
99							
2000							

Source: BLM/Alaska OCS Office (1980)

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TABLE 4.2.1 (cent'd)

OCS EMPLOYMENT IN MAN MONTHS MEAN BASE SCENARIO , EXPLORATORY PHASE

	(MIN) Exploratory Drilling	(MIN) Shore Base	TRA supply Aircraft & Vessels	Total Man Months	Average Monthly
1982					
83	3,232	36o	1,720	5,312	443
84	5,252	36o	2,720	8,332	694
85	6,060	360	3,120	9,540	795
86	5,252	36o	2,720	8,332	694
87	2,424	36o	1,320	4,104	342

Source: BLM/Alaska OCS Office (1980)

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TABLE 4.2.2

OCS EMPLOYMENT IN MAN-MONTHS , MINING

	Exploratory Drilling	Exploratory Shore Base	Development Drilling	Development Shore Base	Development Headquarters	Production Operations	Sub-Total Man-Months	Average Monthly
1982								
83	3,232	360					3,592	299
84	5,252	360					5,612	468
85	6,060	360					6,420	535
86	5,252	360					5,612	468
87	2,424	360	5,655	360			8,799	733
88			8,678	360	187		9,225	769
89			5,519	360	375	7,524	13,778	1,148
90			3,679	360	1,210	7,524	12,773	1,064
91			1,932	360	1,591	7,524	11,407	951
92			3,679	360	1,591	7,524	13,154	1,096
93			5,887	360	1,591	7,524	15,362	1,280
94			4,415	360	1,591	7,524	13,890	1,158
95			2,944	360	1,591	7,524	12,419	1,035
96			1,564	360	1,591	7,524	11,039	920
97			3,679	360	1,591	7,524	13,154	1,096
98			5,887	360	1,591	7,524	15,362	1,280
99			4,415	360	1,591	7,524	13,890	1,158
2000			2,944	360	1,591	7,524	12,419	1,035

Source: BLM/Alaska OCS Office (1980)

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TABLE 4.2.2 (cent'd)

OCS EMPLOYMENT IN MAN-MONTHS , TRANSPORTATION

	Exploration Aircraft & Vessel Support	Development Aircraft & Vessel Support	Development Oil Terminals	Development LNG Terminals	Sub-Total Man-Months	Average Monthly
1982						
83	1,720				1,720	143
84	2,720				2,720	267
85	3,120	720			3,840	320
86	2,720	2,160			4,880	407
87	1,320	4,320			5,640	470
88		5,400	720	1,920	8,040	670
89		6,000	1,440	3,840	11,280	940
90		3,360	1,440	3,840	8,640	720
91		3,360	1,440	3,840	8,640	720
92		3,360	1,440	3,840	8,640	720
93		3,360	1,440	3,840	8,640	720
94		3,360	1,440	3,840	8,640	720
95		3,360	1,440	3,840	8,640	720
96		3,360	1,440	3,840	8,640	720
97		3,360	1,440	3,840	8,640	720
98		3,360	1,440	3,840	8,640	720
99		3,360	1,440	3,840	8,640	720
2000		3,360	1,440	3,840	8,640	720

Source: BLM/Alaska OCS Office (1980) ECI

TABLE 4.2.2 (cent'd)

OCS EMPLOYMENT IN MAN-MONTHS , CONSTRUCTION

	Platform Installn	Shore Bases	Pipeline Construct	Oil Terminal	LNG Terminal	Sub-Total Man-Months	Average Monthly	Grand Total	Ocs Monthly Average
1982									
83		444				444	37	5,756	480
84		1,332				1,332	111	9,664	805
85	6,375	2,664				9,039	753	19,299	1,608
86	21,675					21,675	1,806	32,167	2,681
87	33,150		5,855	12,348	5,301	56,654	4,721	71,093	5,924
88	22,950		5,855	12,348	5,301	46,454	3,871	63,719	5,310
89	11,475			12,348	5,301	29,124	2,427	54,182	4,515
90	2,550			12,348		14,898	1,242	36,311	3,026
91								20,047	1,671
92								21,794	1,816
93								24,002	2,000
94								22,530	1,878
95,								21,059	1,755
96								19,679	1,640
97								21,794	1,816
98								24,002	2,000
99								22,530	1,878
2000								21,059	1,755

Source: BLM/Alaska OCS Office (1980)

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Exploratory Phase

- Drilling Rigs
  None
- Shore Bases
  10 percent
- Supply Aircraft/Support Vessels
  15 percent

Construction Phase

- Platform Installation
  None
- Shore Base
  5 percent
- Pipeline Construction
  10 percent
- Oil Terminal
  5 percent
- LNG Terminal
  5 percent

Development Phase

- Development Drilling
  None
- Supply Aircraft/Support Vessels
  20 percent
- Shore Base
  10 percent
- Headquarters
  None
- Oil Terminal
  5 percent
- LNG Terminal
  5 percent
- Production Operations
  None

In addition, 7% of the transportation employment was assumed to be made up of ship's captains, some of whom could conceivably transfer from fisheries employment. This and the other percentages above were applied to the OCS employment figures of Table 4.2.2 to obtain the number of job opportunities into which fishery labor might transfer. The results are contained in Table 4.2.3.

As discussed below, the labor transfer model used here

TABLE 4.2.3

ESTIMATED OCS USE OF UNSKILLED LABOR, TRANSPORTATION

	Exploratory Aircraft & Vessel Support	Development Aircraft & Vessel Support	Development Oil Terminal	Development LNG Terminal	Sub-Total Man-Months	Average Monthly Employment
1982						
83	258				258	22
84	408				408	34
85	468	144			612	51
86	408	432			840	70
87	198	864			1,062	89
88		1,080	36	96	1,212	101
89		1,200	72	192	1,464	122
90		672	72	192	936	78
91		672	72	192	936	78
92		672	72	192	936	78
93		672	72	192	936	78
94		672	72	192	936	78
95		672	72	192	9.36	78
96		672	72	192	936	78
97		672	72	192	936	78
98		672	72	192	936	78
99		672	72	192	936	78
2000		672	72	192	936	78

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TABLE 4.2.3 (cent'd)

ESTIMATED OCS USE OF UNSKILLED LABOR > MINING

	Exploratory Drilling	Exploratory Shore Base	Development Drilling	Development Shore Base	Development Headquarters	Production Operations	Sub-Total Man-Months	Average Monthly Employment
1982								
83		36					36	3
84		36					36	3
85		36					36	3
86		36					36	3
87		36		36			72	6
88				36			36	3
89				36			36	3
90				36			36	3
91				36			36	3
92				36			36	3
93				36			36	3
94				36			36	3
95				36			36	3
96				36			36	3
97				36			36	3
98				36			36	3
99				36			36	3
2000				36			36	3

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TABLE 4.2 3 (cont d)

ESTIMATED OCS USE OF UNSKILLED LABOR, CONSTRUCTION

	Platform Installn	Shore Bases	Pipeline Constn	Oil Terminal	LNG Termina	Sub-Tota Man-Months	Average Monthly Employment	ALL THREE INDUSTRIES Grand Total Man-Months Unski ed	ALL THREE INDUSTRIES OCS Average Monthly Employment Unskilled Man-Months
1982									
83		22				22	2	316	26
84		67				67	6	51	43
85		133				133	1	78	65
86								876	73
87			586	617	265	1,468	122	2,602	217
88			586	617	265	1,468	122	2,716	226
89				617	265	882	74	2,382	199
90				617		617	51	1,889	1 2
91								972	8
92								972	81
93								972	8
94								972	81
95								972	81
96								972	81
97								972	81
98								972	81
99								972	81
2000								972	81

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assumes that the major reason for transfers is the size of wage and salary differential existing between current and prospective occupations. This means that wages and salaries in both fisheries and OCS oil employment must be known or estimated. The average wages in OCS oil activities were estimated using data from the 'Statistical Quarterly"? 1972-1979, a publication of Alaska Department of Labor. The procedure for estimating the skilled and unskilled labor wages is tabulated in Exhibit 4.2.1. Employment and earnings in the fisheries were also estimated. The estimation of employment and earnings was conducted separately for traditional species and groundfish. In each case both harvesting and processing employment were estimated.

4.2.1 Employment in Traditional Fisheries

The traditional species harvesting employment was estimated using the 1978 effort data. Briefly, four steps were involved.

1) For each region (i.e. Bristol Bay, the northern portion of the Alaska Peninsula, Dutch Harbor and the Bering Sea) the number of boats fishing in 1978 were recorded (or estimated) from ADF&G and CFEC data. This data shows the number of boats by region, by species and gear type.

2) The number of vessels by length category for each region, species and gear type was then estimated using the length distribution information obtained from CFEC.

3) Crew size requirements for each species and gear type was then established according to vessel size.

4) Using the length frequency information estimates from (2), and crew size requirement from (3), the total crew requirements for each vessel length category were estimated. The results of this exercise are shown in Table 4.2.4.

Next, earnings for the crew were estimated. Here, also, four steps describe the procedure followed.

1) Average value of catch per vessel was estimated for each species and gear type by region. The averages established were specific to vessel length categories and were derived from total value landed by vessels in a given length category as well as the number of vessels estimated for the

EXHIBIT 4.2.1

DERIVATION OF OCS WAGE RATES

Employment directly related to OCS is for the transportation, construction, and mining sectors. In order to derive OCS wage rates data for these sectors for the Aleutians and Alaska other than the Aleutian Islands division were analyzed. The "Statistical Quarterly" from the Alaska Department of Labor shows that there have been no mining activities in the Aleutian Islands division. The following data shows average monthly wage rates in the Aleutians and elsewhere in Alaska-for 1972 - 1979:

Average Monthly Wage Rate ($)

	Aleutian Islands Division	Alaska (Except The Aleutians)	
	Construction and Transportation Sectors	Construction and Transportation Sectors	Oil and Gas Mining
1972	1,951.97	1,319.03	1,611.02
1973	2,001.32	1,378.10	1,661.46
1974	2,317.23	2,012.58	1,953.73
1975	2,641.16	2,697.88	2,466.o7
1976	3,304.90	3,350.00	2,799.91
1977	3,351.51	2,889.14	3,155.34
1978	3,918.89	2,692.68	3,342.05
1979	3,069.12	2,503.76	3,639.3$

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EXHIBIT 4.2.1 Continued

Since there have been no mining activities in the Aleutian Islands division, average wage rates for the oil and gas mining sector in the rest of the State was incorporated to derive a weighted average wage rate for OCS in the Aleutian Islands division. The weighted average monthly wage rate in dollar: for those OCS related sectors in the Aleutian Islands division is as follows:

Weighted Average Monthly Wage ($)

	Actual Wage	Linear Trend
1972	1,649.61	1,548.86
1973	1,705.95	1,841.80
1974	1,983.00	2,134.74
1975	2,481.20	2,427.67
1976	2,821.93	2,720.61
1977	3,161.74	3,013.54
1978	3,360.55	3,306.48
1979	3,429.13	3,599.41
1980	---	3,892.35

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EXHIBIT 4.2.1 Continued

With an estimated wage rate for 1980 in the Aleutian Islands division, wage rates for skilled and unskilled labor were developed. To differentiate wage rates between skilled and unskilled labor, the average wage rates were adjusted by the same percentage so that the skilled and unskilled labor wages would have a ratio of 2 to 1. Thus the average wage rates were adjusted by one-third to derive skilled and unskilled wage rates:

OCS Related Sectors In The Aleutian Islands Division ($)

	Monthly	Annua 1
Average Wage	3,892..35	46,708.20
Skilled Wage	5,189.80	62,277.60
Unskilled Wage	2,594.90	31,138.80

EC I

TABLE 4.2.4

ESTIMATED TOTAL EMPLOYMENT BY VESSEL

LENGTH GROUP 1

Bering Sea:							
King and Tanner Crab Vessels							
Vessel Length	41-60	61-80	81-100	101-120	21-150	51-200	TOTAL
No. Employed	8	155	441	368	207	108	1,287
Bristol Bay Salmon:							
Drift Gi nets							
Vessel Length	0-20	21-30	31- 40				
No. Employed	40	1,660	3,018				4,7[illegible]8
Set Gi nets							
Vessel Length	0-20	21-30	31- 40				
No. Employed	226	302	75				603
Alaska Peninsula (North):							
Drift Gi nets							
Vessel Length	0-20	21-30	31- 40	41- 50			
No. Employed	2	42	267				[illegible]20

Alaska Peninsu'a
(North)
(Continued)

TOTAL

Set Gi nets

Vessel Length	0-20	2 -30	3 - 40				
No. Employed	10	6	5				2

Purse Se nes

Vessel Length	0-20	21-30	3·- 40	41-50	5 -60	61-70	
No. Employed		28	·2	5		6	5

TOTAL 7,000

61

Overa' Length n Feet

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corresponding length.

2) Crew share arrangements that prevail in the various fisheries and regions were established through discussions with ADF&G area biologists, fishing industry representatives and in some cases by direct discussions with industry people.

3) Using crew share practices and the landed value per boat, crew shares were calculated. These shares were species and gear specific and varied according to vessel length and region.

4) The number of people to whom these earnings apply are those estimated as total crew for the corresponding species, gear, region and vessel length category as established earlier.

Both the crew and their earnings are shown in Table 4.2.5. It was assumed that there is no reason to expect future harvesting employment of traditional species to change radically in the near term.

Processing labor and wages were estimated for the traditional species in the region of interest. The basis of estimates pertaining to shore based and floating processing (excluding crab catcher/processors) is contained in Exhibit 4.2.2. Processing employment on crab catcher/processors was estimated separately. In 1978 there were an estimated 35 crabbers that had an overall length in excess of 120 ft and participated in the Bering Sea fishery. Crabbers of this size usually will harvest and process. Area biologists as well as people in the industry estimate that a catcher/processor crabber will require about 10 processing employees in addition to the fishing crew of about 9 people. These are average figures which take into account the fact that crew sizes do vary with vessel size as well as the degree of processing involved. The fishing crews of these vessels are included in Table 4.2.4. An additional 350 people are estimated as processing employment on these vessels and are assumed to earn wages that are comparable to the fishing crew. Analysis of fishing crew earnings revealed that compensation for people on this size of crabber usually exceeds that of unskilled workers in the oil and gas industry. Thus, these people would be earning wages much higher than can be expected for unskilled OCS jobs to which they may be accepted. For this reason these people do not figure in the estimate of those likely to

TABLE 4.2.5

TRADITIONAL SPECIES HARVEST EMPLOYMENT AND EARNINGS

Earnings 1978 ($000)	1980 Dollars Equivalent	Estimated No. Of Employees	Full Time Equivalent Employment [1]
0.7	0.8	75	13
1.1	1.3	6	2
2.1	2.4	5	1
3.8	4.4	226	38
4.4	5.1	9	2
6.0	6.9	“302	50
7.0	8.1	4	2
7.5	8.7	1,660	415
8.0	9.2	40	10
10.5	12.1	267	67
10.8	12.5	42	11
11.94	13.8	3,018	755
12.3	14.2	12	3
13.8	15.9	6	2
14.0	16.2	2	1
15.0	17.3	4	2
18.9	21.8	28	7
21.8	25.1	25	15
<33.0	<38.0	1,269	737
TOTAL		7,000	2,133

[1] Estimated no. of employees times no. of months for specific fisheries and divided by 12 months:

Crab	: 7 Months
Salmon Set Gillnets	: 2 Months
Salmon Drift Gillnets & Purse Seines	: 3 Months

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EXHIBIT 4.2.2

ESTIMATION OF PROCESSING EMPLOYMENT AND WAGES

Estimation of Food Processing employment and first wholesale value in North Alaska Peninsula and Bering Sea.

The number of processors that existed in Aleutian Islands Division in 1979 were 46, of which 15 were based on shore and 31 were floaters. The num of plants broken down by location is as follows:

Location	Number Of Plants		
	Floaters	Shore Based	Total
Dutch Harbor	4	4	8
Unalaska/Captains Bay/Beaver Inlet	2	3	5
Aleutians/Bering Sea	10	0	10
Akutan	6	0	6
Port Moller/Port Heiden/King Cove	3	5	8
Sand Point/Chignik	6	3	9
Total Aleutian Islands Division	31	15	46

The species processed include king, Tanner, and Dungeness crab, shrimp, salmon and halibut. Identified product forms from these species are fresh/ frozen, salted and canned.

From the given processed weight by location, landed weight was estimate using the following recovery factors:

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Species	Product Form	Recovery Factor For obtaining Equivalent Landing Weight From Product
Salmon	Fresh/Frozen	1.67
Hal i but	Fresh/Frozen	1.96
Crab	Fresh/Frozen	4.50
Shrimp	Fresh/Frozen	2.o4
Salmon	Canned	1.67
Crab	Canned	5*33
Shrimp	Canned	2.04
Salmon	Sa 1 ted	1.67

Source: NMFS Unpublished data

The Statistical Quarterly from the Alaska Department of Labor shows that there was an average of 1,739 food processing (manufacturing) employment per month in the Aleutian Islands division which includes all the plant locations identified above. No further employment breakdown by location is available. Therefore employment by location had to be estimated. It was assumed that employment requirements are proportional to landed weight thus total food processing employment in the Aleutian islands division was apportioned proportionately to locations on the basis of landed weight.

The procedure used is as shown below:

Location	Estimated Tota l Landed Weight MT	%	Number of Plants	Estimated Food Processing Employment Per Month
Dutch Harbor	40,011	29.84	8	519
Unalaska/Captains Bay/Beaver inlet	30,123	22.46	5	390
Aleutians/Bering Sea	7,147	5*33	10	93
Akutan	16,645	12.41	6	2 1 6
Port Moller/Port Heiden/King Cove	28,554	21.29	8	370
Sand Point/Chignik	11,629	8.67	9	151
Tota 1 Aleutian islands Division For 1979	134,109	100.00	46	1,739

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There were 8 plants in Port Moller/Port Heiden/King Cove, of which 2 (or 25%) were located in the southern portion of the Alaska peninsula. Therefore, one-fourth of the 370 average employment for Port Moller/Port Heiden/King Cove and a total estimated employment of 151 in Sand point/ Chignik were subtracted from the total employment of 1,739 in order to get the Aleutians and Bering Sea employment exclusive of the employment in the southern portion of the Alaska peninsula. The adjusted total food processing employment for 1979 is 1,496.

The same approach has been applied in deriving the first wholesale value generated by processors located in the North Alaska peninsula and Bering Sea. The 1979 first wholesale value broken down by location in the North Alaska peninsula and Bering Sea is as follows:

Location	First Wholesale Value $
Dutch Harbor	108,247,485
Unalaska/Captains Bay/Beaver Inlet	73,861,499
Aleutians/Bering Sea	22,133,239
Akutan	43,910,836
Port Moller/Port Heiden	55,300,924
Tota 1	303,453,983

For the labor competition analysis data requirement average monthly manufacturing employment for the Aleutian Islands division was assumed to represent seafood processing employment in this area. The figure of 1,496 employees as derived above and as used in Table 4.2.9 (see report) is based on this assumption. In addition the average monthly earning of this type of employment was used to derive in 1980 dollars the annual earnings level which could be compared to OCS earnings of Exhibit 4.2.1 given on Page 58 of the main report. To do this a linear projection was obtained from the 1972 - 1979 manufacturing earnings, as follows:

Average Monthly Wage

	Actual	Linear Trend
1972	681.79	657.71
1973	686.26	766.35
1974	893.99	875.00
1975	937.14	983.64
1976	1,227.81	1,092.29
1977	1,249.36	1,200.93
1978	1,209.20	1,309.58
1979	1,418.17	1,418.22
1980	---	1,526.87

A figure of $18,322 on an annual basis was therefore used (based on the monthly earnings projection for 1980) in the labor transfer analysis. This figure was compared with OCS earnings for unskilled workers in the manner described in the labor transfer model (Pages 81 - 86).

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transfer from fishing to the oil and gas industry.

4.2.2 Employment in Groundfish Harvesting and Processing

Groundfish employment was estimated according to whether processing is to be done on shore or at sea. A general assumption was made that the harvestable potential will be equally divided between land and sea based operations. The total potential used is 2,000,000 m.t. per year of which 300,000 m.t. would be harvested by operations that are based in Kodiak. The rest, 1,700,000 m.t., would be processed by operations that are based in the Bering Sea and Aleutian regions. One half of this was used to estimate employment for land based employment and the other half employment for sea based operations.

Land based employment was estimated by assuming use of a typical trawler approximately 123' in overall length (OAL) carrying a crew of six, and a processing plant with an annual throughput of roughly 60,000 m.t. employing some 606 workers on a year round basis. The trawler would have an annual harvest capacity of 2,700 m.t. This figure is an estimate that was originally supplied by the University of Alaska (1980, Tech. Rep. 51). This means that for the eventual total utilization of the resource, 315 trawlers and 1,890 crew members, plus about the equivalent of 14 processing plants (60,000 m.t. input) employing a total of 8,484 would be required for the land based operations alone.

Sea based operations would likely depend on catcher/processors and motherships. For purposes of this analysis, to estimate employment for these operations, a typical catcher/processor of roughly 250' OAL was assumed. Such a vessel would carry a crew of 60 on each trip including at least 11 people as fishing crew. Because of the rather extended trip lengths (20-30 days) a single vessel would likely require about 20 (or about 1/3 of the total manning) extra crew for rotations. A total of 80 people would therefore be attached to a single vessel. The total number of such vessels required is estimated at 93 based on an annual catch of 9,100 m.t. per vessel. This translates into an estimated 7,440 people to man the catcher/processor fleet.

The next step was to determine the wages and salaries associated with domestic fishermen's participation in groundfish harvesting. Currently, very little of these vast resources is harvested by the domestic fishing fleet. It is expected that initially some vessels from crab fisheries will" participate on a part time basis and supplement their incomes this way. Also, any new vessels constructed for groundfish harvest will most likely equip for multiple fisheries and will spend at least part of the year fishing for crab and salmon If the regulations permit.

The most ideal way to estimate earnings of crew members in groundfish harvesting is to consider their incomes from all the fisheries in which they might participate. This task would require effort beyond the needs for this project. The level of participation in the different fisheries is difficult to assess, and is further complicated by the fact that participation itself is likely to vary by vessel size. In other words, earnings from different fisheries will vary by vessel size. The ownership relationship and contractual obligations will also affect the level of participation. For example, a vessel owned by a groundfish processor is more likely to catch groundfish on a full-time basis than one owned by an independent operator who is not bound by contract to supply groundfish to a processor. To account for all of these considerations and to permit more realistic calculations, a minimum level of earning by harvesting vessels was therefore established.

To establish minimum" crew earnings from groundfish an operating profile for an 85' trawler was constructed. This size of vessel was chosen as being in the lowest size range that can operate successfully in the Bering Sea groundfish harvest. Smaller vessels will have difficulty in accessing any but those resources close to shore. Exhibit 4.2.3 shows this profile. This profile assumes full time participation. It is also assumed that crew members on larger vessels and on vessels that choose to participate in multiple fisheries can expect to earn at least the minimum calculated in this profile. This sets a minimum annual earnings of $31,549, or 5% of gross sales, per crew member and $75,000, or 12% of gross sales for the skipper. The crew requirement used for the average trawler is six, including the skipper.

Processing employment wages and salaries were estimated as shown in Exhibit 4.2.4. Certain hourly wages were assumed and then used to determine annual earnings. As shown, the annual earnings include benefits estimated at 35% of the basic pay.

EXHIBIT 4.2.3

COST ANALYSIS BASED UPON A TYPICAL OPERATION FOR AN 85I TRAWLER

Variable Cost		
	Maintenance and Repair	$ 35,555
	Gear Replacement	7,489
	Fue 1	135,625
	Food	12,375
	Miscellaneous	21,333
(1)	Variable Cost	$ 212,377
Fixed Cost		
	Annual Amortization	$ 94,661
	Depreciation (15 years Straight Line)	64,000
	Moorage	525
	Insurance (3.5% of Value)	33,500
(2)	Total Fixed Cost	$ 192,686
(3)	Return on equity (@ 10%)	$ 24,000
(4)	Total Owner's Share (1 + 2 + 3)	$ 429,063
(5)	Crew Share (32% of Gross Sales)	$ 201,912
(6)	Total Harvest Bill (4 + 5)	$ 630,975
(7)	Weighted Average Breakeven Price (¢/lb)	11.19

NOTES :

(1) initial cost estimated at $960,000 in 1980 dollars.

(2) Financing assumed to be available at 10% interest for 15 years; debt = 75% of Vessel cost.

(3) Total amount of catch while operating in the area of interest to t study is estimated at 2558 M.T. of which 68.8% is assumed to be Alaska pollock and 31.2% is other groundfish species.

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EXHIBIT 4.2.

60 M.T. PLANT PROCESSING EMPLOYMENT AND EARNINGS

HOURLY WAGE	7.50	8.00	8.67	9.00	10.33	11.00	11.50	
HOURLY WITH BENEFITS	10.13	10.80	1.70	12.15	13.95	14.95	15.53	
ANNUAL WITH BENEFITS	17.000.00	18, 00.00	19,700.00	20,400.00	23.400.00	25.1 .00	26.100.00	TOTAL
60 m.t. PLANT LINE LABOR REQUIREMENTS								
FLATFISH	8	6						14
COD PROCESSING	70	81	2		159	7		429
PERCH & ROCKFISH	11	7			9	1		28
HAND FILLET	17	2			44			63
DEBONING		3						3
TOTAL LINE LABOR	206	99	2		212	8		537
EARNINGS ($M)	3.50	1.79	0.04		4.96	0.45		10.74

EXHIBIT 4.2.4 (cent'd)

60 M.T. PLANT PROCESSING EMPLOYMENT AND EARNINGS

HOURLY WAGE	7,50	8.00	8.67	9.00	10.33	11.00	11.50	
HOURLY WITH BENEFITS	10.13	10.80	11.70	12.15	13095	14.95	15.53	
ANNUAL WITH BENEFITS	17,000.00	18,100.00	19,700.00	20,400.00	23,400.00	25,100.00	26,100.00	TOTAL
MISC NON-LINE LABOR								
SORTERS & INSPECTORS	14							14
MACHINE OPERATOR	4							4
FREEZING AND COLD STORAGE	11							11
WAREHOUSEMEN		8						8
MECHANICS			8	1				9
PLANT FOREMEN						4		4
FLOOR MANAGER							2	2
TOTAL NON-LINE LABOR	29	8	8	1		4	2	52
EARNINGS ($M)	0.49	0.14	0.16	0.02		0.10	0.05	0.96

EXHIBIT 4.2.4 (cent'd)

60 M.T. PLANT PROCESSING EMPLOYMENT AND EARNINGS

MONTHLY RATE	1000000	1100.00	2000 .00	2500.00	3000.00	3500.00		
MONTHLY RATE WITH BENEFITS	1350.00	1485.00	2700.00	3375.00	4050.00	4725.00		
ANNUAL EARNINGS	16,200,00	17,820.00	32,400.00	40,500.00	48,600.00	56,700.00		TOTAL
CLERICAL STAFF RECEPTIONIST	2							2
CLERKS	4							4
BOOKKEEPERS		3						3
SECRETARY		2						2
PLANT SUPERVISOR			2					2
ASSISTANT PLANT MANAGER				2				2
PLANT MANAGER					1			1
GENERAL MANAGER						1		1
TOTAL INDIRECT LABOR	6	5	2	2	1	1		17
EARNINGS ($M)	0.10	0.09	0.06	0.08	0.05	0.06		0.44

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Employment figures discussed so far pertain to eventual total potential of fisheries utilization. Except for traditional fisheries, employment in Alaska fisheries can be expected to grow over time. Estimates of the year-by-year requirements were made based on a roughly normal distribution for annual increments in resource exploitation. For groundfish fisheries, Table 4.2.6 indicates these estimates as they pertain to operations based in the Bering Sea and Aleutians.

It is equally important to display these estimates according to expected labor earnings. Using the earnings estimates and assumptions established above, the wage distributions for processing plants are as shown in Table 4.2.6. From Exhibit 4.2.5 the people employed on the catcher/processors were grouped by level of earnings as are shown in Table 4.2.7. The wage rates used were developed through conversations with fishing industry people and, though considerate of the harsh working conditions, are generally lower than earnings of crab crews on vessels larger than 70' OAL. The breakdown of trawler employment between skippers and crew members is contained in Table 4.2.8.

It must be noted at this point, that not all wage categories are susceptible to transfer. First, transfers are assumed to be initiated only when the salary differential is large enough. Secondly, unskilled fishery employees can only transfer to OCS jobs that require no special skills. Also, even when skilled people are involved, it may turn out that these skills are not specifically required for OCS jobs. Therefore, for all practical purposes skilled fish processing machine operators are regarded as unskilled laborers when seeking employment in the oil industry. Thirdly (and this is similar to the first argument) if jobs requiring specific skills are available in another industry but are subject to lower pay than paid by current employment, no transfers are expected to occur.

Only those fishery laborers not excluded by the foregoing criteria need be considered in the labor transfer calculations. Table 4.2.9 contains estimates of jobs that ar susceptible to transfer from the commercial fisheries. These estimates have been extracted from Exhibit 4.2.2 and Tables 4.2.6 and 4.2.7. They exclude all job categories with earnings greater than $31,000 which is the estimated earnings by an unskilled worker in OCS employment. They also exclude

TABLE 4.2.6

GROUNDFISH EMPLOYMENT FOR OPERATIONS PROJECTED TO BE BASED IN THE ALEUTIANS / BERING SEA AREA

	NO Of Plants	Plant Employment	NO of Trawlers	Trawler Employment	NO of Catcher Processors	Catcher Processor Employment	Total Employment
1982	1	606	9	54	3	240	900
83	1	606	19	114	5	400	1,120
84	1	606	28	168	8	64o	1,414
85	2	1,212	37	222	11	880	2,314
86	2	1,212	46	276	14	1,120	2,6o8
87	3	1,818	65	390	19	1,520	3,728
88	4	2,424	83	.498	25	2,000	4,922
89	5	3,030	111	666	33	2,64o	6,336
90	6	3,636	139	834	41	3,280	6,850
91	8	4,848	167	1,002	49	3,920	9,770
92	8	4,848	185	1,110	55	4,400	10,358
93	10	6,060	213	1,278	63	5,040	12,378
94	11	6,666	241	1,446	71	5,680	13,792
95	11	6,666	250	1,500>	74	5,920	14,086
96	12	7,272	259	1,554	77	6,160	14,986
97	13	7,878	278	1,668	82	6,560	16,106
98	13	7,878	296	1,776	88	7,040	16,694
99	14	8,484	306	1,836	91	7,280	17,600
2000	14	8,484	315	1,890	93	7,440	17,814

TABLE 4.2.6 a

EMPLOYMENT BY EARNINGS GROUP IN SHORE PROCESSING PLANTS

	Number Of Shore Plants	Earnings Group ('000)							
		16.4	16.5-19.3	19.4-21.2	21.3-25	25.1-35	35.1-45	>45	Total
1985	2	12	694	22	424	52	4	4	1,212
1990	6	36	2,082	66	1.272	156	12	12	3,636
1995	11	66	3,817	121	2,332	286	22	22	6,666
2000	14	84	4,858	154	2,968	364	28	28	8,484

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EXHIBIT 4.2.5

ESTIMATED CREW REQUIREMENTS AND COMPENSATION [1]

FOR 250-FOOT CATCHER/PROCESSOR

POSITION	NUMBER	COMPENSATION @
SHIP'S MASTER	1	$ 82,620.00
1ST MATE	1	43,740.00
2ND MATE	1	39,366.00
CHIEF ENGINEER	1	65,286.00
1ST ASSISTANT ENGINEER	1	39,852.00"
2ND ASSISTANT ENGINEER	1	35,883.00
PRODUCTION SUPERINTENDENT	1	26,100.00
PRODUCTION FOREMAN	2	25,100.00
PRODUCTION CREW *	35	23,400.00
FISHING SUPERINTENDENT	1	26,100.00
FISHING/DECK CREW	10	23,400.00
CHIEF COOK	1	21,060.00
ASSISTANT COOK	2	17,820.00
STEWARD	2	14,580.00
	60	$1,548,007.00

* THE PRODUCTION CREW WORKS TWO SHIFTS ON TWO PRODUCTION LINES.

1 INCLUDES 35% BENEFITS BUT IS EXCLUSIVE OF ROTATION REQUIREMENTS WHICH TOTAL ABOUT $511,000.00

TABLE 4.2.7

EMPLOYMENT BY EARNINGS GROUP IN CATCHER PROCESSING

	Number of Catcher Processors	Earnings Group ($000) 16.4	16,5-19.3	19.4-21.2	21.3-25	25.1-35	35.1-45	>45	Total
1985	11	29	29	15	659	58	60	30	880
1990	41	109	109	55	2,459	218	220	110	3,280
1995	74	199	199	99	4,431	398	396	198	5,920
2000	93	248	248	124	5,580	496	496	248	7,440

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TABLE 4,2.8

GROUNDFISH TRAWLER EMPLOYMENT

	NUMBER OF TRAWLERS		SKIPPER	CREW	TOTAL
1982	9		9	45	54
83	19		19	95	114
84	28		28	140	168
85	37		37	185	222
86	46		46	230	276
87	65		65	325	390
88	83		83	415	498
89	111		111	555	666
90	139		139	695	834
91	167		167	835	1002
92	185		185	925	1110
93	213		213	1065	1278
94	241		241	1205	1446
95	250		250	1250	1500
9 6.	259		259	1295	1554
97	278		278	1390	1668
98	296		296	1480	1776
99	306		306	1530	1836
2000	315		315	1575	1890

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TABLE 4.2.9

FISHERY EMPLOYEES TO WHOM TRANSFER PROBABILITIES APPLY

Year	Traditional Species		Groundfish			Total
	Harvesting	Processing	Trawlers	Catcher Processors	Shore Processing Plants	
1985	1,396	1,496	---	852	1,200	4,944
1990	1,396	1,496	---	3,172	3,600	9,664
1995	1,396	1,496	---	5,724	6,600	15,216
2000	1,396	1,496	---	7,192	8,400	18,484

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skippers, vessel engineers, mates and others whose skills could be used in OCS but who can expect to earn more than $62,000, which is the estimated average earnings for a skilled person in OCS related employment.

4.2.3 The Labor Transfer Model and its Application 0 he St. eorge Basin

This model is based on the hypothesis that labor will move from occupation to occupation if wage (salary) differentials exist between the two occupations. Further, it is hypothesized that salary differentials must be big enough to warrant such movements but that the probability to move will increase with the size of wage differentials. Studies conducted by the Organization for Economic Cooperation and Development (OECD, 1965) showed that a statistically significant negative correlation exists between levels of earnings and labor turnover rates. That is, the higher the level of pay in current occupation, the less likely is one to transfer to other employment.

The initial formulation for the job transfer is as follows. The probability of transfer to a higher paying job was related to the implied salary differential as a percentage of current earnings in the following manner.

Salary Differential	Probability of Transfer
0% - 9%	0.0
10% - 29%	0.2
30% - 49%	0.5
50% and greater	0.95

It must be recognized, however, that some people are more likely to change jobs than others even when the salary differential offered is the same. Some people simply cannot keep a job for long, but this category of people is not the subject of this discussion. Here we are concerned with an average worker. What makes one such worker more likely to transfer than the next person can only be discussed in the context of what we have termed ‘anchor factors”. The following factors were selected for the purpose.

1) Seniority and experience at the current job.
2) Whether or not one owns property or stock in their current occupation.

3) How far from home the two alternative jobs are.
4) How long the new job is expected to last.
5) Consideration's for job security.
6) Ethnic and historical attachment to current occupation.

Careful examination of each of these factors reveals that a common denominator in the form of the age of the employee exists in most of them. Usually the older one is the more senior at a job and the more experienced. The level of property ownership, whether in the form of land to a farmer or stock to a worker for a given corporation, will more likely be higher for older persons. The longer one has worked for a given corporation the more likely one is to acquire some of their stock. Also, senior citizens will usually prefer to work close to home and are more likely to resist transfers that geographically separate them from their accustomed home. As far as the length of employment is concerned, most people will usually resist transferring to a job that will expire in a short period of time. However, if such a short duration has a high salary associated with it, younger persons who have little seniority to lose and little or no experience and no property interest in current employment, will be more likely to move than their older counterparts.

Similar arguments can be mounted in the case of job security and when one has ethnic attachment to current occupation. It seems reasonable to suppose, therefore, that given the age characteristics of fishery employment and a relationship between age and the tendency to change jobs, the bulk of anchor factors discussed would be accounted for implicitly.

After a literature search on labor mobility, age specific labor mobility statistics for the calendar year 1977 (see Department of Labor 'Monthly Labor Review", Dec. 1979) were used to provide scale factors for the labor transfer model. Table 4.2.10 gives the basis for computation of the scale factors.

The data of Table 4.2.10 was rearranged in two age groups ; those up to 34 years old and people 35 years and older. The mobility rates of these age groups were computed to be 19.7% and 5.7%, respectively. By expressing the latter as a fraction of the former it is shown that the older group is 30% as likely to move as the younger. This fact was used to modify the transfer probabilities given above to reflect

TABLE 4.2.10

OCCUPATION MOBILITY IN THE UNITED STATES

January 1977 - January 1978

Age Group	No. Employed At Beginning and End (000)	No. Employed in the Same Occupation (000)	No. Employed in a Different Occupation (000)	Mobility Rate %	
18 - 19	1,977	1,136	840	42.5	
20 - 24	9,273	6,921	2,351	25,4	19.7
25 - 34	20,823	17,687	3,136	15.1	
35 - 44	16,008	14,640	1,368	8.5	
45 - 54	15,269	14,549	720	4.7	
55 - 64	10,427	10,060	367	3.5	5.7
65 and Over	2,644	2,587	57	2.2	

Source: U.S. Department of Labor, Monthly Labor Review, December 1979.

reduced willingness to transfer as one gets older. The following results constitute the transfer probabilities used in this analysis.

Salary Differential	Probability of Transfer Ages 18 - 34	Probability of Transfer Ages 35 and Older
0 - 9%	0.0	0.0
10 - 29%	0.2	0.06
30 - 49%	0.5	0.15
50% and Greater	0.95	0.29

Next, it was necessary to establish an age distribution for fishery employment. The Alaska Department of Labor provided some information for this purpose. In their Bottomfish Labor Study, the Alaska Department of Labor (1980) has investigated the age characteristics of current fishery employment. Findings show that 50.3$ of the harvesting employment is composed of people less than 30 years old. Processing employment is even more dependent on a younger, more mobile population. Nearly 69% of processing employment is below the age of 30. These percentages were applied to the employment estimates in Tables 4.2.5 to 4.2.9 to obtain employment by age group. The age distribution in future groundfish harvesting and processing was assumed to be similar to that of current processing employment. This is based on the assumption that younger people, being generally more mobile, will be more willing to move to rather remote areas as are typical of the locations of groundfish resources in Alaska.

Applying the above probabilities to age and wage specific employment estimates gives the expected number of people willing to transfer. The results are summarized in Table 4.2.11.

Results of this analysis show that by the year 2000, a total of 9,971 people would be willing to transfer from fisheries to OCS employment. By far the greatest number would come from the processing sector. Processing of traditional species would contribute 1,113 people. Groundfish processing, both in plants on land or catcher/processors at sea, would contribute 8,000 people. The total number from the processing sector is 9,113. However, the actual transfers would be much lower than these estimates indicate and would have an upper ceiling dictated by the number of available OCS jobs. For

TABLE 4.2.11

NUMBER OF FISHERY EMPLOYEES EXPECTED TO TAKE OCS JOBS IF AVAILABLE [1]

	Age Group	1985	1990	1995	2000
Processing Plants Groundfish	up to 30	313	1,163	2,097	2,638
	Above 30	43	160	288	362
	Total	356	1,323	2,385	3,000
Catcher/Processors	up to 30	628	1,882	3,450	4,392
	Above 30	87	261	478	608
	Total	715	2,143	3,928	5,000
Traditional Species Harvest	up to 30	660	660	660	660
	Above 30	198	198	198	198
	Total	858	858	858	858
Processing	up to 30	977	977	977	977
	Above 30	136	136	136	136
	Total	1,113	1,113	1,113	1,113
Grand Total		3,042	5,437	8,284	9,971

1 Actual ceiling on transfers may be set by number of OCS jobs available if expected transfers exceed available jobs.

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example, the number of full time equivalent OCS jobs in the St. George Basin which fishery labor might seek are estimated at 87 in 1985 and 101 in 2000. The highest figure for this type of employment is 258 positions, and this occurs in 1988. In every year after 1985 over 70% of the OCS jobs available t(fisheries employees are in the unskilled category (see Table 4.2.3).

The impact of competition for labor between the two industries is to be viewed in terms of available jobs as well as labor supply. If jobs were available for all willing to transfer, the impact on commercial fisheries would be maximized. The harvesting sector has an apparent abundance o: labor. For example, peak employment of crew members in Alask: in 1978 was 3,396. This compares with a total of 21,841 registered crew members. For each crew member actually engaged in fishing 4 others were not. Processing of seafood in Alaska tends to be seasonal. Groundfish processing, however, is likely to be a year round process. If there were a lot of OCS jobs each year on a full time basis one would expect competition for labor to be correspondingly high and affect the year round processing of groundfish. A substantial portion of processing labor coming from the lower 48 states, as is currently the case, would likely produce a moderating influence on this type of competition.

As a special area of concern, the small boat fisherie of this area could be affected more than the industry in total. People engaged in these fisheries tend to be among those who earn least from fish harvesting employment. To the extent that these people are subsistence fishermen, the loss of their participation could have considerable impact from a cultural perspective. Availability of data constrains the analysis at this point.

4.2.4 Competition for Labor in the North Aleutian Shelf

The labor transfer model used for the St. George Basi OCS activities estimates that the number of people transferring from fisheries to OCS employment would depend on the availability of OCS jobs to basically unskilled labor. The level of OCS activity in the St. George Basin projects a total of 285 jobs that could be filled by people without special skills. The activity level in the North Aleutian Shelf OCS is not expected to be greater than in the St. Georg Basin. Consequently, the level of available unskilled labor jobs and resultant transfers to OCS should be similar to those estimated for the St. George Basin.

4.3 COLLISION IMPACTS

Two models were used to calculate collision impacts. Specifically these models were applied according to the travel patterns projected for both OCS and commercial fishing needs. The parallel path model was used in situations where expedient transit through a given area was deemed to be the major intent of vessels, while the "free gas" analogy was applied to situations in which vessels could be moving in all kinds of directions. Below, the parallel path method is first described; and is followed by a discussion of the 'free gas" approach.

The parallel path model originated by the Sperry Piedmont Corporation is summarized as follows:

$E = \frac{N^2 L}{2KV}$ = number of encounters per year

$P(c) = C/E$ = probability of collision per encounter

where C = average number of collisions per year, if known

$P(C_o) = b/W$ = probability of a collision situation

$P(C/C_o) = P(C)/P(C_o)$ = conditional probability of a collision given a collision situation

N = Number of vessel trips associated with the waterway
L = Length of a specific body of water to be traversed by vessels
K = A constant equal to a number of hours in a year
V = Average velocity of vessels
b = Average width (or clearance) of vessels
w = Width of the body of water

For purposes of this analysis two estimates of P(C) were utilized. One was adopted from statistics of the English Channel and the other was an estimate of the conditions in the Pacific region of the United States waters. For the second estimate the average number of collisions (C) for the years 1970/71, 1972/73 - 1977/78 was calculated using annual vessel casualty statistics published from time to time by the U.S. Coast Guard in the 'Proceedings of the Merchant Marine Safety Council". Statistics for both inland Pacific and the Pacific Ocean were used. The number of encounters per year was estimated for the period 1970-1977. This was done using the formula for E given above. It was assumed that all collision occurred within waterways measuring about 83 nautical miles. This is a weighted average waterway (channel) length where vessel trips for the various waterways were used as weights. The number of inbound and outbound vessel movements associated with the various waterways were averaged for the period 1971-1977 and used as weights to compute the average **length** traveled in U.S. Pacific waterways. "**Waterborne** Commerce of the United States" statistics provided the information on vessel trips. An average velocity of 10 knots was assumed for all vessels, while 4.264 nautical miles was taken as an average width for navigable waters. Like the length, this width is a weighted average for the waterways in the Pacific Region. Traffic volume N was estimated using number of vessel movements from the "Waterborne Commerce of the United States". Vessel movements inbound and outbound as estimated for the various Army Corps of Engineers' districts by the Department of the Army (1971-1977) , were totaled for the Pacific **region,** including Hawaii and the Gulf of Alaska. Table 4.3.1 summarizes the vessel trips for this period. Including inbound and outbound movements an average of 1.285 million trips per year occurred during this period.

The estimated total number of encounters E in the Pacific was calculated to average 785 million per year and resulted in 62 collisions per annum. This leads to a collision per encounter probability, $P(C) = 7.90 \times 10^{-8}$. $P(C_o)$ was estimated using an average vessel width of 100 feet and a channel width of 4.264 nautical miles resulting in a value of $P(C_o) = 4.43 \times 10^{-3}$. Finally, the conditional probability of a collision given a collision situation is given by:

$$P(C/C_o) = P(C)/P(C_o) = 7.90 \times 10^{-8} / 4.43 \times 10^{-3} = 1.78 \times 10^{-5}$$

In assessing the collisions in each fishing statistical area the above conditional probability was multiplied by estimated numbers of collision situations (potential collisions). For selected areas of highest vessel traffic, especially near Dutch Harbor and neighboring waters the probability derived for the Strait of Dover in the English Channel was used. This is equal to 1.49×10^{-4}. We assumed that this probability was more appropriately applied because of the more constricted passage area. In a previous analysis of oil tanker collisions on Puget Sound, the Strait of Dover - probability was also used. This assumption is expected to yield a more practical assessment of the collision impacts. The above approach computes only part of the collision impacts, those associated with expedient travel. The more

TABLE 4.3.1

COMMERCIAL VESSEL MOVEMENTS

District	Average Traffic 1970 - 1978
Los Angeles, CA	132,743
Sacramento, CA	15,478
San Francisco, CA	91,182
Pacific Ocean	31,423
Walla Walla, WA	11,980
Portland, OR	245,586
Seattle, WA	658,341
Alaska	98,939
	1,285,672

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the U.S.

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random travel associated with fishing is addressed next.

The free gas analogy was used to apply to encounters between OCS vessels in transit (to and from platforms and rigs) and fishing vessels engaged in fishing activities. In this case the estimated number of collision situations is approximated by:

$$es = L\ (N/A)w$$

L = Total number of miles logged in a fishing statistical area by all vessels (including OCS vessels) in a given year

N/A = Total number of vessels per unit area observed in the statistical area (vessel density)

w = Average collision cross section. According to Wentzell (Honeywell, Inc., 1971), this is approximately 2/3 of the ship's length. We used 2/3 of the weighted average length of vessels estimated to operate in all the affected statistical areas.

L was estimated using the number of vessels required to conduct fishing in a statistical area and also those transiting the area for OCS purposes. Number of fishing trips per year, number of hours fishing per trip and average fishing speed were used to estimate fishing miles logged. OCS vessel trips, and average distance required to cross through a statistical area were used to obtain the corresponding OCS miles logged. This process was repeated for each fishing statistical area that OCS vessels are likely to traverse.

In estimating the vessel density in any statistical area, two steps were followed. First, the number of vessels required for harvesting in a given area were weighted by time spent fishing annually. Similarly, the number of OCS vessels estimated to cross the same area were weighted by transit time on an annual basis.

To estimate the expected number of collisions per year for a specific fishing area, the number of collision situations were multiplied by the conditional probability as estimated above.

4.3.1 Application of the Parallel Path Model

The parallel path model computation of collision potentials or collision situations (CS) was done through the formula:

$$CS = \frac{N^2 Lb}{KVW}$$

N, L, K, V and W are as defined earlier. K is a constant and V was assumed to equal 10 knots in all cases. N, however, the number of vessel trips varies for each statistical area and also by year. Tables 4.3.2 and 4.3.3 give the estimated number of vessel trips for fishing and OCS vessels, in five year intervals starting in 1985, respectively. L, the length of the waterway in question also varies. The width of the waterway, W, was fixed at 30 nautical miles for all affected statistical areas except in two distinct cases. In the first instance, a figure of 20 nautical miles was used for statistical areas 351-61 & 62. In the second instance a series of widths was used for various locations in and around Dutch Harbor. It was assumed that from Unalaska to the fishing areas just outside statistical areas 302-25 and 302-3(there is a distance of at least 30 miles. Unalaska Bay itself covers 7 miles. Inside this bay three zones were defined:

I) A region starting inside Dutch Harbor and going north for one mile: Assume a width of 1 nautical mile.

II) A region 3 miles long ending just north of Eider Point on the westside and across to North of Constantine Bay but south of Prince Head on the east side of Unalaska Bay: Assume a navigable channel width of 4 miles.

III) The balance of Unalaska Bay or a total of 3 miles in length: Assume a width of 5 nautical miles.

The remaining region of statistical areas 302-25 and 302-30 covers an additional 23 nautical miles. For this region a width of 15 nautical miles was used. For purposes o: this analysis this was designated region IV. Later these designations (I-IV) are used to tabulate estimated collision potentials (See Table 4.3.29 at the end of the chapter).

Collision situations among fishing vessels in the absence of OCS vessels were calculated. Secondly, the total collision situations due to interaction of the two fleets acting together were assessed. The applicable formulas are:

$$Cs = \frac{N_i^{\,2} Lb}{K\ V\ W}$$

i = 1: Non-OCS case (fisheries

2: Mean OCS case (fishery ε OCS vessels)

TABLE 4.3.2

FISHING VESSEL TRIPS[1] TO AND THROUGH IMPACT STATISTICAL AREAS

Stat Area	1985	1990	1995	2000
302 - 25 & 30	4,402	6,129	8,006	9,102
350 - 41	916	1,275	1,668	1,896
- 51	2,887	3,477	4,098	4,479
- 61	4,087	5,236	6,492	7,378
351 - 22	32	93	160	199
- 23	61	73	87	95
- 32	117	293	484	596
- 33	527	606	691	740
- 41	211	588	1,000	1,240
- 42	290	545	729	982
- 43		——	——	
- 51	799	1,648	2,662	3,225
- 52	881	1,560	2,288	2,715
- 61	3,479	5,448	7,584	8,831
- 62	830	1,111	2,159	2,563

[1] One way count (i.e. round trip counts double).

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TABLE 4.3.3

OCS VESSEL TRIPS[1] TO AND THROUGH IMPACT STATISTICAL AREAS

Stat Area	1985	1990, 1995 & 2000
302 - 25 & 30	3,744	6,864
350 - 41	1,248	1,248
- 51	1,248	2,496
- 61	624	2,496
351 - 22	624	—
- 23	—	624
- 32	1,248	1,872
- 33		624
- 41	624	624
- 42	1,248	2,496
- 43	—	—
- 51	3,120	3,744
- 52	1,248	2,496
- 61	3,744	6,864
- 62	1,248	1,248

[1] One way count (i.e. round trip counts double).

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The values of b varied from 0.0122 to 0.0133 nautical miles in 1985 and the year 2000, respectively. b is calculated as 2/3 of the weighted average length and varied due to annual change in fleet composition. Using the vessel trips in Tables 4.3.2 and 4.3.3 for values of N_1 (Table 4.3.2) and N_2 (both Tables), collision potentials were computed. Table 4.3.4 shows the results as well as computation for collisions in the year 2000. Similar tables for three 5-year intervals before the year 2000 are also given (see Tables 4.3.5 to 4.3.7). Incremental collision situations and collisions among transiting vessels due to introduction of OCS activities were estimated.

4.3.2 Application of the Free Gas Model

Collision situations were assessed according to the formula as described earlier. However, further detail on use of the formula is provided here. First, vessel miles were calculated. In the case of fishing vessels, total number of days fishing per year, number of hours fishing each fishing day and the fishing speed were estimated. The three quantities and the number of vessels were multiplied to get fishing miles (L) for any given statistical area. Exhibit 4.3.1 gives the general information used for this purpose. The number of fishing vessels by statistical area and by year can be found in Tables 4.3.8 to 4.3.11.

Vessel density was obtained by first calculating the 'modified" or weighted vessel count (N') and dividing by the area. Number of vessels from Tables 4.3.8 to 4.3.11 were weighted by the ratio of days fishing each year to total days in a year (365). Each statistical area was assumed to have an area of approximately 1,050 sq. nautical miles or about 35 X 30 nautical miles.

Fishing miles (L) multiplied by vessel density N /A multiplied by the average collision cross section (w) equals potential collisions. The collision cross section for vessels was estimated as above and varied from 0.0122 to 0.0133 nautical miles depending on the fleet composition as fishery development progresses. These values are two thirds of weighted overall length for fishing vessels including 250[1] catcher/processors, and smaller trawlers and crab vessels of less than 100' OAL. OCS supply vessels are also expected to have sizes within this range. Tables 4.3.12 to 4.3.15 show

TABLE 4.3.4

ESTIMATED COLLISIONS AND COLLISION SITUATIONS
FOR VESSELS IN TRANSIT - 2000

Stat Area	Length Crossed	Potential Collisions			Colli
		Non-OCS Case; Fishing Fleet Only	Mean OCS Scenario; Composite Fishing & OCS Fleet	Change Due to Ocs	
302 - 25 & 30	30	53.188	164.964	111.776	
250 - 41	10	0.182	0.500	0.318	
- 51	20	2.031	4.925	2.894	
- 61	15	4.132	7.401	3.269	
351 - 22	8	0.002	0.002	0.000	
- 23	8	0.000	0.021	0.021	
- 32	25	0.045	0.770	0.725	
- 33	20	0.055	0.187	0.132	
- 41	15	0.117	0.530	0.413	
- 42	30	0.146	1.837	1.691	
- 43	8	—	—	—	
- 51	30	1.579	7.373	5.794	
- 52	30	1.119	4.123	3.004	
- 61	35	20.721	65.450	44.729	
- 62	35	1.745	3.859	2.114	
Sub Total [2]		9.408	27.669	18.261	3.25
Sub Total [3]		75.654	234.273	158.619	2.36,
GRAND TOTAL		85.062	261.942	176.880	2.39

[1] Equals Total Potential Collisions Times The Conditional Probability of a Collision Given a Collision Situation $P(C/C_o)$

$P(C/C_o) = 1.78 \times 10^{-5}$ except for statistical areas 351-61, 351-62, 302-25 & 30 where $P(C/C_o) = 1.49 \times 10^{-4}$

[2] All Statistical Areas Except 351-61, 351-62, 302-25 & 30

[3] Statistical Areas 351-61, 351-62, 302-25 & 30

TABLE 4.3.5

ESTIMATED COLLISIONS AND COLLISION SITUATIONS

FOR VESSELS IN TRANSIT - 1985

Stat Area	Length Crossed	Potential Collisions			Collision[1]
		Non-OCS Case; Fishing Fleet Only	Mean OCS Scenario; Composite Fishing & OCS Fleet	Change Due to Ocs	
302 - 25 & 30	30	12.451	39.462	27.011	
250 - 41	10	0.039	0.217	0.178	
- 51	20	0.774	1.588	0.814	
- 61	15	1.163	1.545	0.382	
351 - 22	8	0.000	0.015	0.015	
- 23	8	—	—	—	
- 32	25	0.002	0.217	0.215	
- 33	20	0.026	0.026	0.000	
- 41	15	0.003	0.048	0.045	
- 42	30	0.012	0.330	0.318	
- 43	8	—	.	—	
- 51	30	0.089	2.139	2.050	
- 52	30	0.108	0.631	0.523	
- 61	35	2.950	12.715	9.765	
- 62	35	0.168	0.168	0.000	
Sub Total[2]		2.216	6.756	4.540	8.080 x 10-5
Sub Total[3]		15.569	52.345	36.776	5.48ox 10-3
GRAND TOTAL		17.785	59.101	41.316	5.561 x 10-3

[1] Equals Total Potential Collisions Times The Conditional Probability of a Collision Given a Collision Situation $P(C/C_o)$

$P(C/C_o)$ = 1.78 x 10-5 except for statistical areas

351-61, 351-62, 302-25 & 30where $P(C/C_o) = 1.49 \times 10^{-4}$

[2] All Statistical Areas Except 351-61, 351-62, 302-25 & 30

[3] Statistical Areas 351-61, 351-62, 302-25 & 30

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TABLE 4.3.6

ESTIMATED COLLISIONS AND COLLISION SITUATIONS
FOR VESSELS IN TRANSIT - 1990

Stat Area	Length Crossed	Potential Collisions			Collision
		Non-OCS Case; Fishing Fleet Only	Mean OCS Scenario; Composite Fishing & OCS Fleet	Change Due to Ocs	
302 - 25 & 30	30	24.159	107.342	83.183	
250 - 41	10	0.079	0.310	0.231	
- 51	20	1.178	3.476	2.298	
- 61	15	2.003	4.368	2.365	
351 - 22	8	—	—	.	
- 23	8	0.000	0.019	0.019	
- 32	25	0.010	0.571	0.561	
- 33	20	0.036	0.148	0.112	
- 41	15	0.025	0.107	0.082	
- 42	30	0.043	1.351	1.308	
- 43	8	—	—	—	
- 51	30	0.397	4.248	3.851	
- 52	30	0.356	2.404	2,048	
- 61	35	7.590	38.762	31.172	
- 62	35	0.316	1.423	1.107	
Sub Total [2]		4.127	17.002	12.875	2.292 x
Sub Total [3]		32.065	147.527	115.462	1.720 x
GRAND TOTAL		36.192	164.529	128.337	1.743 x

[1] Equals Total Potential Collisions Times The Conditional Probability of a Collision Given a Collision Situation $P(C/C_o)$

$P(C/C_o)$ = 1.78 x 10-5 except for statistical areas

351-61, 351-62, 302-25 & 30 where P{C/Co) = 1.49X 10^{-4}

[2] All Statistical Areas Except 351-61, 351-62, 302-25 & 30

[3] Statistical Areas 351-61, 351-62, 302-25 & 30

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TABLE 4.3.7

ESTIMATED COLLISIONS AND COLLISION SITUATIONS

FOR VESSELS IN TRANSIT - 1995

Stat Area	Length Crossed	Potential Collisions: Non-OCS Case; Fishing Fleet Only	Potential Collisions: Mean OCS Scenario; Composite Fishing & OCS Fleet	Potential Collisions: Change Due to OCS	Collision[1]
302 - 25 & 30	30	40.996	141.888	100.892	
250 - 41	10	0.139	0.425	0.286	
- 51	20	1.674	4.334	2.660	
- 61	15	3.151	6.032	2.881	
351 - 22	8	0.001	0.001	0.000	
- 23	8	0.000	0.020	0.020	
- 32	25	0.029	0.692	0.663	
- 33	20	0.048	0.173	0.125	
- 41	15	0.075	0.197	0.122	
- 42	30	0.079	1.555	1.476	
- 43	8	—	—	—	
- 51	30	1.060	6.137	5.077	
- 52	30	0.783	3.423	2.640	
- 61	35	15.052	54.629	39.577	
- 62	35	1.220	3.038	1.818	
Sub Total[2]		7.039	22.989	15.950	2.839×10^{-4}
Sub Total[3]		57.268	199.555	142.287	2.120×10^{-2}
GRAND TOTAL		64.307	222.544	158.237	2.148×10^{-2}

[1] Equals Total Potential Collisions Times The Conditional Probability of a Collision Given a Collision Situation P(C/Co)

$P(C/C_o) = 1.78 \times 10^{-5}$ except for statistical areas

351-61, 351-62, 302-25 & 30 where $P(C/C_o) = 1.49 \times 10^{-4}$

[2] All Statistical Areas Except 351-61, 351-62, 302-25 & 30

[3] Statistical Areas 351-61, 351-62, 302-25 & 30

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EXHIBIT 4.3.1

FISHING VESSEL CHARACTERISTICS

	Trips Per Year	Days Fishing Per Trip	Hours Fishing Per Day	Fishing Speed In Knots
Catcher Processors	9	20	18	5
Trawlers	28	4.5	18	5
Crabbers	15	7	18	4

TABLE 4 .3.8

FISHING VESSEL REQUIREMENTS - 1985

Stat Area	Trawlers	Catcher/ Processors	Crabbers	Total
302 - 25 & 30	.0467	.0046	2.6045	2.6558
350 - 41	.7155	.0732	3.9792	4.7679
- 51		——	1.5193	1.5193
- 61	2.6649	.2738	.0723	3.0110
351 - 22	.1731	.2255	.2894	.6880
- 23		.2523	1.0852	1.3375
- 32	.7395	.0758	.2170	1.0323
- 33	.3768	.1392	.0723	.5883
- 41	.4090	.0419	.0723	.5232
- 42	.3211	.0327	.0723	.4261
- 43	——	——		
- 51	1.0416	.1072	——	1.1488
- 52	1.7370	.1784	——	1.9154
- 61	1.7021	.1745	——	1.8766
- 62	.2044	.0209	——	.2253
TOTAL	10.1317	1.6000	9.9838	21.7155

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TABLE 4 .3.9

FISHING VESSEL REQUIREMENTS - 1990

Stat Area	Trawlers	Catcher/ Processors	Crabbers	Tota
302 - 25 & 30	.1750	.0172	2.6045	2.796
350 - 41	2.6833	.2745	3.9792	6.937
- 51			1.5193	1.519
- 61	9.9934	1.0270	.0723	11.092
351 - 22	.6491	.8456	.2894	1.784
- 23	—	.9460	1.0852	2.031
- 32	2.7732	.2843	.2170	3.274
- 33	1.4126	.5221	.0723	2.007
- 41	1.5338	.1569	.0723	1.763
- 42	1.2038	.1226	.0723	1.398
- 43	—			—
- 51	3.9060	.4019	—	4.307
- 52	6.5136	.6691		7.182
- 61	6.3829	.6544	—	7.037
- 62	.7665	.0785	—	.84:
TOTAL	37.9932	6.0001	9.9838	53.97;

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TABLE 4.3.10

FISHING VESSEL REQUIREMENTS - 1995

Stat Area	Trawlers	Catcher/ Processors	Crabbers	Total
302 - 25 & 30	.3148	.0309	2.6045	2.9502
350 - 41	4.83oo	.4941	3.9792	9.3033
- 51	—		1.5193	1.5193
- 61	17.9882	1.8486	.0723	19.9091
351 - 22	1.1685	1.5221	.2894	2.9800
- 23		1.7029	1.0852	2.7881
- 32	4.9916	.5118	.2170	5.7204
- 33	2.5425	.9396	.0723	3.5544
- 41	2.7609	.2824	.0723	3.1156
- 42	2.1668	.2206	.0723	2.4597
- 43	—	—		—
- 51	7.0309	.7235	—	7.7544
- 52	11.7246	1.2045		12.9291
- 61	11.4892	1.1779		12.6671
- 62	1.3797	.1412	—	1.5209
TOTAL	68.3877	10.8001	9.9838	89.1716

TABLE 4.3.11

FISHING VESSEL REQUIREMENTS - 2000

Stat Area	Trawlers	Catcher/ Processors	Crabbers	To
302 - 25 & 30	.3964	.0389	2.6045	3.0
350 - 41	6.0822	.6222	3.9792	10.6
- 51	——	——	1.5193	1.5
- 61	22.6518	2.3278	.0723	25.0
351 - 22	1.4714	1.9167	.2894	3.6
- 23	——	2.1444	1.0852	3.2
- 32	6.2857	.6444	,2170	7.1
- 33	3.2018	1.1833	.0723	4.4
- 41	3.4767	.3556	.0723	3.9
- 42	2.7286	.2278	.0723	3.0
- 43				
- 51	8.8536	.9111	——	9.7
- 52	14.7643	1.5167		12.2
- 61	1.7375	1.4833		3.2
- 62	.1928	.1778	——	..
TOTAL	71.8428	13.6000	9.9838	95.[illegible]

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weighted vessel count and density while Table 4.3.16 displays vessel miles and estimates of potential collisions in the year 2000 for the non-OCS case. Results for the three 5-year intervals before the year 2000 are contained in Tables 4.3.17 to 4.3.19.

OCS vessel miles, vessel density and collision cross section were based on the following assumptions. First, it has been estimated that for the mean base case scenario, five exploration rigs and one production platform will be in place during calendar year 1985. By 1990 and thereafter a total of 11 platforms are expected to be operating in the St. George Basin. It was assumed that each platform or rig will be served by two support/supply vessels, each making 13 round trips per month. The vessels are expected to have an overall length of at least 100 feet.

For lack of better information it was assumed that these structures would be uniformly distributed in the lease sale area. It was, therefore, possible to estimate the total number of crossings (movements) in the fishing statistical areas by OCS vessels with each round trip counting as two in determining vessel movements. This information was referred to earlier in Table 4.3.3. Vessel miles were then obtained as a product of vessel trips and a one way distance for a given statistical area. Vessel density was calculated as the weighted vessel count divided by area. Weighted vessel count is the product of number of vessels, the time spent crossing a given statistical area and the total number of crossings (Table 4.3.3) divided by total time in a year (8,760 hours). Area was assumed to be approximately 1,050 square nautical miles. The contribution of OCS vessels to vessel density in 1990 and thereafter when all projected OGIS will be in place, is shown in Table 4.3.20. For 1985 similar information is presented in Table 4.3.21. The information contained in these tables refers to a hypothetical situation in which only OCS vessels travel to platforms and rigs which are equally distributed in the lease area.

Total collision potentials when both OCS and fishing vessels are considered were also estimated and are illustrated in Table 4.3.22 for the year 2000. These estimates are obtained as follows. Fishing miles and OCS vessel miles are added. The result is multiplied by the sum of OCS and fishing vessel densities. Finally, this is further multiplied by a weighted fisheries OCS vessel collision cross section of 0.0122, 0.0128, 0.0131 and 0.0133 for the selected analysis years (1985; '90; '95 and 2000) to give the total potential collisions. Table 4.3.23 summarizes the estimates of potential and projected collisions due to interaction between

TABLE 4.3.12

WEIGHTED VESSEL COUNT AND DENSITY

(Fishing Vessels) - 1985

VESSEL COUNT

Stat Area	Trawlers	Catcher/ Processors	Crabbers	Total	Ves Den
302 - 25 & 30	.0161	.0023	.7492	.7676	.000
350 - 41	.2470	.0361	1.1447	1.4278	.001
- 51	——	——	.4371	.4371	.000
- 61	.9199	.1350	.0208	1.0757	.001
351 - 22	.0598	.1112	.0833	.2543	.000
- 23	——	.1244	.3122	.4366	.000
- 32	.2553	.0374	.0624	.3551	.000
- 33	.1301	.0686	.0208	.2195	.000
- 41	.1412	.0207	.0208	.1827	.000
- 42	.1108	.0161	.0208	.1477	.000
- - 43		——	——	——	
- 51	.3596	.0529		.4125	.000
- 52	.5996	.0880	——	.6876	.000
- 61	.5876	.0861		.6737	.00C
- 62	.0706	.0103		.0809	.00C
TOTAL	3.4976	.7891	2.8721	7.1588	

TABLE 4.3.13

WEIGHTED VESSEL COUNT AND DENSITY
(Fishing Vessels) - 1990

VESSEL COUNT

Stat Area	Trawlers	Catcher/ Processors	Crabbers	Total	Vessel Density
302 - 25 & 30	.0604	.0085	.7492	.3675	.0007791
35(I - 41	.9263	.1354	1.1447	2.2064	.0021013
- 51	—		.4371	.4371	.0004163
- 61	3.4498	.5065	.0208	3.9771	.0037877
351 - 22	.2241	.4170	.0833	.7244	.0006899
- 23		.4665	.3122	.7787	.0007416
- 32	.9573	.1402	.0624	1.1599	.0011047
- 33	.4876	.2575	.0208	.7659	.0007294
- 41	.5295	.0774	.0208	.6277	.0005978
- 42	.4156	.0605	.0208	.4969	.0004732
- 43					
- 51	1.3484	.1982		1.5466	.0014730
- 52	2.2485	.3300	—	2.5785	.0024557
- 61	2.2034	.3227	—	2.5261	.0024058
- 62	.2646	.0387	-	.3033	.0002889
TOTAL	13.1155	2.9591	2.8721	18.4961	

TABLE 4.3.14

WEIGHTED VESSEL COUNT AND DENSITY

(Fishing Vessels) - 1995

VE SS E L C O U N T

Stat Area	Trawlers	Catcher/ Processors	Crabbers	Total	Vess Dens
302 - 25 & 30	.1087	.0152	.7492	.6160	. 00c
350 - 41	1.6673	.2437	1.1447	3.0557	.002
- 51		——	.4371	.4371	. 00c
- 61	6.2096	.9116	.0208	7.1420	. 006
351 - 22	.4034	.7506	.0833	1.2373	.001
- 23		.8398	.3122	1.1520	.001
- 32	1.7231	.2524	.0624	2.0379	.001
- 33	.8777	.4634	.0208	1.3619	.001
- 41	.9531	.1393	.0208	1.1132	.001
- 42	.7480	.1088	.0208	.8776	. 00(
- 43	——	——		——	
- 51	2.4271	.3568		2.7839	.00:
- 52	4.0474	.5940		4.6414	,001
- 61	3.9661	.5809		4.5470	.001
- 62	.4763	.0690		.5459	. 00(
TOTAL	23.6078	5.3261	2.8721	31.5489	

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TABLE 4.3.15

WEIGHTED VESSEL COUNT AND DENSITY

(Fishing Vessels) - 2000

VESSEL COUNT

Stat Area	Trawlers	Catcher/ Processors	Crabbers	Total	Vessel Density
302 - 25 & 30	.1368	.0192	.7492	.9052	.0008621
350- 41	2.0996	.3068	1.1447	3.5511	.0033820
- 51			.4371	.437"1	.0004163
- 61	7.8195	1.1480	.0208	8.9883	.0085603
351 - 22	.5079	.9452	.0833	1.5364	.0014632
- 23		1.0575	.3122	1.3697	.0013045
- 32	2.1699	.3178	.0624	2.5501	.0024287
- 33	1.1053	.5835	.0208	1.7096	.0016282
- 41	1.2002	.1754	.0208	1.3964	.0013299
- 42	.9419	.1370	.0108	1.0997	.0010473
- 43					
- 51	3.0563	.4493	—	3.5056	.0033387
- 52	5.0967	.7480		5.8447	.0055664
- 61	4.9944	.7315		5.7259	.0054532
- 62	.5998	.0877		.6875	.0006548
TOTAL	29.7283	6.7069	2.8721	39.3073	

TABLE 4.3.16

FISHING MILES AND POTENTIAL COLLISIONS
AMONG FISHING VESSELS - 2000

F I SH I NG M I L E S

Stat Area	Trawlers	Catcher/ Processors	Crabbers	Total	Potential Collisions
302 - 25 & 30	4,495	630	19,690	24,815	.285
350 - 41	68,972	10,080	30,083	109,135	4.909
- 51	——	——	11,486	11,486	.064
- 61	256,871	37,710	547	295,128	33.601
351 - 22	16,686	31,051	2,188	49,925	.972
- 23	——	34,739	8,204	42,943	.745
- 32	71,280	10,439	1,641	83,360	2.693
- 33	36,308	19,169	547	56,024	1.213
- 41	39,426	5,761	547	45,734	.809
- 42	30,942	4,500	547	35,989	.501
- 43		——		——	——
- 51	100,400	14,760		115,160	5.114
- 52	167,427	24,571		191,998	14.214
- 61	164,066	24,029		188,095	13.642
- 62	19,703	2,880		22,538	.196
TOTAL	976,576	220,319	75,480	1,272,330	78.958

TABLE 4.3.17

FISHING MILES AND POTENTIAL COLLISIONS
AMONG FISHING VESSELS - 1985

	FISHING MILES				
Stat Area	Trawlers	Catcher/ Processors	Crabbers	Total	Potential Collisions
302 - 25 & 30	530	75	19,690	20,295	.181
350 - 41	8,114	1,186	30,083	39,383	.653
- 51	.	—	11,486	11,486	.058
- 61	30,220	4,436	547	35,203	.440
351 - 22	1,963	3,653	2,188	7,804	.023
- 23	—	4,087	8,204	12,291	.062
- 32	8,386	1,228	1,641	11,255	.046
- 33	4,273	2,255	547	7,075	.018
- 41	4,638	679	547	5,864	.012
- 42	3,641	530	547	4,718	.008
- 43	—	—	—	—	—
- 51	11,812	1,737	—	13,549	.065
- 52	19,698	2,890	—	22,588	.180
- 61	19,302"	2,827	—	22,129	.173
- 62	2,318	339	—	2,657	.002
TOTAL	114,895	25,922	75,480	216,297	1.921

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TABLE 4.3.18

FISHING MILES AND POTENTIAL COLLISIONS
AMONG FISHING VESSELS - 1990

	FISHING MILES				
Stat Area	Trawlers	Catcher/ Processors	Crabbers	Total	Potential Collisions
302 - 25 & 30	1,985	279	19,690	21,954	.219
350 - 41	30,429	4,447	30,083	64,959	1.747
- 51	—	—	11,486	11,486	.061
- 61	113,325	16,637	547	130,509	6.327
351 - 22	7,361	13,699	2,188	23,248	.205
- 23	—	15,325	8,204	23,529	.223
- 32	31,448	4,606	1,641	37,695	.533
- 33	16,019	8,458	547	25,024	.234
- 41	17,393	2,542	547	20,482	.157
- 42	13,651	1,986	547	16,184	.098
- 43	—	—	—	—	—
- 51	44,294	6,511	—	50,805	.958
- 52	73,864	10,839	—	84,703	2.662
- 61	72,382	10,601	—	82,983	2.555
- 62	8,692	1,272	—	9,964	.037
TOTAL	430,843	97,202	75,480	603,525	16.016

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TABLE 4.3.19

FISHING MILES AND POTENTIAL COLLISIONS

AMONG FISHING VESSELS - 1995

F I S H I NG M I L E S

Stat Area	Trawlers	Catcher/ Processors	Crabbers	Tota 1	Potential Collisions
302 - 25 & 30	3,570	501	19,690	23,761	.259
350 - 41	54,772	8,004	30,083	92,859	3.540
- 51	—	—	11,486	11,486	.063
- 61	203,986	29,947	547	234,48o	20.893
351 - 22	13,251	24,658	2,188	40,097	.619
- 23	—	27,587	8,2o4	35,791	.514
- 32	56,605	8,291	1,641	66,537	1.692
- 33	28,832	15,222	547	44,601	.758
- 41	31,309	4,575	547	36,431	.506
- 42	24,572	3,574	547	28,693	.314
- 43	—	—	—	—	—
- 51	79,730	11,721	—	91,451	3.176
- 52	132,957	19,513	—	152,470	8.829
- 61	130,288	19,082	—	149,370	‘8.474
- 62	1s,646	2,287	—	17,933	.122
TOTAL	775,518	174,962	7s,480	1,025,960	49.579

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TABLE 4.3.20

OCS VESSEL TRIPS, DENSITY AND POTENTIAL COLLISIONS - 1990, 1995 & 2000

Stat Area	Distance One Way	Vessel Trips	Vessel Miles	Vessel Density
302 - 25 & 30	30	6,864	205,920	.0022387
350 - 41	10	1,248	12,480	.0001357
- 51	20	2,496	49,920	.0005427
- 61	15	2,496	37,440	.0004070
351 - 22	8	——	——	——
- 23	8	624	4,992	.0000543
- 32	25	1,872	46,800	.0005088
33	20	624	12,480	.0001357
- 41	15	624	9,360	.0001018
- 42	30	2,496	74,880	.0008141
- 43	8	——	——	
- 51	30	3,744	112,320	.0012211
- 52	30	2,496	74,880	.0008141
- 61	35	6,864	240,240	.0026119
- 62	35	1,248	43,680	.0004749

TABLE 4.3.21

OCS VESSEL TRIPS, DENSITY AND POTENTIAL .COLLISIONS - 1985

Stat Area	Distance One Way	Vessel Trips	Vessel Miles	Vessel Density
302 - 25 & 30	30	3,744	112,320	.0012211
350 - 41	10	1,248	12,480	.0001357
- 51	20	1,248	24,960	.0002714
- 61	15	624	9,36o	.0001018
351 - 22	8	624	4,992	.0000543
- 23	8	—	—	—
- 32	2 5	1,248	31,200	.0003392
- 33	20			—
- 41	15	624	9,36o	.0001018
- 42	3,0	1,248	37,440	.0004070
- 43	8			—
- 51	30	3,120	93,600	.0010176
- 52	30	1,248	37,440	.0004070
- 61	35	3,744	131,040	.0014247
- 62	3 5			

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TABLE 4.3.22

ESTIMATED COLLISIONS AND COLLISION SITUATIONS

INVOLVING VESSELS IN THE ACT OF FISHING - 2000

Stat Area	Potential Collisions			Collis
	Non-OCS Case; Fishing Fleet Only,	Mean OCS Scenario; Composite Fishing & OCS Fleet	Change Due to Ocs	
302 - 25 & 30	0.285	9.516	9.231	
250 - 41	4.909	5.690	0.781	
- 51	0.064	0.783	0.719	
- 61	33.601	39.664	6.063	
351 - 22	—	—	—	
- 23	0.745	0.866	0.121	
- 32	2.693	5.085	2,392	
- 33	1.213	1.334	0.121	
- 41	0.809	1.049	0.240	
- 42	0.501	2.745	2.244	
- 43	—	—	.	
- 51	5.114	13.796	8.682	
- 52	14.214	22.647	8.433	
- 61	13.642	45.946	32.304	
- 62	0.196	0.995	0.799	
Sub Total [2]	63.863	93.659	29.796	5.304
Sub Total [3]	14.123	56.457	42.334	6.308
GRAND TOTAL	77.986	150.116	72.130	6.838

[1] Equals Total Potential Collisions Times The Conditional Probability of a Collision Given a Collision Situation $P(C/C_o)$

$P(C/C_o)$ = 1.78 x 10-5 except for statistical areas 351-61, 351-62, 302-25 & 30where $P(C/C_o)$ = 1.49X 10^{-4}

[2] All Statistical Areas Except 351-61, 351-62, 302-25 & 30

[3] Statistical Areas 351-61, 351-62, 302-25 & 30

fishery and OCS vessels for the years 1985, 1990, 1995 and 2000. Additional details may be found in Tables 4.3.24 to 4.3.26.

Combining the results of the free gas analogy and the parallel path model leads to an overall estimate of number of collisions. For the year 2000 results are displayed in Table 4.3.27. Although there would be as many as 412 potential collisions (or collision situations) per year for the mean OCS scenario, based on the collision experience both in the Pacific and the English Channel, these situations would not result in actual collisions each year. That is, in the Pacific it is estimated that the probability of a collision situation resulting in an actual collision is 1.78 x 10^{-5}. This means that on average, for every collision that occurs, 56,180 potential collisions are avoided. The corresponding figure for the Strait of Dover in the English Channel is 6,700 avoided collisions for each collision that occurs. Therefore, based on the avoidance experience in both regions, 412 potential collisions are for the most part likely to be avoided. In fact, on an annual basis only 0.05 collisions may be expected among all vessels. This is equivalent to one collision every 20 years.

In terms of increased likelihood of a collision from the non-OCS to the OCS case, introduction of OCS activity seems to make a difference. For example, in the year 2000, 163 potential collisions and 0.014 actual collisions are estimated for the non-OCS case. The corresponding estimates for the mean OCS case are 412 potential collisions and 0.045 collisions. There is therefore an increase of 249 potential collisions. However, although this contributes to an increase of the likelihood of an actual collision, the overall estimate of collisions is increased by only 0.031 for a total of 0.045 collisions on an annual basis.

An attempt was made to interpret this measure of collisions in terms of impact on commercial fisheries. As discussed earlier the change from the non-OCS to the OCS case is estimated to result in an increase of 0.031 collisions per year. This is roughly equivalent to a collision every 32 years. If such a collision occurred the value lost can be measured in terms of damage to the vessels involved, or in terms of vessel value where a vessel sinks as a result. Examination of casualty statistics in U.S. waters (see Proceedings of the Marine Safety Council) shows that for the 1970-1978 period an average of 1,367 vessels were involved in a total of 472 collisions each year. Thus an average 2.9 (practically 3) vessels were involved in each collision (see Table 4.3.28). Assuming that collisions in the St. George

TABLE 4.3.23

SUMMARY OF ESTIMATED COLLISIONS'
AND COLLISION SITUATIONS INVOLVING VESSELS
IN THE ACT OF FISHING

	Potential Collisions			
	Non-OCS Case; Fishing Fleet Only	Mean OCS Scenario; Composite Fishing & OCS Fleet	Change Due to OCS	Estimate Collisio
1985				
Sub Total [2]	1.485	3,886	2.401	4.270 x
Sub Total [3]	0.356	7.021	6.665	9.931 x
GRAND TOTAL	1.841	10.907	9.066	1.036 x
1990				
Sub Total [2]	2.811	28.511	15.511	2.761 x
Sub Total [3]	13.000	30.086	27.275	4.064 x
GRAND TOTAL	15.811	58.597	42.786	4.340 x
1995				
Sub Total [2]	40.285	64.839	24.554	4.371 x
Sub Total [3]	8.855	45.474	36.619	s.456 X
GRAND TOTAL	49.140	110.313	61.173	5.893 X
2000				
Sub Total [2]	63.863	93.659	29.796	5.304 x
Sub Total [3]	14.123	56.457	42.334	6.3o8 x
GRAND TOTAL	77.986	150.116	72.130	6.838 x

[1] Equals Total Potential Collisions Times The Conditional Probability of a Collision Given a Collision Situation $P(C/C_o)$

$P(C/C_o)$ = 1.78 x 10-5 except for statistical areas 351-61, 351-62, 302-25 & 30where $P(C/C_o)$ = 1.49 x 10^{-4}

[2] All Statistical Areas Except 351-61, 351-62, 302-25 & 30

[3] Statistical Areas 351-61, 351-62, 302-25 & 30

TABLE 4.3.24

ESTIMATED COLLISIONS AND COLLISION SITUATIONS INVOLVING VESSELS IN THE ACT OF FISHING - 1985

Stat Area	Potential Collisions: Non-OCS Case; Fishing Fleet Only	Potential Collisions: Mean OCS Scenario; Composite Fishing & OCS Fleet	Potential Collisions: Change Due to OCS	Collision[1]
302 - 25 & 30	0.181	3.158	2.977	
250 - 41	0.653	0.946	0.293	
- 51	0.058	0.306	0.248	
- 61	0.440	0.612	0.172	
351 - 22	0.023	0.046	0.023	
- 23	—	—	—	
- 32	0.046	0.351	0.305	
- 33	—	—	—	
- 41	0.012	0.051	0.039	
- 42	0.008	0.282	0.274	
- 43	—	—	—	
- 51	0.065	0.514	0.449	
- 52	0.180	0.778	0.598	
- 61	0.173	3.861	3.688	
- 62	0.002	0.002	—	
Sub Total[2]	1.485	3.886	2.401	4.27ox 10-5
Sub Total[3]	0.356	7.021	6.665	9.931×10^{-4}
GRAND TOTAL	1.841	10.907	9.066	1.036 x 10-3

[1] Equals Total Potential Collisions Times The Conditional Probability of a Collision Given a Collision Situation $P(C/C_O)$

$P(C/C_O)$ = 1.78 x 10-5 except for statistical areas

351-61, 351-62, 302-25 & 30 where $P(C/C_O) = 1.49 \times 10^{-4}$

[2] All Statistical Areas Except 351-61, 351-62, 302-25 & 30

[3] Statistical Areas 351-61, 351-62, 302-25 & 30

TABLE 4.3.25

ESTIMATED COLLIS1ONS AND COLLISION SITUATIONS

INVOLVING VESSELS IN THE ACT OF FISHING - 1990

Stat Area	Potential Collisions			Collisi
	Non-OCS Case; Fishing Fleet Only	Mean OCS Scenario; Composite Fishing & OCS Fleet	Change Due to Ocs	
302 - 25 & 30	0.219	8.802	8.583	
250 - 41	1.747	2.217	0.470	
- 51	0.061	0.754	0.693	
- 61	6.327	9.018	2.691	
351 - 22	—	—	—	
- 23	0.223	0.291	0.068	
- 32	0.533	1.745	1.212	
- 33	0.234	0.415	0.181	
- 41	0.157	0.267	0.110	
- 42	0.098	1.500	1.402	
- 43	—	—	—	
- 51	0.958	5.625	4.667	
- 52	2.662	6.679	4.017	
- 61	2.555	20.760	18.205	
- 62	0.037	0.524	0.487	
Sub Total [2]	2.811	28.511	15.511	2.761
Sub Total [3]	13.000	30.086	27.275	4.064
GRAND TOTAL	15.811	58.597	42.786	4.340

[1] Equals Total Potential Collisions Times The Conditional Probability of a Collision Given a Collision Situation $P(C/C_o)$

$P(C/C_o)$ = 1.78 x 10-5 except for statistical areas

351-61, 351-62, 302-25 & 30 where $P(C/C_o) = 1.49 \times 10^{-4}$

[2] All Statistical Areas Except 351-61, 351-62, 302-25 & 30

[3] Statistical Areas 351-61, 351-62, 302-25 & 30

TABLE 4.3.26

ESTIMATED COLLISIONS AND COLLISION SITUATIONS
INVOLVING VESSELS IN THE ACT OF FISHING - 1995

Stat Area	Potential Collisions			Collision[1]
	Non-OCS Case; Fishing Fleet Only	Mean OCS Scenario; Composite Fishing & OCS Fleet	Change Due to OCS	
302 - 25 & 30	0.259	9.238	8.979	
250 - 41	3.540	4.203	0.663	
- 51	0.063	0.771	0.708	
- 61	20.893	25.679	4.786	
351 - 22	—	—	—	
- 23	0.514	0.615	0.101	
- 32	1.692	3.637	1.945	
- 33	0.758	1.071	0.313	
- 41	0.506	0.697	0.191	
- 42	0.314	2.239	1.925	
- 43	—	—	—	
- 51	3.176	10.337	7.161	
- 52	8.829	15.590	6.761	
- 61	8.474	35.433	26.959	
- 62	0.122	0.803	0.681	
Sub Total[2]	40.285	64.839	24.554	4.371×10^{-4}
Sub Total[3]	8.855	45.474	36.619	5,456 X 10-3
GRAND TOTAL	49.140	110.313	61.173	5.893 x 10-3

[1] Equals Total Potential Collisions Times The Conditional Probability of a Collision Given a Collision Situation $P(C/C_o)$

$P(C/C_o) = 1.78 \times 10^{-5}$ except for statistical areas 3s1-61, 351-62, 302-25 & 30 where $P(C/C_o) = 1.49 \times 10^{-4}$

[2] All Statistical Areas Except 3s1-61, 351-62, 302-25 & 30

[3] Statistical Areas 351-61, 3s1-62, 302-25 & 30

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TABLE 4.3.27

SUMMARY OF ESTIMATED COLLISIONS[1] AND COLLISION SITUATIONS FOR ALL VESSEL MOVEMENTS

		Potential Collisions		
	Non-OCS Case; Fishing Fleet Only	Mean OCS Scenario; Composite Fishing & OCS Fleet	Change Due to OCS	Estimat Collisi
1985				
Sub Total[2]	3.701	10.642	6.941	1.235
Sub Total[3]	15.925	59.366	43.441	6.473
GRAND TOTAL	19.626	70.008	50.382	6.597
1990				
Sub Total[2]	6.938	45.513	28.386	5.053
Sub Total[3]	45,065	177.613	142.737	2.126
GRAND TOTAL	52.003	223.126	171.123	2.177
1995				
Sub Total[2]	47.324	87.828	40.504	7.210
Sub Total[3]	66.123	245.029	178.906	2.666
GRAND TOTAL	113.447	332.857	219.410	2.737
2000				
Sub Total[2]	73.271	121.328	48.057	8.554
Sub Total[3]	89.777	290.730	200.953	2.994
GRAND TOTAL	163.048	412.058	249.010	3.080

[1] Equals Total Potential Collisions Times The Conditional Probability of a Collision Given a Collision Situation $P(C/C_o)$

$P(C/C_o) = 1.78 \times 10^{-5}$ except for statistical areas 351-61, 351-62, 302-25 & 30where $P(C/C_o) = 1.49 \times 10^{-4}$

[2] All Statistical Areas Except 351-61, 351-62, 302-25 & 30

[3] Statistical Areas 351-61, 351-62, 302-25 & 30

TABLE 4.3.28

VESSEL COLLISIONS WHILE PASSING; OVERTAKING; ANCHORED; DOCKING; LOADING; OR IN FOG --

PACIFIC OCEAN AND INLAND PACIFIC

	70/71	72/73	73/74	74/75	75/76	76/77	77/78	TOTAL	AVERAGE
No. Casualties (Collisions), All US Waters	406	434	465	497	446	490	563	3,301	472
No. Vessels Involved in Collisions, All US Waters	1,197	1,219	1,373	1,449	1,340	1,407	1,584	9,569	1,367
Inland Pacific Collisions	38	27	45	53	33	50	58	304	43
Ocean Pacific Collisions	13	15	20	10	14	22	36	130	19
Total Pacific Collisions	51	42	65	63	47	72	94	434	62
No. Collisions Involving Deaths or Injuries, All US Waters	26	16	24	29	24	30	31	180	26
No. Deaths, All US Waters	19	7	26	60	21	89	23	245	35
No. Injured, All US Waters	29	17	44	31	29	52	32	234	33
Damage & Vessel Loss Value ($1,000): (Current)	9,735	17,740	17,970	35,955	15,550	16,268	23,284		

TABLE 4.3.28 (Cent'd)

VESSEL COLLISIONS WHILE PASSING; OVERTAKING; ANCHORED; DOCKING; LOADING; OR IN FOG --

PACIFIC OCEAN AND INLAND PACIFIC (Cent'd)

	70/71	72/73	73/74	74/75	75/76	76/77	77/78	TOTAL	AVERAGE
(Constant 1980 Dollars)	19,793	32,921	30,035	55,047	22,502	22,119	29,412	211,829	30,261
No. of Vessels Lost :									
Inspected	1	4	5	2	3	0	4	19	3
Total All Vessel s	32	31	23	19	28	23	21	177	25

2&

Source: Annual Statistical Summary of Casualties to Commercial Vessels, Proceedings of the Marine Safety Council.

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TABLE 4.3.29

ESTIMATED POTENTIAL COLLISIONS IN

AND AROUND DUTCH HARBOR

(Statistical Areas 302-25 & 30)

Year	Assigned Division	Length Crossed	Channel Width	Potential Collisions: Non-OCS Case; Fishing Fleet Only	Potential Collisions: Mean OCS Scenario; Composite Fishing & OCS Fleet	Potential Collisions: Change Due to Ocs
985	I	1	1	3.206	10.162	6.956
	II	3	4	2.405	7.622	5.217
	III	3	5	1.924	6.097	4.173
	Iv	23	15	4.916	15.581	10.665
	Total			12.451	39.462	27.011
990	I	1	1	6.221	27.642	21.421
	II	3	4	4.666	20.731	16.065
	III	3	5	3.733	16.586	12.853
	Iv	23	15	9.539	42.383	32.844
	Total			24.159	107.342	83.183
995	I	1	1	10.557	36.538	25.981
	II	3	4	7.918	27.403	19.485
	III	3	5	6.334	21.923	15.589
	Iv	23	15	16.187	56.024	39.837
	Total			40.996	141.888	100.892
2000	I	1	1	13.697	42.480	28.783
	II	3	4	10.272	31.860	21.588
	III	3	5	8.218	25.488	17.270
	Iv	23	15	21.001	65.136	44.135
	Total			53.188	164.964	111.776

Notes: 1) Utilizes vessel movements in Tables 4.3.2 and 4.3.3.

2) Vessel movements through statistical areas 302-25 & 30 include 396 movements of Crab vessels estimated to deliver catches from south of the Aleutians.

3) It is assumed that there is one tanker movement a day in and around Dutch Harbor for a total of 365 tanker movements each year.

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Basin would include a similar number of vessels and since estimates of number of vessels show that most will be fishing vessels, it is reasonable to suppose that two out of every three vessels in a collision will likely be fishing vessels. If we further suppose that one of these vessels will be a 250' groundfish catcher/processor and the other a trawler, and that one will sink (an unlikely event), then a ceiling can be estimated for a loss of value. Vessel construction companies in the Pacific Northwest estimate that $15-$20 million is required for a single catcher/processor while the cost of crabbers and trawlers in the 80' to 120' OAL range is estimated at $1.0 to 2.5 million when new. The fleet of fishing vessels which is projected to operate in the lease sale area and vicinity will contain about 9 trawlers or crabbers for every catcher/processor. Taking this vessel composition into consideration, the weighted average range of loss due to a sinking vessel would be $3.0 to 3.5 million per collision.

The annual expectation of loss to the fisheries, however, can only be estimated by realizing that the incremental impact of OCS will cause such a collision only once in 32 years. In the event that this collision takes place, the equivalent annual loss is estimated to be $94,000 to $109,000. Obviously these estimates depend on the assumption of a sinking or complete loss of at least one vessel. More probable will be situations in which both vessels are only damaged. In this event losses should be much lower.

The annual statistical summaries of casualty to commercial vessels as contained in the 'Proceedings of the Marine Safety Council" show the number of vessels totally lost due to collisions. This averaged 25 vessels per year (of which 23 were uninspected) during the 1970-1978 period. This shows that less than 2% (25 out of 1367) of vessels that collide in the manner envisioned for casualties in the St. George Basin actually sink or are damaged beyond repair. Most of the vessels that sink (92%) are usually uninspected, a phenomenon that generally applies to smaller vessels of under 300 gross tons and not carrying passengers for hire. Therefore we can assume that the probability of losing a larger fishing vessel such as a catcher/processor after a collision is negligible if such a vessel has been inspected and found to be seaworthy.

A more realistic way to arrive at value lost is suggested by the following approach:

(a) During the 1970-1978 period vessel value losses (in 1980 dollars), including damage and total loss, averaged $22,137 per vessel that was involved in a collision while passing, overtaking, docking or in fog (See Table 4.3.28).

(b) By assuming that each fishing vessel involved in a collision will on average result in a loss of $22,137, total loss to fishing vessels in one collision is estimated at $44,274.

(c) As the incremental collision due to introduction of OCS activities is estimated to occur but once in 32 years, annual losses to fisheries can be inferred to be on the order of $1,400. As stated, this situation reflects the average of a series of occurrences in U.S. waters and is therefore more likely than the case in which one assumes as the norm the total loss of one or more vessel for each collision.

4.3.3 Collision Impacts in the North Aleution Shelf

Potential for collision is heightened by an increase in the amount of traffic. The level of fishing activity and OCS activity in the North Aleutian Shelf will tend to be the same or lower than in the St. George Basin. This in turn will tend to determine a similar or lower level of OCS supply vessel and commercial fisheries vessel traffic. The interaction between the OCS and fishery vessels should not exceed that estimated for the St. George Basin. It is assumed that the St. George OCS activities will have a land base at Dutch Harbor. The North Aleutian OCS activity will also use Dutch Harbor for supply vessels and other activities but will use Cold Bay for an air support base. This means that there will be at the maximum an increment of 5,616 vessel trips in and out of Dutch Harbor in the year 2000. This assumes 9 platforms, 2 vessels per platform each making 13 round trips a month. This is less than the 6,864 OCS vessel movements projected for vessels moving in and out of Dutch Harbor in support of petroleum activities in the St. George Basin. Thus, the individual collision impacts of each lease sale would tend to be similar. For the St. George Basin the incremental OCS impact is estimated at one collision in 32 years over and above the scenario for the base case. The combined incremental impact of both the St. George and North Aleutian Shelf OCS vessel traffic would approximate roughly one collision in 15 years.

4*4 RECREATIONAL IMPACTS

4 .4.1 Model of Determining Recreation enera ted by OCS

The model selected for determining recreational fishing demand by OCS activities in the St. George Basin relates population to angler days of fishing effort. This is translated into estimated effect on the resource and impacts on commercial fisheries using catch per unit effort statistics.

The principle sources of information for the model are the *Statewide Harvest study* published by the Sport Fish Division Of ADF&G, and ~~The Alaska Statistical Review 1980~~ published by the Division of Economic Enterprise of the Alaska Department of Commerce and Economic Development.

The angler days to population relationship varies with circumstances in different locations in Alaska so three places were selected to which data from the sources above could be matched. These locations are believed to reasonably represent the bounds of recreational fishing activity that might be generated by a population increment introduced by OCS activities in the study area.

The three places selected were Prince of Wales Island in Southeastern Alaska, Kodiak, and Seward Peninsula/Norton Sound. These provide a range of recreational fisheries characteristics and more significantly, weather conditions. The relationships are shown in Table 4.4.1.

Data supplied by Alaska Consultants Inc. (In Tech. Rep. 59) shows projected population estimates for the City of Unalaska for both the base case without OCS activities and the mean case scenario in the presence of OCS. According to these projections the base case population of the city will grow from a 1980 estimate of 1,288 to 13,221 people in the year 2000; a growth of 11,933 people. A very significant portion of this growth will be accounted for by fisheries related employment and their dependents as evidenced by comparing fishery employment with total employment of all the sectors. For example, fishery employment (both fishing and processing) will grow from 1,316 in 1980 to 6,5oo in the year 2000; at the same time total employment will grow from 1,600 to 8,967.

In the mean case scenario, population for the City of Unalaska would grow from 1,288 in 1980 to 14,117 in the year 2000. This represents growth of 12,829 or only 896 over the

TABLE 4.4.1

POPULATION AND RECREATIONAL FISHING EFFORT FOR SELECTED PLACES .

	1978 Population	1978 Angler Days	Angler Days Per Person
Prince of Wales	2,600	16,478	6.3
Kodiak	9,600	44,5o2	4.6
Seward Peninsula/ Norton Sound	7,200[1]	8,379	1.2

[1] Nome Census Division

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base scenario. Therefore in the case where both OCS and fishery activities grow together, OCS activities of the St. George Basin will account for about 7% of the population growth. The OCS impact on commercial fisheries as exerted by population participation in recreational fishing should therefore be proportionate to this growth. Considering only this net population increase an estimate of angler effort due to the presence of OCS may be estimated. Using the data from Table 4.4.1, this would suggest an increase in angler days of fishing effort ranging from 1,075 to 5,645. There is no base data for Dutch Harbor/Unalaska sport fishing now, so the change in effort cannot be made area-specific. This increase compares with statewide effort estimates of 1,197,590 and 1,285,063 angler days for the 1977 and 1978 seasons respectfully. The total city effort of 28,234 angler days estimated for the mean scenario in the year 2000 is about 2.3% of current State total participation.

4.4.2 Assessment of Recreational Impact

The present commercial fisheries associated with the City of Unalaska are very large and important. They are based mainly on king and Tanner crab resources of the Bering Sea and Gulf of Alaska. In 1979, these two species accounted for over 98% of the value of landings paid to fishermen there, which totaled about $63.5 million. Shrimp accounts for about half of the remainder. The only species landed in which there is some recreational interest and therefore, potential impact, are halibut and pink salmon.

Recreational landings of any species in this area have not been identified or reported in ADF&G statistics. According to Mr. Low, the Public Safety Officer in Dutch Harbor, recreational salmon catches usually average less than 6,500 fish. Catches for pink salmon, the most abundant, are usually less than 5,000. Two other species (coho and sockeye) account for about 1,000 and 500 fish, respectively. Apparently there have been no sport fishing reporting requirements in the area.

Current sport fishing for halibut runs from March through September. Various groundfish species, especially cod and various rockfish, may be caught incidental to the halibut. It is reported that the catch rates for halibut are very low; something which is likely to have a dampening effect on rates of recreational participation. From this it is reasonable to assume that per person fishing effort by future populations will tend to be in the low range of activity. This view is reinforced by the weather restrictions that will limit the range and availability of marine fishing opportunities. According to Table 4.4.1 (referred to earlier), the lowest participation is 1.2 angler days per person. Because of the preceding discussion, participation in the study area is not expected to be ❑uch higher than this if at all.

If we then select two angler days per person as the area's approximate recreational fishing effort, this would, in the year 2000, create a base effort of 26,442 angler days and an OCS increment of 1,792 days. It should be expected that the harvest from this effort will be from a variety of species. Salmon would be the most desired, but the recreationally favored species of king and coho do not appear to be available usually in the area. The kings seem to be nonexistent while coho are available in token numbers. Catches of halibut should be expected. Probably more of the catch will be of bottomfish species, such as rockfish, cod, and flounder, that are not now of commercial significance in the area.

These bottomfish species form the basis of recreational fisheries in many other parts of the U.S., but the CPUE data for those places are not regarded as being applicable to the waters around Dutch Harbor. Alaska CPUE statistics are also not applicable because the target species are not those available to the recreational fishery in this area.

But this difficulty does not avoid arriving at the conclusion that an expanded local recreational fishery due to OCS will have little or no impact on commercial allocation and activities. This conclusion is supported by the consideration of species interest and the size of the OCS-related effort in comparison to total projected effort. The local OCS-related sport fisherman is simply not going to be harvesting enough crab, shrimp or bottomfish for there to be a significant impact on either the currently important commercial fishing or the fisheries for the vast bottomfish species. Some shrimp and king crab are currently taken for subsistence and this activity will probably continue at current levels. Usually there is a limit of 6 crab per fisherman per day, and no limit for shrimp.

Catch Rates:

<u>Salmon</u>

There is no data on sport fishing catch rates for Dutch Harbor. For salmon, however, as outlined above, it would seem that a total annual catch of 6,5oo is currently an upper end estimate. The total effort expended based on the 1980 population of 1,288 and two angler days per unit of population would be 2,576. Area biologists and other residents expressed the opinion that perhaps as much as 75% of current recreational effort is directed at salmon. This means that 1,932 angler days are necessary to harvest a maximum of 6,500 salmon at about 3 fish per angler day.

At this catch rate and an effort of 1,344 angler days (75% of 1,792) the incremental catch of salmon due to OCS population is estimated at 4,032 fish in the year 2000. This is very much subject to availability. According to the current sport salmon catch estimates for the area, the catch composition would be roughly 75% pink salmon, 15% coho and 10% reds. Assuming average weights per fish of 3 lbs. for pinks, 6 lbs. for coho, and 4.5 lbs. for red, and further assuming a yield rate of 65%, the equivalent product weight is estimated at 9,435 lbs. Assuming a first wholesale price of $5.19 in the year 2000 this product would be worth $48,873 in real 1980 dollars.

Halibut

Some limited data is included in the 1978 Annual Report of the International Pacific Halibut Commission on a special study that year of the charter boat sport fishery in Ketchikan Bay. Three fleets comprised of 9 boats operate from mid-May to mid-September. Two of the fleets are directed toward halibut only and guarantee the catch limit of 2 fish per person. Number of boats in these two fleets is not stated. Catch for the season was 8,500 fish (77,000 lbs., headed and gutted). Average fish size was 9 lbs.

From this information, it is estimated that the average charter boat carries 5 anglers for a season of 111 days, which allows 10% time loss for weather and equipment failures. This converts to 4,995 angler days for the 9 boats and a catch rate of 1.7 fish per day. This is a high rate for halibut sport fishing, which is presumed to be achieved due to quality of the fishing grounds and skipper knowledge on the charter boats.

For Dutch Harbor, it is likely that the CPUE will be much lower, but how much is uncertain. Commercial catch statistics of halibut in area 4 of the International Pacific Halibut Commission show that for each of the five years terminating in 1979 this area accounted for less than 4% of the combined U.S. and Canadian harvest in all areas. Area 4 corresponds to the Bering Sea in which the study area falls. Although no direct inference can be made from this about relative recreational catch rates it is to be expected that where commercial catch rates are lower recreational catches too are likely to be correspondingly unattractive. From a maximum impact standpoint, using 1 fish/angler day seems appropriate. At this catch rate the remainder of the incremental effort would reasonably be directed toward halibut with some excellent chances of landing groundfish such as cod and rockfish as incidental harvest.

For the OCS increment of 1,792 angler days, this mean 448 angler days would be directed on halibut for a catch of 448 fish at a I/day success rate. At an average of 11 lbs. per fish, round weight, this would be 4,928 lbs. of sport caught halibut. This compares to the local commercial landings of 79,312 lbs. in 1979. In the year 2000 this could amount to $33,917 in first wholesale value (1980 dollars). This assumes an average product weight of 9 lbs. per fish and based on historical prices, a real price six times that of other groundfish product for the year 2,000 (i.e. 6 x $1.402/lb.).

This would suggest a possible impact. Most of the halibut caught in the waters on both the Bering Sea and Gulf of Alaska sides of Unalaska Island are not landed' in Dutch Harbor. The favored ports are Kodiak and Seward, where halibut landings were 3.7 and 3.4 million lbs., respectively, in 1978. This is the base to which the potential loss by commercial fisheries of 4,928 lbs. of sport caught halibut should be compared. According to data in IPHC annual reports each U.S. halibut vessel makes an average of 2 to 3 trips each year and an average catch of 5,000 to 6,oOO lbs. for this effort. In 1979, 3,032 vessels were recorded. Thus another perspective of the OCS impact is provided by interpreting the recreational catch as representing displacement of one commercial halibut vessel.

In terms of number of halibut caught, the Alaska sport landings in 1978 were 37,085. The OCS impact would be a potential removal of 448 fish by recreationists.

Bottomfish

The effort directed toward halibut will likely result in incidental catches of bottomfish species available in the area. Catch rates for these may be quite high. They are not covered by catch limits and twenty pounds per angler day would not be unreasonable. This would yield an annual harvest of 8,96o lbs. or $4,400 at first wholesale value. This assumes a real price of $1.402/lb. in 2000 and a 35% yield rate. The estimate of impact (about 4 m. t.) is to be compared with a total potential of 2.0 million metric tons of bottomfish for the Bering Sea and Aleutians region as a whole.

There may be competition generated by recreational activity outside the scope of this analysis. If there is a small boat harbor needed for recreational boats, the space needs and traffic may result in some future conflicts. These are recognized as possible but not quantified for this analysis.

4.4.3 Recreation Impacts of the North Aleutian elf Ocs Activities

It is expected that the majority of OCS-related population resulting from petroleum development in the North Aleutian Shelf will be based at Dutch Harbor, with the exception of some at Cold Bay. The OCS population of the St. George Basin which will be based in Unalaska Bay is estimated at 896 or 7% of projected population growth. The North Aleutian Shelf activities should not be expected to bring in more than this number according to the relative OCS activity levels in the two lease areas. It is estimated that the St. George Basin OCS related populations will cost commercial fisheries about $87,000 by participating in recreational fishing. Accordingly the combined impact of both lease sales should be about twice this figure assuming that angler success remains the same even with increased participation.

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TECHNICAL APPENDICES

TECHNICAL APPENDIXA

TABLE OF CONTENTS

TABLE OF CONTENTS (cent'd)

FOREIGN CATCH - Aleutians (cent'd)

DOMESTIC CATCH

DOMESTIC CATCH (cent'd)

F GURE A-

FOREIGN FISHERY CATCH CONCENTRATION, 1978

BERING SEA AND ALEUTIANS

Approximate Area of Interest for Tract Sales

TABLE A-1
1978 FOREIGN CATCH - POLLOCK - ALL GEAR TYPE
(metric tons)

GRAND TOTAL: 384,166

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	1,527	6		16	486	928	969	1,230						
570	6,065	8	103	1	98	1,143	2,395	2,725	8					
563	8,541	3,704	415	13,310	12,048	8,637	4,663	3,654	467					
560	3,592	3,748	12,661	9,511	11,078	12,449	14,643	15,885	2,876					
553		29	260	22,324	6,962	9,087	16,223	4,151						
550				3,999	38,260	23,511								
543			76	521	3,812	38,086	56,511							
540	31		31		135	312	255							

Tables represent 158° W to 172° W and 54° N to 58° N

ECI

TABLE A-2

1978 FOREIGN CATCH - PACIFIC COD - ALL GEAR TYPE

(metric tons)

GRAND TOTAL: 19,741

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	35			44	77	151	46	13						
570	150	3		8	12	453	280	169						
563	591	59	21	374	517	580	593	291	3					
560	502	583	1,253	1,357	989	562	245	158	23					
553	1	11	30	958	387	357	378	54						
550			6	336	1,998	846								
543				7	208	1,424	2,518							
540			8		17	40	15							

Tables represent 158° W to 172° W and 54° N to 58° N

EC I

TABLE A-3

1978 FOREIGN CATCH - PACIFIC OCEAN PERCH - ALL GEAR TYPE

(metric tons)

GRAND TOTAL: 1,207

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570	22					1								
563	22		2	4	1									
560	49	52	54	133	14	1								
553		1	1	80	1	1								
550				12	41	6								
543				1	20	88	477							
540					6	116	1							

Tables represent 158° W to 172° W and 54° N to 58° N

TABLE A-4
1978 FOREIGN CATCH - ROCKFISH - ALL GEAR TYPE
(metric tons)

GRAND TOTAL: 555

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563	36	1												
56o	148	181	32	6	1									
553		4	4	25	1									
550			1	16	6									
543					10	2	17							
540					9	55								

Note: USSR catch only, may include Pacific ocean perch.

Tables represent 158° W to 172° W and 54° N to 58° N

ECI

TABLE A-5

1978 FOREIGN CATCH - YELLOWFIN SOLE - ALL GEAR TYPE
(metric tons)

GRAND TOTAL: 95,989

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	5			216	14,337	15,651	640	171						
570	68			12	2,179	16,981	11,648	4,596	144					
563	1,305	938	15	649	2,964	5,322	4,217	3,527	113					
560	260	286	55	1,458	2,410	2,258	908	130	77					
553	13	2	36	544	98	122	235	24						
550				136	325	180								
543				1	40	226	461							
540					1	7	1							

Tables represent 158° W to 172° W and 54° N to 58° N

TABLE A-6

1978 FOREIGN CATCH - TURBOT - ALL GEAR TYPE

(metric tons)

GRAND TOTAL: 2,589

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	4			9										
570	33					31								
563	115	9	21	224	69	28	47	12						
560	80	6?	82	127	166	67	41	8						
553		2	6	77	73	68	108	6						
550			1	43	361	170								
543					25	110	282							
540					19	3	1							

Tables represent 158° W to 172° W and 54° N to 58° N

EC I

TABLE A-7

1978 FOREIGN CATCH- GREENLAND TURBOT - ALL GEAR TYPE

(metric tons)

GRAND TOTAL: 6,392

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	41			10										
570	101				3	77								
563	280	34	9	148	154	93	145	33						
560	557	380	225	238	91	141	67	14						
553	3	8	53	489	52	47	52	6						
550			2	194	363	124								
543				3	536	375	382							
540			1	8	476	367	10							

Tables represent 158° W to 172° W and 54° N to 58° N

TABLE A-8

1978 FOREIGN CATCH - OTHER FLATFISHES - ALL GEAR TYPE

(metric tons)

GRAND TOTAL: 49,636

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	118			126	6,042	9,788	562	64						
570	323			17	1,094	6,532	3,759	2,980	26					
563	1,585	1,765	5	440	755	1,364	1,146	457	2					
56o	459	689	145	1,825	2,482	1,049	851	188	18					
553		9	9	440	100	144	195	55						
550				45	303	226								
543				5	44	232	1,104							
540					25	39	5							

Tables represent 1s8° W to 172° W and 54° N to 58° N

ECI

TABLE A-9

1978 FOREIGN CATCH - ATKA MACKEREL - ALL GEAR TYPE

(metric tons)

GRAND TOTAL: 803

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	1													
570														
563	1					1								
56o	3	280	3	120	4									
553			2	26	2		1	1						
550					10	3								
543					8	33	295							
540					1	8								

Tables represent 158° W to 172° W and 54°N to 58° N

TABLE A-10

1978 FOREIGN CATCH - SQUID - ALL GEAR TYPE

(metric tons)

GRAND TOTAL: I ,788

	171	170	169	168	167	I 66	165	164	163	162	161	160	1 59	158
573						2	8							
570	1	1					36	19						
563	41	2	2	2	1	6	6	1						
560	119	“69	39	119	19	2	1							
553	1	1	9	107	5	2	2	2						
550			1	43	82	9								
543				1	65	150	693							
540					62	52	5							

Tables represent 158° W to 172° W and 54° N to 58° N

EC I

TABLE A-11
1978 FOREIGN CATCH - SABLEFISH - ALL GEAR TYPE
(metric tons)

GRAND TOTAL: 603

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563	4	3		1	2	1	2							
56o	23	33	91	64	10	6		5	2					
553		2	14	46	2		1							
550				9	33	3								
543					54	71	82							
540					7	21	11							

Tables represent 158° U to 172° W and 54° N to 58° N

TABLE A-12

1978 FOREIGN CATCH - HERRING - ALL GEAR TYPE

(metric tons)

GRAND TOTAl : 53

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563		1												
560	16	1	10	1										
553				18										
550														
543					5		1							
540														

Tables represent 158° W to 172° W and 54° N to 58° N

EC I

TABLE A-13

1978 FOREIGN CATCH - OTHER FISHES - ALL GEAR TYPE

(metric tons)

GRAND TOTAL: 23,605

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	18	2	1	40	3,649	3,837	81	3						
570	110	3	2	1	342	2,452	1,066	359	11					
563	557	29	5	242	379	526	661	319	6					
560	719	603	272	363	777	455	161	58	1					
553		25	1 8	510	141	147	245	29						
550			1	79	576	324								
543			3	10	154	801	2,154							
540			8	3	132	121	14							

Tables represent 158° W to 172° W and 54° N to 58° N

ECI

(F rst Quarter)

	171	170	169	168	167	166	165	164	163	62	161	160	159	158
573	20													
570						46								
563	273		6	248	699	719								
560	490	70	3	2,836	3,626	1,873								
553		19	52	608	12									
550														
543														
540														

Tables represent 158° W to 172° W and 54° N to 58° N

(Second Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	74		1	3	6	43	158							
570	307					9								
563	1,597	80		777	366	111	236	580	481					
560	7551	1,019	881	3,311	3,102	711	297	4,173	2,799					
553	15		65	1,696	631	152	472.	199						
550			1	149	605	1,726								
543				4	316	264	550							
540					289	185								

1978 FOREIGN CATCH, SEASONALLY
JAPAN - STERN TRAWL

TABLE A-14

Third Quarter

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	33				559	602	1,011	1,245						
570	121				10	1,054	2,129	2,574						
563	609	371		103	665	511	2,901	3,103						
560	1,942	50	12,532	1,415	203	547	6,347	9,448	180					
553			160	3,302	783	715	3,471	1,356						
550			4	2,177	12,075	6,821								
543					2,348	16,969	26, 048							
540				12	274	379	148							

Tables represent 158° W to 172° W and 54° N to 58° N

A-16

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573				144	375	148	143							
570				34	46	1,173	2,882	1,737						
563	2	47	52	639	870	1,414	4,564	1,897						
560	34	97	143	2,101	48	1,077	43							
553			7	1,820	79									
550				1,366	2,334	91								
543				74	1,393	12,767	12,320							
540			3		167	182	6							

1978 FOREIGN CATCH, SEASONALLY
JAPAN - STERN TRAWL

TABLE A-14 (cent'd)

ECI

(First Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560														
553														
550														
543														
540														

Tables represent 158° W to 172° W **and** 54° N to 58° N

(Second Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	220													
570	1,213													
563	1,344	307		3,671	1,676	942	372							
560	106	99		628	1,043	1,071	1,322	161						
553				45	8	17	112	38						
550					11	22								
543						2	22							
540														

1978 FOREIGN CATCH, SEASONALLY
JAPAN - DANISH SEINE
TABLE A-15

ECI

(Third Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	252													
570	520				27									
563			176	3	1,528	1,665	26							
560				69	83	1,556	56		19					
553				108	360	379	303	20						
550					783	519								
543					19	119	93							
540														

Tables represent 158° W to 172° W and 54° N to 58° N

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563					43									
560				8	94									
553				13	54									
550					79	39								
543						24								
540														

1978 FOREIGN CATCH, SEASONALLY
JAPAN - DANISH SEINE
TABLE A-15 (cent'd)

EC I

(First Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563					1,706									
560					650									
553														
550														
543														
540														

Tables represent 158° W to 172° W and 54° N to 58° N

(Second Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	565													
570	2,835													
563	3,755	724		9,588	4,463	2,197	1,257							
560	251	2,710		2,193	5,000	4,248	7,742	1,003						
553				720	568		5,916							
550					581									
543														
540														

1978 FOREIGN CATCH, SEASONALLY
JAPAN - PAIR TRAWL
TABLE A-16

(Third Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	427				3,397	1,412								
570	1,410				257	2,907	748							
563					3,942	3,632								
560				1,676	696	5,047		1,660						
553				4,386	4,411	8,498	7,069	2,711						
550				796	20,380	15,396								
543						1,278								
540														

Tables represent 158° W to 172° W and 54° N to 58° N

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570						3,846	5,575	1,193						
563				127	396	3,506	1,183	1,481						
560					3,423	777								
553				727	661									
550					4,003	558								
543						2,636	624							
540														

1978 FOREIGN CATCH, SEASONALLY
JAPAN - PAIR TRAWL
TABLE A-16 (cent'd)

EC I

(First Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560	19	87	246	64	7									
553				100		129								
550				66	62	1								
543					49	194	372							
540					13	26								

Tables represent 158° W to 172° W and 54° N to 58° N

(Second Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560	13	15	152	40										
553		6	43	19										
550					24									
543					46	85	253							
540					8	33	11							

1978 FOREIGN CATCH, SEASONALLY
JAPAN - LONGLINE
TABLE A-17

ECI

(Third Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560	36	65	282	135										
553			5	140										
550				43	34									
543					48	54	34							
540						1	5							

Tables represent 158° W to 172° W and 54° N to 58° N

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563	62	6												
560	44	187	437	73										
553			8	127	65	8								
550			7	107	53									
543				4	5	372	634							
540			10			1	8							

1978 FOREIGN CATCH, SEASONALLY
JAPAN - LONGLINE

TABLE A-17 (cent'd)

(First Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563	725													
560	561	149												
553														
550														
543														
540														

Tables represent 158° W to 172° W **and** 54° N to 58° N

(Second Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570	1	3												
563	394	6												
560	'709	57												
553	4													
550														
543														
540														

1978 FOREIGN CATCH, SEASONALLY
JAPAN - LANDBASED TRAWL

TABLE A-18

(Third Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563	146	4												
560	725	881												
553		57												
550														
543														
540														

Tables represent 158° W to 172° W and 54° N to 58° N

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573		3												
570	5	12												
563														
560	234	470												
553		13												
550														
543														
540														

1978 FOREIGN CATCH, SEASONALLY
JAPAN - LANDBASED TRAWL

TABLE A-18 (cent'd)

ECI

(First Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	157	4												
570	317													
563	3,938	4,936												
56o	4s6	975												
553														
550														
543												198		
540												63		

Tables represent 158° W to 172° W and 54° N to 58° N

(Second Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560	,													
553														
550														32
543												15	82	4,724
540										6	556	741		20

1978 FOREIGN CATCH, SEASONALLY

USSR - OTTER TRAWL

TABLE A-19

ECI

(Third Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573		7		156	15,767	18,356	128							
570				4	649	447								
563						176								
560	3					5								
553					1	76								
550					10									947
543														7,579
540													517	150

Tables represent 158° W to 172° W and 54° N to 58° N

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573				159	4,491	9,798	863	235						
570					2,740	18,186	7,843	5,342	189					
563					525	1,683	936	1,228	109					
560					12	83	1,116							
553														
550														
543												1		
540											50			

1978 FOREIGN CATCH, SEASONALLY
USSR - OTTER TRAWL
TABLE A-19 (cent'd)

ECI

First Quarter)

	171	170	169	168	167	166	165′	164	163	162	161	160	159	158
573														
570	63													
563	106		50	139										
56o	71			202										
553				1,872										
550				51										
543														22
540														

Tables represent 158° W to 172° W and 54° N to 58° N

Second Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563	219		196	89										
56o	′ 71	18	154	515	36									
553			108	7,044	79		21.							
550				65	805	135								
543				467		718	6,098				5			337
540					15					4	163	361	68	

1978 FOREIGN CATCH, SEASONALLY
KOREA - TRAWLS

TABLE A-20

(Third Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570			105											
563														
560			83											
553				1,820			77							
550				86	237	85								
543			79		147	2,611	15,164							
540	31		37		46	300	140			81	362	976		

Tables represent 158° W to 172° W and 54° N to 58° N

(Fourth Quarter)

	171′	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570	68													
563	,3	65	13											
56o				34										
553				1,094	109									
550					263									
543					613	3,394	2,748							20
5 40					73	28					33	586	33	

1978 FOREIGN CATCH, SEASONALLY

KOREA - TRAWLS

TABLE A-20 (cent'd)

EC I

(First Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560														
553														
550														
543														
540														

Tables represent 158° W to 172° W and 54° N to 58° N

(Second Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560														
553														
550													2	
543														
540													4	

1978 FOREIGN CATCH, SEASONALLY
KOREA - LONGLINE

TABLE A-21

EC I

Third Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560														
553														
550														
543														10
540										6				

Tables represent 158° W to 172° W and 54° N to 58° N

Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560														
553														
550														
543														
540						3				10	4			

1978 FOREIGN CATCH, SEASONALLY
KOREA - LONGLINE
TABLE A-21 (cent'd)

ECI

(First Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	177	4												
570	380					46								
563	5,042	4,936	56	387	2,405	719								
560	1,597	1,281	249	3,102	4,283	1,873								
553		19	52	2,580	12	129								
550				117	62	1								
543					49	194	372					198		22
540					13	26						63		

Tables represent 158° W to 172° W and 54° N to 58° N

(Second Quarter)

	171	170	169	168	167	I 66	165	164	163	162	161	160	159	158
573	859		1	3	6	43	158							
570	4,356	3				9								
563	7,309	1,117	196	14,125	6,505	3,250	1,865	580	481					
560	1,905	3,918	1,187	6,687	9,181	6,030	9,361	5,337	2,799					
553	19	6	216	9,524	I,286	169	6,521	237						
550			1	214	2,026	1,883							2	32
543				471	362	1,069	6,923				5	15	82	5,061
540					312	218	11			10	719	1,102	72	20

1978 FOREIGN CATCH, SEASONALLY
ALL COUNTRIES - ALL GEAR TYPES

TABLE A-22

(Third Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	712	1		156	19.723	20.370	9	,245						
570	[illegible]		105	4	943	4.408	2.877	2.574						
563	755	275	176	106	6.135	5.984	2.927	3.103						
560	2,706	996	12,897	3,295	982	7,155	6,403	11,108	199					
553		57	165	9.756	5.555	9.668	10.920	4.087						
550			4	3.102	33.519	22.821								947
543			79		2.562	21.031	41.339							7,589
540	21		27	12	320	680	293			87	362	976	517	50

Tables represent 158° W to 172° W and 54° N to 58° N

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573		2		303	4.866	9.946	[illegible]	235						
570	73	12		34	2.786	23.205	16.300	8.272	189					
563	77	118	65	766	1.834	6.603	6,683	4,606	109					
560	312	754	580	2.216	3.577	1.937	1.159							
553		13	15	3.781	968	8								
550			7	1.473	6.732	688								
543				78	2.011	119.193	116,326							[illegible]
540			13		240	214	14			10	[illegible]	[illegible]	[illegible]	

1978 FOREIGN CATCH, SEASONALLY
ALL COUNTRIES - ALL GEAR TYPES

TABLE A-22 (cont'd)

≤CI

(First Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	6													
570						6								
563	445		10	337	295	208								
560	762	122	11	4,383	4,216	954								
553		14	69	1,093	22									
550														
543														
540														

Tables represent 158° W to 172° W and 54° N to 58° N

(Second Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	28		8	3	7	90	284							
570	110					12								
563	525	53		318	135	71	121	93	41					
560	484	849	341	1,198	3,267	182	122	376	262					
553	9		153	2,011	204	49	53	28						
550			4	307	551	460								
543				17	617	231	131							
540					871	325								

1978 FOREIGN FISHING EFFORT IN NUMBER OF HOURS, SEASONALLY
JAPAN - STERN TRAWL (Sea Based)

TABLE A-23

(Third Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	12				428	421	247	102						
570	40				16	323	214	215						
563	79	16		41	118	103	276	263						
560	168	9	1,721	339	23	113	562	821	15					
553			40		120	96	329	130						
55C			7	936	2,119	856								
543				777	1,015	2,838	4,070							
540				32	910	713	88							

Tables represent 1s8° W to 172° W and 54° N to 58° N

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573				32	465	171	41							
570				6	58	587	982	511						
563	8	3	13	? 48	177	492	1,242	567						
56o	50	70	334	1,617	123	305	11							
553			26	517	17								1'	
550				155	294	6								
543				30	632	2,026	7,005							
540			6		305	419	26							

978 FOREIGN FISHING EFFORT IN NUMBER OF HOURS, SEASONALLY
JAPAN - STERN TRAWL (Sea Based)

TABLE A-23 (cent'd)

EC I

(First Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563					18									
56o					9									
553														
550														
543														
540														

Tables represent 158° W to 172° W and 54° N to 58° N

(Second Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	85													
570	422													
563	675	144		1,193	530	282	148							
560	5 8	347		263	578	481	78o	130						
553				71	79		672							
550					77									
543														
540														

1978 FOREIGN FISHING EFFORT IN NUMBER OF HOURS, SEASONALLY
JAPAN - PAIR TRAWL (Sea Based)

TABLE A-24

ECI

(Third Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	40				95	43								
570	106				7	64	8							
563					372	334								
560				112	54	402		128						
553				294	305	614	645	213						
550				57	1,468	1,139								
543						92								
540														

Tables represent 158° W to 172° W and 54° N to 58° N

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570						54	79	24						
563				3	12	57	28	32						
560					301	15								
553				46	47									
550					282	49								
543						166	49							
540														

1978 FOREIGN FISHING EFFORT IN NUMBER OF HOURS, SEASONALLY
JAPAN - PAIR TRAWL (Sea Based)
TABLE A-24 (cent'd)

ECI

First Quarter

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560	121	503	1,830	436	40									
553				724		122								
550				414	476	42								
543					411	1,238	2,964							
540					124	248								

Tables represent 158° W to 172° W and 54° N to 58° N

Second Quarter

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560	160	120	1,010	299										
553		30	234	80										
550					126									
543					249	561	2,025							
540					40	196	82							

1978 FOREIGN FISHING EFFORT IN NUMBER OF HOURS, SEASONALLY
JAPAN - LONGLINE (Sea Based)

TABLE A-25

Third Quarter

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560	199	410	1,611	869										
553			40	1,032										
550				190	186									
543					233	358	273							
540					30	77	40							

Tables represent 158° W to 172° W and 54° N to 58° N

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563	208	42												
560	164	804	1,823	323										
553			16	528	366	40								
550			40	443	202									
543				25	89	1,677	1,931							
540			42			32	40							

1978 FOREIGN FISHING EFFORT IN NUMBER OF HOURS, SEASONALLY
JAPAN - LONGLINE (Sea Based)
TABLE A-25 (cent'd)

(First Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563	1,189													
560	869	196												
553														
550														
543														
540														

Tables represent 158° W to 172° W and 54° N to 58° N

(Second Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570	12	6												
563	922	16												
560	1,422	97												
553	7													
550		2												
543														
540														

1978 FOREIGN FISHING EFFORT IN NUMBER OF HOURS, SEASONALLY
JAPAN - STERN TRAWL (Land Based)

TABLE A-26

(Third Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563	307	14												
560	1,831	2,081												
553		94												
550														
543														
540														

Tables represent 158° W to 172° W and 54° N to 58° N

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573		4												
570	7	23												
563	7													
56o	478	834												
553		10												
550														
543														
540														

1978 FOREIGN FISHING EFFORT IN NUMBER OF HOURS, SEASONALLY
JAPAN - STERN TRAWL (Land Based)
TABLE A-26 (cent'd)

EC I

First Quarter

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	37	1												
570	118													
563	845	1,164												
560	92													
553														
550														8
543												22		1,162
540												16		5,

Tables represent 158° W to 172° W and 54° N to 58° N

Second Quarter

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560														
553														
550														235
543												4	18	2,338
540										2	151	223	147	31

1978 FOREIGN FISHING EFFORT IN NUMBER OF HOURS, SEASONALLY
USSR - OTTER TRAWL

TABLE A-27

(Th rd Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573		1		38	3,910	6,006	50							
570				2	195	165								
563						49								
560	1	177				2								
553					1	19								
550					2									
543														
540														

Tables represent 158° W to 172° W and 54° N to 58° N

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573				48	1,216	2,405	221	65						
570					701	5,081	1,918	1,350	59					
563					136	417	219	285	35					
560					4	29	370							
553														
550														
543												1		
540											10			2

1978 FOREIGN FISH NG EFFORT IN NUMBER OF HOURS, SEASONALLY
USSR - OTTER TRAWL
TABLE A-27 (cent'd)

EC I

(First Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570	6													
563	26		7	14										
560	26			76										
553				386										
550				6										8
543														
540														

Tables represent 158° W to 172° W and 54° N to 58° N

(Second Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563	83		43	14										
560	52	10	62	138	10									
553			51	2,175	33		14+							
550				36	224	28								
543				117		147	1.702				6			
540					13					9	49	65	13	50

1978 FOREIGN FISHING EFFORT IN NUMBER OF HOURS, SEASONALLY
KOREA - TRAWL

TABLE A-28

ECI

(Third Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570			29											
563														
560			15											
553				382			27							
550				26	65	17								
543			20		53	631	3,681							
540	12		13		13	75	34			8	35	78		

Tables represent 158° W to 172° W and 54° N to 58° N

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570	4													
563	6	5	?6											
560				31										
553				460	42									
550					52									
543					272	1,249	963							4
540					22	3					9	45	5	

1978 FOREIGN FISHING EFFORT IN NUMBER OF HOURS, SEASONALLY
KOREA - TRAWL

TABLE A-28 (cent'd)

ECI

(First Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560														
553														
550														
543														
540														

Tables represent 158° W to 172° W and 54° N to 58° N

(Second Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560														
553														
550													20	
543														
540													39	

1978 FOREIGN FISHING EFFORT IN NUMBER OF HOURS, SEASONALLY
KOREA - LONGLINE

TABLE A-29

(Third Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
560														
553														
550														
543														35
540										35				

Tables represent 158° W to 172° W and 54° N to 58° N

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573														
570														
563														
56o														
553														
550														
543														
540						15				78	18			

1978 FORE!GN FISH!NG EFFORT IN NUMBER OF HOURS, SEASONALLY
KOREA - LONGLINE

TABLE A-29 (cent’d)

ECI

(First Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	43	1												
570	124	1,164				6								
563	2,505		17	351	313	208								
560	1,870	821	2,037	4,896	4,265	954								
553		14	69	2,203	22	122								
550				420	476	42								8
543					411	1,238	2,964					22		1,170
540					124	248						16		5

Tables represent 158° W to 172° W and 54° N to 58° N

(Second Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	113		8	3	7	90	284							
570	544	6				12								
563	2,205	213	43	1,525	665	353	269	93	41					
560	2,176	1,423	1,413	1,898	3,855	663	902	506	262					
553	16	30	438	4,337	316	49	739.	28						
550		2	4	343	978	488							20	235
543				134	866	939	3,858			2	6	4	18	2,338
540					911	521	82			9	200	288	199	81

1978 FOREIGN FISHING EFFORT IN NUMBER OF HOURS, SEASONALLY
ALL COUNTRIES - ALL GEAR TYPE

TABLE A-30

ECI

(Third Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573	52	1		38	4,433	6,47o	297	102						
570	146		29	2	218	552	222	215						
563	386	30		41	490	486	276	'263						
560	2,199	2,677	3,347	1,320	77	517	562	949	15					
'553		94	80	1,708	425	729	1,001	343						
550			7	1,209	3,84o	2,012								
543			20	777	1,301	3,919	8,o24							35
540	12		13	32	953	865	162			43	35	78		

Tables represent 1s8° W to 172° W and 54° N to 58° N

A-48

(Fourth Quarter)

	171	170	169	168	167	166	165	164	163	162	161	160	159	158
573		4		- 80	1,681	2,576	262	65						
570	11	23		6	759	5,722	2,979	1,885	59					
563	229	50	29	151	325	966	1,489	884	35					
560	692	1,708	2,157	1,971	428	349	381							
553		10	42	1,551	472	40								
5501			40	598	830	55								
543				55	983	5,154	9,948					1		4
540			48		327	469	66			78	37	45	5	2

1978 FOREIGN FISHING EFFORT IN NUMBER OF HOURS, SEASONALLy
ALL COUTRIES - ALL GEAR T Y P E

TABLE A-30 (cent'd)

ECI

TABLE A-31

JAPANESE CATCH AND EFFORT IN THE BERING SEA AND ALEUTIANS IN 1978

SEA BASED	Type of Gear	Effort (hrs)	Catch (m t)	% Catch	CPUE (mt/hr)
	Pair Trawl	32,254	363,355	34.4	11.27
	Danish Seine	17,421[1]	98,144	8.4	5.63[2]
	Long Lines	58,192	9,505	0.9	0.16
	Stern Trawl	138,346	485,8o7	46.o	3.5
LAND BASED					
	Stern Trawl	174,375	108,046	10.2	0.62
TOTAL			1,055,857	99.9,	

1 Effort in number of tows

2 CPUE in ret/tow

ECI

TABLE A-32

1978 FOREIGN CATCH BY SPECIES - ALL GEAR TYPES

(metric tons)

1. Pollock

Total : 28,652

	171	170	169	168	167	166	165	164	163 "
533	7	5		25		770	131	3	3
530		52	1	170	10,200	10,921	160		
523	242	310	464	147	3,626	21			
520	502	138	536	78	29				
513	111								
510									

2. Pacific Cod

Total : 3,925

	171	170	169	168	167	166	165	164	163
533	4	1				10	356	328	246
530		37	46	22	551	649	62,	6	7
523	128	114	394	14	243	11			
520	345	85	192						
513	74								
510									

3. Pacific Ocean Perch

Total : 5,095

	171	170	169	168	167	166	165	164	163
533	3	2				120	2	2 "	2
530	1	16	12	21	1,321	1,207	70		
523	135	65	91	8	635	10			
520	741	291	110						
513	230								
510									

TABLE A-32 (Cent'd)

1978 FOREIGN CATCH BY SPECIES - ALL GEAR TYPES

(metric tons)

4. Rockfish

Total : 1,859

	171	170	169	168	167	166	165	164	163
533	3	1				35		2	2
530		39	1	69	213	208	11		
523	219	120	51	4	161	2			
520	467	121	21						
513	109								
510									

5. Yellowfin Sole

Total : 39

	171	170	169	168	167	166	165	164	163
533									
530		8			1				
523	12	3							
520	3	4	4						
513	4								
510									

6. Turbot

Total : 979

	171	170	169	168	167	166	165	164	163
533		1			2		9	6	4
530		8	19		52	84	1	1	1
523	37	43	221	21	67				
520	82	82	198						
513	40								
510									

TABLE A-32 (Cent'd)

1978 FOREIGN CATCH BY SPECIES - ALL GEAR TYPES

(metric tons)

7. Greenland Turbot

Total : 1,042

	171	170	169	168	167	166	165	164	163”
533	3	3			10				
530		35	66						
523	120	630	12	1	8				
520	111	25	11						
513	7								
510									

8. Other Flatfishes

Total : 1,156

	171	170	169	168	167	166	165	164	163
533	1	4			1		5	4	3
530		36	70		53	91	8		
523	57	65	189	48	126	3			
520	124	42	162						
513	64								
510									

9. Atka Mackerel

Total : 1,934

	171	170	169	168	167	166	165	164	163
533	2								
530	1	6			34	30			
523	31	13	45	14	42	1			
520	I ,507	11	79						
513	118								
510									

TABLE A-32 (Cent'd)

1978 FOREIGN CATCH BY SPECIES - ALL GEAR TYPES
(metric tons)

0. Squid

Total : 416

	171	170	169	168	167	166	165	164	163
533	3	1				1			
530		13	6	2	34	47	3		
523	48	81	4		15	1			
520	84	29	1						
513	43								
510									

. Sab efish

Total : 1,238

	171	170	169	168	167	166	165	164	163
533				7	8		148	285	131
530		10	84		52	98	87	3	2
523	21	10	69	27	111				
520	17	25	37						
513	6								
510									

2. Other Fishes

Total : 5,053

	171	170	169	168	167	166	165	164	163
533	13	13			4	63	3	-lo	6
530	13	67	90	13	734	803	20		
523	626	232	103	18	348				
520	1,272	172	125		4				
513	301								
510									

Tables represent 163°W to 172°W and 51°N to 54°N.

EC I

TABLE A-33

978 JAPANESE CATCH BY GEAR TYPE

(metric tons)

1. Stern Trawl (Sea Based) — Total: 7,373

	171	170	169	168	167	166	165	164	163
533									
530		42	102		292	405			
523	244	78	,168	213	614				
520	,405	728	,291						
513	690								
510									

2. Longline (Sea Based) — Total: 3,2?8

	171	170	169	168	167	166	165	164	163
533					25		478	543	376
530		22	293		153	185	8	[illegible]	8
52	2	6	454	36	62				
520	106	58	185						
5 3	61								
5 0									

3. Stern Trawl (Landbased) — Total: 4,943

	171	170	169	168	167	166	165	164	163
533	39	30							
530	15	263							
523	1,205	,500							
520	1,405	239							
513	247								
510									

Tables represent 63°W to 72°W and 5 °N to 54°N

EC

TABLE A-34

1978 USSR CATCH BY GEAR TYPE

(metric tons)

Total : 1,720

		171	170	169	168	167	166	165	164	163
Otter Traw	533									
	530									
	523									
	520	1,611								
	513	109								
	510									

Table represents 163°W to 172°W and 51°N to 54°N.

EC I

TABLE A-35

1978 KOREAN CATCH BY GEAR TYPE

(metric tons)

Traw's

Total : 33,858

	171	170	169	168	167	166	165	164	163"
533				32		999	126		
530				297	12,800	13,541	288		
523	207		21	53	4,606	49			
520	728			78	33				
513									
510									

Total : 216

	171	170	169	168	167	166	165	164	163
533							50	97	21
530						7	16	3	2
523	18	2							
520									
513									
510									

Tables represent 163°W to 172°W and 51°N to 54°N.

EC l

TABLE A-36

1978 FOREIGN CATCH, ALL COUNTRIES - ALL GEAR TYPES

(metric tons)

Total 51,388

	171	170	169	168	167	166	165	164	163
533	39	31		32	25	999	654	640	397
530	15	327	395	297	13,245,	14,138	422	10	10
523	1,676	1,686	1,643	302	5,382	49			
520	5,255	1,025	1,476	78	33				
513	1,107								
510									

Table represents 163°W to 172°W and 51°N to 54°N.

TABLE A-37

1978 JAPANESE FISHING EFFORT IN NUMBER OF HOURS BY GEAR TYPE

Total: 5,026

171	170	169	68	67	66	6	64	3
	1							
	26	155		116	136			
253	61	672	86	5 4				
1,248	389	745						
618								

Tota : 19,464

7	170	169	68	67	66	65	164	6
				119		2,58	3.226	2,576
	65	2,1 2		863	1,056	68	30	40
66	40	2,225	241	988				
705	548	85						
345								

Total: 7,787

171	170	169	68	67	66	65	64	63
38	42							
8	425							
1,910	2,681							
1,939	434							
308								
2								

ab es represent 63°W to 72°W and 5 °N to 54°N.

EC

TABLE A-38

1978 USSR FISHING EFFORT IN NUMBER OF

HOURS BY GEAR TYPE

1. Otter Trawl

Total : 514

	171	170	169	168	167	166	165	164	163
533									
530									
523									
520	484								
513	30								
510									

Table represents 163°W to 172°W and 51"N to 54°N.

ECI

TABLE A-39

1978 KOREAN FISHING EFFORT IN NUMBER OF HOURS BY GEAR TYPE

1. Trawls

Total : 5,066

	171	170	169	168	167	166	165	164
533				10		45	36	
530				17	1,913	1,996	13	
523	15		21	9	787	12		
520	125			55	12			
513								
510								

2. Longline

Total : 1,057

	171	170	169	168	167	166	165	164
533							256	479
530						30	84	14
523	30	10						
520								
513								
510								

Tables represent 163°W to 172°W and 51"N to 54°N.

TABLE A-40

1978 FOREIGN FISHING EFFORT IN NUMBER OF

HOURS, ALL COUNTRIES - ALL GEAR TYPES

Total : 38,914

	171	170	169	168	167	I 66	165	164	163
533	38	43		10	119	45	2,873	3,705	2,714
530	8	616	2,267	17	2,892	3,218'	778	44	56
523	2,280	2,792	2,918	336	2,289	12			
520	4,501	1,371	1,602	55	12				
513	1,301								
510	2								

Table represents 163°W to 172°W and 51"N to 54°N.

TABLE A-41

ANNUAL CATCH N METR C TONS BY SPECIES, BY GEAR VESSEL S ZE AND
BY 5-D GIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPECIES: Sa l mon

GEAR: Drift Gillnet

	VESSEL SIZE IN FEET											TOTAL
STAT. AREA	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	
321-00	2	28	59		*						7	96
322-00	44	1,245	1,530		30						184	3.033
324-00	94	3,438	8,725	3	4		3	1	2		599	12JiQ
-lo	3	105	223								11	347
325-00	122	3,713	11,230	34	2			2	2	57	1.067	16.229
-lo	1	71	5								9	86
326-00	23	2,442	150	2						2	81	2.700
-lo	6	177	18								7	208
-11												
-12												
-20		1										1
-30		7										7
-40		2										2
-70	1	117	7								7	132
-71												
TOTAL	296	11,358	21,5?51	39	36		3	3	4	59	1.974	35.723

* less than .5 MT

ECI

TABLE A-42

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPECIES: Salmon

GEAR : Set Gillnet

STAT. AREA	VESSEL SIZE IN FEET 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
321-00											3	3
322-00		1	1								611	613
324-00		*									1,427	1,427
-10											18	18
-20											7	7
325-00	3	3									1,752	1,758
-lo											234	234
-20											*	*
326-oo	7	20									305	332
-lo											1	1
-11												
-12												
-20												
-30												
-40											*	*
-70	1	2									39	42
-71												
TOTAL	11	26	1								4,397	4,435

* less than .5 MT

EC I

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR: Drift Gillnet

STAT. AREA	VESSEL SIZE IN FEET											TOTAL
	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	
321-00												
322-00												
325-00												
-lo												
-20												
-20												
-30												
-40												
-70		8	*									8
-71												

* less than .5 MT

ECI

TABLE A-44

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR : Set Gillnet

STAT. AREA	VESSEL SIZE IN FEET											TOTAL
	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	
322-00												
-10												
-20												
325-00												
-lo												
-20												
-lo	10	62	172	10							20	274
-11												
-12		1	7								1	9
-40												
-70		5	*									5
-71												
TOTAL	10	69	181	10							21	291

* less than .5 MT

EC I

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND
BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA : Bristol Bay

SPECIES: Herring

GEAR : Purse Seine

STAT. AREA	VESSEL SIZE IN FEET 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
322-00												
324-oO												
-lo												
-20												
325-00												
-In												
-20												
-lo		62	203	10							40	315
-11		16	16								8	40
-12		1,396	3,945	71					24		71	5*507
-20		7	4									11
-40												
-70			425	116								541
-71			25									25
TOTAL		1,481	4,618	197					24		119	I 6.439

ECI

TABLE A-46

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR : Other

STAT. AREA	VESSEL SIZE IN FEET 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
322-00												
-20												
325-00												
-10												
-20												
326-00												
-lo			25				5					30
-11												
-17												
-20												
-30												
-40												
-70												

EC I

TABLE A-47

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPECIES: Herring Roe on Kelp

GEAR : Hand Picked

STAT. AREA	VESSEL SIZE IN FEET 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
322-00												
324-00												
-lo												
-20												
325-00												
-lo												
326-00												
-lo		1										1
-11		*										*
-12												
-20												
-30												
-40												
-70		*										*
-71												

* less than .5 MT

ECI

TABLE A-48

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND
BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPECIES: Herring Roe on Kelp

GEAR: Other

STAT. AREA	VESSEL SIZE IN FEET 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
321-00												
-lo												
-20												
325-00												
-10												
-20												
326-00												
-11	10	30	28		1						16	85
-12	2	20	11		2						18	53
-20												
-30												
-40												
TOTAL	13	58	39		3						35	148

ECI

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT . AREA: Bristol Bay

SPEC ES: Salmon

GEAR Drift Gillnet

	VESSEL SIZE IN FEET											TOTAL
STAT. AREA	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	
321-00	3	44	92		1						17	1<7
322-00	70	1,995	2,46o		48						296	4,869
324-00	133	5,203	13,439	5	6		5	2	3	.	917	19,713
-lo	6	231	492								23	752
-20		18	6								2	26
325-00	162	4,827	14,622	45	2			2	2	75	1,360	21,097
-lo	1	112	9								15	137
-20												
326-00	33	3,282	195	2						2	107	3,621
												2 9 8
-11												
-12												
-20		1										1
-30		10										10
-40		2										2
-70	2	195	11								12	220
-71												
TOTAL	419	16,172	31,353	52	57		5	4	5	77	2,754	50,898

EC I

TABLE A-50

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: Bristol Bay

SPECIES: Salmon

GEAR : Set Gillnet

STAT. AREA	VESSEL SIZE IN FEET 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
322-00		2	1								976	979
												38
-10											30	30
-20											11	11
325-00	4	4									2,232	2,240
-10											372	372
-20											*	*
326-00	11	28									437	476
-10											2	2
-11												
-12												
-20												
-40											*	*
-70	2	2									63	67
-71												
TOTAL	17	36	1								6,266	6,320

* less than $500

ECI

EXVESSEL VALUE OF ANNUAL CATCH **BY SPECIES,** BY **GEAR,** VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR: Drift Gillnet

STAT. AREA	VESSEL SIZE IN FEET											TOTAL
	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	
321-00												
322-00												
324-00												
-lo												
325-00												
-lo												
-20												
6												
-lo	2	20	49								13	84
-11	1	2	2								1	6
-12	1	4	9								1	15
-30												
-40												
-70		3	*									3
-71												
TOTAL	4	29	60								15	108

* less than $500

EC I

TABLE A-52

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

($000)

HGT. AREA: Bristol **Bay**

SPECIES: Herring

GEAR: Set Gillnet

STAT. AREA	VESSEL SIZE IN FEET 0-20	21-30	31-40	41-50	51-60	61-7o	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
322-00												
-lo												
-10												
-20												
6												
-lo	4	23	65	4							8	104
-11												
-12		*	3								*	3
-20		1	1									2
-30												
-40												
TOTAL	4	26	69	4							8	111

* less than $500

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR : Purse Seine

STAT. AREA	VESSEL SIZE IN FEET 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
321-00												
324-00												
-lo												
325-00												
-lo												
326-00												
-lo		23	76	4							15	118
-11		6	6								3	15
-12		523	1,479	27					9		27	2,065
-20		3	1									4
-30												
-40												
-70			159	43								202
-71			9									9
TOTAL		555	1,730	74					9		45	2,413

* less than $500

TABLE A-54

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR: Other

STAT. AREA	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
-10												
-20												
325-00												
-10												
-20												
326-oo												
-lo			9				2					11
-11												
-12												
-30												
-40												
-70												
-71												
TOTAL			9				2					11

ECI

TABLE A-55

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: Bristol Bay

SPECIES: Herring Roe on Kelp

GEAR : Hand Picked

STAT. AREA	VESSEL SIZE IN FEET 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
0												
0												
324-00												
0												
0												
325-00												
-lo												
0												
326-00												
-lo		1										1
-11		*										*
-20												
-30												
-40												
-70		*										*
-71												
0												

* less than $500

EC |

TABLE A-56

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-D GIT STATISTICAL AREA, 1978

($000)

MGT. AREA: Bristol Bay

SPECIES: Herring Roe on Kelp

GEAR : Other

STAT. AREA	VESSEL SIZE IN FEET 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
321-00												
-lo												
-20												
-lo												
-20												
6												
-lo		2										2
-30												
-40												
-70	1	4									1	6
-71												
TOTAL	10	44	29		2						27	112

TABLE A-57

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE

AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPECIES: Salmon

GEAR: Drift Gillnet

	VESSEL SIZE IN FEET											TOTAL
STAT. AREA	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	
321-00	8	79	111		1						23	222
322-00	54	1,278	1,172		20						189	2,713
324-00	86	2,537	5,377	3	4		3	1	2		410	8,423
-lo	2	77	84								6	169
-20		21	19								7	47
325-00	84	2,605	6,484	18	1			‘1	1	30	715	9,939
-lo	2	133	14								23	1 72
-20												
326-oo	36	2,452	202	1						1	* 91	2,783
-lo	13	156	31								16	216
-11												
-12												
-20		2										2
-30		14										14
-40		1										1
-70	3	402	32								17	454
-71												
TOTAL	288	9,757	13,526	22	26		3	2	3	31	1,497	25,155

EC I

TABLE A-58

ANNUAL FISHING EFFORT IN NUMBER OF LAMDINGS BY SPECIES, BY GEAR, VESSEL SIZE

AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPECIES: Salmon

GEAR: Set Gillnet

	VESSEL SIZE IN FEET											TOTAL
STAT. AREA	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	
321-00											15	15
322-00		2	1								1,614	1,617
324-00		2									3,038	3,040
-lo											23	23
-20											2	2
325-00	4	4									2,266	2,274
-lo											730	730
-20											1	1
326-oo	12	32									' 765	809
-lo											1	1
-11												
-12												
-20												
-30												
-40											1	1
-70	8	9									242	259
-71												
TOTAL	24	49	1								8,698	8,772

TABLE A-59

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE
AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR: Drift Gillnet

STAT. AREA	VESSEL SIZE IN FEET 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101'-110	UNKNOWN	TOTAL
321-00												
322-00												
324-00												
-lo												
-10												
326-oO												
-lo	5	15	30								12	6 2
-11	1	3	4								1	9
-12	2	6	11								3	22
-20												
-30												
-40												
-70		10	1									11
TOTAL	8	34	46								16	104

ECI

TABLE A-60

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE

AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR: Set Gillnet

STAT. AREA	VESSEL SIZE IN FEET											TOTAL
	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	
321-00												
322-00												
324-00												
-10												
-20												
325-00												
-lo												
326-oo												
-lo	2	16	36	2							4	60
-11												
“20		2	2									4
-30												
-40												
-70		7	1									8
-71												
TOTAL	2	26	44	2							5	79

TABLE A-61

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS By SPECIES, BY GEAR, VESSEL SIZE AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR: purse Seine

	VESSEL SIZE IN FEET											TOTAL
STAT. AREA	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	
321-00												
322-00												
-lo												
-20												
-lo												
-20												
326-00												
-lo		6	15	1							4	26
-12		29	89	3					1		3	125
-30												
-40												
-70			7	2								9
TOTAL		39	116	6					1		8	170

ECI

TABLE A-62

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE

AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPEC ES: Herring

GEAR Other

STAT. AREA	VESSEL SIZE IN FEET 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
321-00												
322-00												
324-00												
-10												
-20												
325-00												
-10												
-20												
-11												
-12												
-20												
-40												
-70												
-71												
TOTAL			5				-					6

TABLE A-63

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE
AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPECIES: Herring Roe on Kelp

GEAR: Hand Picked

STAT. AREA	VESSEL SiZE IN FEET											TOTAL
	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	
321-00												
322-00												
-lo												
-20												
325-00												
-lo												
-20												
-10		2										2
-11		1										1
-12												
-30												
-40												
-70		1										1
-71												
TOTAL		4										4

EC I

TABLE A-64

ANNUAL FISHING EFFORT IN NUMBER OF IANDINGS BY SPECIES, BY GEAR, VESSEL SIZE

AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bristol Bay

SPECIES: Herring Roe on Kelp

GEAR : Other

STAT. AREA	VESSEL SIZE IN FEET 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
321-00												
322-00												
324-00												
-20												
325-00												
-lo												
-20												
-11	32	65	57		2						26	182
-12	3	42	23		3						17	88
-20												
-40												
-70	1	14									2	17
-71												
TOTAL	36	126	80		5						45	292

ECI

TABLE A-65

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND

By 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: North Alaska Peninsula

SPECIES: Salmon

GEAR: Drift Gillnet

STAT. AREA	VESSEL SIZE 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
-20												
-52												
-60			*									*
-40												
313-30	25	68	207								82	382
314-12		7	63	7							9	86
-20			1									1
315-10		15	116								2	133
-11		266	1,133	12							18	1,429
316-10		16	51	3								70
-20			18	4								22
317-20		17	102									119
318-20		10	13								2	25
TOTAL	25	399	1,706	26							113,	2,269

* LESS THAN .5 MT

ECI

TABLE A-66

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: North Alaska Peninsula

SPECIES: Salmon

GEAR: Set Gillnet

	VESSEL SIZE											TOTAL
STAT. AREA	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	
311-10												
-20												
-52												
-60											3	3
312-20												
-40												
313-30	160	9	103								114	386
-20												
-30	39	13										52
-11												
-20												
317-20	1	22	2								10	35
318-20											7	7
TOTAL	216	49	106								134	505

TABLE A-67

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: North Alaska Peninsula

SPECIES: Salmon

GEAR: Purse Seine

	VESSEL SIZE											TOTAL
STAT. AREA	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	
311-10												
-20												
-52		133	45								25	203
-60		464	160	19		9					142	794
312-20		96	27								9	132
-40		112	38								74	224
314-12												
-20		16										16
-30												
-11												
316-10												
317-20												
318-20												
TOTAL		821	270	19		9					240	1,369

TABLE A-68

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: North Alaska Peninsula

SPECIES: King Crab

GEAR : Pot

STAT. AREA	VESSEL SIZE 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	151-200	UNKNOWN	TOTAL
311-10							8		13	13	15		49
-20													
-52													
-60													
312-20													
-40													
313-30													
314-12													
-20													
-30													
315-10													
-11													
316-10													
-20													
317-20													
318-20													
TOTAL							8		13	13	15		49

EC I

TABLE A-69

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: North Alaska Peninsula

SPECIES: Tanner Crab

GEAR : Pot

STAT. AREA	VESSEL SIZE 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	151-200	UNKNOWN	TOTAL
311-10							54				9		63
-20							530	337	273	495	52	571	2,258
-60													
-40													
313-30													
314-12													
-20													
-30													
315-10													
-11													
316-10													
-20													
318-20													
TOTAL							584	358	273	495	61	57:1	2,342

TABLE A-70

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: North Alaska Peninsula

SPECIES: Salmon

GEAR: Drift Gillnet

STAT. AREA	VESSEL SIZE 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
-20												
-52												
312-20												
-40												
313-30	42	113	344								136	635
314-12		11	104	11							15	141
-20			2									2
-30		*	4									4
315-10		24	187								4	215
-11		427	1,857	19							29	2,332
316-10		26	84	4								114
317-20		29										29
318-20		16	21								3	40
TOTAL	42	646	2,633	40							187	3,548

* LESS THAN $500

ECI

TABLE A-71

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND
BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: North Alaska Peninsula

SPECIES: Salmon

GEAR: Set Gillnet

STAT. AREA	VESSEL SIZE 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
311-10												
-20												
-60											6	6
312-20												
-40												
313-30	267	15	171								185	638
314-12	27	9	2									38
-11												
6												
-20												
317-20	1	37	3								16	57
318-20											11	11
TOTAL	359	83	176								218	836

EC I

TABLE A-72

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: North Alaska Peninsula

SPECIES: Salmon

GEAR : Purse Seine

STAT. AREA	VESSEL SIZE 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
311-10												
312-20		103	29								10	142
-40		126	46								85	257
313-30												
314-12												
-20		18										18
-30												
315-10												
-11												
316-10												
-20												
0												
318-20												
TOTAL		758	245	14		7					231	1,255

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: North Alaska Peninsula

SPECIES: King Crab

GEAR : Pot

STAT. AREA	VESSEL SIZE												TOTAL
	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	151-200	UNKNOWN	
311-10							18		28	29	34		109
-20													
-52													
-60													
312-20													
-40													
313-30													
314-12													
-20													
-30													
315-10													
-11													
316-10													
-20													
317-20													
TOTAL							18		28	29	34		109

TABLE A-74

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND
BY 5-DIGIT STATISTICAL AREA, 1978
($000)

MGT. AREA: North Alaska Peninsula

SPECIES: Tanner Crab

R

STAT. AREA	VESSEL SIZE 0-20	21-30	31-40	41-50	51-60	61-70	71"80	81-9o	91-100	101-110	151-200	UNKNOWN	TOTAL
311-10							48				8		56
-20							478	304	247	447	46	516	2,038
312-20													
-40													
313-30													
314-12													
-30													
315-10													
-11													
-20													
317-20													
8													
TOTAL							526	323	247	447	54	516	2,113

EC I

TABLE A-75

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: North Alaska Peninsula

SPECIES: Salmon

GEAR Drift Gillnet

STAT. AREA	VESSEL SIZE 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
311-10												
-20												
-52												
-60			1									1
312-20												
-40												
313-30	38	44	177								76	335
314-12		4	27	7							4	42
-20			2									2
-30		2	6									8
315-10		16	120								1	137
-11		172	805	7							13	997
316-10		10	21	2								33
-20			5	2								7
317-20		30	157									187
318-20		14	30								5	49
TOTAL	38	292	1,351	18							99	1,798

TABLE A-76

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE
AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: North Alaska Peninsula

SPECIES: Salmon

GEAR: Set Gillnet

	VESSEL SIZE											TOTAL
STAT, AREA	0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	
311-10												
-52												
-40												
313-30	186	16	53								145	400
-20												
315-10												
-11												
316-10												
-20	3	49	6								34	92
318-20											12	12
TOTAL	255	87	61								194	597

TABLE A-77

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE
AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT . AREA : North A' aska Peninsula

SPEC ES: Salmon

GEAR Purse Seine

STAT. AREA	VESSEL SIZE 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	UNKNOWN	TOTAL
311-10												
-20												
-52		27	16								9	52
-60		49	23	2		1					15	90
												8
		8										59
313-30												
314-12												
-30												
315-10												
-11												
6												
-20												
317-20												
318-20												
TOTAL		121	57	2		1					41	222

EC I

TABLE A-78

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE

AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: North Alaska Peninsula

SPECIES: King Crab

GEAR: Pot

STAT. AREA	VESSEL SIZE 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	151-200	UNKNOWN	TOTAL
0													
-20													
-52													
-60													
312-20													
-40													
313-30													
314-12													
-20													1 "
-30													
3 5 0													
-11													
316-10													
-20 I													
317-20													
318-20													
0 A													

EC I

TABLE A-79

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: North Alaska Peninsula

SPECIES: Tanner Crab

GEAR : Pot

STAT. AREA	VESSEL SIZE 0-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	151-200	UNKNOWN	TOTAL
311-10							6				1		7
-20							18	17	7	9	1	10	62
-52								1					1
-60													
312-20													
-40													
0													
314-12													
-20													
-30													
315-10													
-11													
316-10													
-20													
317-20													
318-20													
TOTAL							24	18	7	9	2	10	70

TABLE A-80

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bering Sea

SPECIES: King Crab

GEAR: Pot Gear

STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
302-16														
-17			65		28	43	22	10			8	6		182
-25														
-30		30		34			14	13						91
311-31														
-41														
-51			5											5
350-01														7
-04						26								26
-11			10				66	60			19			55
-12				33			52		50		41	62	66	304
-13			32	45	92	144	183			34		21	22	573
-14			36	99	178	535		261	261	68	31			1,469
-15		75		311	329	1,034	575	235	293	214	97			3,163
-16			62					31						93
-21			79	62		33	136		62			59		431
-22			83	155	355	1,250	964	390	971		72	142		4,526
-23			106	310	1,119	1,428	1,599	220	577	44	158	203	32	5,796
-24				630	1,406	476	1,655	505	248		234	111	117	5,382
-25		9	18	663	759	168	296	87	29	53	120		58	2,260

Bering Sea (continued) King Crab CATCH (MT)

AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
350-26							61					35		96
-31			55	29	312	181	47	65	108			95	14	906
-32			77	130	504	310	331	493	587	95		311	115	2,953
-33			8	845	644	1,268	810	170	191		20	107	80	4,143
"34		18		497	422	566	376	168	192	51	139	106	148	2,683
-41					274	77		219	256			69	145	1,040
-42				70	125	183	80	133	133			17		741
-43			8	284	364	249	201	79	26		65		52	1,328
-44				19	119		31							169
-51			7			46		44	22					119
-52				13	14									27
-61														
0														
-04													55	55
-06														
-11			7											7
-13				13										13
-14						7			19					26
-15				67	35	183	70	102				32		489
-16						12	12		11					35
-21			26						4 0			51		117
-22														
-23					15	24	24	45	23			43	15	189
-24			9	259	114	403	264	253	103	27	73	268	97	1,870

TAB L-E A-80 (cont'd)

Bering Sea (continued) King Crab

CATCH (MT)

STAT. AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
	VESSEL SIZE IN FEET													
351-25				27	42,	43.,		,68					26	206
3'1			17		19		89		55			1	7	197
-32					*									
-33									17					17
-34					11	17								28
-35						4								4
-41														
-42														
TOTAL	.30	102	592	4,722	7,346	8,762	8,072	3,678	4,258-	675	1,058	1,856	1,160	42,311

* LESS THAN 0.5 METRIC TONS

EC I

TABLE A-81

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND
BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bering Sea

SPECIES: Tanner Crab

GEAR: Pot

AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151.200	UNKNOWN	TOTAL
302-16	9	14	7	1 6 1	15	39								245
-17														
-30	51	14												65
311-31			14	144	56		145							359
-41				39	76	52	20		19					206
-51			31	246	250	206	108		94		314			1,249
350-01														
-04														
-11														
-12			20											20
-13														
-14														
-15				177	71		56	102		47				453
-16														
-22				3										3
-23							39							39
-24				66	50	111	71	24			20			342
-25			14	303	803	749	972	143	20	56		13	28	3,101

Bering Sea (continued)

TABLE A-81 (cent'd)

Tanner Crab Catch (MT)

STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
350-26														
-31					229		99	90			50	57		525
-32					14	21	44	41	20	19	50		13	222
-34			11	223	155	226	165	133		61	55		23	1,052
-35				342	185	314	409	26	26	48	65	33		1,448
-42			30	239	471	457	693	940	44		111		31	3,016
-43			179	887	1,178	1,317	952	179	90	205	37			5,024
-44			41		113	38	128					77		397
														8
-52			248	668	611	525	422	53	53	49	177	34	111	2,951
-61						8								8
351-01														
-04														
-06														
-11														
-15				41	6	117	163	26	9			5		367
-16				106		57								163
-21														
-22				31										31
-23					14		43					25		82
-24			21	802	171	1,211	1,312	644	64			40		4,265

Bering Sea (continued)

TABLE A-81 (cent'd)

Tanner Crab — Catch (MT)

AREA	41-50	51-60	61-70	71-80	81-90	91-loo	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
351-25				103	41	220	610					19		993
31				135	45		71	130				62		443
-32				13										13
-33														
-34					13	35	41							89
-35					31									31
-41							15							15
-42							15							15
TOTAL	60	28	646	4,879	4,935	5,857	6,913	2,713	500	543	930	442	292	28,738

EC I

TABLE A-82

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND
BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA : Bering Sea

SPEC ES: Shrimp

GEAR Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	/1-80	Hi-go	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
302-16														
-17														
-25														
-30														
311-31														
-41														
-51														
350-01														
-04														
-11														
-12														
-13														
-14														
-15														
-16														
-21														
-22														
-23														
-24														
-25														

Bering Sea (continued)

TABLE A-82 (cent'd)

Shrimp Catch (MT)

STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
350-26														
-31														
-32														
-33														
-34														
-35														
-41														
-43														
-44														
-51														
-52														
-61														
351-01														
-04														
-06				20										20
-11														
-13														
-14														
-15														
-16														
-21														
-22														
-23														
-24														

Bering Sea (cont nued)

TABLE A-82 cent'cl)

Shrimp Catch (MT)

STAT, AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
351-25														
31														
-32														
33														
"34														
-35														
-41														
-42														
0 A														

EC1

TABLE A-83

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bering Sea

SPECIES: Pacific Cod

GEAR: Otter and Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
302-16														
-17														
-25							10							10
-30				20										20
311-31														
-41														
-51														
350-01														
-04														
-11														
-12														
-13														
-14														
-15														
-16														
-21														
-22														
-23														
-24														
-25														

Bering Sea (continued)

TABLE A-83 (cent'd)

Pacific Cod Catch (MT)

AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
350-26														
-31														
-32														
-33														
-34														
-35														
-41														
-42														
-43														
-44														
-51														
-52														
-61														
0														
-04														
-06														
-11														
-13														
-14														
-15														
-16														
-22														
-23														
-24														

TABLE A-83 (cent'd)

Ber ng Sea (cent nued)

Pacific Cod Catch (MT)

STAT. AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
351-25														
-31														
-32														
-33														
-34														
-35														
-41														
-42														
TOTAL				20			10							30

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TABLE A-84

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND
BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bering Sea

SPECIES: Pollock

GEAR: Otter and Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-60	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
302-16														
-17														
5														
-30				3										3
311-31														
-41														
-51														
350-01														
-04														
-11														
-12														
-13														
-14														
-15														
-16														
-21														
-23														
-24														

Bering Sea (continued)

TABLE A-84 (Cent'd)

Pollock

Catch (MT)

AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
350-26														
-32														
-34														
-35														
-41														
-43														
-44														
-51														
-52														
-61														
351-01														
-04														
06														
-11														
-13														
-14														
-15														
-16														
-21														
-22														
-23														
-24														

Bering Sea (continued)

TABLE A-84 (cent'd)

Pol lock

Catch (MT)

STAT. AREA	VESSEL SIZE IN FEET														TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN		
351-25															
-31															
-32															
-33															
-34															
-35															
-41															
-42															
TOTAL				3			20								23

TABLE A-85

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND
BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bering Sea

SPECIES: Other Bottom Fish

GEAR: Double Otter Trawl

ST AREA	N													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-11o	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
6														
-17														
-25														
-30				5										5
311-31														
-41														
-51														
350-01														
-04														
-11														
-12														
-13														
-14														
-15														
-16														
-24														
-25														

Bering Sea (continued)

TABLE A-85 (cent'd)

Other Bottom Fish catch (MT)

STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
350-26														
-31														
-32														
33														
-34														
"35														
-41														
-42														
"43														
-44														
-51														
-61														
351-01														
-04														
-06														
-11														
-13														
-14														
-15														
-16														
-21														
-22														
-23														
-24														

Table A-39 (cont.)

Bering Sea (continued)

Other Bottom Fish Catch (MT)

STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
-33														
-34														
-35														
-41														
-42														
TOTAL				5										5

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TABLE A-86

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: Bering Sea

SPECIES: King Crab

GEAR: pot

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-/0	71-80	81-90	9I-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
302 6														
-25														
-30	85			95			39	36						255
311-31														
-41														
-51					14									14
350-01			19											19
-04						70								70
-11			26				176	162				51,		415
-12				88		139		133			110	167	176	813
-13			86	120	247	386	491		90			57	60	1,537
-14			96	266	479	1,441		702	702	183	83			3,952
-15		201		840	888	2,788	1,565	634	793	580	263			8,552
-16				168				85						253
-21			214	168		88	367		169			159		1,165
-22			224	424	959	3,394	2,611	1,055	2,600	.	194	388	316	12,165
-23			287	848	3,028	3,886	4,336	564	1,522	118	426	523	85	15,623
-24				1,708	3,77o	1,284	4,509	1,340	653		631	300	315	14,510
-25		25	50	1,772	2.042	458	807	235	78	143	324		156	6.090

Bering Sea (continued) King Crab EXVESSEL VALUE ($000)

AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
0-														
-31			146	76	824	479	124	172	418			252	38	2,529
-32			209	353	1,367	846	895	1,320	1,600	257		843	311	8,001
-33			21	2,292	1,730	3,438	2,191	463	523		54	290	218	11,220
-34		48		1,344	1,142	1,515	1,029	455	523	139	377	286	402	7,260
-35					166		264	121		333		153		1,037
-41					742	207		593	692			187	392	2,813
-42				190	328	500	220	358	358			45		1,999
-43			22	765	963	679	550	212	71		175		140	3,577
-44				51	319		84							454
-51			19			123		118	59					319
-52				35	36									71
-61														
351-01			19											19
-04													149	149
-06														
-11			19											19
-14						18			52					70
-15				181	93	494	186	273				86		1,313
-16						31	33		30					94
-21			69						108			136		313
-22														
-23					41	64	66	121	6	1		115	40	508
-24			25	705	310	1,097	719	680	279	78	199	723	264	5,079

TABLE A-86 (cent'd)

Bering Sea (continued) King Crab EXVESSEL VALUE ($000)

AREA	41-50	51-60	61-70	71-80	81-90	91-100	10I-11o	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
351-25				74	115	119	183					71		562
31			47		51		242		148			47		535
-32					1									1
33									45					45
-34					31	47.								78
-41														
-42														
TOTAL	85	274	1,598	12,778	19,764	23,722	21,912	9,861	11,574	1,831	2,860	4,992	3,062	114,313

TABLE A-87

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: Bering Sea

SPECIES: Tanner Crab

GEAR: Pot

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
302-16	8	13	6	145	13	35								220
-17														
-25														
-30	46	12												58
311-31			12	130	51		131							324
-41				35	70	47	18		17					187
-51			28	222	209	186	97		83		277			1,102
350-01														
-04														
-11														
-12			18											18
-13														
-14														
-15				160	64		50	92		42				408
-16														
-21														
-22				3										3
-23							35							35
-24				60	45	100	64	21			18			308
-25			12	252	725	676	878	128	18	50		12	25	2,776

TABLE A-87 (cent'd)

Bering Sea (continued) Tanner Crab Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
0-														
-32					17	19	39	36	18	17	45		17	198
-33			9	78	59		124	28	78	52	23		39	440
-34			10	202	140	203	149	120		55	50		21	950
-35				309	167	283	370	23	23	43	59	30		1,307
-41				19	133	26	90	110				69		447
-42			26	210	424	411	624	829	40		99		27	2,690
"43			162	800	1,065	1,190	852	162	81	185	34			4,531
"44			37		102	34	115					70		358
-51			18	38	75	51		27	77		23		38	2'37
-52			224	603	552	473	381	48	48	44	160	30	100	2,663
-61						7								7
351-01														
-04														
-06														
-11														
-13						38	45							83
-14					36	24	29							89
-15				37	5	106	147	23	8			5		331
-16				96		51								147
-21														
-23					12		39					22		73
-24			19	124	154	1,094	1,163	577	58			36		3,225

TABLE A-87 (cent'd)

Bering Sea (continued) Tanner Crab Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
351-25				92	37	198	548					17		892
31				122	41		64	117				55		399
33														
-34					12	31	37							80
-35					28									28
-41							14							14-
-42							14							14
TOTAL	54	25	581	3,777	4,436	5,283	6,205	2,422	449	488	833	397	262	25.212

TABLE A-88

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: Baring Sea

SPECIES: Shrimp

GEAR : Otter Trawl

STAT. AREA	41-50	51-60	61-70	71-80	61-90	91- 100	IO1-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
302-16														
- 17														
-25														
“30														
311-31														
-41														
-51														
350-01														
-04														
-11														
-12														
-13														
-14														
-15														
-16														
-21														
22														
3														
-24														
5														

Bering Sea (continued) Shrimp Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
350-26														
-31														
-34														
35														
" -41														
-42														
-43														
-44														
-51														
-52														
-61														
351-01														
-04														
-06				8										8"
-11														
-13														
-14														
-15														
-16														
-21														
-22														
-23														
-24														

TABLE A-88 (cent'd)

Ber ng Sea (continued)   Shrimp   Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	10I-I1o	111-120	121-130	131-140	141-150	1s1-200	UNKNOWN	
351-25														
31														
-32														
33														
-34														
-35														
-41														
-42														
TOTAL				8										8

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TABLE A-89

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: Bering Sea

SPECIES: Pacific Cod

GEAR: Otter and Double Otter Trawl

STAT AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151.200	UNKNOWN	TOTAL
302-16														
-17														
-25							6							6
30														
3 3														
-41														
-51														
350-01														
-04														
-11														
-12														
-13														
-14														
-15														
-16														
-21														
-22														
-24														
-25														

TABLE A-89 (cent'd)

Bering Sea (continued) Pacific Cod Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
350-26														
-31														
-32														
33														
-34														
35														
-41														
-42														
-43														
-44														
-51														
-52														
-61														
351-01														
“04														
-06														
-11														
-13														
-14														
-15														
-16														
-21														
-22														
-24														

TABLE A-89 (Cont'd)

Bering Sea (continued) Pacific Cod Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
351-25														
-31														
-32														
-33														
-34														
-35														
-41														
-42														
TOTAL					12		6							18

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TABLE A-90

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: **Bering Sea**

SPECIES: Pollock

GEAR: otter and Double Otter Trawl

STAT. AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
302-16														
-17														
-25							2							2
-30					1									1
311-31														
-41														
-51														
350-01														
-04														
-11														
-12														
-13														
-14														
-15														
-16														
-21														
-22														
-24														
-25														

Bering Sea (continued) Pollock Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
350-26														
-31														
-32														
33														
-34														
35														
-41														
-42														
-43														
-44														
-51														
-52														
-61														
351-01														
"04														
-06														
-11														
-13														
-14														
-15														
-16														
-22														
-24														

TABLE A-90 (cent'd)

Bering Sea (continued) Pol lock Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
31														
-34														
-35														
-41														
-42														
0 A														

TABLE A-91

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. MEA: **Bering Sea**

SPECIES: Other Bottom Fish

GEAR: Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
302-16														
-17														
-25														
-30				2										2
311-31														
-41														
-51														
350-01														
-04														
-11														
-12														
-13														
-14														
-15														
-16														
-21														
-22														
-23														
-24														
25														

TABLE A-91 (cent'd)

Bering Sea (continued) Other Bottom Fish Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
350-26														
-31														
-32														
33														
-34														
35														
- 4 1														
-42														
-43														
-44														
-51														
-52														
-61														
351-01														
-04														
-06														
-11														
-13														
-14														
-15														
-16														
-21														

(cont'd)

Bering Sea (continued)

Other Bottom Fish

Exvessel Value ($000)

STAT. AREA	41-50	51-6o	61-70	71-80	81-90	91-100	10I-I10	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
351-25														
-31														
-32														
31														
-34														
"35														
-41														
42														
TOTAL				2										2

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TABLE A-92

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bering Sea

SPECIES: King Crab

GEAR : Pot

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
302-16														
-17				5	4	4	2	1			1	1		18
-25														
-30	11			4			1	1						17
311-31														
-41														
-51					1									1
350-01			1											1
-04						1								1
-11			1				2	2				1		6
-12				1		1		1			1	2	2	8
-13			3	2	4	5	5		1			1	1	22
-14			3	4	7	14		7	7	2	1			45
-15		4		8	14	20	16	4	5	4	2			77
-16				3				1						4
-21			8	3		1	4		2			3		21
-22			6	10	12	27	17	9	19		2	8	5	115
-23			7	16	38	30	37	7	10	1	4	7	1	158
-24				22	45	13	37	11	9		8	5	5	155
-25		1	2	24	26	6	9	3	1	2	5		3	82

TABLE A-92 (cent'd)

Bering Sea (continued)

King Crab EFFORT

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
350-26							1					1		2
-31			8	2	14	8	2	3	5			7	1	50
-32			7	8	24	11	13	10	17	3		13	5	111
-33			1	27	27	34	24	8	9		1	7	,5	143
-34		1		19	23	16	10	3	9	1	3	3	4	92
-35					2		2	1		3		2		10
-41					11	2		6	7			3	6	35
-43			1	19	21	12	7	3	1		3		3	70
-44				1	6		1							8
-52				1	1									2
-61														
351-01			1											1
"04													1	1
-06														
-11			1											1
-14						1			3					4
-15				4	2	8	4	4				2		24
-24			1	14	11	22	10	11	8	1	3	14	5	100

TABLE A-92 (cont'd)
EFFORT

Bering Sea continued) K ng Crab

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
351-25				2	3	2	3					2		12
-31			2		1		3		2			1		9
-32					1									1
-33									1					1
-34					1	1								2
-35						2								2
-41														
-42														
TOTAL	11	6	56	205	311	250	218	105	125	17	34	89	48	1,475

TABLE A-93

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE

AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bering Sea

SPECIES: Tanner Crab

GEAR: pot

AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
302-16	3	2	1	11	1	2								20
-17														
-25														
-30	11	1												12
311-31			2	7	4		4							17
-41				3	6	3	1		1					14
-51			2	12	14	7	6		2		8			51
350-01														
-04														
-11														
-12			2											2
-13														
-14														
-15				5	2		1	2		1				11
-16														
-21														
-22				1										1
-23							1							1
-24				4	3	5	4	1			1			18
-25			2	18	23	19	22	7	1	3		1	2	98

Bering Sea (continued)

TABLE A-93 (cent'd)

Tanner Crab

STAT . AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
350-26														
-34			1	10	8	10	6	4		2	2		1	44
-35				12	7	15	10	1	1	2	3	2		53
-41				1	7	1	3	4				4,		20
-42			2	14	21	17	20	18	1		3		1	97
-43			12	34	39	30	19	4	2	5	1			146
-51			2	?	4	2		1	1		1		2	15
-52			14	23	32	14	10	1	1	1	4	1	3	104
-61						1								1
-04														
-11														
-13						1	1							2
-14					7	1	1							4
-15				7	1	9	8	3	1			1		30
-24			1	20	10	32	27	10	1			7		108

TABLE A-93 (cent'd)

Bering Sea (continued) Tanner Crab

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
-33 I														
-34					1	2	2							5
-35					2									2
-41							1							1
-42							1							1
TOTAL	14	3	45	210	211	184	180	66	14	17	29	28	12	1,013

TABLE A-94

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA : Bering Sea

SPEC ES: Shrimp

GEAR Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
302-16														
-17														
-25														
-30														
311-31														
-41														
-51														
350-01														
-04														
-11														
-12														
-13														
-14														
-15														
-16														
-21														
-23														
-24														
-25														

Bering Sea (continued)

TABLE A-94 (cent'd)

Shrimp Effort

STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
350-26														
-32														
-34														
-35														
-41														
-42														
-43														
-44														
-51														
-52														
-61														
351-01														
-04														
-06				1										1
-11														
-13														
-14														
-15														
-16														
-21														
-23														

TABLE A-94 (cent'd)

Bering Sea (continued) Shrimp Effort

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	
351-25														
-31														
-32														
-33														
-34														
-35														
-4?														
-42														
TOTAL				1										1

TABLE A-95

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE AND BY THE 5--DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bering Sea

SPECIES: Pacific Cod

GEAR : Otter and Double Otter Trawl

AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
302-16														
-17														
-25							2							2
-30				1										1
311-31														
-41														
-51														
350-01														
-04														
-11														
-12														
-13														
-14														
-15														
-16														
-21														
-23														
-24														
-25														

Bering Sea (continued)

TABLE A-95 (cent'd)

Pacific Cod Effort

STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
350-26														
-31														
-32														
-33														
-34														
-35														
-41														
-42														
-43														
-44														
-51														
-52														
-61														
351-01														
-04														
-06														
-11														
-14														
-15														
-24														

TABLE A-95 (Cent'd)

Bering Sea (continued) Pacific Cod Effort

STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
351-25														
-31														
-32														
-34														
-35														
-41														
-42														
TOTAL				1			2							3

TABLE A-96

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE

AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA : Bering Sea

SPEC ES: Pol 1 ock

GEAR Otter and Double Otter Traw

STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
302-16														
-17														
-25							2							2
-30				1										1
311-31														
-41														
-51														
350-01														
-04														
-11														
-12														
-13														
-14														
-15														
-16														
-21														
-22														
-23														
-24														
-25														

Pollock Effort

STAT. AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
350-26														
-31														
-33														
-34														
-35														
-41														
-42														
-43														
-44														
-51														
-52														
-61														
-04														
-06														
-11														
-13														
-14														
-15														
-16														
-21														
-22														
-24														

Bering Sea (continued)

TABLE A-36 (cont'd)

Pol lock

Effort

AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
351-25														
-31														
-32														
-33														
-34 I														
-35														
-41														
-42														
TOTAL				1			2							[illegible]

TABLE A-97

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE

AND BY THE 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: Bering Sea

SPECIES: Other Bottom Fish

GEAR: Double Otter Trawl

AREA	41-50	51-60	61-70	71-80	81-90	91-100	901-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
-17														
-25														
-30				1										1
311-31														
-41														
-51														
350-01														
-04														
-11														
-12														
-13														
-14														
-15														
-16														
-21														
-22														
-23														
-24														

Bering Sea (continued)

TABLE A-97 (Cent'd)

Other Bottom Fish Effort

AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
-31														
-32														
-33														
-34														
-41														
-42														
-43														
-44														
-51														
-52														
6														
351-01														
-04														
-06														
-11														
-13														
-14														
-15														
-16														
-21														
-22														
-23														
-24														

TABLE A-97 (cent'd)

Bering Sea (continued)

Other Bottom Fish

Effort

AREA	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	UNKNOWN	TOTAL
351-25														
-32														
-33														
-34														
-35														
-41														
-42														
TOTAL				1										1

TABLE A-98

MONTHLY FISHING EFFORT N NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STAT STICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA : Bristol Bay

SPEC ES: Salmon

GEAR Drift Gil lnet

	MONTH												
STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	1:	TOTAL
321-00						165	'58	17	16				256
322-00						1386	1641	39	1				3,067
324-00						1713	7489	775	2				9,979
-10							167	11					178
-20						5	42						47
325-00					112	4 400	6685	960					12,157
-lo						63	167						230
-20													
326-00						1060	1977	227					3.264
-lo						46	133	48	27				254
-11													
-12													
-20								2					2
-30							2	4	8				14
-40						1							1
-70						44	4	224	218				490
-71													
TOTAL					112	8883	18,365	2307	272				29,939

EC I

TABLE A-99

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: Bristol Bay

SPECIES: Salmon

GEAR Set Gillnet

	M												
STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
321-00						5	4	8					17
322-00						785	1223	37					2,045
324-00					1	986	3067	436					4,490
325-00						331	2649	401	2				3,383
-10						168	895						1,063
-20							1						1
326-00						281	551	180					1,012
-30													
-40						1							1
-70						24	12	186	90				312
-71													
TOTAL					1	2584	8431	1248	92				12,356

ECI

TABLE A-100

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR,

AND By 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: Bristol Bay

SPEC ES: Herring

GEAR Drift Gil Inet

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
321-00													
322-00													
324-00													
-10													
-20													
325-00													
-lo													
-20													
326-00													
-lo					79								79
-11					9								9
-12					25								25
-20													
-30													
-40													
-70													
-71													
TOTAL					113								113

EC I

TABLE A-101

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR: Set Gillnet

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
321-00													
322-00													
324-00													
-10													
-20													
325-00													
-10													
326-00													
-10					85								85
-11													
-20					4								4
-40													

ECI

TABLE A-102

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: Bristo' Bay

SPECIES: Herring

GEAR: Purse Se ne

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTA
322-00													
324-00													
-lo													
-20													
-lo													
-lo					28	1							29
-11					5								5
-12					167	5							172
-20					3								3
-30													
-40													
-70					11								11
-71					2								2
TOTAL					216	6							222

EC

TABLE A-103

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR: Other

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
321-00													
324-00													
-11													
-20													
-40													
-70													
-71													

ECI

TABLE A-104

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR,

AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: Bristol Bay

SPEC ES: Herring Roe on Ke p

GEAR Hand Picked

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
324-00													
-lo													
-10													
-20													
326-00													
-lo					2								2
-11					1								1
-12													
-20													
-30													
-40													
-70					1								1
-71													
TOTAL					4								4

EC I

TABLE A-105

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: Bristol Bay

SPECIES: Herring Roe on Kelp

GEAR: Other

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
322-00													
324-00													
-lo													
-20													
325-00													
-lo													
-11				2	232	1							235
-20													
-30													
-40													
-70					18								18
TOTAL				2	255	1							258

ECI

TABLE A-106

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: Bristol Bay

SPEC ES: Salmon

GEAR Drift Gil Inet

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
321-00						70	'19	5	2				96
322-00						935	2082	14	2				3,033
324-00						3145	8757	964	3				12,869
-lo							339	3					342
-20						7	11						18
325-00					17	3770	10,551	1891					16,229
-10						31	55						86
-20													
326-00						667	1953	80					2700
-10						49	130	17	12				208
-11													
-12													
-20								1					1
-30							2	2	3				7
-40						2							2
-70						11	4	51	66			+	132
-71													
TOTAL					17	8687	23,903	3028	88				35,723

ECI

TABLE A-107

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT
"STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: Bristol Bay

SPECIES: Salmon

GEAR: Set Gillnet

	MONTH												
STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
321-00						1	1	1					3
322-00						132	471	10					613
324-00					*	266	1002	159					1427
-lo							18						18
-20						7							7
325-00				88	1227	28843	1227		*				1758
-10				54	180								234
-20							*						*
326-00						64	238	30					332
-10								1					1
-11													
-12													
-20													
-30													
-40						*							*
-70						3	4	23	12				42
-71													
TOTAL					*	815	3141	467	12				4435

* Less than ,5 m.t.

EC I

TABLE A-108

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR: Drift Gillnet

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
326-00													
-10					221								221
-11					13								13
-12					41								41
-20													
-30													
-40													
-70					8								8
-71													
TOTAL					283								283

ECI

TABLE A-109

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR: Set Gillnet

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
321-00													
322-00													
324-00													
-10													
-20													
325-00													
-10													
-10					274								274
-11													
-12					9								9
-30													
-40													
-70					5								5
-71													
TOTAL					291								291

ECI

TABLE A-110

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR: Purse Seine

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
321-00													
322-00													
324-00													
-10													
-20													
325-00													
-10													
-20													
326-00													
-10					312	3							315
-11					40								40
-12					5488	19							5507
-20					11								11
-30													
-40													
-70					541								541
-71					25								25
TOTAL					6417	22							6439

ECI

TABLE A-111

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: Bristol Bay

SPECIES: Herring

GEAR: Other

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
321-00													
322-00													
324-00													
-lo													
325-00													
-lo													
-10					30								30
-11													
-12													
-20													
-30													
-40													
-70													
-71													

ECI

TABLE A-112

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: Bristol Bay

SPECIES: Herring Roe on Kelp

GEAR: Hand Picked

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
321-00													
322-00													
324-00													
-10													
-20													
325-00													
-10													
-20													
326-00													
-lo					1								1
-11					*								*
-12													
-20													
-30													
-40													
-70					*								*
-71													
TOTAL					2								2

* Less than .5 m.t.

EC I

TABLE A-113

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: Bristol Bay

SPECIES: Herring Roe on Kelp

GEAR: Other

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
322-00													
324-00													
-lo													
-20													
325-00													
-lo													
-lo					2								2
-11				1	84	*							85
-20													
-30													
-40													
-71													
TOTAL				1	131	16							148

* Less than .5 m.t.

EC I

TABLE A-114

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: North Alaska Peninsula

SPECIES: Salmon

GEAR: Drift Gillnet

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
311-10													
-20													
-52													
-60						1							1
312-20													
-40													
313-30						76	167	117	77				377
314-12						1	40	2					43
-20							2						2
-30						5	3						8
315-10						3	90	54					147
-11						61	681	361					1,103
316-10							31	2					33
-20							7						7
317-20					13	94		68	13				188
318-20								17	42				59
TOTAL					13	241	1,021	616	77				1,968

ECI

TABLE A-115

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: North Alaska Peninsula

SPECIES: Salmon

GEAR: Set Gillnet

	M												
STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
311-10													
-20													
-52													
-60								3					3
-40													
313-30						141	233	96	16				486
314-12						25	4	14					43
-20													
-30						15	42	2					59
315-10													
-11													
-20													
317-20					5	43	11	31	5				95
318-20								5	10				15
TOTAL					5	224	290	151	31				701

ECI

TABLE A-116

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR,
AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: North Alaska Peninsula

SPECIES: Salmon

GEAR: Purse Seine

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOT
311-10													
-20													
-52						5	54	2					[illegible]
-60								114					1
312-20							9	14					
-40							58	8					[illegible]
313-30													
314-12													
-20							3						
-30													
315-10													
-11													
316-10													
-20													
317-20													
318-20													
TOTAL						5	124	138					26

ECI

TABLE A-117

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: North Alaska Peninsula

SPEC ES: K ng Crab

GEAR Pot

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
-52													
-60													
-40													
315-10													
-11													
-20													
317-20													
318-20													
TOTAL											5		5

ECI

TABLE A-118

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR,

AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: North Alaska Peninsula

SPEC ES: Tanner Crab

GEAR Pot

STAT. AREA	MONTH												TOTA
	1	2	3	4	5	6	7	8	9	10	11	12	
311-10			1	3	1								
-20	13	22	13	9	5								6
-52			1										
-60													
-40													
313-30													
314-12													
-20													
-30													
315-10													
-11													
316-10													
-20													
317-20													
318-20													
TOTAL	13	22	15	12	6								6

ECI

TABLE A-119

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: North Alaska Peninsula

SPECIES: Salmon

GEAR: Drift Gillnet

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
311-10													
-20													
-52													
-60						*							*
312-20													
-40													
313-30						94	192	79	17				382
314-12						1	85	*					86
-20							1						1
-30						2	*						2
315-10						11	59	63					133
-11						159	846	424					1,429
316-10							68	2					70
-20							22						22
317-20					7	73		35	4				119
318-20								9	16				25
TOTAL					7	340	1,273	612	37				2,269

* LESS THAN .5 MT

ECI

TABLE A-120

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: North Alaska Peninsula

SPECIES: Salmon

GEAR : Set Gillnet

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11 12	TOTAL
311-10												
-20												
-52												
-60												
312-20												
-40												
313-30						147	199	29	11			386
314-12						10	6	6				1 ~2
-20												
-30						14	37	1				52
315-10												
-11												
316-10												
-20												
317-20												
318-20								2	5			7
TOTAL					2	190	243	52	18			505

EC I

TABLE A-121

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: North Alaska Peninsula

SPECIES: Salmon

GEAR : Purse Seine

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
311-10													
-20													
-52						16	182	5					203
-60													
312-20													
-40							187	37					224
313-30													
314-12													
-20							16						16
-30													
315-10													
-11													
316-10													
-20													
317-20													
318-20													
TOTAL						16	441	912					1,369

ECI

TABLE A-122

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: North Alaska Peninsula

SPECIES: King Crab

GEAR: Pot

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
311-10											49		49
-20													
-52													
-60													
312-20													
-40													
313-30													
314-12													
-20													
-30													
315-10													
-11													
316-10													
-20													
317-20													
318-20													
TOTAL											49		49

ECI

TABLE A-123

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: North Alaska Peninsula

SPECIES: Tanner Crab

GEAR: Pot

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
311-10			9	51	3								63
-20	548	746	621	286	57								2,258
-52			21										21
-40													
315-10													
-11													
318-20													
TOTAL	548	746	651	337	60								2,342

EC I

TABLE A-124

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR,

AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: Bering Sea

SPECIES: King Crab

GEAR: Pot

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOT
302-16													
-17											18		
-25													
-30									9		8		
311-31													
-41													
-51										1			
350-01									1				
-04									1				
-11									1	5			
-12									3	5			
-13									7	15			
-14									23	22			
-15									48		29		
-16									1	3			
-21									3	18			
"22									35	80			
-23									39	119			
-24									42	113			
-25									53	29			
-26									1	1			
-31									9	41			
-32									30	81			
-33									26	117			
-34									20	72			
-35									5	5			
-41									3	32			
-42									7	30			

TABLE A-124 (cent'd)

ering Sea (continued) King Crab Effort

STAT. AREA	MONTH 1	2	3	4	5.	6	7	8	9	10	11	12	TOTAL
350-43									13	57			70
-44									4	4			8
-52									1	1			2
-61													
351-01									1				1
-04											1		1
-06													
-11									1				1
-13												2	2
-14											2	2	4
-15	19										1	4	24
-16	1											2	3
-23	1										5	4	10
-24	15									2	32	51	100
-32										1			1
-33										2			2
-34											1	1	2
-35											2		2
-41													
TOTAL	41								390	903	74	69	1,477

ECI

TABLE A-125

MONTHLY FISHING EFFORT N NUMBER OF LANDINGS BY SPECIES, BY GEAR,
AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: Bering Sea

SPECIES: Tanner Crab

GEAR : Pot

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTA!
302-16	2	1		2	6	1						8	2(
-17													
311-31	2	6	3	6									1
-41		8	2	3	1								1
-51	1	12	12	18	7							1	51
-04													
-11													
-12				2									2
-13													
-14													
-15					8	3							1
-16													
-21													
-24					13	5							1
-25				5	64	31							10(
-26													
-31			7	6	7	2							22
3													
-33			3	9	6	1							1
-34				8	24	12							[illegible]
-35				7	35	11							5
-41		3		8	7	2							2(
-42	1	3	34	'39	13	7							9

TABLE A-125 (cent'd)

'ing Sea (continued) Tanner Crab Effort

"AT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
;0-43	3	11	40	73	18	1							146
-44													15
-51													15
-52													104
-61													1
:1-01													
-04													
-06													
-11													
-13					2								2
-14		1			2								4
-15	15	2			11							2	30
-16	1	1			3	2							7
-21													
-22					1	1	2						4
-23					2							3	C
-24	9	10	19	24	27	9					3	7	108
-25													31
-31			2	2	3	4	5	1					17
-32						1	1						2
-33													
-34				2	2	1							5
-35			1	1									2
-41				1									1
-42				•									1
'OTAL	43	98	155	279	299	104	8	1			3	25	1,015

ECI

TABLE A-126

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR,

AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: Bering Sea

SPECIES: Shrimp

GEAR: Otter Trawl

	MONTH												
STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
302-16													
-17													
-25													
-30													
311-31													
-41													
-51													
350-01													
-04													
-11													
-12													
-13													
-14													
-15													
-16													
-21													
-22													
-23													
-24													
-25													
-26													
-31													
-32													
-33													
-34													
-35													
-41													
-42													

TABLE A-126 (cent'd)

Bering Sea (continued) Shrimp Effort

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
350-43													
-44													
-51													
-52													
-61													
351-01													
-04													
-06				1									1
-11													
-13													
-14													
-15													
-16													
-21													
-22													
-23													
-24													
-25													
-31													
-32													
-33													
-34													
-35													
-41													
-42													
TOTAL				1									

EC

TABLE A-127

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR,

AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: Bering Sea

SPECIES: Pacific Cod

GEAR: Otter and Double Otter Trawl

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOT
302-16													
-17													
-25			2										
-30										1			
311-31													
-41													
-51													
350-01													
-04													
-11													
-14													
-15													
-16													
-23													
-24													
-26													
-31													
-32													
-33													
-34													
-35													
-41													
“42													

TABLE A-127 (cent'd)

Bering Sea (continued) Pacific Cod Effort

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTA
350-43													
-44													
-51													
-52													
-61													
351-01													
-04													
-06													
-11													
-13													
-14													
-15													
-16													
-21													
-22													
-23													
-24													
-25													
-31													
-32													
-33													
-34													
-35													
-41													
-42													
TOTAL			2							1			

EC

TABLE A-128

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR,

AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: Bering Sea

SPECIES: Pollock

GEAR: Otter and Double Otter Trawl

	MONTH												
STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOT
302-16													
-17													
-25			2										
-30										1			
311-31													
-41													
-51													
350-01													
-04													
-11													
-12													
-13													
-14													
-15													
-16													
-23													
-24													
-26													
-31													
-32													
-33													
"34													
-35													
-41													
-42													

TABLE A-' 28 (cont d)

ering Sea (continued) Pollock Effort

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
350-43													
-44													
-51													
-52													
-61													
351-01													
-04													
-06													
-11													
-13													
-14													
-15													
-16													
-21													
-22													
-23													
-24													
-25													
-31													
-32													
-33													
-34													
-35													
-41													
-42													
TOTAL			2							1			3

EC

TABLE A-129

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: Bering Sea

SPECIES: Other Bottom Fish

GEAR: Double Otter Trawl

	MONTH												
STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOT
302-16													
-17													
-25													
-30										1			
311-31													
-41													
-51													
350-01													
-04													
-11													
-12													
-13													
-14													
-15													
-16													
-21													
-22													
-23													
-24													
-25													
-26													
-31													
-32													
-33													
-34													
-35													
-41													
-42													

TABLE A-129 (cent'd)

Bering Sea (continued) Other Bottom Fish Effort

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAl
350-43													
-44													
-51													
-52													
-61													
351-01													
-04													
-06													
-11													
-13													
-14													
-15													
-16													
-22													
-24													
-25													
-31													
-32													
-33													
-35													
-41													
-42													
TOTAL										1			1

ECI

TABLE A-130

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: Bering Sea

SPECIES: King Crab

GEAR: Pot

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
-30								42		49			91
311-31													
-41													
-51									5				5
350-01								7					7
-04								26					26
-11								7	148				155
-12								68	236				304
-13								147	426				573
-14								804	665				1,469
-15								2,078	1,085				3,163
-16								18	75				93
-21								122	309				431
-22								1,978	2,548				4,526
-23								1,696	4,100				5,796
-24								1,668	3,714				5,382
-25								1,607	653				2,260
-26								21	75				96
-31								175	731				906
-32								928	2,025				2,953
-33								936	3,207				4,143
-34								720	1,963				2,683
-35								158	225				383
-41								101	939				1,040
-42								125	616				741

TABLE A-' 30 (cont d)

Bering Sea (continued) King Crab Catch (MT)

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	MONTH												
50-43									227	1,101			1,328
-44									71	98			169
-51										119			119
-52									1	26			27
-61													
51-01									7				7
-04											55		55
-06													
-11									7				7
-13												13	13
-14											23	31	26
-15	329										16	144	489
-16	21											14	35
-21										117			117
-22													
-23	10										101	78	189
-24	342									25	533	970	1,870
-25	95										71	40	206
-31									147	50			197
-32										*			*
-33										17			17
-34											25	3	28
-35											4		4
-41													
-42													
TOTAL	797								13,892	25,298	1,059	1,265	42,311

ECI

TABLE A-131

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: Bering Sea

SPECIES: Tanner Crab

GEAR : Pot

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
302-16	36	7		72	68	14						48	245
-17													
-25													
-30	7	27	6	10								15	65
311-31	59	160	48	92									35[illegible]
-41		103	34	67	2								70[illegible]
-51	10	286	433	398	105							17	1,249
350-01													
-04													
-11													
-12				20									2[illegible]
-13													
-14													
-15					336	117							45[illegible]
-16													
-21													
-22						3							
-23				39									39
-24					262	80							34[illegible]
-25				162	2,234	705							3,10[illegible]
-26													
-31			226	211	74	14							521
-32				182	24	16							22[illegible]
-33			83	291	113	4							49[illegible]
-34				289	558	205							1,05[illegible]
-35				299	979	179							1,44[illegible]
-41		133		245	103	14							49[illegible]
-42	1	126	1,371	1,181	182	155							3,01[illegible]

TABLE A-131 (cent'd)

Bering Sea (continued) Tanner Crab Catch (MT)

'AT. AREA	MONTH												TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	
0-43	85	289	1,812	2,517	276	45							5,024
-44		38	33	128	127	71							397
-51	4	28		238	58								328
-52	114	853	955	899	130								2,951
-61												8	8
1-01													
-04													
-06													
-11													
-13					93								93
-14		18			81								99
-15	68	31			266							2	367
-16	2	*			114	47							163
-21													
-22					6	10	15						31
-23					75							7	82
-24	57	561	1,122	1,441	825	245					5	9	4,265
-25	15	130	127	425	234	61						1	993
-31			54	59	26	148	153	3					443
-32						8	5						13
-33													
-34				29	41	19							89
-35			3	28									31
-41				15									15
-42				15									15
TAL	458	2,790	6,307	9,352	7,392	2,151	173	3			5	107	28.738

* LESS THAN .5 MT

ECI

TABLE A-132

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: Bering Sea

SPECIES: Shrimp

GEAR: Otter Trawl

	MONTH												
STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
302-16													
-17													
-30													
311-31													
-41													
-51													
-04													
-11													
-12													
-13													
-14													
-15													
-16													
-21													
-24													
-25													
-26													
-31													
-32													
-33													
-34													
-35													
-41													

TABLE A-132 (cent'd)

Bering Sea (continued) Shrimp Catch (MT)

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
350-43													
-44													
-51													
-52													
-61													
351-01													
-04													
-06				20									70
-11													
-13													
-14													
-16													
-22													
-23													
-24													
-25													
-31													
-32													
-34													
-35													
-41													
-42													

ECI

TABLE A-133

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT
STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: Bering Sea

SPECIES: Pacific Cod

GEAR : Otter and Double Otter Trawl

	MONTH												
STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
302-16													
-17													
-25			10										10
311-31													
-41													
-51													
350-01													
-04													
-11													
-12													
-13													
-14													
-16													
-21													
-22													
-23													
-24													
-31													
-33													
-34													
-35													
-42													

TABLE A-133 (cent'd)

Be r ng Sea (cent' nued)   Pacific Cod   Catch (MT)

	MONTH												
STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
350-43													
-44													
-51													
-52													
-61													
351-01													
-04													
-11													
-13													
-14													
-15													
-16													
-21													
-22													
-23													
-31													
-32													
-33													
-34													
-35													
-41													
-42													
TOTAL			10							20			30

EC I

TABLE A-134

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: Bering Sea

SPECIES: Pollock

GEAR: Otter and Double Otter Trawl

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
302-16													
-17													
-25				20									20
-30										3			3
311-31													
-41													
-51													
350-01													
-04													
-11													
-12													
-13													
-14													
-15													
-16													
-23													
-24													
-26													
-31													
-32													
-33													
-34													
-35													
-41													
-42													

TABLE A-134 (cent'd)

Bering Sea (continued) Pollock Catch (MT)

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
350-43													
-44													
-51													
-52													
-61													
-04													
-06													
-11													
-13													
-14													
-15													
-16													
-21													
-22													
-23													
-24													
-25													
-31													
-32													
-33													
-34													
-35													
-41													
-42													

ECI

TABLE A-135

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT
STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: Bering Sea

SPECIES: Other Bottom Fish

GEAR: Double Otter Trawl

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
302-16													
-17													
-25													
-30											5		5
311-31													
-41													
-51													
350-01													
-04													
-11													
-12													
-13													
-14													
-15													
-16													
-21													
-22													
-23													
-24													
-25													
-26													
-32													
-33													
-34													
-35													
-41													
-42													

TABLE A-135 (cent d)

Bering Sea (cent nued) Other Bottom Fish Catch (MT)

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
350-43													
-44													
-51													
-52													
-61													
351-01													
-04													
-06													
-11													
-13													
-14													
-15													
-16													
-23													
-24													
-25													
-31													
-32													
-34													
-35													
-41													
-42													
TOTAL										5			5

ECI

TABLE A-136

MONTHLY CATCH IN METRIC TONS BY SPECIES N

BRISTOL BAY MANAGEMENT AREA (ALL GEAR TYPES) 1978

SPECIES:	M												TOTA
	1	2	3	4	5	6	7	8	9	10	11	12	
Salmon:													
King					17	1448	430	6	*				1,90
Red					*	7679	21253	112	6				29,05
Coho						*	32	197	95				32
Pink						1	4383	3148	*				7,53
Chum					*	374	946	32	*				1,35
Total Salmon					17	9502	27o44	3495	101				40,15
Tota Herr ng					7024	22							7,04
Tota Herr ng Roe on Kelp				I	132	15							14

* Less than .5 MT

ECI

TABLE A-137

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY
SPECIES IN BRISTOL BAY MANAGEMENT AREA (ALL GEAR TYPES), 1978

;PECIES:	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
ta Sa 1 mon					113	11462	26794	3556	364				42,28:
ta Herring					456	6							464
tal Herring De on Kelp				2	332	38							372
AND TOTAL				2	903	11506	26794	3556	364				43,125

ECI

TABLE A-138

MONTHLY CATCH IN METRIC TONS BY SPECIES IN
N/S ALASKA PENINSULA MANAGEMENT AREA (ALL GEAR TYPES), 1978

SPECIES:	1	2	3	4	5	6	7	8	9	10	11	12	TOTA
Salmon:													
King					8	139	11	1					15
Red						1691	1710	503	3				3,90:
Coho						*	74	244	74				39:
Pink						112	2154	7177	*				9,39
Chum						413	1187	860	19				2,47
Total Salmon	8					2355	5136	8735	96				16,33
Bottomfish:													
Pacific Cod					1		4	3	1	*	52		6
Flounder											6		6
Other											13		1
Total Bottomfish					1		4	3	1	*	71		8
Shellfish:													
King Crab	2								350	673	258	44	1,32
Tanner Crab	572	727	698	797	256						22	221	3,29
Shrimp	609	572				833	1758	1560	26				5,35
Total Shellfish	1183	1299	698	797	956	833	1758	1560	376	673	780	265	9,97

* Less than .5 MT

EC I

TABLE A-139

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY

SPECIES IN N/S ALASKA PENINSULA MANAGEMENT AREA (ALL GEAR TYPES), 1978

SPECIES:	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
otal Salmon					18	2,148	2,591	1,918	159				6,83[illegible]
ottomfish:													
Pacific Cod					1		3	3	1	1	3		1[illegible]
Flounder											1		[illegible]
Other											2		[illegible]
otal Bottom-fish													
hellfish:													
King Crab	1								41	102	60	3	207
Tanner Crab	53	68	98	84	26						1	25	355
Shrimp	11	7				17	44	44	2				125
otal Shell-fish	65	75	98	84	26	17	44	44	43	102	61	28	687
AND TOTAL	65	75	98	84	45	2,165	2,638	1,965	203	103	67	28	7,536

ECI

TABLE A-140

MONTHLY CATCH IN METRIC TONS BY SPECIES IN

DUTCH HARBOR MANAGEMENT AREA (ALL GEAR TYPES), 1978

SPECIES:	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
Bottomfish:													
Pacific Cod													
Pollock													
Other										5			5
Total Bottom fish			30							29			59
Shellfish:													
King Crab (red)	2								801	1,136	1,158		3,097
Tanner (bairdi)	193	139	288	296	162	24					5	83	1,190
Dungeness							3	5		*	*		8
Shrimp	411	306	281	298	575	146	236	418	180	*	92	59	3,001
Total Shell-fish	606	445	569	594	737	170	239	423	981	1,136	1,255	142	7,297

* Less than .5 MT

TABLE A-141

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES IN DUTCH HARBOR MANAGEMENT AREA (ALL GEAR TYPES), 1978

SPECIES:	1	2	3	4	5	6	7	8	9	10	11	12	TOTA
Bottomfish:													
Pacific Coc			2							1			3
Pol lock			2							1			3
Other										1			1
Total Bottom fish			4							3			7
Shellfish:													
King Crab (red)	1								79	112	109		301
Tanner (bairdi)	9	24	34	67	44	7					4	14	20:
Dungeness							2	2		4	1		(
Shrimp	10	9	7	10	12	4	9	11	6	3	11	4	9[illegible]
Total Shell-fish	20	33	41	77	56	11	11	13	85	119	125	18	60:
GRAND TOTAL	20	33	45	77	56	11	11	13	85	122	125	18	611

EC

TABLE A-142

MONTHLY CATCH IN METRIC TONS BY SPECIES IN

BERING SEA MANAGEMENT AREA (ALL GEAR TYPES), 1978

SPECIES:	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
Shellfish:													
King Crab:													
Red	*	6	2	8			*	734	14035	25267			40,052
Blue	798						768	549	30	33	830	1264	3,772
Total King Crab	798	6	2	8			268	1283	14065	25300	830	1264	43,824
Tanner"Crab													
bairdi	963	3502	6952	9607	7184	1733					5	44	29,990
opilio					198	404	173	3					778
Total Tanner C ab	963	3502	6952	9607	7382	2137	173	3			5	44	30,768
Tota Shrimp				20									20
TOTAL SHELL-FISH	1761	3508	6954	9635	7382	7137	441	1286	14065	25300	835	1308	74,612

* Less than .5 MT

ECI

TABLE A-143

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY
SPECIES IN BERING SEA MANAGEMENT AREA (ALL GEAR TYPES), Ig78

SPECIES:	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
hellfish:													
King Crab													
Red	6	84	42	135			2	37	279	653			1,238
Blue	34						21	45	6	3	43	64	216
otal King	40	84	42	135			23	82	285	6s6	43	64	1,454
anner Crab													
bairdi	41	92	150	234	227	79					3	13	839
opilio					15	15	7	1					38
ota Tanner	41	92	150	234	242	94	7	1			3	13	877
ota Shrimp				1									1
RAND TOTAL	81	176	192	370	242	94	30	83	285	656	46	77	2,332

ECI

TABLE A-144

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: South Alaska Peninsula

SPECIES: Salmon

GEAR : Drift Gillnet

STAT. AREA	VESSEL SIZE IN FEET														TOTAL
	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	
- 11															
- 12															
8															
- 20															
- 30															
- 50		32	136	20	1	1								7	197
- 60	2	206	571	65	8	8								62	922
- 71															
- 72															
286 - 41															
- 42															
- 44															
46															
302 - 18															
- 19															
- 21															

South Alaska Peninsula (continued)

Salmon Catch (MT)

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	90	100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22															
- 23															
- 24															
- 26															
- 31															
- 50															
- 51															
- 60															
- 70															
303 - 11															
304 - 11															
353 - 30															
362 - 11.															
- 16															
- 52															
- 71															
TOTAL	2	238	741	89	9	9								75	1.163

1) Aleutians: 63"W to 172°W and 51°N to 54°N; and South of Unmak Island.

ECI

TABLE A-145

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: South Alaska Peninsula[1]

SPECIES: Salmon

GEAR: Set Gil net

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
283 - 10															
- 11															
- 12															
284 - 10															
- 20															
- 30															
-40															
- 50															
- 60		3	1	1										1	6
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
19															
- 20															
- 21															

TABLE A-145

South Alaska Peninsula (continued)

	Salmon						Catch (MT)								
	VESSEL SIZE IN FEET														
STAT. AREA	1 ,20	21 30	31 40-	41	51	50	71 60	7	100	1?1- 80 110	90 120	121 130	151 200	UNKNOWN	TOTAL
302 - 22															
- 23															
- 74															
- 26															
- 51															
- 60															
- 70															
303- 11															
304- 11															
353 - 30															
362 - 11															
16															
- 52															
- 71															
TOTAL		3	1	1										1	6

⁽¹⁾ Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

EC I

TABLE A-146

ANNUAL CATCH N METRIC TONS BY SPECIES, BY GEAR, VESSEL S ZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: South Alaska Peninsula

SPECIES: Salmon

GEAR : Purse Seine

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
283 - 10															
- 11															
- 12															
284 - 10															
- 20															
- 30															
- 40				3											3
- 50	3			50										7	60
- 60	5	39	3	219	8									22	296
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
- 19															
- 21															

TABLE A-146

South Alaska Peninsula (continued)

Salmon Catch (MT)

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22															
- 24															
- 26															
- 31	29	14												7	50
- 50															
- 51															
- 60															
- 70															
303 - 11															
304 - 11															
353 - 30															
- 16															
- 71															
TOTAL	41	53	3	272	8									36	413

1) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island,

EC I

TABLE 47

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: South Alaska Peninsula[1]

SPECIES: King Crab

GEAR: Pot

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
283 - 10															
- 11				48	6	8									62
- 12															
284 - 10								13							13
- 20							5								5
- 30											4				4
- 40						3					3				6
- 50															
- 60					11	23									34
- 71							14	11			3				28
- 72											4				4
286 - 41											4				4
- 42											4				4
- 44											4				4
- 46								13							13
302 - 18			11	8	58	195	204		17	26	25	8	17		569
- 19									8						8
- 20															
- 21						16	39		10						65

TABLE A-147

South Alaska Peninsula (continued)

King Crab Catch (MT)

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
	VESSEL SIZE IN FEET														
302 - 22							16								16
- 23															
- 24						1									1
- 26															
- 31		2	38												40
- 50			7	138	6	12		11	7						181
- 51				87	68	63	504	86	148		9	9			974
- 60				2											2
- 70							3			1					4
303 - 11										8					8
304- 11						12	388		22	32					454
353 - 30										1					1
362 - 11							191	45	29						265
- 16															
- 52					5	13	136	18				17			184
- 71										1					1
TOTAL		2	45	286	104	209	1,491	401	241	69	60	29	17		2,954

(1) Aleutians: 163°W to 172°W and 51"N to 54°N; and South of Unimak Island.

* Less than .5 MT.

ECI

TABLE A-148

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: South Alaska Peninsula[1)]

SPECIES: Tanner Crab

GEAR: Pot

STAT. AREA	VESSEL SIZE IN FEET														TOTAL
	1- 20	21 30	31- 40	41 50	51 60	61- 70	71- 80	90	100	101- 110	111- 120	121- 130	151- 200	UNKNOWN	
283 - 10								12							12
- 11				127		18	6					98			249
- 12							1								1
284 - 10															
- 20						6			59				95		160
- 30					10		85								95
- 40					6	12	25						88		131
- 50					5										5
- 60															
- 71					6			33	14				294		347
286 - 41															
- 42															
- 44															
- 46															
302 - 18								4							4
- 19															
- 20				8											8
- 21							36	12							48

TABLE A-148

South Alaska Peninsula (continued)

Tanner Crab Catch (MT)

STAT. AREA	VESSEL SIZE IN FEET 1-20	-30	31-40	41-50	51-60	61-70	71-80	90	100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22							181	200							381
- 24					46	16		17							79
- 26					7		8								15
- 31			156	59											215
- 50				29				6	6						41
- 51							2	2							4
- 70															
304 - 11															
353 - 30															
362 - 11								21							21
- 16															
- 52								21							21
- 71															
TOTAL			156	223	96	52	352	337	79			98	477		1,870

’) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

EC I

TABLE A-149

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: South Alaska Peninsula

SPECIES: Shrimp

GEAR: Otter Trawls

STAT. AREA	VESSEL SIZE IN FEET														TOTAL
	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	
283 - 10															
11							175		215						390
- 12															
284- 10															
20															
- 30															
- 40															
- 50															
- 60						265	553								818
- 71															
[illegible]															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
- 19															
- 21															

TABLE A-149

South Alaska Peninsula (continued)

Shrimp Catch (MT)

STAT. AREA	VESSEL SIZE IN FEET T 20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
- 24						148	51	124							323
- 31						89	248								337
- 50						177	21	98							296
- 51															
- 60							29								29
- 70						51	19								70
- 16															
- 52															
- 71															
TOTAL						795	1,155	372	215						2,537

1) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

EC I

TABLE A-150

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: South Alaska Peninsula

SPECIES: Shrimp

GEAR: Pot

STAT. AREA	VESSEL SIZE IN FEET														TOTAL
	1- 20	- 30	31- 40	41- 50	51- 60	61- 70	71- 80	90-	100	lot- 110	111 120-	121- 130	151- 200	UNKNOWN	
283 - 10															
- 11															
284- 10															
. 20															
- 30															
- 40															
- 50															
- 60															
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
- 19															
- 20															
- 21															

TABLE A-150

South Alaska Peninsula (continued)

Shrimp Catch (MT)

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22															
- [illegible]															
- 24															
- 26															
- 31		*													*
- 50															
- 51															
- 60															
- 70															
303 - 11															
304 - 11															
- 16															
- 52															
- 71															
		*													*

1) Aleutians: 163°W to 172°W and 5' "N to 54°N; and South of Unimak Island.
* Less than .5 MT.

ECI

TABLE A-151

ANNUA CATCH N METRIC ONS BY SPECIES, BY GEAR, VESSEL S ZE AND
BY 5-DIG T STAT STICAL AREA, 1978

MGT. AREA : South Alaska Peninsula'

SPECIES: Dungeness Crab

GEAR: Pot

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51 60	61-70	80	90	100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
283 - 10															
- 11															
- 12															
284 - 10															
- 20															
- 30															
- 40															
- 50															
- 60															
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
302 - 18				5											5
19															
- 20															
- 21															

South Alaska Peninsula (continued)

Dungeness Crab Catch (MT)

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-100	101-110	111-120	121-130	131-150	151-200	UNKNOWN	TOTAL
	VESSEL SIZE IN FEET														
302 - 22															
- 23															
- 24				3											3
- 26															
- 31		*													*
- 50															
- 51															
- 60															
- 70															
303 - 11															
304 - 11															
16															
- 52															
- 71															
TOTAL		*		8											8

[1] Aleutians: 163°W to 72°W and 51°N to 54°N; and South of Unimak Island.

* Less than .5 MT.

ECI

TABLE A-152

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: South Alaska Peninsula[1])

SPECIES: Pacific Cod

GEAR : Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
283 - 10							1								1
- 11															
- 12															
284 - 10															
- 20															
- 30															
- 40															
- 60															
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
- 19															
- 20															
- 21															

TABLE A-152

South Alaska Peninsula (continued)

Pacific Cod Catch (MT)

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	90	100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22															
- 23															
- 24															
- 31															
- 50															
- 51															
- 60															
- 70															
303 - 11															
304 - 11															
- 16						51									51
- 71															
TOTAL						51	1								52

') Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

ECI

TABLE A-153

ANNUA CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: South Alaska Peninsula[1)]

SPECIES: Flounder

GEAR : Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET														TOTAL
	1-20	21-30	31-40	41-50	51-60	-70	-80	100	90	101-110	111-120	121-130	151-200	UNKNOWN	
283 - 10															
- 11															
- 12															
284 - 10															
- 20															
- 30															
- 40															
- 50															
- 60															
- 71															
- 72															
286 - 41															
- 47															
- 44															
- 46															
302 - 18															
- 19															
- 21															

TABLE A-153

South Alaska Peninsula (continued)

Flounder Catch (MT)

STAT. AREA	VESSEL SIZE IN FEET 1- 20	- 30	31- 40	41- 50	51 60	61- 70	71- 80	90	91- 100	101- 110	111- 120	121- 130	151- 200	UNKNOWN	TOTAL
302 - 22															
- 24															
- 26															
- 50															
- 51															
- 60															
- 70															
303 - 11															
353 - 30															
- 16					6										6
- 71															
TOTAL					6										6

[1] Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

EC I

TABLE A-154

ANNUAL CATCH N METRIC TONS BY SPECIES, BY GEAR, VESSEL S ZE AND

BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: South Alaska Peninsula[1])

SPECIES: Other Bottomfish

GEAR: Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET														TOTAL
	1- 20	" - 30	31- 40	41- 50	51- 60	61- 70	71- 80	81- 90	91- 100	101- 110	111- 120	121- 130	151- 200	UNKNOWN	
283 - 10															
- 11															
- 12															
284 - 10															
- 20															
- 30															
- 40															
- 50															
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
- 19															

D 2 w w

TABLE A-154

South Alaska Peninsula (continued)

Other Bottomfish Catch (MT)

STAT. AREA	VESSEL SIZE IN FEET 1- 20	30	31 40	41 50	51 60	61- 70	71- 80	90	100	101 110	111- 120	121 130	151- 200	UNKNOWN	TOTAL
- 23															
- 24															
- 26															
- 31															
- 51															
303 - 11															
304-11															
353 - 30															
- 16															
- 71															
TOTAL						13									13

1) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

EC I

TABLE A-155

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: South Alaska Peninsula[1]

SPECIES: Salmon

GEAR: Drift Gillnet

	VESSEL SIZE IN FEET														
STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
283 - 10															
- 11															
- 12															
284 - 10															
- 20															
- 30															
- 40			37	5										6	48
- 50		49	199	28	2	2								11	291
- 60	3	325	876	102	13	13								99	1,431
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
- 19															
- 21															

TABLE A-155

South Alaska Peninsula (continued)

Salmon Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
- 23															
- 24															
- 26															
- 31															
- 60															
303 - 11															
304 - 11															
362 - 11															
- 16															
- 52															
- 71															
TOTAL	3	374	1,112	135	15	15								116	1,770

1) A eutians: 163*W to 172°W and 51°N to 54°N; and South of Unimak Island.

ECI

TABLE A-156

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL

SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: South Alaska Peninsula

SPECIES: Salmon

GEAR : Set Gillnet

STAT. AREA	VESSEL SIZE IN FEET														TOTAL
	1-20	21-30	31-40	41-50	51-60	61-70	71-80	90	100	101-110	111-120	121-130	151-200	UNKNOWN	
283 - 10															
- 11															
- 12															
284 - 10															
- 20															
- 30															
- 40															
- 50															
- 60		4	2	2										1	9
- 71															
- 72															
286 - 41															
- 4?															
- 44															
- 46															
- 19															
- 21															1

TABLE A-156

South Alaska Peninsula (continued)

Salmon Exvessel ($000)

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22															
- 23															
- 24															
- 26															
- 31															
- 50															
- 51															
- 60															
- 70															
303 - 11															
304 - 11															
362 - 11															
- 16															
- 52															
- 71															

[1] Aleutians: 163*W to 172°W and 51°N to 54°N; and South of Unimak Island.

TABLE A-157

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: South Alaska Peninsula[1)]

SPECIES: Salmon

GEAR: Purse Seine

STAT. AREA	VESSEL SIZE IN FEET 1- 20	21- 30	31- 40	41- 50	51 60	61- 70	80	90	100	101- 110	111- 120	121- 130	151- 200	UNKNOWN	TOTAL
283 - 10															
- 11															
- 12															
284 - 10															
- 20															
- 30															
- 40				2											2
- 50	5			75										11	91
-60	4	28	2	296	6									16	352
- 71															
- 7?															
286 - 41															
- 42															
44															
- 46															
- 19															
- 21															

D-233

TABLE A-157

South Alaska Peninsula (continued)

Salmon Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22															
- 23	3														3
- 24															
- 31	21	11												5	37
- 50															
- 51															
- 60															
- 70															
304 - 11															
- 16															
- 52															
- 71															
TOTAL	33	39	2	373	6									32	485

1) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

ECI

TABLE A-158

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: South Alaska Peninsula[1]

SPECIES: King Crab

GEAR : Pot

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
283 - 10															
- 11				130	18	21									169
- 12															
284 - 10								34							34
- 20							14								14
- 30											11				11
- 40						9					8				17
- 50															
- 60				1	31	63									95
- 71							38	29			9				76
- 72											11				11
286 - 41											11				11
- 42											11				11
- 44											11				11
- 46								34							34
302 - 18				31	22	164	545	570	48	77	71	74	47		1,594
- 19									23						23
- 20															
- 21						46	108		27						181

TABLE A-158

South Alaska Peninsula (continued)

King Crab Exvessel Value ($ 000)

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22							44								44
- 23															
- 24						1									1
- 26															
- 50			21	387	18	33		30	19						508
- 51				244	191	175	1,411	242	415		25	25			2,728
- 60				4											4
- 70							7			3					10
303 - 11										24					24
304 - 11						34	1,086		60	90					1,270
353 - 30										4					4
362 - 11							532	126	81						739
- 16															
- 52					15	37	375	51				32			510
- 71										2					2
TOTAL		6	128	797	295	583	4,160	1,116	673	195	168	81	47		8,249

1) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

ECI

TABLE A-159

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL

SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: South Alaska Peninsula[1)]

SPECIES: Tanner Crab

GEAR: Pot

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30"	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
283 - 10								12							12
- 11				131		19	7					101			258
- 12							1								1
284 - 10															
- 20						6			61				98		165
- 30					10		89								99
- 40					6	13	26						91		136
- 50					6										6
- 60															
- 71					6			34	14				305		359
- 72															
286 - 41															
- 42															
- 44															
- 46															
302 - 18								3							3
- 19															
- 20				8											8
- 21							33	11							44

D 24w

South Alaska Peninsula (continued)

Tanner Crab Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22							164'	181							345
- 23	.				14		8	8							30
- 24					42	14		16							72
- 26					6		7								13
- 31			141	53											194
- 50				26				5	5						36
- 51							2	2							4
- 60															
- 70															
362 - 11								22							22
- 16															
- 71															
TOTAL			141	218	90	52	337	316	80			101	494		1,829

1) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

ECI

TABLE A-160

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: South Alaska Peninsula 1)

SPECIES: Shrimp

GEAR : Otter Trawls

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
283 - 10															
- 11							70		86						156
284 - 10															
- 20															
- 40															
- 50															
- 60,						106	221								327
- 71															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
- 19															
- 21															

TABLE A-160

South Alaska Peninsula (continued)

Shrimp Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
- 23					22	19	60								101
- 24					59	294	49								402
- 31					36	202									238
- 50					71	112	39								222
- 51															
- 60						11									11
303 - 11															
304 - 11															
353 - 30															
362 - 11															
- 16															
- 71															
TOTAL					318	1,128	]48	86							1,680

1) Aleutians: 163°W to 172*W and 51°N to 54°N; and South of Un mak Island.

* Less than $500.

ECI

TABLE A-161

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: South Alaska Peninsula[1])

SPECIES: Shrimp

GEAR : Pot

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	
283 - 10															
- 11															
- 12															
284 - 10															
- 20															
- 30															
- 40															
- 50															
- 60															
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
- 19															
- 20															
- 21															

TABLE A-161

South Alaska Peninsula (continued)

Shrimp Exvessel Value ($000)

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	80	90	100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22															
- 23															
- 24															
- 26															
- 31		*													*
- 50															
- 51															
- 60															
- 70															
303 - 11															
304 - 11															
- 16															
- 52															
- 71															
TOTAL		*													*

1) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

* Less than $500.

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TABLE A-162

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: South Alaska Peninsula[1)]

SPECIES: Dungeness Crab

GEAR: Pot

STAT. AREA	VESSEL SIZE IN FEET 1- 20	- 30	31- 40	41- 50	51- 60	61- 70	71- 80	81- 90	91- 100	101- 110	111- 120	121- 130	151- 200	UNKNOWN	TOTAL
11															
- 12															
284 - 10															
- 20															
- 30															
- 40															
- 50															
- 60															
- 71															
- 72															
286 - 41															
- 42															
- 46															
302 - 18			7												7
- 21															

TABLE A-162

South Alaska Peninsula (continued)

Dungeness Crab Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	90	100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
- 23															
- 24				4											4
- 26															
- 31		*													*
- 50															
- 51															
- 60															
- 70															
304- 11															
362 - 11															
- 52															
- 71															
TOTAL		*		11											11

1) Aleutians: 163°W to 172°W and 5" "N to 54°N; and South of Unimak Island.

* Less than $500.

TABLE A-163

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL

SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: South Alaska Peninsula [1)]

SPECIES: Pacific Cod

GEAR: Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
283 - 10							1								1
- 11															
- 12															
284 - 10															
- 20															
- 30															
- 40															
- 50															
- 60															
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
- 19															
- 20															
- 21															

TABLE A-163

South Alaska Peninsula (continued)

Pacific Cod Exvessel Value ($000)

STAT.[1] AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-150	151-200	UNKNOWN	TOTAL
302 - 22																
- 23																
- 24																
- 26																
- 31																
- 50																
- 51																
- 60																
- 70																
304 - 11																
362 - 11																
- 16						29										29
- 52																

1) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

TABLE A-164

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: South Alaska Peninsula[1)]

SPECIES: Flounder

GEAR: Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET														TOTAL
	1-20	21-30	31-40	41-50	51-60	61-70	80	90	100	101-110	111-120	121-130	151-200	UNKNOWN	
233 - 10															
- 11															
- 12															
284 - 10															
- 20															
- 30															
- 40															
- 50															
- 60															
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
- 19															
- 20															
- 21															

TABLE A-164

South Alaska Peninsula (continued)

Flounder Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET 1- 20	21- 30	31- 40	41- 50	51- 60	61- 70	71- 80	81- 90	100	101 110	111 120	121 130	151 200	UNKNOWN	TOTAL
302 - 22															
- 23															
- 24															
- 26															
- 31															
- 50															
- 51															
- 60															
- 70															
303- 11															
304- 11															
353 - 30															
362 - 11															
- 16						3									3
- 52															
- 71															

1) Aleutians: 163°W to 172°W and 51"N to 54°N; and South of Unimak Island.

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TABLE A-165

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL

SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: South Alaska Peninsula[1]

SPECIES: Other Bottomfish

GEAR: Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	90	100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
283 - 10															
- 11															
- 12															
284- 10															
- 20															
- 30															
- 40															
- 50															
- 60															
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
- 19															
- 20															
- 21															

TABLE A-165

South Alaska Peninsula (continued]

Other Bottomfish Exvessel Value ($000)

STAT. AREA	VESSEL SIZE IN FEET														TOTAL
	1-20	21-30	31-40	41-50	51-60	61-70	71-80	90	100	101-110	111-120	121-130	151-200	UNKNOWN	
302 - 22															
- 23															
- 24															
- 26															
- 31															
- 50															
- 51															
- 60															
- 70															
303- 11															
304- 11															
353 - 30															
362 - 11						7									7
- 16															
- 52															
- 71															
TOTAL						7									7

1) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

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TABLE A-166

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES,

BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: South Alaska Peninsula[1)]

SPECIES: Salmon

GEAR : Drift Gillnet

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	100	101-110	111-120	1- 1:0	151-200	UNKNOWN	TOTAL
283 - 10															
- 11															
- 12															
284- 10															
" 20															
- 30															
- 40			18	3										4	25
- 50		23	127	21	1	1								5	178
- 60	2	209	537	56	9	9								59	881
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
19															
- 20															
- 21															

TABLE A-166

South Alaska Peninsula (continued)

Salmon Effort

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22															
- 23															
- 24															
- 26															
- 31															
- 50															
- 60															
- 70															
0															
304- 11															
0															
362- 11															
- 16															
- 52															
- 71															
TOTAL	2	232	682	80	10	10								68	1,084

1) Aleutians: 163°W to 172°W and 51°N to 54"N; and South of Unimak Island.

EC I

TABLE A-167

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPEC ES,

BY GEAR VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA 1978

MGT. AREA: South Alaska Peninsula[1)]

SPECIES: Salmon

GEAR: Set Gillnet

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51 60	61-70	71-80	90	100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
283- 10															
- 11															
- 12															
284- 10															
- 20															
- 30															
- 40															
- 50															
- 60		7	3	3										2	15
- 71															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
- 19															
- 21															

TABLE A- 167

South Alaska Peninsula (continued)

Salmon Effort

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22															
- 24															
- 26															
- 50															
- 51															
- 60															
- 70															
303- 11															
304- 11															
353 - 30															
6															
- 16															
- 52															
- 71															
0 A															

1) A eutians: 163°W to 172°W and 51°N to 54*N; and South of Un mak Island.

EC I

TABLE A-168

ANNUAL FISHING EFFORT IN NUMBER OF LAND NGS BY SPECIES,

BY GEAR, VESSEL SIZE AND BY 5-DIGIT STAT STICAL AREA, 1978

MGT. AREA: South A' aska Peninsula[1]

SPECIES: Salmon

GEAR : Purse Seine

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	80	81-90	91-100	101-110	111-120	1 1 :;-	151-200	UNKNOWN	TOTAL
283 - 10															
- 11															
- 12															
284- 10															
- 20															
- 30															
- 40				2											2
- 50	1			12										2	15
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
- 19															
- 21															

TABLE A-168

South Alaska Peninsula (cent i nued)

Salmon Effort

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
	VESSEL SIZE IN FEET														
0															
- 23	2														2
- 24															
- 50															
- 51															
- 60															
70															
303 - 11															
0															
353 - 30															
6															
- 16															
- 52															
- 71															
TOTAL	21	14	1	61	3									14	114

1) Aleutians: 163°W to 172°W and 51"N to 54°N; and South of Unimak Island.

EC I

TABLE A-169

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES,

BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA 1978

MGT. AREA: South Alaska Peninsula[1])

SPECIES: King Crab

GEAR: pot

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
8 0															
- 11				16	1	1									18
- 12															
284- 10								1							1
- 20							1								1
- 30											1				1
- 40						1					1				2
- 50															
- 60				1	3	5									9
- 72											1				1
286 - 41											1				1
- 42											1				1
- 44											1				1
- 46								1							1
302 - 18				7	1	6	12	15	1	2	3	1	2		50
- 19									1						1
- 20															
- 21						3	2		1						6

TABLE A-169

South A aska Pen **nsula** (continued)

King Crab Effort

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	- [illegible]	81-[illegible]	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
	VESSEL SIZE IN FEET														
302 - 22							2								2
- 23															
- 24						1									1
6															
- 31		3	57											I	60
- 50			7	37	7	3		1	1						51
- 51				17	8	6	77	3	8		1	1			71
60															
- 70							1			1					2
303- 11										3					3
304- 11						1	9		1	2					13
353 - 30										1					1
362- 11							11	2	2						15
- 16															
- 52					1	2	12	1				2			18
- 71										1					1
TOTAL	I	3	64	79	16	29	78	25	15	10	11	4	2		336

1) Aleut ans: 163°W to 172°W and 51 'N to 54°N; and South of Un mak Island.

EC I

TABLE A- 170

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES,

BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: South Alaska Peninsula[1]

SPECIES: Tanner Crab

GEAR: pot

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
283 - 10								1							1
- 11				11		3	1					6			21
- 12							1								1
284 - 10															
- 20						1			6				1		8
- 30					1		8								9
- 40					1	2	4						1		8
- 50					1										1
- 60															
- 71					1			5	2				4		12
- 72															
286 - 41															
- 42															
- 44															
46															
302 - 18								1							1
- 19															
- 20				2											2
- 21							3	1							4

TABLE A-170

South Alaska Peninsula (continued)

Tanner Crab Effort

STAT. AREA	7-20	21-30	31-40	41-50	51-60	6. 70	.. 80	81-90	100	101 110	111-120	121-130	151-200	UNKNOWN	TOTAL
	VESSEL SIZE IN FEET														
302 - 22							15	6							21
- 23					2		1	1							4
- 24					3	1		1							5
- 26					1		1								2
- 31			87	32											119
- 50				9				1	1						11
- 51							1	1							7
- 60															
- 70															
0															
304 - 11															
0															
362 - 11								4							4
- 16															
- 52								4							4
- 71															
TOTAL			87	54	10	7	35	26	9			6	6		240

1) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

ECI

TABLE A-171

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES,

BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA 1978

MGT. AREA: South Alaska Peninsula[1)]

SPECIES: Shrimp

GEAR: Otter Trawls

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	80	90	100	101-110	111-120	121-130	1	151-200	UNKNOWN	TOTAL
283 - 10																
- 11							2		2							4
- 12						1										1
284 - 10																
- 20																
- 30																
- 40																
- 50																
- 60						6	10									16
- 71																
- 72																
286 - 41																
- 42																
- 44																
- 46																
302 - 18																
- 19																
- 20																
- 21																

TABLE A-171

South Alaska Peninsula (continued)

Shrimp Effort

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
						VESSEL SIZE IN FEET									
302 - 22						1	1								2
- 23						3	2	5							10
- 24						6	23	3							32
- 50						9	11	3							23
- 51															
- 60							1								1
- 70						2	15								17
0															
304 - 11															
0															
362 - 11															
- 16															
- 71															
TOTAL						30	77	11	2						120

1) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

ECI

TABLE A-172

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES,

BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: South Alaska Peninsula[1]

SPECIES: Shrimp

GEAR: Pot

STAT. AREA	VESSEL SIZE IN FEET 1- 20	21 30	31- 40	41 50	51 60	61- 70	71- 80	90	100	101- 110	111- 120	121- 130	151- 200	UNKNOWN	TOTAL
283 - 10															
- 11															
- 12															
284 - 10															
- 30															
- 40															
- 60															
- 71															
- 72															
286 - 41															
- 47															
- 44															
- 46															
302 - 18															
- 19															
- 20															
- 21															

TABLE A-172

South Alaska Peninsula (continued)

Shrimp Effort

STAT. AREA	VESSEL SIZE IN FEET 1-20	21 30	31- 40	41- 50	51- 60	6 70	71 80	8 90	9 100	101- 110	111- 120	121- 130	151- 200	UNKNOWN	TOTAL
302 - 22															
- 23															
- 24															
- 26															
- 31		9													9
- 50															
- 51															
- 60															
- 70															
303- 11															
304- 11															
353 - 30															
362 - 11															
- 16															
- 52															
- 71															
TOTAL		9													9

1) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Un mak Island.

EC I

TABLE A-173

ANNUAL FISHING EFFORT IN NUMBER OF LAND NGS BY SPEC ES,

BY GEAR VESSEL SIZE AND BY 5-DIGIT STAT STICAL AREA 1978

MGT. AREA: South Alaska Peninsula[1)]

SPECIES: Dungeness Crab

GEAR : Pot

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
283 - 10															
- 11															
284 - 10															
- 30															
- 40															
- 50															
- 60															
- 71															
286 - 41															
- 42															
- 44															
- 46															
302 - 18				4											4
- 19															

TABLE A-173

South Alaska Peninsula (continued)

Dungeness Crab Effort

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22															
- 23															
- 24				3											3
- 26															
- 31		5													5
- 50															
- 51															
- 60															
- 70															
303- 11															
304- 11															
353 - 30															
362- 11															
- 16															
- 52															
- 71															
TOTAL		5		7											12

1) Aleutians: 163°W to 72°W and 51°N to 54°N; and South of Unimak Island.

EC I

TABLE A-174

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES,

BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA South Alaska Peninsula[1]

SPECIES: Pacific Cod

GEAR: Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET														TOTAL
	1- 20	- 30	31- 40	41- 5(.3	51 60	61- 70	71- 80	90	10;	1 l- 1:0	111- 120	121- 130	151- 200	UNKNOWN	
283- 10							1								1
- 11															
- 12															
284- 10															
- 20															
- 30															
- 40															
- 50															
- 60															
71															
- 72															
286- 41															
- 42															
- 44															
- 46															
302 - 18															
- 19															
- 21															

TABLE A-174

South Alaska Peninsula (continued)

Pacific Cod Effort

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22															
- 23															
- 24															
- 26															
- 31															
- 50															
- 51															
- 60															
- 70															
303- 11															
304- 11															
353 - 30															
362 - 11															
- 16						2									2
- 52															
- 71															
TOTAL						2	1								3

1) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

ECI

TABLE A-175

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES,

BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1970

MGT. AREA : **South Alaska Peninsula**[1]

SPECIES: Flounder

GEAR: Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET														TOTAL
	1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-1:0	111-120	121-130	151-200	UNKNOWN	
283 - 10															
- 11															
- 12															
284 - 10															
- 20															
- 30															
- 40															
- 50															
- 60															
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
- 19															
- 20															
- 21															

TABLE A-175

South Alaska Peninsula (continued)

Flounder Effort

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22															
- 23															
- 24															
6															
- 31															
- 50															
- 51															
- 60															
- 70															
0															
304 - 11															
353 - 30															
362 - 11															
- 16						1									1
- 52															
- 71															
TOTAL						1									1

1) Aleutians: 163°W to 172°W and 51°N to 54°N; and South of Unimak Island.

TABLE A-176

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES,

BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: South Alaska Peninsula[1)]

SPECIES: Other Bottomfish

GEAR: Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET														TOTAL
	1-20	21-30	31-40	41-50	51-60	61-70	71-80	90	10;	101-110	111-120	121-130	151-200	UNKNOWN	
283 - 10															
- 11															
- 12															
284 - 10															
- 20															
- 30															
- 40															
- 50															
- 60															
- 71															
- 72															
286 - 41															
- 42															
- 44															
- 46															
302 - 18															
- 19															
- 20															
- 21															

TABLE A-176

South Alaska Peninsula (continued)

Other Bottomfish Effort

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	151-200	UNKNOWN	TOTAL
302 - 22															
- 23															
- 24															
- 26															
- 31															
- 50															
- 51															
- 60															
- 70															
303- 11															
304- 11															
353 - 30															
362- 11						2									2
- 16															
- 71															
A															

1) Aleutians: 63″W to 172°W and 51°N to 54°N; and South of Unimak Island.

ECI

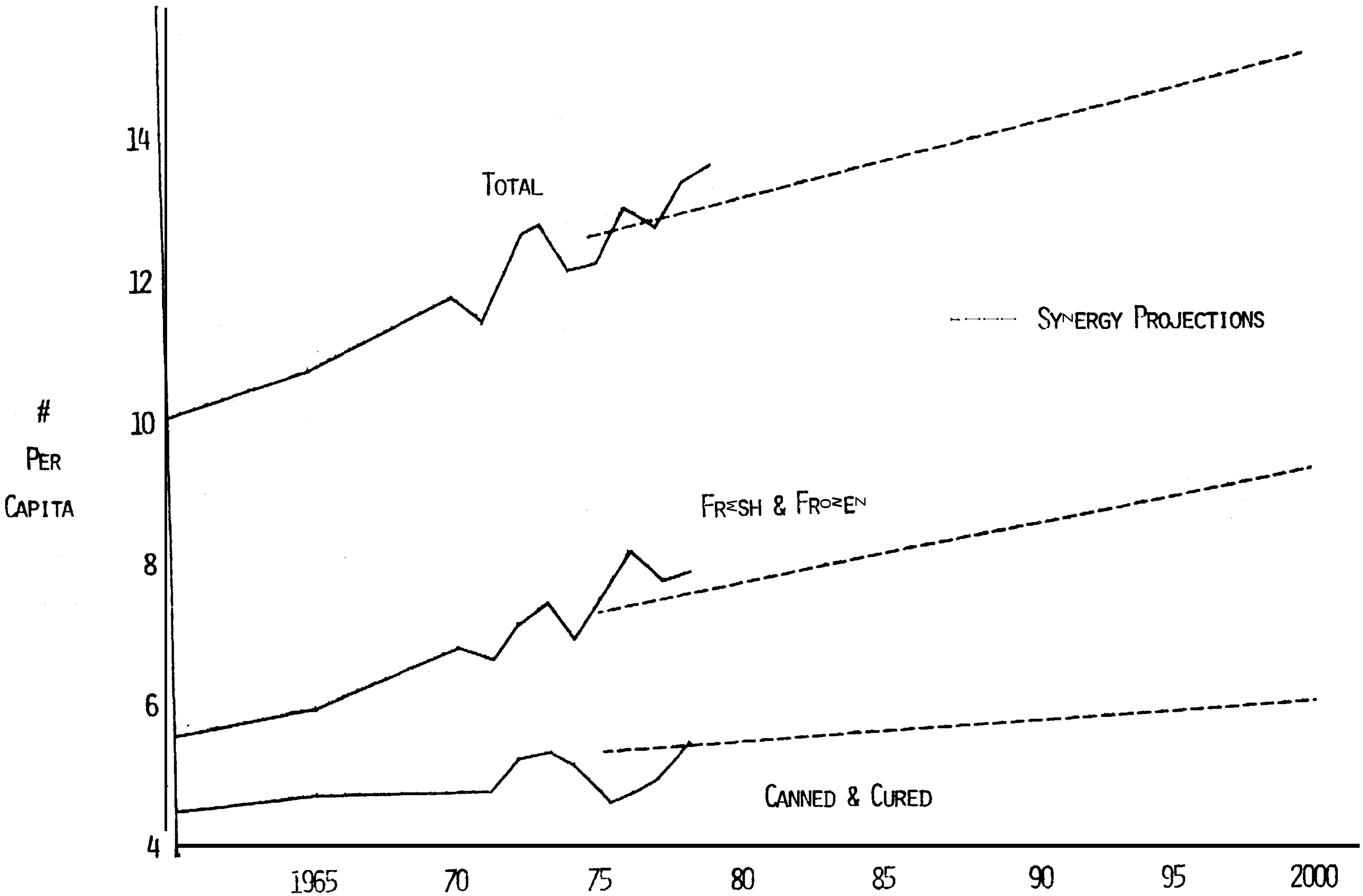
Fish Markets

U.S. per capita consumption of fish products increased 17.3% over the 10 year period from 1968 to 1978 while total fish consumption increased over 25%. This increase paralleled, and is possibly linked to, a real per capita disposable income increase of 22%. Considering this economic relationship, the slowed or declining rates of consumption that occurred during 1979 are not unexpected. Future growth in the domestic consumption of fish products will, in part, be dependent upon the general health of the U.S. economy. A continued growth rate is predicted (Figure A-2).

Groundfish Species:

The U.S. supply of groundfish has increased steadily over the last decade at a rate of over 3% per year (Table A-177). Over half of the groundfish supply is comprised of imported blocks which are further processed into fish sticks and portions. The per capita consumption of these product forms has increased from 1.32 lbs. in 1968 to 2.18 lbs. in 1979, a rate of about 6% per year (Table A-178). The fresh and frozen fillet market offers the most immediate opportunity for utilization of increasing domestic groundfish harvests. As the domestic industry develops capabilities to produce blocks at competitive prices, these products will take on increasing importance. Cod and flounder fillets have the stronger markets currently and have experienced substantial price increases in 1979. The apparent consumption of ocean perch has declined from a high in 1973 in spite of increasing supplies. While Alaskan pollock processed in Korea has supplied an increasing amount of the U.S. block imports, the price remains too low to attract U.S. industry. Again, the greatest short term potential for pollock is in the fillet market. Markets for other product forms of groundfish merit consideration by Alaska processors. Both salted and dried fish have strong markets, especially in developing nations. Nigeria has offered to buy 10,000 m.t. of dried cod (stockfish) from U.S. suppliers. Additionally, recent U.S. imports have included about 1/2 million lbs. of dried and 13 million lbs. of salted white fish (cod, tusk, hake, and pollock).

In summary, the groundfish market continued to grow during 1979, blocks and fillets growing at 2% and 1%, respectively. This suggests these products may be more resistant to exogenous economic pressures than some others. Groundfish does not appear to be an inferior food if the product quality is high, especially as it is most often used



TOTAL
SYNERGY PROJECTIONS
FRESH & FROZEN
CANNED & CURED
PER CAPITA
14
12
10
8
6
4
1965
70
75
80
85
90
95
2000

Table A-177

U. S. SUPPLY OF GROUNDFISH
Fresh, Frozen Fillets & Steaks
Frozen Blocks & Slabs

	Domestic/l		Import/l		World Supply/2 (Frozen Groundfish)
	Quantity (Thousand Pounds)	Value (Thousand Dollars)	Quantity (Thousand Pounds)	Value (Thousand Dollars)	(Thousand MT)
1950			78.0-	14.6 '	
1951			111.6	23.0	
1952			140.5	31.4	
1953	135.0	36.5	118.3	25.3	256.4
1954	144.4	36.4	147.8	29.9	394.8
1955	130.0	33.9	141.1	28.6	416.5
1956	130.7	34.4	148.5	29.8	405.3
1957	122.9	34.6	155.2	31.7	432.6
1958	124.8	37.5	161.4	34.8	501.2
1959	117.6	34.9	199.3	43.1	495.0
1960	124.5	37.0	176.5	39.0	483.6
1961	126.7	38.8	215.0	48.0	517.5
1962	133.9	42.9	241.8	52.9	498.1
1963	130.7	43.2	250.5	55.6	632.8
1964	125.3	42.1	270.4	64.7	675.6
1965	129.1	47.9	309.8	82.0	778.4
1966	127.6	51.0	352.7	94.4	799.3
1967	118.8	48.3	320.3	81.4	605.7
1968	119.4	50.2	434.5	109.4	564.6
1969	118.1	56.1	526.7	107.8	640.7
1970	112.9	59.3	458.8	134.6	596.4
1971	96.7	59.6	482.6	181.7	638.4
1972	103.9	69.8	568.7	246.3	626.5
1973	119.2	96.1	578.8	313.5	687.7
1974	114.4	99.1	431.4	250.5	702.3
1975	102.4	109.0	513.8	278.4	706.1
1976	141.1	141.1	607.0	398.6	752.2
1977	130.4	162.3	599.6	502.1	NA
1978	142.3	186.0	639.4	565.4	
1979	139.7	211.4	661.1	622.3	

l/Compiled from Fisheries of the United States, annuals

ECI

2/FAO Yearbooks of Fish Statistics

Table A-178

Supply and use of Fish sticks and portions, 1960-79

(Product weight)

Year	Supply: Beginning stocks	Supply: Production: Sticks	Supply: Production: Portions	Supply: Production: Total	Supply: Imports	Supply: Total	Use: Ending stocks	Use: Apparent consumption: Total	Use: Apparent consumption: Per capita
	Million pounds								Pounds
1960	6.9	65.1	49.4	114.5	0.2	121.6	9.1	112.5	0.625
1961	9.1	69.8	59.8	129.6	0.5	139.2	10.5	128.7	.703
1962	10.5	77.2	78.7	150.9	0.3	161.7	11.5	150.1	.807
1963	11.6	79.3	94.6	179.3	0.4	185.9	13.6	172.1	.912
1964	13.6	73.6	106.3	179.9	0.2	193.7	8.1	185.6	.969
1965	8.1	82.5	140.4	222.9	0.3	231.3	20.2	211.1	1.091
1966	20.2	81.4	147.6	229.0	0.4	249.6	19.5	230.1	1.176
1967	19.5	73.9	161.3	235.2	0.4	255.1	14.0	241.1	1.222
1968	14.0	91.7	182.8	274.5	0.9	289.4	24.0	265.4	1.328
1969	24.0	113.4	217.0	330.4	1.6	356.0	25.4	330.0	1.637
1970	25.4	115.9	234.3	350.2	1.2	376.8	22.0	354.8	1.746
1971	22.0	97.8	239.7	337.5	1.2	360.7	23.2	337.5	1.637
1972	23.2	114.5	269.2	383.7	1.4	408.3	34.4	373.9	1.784
1973	34.4	127.2	298.4	425.6	1.7	461.7	41.5	420.2	2.002
1974	41.5	103.1	276.2	379.3	1.5	422.3	33.3	389.0	1.860
1975	33.3	91.1	295.6	386.7	0.4	420.4	35.3	385.1	1.808
1976	35.3	93.4	340.1	433.5	0.6	469.4	31.0	438.4	2.042
1977	31.0	87.2	355.4	442.7	0.6	474.3	30.5	443.8	2.051
1978	30.5	94.7	389.4	484.1	1.4	516.0	37.1	478.8	2.194
1979 1/	37.1	91.9	390.4	482.2	2.4	521.8	41.7	480.1	2.181

1/ Preliminary.

Source: National Marine Fisheries Service, Food Fish Market Review, May, 1980.

in the fast food industry. U.S. takeover of the groundfish harvest and processing operations will likely be phased in over a 20 year period, Although labor and energy costs of U.S. operators are likely to influence price the possibility of technological adaptation will act to balance these effects. Production economics for U.S. operators are marginal at present. Recent market softness for traditional species coupled with high interest rates keep investors from injecting venture capital into this developing industry. The longer term prospects over the next 20 years are likely to show better than these short term aberrations in the industry growth curve.

Salmon:

Large supplies of salmon have caused some softening in the market. U.S. landings in 1979 increased by a third from 1978 and were 84% of the 74-78 average. Enhancement programs have strong support internationally which suggests that salmon supplies will increase on a worldwide basis at a rate of about 2% per year (Canada Department of Fisheries and Oceans, 1979). This situation indicates that the present market problems won't be easily or quickly solved. A consistently high quality product is mandatory for successful competition in the future, as high demand for high quality salmon continues despite the general softening.

Herring:

The U.S. imports a considerable volume of herring, including about 50,000 m.t. from Canada alone (Canada Department of Fisheries and Oceans, 1979). See Table A-179. Shortages of herring stocks have occurred worldwide, and demand for food herring remains high. However, this demand is generally for high value specialty items, and quality requirements are exacting. High yield and size graded fish with high fat content are in strong demand. The exvessel price more than doubled in 1979 to $.58/lb.; consequently, the interest of U.S. fishermen to harvest herring is growing.

Halibut:

The traditionally strong market for halibut continues with exvessel prices going up over 50% to $1.62/lb. in 1979. The decline in imports of 2.8 million lbs. was replaced by increased U.S. landings of 3.7 million lbs. Prices dropped substantially in 1980, but the demand remained strong.

Table A-179

Canadian Herring Exports to the United States
(Q: metric tons, product weight; V: $000)

	1975 Q	1975 V	1977 Q	1977 V	1978 Q	1978 V
Fresh, whole or dressed	24,600	2,387	21,151	5,735	22,073	5,886
Frozen, whole or dressed	742	328	1,812	739	1,827	1,437
Frozen fillets	359	207	445	366	2,857*	4,447
Smoked	204	328	585	845	548	944
Vinegar-cured fillets	3,110	1,881	3,786	2,762	4,405	5,365
Vinegar-cured whole or dressed	494	242	757	473	430	422
Pickled fillets	4,120	2,602	2,430	1,594	4,654	5,774
Pickled split	141	102	429	293	708	753
Pickled, whole or dressed	2,051	1,041	1,440	894	1,400	1,453
Canned	2,856	4,948	2,438	5,415	2,378	5,728
Sardines	1,136	1,843	1,025	2,240	1,218	3,316
Sub Total	39,813	15,909	36,298	21,356	42,498	35,525
Herring Roe	31	95	88	508	41	427
Herring Meal	14,506	3,795	8,675	3,862	10,473	4,979
Herring Oil	2,259	807	3,490	1,224	3,579	1,733
Sub Total	16,796	4,697	12,253	5,594	14,093	7,139
GRAND TOTAL	56,609	20,606	48,551	26,950	56,591	42,664

Source: Statistics Canada
* Questioned by trade. Exports from Canada for U.S. consumption considered to be negligible.

Shellfish:

As the high priced line of fisheries products, shellfish may be ❑ost sensitive to economic pressures. Domestic consumption is primarily through the food service industry which has suffered from recessionary slowdowns. Nevertheless, the long term projections are for increasing world consumption of shellfish at a 3% to 4% rate which should maintain or increase prices. In 1979, both the shrimp landings and the per capita consumption of shrimp were at the lowest levels in ten years (Table A-180). Substantial price increases occurred as a result, but they have stabilized subsequently. The market appears to have reached a price ceiling although costs to fishermen are still climbing. Export markets are dependent upon the availability of competing stocks, especially in the Scandinavian countries.

King crab has not suffered from the generally slow market. Demand has been steady with prices increasing in 1979 substantially, in spite of relatively high landings. The domestic market for king crab is nearly entirely in food service, while the foreign market is predominately in Japan. Considering the recent poor restaurant sales and the reduction of shellfish consumption in Japan during 1979, the continued success of king crab demonstrates a strong market position. Tanner crab enjoys some of the substitute king crab market in addition to having a steady market demand itself. Again, the domestic food service market and the Japanese market predominate. Future market outlook is good.

Hydrocarbon Effluent Water Pollution

ECI staff contacted federal and state officials immediately involved in oil spill cleanup efforts in western Alaska, as well as those who track such accidents over time. From them it has been determined that since 1976, in the St. George Basin area and North Aleutian Shelf, there have been no spills that have had measurable impacts upon the fisheries or fishing industry of that area.

The U.S. Coast Guard Marine Safety Office in Anchorage keeps records of all spills in Alaska. Mr. John Sullivan of that office reported no incidence affecting fisheries in these areas for the time period in question. This was confirmed with members of the State Department of Environmental Conservation, and the Anchorage Office of the EPA.

Table A-180

PER CAPITA CONSUMPTION OF SHRIMP 1950 to 1979

Year	Pounds	Year	Pounds
1950	0.75	1964	1.16
1951	.87	1965	1.24
1952	.92	1966	1.21
1953	.92	1967	1.29
1954	.94	1968	1.37
1955	.98	1969	1.31
1956	.93	1970	1.44
1957	.83	1971	1.39
1958	.88	1972	1.44
1959	1.04	1973	1.36
1960	1.08	1974	1.51
1961	1.01	1975	1.41
1962	0.02	1976	1.50
1963	1.17	1977	1.59
		1978	1.51
		1979	1.34

Source: NMFS, Fisheries of the United States, 1979.

Mr. Burl Wescott, onsite coordinator for the November 1979 St.. Paul cleanup operation, reported that because of the unique circumstances of the St. Paul spill, no damage to the fishing industry occurred. Working with NOAA's Office of Marine Pollution Assessment, Mr. Wescott was able to arrive onsite with a large crew fairly quickly, thanks to the sizable airstrip on St. Paul. He emphasized that most locations in the Aleutians and Bering Sea would be much more difficult to reach quickly with a well equipped cleanup crew.

The spill itself, which occurred when a Japanese factory ship was grounded in a storm, was comprised of 100,000-150,000 gallons of light diesel oil. About one-half of the spill was swept almost immediately into Salt Lagoon.

The lagoon sustained heavy anthropod damage, but no commercial fisheries were affected. The response team cleaned up the lagoon by creating a large eddy in the sand dike that trapped the oil, as a container boom across the mouth of the lagoon proved to be ineffective.

In summary, the spill had a high initial impact with very little residence time, as the lagoon flushes itself. No damage to commercial fisheries was sustained.

Factors of Change

In this section several topical factors of change are discussed. These factors are included as they may have some influence on the impacts analysis for OCS development and commercial fisheries. The several topics considered below include: limited entry, technology, the 200 mile limit, enhancement, aquiculture, groundfish potential, the proposed clam fishery, the current political and economic trends, and the relationship between foreign and domestic fishing effort as affected by these other factors.

Limited Entry:

The major effect of limited entry is that it tends to hold constant the number of fishing boats which participate in the fishery. Theoretically this prevents economic over-capitalization for that fishery. Limited entry is designed to allow a better chance for individual operators to achieve adequate revenues given a finite resource. In the area of interest to this study the only fishery currently subject to limited entry is that for salmon. There are prospects for near future limitation of the halibut fishery. Other fisheries for crab, shrimp and herring do not appear to be as near to entry limitation although they have been subject of related discussions. It does not appear that the domestic bottomfish fishery will be the subject of entry limitation in the near future.

To date, the overall effect of entry limitation on commercial fishery activities is not completely evident. However, it appears that some positive benefits have been gained. For purposes of this study, limited entry as is currently in place, or that which might be perceived for the future, should not pose any important changes to the methodology employed in the impacts analysis. However, depending upon whether the total number of fishing boats is increased or decreased as a result of entry limitation, the magnitude of the impacts as determined in this analysis could change somewhat. It is not clear at this time what the net effect of any change would be.

Technology:

Technological changes have been a part of the fishing industry over the last few decades. Many aspects of the U.S. fishing industry are characterized by a high degree of technology. This is especially true regarding the harvesting and processing of the traditionally caught species. In order to develop efficiently the bottomfish resources in Alaska and other places, U.S. industry will likely avail itself of the world technology which is currently accessible! yet not being applied to any great extent. This technology involves the use of larger and differently organized fishing vessels and also the use of ❑echanical and automated processing systems both on board vessels and at land installations.

Offshore processing of bottomfish will be important to the future U.S. industry. This includes the use of motherships and catcher/processor vessels which will allow the industry to access resources which are more distant from land. The need for these types of systems is expressed by the resource itself, which in many cases, especially that for Alaskan pollock, exhibits physiological characteristics which require consideration. Rapid flesh deterioration with resultant loss of quality in products produced from these species is of most critical concern. Onboard processing is currently the best approach for combating this problem. Future technology such as cryogenic freezing and/or the use of modified holding mediums, including the “champagne ice” (carbon dioxide bubbling) and other holding mediums may provide alternatives to maintaining quality while utilizing a land site from a relatively distant harvesting location.

Other operational factors, including the abilities to catch and hold fish on a vessel, steaming times, and overall energy requirements, may also favor at-sea processing in future times.

Processing technology is of considerable importance. The low unit value high volume fisheries, typical of the species that are available in the Bering Sea, require automated processing systems. Mechanical processing systems are currently available in world technology for application both to shoreside and at-sea processing operations. This technology is important to include in analyzing the future of domestic fisheries. For this impacts analysis the incorporation of this kind of technology is included and projected for the future. It is possible that other technology in the form of more efficient vessels, more efficient processing machines, and so forth, will be available to the fishing industry as time passes; indeed, there appears to be adequate incentive to develop new methods and processes. To the extent that this technology makes fish processing more efficient it would generally result in impacts of lesser magnitude than are predicted in this analysis.

200 Mile Limit:

The Fisheries Conservation and Management Act of 1976 provided perhaps the most sweeping and significant change for the U.S. fishing industry in all its history. In essence, U.S. industry has first right of access to all of the fish and shellfish resources within 200 nautical miles of the U.S. coastline. Nearly 20% of the world's fish and shellfish resources exist within that limit. This is an important economic opportunity for the industry to develop in the future.

The FCMA included provisions for full utilization of the resources within the extended coastal jurisdiction. Consequently, foreign fishing ventures are allowed to harvest that portion of the resource which U.S. enterprise does not have the capacity to handle. Currently, species such as king crab, salmon, herring, halibut, shrimp and Tanner crab (*C. bairdi*) are fully harvested by U.S. fishermen in the Bering Sea and no directed foreign fishing is allowed. However, for the *C. opilio* Tanner crab and for the bulk of the bottomfish resources (in 1980 U.S. fishing, including joint ventures, accounted for less than 3% of the bottomfish landings off the coast of Alaska), foreign fisheries are allowed. As U.S. capacity to harvest and process these resources increases, the effect of the 200 mile limit will be to make the fisheries within the zone essentially U.S. industries.

Joint Ventures:

Joint ventures in U.S. waters for harvesting and processing seafood are a recent development. The first such venture in the North Pacific started operation in 1979 in the Gulf of Alaska. It was not until 1980, however, that some activity was established in the Bering Sea. The reasons for this new type of venture are several but all relate back to the establishment of the 200 mile Fisheries Conservation Zone. U s . producers have a preferential status under the law and foreign operators only receive allocations when certain conditions are met. Foreign producers have entered into joint ventures with U.S. firms at least in part to maintain a share of production of the resources included under the law. Joint ventures to date have generally involved U.S. harvesters and foreign processors. The arrangements tend to be viewed as advantageous from the perspective of each of the parties.

By far the largest potential for seafood production lies in the species hitherto underutilized by U.S. producers. The experience of domestic fishermen in harvesting these resources has been very limited in the Bering Sea and Gulf of Alaska and it cannot be developed overnight. Even assuming that domestic fishermen could harvest large quantities in the future, corresponding U.S. processing capacity and experience is not yet in place. It is difficult to assess what price would be available to a U.S. fisherman, at present, if large quantities of bottomfish were to be brought ashore. For these reasons it has and continues to make sense for U.S. fishermen to gain harvest experience and have a sure market for their effort. This also allows the U.S. processor to have time to develop or adopt the appropriate technology tailored for this resource. Thus far joint venture development has occurred in the harvesting sector where domestic fishermen catch and deliver fish to foreign processor partners at sea. However, ventures involving U.S. processors in some capacity are also possible under the law.

The argument has been posed by representatives of U.S. producers that joint ventures inhibit development of U.S. production capacity. It is argued in part that if foreigners are allowed to continue processing and distributing seafood products from these vast resources, they will continue to overly influence market pricing and effectively block out U.S. competition. However, all of these products are international commodities and there are resources in other parts of the world from which the same or similar products are produced. It would be difficult at best to control market price from the production end. Under the FCMA, when U.S. production capacity is available for these resources, the allocations will be made to Us. producers. Joint ventures provide an outlet for U.S. harvesters with excess capacity to earn income additional to their usual fisheries. It is likely that joint ventures will continue to be a part of development for the U.S. industry during these early years.

Information available shows that estimated catches for the 1980 season increased more than twentyfold over the catch in the initial year (1979) of operation. During the maiden season joint venture catches in the Gulf of Alaska amounted to 1,521.4 metric tons; this accounted for 21% of U.S. landings in the Gulf of Alaska and Bering Sea combined. In 1980, however, the catch by joint ventures increased to 34,482.6 metric tons and accounted for 84% of all domestic groundfish landings. The estimated joint venture catches for the first two years of operation are as shown below.

Joint Venture Catches in MT

1979	Gulf of Alaska	Bering Sea	Total
US/Korea	1,383.6	0	1,383.6
US/USSR	137.8	0	137.8
	1,521.4	0	1,521.4
1980			
US/Korea	1,816.6	7,809.8	9,626.4
US/USSR	94.1	24,762.1	24,856.2
	1,910.7	32,571.9	34,482.6

For the 1981 season the catch allocation requests by five already approved ventures is in excess of 170,000 metric tons. In addition to this there could be up to 20,000 metric tons allocated to a joint venture involving Poland. These allocations which are shown below was obtained from the staff of the North Pacific Fishery Management Council.

Joint Venture Allocation requests for Fishing in the Bering Sea (BS) and the Gulf of Alaska 1981

U s . Farm/Foreign Entity	Amount Requested (Metric Tons)	Fishing Area
Fish Producers Associates/ KMIDC (South Korea)	77,500	BS/Gulf
Marine Resources Inc./USSR	64,950 7,850	BS Gulf
Pan Alaska Fish/Taijo (Japan)	7,000	BS/Gulf
Commercial Seafoods/Nippon Suisan Kaisha (Japan)	7,000	BS/Gulf
Alaska Seafood Co./Federal Rep. Germany	5,000-6,000 1,800	BS Gulf
Poland's application is pending	8,000-10,000 8,000-10,000	BS Gulf

Source : North Pacific Fishery Management Council.

It can be seen that the trend, at least in the short term, is for increased participation of joint ventures. If the 1981 allocation requests can be harvested, they will represent a 400% increase over 1980 catches. This activity is significant and likely to continue over the near future.

Enhancement:

In the Bristol Bay area and along the Alaska Peninsula and Aleutian Islands the State of Alaska has begun an enhancement program to stimulate traditional fisheries. Programs throughout the state have been primarily directed at increasing salmon runs through the use of hatcheries and in some instances spawning channels or environmental rehabilitation.

In the area of Bristol Bay there is one State hatchery currently in operation. This is the East Creek Hatchery which is designed for sockeye production. Construction was completed in 1978, capacity is estimated at 15-20,000,000 eggs. Although there were certain disease problems at the facilities in 1979, in 1980 56,000,000 eggs were incubated. One can presume that capacity will be reached over the next several years; consequently, this project will contribute somewhat to increased salmon runs in the area.

Along the Aleutians and the Alaska Peninsula there is only one State hatchery, on Russel Creek near Cold Bay. This facility is designed for chum and pink salmon. Construction was completed in 1979, and it has a capacity of 52,000,000 eggs. During 1979, 20,000,000 eggs were incubated. Part of the facility washed away in a flood. However, they were able to recoup to a point where they could do some incubation. Over the next several years this facility will likely also produce at its designed capacity, consequently contributing more salmon to the area of interest. Estimates of the increase in the number of adults that would be added to the catch from these facilities were not available for this analysis. However, the enhancement efforts can be expected to increase the numbers of salmon available to commercial fishermen. This in turn would likely decrease the relative magnitude of the impacts described in this analysis pertaining to salmon catches.

Over the last few years the Bristol Bay salmon runs have been at record levels. Several factors are likely responsible for this. Mild winters and good incubation conditions in the natural environment may have played the major role. However, enforcement of the 200 mile fishery conservation law and other management practices also contributed. Given that man has minimal control over the environment, enhancement and management measures for certain species tend to be the only avenues through which to ensure positive future conditions with respect to commercial fisheries.

Aquaculture:

In 1974 the State passed legislation Permitting operation of nonprofit salmon aquiculture ventures. These could be private companies, and generally the organization which favors regional participation by the people who are involved in salmon fishing and processing receives favorable treatment under the law. There have been several regional aquiculture corporations officially formed in the state. The one of interest to this project is associated with Bristol Bay. In mid-1977, what was then the Bristol Bay Regional Development Council formed the structure for the private nonprofit salmon venture. In December, the IMARPIK Regional Aquiculture Corporation was incorporated.

Generally, there are two methods through which these aquiculture corporations may levy assessments for operating funds. One is voluntary, the other one is mandatory. The voluntary program would solicit from the permit holders in Bristol Bay or anyone else, a contribution of any sum of money they wish to provide for the aquiculture corporation. This quite evidently is an uncertain method of financing a business venture. The mandatory assessment program, on the other hand, would require each permit holder of Bristol Bay to pay a percentage of their gross earnings made from commercial salmon harvests within the region. The advantage of this method is that it gives one some idea of a base of revenues from which to plan and operate a facility.

The current condition of the IMARPIK Regional Aquiculture Corporation does not look promising. According to local sources, IMARPIK will likely not be able to apply the mandatory assessment approach and it will be difficult for them to operate under voluntary assessments. Consequently, they are currently in serious financial jeopardy.

To the extent that this or another nonprofit aquiculture facility may operate in this area of concern, more salmon would be produced for commercial uses and consequently would be of benefit to the fishing industry as well as to local economies.

Groundfish Potential:

The potential for exploiting the groundfish resource in the Bering Sea is quite immense. It indeed presents the largest commercial fisheries opportunity available in all of Alaska. Nearly 2,000,000 m.t. of groundfish are available for continued utilization, yet less than 1% of this total is currently harvested and processed by U.S. enterprises. There is no question but that these resources are the focal point of future fisheries development in Alaska. Problems with market access and economic conditions must be overcome in order to realize the full potential of these resources. Both the State of Alaska and the federal government recognize this potential and are actively devoted to developing this as a U.S. industry. Development of the bottomfish resources is a key factor in determining the overall impacts on the U.S. commercial fishery from OCS development activities. This consideration is included in the impacts analysis.

Proposed Clam Fishery:

Current information regarding the clam resources is sketchy at best. Very little information has been put together regarding conditions of the stock, although distribution is known to be widespread and several species are believed to be quite abundant. Problems with paralytic shellfish poisoning (PSP) and environmental concerns stemming from the use of dredges along the shoreline are some factors which inhibit development of these resources. There is no commercial clam fishery currently; however, the resources draw a considerable amount of attention. There is no basis at present upon which to project a reasonable starting date for commercial production in this fishery.

Current Political and Economic Trends:

The most dominant of the current political factors has tended to set the stage for fisheries development. The FCMA established a clear legal opportunity for U.S. industries and there has been some benefit derived from this legislation. To this point, however, there has been a noticeable lack of any real progress in the development of underutilized species. It is difficult to pinpoint the exact reasons why U.S. ventures are not substantially involved in this production as yet; however, those factors which can be considered as contributors to the cause are discussed below.

Perhaps the most telling of these factors is that the fishing and processing industries as organized in Alaska, and indeed, in a good part of the rest of the country, are relatively small businesses by U.S. standards. They are, therefore, not readily able to accumulate the capital that is needed to invest in the types of equipment needed for efficient utilization of underutilized species. The foreign fisheries are conducted by either relatively large fishing companies or by companies under national organization, funded as budget items. The cost of a seabased processor is likely to be in the range of $8 to $20 million depending on its size and internal equipment. This is a very large sum of money for any of the existing U.S. companies, especially when considering a fleet of these vessels.

Another factor is that in the last two years markets for prime products from Alaska, namely salmon and king crab, have not been nearly as attractive from a price standpoint as in prior years. Supplies have been large but the sales have been at a relatively low unit price. This situation has added to the difficulty of these companies in raising investment capital and has even made servicing their typical operating loans somewhat of a problem.

The need for operating capital has sometimes placed the companies operating in Alaska and the Northwest in a position of accepting foreign investments, particularly from Japan. The degree of this is well documented in recent studie's and indicates a substantial participation in the U.S. industry by Japan. That country's motivation for fisheries development when they are one of the main participants in the foreign allocation has to be regarded as questionable, at best.

Another economic factor for consideration is the current rate of increase in costs of labor and fuel. These are the dominant cost factors in our fishing operations and make the opportunity to compete with foreign systems just a little more risky, both in today's terms and in predicting for the years ahead when the sizable investments would have to be paid out.

In a policy sense, some countries have resorted to tariff barriers and nontariff barriers as a way of culturing a domestic fishery and improving their competitive position in world markets. This type of approach has been proposed and discussed in the United States but seems improbable that it

Jill ever be pursued seriously. Even such things as countervailing duties to adjust an exporting nation's cost to our ❑arkets where they are subsidizing their operation in some documented fashion have not been instituted very successfully. As might be expected, our trade relations and political relations with other countries are based on a wide range of factors and it is rare when seafood products are dominant *in* these relationships. Therefore, the U.S. motivation at the policy level to nurture a developing seafood industry through any protection measures is minimal.

The foregoing discussion indicates the difficulties that are encountered in the current political and economic situation that affects fisheries development in the Bering Sea. The positive factors are simply that the resource does exist, that there is a growing capability and a capacity in American industry to utilize these, and that there is a strong commitment toward development on both the State and federal level. However, it does appear that for any real surge of growth there will need to be solution-oriented national and State programs which are aimed at resolving some of the financial and marketing problems that are occurring in the industry. There is evidence that this is occurring and will continue to occur, but it does affect any estimate of timing as to when these measures will be effective and where the , development will occur within the economic and potential constraints that have been discussed.

Foreign vs. Domestic Fishing Effort:

As the domestic fishery for bottomfish develops, it will cause a commensurate decline in foreign fishing effort. Prior to enactment of the FCMA and while the Japanese high seas gillnet fleet plied the waters of the Bering Sea, over 3,000 foreign vessels operated in this area. More recently these numbers have declined to the range of a few to several hundred on station at any one time. This includes a large number of tender vessels which will be eliminated as U.S. vessels taken their place. The net result should be a lower total number of vessels required to operate on these waters.

APPENDIX B

List of Tables

(All information is shown by five-digit statistical area)

List of Tables (Cent'd)

TABLE B-1

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE
AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT . AREA : N/S Peninsula (Southern Portion)'

SPEC ES: Salmon

GEAR Purse Seine

STAT. AREA	VESSEL SIZE IN FEET							TOTAL
	1-20	21-30	31-40	41-50	51-60	61-70	UNKNOWN	
271 - 10		336	4,175	755			396	5,662
272 - 20			3					3
- 30		2	125	23			10	160
273 - 70			152	89			60	301
- 72			3					3
- 74			6					6
- 80			8				1	9
- 82			5	1				6
- 84			58	24				82
- 90			218	39			31	288
- 94		7	116	13			11	147
275 - 40			482	32			36	550
- 60			23	2				25
281 - 10	14						14	28
- 20	16	42	64	71			24	217
- 31	3				12		12	27
- 32		4	15		4			23
- 33			*					*
- 34		47	36	12	24		47	166
- 35	3	27	13	8	27		13	91
282 - 10	59	139	179	59	19		16	471
- 11	60	47	356	1,403	161		113	2,140
- 12	15	90	51	75	29			260
- 13		4	7	7				18
283 - 31			59		5		16	80
- 33	42	243	536	70	84	70	378	1,423
- 34	3	9	12	3		3	9	39
- 42	7	69	332	41		27	164	640
- 51	3	13	7				7	30
- 52		15	68	91			30	204
- 62	13	147	83	146	15			404

(CONTINUED)

STAT. AREA	1-20	21-30	31-40	41-50	51-60	61-70	UNKNOWN	TOTAL '
	VESSEL SIZE IN FEET							
283 - 63	93	437	566	313		25	193	1,627
- 64	93	383	424	584	12	87	105	1,688
- 70			3					3
- 80	10	50	28	104	7		7	206
- 90	61	61	182	183	39		26	552
284 - 40				3				3
- 50	3			50			7	60
- 60	5	39	3	219	8		22	296
TOTAL	503	2,211	8,398	4,420	446	212	1.748	17.938

* Less than .5 MT

1 South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

EC i

TABLE B-2

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE

AND BY 5-DIGIT STATIST CAL AREA, 1978

($000)

MGT. AREA: N/S Peninsula (Southern Portion)'

SPECIES: Salmon

GEAR : Purse Seine

STAT. AREA	VESSEL SIZE IN FEET							TOTAL
	I-20	21-30	31-40	41-50	51-60	61-70	UNKNOWN	
271 - 10		895	11,421	2,089			1,068	15,473
272 - 20			7					7
- 30		5	2g4	53			24	376
273 - 70			106	62			41	209
- 80			9				1	10
- 84			79	30				102
- 90			189	34			27	250
- 94		6	99	11			10	126
275 - 40			391	26			29	446
- 60			21	2				23
281 - 10	10						10	20
- 20	12	30	46	50			17	155
- 32		3	11		3			17
- 33			*					*
- 34		34	25	8	17		34	118
- 35	4	35	18	10	35		18	120
282 - 10	49	114	144	53	15		13	388
- 11	53	48	320	1,354	143		100	2,018
- 12	12	64	36	56	22			190
- 13		3	6	6				15
283 - 31			41		4		11	56
- 33	30	167	382	50	60	50	269	1,008
- 34	2	6	8	2		2	6	26
- 42	5	48	247	32		21	127	480
- 51	3	10	5				5	23
- 52		12	54	72			24	162
- 62	9	101	57	100	10			277

TABLE B-2 (Cent'd)

(CONTINUED)

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	UNKNOWN	TOTAL '
283 - 63	67	316	413	225		18	135	1,174
- 64	67	282	308	428	9	64	76	1,234
- 70			2					2
- 80	7	34	23	83	5		5	157
- 90	44	43	149	137	28		18	419
284 - 40				2				2
- 50	5			75			11	91
- 60	4	28	2	296	6		16	352
TOTAL	3a5	2,284	14,919	5,347	366	155	2,104	25,560

* Less than $500

[1] South of the Peninsula between 158°W and 165"30' W; also includes a portion of Chignik.

EC I

TABLE B-3

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: N/S Peninsula (Southern Portion)

SPECIES: Salmon

GEAR : Purse Seine

STAT. AREA	VESSEL SIZE IN FEET							TOTAL
	1-20	21-30	31-40	41-50	51-60	61-70	UNKNOWN	
271 - 10		186	1,697	269			132	2,284
272 - 20			2					2
- 30		1	60	11			5	77
273 - 70			18	12			6	36
- 72			1					1
- 74			1					1
- 80			5				1	6
- 82			4	1				5
- 84			25	6				31
- 90			50	5			4	59
- 94		3	39	6			5	53
275 - 40			78	7			8	93
- 60			6	1				7
281 - 10	1						1	2
- 20	5	7	8	9			3	32
- 31	1				1		1	3
- 32		2	8		2			12
- 33			1					1
- 34		4	3	1	2		-4	14
- 35	1	2	1	5	2		1	12
282 - 10	19	34	45	24	6		5	133
- 11	25	12	87	297	30		21	472
- 12	8	16	15	7	2			48
- 13		1	2	2				5
283 - 31			4		1		3	8
- 33	13	22	57	5	6	5	37	145
- 34	1	3	4	1		1	3	13
- 42	2	9	30	3		2	15	61
- 52		1	7	6			2	16
- 62	4	21	16	17	1			59

(CONTINUED)

STAT. AREA	VESSEL SIZE iN FEET 1-20	21-30	31-40	41-50	51-60	61-70	UNKNOWN	TOTA.'
283-63'.	31	95	141	50		7	32	356
- 64	26	104	129	89	3	21	28	400
- 70			1					1
- 80	3	7	12	18	1		1	42
- 90	9	10	30	18	3		2	72
284 - 40				2				2
- 50	1			12			2	15
- 60	2	6	1	47	3		8	67
TOTAL	153	548	2,589	931'	63	36	331	4,651

[1] South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

EC I

TABLE B-4

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: N/S Peninsula (Southern Portion)'

SPECIES: Salmon

GEAR: Purse Seine

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
271 - 10						2,648	2,447	557	10				5,662
272 - 20						2	1						3
- 30						81	61	18					160
273 - 70							253	48					301
- 72							3						3
- 74							6						6
- 80							1	8					9
- 82							3	3					6
- 84							19	63					82
- 90							92	196					288
- 94							23	124					147
275 - 40							126	424					550
- 60							24	1					25
281 - 10								28					28
- 20							109	108					217
- 31							5	22					27
- 32							9	14					23
- 33							*						*
- 34								160	6				166
- 35							10	81					91
282 - 10						19	89	362	1				471
- 11						269	864	1,007					2,140
- 12							13	247					260
- 13							11	7					18
283 - 31								80					80
- 33							36	1,387	*				1,423
- 34							5	29	5				39
- 42							9	623	8				640
- 51								30					30
- 52							2	202					204
- 62							1	403					404

TABLE B-4 (Cent'd)

(CONTINUED)

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL '
283 - 63							721	906					1,627
- 64							1,034	654					1,688
- 70								3					3
- 80							10	193	3				206
- 90							114	435	3				552
- 50						60							60
- 60						207		89					296
TOTAL						3.289	6.101	8.512	36				17.938

* Less than .5 MT

1 South of the Pen nsula between 158°W and 65°30' W; also i nc udes a portion of Chignik.

EC I

TABLE B-5

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: N/S Peninsula (Southern Portion)'

SPECIES: Salmon

GEAR : Purse Seine

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
271 - 10						923	779	s64	18				2,284
272 - 20						1	1						2
- 30						37	31	9					77
273 - 70							25	11					36
- 72							1						1-
- 74							1						1
- 80							1	5					6
- 82							1	4					5
- 84							5	26					31
- 90							14	45					59
- 94							16	37					53
275 - 40							16	77					93
- 60							6	1					7
281 - 10								7					2
- 20							17	15					32
- 31							1	2					3
- 32							4	8					12
- 33							1						1
- 34								17	7				14
- 35							6	6					17
282 - 10						14	44	73	2				133
- 11						161	214	97					472
- 12							8	40					48
- 13							3	2					5
283 - 31								8					8
- 33							10	134	1				145
- 34							3	9	1				13
- 42							2	56	3				61
- 51								5					5
- 52							1	15					16
- 62							2	57					59

TABLE B-5 (Cent'd)

(CONTINUED)

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL [1]
283 - 63							242	114					356
- 64							304	96					400
- 70								1					1
- 80							2	35	5				42
- 90							16	55	1				72
284 - 40						2							2
- 50						1	5						15
- 60						5	8	9					67
TOTAL						1,194	1,794	1,630	33				4,651

[1] South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

ECI

TABLE B-6

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE
AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Salmon

GEAR: Set Gillnet

STAT. AREA	VESSEL SIZE IN FEET							TOTAL
	I-20	21-30	31-40	41-50	51-60	61-70	UNKNOWN	
281 - 20		3					3	6
- 31		1	12					13
- 34	32	5	12	1				50
- 35	2	6	14	14			7	43
282 - 10	10	17	9	4			1	41
- II	7	8	10	14			3	42
- 12	1	4		7				17
- 23			1					1
283 - 52			9					9
- 63				*				*
- 70			2					2
- 80	9	1	25	*				35
- 90	4	1	3				1	9
284 - 60		3	1	1			1	6
TOTAL	65	49	98	41			16	269

* Less than .5 MT

[1] South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

TABLE B-7

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: N/S Peninsula (Southern Portion)'

SPECIES: Salmon

GEAR : Set Gillnet

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	UNKNOWN	TOTAL
281 - 20		5					5	10
- 31		2	19					21
- 34	51	9	19	2				81
- 35	3	9	23	23			11	69
282 - 10	11	18	9	4			1	43
- 11	8	9	12	16			3	48
- 12	1	5		9				15
- 23			1					1
283 - 62			12					17
- 63				*				*
- 70			3					3
- 80	12	1	33	1				47
- 90	6	2	4				2	14
284 - 60		4	2	2			1	9
TOTAL	92	64	137	57			23	373

Less than $500

South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

EC I

TABLE B-8

ANNUAL FISH NG EFFORT IN NUMBER OF LANDINGS BY SPEC ES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: N/S peninsula (Southern Portion)[1]

SPECIES: Sal mon

GEAR : Set Gillnet

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	UNKNOWN	TOTAL
281 - 20		1					1	2
- 31		1	9					10
- 34	36	5	11	1				53
- 35	2	7	21	17			8	55
2a2 - 10	27	27	11	6			1	72
- 11	14	9	"22	17			3	65
- 12	1	5		9				15
- 23			2					2
283 - 52			4					4
- 63				2				2
- 70			4					4
- 80	23	2	38	1				64
- 90	6	1	6				3	16
284 - 60		7	3	3			2	15
TOTAL	109	65	131	56			18	379

[1] South of the Peninsu a between 158°W and 165°30' W; also includes a portion of Chignik.

EC I

TABLE B-9

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Salmon

GEAR: Set Gillnet

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
281 - 20							4	7					6
- 31						7	5	1					13
- 34						25	21		4				50
- 35						24	14		5				43
282 - 10						5	10	25	1				41
- II						4	33	5					42
- 12						1	10	1					17
- 23						1							1
283 - 62								9					9
- 63							*						*
- 70						*	2						2
- 80						9	16	6	4				35
- 90						2	7	*	*				9
284 - 60						6							6
TOTAL						84	122	49	14				269

* Less than .5 MT

[1] South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

EC I

TABLE B-10

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Salmon

GEAR: Set Gillnet

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
281 - 20							1	1					7
- 31						4	4	2					10
- 34						29	17		7				53
- 35						31	17		7				55
2a2 - 10						17	31	19	5				72
- II						19	42	4					65
- 12						2	11	2					15
- 23						2							2
283 - 62													11
- 63							2						2
- 70						1	3"						4
- 80						19	29	6	10				64
- 90						5	9	1	1				16
284 - 60						15							15
TOTAL						144	166	39	30				379

[1] South of the Peninsula between 158°W and 165°30′ W; also includes a portion of Chignik.

EC I

TABLE B-II

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Salmon

GEAR: Drift Gillnet

STAT. AREA	VESSEL SIZE IN FEET							TOTAL
	1-20	21-30	31-40	41-50	51-60	61-70	UNKNOWN	
284 - 40			34	4			6	44
- 50		32	136	20		1	7	197
- 60	2	206	571	65	8	8	62	922
TOTAL	2	238	741	89	9	9	75	1,163

[1] South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

EC I

TABLE B-12

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Salmon

GEAR : Drift Gillnet

STAT. AREA	VESSEL SIZE IN FEET							TOTAL
	1-20	21-30	31-40	41-50	51-60	61-70	UNKNOWN	
284 - 40			37	5			6	48
- 50		49	199	28	2	2	11	291
- 60	3	325	876	102	13	13	99	1,431
TOTAL	3	374	1,112	135	15	15	116	11.770

1 South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

TABLE B-13

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Salmon

GEAR : Drift Gillnet

STAT. AREA	VESSEL SIZE IN FEET 1-20	21-30	31-40	41-50	51-60	61-70	UNKNOWN	TOTAL
284 - 40			18	3			4	25
- 50		23	127	21	1	1	5	178
- 60	2	209	537	56	9	9	59	881
TOTAL	2	232	682	80	10	10	68	1,084

1 South of the Peninsula' between 158°W and 165°30' W; also includes a portion of Chignik.

EC I

TABLE B-14

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Salmon

GEAR : Drift Gillnet

STAT. AREA	May	June	July	Total
284 - 40		44		44
- 50		197		197
- 60		922		922
TOTAL		1,163		1,163

1 South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik. In 1978 catch by drift gillnets was reported in a small area covering only three 5-digit statistical areas.

EC I

TABLE B-15

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: N/S Peninsula (Southern Portion)'

SPECIES: Salmon

GEAR: Drift Gillnet

STAT. AREA	May	June	July	Total
284 - 40		25		25
- 50		178		178
- 60		881		881
TOTAL		1,084		1.084

' South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik. In 1978 catch by drift gillnets was reported in a small area covering only three 5-digit statistical areas.

TABLE B-16

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: N/S Peninsula (Southern Port on)'

SPECIES: King Crab

GEAR : Pot

STAT. AREA	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	TOTAL
	VESSEL SIZE IN FEET													
272 - 30	1	15	8											24
273 - 70				2										2
- 72		3												3
- 80		18												18
- 84		1												1
- 90			3											3
- 94		2												2
275 - 40	"	11												11
- 50		1												1
281 - 10				2										2
- 36		*		4										4
282 - 10		43												43
-11		10		1										11
- 13		9												9
- 22		*												*
- 24		1												1
283- 11		36	6	8										50
- 30				9										9
- 31			1											1
- 34		2												2
- 41		4		5										9
- 51		5												5
- 52		1												1
- 61	7	474	117											598
- 62		126	32											158
- 63		85	11											96
- 64			*											*
- 70		85												85
- 80	6	53		18										77
- 90		30		12										42

TABLE B-16 (Cent'd)

Continued

STAT. AREA	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-I 40	141-I 50	151-200	TOTAL
														13
														5
- 30									4					4
- 40				3					3					6
- 60		*	11	23										34
- 71					14	11			3					2 8
- 72									4					4
286 - 31				3										3
- 34		*												- *
- 41									4					4
- 42									4					4
- 44									4					4
- 46						13								13
302 - 17					65	56	36	13	4			4	4	187
- 18		11	8	58	195	204	17	26	25	8			17	569
- 19							8							8
362- 11					191	45	29							265
TOTAL	14	1,026	197	148	470	342	90	39	55	8		4	21.	2.414

Table header: VESSEL SIZE IN FE ET

* Less than .5 MT

[1] South of the Pen nsula between 158°W and 165°30' W; also includes a port on of Chignik.

EC I

TABLE B-17

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA 1978
($000)

MGT. AREA: N/S Peninsula (Southern Portion)'

SPECIES: King Crab

STAT. AREA	VESSEL SIZE IN FEET 31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	TOTAL
272 - 30	4	42	22											68
- 72		9												9
- 80		49												49
- 84		2												2
- 901			9											9
- 94		5												5
275 - 40		29												29
- 50		2												2
281 - 10				6										6
- 36		*		12										12
282 - 10		118												118
- 11		26		3										29
- 13		25												25
- 22		*												*
- 24		3												3
283 - 11		98	18	21										137
- 30				26										26
- 31			4											4
- 34		6												6
- 41		10		14										24
- 51		13												13
- 52		3												3
- 61	18	1,277	316											1,611
- 62		341	86											427
- 63		230	31											261
- 64			*											*
- 70		230												230
- 80	16	143		48										207
- 90		81		31										112

TABLE B-17 (Cent'd)

Continued

STAT. AREA	VESSEL SIZE IN FEET													TOTAL
	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	
284 - 10						34								34
- 20					14									14
- 30									11					11
- 40				9					8					17
- 60		1	31	63										95
- 71					38	29			9					76
- 72									11					11
286 - 31				9										9
- 34		*												*
- 41									11					11
- 42									11					11
-44									11					11
- 46						34								34
302 - 17					181	156	100	37	12			12	12	510
- 18		31	22	164	545	570	48	72	71	24			47	1,594
- 19							23							23
362 - 11					532	126	81							739
TOTAL	38	2,774	539	411	1,310	949	252	109	155	24		12	59	6,632

* Less than $500

1 South of the Pen nsula between 158°W and 165°30' W; also ncludes a port on of Chignik.

TABLE B-18

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE
AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: King Crab

GEAR: Pot

STAT. AREA	VESSEL SIZE IN FEET 31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	TOTAL
272 - 30	1	6	3											10
273 - 70				1										1
- 72		2												2
- 80		5												5
- 84		1												1
- 90			1											1
- 94		1												1
275 - 40		3												3
- 50		1												1
281 - 10				1										1
- 36		1		1										2
282 - 10		23												23
- 11		5		1										6
- 13		1												1
- 22		1												1
- 24		2												2
283 - 11		16	1	1										18
- 30				1										1
- 31			1											1
- 34		2												2
- 41		5		2										7
- 51		5												5
- 52		3												3
- 61	1	81	29											111
- 62		39	9											48
- 63		24	3											27
- 64			1											1
- 70		27												27
- 80	3	13		2										18
- 90		10		3										13

TABLE B-18 (Cent'd)

Continued

STAT. AREA	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	TOTAL
	VESSEL SIZE IN FEET													
284 - 10						1								1
- 20					1									1
- 30									1					1
- 40				1					1					2
- 60		1	3	5										9
- 71					1	1			1					3
- 72									1					1
286 - 31				1										1
- 34		1												1
- 41									1					1
- 42									1					1
- 44									1					1
- 46						1								1
302 - 17					5	4	4	2	1			1	1	18
- 18		7	1	6	12	15	1	2	3	1			2	50
- 19							1							1
362- 11					11	2	2							15
TOTAL	5	286	52	26	30	24	8	4	11	1		1	3.	451

[1] South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

EC I

TABLE B-19

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: N/S Peninsula (Southern Portion)

SPECIES: King Crab

GEAR : Pot

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
272 - 30										13	5	6	24
273 - 70	2												2
- 72										2	1		3
- 80										17	1		18
- 84	1												1
- 90	3												3
- 94												2	2
275 - 40									8	3			11
- 50	1												1
281 - 10										2			2
- 36										*	4		4
282 - 10										14	29		43
- 11										11			11
- 13										9			9
- 22										*			*
- 24										1	*		1
283 - 11										25	25		50
- 30											9		9
- 31									1				1
- 34										1	1		2
- 41									6	.3			9
- 51									3		2		5
- 52									1		*		1
- 61									141	384	73		598
- 62									19	105	34		158
- 63									66	27	3		96
- 64									*				*
- 70									19	35	31		85
- 80									65	12			77
- 90									30	10	2		42

TABLE B-19 (Cent'd)

Continued

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
284 - 10											13		13
- 20											5		5
- 30												4	4
- 40	2											4	6
- 60										32	2		34
- 71											8	20	28
- 72												4	4
286 - 31											3		3
- 34										*			*
- 41												4	4
- 42												4	4
- 44												4	4
- 46											13		13
302 - 17											182		182
- 18									204	145	220		569
- 19										8			8
362-II									32	81	152		265
TOTAL	9								595	940	818	52	2,414

* Less than .5 MT

1 South of the Pen nsula between 158°W and 165°30' W; also includes a port on of Chignik.

TABLE 6-20

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR,
AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: N/S Peninsula (Southern Portion)'

SPECIES: King Crab

GEAR: Pot

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
272 - 30										4	4	2	10
- 72										1	1		2
- 80										3	2		5
- 84	1												1
- 90	1												1
- 94												1	1
275 - 40									1	2			3
- 50	1												1
281 - 10										1			1
- 36										1	1		2
282 - 10										12	11		23
- 11										6			6
- 13										1			1
22										1			1
- 24										1	1		2
283- 11										8	10		18
- 30											1		'
- 31									1				1
- 34										1	1		2
- 41									2	5			7
- 51									2		3		5
- 52									2		1		3
- 61									21	60	30		111
- 62									7	21	20		48
- 63									12	10	5		27
-64									1				1
- 70									4	13	10		27
- 80									13	5			18
- 90									9	3	1		13

TABLE B-20 (Cent'd)

Continued

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	MONTH												
284 - 10											1		1
- 20											1		1
- 30												1	1
- 40	1											1	2
- 60										8	1		9
- 71											1	2	3
- 72												1	1
286 - 31											1		1
- 34										1			1
- 41												1	1
- 42												1	1
- 44												1	1
- 46											1		1
											8		
- 18								9		16	25		50
- 19										1			1
362- 11								2		7	6		15
TOTAL	5							86		192	157	11-	451

1 South of the Pen nsula between 158°W and 65°30' W; also includes a portion of Chignik.

EC I

TABLE B-21

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE
AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: N/S Peninsula (Southern Portion)'

SPECIES: Tanner Crab

GEAR : Pot

STAT. AREA	VESSEL SIZE IN FEET 21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	TOTAL
272 - 20			29			35									64
- 30			33			28	10	10							81
273 - 70					6	12									18
- 74			*		11	34	12								57
- 80							19								19
8															
- 84			*												*
- 90			10	3		19		3			2				37
- 94			62		7	14					5				88
275 - 40				3											3
- 50			*												*
277 - 30						125	101	269	104	45	22				666
- 40			1		20	7	14	7							49
								8							
- 60					24			79							103
- 70			5		38	13	54	84					9		2 03
8															
281 - 10					8										8
- 36		11	59		23										[illegible]
282 - 10			124	165											289
			8												
			8												
283 - 10							12								12
- 11			127		18	6					98				249
- 12						1									1
- 30			29		6	57	7							284	383
- 31			13	6	19										38
- 41			155	35	133					67					390
- 42				9											9
- 51	17			24											41

TABLE B-21 (Cont'd)

ONTINUED

TAT. AREA	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-I 30	131-140	141-150	151-200	TOTAL
								VESSEL SIZE IN FEET							
83 - 61	9		127		8										144
- 62	8		377	8											393
- 70			51												51
8															
- 90			38												38
84 - 20					6			5 9						95	160
- 30				10		85									95
- 40				6	12	2S								88	131
- 50				5											5
- 71				6			33	14						294	347
- 32			5												5
- 33			63	23											86
- 34			72	6										77	155
302 - 18							4								4
362 - 11							21								21
TOTAL	34	20	1,547	309	343	461	287	843	104	112	127		9	838	5,o34

* Less than .5 MT

1 South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

EC I

TABLE B-22

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978
($000)

MGT. AREA: N/S Peninsula (Southern Portion)'

SPECIES: Tanner Crab

GEAR : Pot

STAT. AREA	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	TOTAL
						VESSEL SIZE IN FEET									
272 - 20			30			36									66
- 30			34			29	10	10							83
273 - 70					6	12									18
- 74			*		11	36	12								59
- 80							20								20
- 82			1												1
- 84			*												*
- 90			10	3		20		4			2				39
- 94			64	7		15					5				91
275 - 40				3											3
- 50			*												*
277 - 30						130	104	279	108	46	23				690
- 40			1		20	7	15	8							51
- 60					24			82							106
- 70			5		39	14	56	87					10		211
278 - 70											*				*
281 - 10					8										8
- 36		11	61		24										96
282 - 10			128	171											299
- 11			29												29
			9												
283 - 10							12								12
- 11			131		19	7					101				258
- 12						1									1
- 30			30		6	59	7							295	397
- 41			160	36	138					69					403
- 42				9											9
- 51	18			24											42

TABLE B-22 (Cent'd)

CONTINUED

STAT. AREA	VESSEL SIZE IN FEET 21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	TOTAL
283 - 61	10		132		8										150
- 62	8		390	9											407
- 63			2		1										3
- 70			52												52
- 80		10	64												74
284 - 20					6			61						98	165
- 30				10		89									99
- 40				6	13	26								91	136
- 71				6			34	14						305	359
286 - 31					3	’									3
- 33			65	24											89
- 34			75	6										80	161
302 - 18							4								4
362 - 11							22								22
TOTAL	36	21	1,598	319	353	481	296	874	108	115	131	10		869	5.211

* Less than $500

1 South of the Peninsula between 58°W and 65°30' W; also ncludes a port on of Chignik.

EC I

TABLE B-23

ANNUAL FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR

VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: N/S Peninsula (Southern Portion)

SPECIES: Tanner Crab

GEAR: Pot

	VESSEL SIZE IN FEET														
STAT. AREA	21-30	31-40	50	60	70	71-80	90	100	101-110	1-120	121-130	131-140	141-150	151-200	TOTAL
272 - 20			2			4									6
- 30			8			3	1	1							13
273 - 70					1	2									3
- 74			1		1	3	1								6
- 80							1								1
- 82			1												1
- 84			1												1
- 90			1	1		6		1			1				10
- 94			18	1		2					1				22
275 - 40				1											1
- 50			1												1
277 - 30						4	9	8	3	2	1				27
- 40			1		3	1	2	1							8
- 50			2					11							13
- 60					1			3							4
- 70			2		3	1	4	6					1		17
278 - 70											1				1
281 - 10					1										1
- 36		3	16		4										23
282 - 10			37	17											54
- 11			9												9
- 13			9												9
- 21			5												5
- 22			6												6
283 - 10							1								1
- 11			11		3	1					6				21
- 12						1									1
- 30			6		1	9	1							3	20
- 31			2	1	3										6
- 41			30	6	22					6					64
- 42				1											1
- 51	3			3											6

TABLE B-23 (Cent'd)

CONTINUED

STAT. AREA	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	151-200	TOTAL
	VESSEL SIZE IN FEET														
283 - 61	3		38		2										43
-62	3		68	3											74
- 70			21												21
- 80		6	28												34
- 90			26												26
284 - 20					1			6						1	8
- 30				1		8									9
- 40				1	2	4								1	8
- 50				1											1
- 71				1			5	2						4	12
286 - 31					1										1
- 32			1												1
- 33			10	3											13
- 34			10	1										2	13
302 - 18							1								1
362- 11							4								4
TOTAL	9	9	372	41	51	49	30	39	3	8	10		1	11	633

1 South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

TABLE B-24

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: N/S Peninsu a (Southern Portion)[1]

SPECIES: Tanner Crab

GEAR : Pot

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
272 - 20				33	51								64
- 30	17		3	28	33							*	81
273 - 70	*				18								18
- 74	*	40			11						1	5	57
- 80												19	19
- 82		1											1
- 84	*												*
- 90	*			18	19								37
- 94		9	28	41	10								88
275 - 40		3											3
- 50	*												*
277 - 30		74	193	347	52						*		666
- 40	21			3	9						1	15	49
- 50	2	64	126	115	18								325
- 60	29	19		55									103
- 70	34		30	84	50							5	203
278 - 70				*									*
281 - 10				8									8
- 36	14	25	23	25	6								93
282 - 10	33	83	35	122	16							*	289
- 11	3	2	11	12									28
- 13	13	9	1										23
- 21	4	17	5										26
- 22			4	8	6								18
283 - 10												12	12
- 11	11	93	55	90									249
- 12				1									1
- 30	72	51	85	123	40							12	383
- 31	22	9	7										38
- 41	41	70	178	91								10	390
- 42		9											9
- 51		13	11									17	41

TABLE B-24 (Cent'd)

CONTINUED

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
	M O N T H												
283 - 61	44	21	19	7	2							51	144
- 62	111	82	59	66	20							55	393
- 70	10	12	13	14	2							*	51
- 80	18	27	17	8	1							*	71
- 90	9	12	9	6	2							*	38
284 - 20		15	85	60									160
- 30	18	28	20	22								7	95
- 40	67	53		11									131
- 71	21			121″	137						22	46	347
286 - 31												3	3
- 32	5												5
- 33	27	15	23	21									86
- 34	30	82	28	15									155
302 - 18			4										4
362-11			5	16									21
TOTAL	676	938	l,o90	1,560	483						24	263	5,034

* Less than .5 MT

1 South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

EC I

TABLE B-25

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR AND By 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Tanner Crab

GEAR: Pot

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
272 - 20				3	3								6
- 30	1		2	5	4							1	13
273 - 70	1				2								3
- 74	1	2			1						1	1	6
- 80												1	1
- 82		1											1
- 84	1												1
- 90	1			6	3								10
- 94		3	7	9	3								22
275 - 40		1											1
- 50	1												1
277 - 30		2	6	14	4						1		27
- 40	3			1	1						1	2	8
- 50	1	4	4	3	1								13-
- 60	1	1		2									4
- 70		1	2	7	6							1	17
278 - 70				1									1
281 - 10				1									1
- 36	5	3	8	5	2								23
282 - 10	6	13	9	19	6							1	54
- 11	1	2	2	4									9
- 13	4	4	1										9
- 21	2	2	1										5
- 22			2	2	2								6
283 - 10												1	1
- 11	1	6	5	9									21
- 12				1									1
- 30	3	2	3	8	3							1	20
- 31	3	2	1										6
- 41	5	11	29	17								2	64
- 42		1											1
- 51		1	2									3	6

TABLE B-25 (Cent'd)

CONTINUED

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
283 - 61	1	1	6	6	6	2						12	43
- 62	16	14	15	11	5							13	74
- 63			1									1	2
- 70	5	5	5	4	1							1	21
- 80	5	8	13	6	1							1	34
- 90	6	6	7	4	2							1	26
284 - 20		2	3	3									8
- 33	2	3	3	5									13
- 34	4	2	4	3									13
302 - 18			1										1
362 - 11			1	3									4
TOTAL	99	113	146	164	60						4	47	633

I South of the Pen nsula between 158°W and 65°30' w; also ncludes a port on of Chignik.

EC I

TABLE B-26

ANNUAL CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Shrimp

GEAR: Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET					TOTAL
	41-50	51-60	61-70	71-80	81-90	
272 - 20		29	98		39	166
- 30	15	34	38		23	110
273 - 72		129	115		34	278
- 84			120			120
275 - 40		33	49			82
- 50		18	31			49
- 60		51	43		17	111
282 - 10		6				6
- 21			*			*
283 - 11				175		175
- 34			2			2
- 42				*		*
- 52				1		1
- 61		20	25	221		266
- 62			2			2
- 63		121	302	44		467
TOTAL	15	441	940	441	120	1,957

* Less than .5 MT

[1] South of the Peninsula between 158°W and 165°30′ W; also includes a portion of Chignik.

EC I

TABLE B-27

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Shrimp

GEAR: Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET					TOTAL
	41-50	51-60	61-70	71-80	81-90	
272 - 20		12	41		16	69
- 30	6	14	16		10	46
273 - 72		54	48		14	116
- 80			31			31
- 82			17			17
- 84			50			50
- 94					3	3
275 - 40		14	20			34
- 50		8	13			21
- 60		21	18		7	46
282 - 10		2				2
- 21			*			*
283 - 11				70		70
- 34			1			1
- 42				*		*
- 52				*		*
- 61		8	10	88		106
- 62			1			1
- 63		48	121	18		187
TOTAL	6	181	387	176	50	800

* Less than $500

[1] South of the Peninsula between 158°W and 165°30′ W; also includes a portion of Chignik.

TABLE B-28

ANNUAL FISH NG EFFORT IN NUMBER OF LANDINGS BY SPEC ES, BY GEAR, VESSEL SIZE
AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Shrimp

GEAR: Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET					TOTAL
	41-50	51-60	61-70	71-80	81-90	
- 30	1	2	2		1	6
273 - 72		5	4		1	10
- 80			4			4
- 84			3			3
- 94					1	1
- 50		2	3			5
282 - 10		1				1
- 21			1			1
283 - 11				2		2
- 34			1			1
- 42				1		1
- 52				1		1
- 61		3	3	5		11
- 62			1			1
- 63		6	12	1		19
TOTAL	1	27	45	10	5	88

[1] South of the Pen nsula between 158°W and 165°30' W; a so in-c udes a portion of Chignik.

ECI

TABLE B-29

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: N/S Peninsula (Southern Portion)'

SPECIES: Shrimp

GEAR: Otter Trawl

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
272 - 20							103	63					166
- 30						1	109						110
273 - 72						94	184						278
- 80							56	19					75
- 82							40						40
- 84							120						120
- 94							7						7
275 - 40						43	39						82
50						35	10	4					49
- 60						77	34						111
282 - 10								6					6
- 21						*							*
283- 11	87	88											175
-34								2					2
- 42							*						*
- 52							1						1
- 61						131	123	12					266
- 62							2						2
- 63						87	303	77					-467
TOTAL	87	88				468	1,131	183					1,957

* Less than ,5 MT

' South of the Peninsula between 158°W and 165°30' U; **also** includes **a** portion of Chignik.

ECI

TABLE B-30

MONTHLY F SHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL S ZES), 978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Shrimp

GEAR: Otter Trawl

STAT. AREA	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
- 30						1	5						6
273 - 72						4	6						10
- 80							3	1					4
- 82							1						1
- 84							3						3
- 94							1						1
275 - 40						5	2						7
50						2	2	1					5
- 60						6	7						8
282 - 10								1					1
- 21						1							1
283- 11	1	1											2
-34								1					1
- 42							1						1
- 52							1						1
- 62							1						1
- 63						4	11	4"					19
TOTAL	1	1				25	50	11					88

[1] South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

EC I

TABLE B-31

ANNUAL lATCH IN METRIC ONS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIG T STATISTICAL AREA, 1978

MGT . AREA : N/S Pen nsula (Southern Portion)[1]

SPECIES: Shrimp

GEAR: Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET 61-70	71-80	81-90	91-100	TOTAL
272 - 20	261	877	166	90	1,394
- 30	111	1,056	102	37	1,306
- 72	401	606		67	1,074
-80	306	183			489
- 84		23			23
- 94	367	370	90	49	876
275 - 40	212	203		47	462
- 60	165	363		19	547
277 - 40	105				105
- 36		7			7
282 - 10	193	258			451
- 23	3				3
283 - 11				215	215
- 30	*				*
- 61	134	1,255	161	188	1,738
- 63	381	469		322	1,172
284 - 60	265	553			818
TOTAL	2,951	6,358	525	1,050	10,884

* Less than .5 MT

[1] South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

EC I

TABLE B-32

EXVESSEL VALUE OF ANNUAL CATCH BY SPECIES, BY GEAR, VESSEL SIZE

AND BY 5-DIGIT STATISTICAL AREA, 1978

($000)

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Shrimp

GEAR: Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET				TOTAL
	61-70	71-80	81-90	91-100	
272 - 20	106	347	69	38	560
- 30	46	441	43	15	545
273 - 70			3		3
- 72	167	254		28	449
- 80	128	76			204
- 84		9			9
- 90	9	15			24
- 94	153	152	37	20	362
275 - 40	89	85		20	194
- 60	68	152		8	228
277 - 40	44				44
281 - 33		13			13
- 36		3			3
282 - 10	76	101			177
- 23	1				1
283 - 11				86	86
- 12	*				*
- 30	*				*
- 61	54	491	64	75	684
- 63	152	196		129	477
284 - 60	106	221			327
TOTAL	1.209	2,584	216	426	4,435

* Less than $500

[1] South of the Peninsula between 158°W and 165°30′ W; also includes a portion of Chignik.

TABLE B-33

ANNUAL F SHING EFFORT IN NUMBER OF LANDINGS BY SPEC ES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA : N/S Peninsula (Southern Portion)[1]

SPECIES: Shrimp

GEAR : Double Otter Trawl

STAT. AREA	VESSEL SIZE IN FEET				TOTAL
	61-70	71-80	81-90	91-100	
272 - 20	9	21	4	2	36
- 30	4	27	3	1	35
273 - 70			1		1
- 80	6	8			14
- 84		2			2
- 90	2	3			5
- 94	10	13	2	1	26
275 - 40	6	8		1	15
- 50		5			5
281 - 33		1			1
- 36		3			3
282 - 10	10	6			16
- 23	1				1
283 - 11				2	2
- 61	5	26	4	4	39
- 63	14	11		3	28
284 - 60	6	10			16
TOTAL	94	171	14	18	297

[1] South of the Pen nsula between 158°W and 165°30' W; also includes a port' on of Chignik.

ECI

TABLE B-34

MONTHLY CATCH IN METRIC TONS BY SPECIES, BY GEAR AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Shrimp

GEAR: Double Otter Trawl

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
272 - 20							1,158	236					1,394
- 30							1,187	119					1,306
- 72						675	399						1,074
- 80							339	150					489
- 82							28	12					40
- 90							3	55					58
- 94							808	68					876
275 - 40						33	327	102					462
- 60						253	232	62					547
277 - 40						105							105
281 - 33								32					32
- 36						7		*					7
282 - 10								425	26				451
- 12							1						1
30							*						*
- 61						456	563	719					1,738
- 63						151	764	257					1,172
284 - 60	519	269					1	29					818
TOTAL	522	484				1,716	5,828	2,308	26				10,884

* Less than .5 MT

1 South of the Peninsula between 158*w and 165°30' W; also includes a portion of Chignik.

EC I

TABLE B-35

MONTHLY FISHING EFFORT IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES), 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

SPECIES: Shrimp

GEAR: Double Otter Trawl

STAT. AREA	MONTH 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
272 - 20							27	9					36
- 30							31	4					35
273 - 70						1							1
- 72						13	9						22
- 80							5	9					14
- 82							2	1					3
- 84							1	1					2
- 90							3	2					5
- 94							23	3					26
275 - 40						2	10	3					15
- 50						3		2					5
- 60						9	11	3					23
277 - 40						2							2
281 - 33								1					1
- 36						1		2					3
282 - 10								14	2				16
- 23	1												1
283 - 11		2											2
- 12							1						1
- 30							1						1
- 61						8	14	17					39
- 63						3	18	7					28
284 - 60	9	4					1	2					16
TOTAL	10	6				42	157	80	2				297

[1] South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

EC I

TABLE B-36

ANNUAL BOTTOMFISH CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: N/S Peninsula (Southern portion)[1]

GEAR : Otter Trawl

SPECIES	STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	TOTAL
BOTTOMFISH GENERAL	273 - 80		*		*
	Total		*		*
PACIFIC COD	272 - 20		7	7	14
	- 30		*		*
	273 - 80		12	12	24
	- 90	6		6	12
	283 - 30		1		1
	Total	6	20	25	51
FLAT FISH	273 - 80		*		*
	Total		*		*
PACIFIC OCEAN PERCH	273 - 80		*		*
	Total		*		*
ROCKFISH	273 - 80		*		*
	Total		*		*
POLLOCK	272 - 20		1		1
	273 - 80		1		1
	Total		2		2
BOTTOMFISH	Grand Total	6	22	25	53

* Less than .5 MT

[1] South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

EC I

TABLE B-37

EXVESSEL VALUE OF ANNUAL BOTTOMFISH CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATIST CAL AREA, 1978
($000)

MGT. AREA: N/S Peninsu a (Southern Portion)'

GEAR : Otter Trawl

SPECIES	STAT. AREA	VESSEL SIZE IN FEET			TOTAL
		41-50 "	51-60	61-70	
BOTTOMFISH GENERAL	273 - 80		*		*
	Total		*		*
PACIFIC COD	272 - 20		4	4	8
	- 30		*		*
	273 - 80		7	7	14
	- 90	3		3	6
	283 - 30		*		*
	Total	3	12 .	14	29
FLAT FISH	273 - 80		*		*
	Total		*		*
PACIFIC OCEAN PERCH	273 - 80		*		*
	Total		*		*
ROCKF SH	273 - 80		*		*
	Total		*		*
POLLO K	272 - 20		1		1
	273 - 80		1		1
	Total		2		2
BOTTOMFISH	Grand Total	3	14	14	31

* Less than $500

1 South of the Pen nsula between 158°W and 65°30' W; also inc udes a portion of Chignik.

EC I

TABLE B-38

ANNUAL FISHING EFFORT IN NUMBER OF BOTTOMFISH LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

GEAR : Otter Trawl

SPECIES	STAT. AREA	VESSEL SIZE IN FEET 41-50	51-60	61-70	TOTAL
BOTTOMFISH GENERAL	273 - 80		1		1
	Total		1		1
PACIFIC COD	272 - 20		1	1	2
	- 30		1		1
	273 - 80		1	1	2
	- 90	1		1	2
	283 - 30		2		2
	Total	1	5	3	9
FLAT FISH	273 - 80		1		1
	Total		1		1
PACIFIC OCEAN PERCH	273 - 80		1		1
	Total		1		1
ROCKFISH	273 - 80		1		1
	Total		1		1
POLLOCK	272 - 20		1		1
	273 - 80		1		1
	Total		2		2
BOTTOMFISH	Grand Total	1	11	3	15

[1] South of the peninsula between 158°W and 165°30′ W; also includes a portion of Chignik.

EC I

TABLE B-39

MONTHLY CATCH OF BOTTOMFISH IN METRIC TONS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

GEAR : Otter Trawl

SPECIES	STAT. AREA	MONTH 4	5	6	7	8	9	10	11	12	TOTAL
BOTTOMFISH GENERAL	273 - 80		*								*
	Total		*								*
PACIFIC COD	272 - 20			5	9						14
	- 30			*							*
	273 - 80		22	2							24
	- 90				12						12
	283 - 30						*		1		1
	Total		22	7	21		*		1		51
FLAT FISH	273 - 80		*								*
	Total		*								*
PACIFIC OCEAN PERCH	273 - 80		*								*
	Total		*								*
ROCKFISH	273 - 80		*								*
	Total		*								*
POLLOCK	272 - 20				1						1
	273 - 80		1								1
	Total		1		1						2
BOTTOMFISH	Grand Total		23	7	22		*		1		53

* Less than .5 MT

[1] South of the Peninsula between 58°W and 165°30′ W; also includes a portion of Chignik.

ECI

TABLE B-40

MONTHLY FISHING EFFORT FOR BOTTOMFISH IN NUMBER OF LANDINGS BY SPECIES AND 5-D GIT statistical AREA (ALL VESSEL SIZES) 1978

MGT. AREA: N/S Peninsu a (Southern Portion)[1]

GEAR: Otter Trawl

SPECIES	STAT. AREA	4	5	6	7	8	9	10	11	12	TOTAL
BOTTOMFISH GENERAL	273 - 80		1								1
	Total		1								1
PACIFIC COD	272 - 20				1	1					2
	- 30				1						1
	273 - 80		1		1						2
	- 90					2					2
	283 - 30						1		1		2
	Total		1		3	3	1		1		9
FLAT FISH	273 - 80		1								1
	Total		1								1
PACIFIC OCEAN PERCH	273 - 80		1								1
	Total		1								1
ROCKFISH	273 - 80		1								1
	Total		1								1
POLLOCK	272 - 20					1					1
	273 - 80		1								
	Total		1			1					2
BOTTOMFISH	Grand Total		6		3	4	1		1		15

[1] South of the Peninsula **between 158°W** and **165°30' W; also** includes a portion of **Chignik.**

ECI

TABLE B-41

ANNUAL BOTTOMFISH CATCH IN METRIC TONS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

GEAR : Double Otter Trawl

SPECIES	STAT. AREA	VESSEL SIZE IN FEET				TOTAL
		61-70	71-80	81-90	91-100	
BOTTOMFISH GENERAL	272 - 30		1			1
	273 - 80		*			*
	362 - 16					13
	Total	13	1			14
PACIFIC COD	272 - 20		2		2	4
	- 30		5	3		8
	273 - 72		1			1
	- 80		69			69
	- 84		1			1
	- 94.		6			6
	275 - 60		3			3
	283 - 10		1			1
	- 61	1	1		2	4
	- 63		1	2		3
	362 - 16					51
	Tota 1	52	90	5	4	151
FLATFISH	273 - 80		*			*
	362 - 16					-
	Tota 1	6	*			6
POLLOCK	272 - 30		1			1
	273 - 80					1
	Total		2			2
BOTTOMFISH	Grand Total	71	93	5	4	173

* Less than .5 MT

1 South of the Peninsula between 158°W and 165°301 W; also includes a portion of Chignik.

EC I

TABLE B-42

EXVESSEL VALUE OF ANNUAL BOTTOMFISH CATCH BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATISTICAL AREA, 1978
($000)

MGT. AREA: N/S Alaska Peninsula (Southern Portion)[1]

GEAR : Double Otter Trawl

SPECIES	STAT. AREA	VESSEL SIZE IN FEET 61-70	71-80	81-90	91-100	TOTAL
BOTTOMFISH GENERAL	272 - 30		*			*
	273 - 80		*			*
	362 - 16	7				7
	Total	7	*			7
PACIFIC COD	272 - 20		1		1	2
	- 30		3	2		5
	273 - 72		*			*
	- 80		39			39
	- 84		1			1
	- 94		3			3
	275 - 60		2			2
	283 - 10		1			1
	- 61	1	1		1	3
	- 63		1	1		2
	362 - 16	29				29
	Total	30	52	3	2	87
FLATFISH	273 - 80		*			*
	362 - 16	3				[illegible]
	Total	3	*			3
POLLOCK	272 - 30		*			*
	273 - 80		*			*
	Total		1			1
BOTTOMFISH	Grand Total	40	53	3	2	98

* Less than $500

[1] South of the Peninsula between 158°W and 1[illegible]°30' W; also includes a portion of Chignik.

EC I

TABLE B-43

ANNUAL FISHING EFFORT IN NUMBER OF BOTTOMFISH LANDINGS BY SPECIES, BY GEAR, VESSEL SIZE AND BY 5-DIGIT STATIST CAL AREA, 1978

MGT. AREA: N/S Alaska Peninsula (Southern Portion)

GEAR: Double Otter Trawl

SPECIES	STAT. AREA	VESSEL SIZE IN FEET 61-70	71-80	81-90	91-100	TOTAL
BOTTOMFISH GENERAL	272 - 30		1			1
	273 - 80		1			1
	362 - 16	2				2
	Total	2	2			4
PACIFIC COD	272 - 20		1		1	2
	- 30		2	1		3
	273 - 72		1			1
	- 80		7			7
	- 84		2			2
	- 94		2			2
	275 - 60		1			1
	283 - 10		1			1
	- 61	1	1		1	3
	- 63		1	1		2
	362 - 16	2				2
	Total	3	19	2	2	26
FLATFISH	273 - 80		1			1
	362 - 16	1				1
	Total	1	1			2
POLLOCK	272 - 30		1			1
	273 - 80		2			2
	Total		3			3
BOTTOMFISH	Grand Total	6	25	2	2	35

[1] South of the peninsula between 158°W and 165°30′ W; also includes a portion of Chignik.

EC I

TABLE B-44

MONTHLY BOTTOMFISH CATCH IN METRIC TONS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: N/S Peninsula (Southern Portion)[1]

GEAR : Double Otter Trawl

SPECIES	STAT. AREA	MONTH 4	5	6	7	8	9	10	11	12	TOTAL
BOTTOMFISH GENERAL	272 - 30				1						1
	273 - 80		*								*
	362 - 16										13
	Total		*		1				13		14
PACIFIC COD	272 - 20				2	2					4
	- 30				5	3					8
	273 - 72				1						1
	- 80		47		2	19	1				69
	- 84				1	*					1
	- 94				6						6
	275 - 60			3							3
	283 - 10						1				1
	- 61				4	*					4
	- 63					3					3
	362 - 16										51
	Total		47	3	21	27	2		51		151
FLATFISH	273 - 80										*
	362 - 16										6
	Total		*						6		6
POLLOCK	272 - 30				1						1
	273 - 80		1								1
	Total		1		1						2
BOTTOMFISH	Grand Total		48	3	23	27	2		70		173

* Less than .5 MT

[1] South of the peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

TABLE B-45

MONTHLY FISHING EFFORT FOR BOTTOMFISH IN NUMBER OF LANDINGS BY SPECIES, BY GEAR, AND BY 5-DIGIT STATISTICAL AREA (ALL VESSEL SIZES) 1978

MGT. AREA: N/S **Peninsula (Southern Portion)**[1]

GEAR : Double Otter Trawl

SPECIES	STAT. AREA	4	5	6	7	8	9	10	11	12	TOTAL
BOTTOMFISH GENERAL	272 - 30				1						1
	273 - 80		1								1
	362 - 16									2	2
	Total		1		1					2	4
PACIFIC COD	272 - 20				1	1					2
	- 30				2	1					3
	273 - 72				1						1
	- 80		2		1	3	1				7
	- 84				1	1					2
	- 94				2						2
	275 - 60			1							1
	283 - 10						1				1
	- 61				2	1					3
	- 63					2					2
	362 - 16									2	2
	Total		2	1	10	9	2			2	26
FLATFISH	273 - 80		1								1
	362 - 16									1	1
	Total		1							1	2
POLLOCK	272 - 30				1						1
	273 - 80		2								2
	Total		2		1						3
BOTTOMFISH	Grand Total		6	1	12	9	2			5	35

[1] South of the Peninsula between 158°W and 165°30' W; also includes a portion of Chignik.

EC I

25-82