Regional Information Report No. 5J02-07

Economic Impact Analysis of the Seafood Industry In Southeast Alaska: Importance, Personal Income, and Employment in 1994

by
Jeff Hartman

Alaska Department of Fish and Game
Division of Commercial Fisheries
P.O. Box 25526
Juneau, Alaska 99802-5526

October 16, 2002

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ABOUT THE AUTHOR

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PREFACE

Thanks go to all the seafood industry participants in this study, especially the fishermen and seafood processors who filled out the survey and answered numerous questions about their operations. I would also like to express our appreciation for the support from a number of fishing and seafood interest groups operating in the region, including:

- United Fishermen of Alaska
- Alaska Trollers Association
- Southeast Alaska Seiners
- Petersburg Vessel Owners Association
- United Southeast Alaska Gillnetters
- Pacific Seafood Processors Association

The three agencies providing funding to the project are:

- U.S. Forest Service
- Alaska Seafood Marketing Institute
- Alaska Department of Fish and Game, Southeast Alaska Region and Headquarters offices

Division of Commercial Fisheries staff that supplied information and technical assistance for the study are gratefully acknowledged and they include Hal Geiger, Brian Frenette, David Ackley, Bruce Simonson, Katherine Aschaffenburg, and Kurt Savikko.

A special thanks to Norma Sands of the Alaska Department of Fish and Game who developed the weighting algorithm along with the program used to expand the samples and estimate coefficients of variation and other statistics of reliability. Technical and funding assistance from the U.S. Forest Service were provided from Kathleen Morse and Cal Casipit. Craig Wiese is a Fisheries Specialist with the Alaska Marine Advisory Program, University of Alaska Anchorage and provided IMPLAN sector analysis of harvesting and processing survey data. Acknowledgment goes also to the staff of the Commercial Fisheries Entry Commission, particularly Nancy Free-Sloan and others who responded to my data requests and produced many data reports used in various sections of this study, as well as Kurt Schelle for technical review of earlier drafts of this document.

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EXECUTIVE SUMMARY

The 1994 commercial fishing industry in Southeast Alaska contributed approximately $223.60 million in personal income. This total is composed of $144.56 million in direct income to commercial harvesters and seafood processors, as well as indirect and induced income of $79.04 million. Of the $223.60 million, Alaska residents earned approximately $147.28 million.

Direct, indirect, and induced employment from commercial fishing in Southeast Alaska was 7,529 average annual jobs. The resident contribution totaled approximately 7,155 jobs.

The commercial fisheries of Southeast Alaska contributed $82.79 million in personal income to Washington residents. Employment in the state of Washington from indirect expenditures of commercial fishing and seafood processing in Southeast Alaska totaled 1,615 jobs. In addition to the effects of indirect employment in the state of Washington, direct harvesting and processing employment in Alaska of people who reside in the state of Washington totaled 1,106 jobs.

In 1994 the Southeast Alaska seafood industry was the largest private basic sector employer accounting for 43.9% to 47.8% of the region's private basic sector employment and a similar proportion of private basic sector income at 40.2% (Figure 1). Though the private sector excludes government, the Southeast Alaska seafood industry remains the region's second largest basic industry employer, the first being federal, state, and local government.

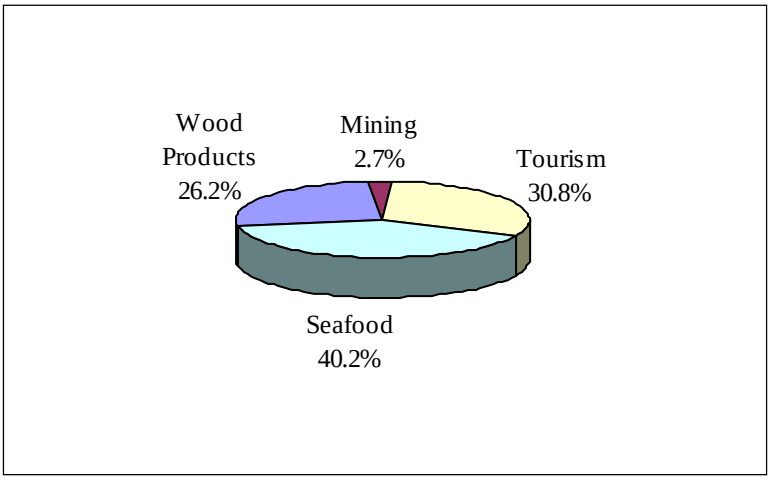

Figure 1. Distribution of private basic sector income across basic sector industries.

In 1994 the seafood industry accounted for 20.56% of the basic industry employment, 17.70% of basic industry payroll, 12.47% of total regional employment, and 12.73% of the total regional payroll. Basic industries include federal, state, and local government, but exclude the support sectors, such as retail and wholesale trade and other services.

In 1994 the direct income from seafood harvesting in the region was $109.13 million, $67.38 million of which was earned by Southeast Alaska residents. Combining Southeast Alaska with the rest of Alaska, approximately 66% of the payments made to seafood harvesting labor were made to Alaska residents in 1994. Approximately 60% of the purchases of non-labor and fixed and variable costs of fishing in the Southeast region were made in Alaska. It is a common misconception that most of the seafood harvesting labor force is made up of employees who reside outside the Southeast Alaska region. Though a significant number of permit holders, vessel owners, and crewmembers reside in other areas of the U.S., 69% of the monthly employment (or average annual employment) in 1994 was from workers who resided in Southeast Alaska. Permit holders from within and outside Alaska frequently hire skippers and crewmembers from within the Southeast Alaska region. Payments to crewmembers in Southeast Alaska totaled 59% of total crew payment (Figure 2).

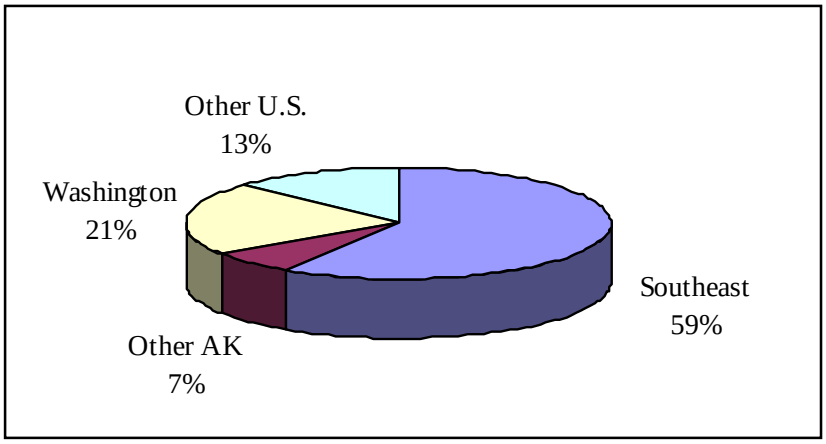

Figure 2. Payments to seafood harvesting crewmembers in Southeast Alaska commercial fisheries by residency.

The largest accounting cost to seafood processors in Southeast Alaska is the cost of raw landed fish. In 1994 fish purchases comprised 56% of the sales revenue for processors in the region (Figure 3). Production labor costs represented 10% of sales, or < 25% of raw fish costs.

Alaska residents received 29% of the total personal income wage from seafood processing in Southeast Alaska (Figure 4). When combining the resident share of seafood processing employment of 422 jobs and commercial fish harvesting employment of 2,147 jobs, residents made up approximately 55% of direct seafood industry employment. Contrary to occasional assumptions that commercial fishing industry residents are not well represented in the region, this proportion of 55% is approximately equal to the average resident employment contribution of the resource-based industries in Southeast Alaska of 56.1% (Figure 5).

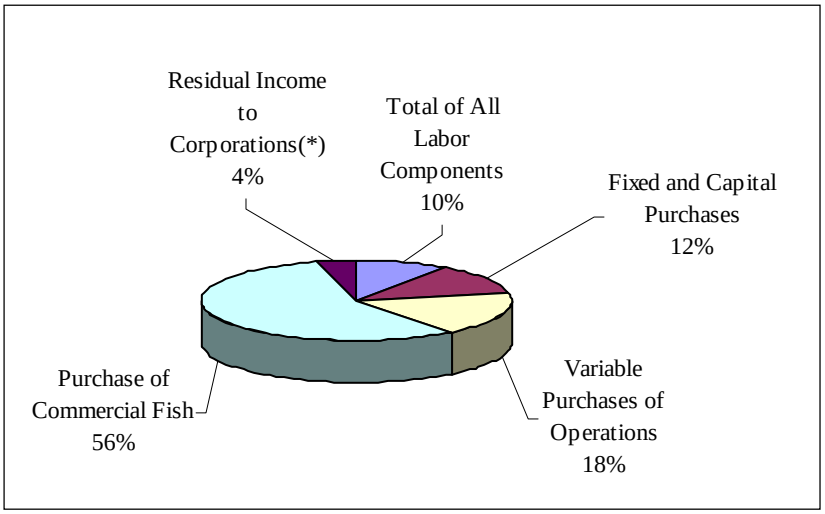

Figure 3. Distribution of 1994 costs as a percent of sales revenue for seafood processors in Southeast Alaska.

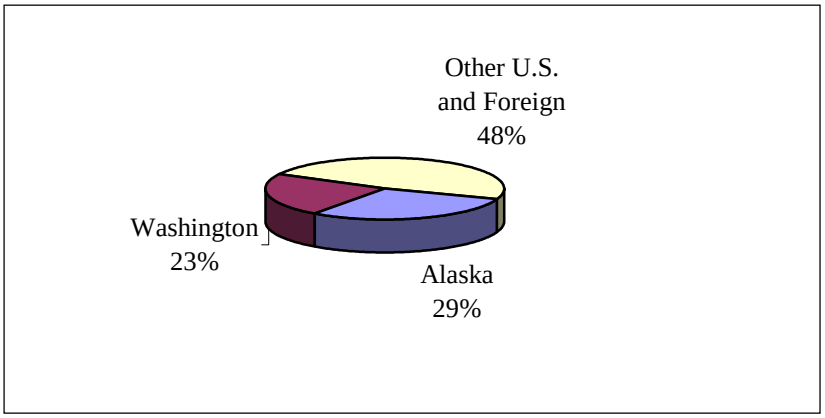

Figure 4. Resident Alaska, Washington, and other U.S. and foreign distribution of income from seafood processing in Southeast Alaska in 1994.

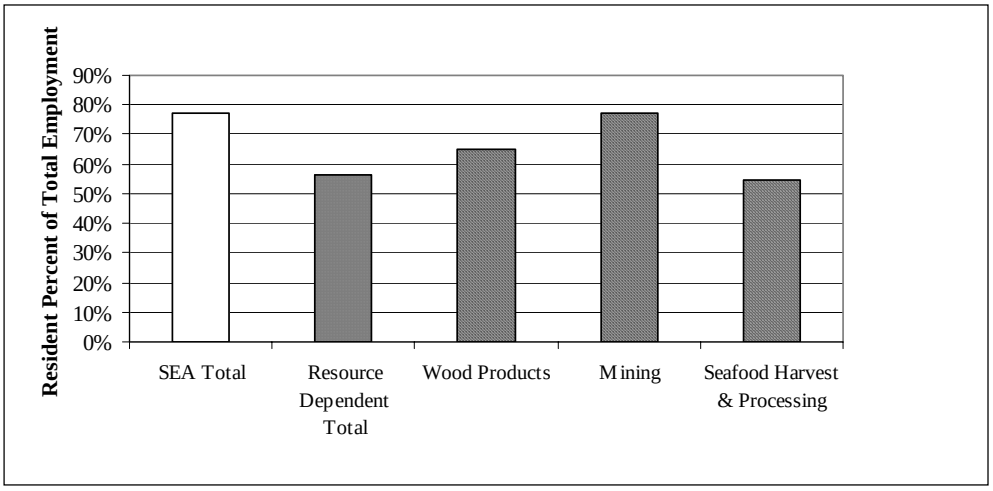

Figure 5. Resident share of employment for Southeast Alaska total and resource dependent industries.

The survey data used in this study only summarize the economic impacts of the commercial fishing harvests that are taken in a common property fishery. The direct and indirect impacts of the harvesting that occur in the types of special fisheries listed below are included by the assumption that they are distributed in the same manner as the average common property fishery harvests. Excluded from this study are five components of seafood employment and income impacts:

1. Noncommon property harvests from Private Nonprofit (PNP) cost recovery,
2. Commercial salmon hatchery employment and income from PNP hatcheries,
3. State, federal, and local government fishery programs in Southeast Alaska,
4. Test and experimental fisheries operating in Southeast Alaska, and
5. Harvests from fish caught in the Exclusive Economic Zone, but not recorded in the fish ticket landings (this would include some at-sea processed fish).

INTRODUCTION

Issue

There has been a chronic lack of data regarding the amount of income and employment generated by commercial fishing and fish processing in Southeast Alaska. Self-employed fishermen and crewmembers are not included in U.S. labor statistics. As a result, standard industry information, such as payroll and employment, has not been presented to the Alaska public on a regular basis. Additional information missing is systematic information on the location of seafood industry purchases between major or neighboring regions. These data gaps produce a great deal of uncertainty in any estimate of direct and indirect employment and income effects of the seafood industry using standard employment and income impact models like IMPLAN Professional ™ (MIG Inc. 1999) or economic base models.

A further problem is that the employment data that exist in Alaska Department of Labor databases are not linked to seafood production by major type of fishery; rather it is compiled by processing operation or firm. Thus, our understanding of this critical component of the economy is weak. It is understandable that previous efforts to evaluate the importance of the commercial seafood industry to Southeast Alaska have been restricted by these data constraints. Two primary reports by Berman and Hull (1987) and McDowell et al. (1989) are based upon estimates using algorithms that make assumptions about the participation of crew on vessels. While these were the best available approach to estimation of employment and income impacts available at the time, these studies were: (1) not based upon a systematic sampling of vessel operations, (2) are now over a decade old, and (3) are not capable of being stratified by location of residence.

A final constraint on previous efforts in the last decade to collect properly stratified and representative data involves access to confidential data from the Alaska Department of Fish and Game and the Commercial Fisheries Entry Commission (CFEC). Access to sensitive individual landing information, prices, and seafood production by processor necessitated the sampling design be carried out by researchers who had legal rights to use this confidential information.

Purpose of Study

The primary purpose of this study was to estimate the direct, indirect, and induced income and employment associated with the commercial finfish and shellfish harvests and seafood production in Southeast Alaska. Additional primary and intermediate information on purchases and employment in the seafood industry was collected and estimated. The significance and distribution of the primary, intermediate, and final income and employment information are compared with other industries in the region.

This study was requested by Alaska seafood industry stakeholder groups to fill basic data gaps on this important sector of the economy. Several fishing industry groups were involved in identifying the scope of the study. Although they are too numerous to list here, a few include the United Fishermen of Alaska, Alaska Trollers Association, Pacific Seafood Processors Association, and Southeast Seiners Association. The U.S. Forest Service and Alaska Seafood Marketing Institute provided considerable funding for the project as did the Alaska Department of Fish and Game.

Primary Objectives and Background

Primary objectives of the study were to:

1. Gather data on fish harvesting and processing employment in Southeast Alaska, including residency and length of employment for hired crew and processing laborers.

2. Collect this information through a mail and phone survey of approximately 1,100 Southeast Alaska commercial fishermen, as well as a mailout, and directly interview of the largest processors operating in the region.

3. Collect information on the amount and location of operating expenditures for the harvesting and processing sectors. Translate this information into a production function in an Input/Output model called IMPLAN (MIG Inc. 1999) to determine the secondary effects of the fisheries.

4. Report on the resulting estimates of direct, indirect, and induced employment and income in Southeast Alaska, all of Alaska, and the state of Washington.

5. Develop technical summary reports for peer and industry review.

The commercial seafood industry in Southeast Alaska is not only one of the largest regional contributors to Alaska's seafood industry, it is also an important supplier of the world's finfish and shellfish. The industry makes a significant and longstanding contribution to the economy of Southeast Alaska. It is especially important to many isolated coastal Southeast Alaska communities as a main source of income and employment, and has been the impetus for the economic development of several of the remote communities in the region.

Vessels licensed to land salmon, crab, shellfish, and groundfish are found in almost every coastal community in Southeast Alaska. Large seafood processing plants dominate some of the coastal communities. What is not readily apparent, and in fact often overlooked, is the true scope and magnitude of the commercial fishing and seafood processing industries as well as the direct and indirect economic impacts they bring to Alaska and the state of Washington. These impacts result from a resource that produced approximately $223.16 million in landings and exported $395.66 million of processed product in 1994.

Whereas Southeast Alaska is an area approximately 150 miles wide by 450 miles long, a better understanding of its potential coastal fishery production capacity is realized by the region's extraordinary coastline (Anonymous 1986). Approximately 10,600 miles of coastline (D. Ackley, ADF&G, Juneau, personal communication) makes up the region's mainland and islands, and is a contributing factor in the productivity of its waters. In contrast to its size, the region's population of approximately 72,500 residents is small. The region and corresponding study impact areas consist of a large amount of habitat in state territorial waters and in the eastern Gulf of Alaska coast region of the Exclusive Economic Zone (EEZ), which extends 200 miles beyond the Alaska coastline (Figure 6).

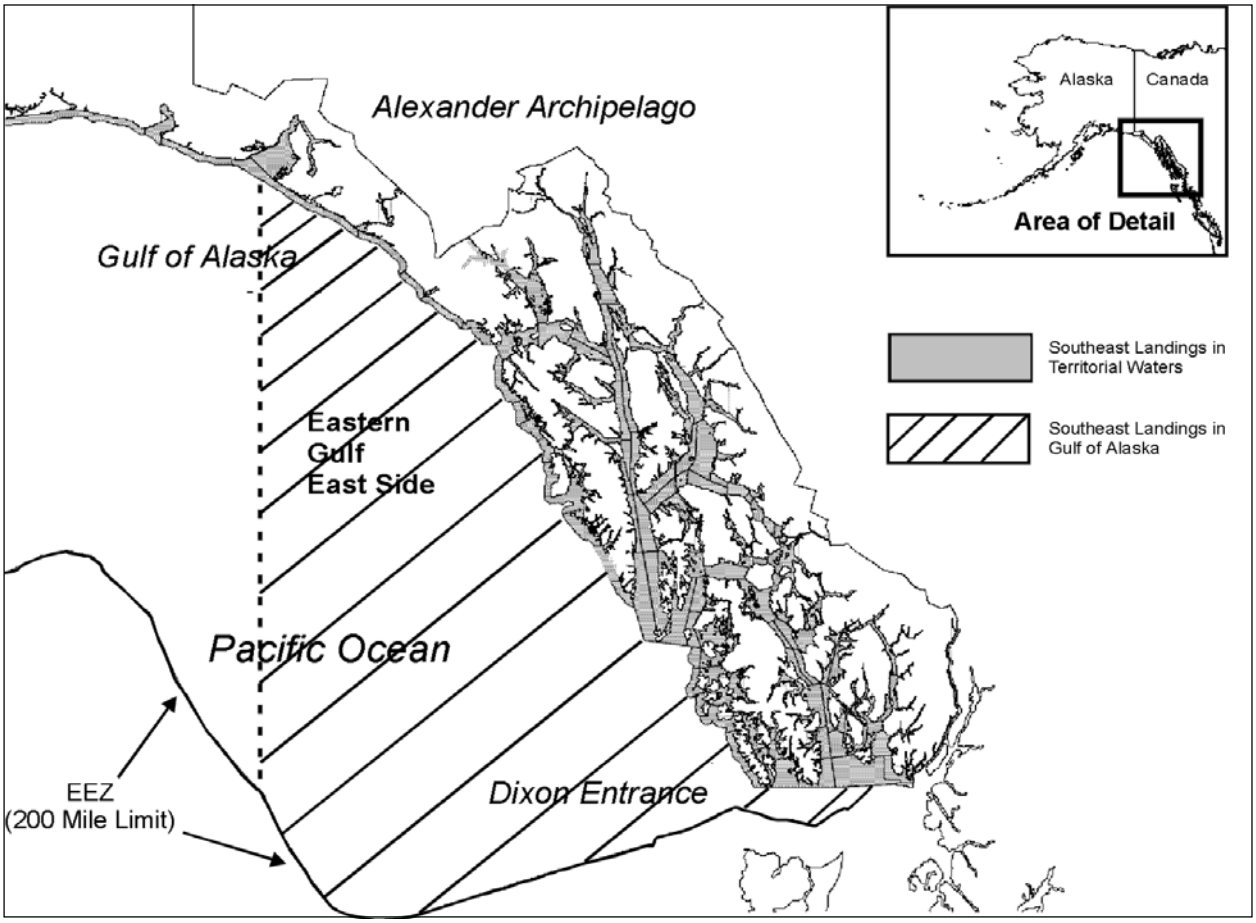

Figure 6. Seafood harvest study area including the eastern Gulf of Alaska coast 200 mile limit and State of Alaska Territorial waters.

Conventional road and rail transportation corridors form primary shipping routes for most of the U.S. In Southeast Alaska, these potential land routes are obstructed by mountains, glaciers, and ice fields. Only three communities (Hyder, Haines, and Skagway) have highway links to regions outside of coastal Southeast Alaska, namely British Columbia and the Yukon Territory. Few communities within the region are linked by roads.

Principal *basic industries* within this region are government, fishing, seafood processing, wood products, mining, and tourism. Typically, a basic industry has its primary market located outside a region. The exception to this is state government, which still derives much of its operating budget from oil royalites. According to economic base theory, regional economic growth depends on expansion of the basic sector of the economy. This, in turn, demands additional increases and activity in the nonbasic sectors. Increases in basic sector activity are usually termed *primary impacts* and those in nonbasic activity *secondary impacts.*

Unlike economic base theory, input/output theory involves a more detailed mathematical representation of industries in a region and outside of a region. It defines links between industries through a constant coefficient production function. It therefore consists of a rather detailed accounting of the flow of goods and services in dollar terms, at a particular time. The

implications of a given change in purchases are similar to an economic base model, in that an increase in one sector can be translated into an increase in other sectors in the economy.

This study summarizes economic impacts of landings recorded in the Alaska Department of Fish and Game fish ticket file for Southeast Region management areas. Fish ticket landings are merged with estimated fish prices in the CFEC gross earnings file (N. Free-Sloan, Commercial Fisheries Entry Commission, Juneau, Personal Communication). The gross earnings file also combines landings from halibut fish tickets collected for the International Pacific Halibut Commission. Thus, some fish stocks harvested in the EEZ and landed elsewhere are not included in the impact estimates. A small amount of EEZ landings outside the Eastern side of the Gulf of Alaska are also landed in Southeast Alaska. These two components of the region's landings are very small.

To many participants, the commercial fishing industry of Southeast Alaska is more than just a source of income. Commercial fishing and seafood processing have a long history in the state and support a longstanding way of life for many of its participants that is not possible to quantify. In this respect, the impact analysis presented herein is limited.

Two terms will consistently arise in this study. One term is "employment", which is used synonymously in this manuscript with the term "jobs". There are many potential ways to estimate employment, but the two ways that are consistently referred to in this study are monthly employment and average annual employment.[2] The impacts within the Southeast Alaska study area are estimated in monthly and average annual employment. Average annual employment is simply the sum of the monthly employment for 12 months divided by 12.

A second term used frequently is "total income". Total income produced by an economic activity includes labor and proprietors' income, profits, dividends, and rent. One may measure regional income either as income earned within a region or as income received by residents of a region. The lack of data available on income earned by nonresident fishermen and processing workers makes accurate measurements of resident incomes difficult and is one of the reasons for this study.

COMPONENTS OF THE STUDY

Economic Study Area

Two distinct types of statistical areas referred to in this study are the area where the fish are harvested and the area where people in localities and communities are impacted. The first is the "geographical harvesting area" from which Southeast Alaska landings are compiled. These areas encompass much of the eastern Gulf of Alaska coast and the state territorial waters, including the Southeast Inside Passage. The second study area is the "geographical area of economic impacts" from which the effects on people and the economy are measured. This area includes Southeast

[2] Employment by month is collected by the Alaska Department of Labor for an employer through a survey associated with the unemployment insurance data. The survey samples the number of persons receiving wages during the week that includes the 12th day of the month. The economic inpact analysis survey used for this study counts an employee month as one person on a vessel for any period during a month.

Alaska, the state of Alaska, and the state of Washington. The Southeast Alaska region covers the area from Yakutat to the U.S./Canadian border and includes 8 census areas identified by the Bureau of Labor Statistics: (1) Wrangell-Petersburg Census Area, (2) Sitka Borough, (3) Yakatut Borough, (4) Skagway-Hoonah-Angoon Census Area, (5) Juneau Borough, (6) Prince of Wales-Outer Ketchikan Census Area, (7) Haines Borough, and (8) Ketchikan Gateway Borough (Figure 7).

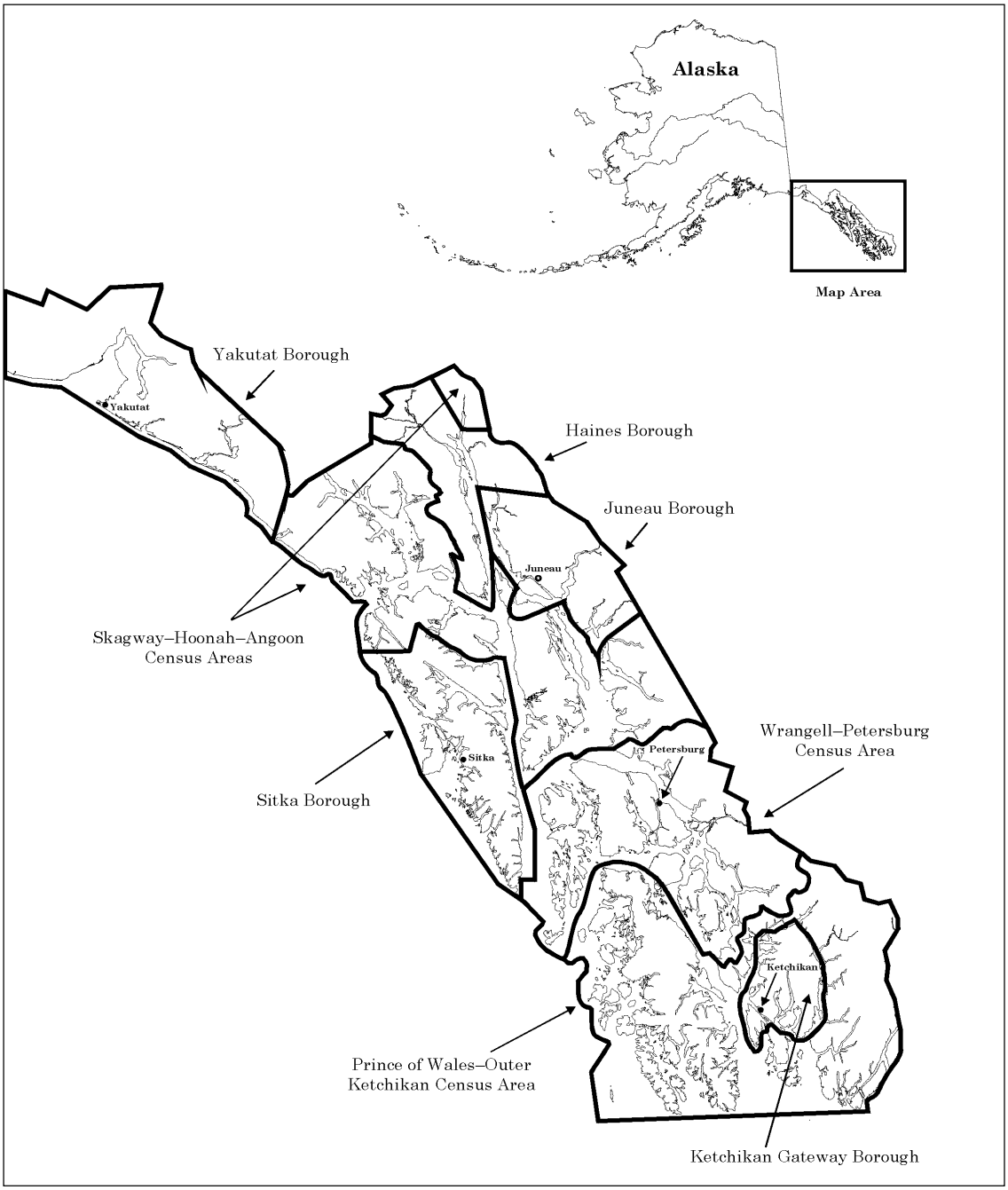

Figure 7. Alaska and Southeast Alaska census areas and boroughs used by the U.S. Bureau of Economic Statistics.

Southeast Alaska Fisheries, the Seafood Harvesting Sector

The Southeast Alaska seafood industry provided a wide variety of salmon, herring, halibut, sablefish, groundfish, and shellfish products to domestic and world markets in 1994. The majority of raw fish harvests undergo significant value-added processing. Small amounts of finfish and shellfish are sold in chilled and unfrozen products forms such as headed and gutted halibut, and troll-caught salmon. A few shellfish products are sold soon after harvest to restaurants and retail markets in essentially the same form they are produced by fishermen.

The types of vessels, gears, and species fished in the Southeast Alaska region are also extremely diverse. There are 52 types of fishing permits (Table 1), and fishermen deploy numerous types of net, longline, troll, pot, jig, and trawl gear. Approximately 3,300 individuals made landings with 6,753 commercial fishery permits in the common property fisheries of Southeast Alaska in 1994.

The salmon seine harvest of 217.77 million pounds from the 1994 common property fisheries was by far the largest component of the Southeast Alaska seafood production (Table 2). Salmon gillnet was next at 31.49 million pounds, followed by salmon power troll at 29.52 million pounds, and sablefish at 27.01 pounds.

If the Southeast Alaska region was an autonomous 51st state, it would rank as the 2nd largest seafood-producing state in the Union; the remaining regions of Alaska would rank first. A common misconception is that the resident fishermen in the region do not play as important a role in seafood production as nonresident fishermen. In Southeast Alaska, residents of the state harvested 59% of the volume of the commercial fishery catch in 1994. In terms of earnings, 71% of landed revenue went to Alaska residents in 1994 (Table 3).

Table 1. Southeast Alaska fishery permit code, fishery name, number of permits and gross earnings in 1994. Blank fields denote confidential data.

Fishery Code	Fishery	No. of Permits	Gross Earnings by Permit Code[a]
A11B	Abalone, diving gear, statewide	70	$ 339,366
B05B	Halibut, hand troll, statewide	26	$ 58,340
B06B	Halibut, long line, under 5 tons, statewide	442	$ 2,006,297
B26B	Halibut, long line, 5 tons or over, statewide	4	$ 7,653
B61B	Sablefish, long line, under 5 tons, statewide (excluding southeast	1,103	$ 24,117,860
C06B	Sablefish, longline, northern southeast	13	$ 226,798
C61A	Sablefish, long line, 5 tons or over, statewide	120	$ 6,856,585
C61B	Sablefish, long line, 5 tons or over, southern southeast	449	$ 28,648,475
C61C	Dungeness crab, pot gear, to 50 ft, southeastern	30	$ 1,231,240
D09A	Dungeness crab, pot gear, to 50 ft, Yakutat	173	$ 2,141,912
D09D	Dungeness crab, pot gear, over 50 ft southeastern	32	$ 501,545
D91A	Dungeness crab, pot gear, over 50 ft, Yakutat	10	$ 102,119
D91D	Dungeness crab, pot gear, over 50 ft, Yakutat	14	$ 367,994
G01A	Roe herring, purse seine, southeastern	52	$ 2,425,531
G34A	Roe herring, gillnet, southeastern	124	$ 1,767,882
H01A	Herring, purse seine, southeastern	5	$ 80,202
H21A	Herring, pound, southeastern		
K09D	King crab, pot gear, to 50 ft, Yakutat		
K19A	Red/blue king crab, pot gear, southeastern	4	$ 55,160
K29A	Red/blue and brown king crab, pot gear, southeastern	4	$ 72,217
K49A	Red/blue king/Tanner crab, pot gear, southeastern	32	$ 1,066,114
K59A	Brown king, Tanner crab, pot gear, southeastern	15	$ 42,531
K69A	King and Tanner crab, pot gear, southeast	62	$ 2,768,613
K91D	King crab, pot gear, over 50 ft, Yakutat		
L21A	Herring spawn, pound, southeast	93	$ 1,812,178
M05B	Misc saltwater finfish, hand troll, statewide		
M06B	Misc troll, all species	16	$ 14,534
M07B	Misc saltwater finfish, long line, under 5 tons, statewide		
M17B	Misc saltwater finfish, otter trawl, statewide		
M26B	Misc saltwater finfish, beam trawl, statewide	67	$ 228,392
M61B	Misc saltwater finfish, jig, statewide	139	$ 246,985
P07B	Misc saltwater finfish, long line, 5 tons or over, statewide		
P09B	Shrimp, otter trawl, statewide	184	$ 958,489
P17B	Shrimp, pot gear, to 50 ft, statewide	23	$ 552,363
P91B	Shrimp, beam trawl, statewide	19	$ 141,403
Q11B	Shrimp, pot gear, over 50 ft, statewide	183	$ 1,726,875
R18B	Sea cucumber, diving/handpicking, statewide	5	$ 26,772
R23B	Clams, mechanical digger, statewide	18	$ 240,507
S01A	Salmon, purse seine, southeastern	479	$ 61,304,210
S03A	Salmon, drift gillnet, southeastern	500	$ 18,384,399
S04D	Salmon, set gillnet	155	$ 3,504,729
S05B	Salmon, hand troll, statewide	621	$ 4,478,849
S15B	Salmon, power gurdy troll, statewide	880	$ 34,418,018
T09D	Tanner crab, pot gear, to 50 ft, Yakutat	7	$ 88,039
T10A	Tanner crab, ring nets, southeastern		
T19A	Tanner crab, pot gear, southeastern	12	$ 430,295
T19D	Tanner crab, pot gear, over 50 ft, Yakutat	5	$ 151,295
W22B	Scallops, dredge, statewide	11	$ 673,015
Y05A	Demersal shelf rockfish, hand troll/hand line, southeast		
Y06A	Demersal shelf rockfish, longline, under 5 tons, southeast	11	$ 6,092
Y26A	Demersal shelf rockfish, mechanical jig, southeast	5	$ 4,065
Y61A	Demersal shelf rockfish, longline, 5 tons or over, southeast	116	$ 620,708
	Subtotal	6,392	$ 205,097,855
	Additional Miscellaneous Earnings	364	$ 419,474
	Grand Total	6,756	$ 205,517,329

[a] Special permits for cost recovery, Metlakatla Indian Reservation, educational, and Test Fisheries are excluded (N. Free-Sloan, Commercial Fisheries Entry Commission, Juneau, personal communication, January 1996).

Table 2. Total pounds harvested in Southeast Alaska by Alaska, Washington, and other U.S. and permits with foreign addresses in 1994. Data are modified from Commercial Fisheries Entry Commission (CFEC) earnings report and permit file report.

Strata Group	Total Lbs	Alaska	Washington	Other
Dive Fisheries	1,060,166	812,338	215,643	32,185
Dungeness Crab	2,825,256	1,844,684	888,621	91,951
Salmon Drift Gillnet	31,488,376	23,981,397	6,703,965	803,014
Halibut Longline <5 Tons	905,971	871,059	21,289	13,623
Halibut Longline ≥5 Tons	12,921,512	11,132,197	1,539,370	249,945
Salmon Hand Troll	3,775,342	3,468,766	214,325	92,251
Other Miscellaneous Fisheries	6,564,390	5,782,047	464,163	318,180
Salmon Power Troll	29,523,996	23,162,606	4,797,128	1,564,262
Roe Herring Gillnet and Purse Seine	12,302,178	9,257,265	2,949,078	95,835
Sablefish Longline	27,012,121	20,826,213	5,316,768	869,140
Salmon Seine	217,770,202	100,463,968	107,172,917	10,133,317
Salmon Setnet	4,853,391	4,185,515	317,194	350,682
Tanner Crab	2,252,382	2,182,857	34,079	35,446
Total	**353,255,283**	**207,970,912**	**130,634,540**	**14,649,831**
Percent of Subtotal	**100%**	**59%**	**37%**	**4%**
Miscellaneous Pounds[a]	55,562,869			
Grand Total	**408,818,152**			

[a] Miscellaneous pounds are those that have no matching Social Security Number, permit number, or vessel number, and also includes specific test and experimental fisheries and hatchery cost recovery in the CFEC vessel or permit file. A final component includes an estimate of Annette Island pounds.

Table 3. Total Earnings from 1994 Southeast Alaska harvests by Alaska, Washington, and other U.S. and foreign-owned permits with foreign addresses. Data modified from Commercial Fisheries Entry Commission (CFEC) earnings report, and permit file report.

Strata Group	Total Earnings	Alaska	Washington	Other
Dive Fisheries	$ 2,104,557	$ 1,679,920	$ 56,497	$ 368,139
Dungeness Crab	$ 3,361,770	$ 2,221,708	$ 106,457	$ 1,033,606
Salmon Drift Gillnet	$ 18,102,898	$ 13,806,014	$ 439,698	$ 3,857,186
Halibut Longline <5 Tons	$ 1,686,210	$ 1,618,720	$ 25,741	$ 41,749
Halibut Longline ≥5 Tons	$ 23,105,882	$ 20,612,661	$ 304,095	$ 2,189,125
Salmon Hand Troll	$ 4,410,270	$ 4,076,946	$ 112,735	$ 220,589
Other Miscellaneous Fisheries	$ 6,274,589	$ 5,210,234	$ 578,744	$ 485,611
Salmon Power Troll	$ 33,806,833	$ 26,533,664	$ 1,552,708	$ 5,720,461
Roe Herring Gillnet and Purse	$ 5,389,804	$ 3,908,610	$ 75,658	$ 1,405,537
Sablefish Longline	$ 36,992,132	$ 29,900,972	$ 1,086,395	$ 6,004,766
Salmon Seine	$ 60,365,533	$ 26,552,456	$ 3,725,454	$ 30,087,624
Salmon Setnet	$ 3,504,729	$ 2,970,335	$ 287,437	$ 246,957
Tanner Crab	$ 6,412,122	$ 6,247,074	$ 86,760	$ 78,289
Subtotal	**$ 205,517,329**	**$ 145,339,314**	**$ 8,438,377**	**$ 51,739,638**
Percent of Subtotal	**100%**	**71%**	**4%**	**25%**
Miscellaneous Earnings[b]	$ 17,639,583			
Grand Total	**$ 223,156,912**			

[a] Miscellaneous earnings are those that have no matching Social Security Number, permit number, or vessel number, and also includes specific test and experimental fisheries and hatchery cost recovery in the CFEC vessel or permit file. A final component includes an estimate of Annette Island earnings.

Table 4. The 1994 seafood processing plant earnings in Southeast Alaska.

Earning Interval in $ Millions	Earnings in Subgroup	Number of Firms	Percent of Earnings
No earnings reported	$0	17	0.0%
Earnings with no Processor Codes	$3,810,989	0	1.0%
$0.0 to $0.25	$3,918,520	111	1.0%
$0.25 to $0.50	$1,518,433	4	0.4%
$0.5 to $1.00	$4,356,491	6	1.1%
$1.0 to $2.50	$6,149,734	4	1.6%
$2.5 to $5.00	$12,705,019	4	3.2%
$5.0 to $7.50	$37,491,173	6	9.5%
$7.5 to $15.00	$51,690,792	4	13.1%
$15.0 to $17.50	$81,638,411	5	20.6%
$17.5 to $100.00	$192,384,708	5	48.6%
Total	$395,664,270	166	100.0%

General Composition of Seafood Processing Sector

Seafood processing establishments are located from the southernmost point in Southeast Alaska to the community of Yakutat along its most northern census area. *Processing* is defined in the Alaska Department of Fish and Game Commercial Operator's Annual Report (COAR) database as any entity that buys finfish and shellfish or transports unprocessed finfish or shellfish out of the state of Alaska, including all land-based processors, catcher processors, buying stations, and small scale harvester-processors. Processing operations in the region vary in total production capacity, month of primary operations, total annual earnings, amount of diversification of species and product form, and level of vertical integration. As in other regions of the state, a relatively few number of plants produce most of the region's seafood product. Some processing companies operate multiple plants. Each plant in the COAR database is represented by a unique processor code. Data on the costs of production for the seafood processing sector in Southeast Alaska, and Alaska in general, are sparse and have not been systematically collected in a consistent manner.

The number and size of seafood operations in the region vary greatly. As with the seafood sector in the rest of the state, the industry in the region is highly concentrated. Of 166 seafood processing operations in Southeast Alaska in 1994, 28 of the largest plants sold over 95% of the seafood product. When aggregating plant codes by firm between the categories of $1.0 million to $100 million, this equated to 23 individual firms (Table 4).

Although seafood in the region is processed in many different forms, the fresh and frozen product is predominant, accounting for 60% of total seafood production (Table 5). This percentage distribution is used in IMPLAN (MIG Inc. 1999) to estimate the production function for the canned and fresh frozen component.

Table 5. Distribution of Southeast Alaska seafood production by product form and pounds for harvest year 1994.

Product Form	Processed Pounds	Percent of Total
Canned	85,731,631	36%
Fresh	19,055,421	8%
Frozen	123,675,795	52%
Other	7,721,650	3%
Total[a]	236,184,497	100%

[a] Includes production from hatchery cost recovery for salmon and other Southeast Alaska test fisheries. Data from Commercial Operators Annual Report, H. Savikko, Alaska Department of Fish and Game, Juneau, personal communication, May 1999.

Survey and Sampling Design

Surveys

Much of the data generated for this study came from two separate surveys, one for seafood harvesting and one for seafood processing. Other data were obtained from existing databases with considerable cooperation of staff of the Commercial Fisheries Entry Commission (CFEC), Alaska Department of Fish and Game (ADF&G), Alaska Department of Labor (ADOL), and seafood business survey data from the Alaska Marine Advisory Program.

Overview of Sampling Design for Seafood Harvesting Sector Survey

The seafood harvesting survey was sent to participants in 775 fishing operations, which included 1,194 individuals, vessel owners, or permit holders, who made landings in Southeast Alaska. These individuals can be divided into 4 groups: 509 CFEC permit holders who own a vessel used to fish their permits, 425 CFEC permit holders who used another vessel owner's boat, 131 vessel owners who do not own any CFEC permits, and 26 CFEC salmon setnet permit holders. The sampling design is described below.

The 8-page harvest survey (Appendix E) asked for information on labor and monthly employment as well as harvest purchases for general vessel operations and for fishing related to each permit fished from the vessel. The survey gathered detailed information on purchases and payments to crew, skippers, and other Southeast laborers in 52 fisheries operated under Alaska's commercial fishery permit system. The survey also included detailed questions on the distribution of expenditures in subregions of Southeast Alaska, other areas of Alaska, and the state of Washington.

Sample Size and Unequal Probability of Sample Selection

The approach for selecting strata and estimating sample size was modified from the stratified systematic sampling methodology used by the Canadian Department of Fisheries and Oceans (DFO 1992). Gross earnings of permit holders was used as the surrogate variable for purchases in determining sample size for a fixed and variable cost study. The objective was to select a sample that was representative of the average gross earnings of the population. The probability of selection was proportional to the gross earnings. Target sample sizes were generated using Cochran (1977) for stratified random sampling with equal probability of selection within the stratum. These target sample sizes were adjusted to ensure important strata (such as those with a large fraction of the total earnings) were well sampled. In the actual sample, important statistics

from the response sample were generated with the "Horvitz-Thompson Estimator." This approach is called "unequal probability sampling", and is addressed in Horvitz and Thompson (1952).

The Population

For the seafood harvesting survey, the "population" was initially defined as all vessels that made landings in the statistical areas in and around Southeast Alaska in 1994. Each vessel could be fishing on one or more commercial fishery entry permit during the 1994 season. In order to include all CFEC salmon setnet fishing permits, which are often fished without use of a vessel, each CFEC salmon setnet permit not associated with a vessel was added to the population. The population under study thus includes all vessels and all setnet permits not associated with vessels that made landings in Southeast Alaska in 1994. Each landing recorded in the CFEC gross earnings file is linked to both the vessel used, if one was used, and the fishing permit. To develop a database for the population, the CFEC gross earnings file, permit file, and vessel file were merged.

The annual gross earnings of a vessel or permit is a key variable in determining regional economic impacts of Southeast Alaska fishermen. Total revenues are strongly related to the value of limited entry permits. By collecting additional financial information it is possible to estimate the direct income to proprietors and labor for a Regional Economic Impact model such as IMPLAN (MIG Inc. 1999). Vessel earnings are also related to the amount of labor and capital spent on a fishing operation as fishermen enter or exit fisheries and spend more or less on variable costs. These expenditures can be translated into indirect effects in an Input/Output model (I/O model). Finally, the number of employees on a vessel varies with expected gross earnings.

Approximately 3,888 vessels recorded landings on 6,756 fishing permits (Table 1). In addition, landings were made using 155 salmon setnet permits in a fishery were vessels used are not required to be registered with ADF&G and are not included elsewhere in the population. This group of set net operations is treated as a separate stratum. In some regions of Alaska, a considerable number of vessels travel to fisheries in more than one area of the state. Vessels making landings in Southeast Alaska in 1994 tended to do less fishing outside of this region than vessels in operating Cook Inlet, Kodiak, and Prince William Sound. The survey effort did, however, specifically ask harvesters to allocate any non-Southeast Alaska production on a vessel to the correct region from which it originated. For those vessels that identified sources of income from outside of the region, the vessel expenses and permit expenses were prorated to represent only the earnings proportion within the Southeast Alaska region.

Strata, Sample Size, and Sample Selection for Survey

Strata: To estimate total earnings within a ±0.10 error with 90% certainty, a simple random sample of the entire study population would require a response sample of 615 members of the population, given a 30% response rate, a survey of over 2,000 of the total 3,888 population members (vessels and setnet permit holders) would be required (see Appendix A). To keep the sample size manageable, the population was stratified by type of fishing operation. The approach for selecting strata and estimating sample size per stratum was modified from the stratified systematic sampling methodology used by the Canadian Department of Fisheries and Oceans (DFO 1992). The membership in each of the 13 strata (see Table 2) was determined by assigning each vessel to an ordered permit group. For example, if the vessel fished a Southeast salmon

seine permit it would fall into the first stratum; if it had no seine permits but had a troll permit it would fall into the second stratum. Thus, most of the strata include vessels with more than one permit that was fished in Southeast Alaska in 1994. All vessels were placed in mutually exclusive strata, with all Yakatut setnet permit holders in a separate stratum.

Sample Size: Gross earnings of permit holders were used as the surrogate variable for purchases in determining sample size. The primary objective was to select a sample that would best estimate total gross earnings of each stratum and of the population. Due to the diversity of gross earnings and of fixed and variable costs between gear types, population was stratified. Sample size determination is presented in Appendix A and sample sizes are given in Table A1.

Sample Selection: Instead of using either random or systematic sampling within the strata, "unequal probability sampling" was used (Horvitz and Thompson 1952), with the probability of selection within each stratum being proportional to the gross earnings within the strata. The samples within each stratum were generated by making the probability of being selected proportional to the gross income of the individual within the stratum because individual gross incomes were known for the entire population. The probability of an individual being selected to the sample was the individual selection probability multiplied by the sample size. This procedure is explained further in Appendix A.

Parameter Estimation: The total gross income (which is known) and the total various income and expenditures (which are unknown) for each stratum were estimated from the sample using the Horvitz-Thompson estimator (Horvitz and Thompson 1952). The method is explained and formulas are given in Appendix A. In general, the total of any variable being estimated within a stratum is estimated by:

$$T = \bullet\, w_i t_i$$

where

$T =$ the total value of a variable within a stratum,
$w_i =$ the weight for sample i based on the probability of Sample i being in the sample (see Appendix A), and
$t_i =$ the variable value for sample i.

The variance of the estimator of gross earnings is zero because gross earnings are known and the estimation process produces this known value. The above formula was also used to estimate totals of other variables associated with the sample such as food costs, wages, etc. For these estimates, the variances could be estimated (see Appendix A for methods).

The Response Sample

Permit holders and vessel owners from 281 vessel operations (i.e., population units) returned completed surveys. These included 341 responses from permit holders. Once individual vessel and permit operations were reviewed and determined to be valid responses, 240 vessels were left in the response sample. This represented a 30% vessel response rate over all strata.

Comparison of Response Earnings and Gross Earnings

There are several ways to test for error and bias of survey response. One way is to find another primary source of information to compare against a surveyed parameter. The CFEC estimate of gross earnings provides not only a parameter to determine sample weights, but an independent measure of gross earnings to compare with the earnings reported by vessel owners in the survey. The CFEC estimates gross earnings from landing and price data. Throughout the harvesting year of 1994, ADF&G collected fish ticket information on landings of various fish species by vessel and CFEC entry permit. Price data is collected from the Commercial Operators Annual Report and other sources by CFEC to generate weighted prices.

The CFEC gross earnings estimates, which were collected over one year earlier, were consistent with gross earnings from our survey results, throughout the range of vessel earnings (Figure 8). This suggests the completed surveys have little strategic response and recall error, at least with respect to reported earnings and, most probably, other parameters.

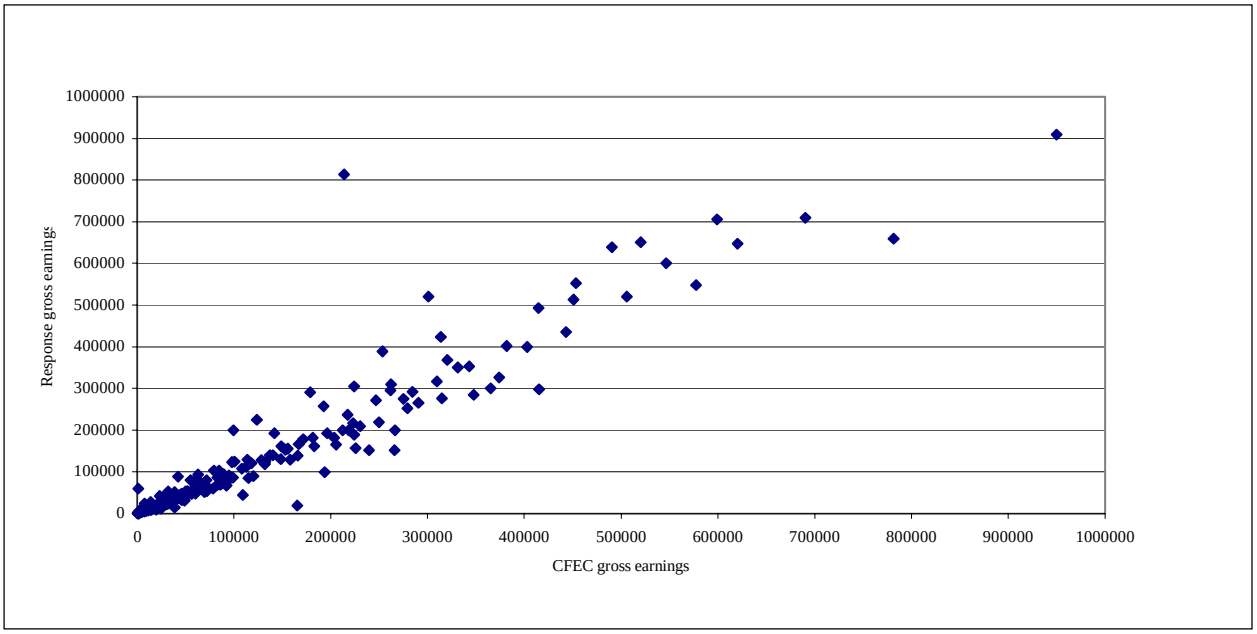

Figure 8. Comparison of CFEC earnings and vessel earnings reported in response to the Southeast commercial fish harvesting survey.

Comparison of Response Earnings and Expenditures

Expenditures of fishing operations that are "variable" should correspondingly increase or decrease with total earnings. Typically, payments to labor as well as expenditures of fuel, oil, food, ice and bait are believed to vary with the amount of earnings. Expenses that are classified as variable are listed below.

- Crew share
- Skipper share
- Food
- Fuel, oil, and grease
- Bait, ice, and salt
- Enhancement tax
- Purchase of nets and gear
- Travel and transportation of skipper and crew
- Shipyard expense
- Insurance premiums
- Miscellaneous supplies (work clothing, gloves, etc.)
- Federal and state income tax
- Other miscellaneous expenses

A comparison of the variance of the expenditures for each vessel collected in the response and the variance in the response earnings revealed that the coefficient of variation was low for the sample information collected (Figure 9).

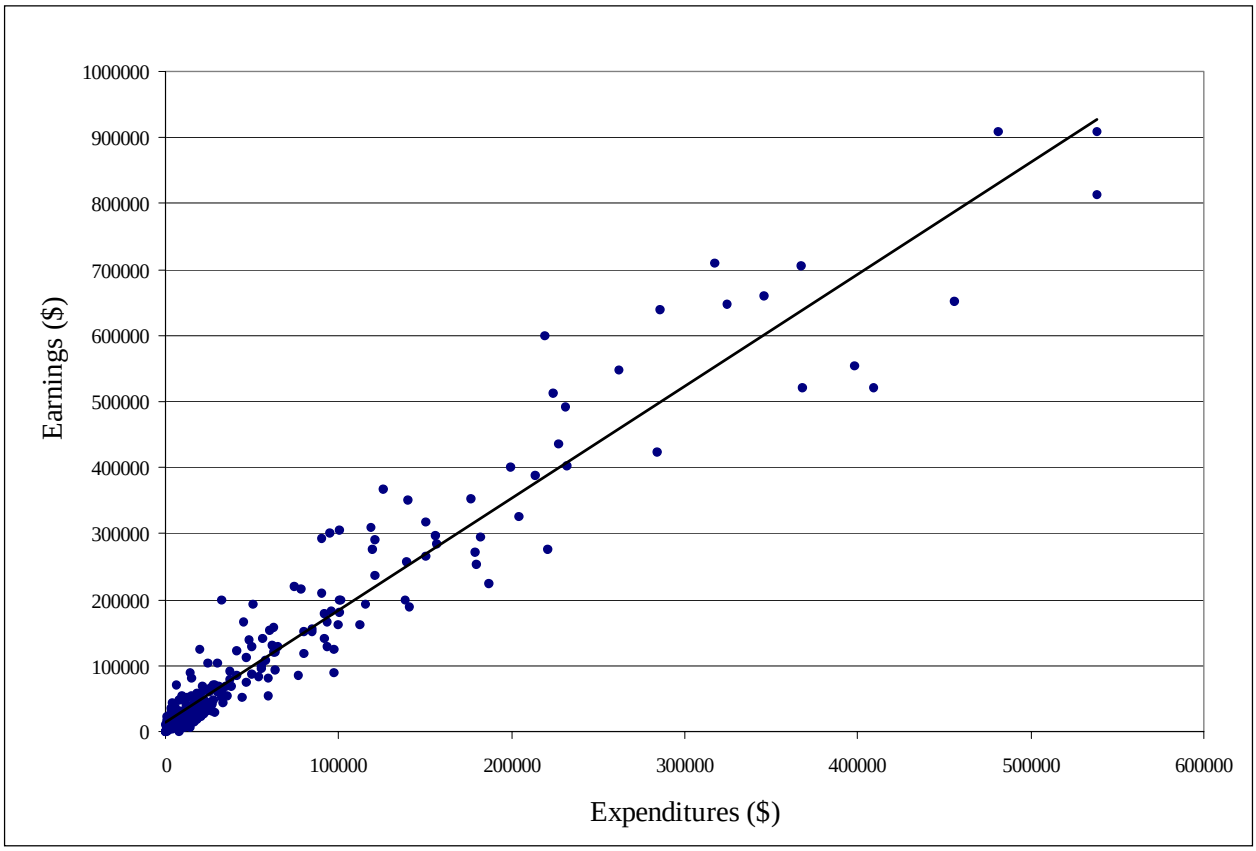

Figure 9. Comparison of earnings and variable expenditures in response sample.

RESULTS

Southeast Alaska, Alaska Statewide, and Washington Statewide Purchases from Seafood Harvesters

Seafood harvesting purchases consist of expenditures for harvesting labor, operation and maintenance of vessels, and payments toward interest and principal on permits, gear, and vessel loans. For purposes of the employment and income impact assessment, the most important component of fishing operations is the income to labor and proprietors, which represented 48% of the total 1994 harvesting expenses (Figure 10).

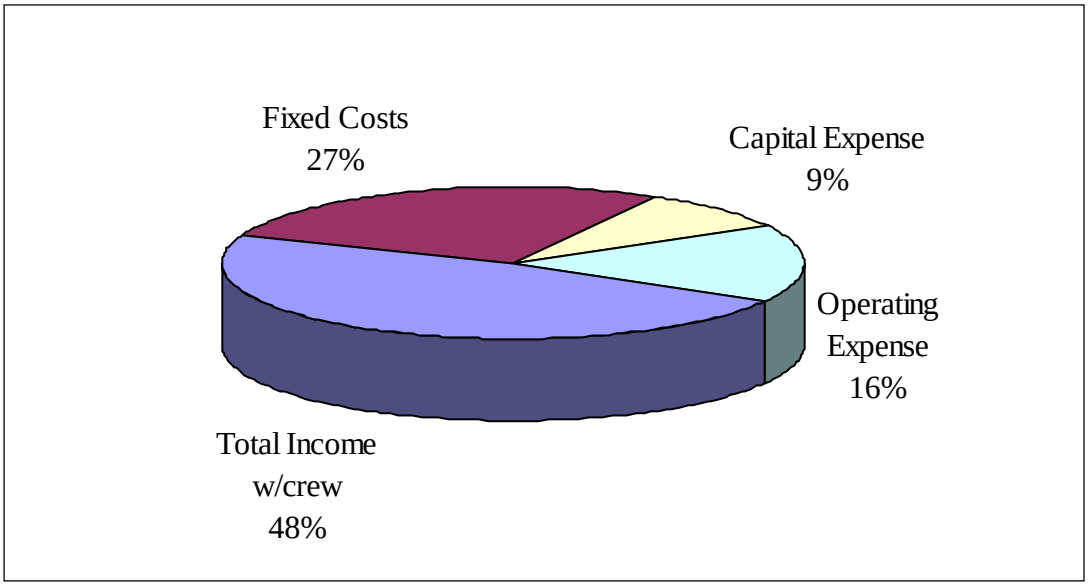

Figure 10. Percent distribution of gross earnings for the Southeast Alaska seafood harvesting sector in 1994.

Harvesting sector income consists of 4 major survey data sources: income to permit holders, vessel owners, skippers, and crew. A fifth source of income reported in our survey is wage labor paid to individuals either as a wage or as a share in compensation for working on or maintaining a vessel. The other types of wage income (Figure 11), reported in the harvesting survey include "baiters" (usually compensated by a small share payment from the halibut and sablefish fisheries), and multipurpose laborers (individuals not included in other maintenance and operational labor compensation who were paid a wage for performing some vessel-related work).

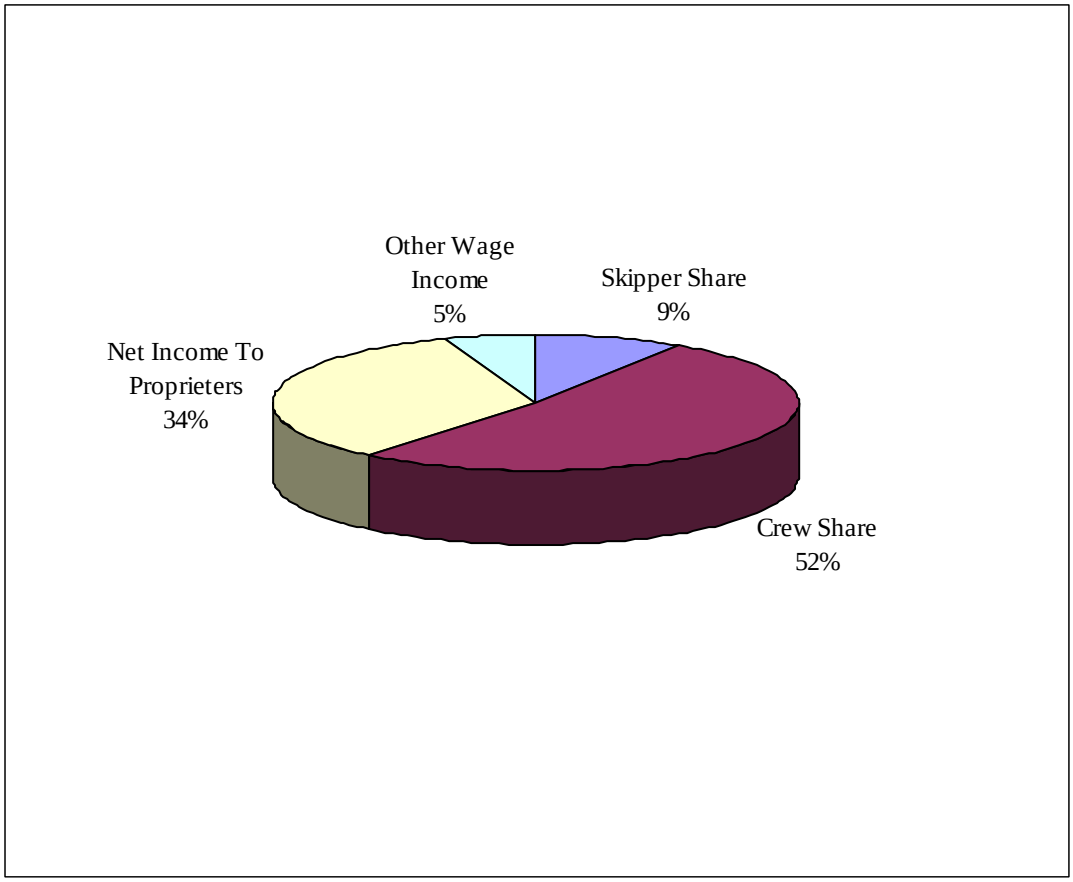

Figure 11. Distribution of income by percent for Southeast Alaska seafood harvesters.

A representative estimate of personal income to proprietors (permit and vessel owners) is critical to generating total impacts of the seafood industry in a region. This proprietary income is calculated as the difference between all expenses in a year and gross earnings reported for each permit on a vessel. Total proprietary income is income to all proprietors related to the vessel or the sum of both permit and vessel owners' income. An input-output model does not differentiate between the income that ends up in the pockets of the permit holder or the vessel owner. All income is aggregated into "Proprietary Income" as a model input for any regional analysis. For many operations, it is both unnecessary and difficult to precisely account for which category the income should be distributed into. It is also largely irrelevant, because most operations in our survey and survey response consisted of individuals who both owned the vessel and fished most or all of the permits associated with the vessel in 1994. These operators often did not report a boat share. They also did not distinguish between income gained from the ownership of the vessel and ownership of permits. When a share paid to the vessel owner was reported, these observations were used as a surrogate to compute earnings to vessel ownership and earnings to permit ownership for a given stratum. This prorating of vessel owner and permit holder income was based on the responses within a strata applied to each vessel without a reported boat share.

Labor expenses for the 1994 harvesting season in Southeast Alaska totaled $70.48 million. This included Crew share and Skipper share from Table 6. In addition, the Labor expenses include a component of other income from the permit section and other income from the vessel section of Table 6. Regional income may be measured either as income earned within a region or as income

received by residents of the region. When labor expense and income to vessel owners and permit holders are included, the total income is $106.45 million (Table 6). Southeast Alaska residents earned $65.67 million of this income, which is slightly more that half the total income from Southeast Alaska harvesting operations.

Table 6. Purchase vector by region for seafood harvesting production from Southeast Alaska during the 1994 harvest year.

	Total Purchases	Southeast Alaska	Other Alaska	Washington	Other U.S. & Foreign
Income					
Crew share	$54,920,567	$32,611,972	$1,935,535	$12,648,902	$7,724,158
Skipper share	$9,756,688	$5,504,959	$2,352,861	$1,239,082	$659,785
Income to permit holder	$26,333,494	$18,170,111	$526,670	$6,583,374	$1,053,340
Residual income to vessel owner	$9,641,365	$5,784,819	$192,827	$2,892,409	$771,309
Other income under permit section	$4,125,698	$2,451,231	$90,197	$1,571,933	$23,456
Other income under vessel section	$1,676,376	$1,150,904	$92,967	$417,935	$14,571
Subtotal[a]	**$106,454,188**	**$65,673,996**	**$5,191,057**	**$25,353,635**	**$10,246,618**
Expenditure Summary from Permit Data					
Food	$7,614,802	$6,627,753	$204,794	$743,297	$38,958
Fuel, oil, and grease	$10,369,481	$9,373,171	$597,565	$371,278	$27,467
Bait, ice, and salt	$3,592,249	$3,296,456	$243,823	$51,971	$0
Purchase of nets and fishing gear	$9,558,785	$4,194,827	$504,897	$4,624,066	$234,996
Travel & transportation of skipper & crew	$2,401,152	$1,577,896	$211,751	$430,575	$180,929
Principal & interest from permit purchase	$5,239,061	$3,340,008	$450,835	$1,447,274	$945
Other expenditures under permit section	$2,506,483	$1,184,782	$190,164	$586,603	$592,873
Subtotal[a]	**$41,282,014**	**$29,594,893**	**$2,403,828**	**$8,255,064**	**$1,076,168**
Expenditure Summary from Vessel Data					
Principal/ Interest	$15,157,910	$8,490,505	$2,340,207	$3,434,177	$893,020
General maintence by operator	$9,921,866	$6,559,957	$861,207	$2,335,144	$165,558
Shipyard expenses	$6,031,660	$3,219,673	$100,266	$2,623,990	$87,730
General contracted repair	$4,472,929	$3,068,132	$125,176	$1,244,162	$35,459
Vessel storing & moorage	$3,223,527	$2,111,056	$295,392	$781,630	$35,448
Net and gear storage fees	$535,307	$303,395	$1,839	$202,450	$27,623
Insurance premiums	$9,534,767	$2,166,274	$321,872	$5,901,043	$1,145,579
Legal, accounting & professional services	$1,483,472	$578,603	$375,344	$439,246	$90,279
Association dues	$762,416	$580,126	$14,503	$149,448	$18,340
Vessel license fees	$1,374,745	$1,031,318	$52,431	$194,222	$96,774
Repair & purchase of safety equipment	$1,382,733	$784,134	$18,761	$531,066	$48,772
Misc. supplies (clothes, gloves, etc)	$4,186,987	$2,681,024	$341,622	$1,072,149	$92,192
Federal and State income tax	$9,715,568	$3,491,067	$141,618	$894,020	$5,188,863
Other expenses and purchases	$7,636,824	$5,243,006	$423,514	$1,903,926	$66,378
Subtotal[a]	**$75,420,711**	**$40,308,272**	**$5,413,752**	**$21,706,672**	**$7,992,015**
Boat share (transfer to vessel owner)	$79,882,154	$52,802,018	$133,933	$24,591,368	$2,354,835
Grand Total[a]	**$223,156,912**	**$135,577,160**	**$13,008,637**	**$55,315,371**	**$19,314,801**

[a] Some columns may not add precisely due to rounding error.

Southeast Alaska, All Alaska, and Washington Employment from Seafood Harvests in Southeast Alaska

For many Southeast fishermen, seafood harvesting is a highly seasonal activity. Some fisheries, such as roe herring, salmon, and halibut (prior to implementation of Individual Fishing Quota fisheries for halibut) are accompanied by periods of intense fishing and little time to sleep, but a

few fisheries may occur over a more prolonged period of time. Of considerable interest has been the inability to track preseason preparations and postseason activities. Few recorded employment statistics exist on commercial seafood harvesting in Alaska Department of Labor (ADOL) statistics. Commercial fishermen fall into a self-employed category, and are exempted from having to be included in ADOL quarterly reports. Though self-employed persons are associated with other industries in Alaska, obstacles such as these do not generally provide as serious an employment accounting problem as they do in commercial seafood harvesting. McDowell et al. (1989) attempted to credit additional time for employment that is unaccounted for in the ADF&G landing statistics. Landing statistics were used to reflect the duration of specific fisheries, and informed estimates were used to extend these defined periods to account for the total duration of fishing employment.

The methodology used in this study for estimating annual average commercial fishery harvesting employment was designed to avoid double-counting of employment by closely approximating the information collected in the ADOL quarterly reports. This methodology treats the vessel as the employer. Each quarter, employers in the reporting industries provide ADOL with monthly employment by SSN. This report is required under state unemployment insurance law. The report counts individuals who worked during the week that includes the 12th day of the month.

Individual permit holders and vessel owners provided monthly employment figures when filling out the 1994 Southeast Alaska Commercial Fishing Industry Survey: Vessel and Permit Income, Purchases and Labor. In each case, fishermen were asked to respond to the number of employees involved in each permit operation. The monthly employment on all participating permits could not exceed the total monthly employment for the entire vessel. This eliminated any double counting between more than one permit on a given vessel. Several months of phone calls were completed to fishermen who responded to the survey, and they were asked (among other verification questions) to verify when a given vessel operation had reported that one individual had been counted two or more times in a month. These occurrences were corrected so that no individual was counted twice for a month fished on two or more permits. Approximately 2 out of 3 of the responses were successfully contacted. The remaining vessels with potentially overlapping employment were adjusted so as not to exceed the maximum employment for a single permit reported for the month in question.

When all strata are included, a peak number of 6,059 employees participated in fish harvesting activities in the waters of Southeast Alaska in 1994 for a total of 35,185 employee months of labor. In 1994, the peak month of employment occurred in June due to a large pulse of employment from major halibut openings. When halibut permits were excluded, the largest peak monthly employment shifted to July. Average annual employment was 2,932 employees per month. Note that the average annual employment is the total monthly employment divided by 12. The harvesting sector survey does not allow for stratifying the components of the fishing activity, into preseason, postseason, and inseason activity. Anecdotal discussions with survey respondents suggest that there is very little pre- and postseason activity reported as employment in the responses. The employment was dominated by fishing activity during established fishery openings that occurred throughout the year.

Some additional sources of employment were excluded from the survey for specific finfish and shellfish catches (Figure 12). Those fisheries include: (1) cost recovery harvest of salmon produced by private nonprofit hatcheries, (2) test fisheries and experimental fisheries carried out

by ADF&G, and (3) miscellaneous landings without permits that could not be matched with vessel or Social Security numbers.

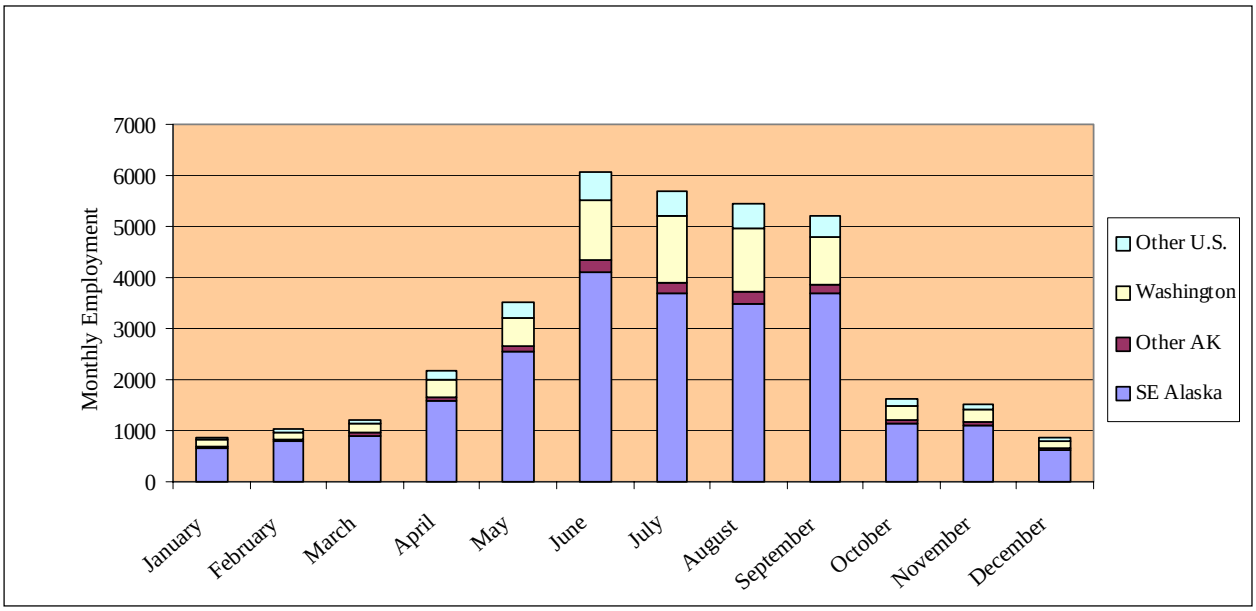

Figure 12. Monthly harvesting sector employment in Southeast Alaska for 1994 from residents of Alaska, Washington, and other U.S. states.

Employment in major Southeast Alaska fisheries varies seasonally and between types of fisheries. Southeast purse seine fisheries, for example, occur over an abbreviated period from June to September. Including preseason and postseason activity, 4 months of the year account for the highest monthly employment, all with over 5,000 person months. With respect to the troll fleet, one large pulse of fishing occurred from June to September, but due to a winter troll season some pre-and postseason employment activity continued at a modest level through most of the year.

Approximately 69% of all Southeast Alaska seafood harvesting employees reside in Southeast Alaska, and 73% are state residents (Figure 13). These results are similar to previous estimates of resident employment of permit holders, suggesting that survey respondents have attempted to answer questions in an unbiased manner and the sampling frame is unbiased with respect to residency of harvesting employment. The distribution of residents and nonresidents in Southeast Alaska fisheries varies greatly between specific fisheries. In 1994, small vessel fisheries tended to have the highest proportion of Alaska residents. For example, Alaska residents made up 95% of the employment in the strata of halibut longline fisheries under 5 tons. In the salmon seine fisheries approximately 43% of the seafood-harvesting workforce were residents of Southeast Alaska, and 49% were from all combined regions of Alaska. Survey results for employment of Southeast Alaska salmon setnetters were lower than residency estimates in the CFEC permit database. This is probably due to a small response sample size for this particular stratum.

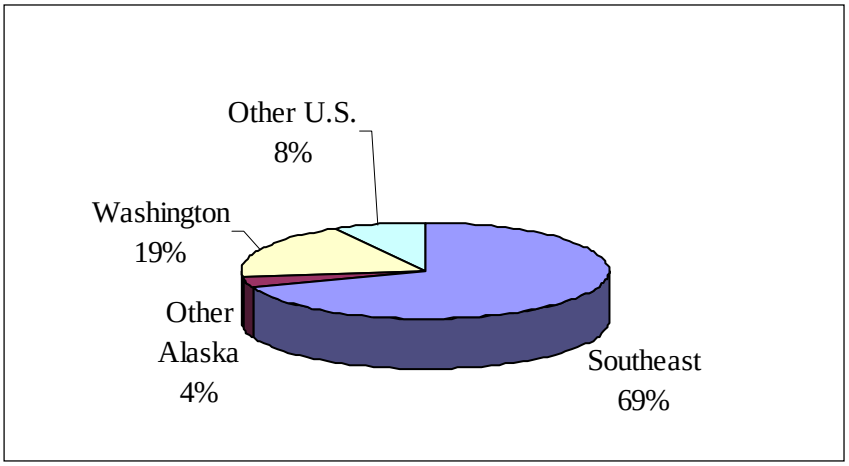

Figure 13. Percentage of seafood harvesting employment by residency of employee.

Southeast Alaska, All Alaska, and Washington Purchases Made by the Seafood Processing Sector

Of the 166 seafood processing plants and operations in Southeast Alaska in 1994, 23 were asked to participate in the survey administered for this study. These processors represented a census of all operations in the region that had at least $1.0 million in annual earnings.

Of the total 1994 seafood processing production, 76% of seafood processing pounds and 73% of seafood processing earnings were accounted for in the response to the survey. The initial survey sample accounted for 95% of all seafood earnings in the region, excluding Annette Island Packing Company which is exempted from filing earnings with the State of Alaska through the Commercial Operators Annual Report.

Seafood processor expenditures may be divided into 4 major categories: (1) the purchase of raw product from fishing fleets in Southeast Alaska accounted for 56% of revenues and was the largest single expense; (2) the labor cost of packing, management, and administration of the seafood plant accounted for 10% of revenues; (3) nonlabor variable costs totaled $70.51 million and are 18% of revenues; and (4) fixed and capital expenses at $47.24 million are 12% of revenues. Considering all of the reported costs in the survey, a residual of only $16.66 million is estimated to accrue as proprietor income and returns from capital invested (Figure 14). Residual income to corporations is not a measure of net income in the same context as IRS reported income. IRS income would include the removal of depreciation, which is not a purchase flow, and of no relevance to impact assessment.

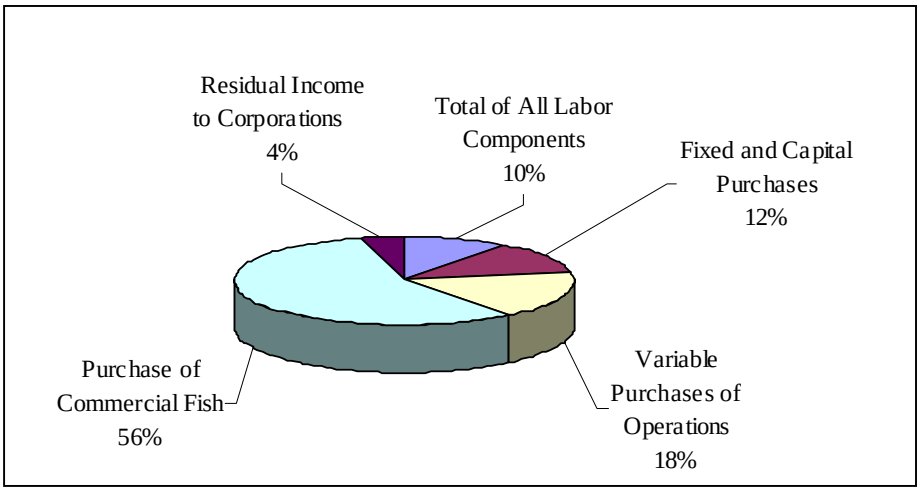

Figure 14. Cost components of 1994 sales revenue for seafood processors in Southeast Alaska in 1994.

Among the important components of the purchases made by seafood processors are the labor associated with packing the production as well as the administrative and management costs of operations. These labor costs represented 10% of expenditures from the total $395 million in seafood processing earnings. This is a large contrast to labor and management costs that were approximately 48% of the $227 million in earnings of the commercial seafood harvesting component. Labor costs reported by seafood processors in the survey varied slightly from those reported by the ADOL. Total labor of packing and administrative costs were $34.65 million (Table 7), compared to the ADOL estimate of $40.38 million in reported wages for 1994. Labor costs from the survey suggest that Alaska residents collect approximately 29% of the total seafood income in the region. This differed somewhat from an estimate modified from 1994 ADOL resident hire statistics and wage estimates for Southeast seafood processing of 39%. There are no statistics directly reported to ADOL on the distribution of wages to residents by processing operation. This estimate is derived from data on the distribution of resident and nonresident employment by processing operation applied to the estimate of annual wages by processing operation. There are certain potential errors in this method. This approach implicitly assumes all job types are paid uniformly, though various job classes certainly receive differential pay. Yet there are no other data with which to compare the Southeast Alaska economic survey and the estimate developed with data reported in the ADOL unemployment insurance program and employee wage files. We have used the estimate of 29% of the total seafood income in the region for IMPLAN (MIG Inc. 1999) simulations, realizing that these may be conservative numbers.

Table 7. Labor costs of Southeast Alaska seafood processing firms.

	Total	Southeast	Other Alaska	Washington	Other
Direct Labor of Packing [a]	$27,857,246	$3,849,413	$699,085	$5,592,335	$17,716,414
Administrative/Management of SE Operations [a]	$6,794,117	$4,856,897	$ -	$1,937,219	$ -
Other Expenses (labor component only)	$3,457,699	$1,768,542	$ 45,951	$1,188,977	$ 454,230
Total of all Labor Components [a]	$38,109,062	$10,474,852	$745,036	$8,718,530	$18,170,643
Percentage of Total Labor by Region	**100%**	**27%**	**2%**	**23%**	**48%**

[a] The Department of Labor estimates that $42 million in income was generated by Southeast Alaska region seafood processors in 1994. No labor statistics are available on distribution of income among residents. The 1994 ADOL resident hire analysis estimates that 24% of seafood processing employment is from residents of Alaska (USDA 1996).

Fixed expenses of seafood processing firms include many service, wholesale, transportation, and nonvariable utility expenses required for a company that operates in Alaska (Table 8). Some marketing and advertising sales and distribution costs for larger firms also are included in the fixed-cost category. For the most part, these expenses are not expected to vary with larger or smaller amounts of production for an individual plant. Approximately 51% of these commodities were purchased in Alaska according to 1994 survey responses of seafood processors. Washington ranked second at 42% of the fixed commodities purchased in that region. Many costs, such as phone expenses and transportation, would logically arise from Southeast Alaska, but a considerable portion of freighting of goods and other services and supplies came from Washington.

Table 8. Fixed and capital costs of seafood processing operations in 1994.

	Total	Southeast	Other Alaska	Washington	Other
Advertising	$ 86,351	$ 42,423	$ 308	$ 27,049	$ 16,571
Legal and Accounting Fees	$ 327,815	$ 135,271	$ 1,624	$ 125,011	$ 65,908
Other Service Supplies	$ 480,237	$ 120,559	$ 5,861	$ 352,681	$ 1,135
Insurance of Plant and Other	$ 2,301,547	$ 2,593	$ 0	$ 2,296,360	$ 2,593
Phone	$ 530,285	$ 405,475	$ 57,786	$ 62,577	$ 4,448
Maintenance of Plant and Grounds	$ 9,559,143	$ 5,227,607	$ 214,069	$ 3,501,524	$ 615,943
Construction of Facilities	$ 4,563,841	$ 1,567,993	$ 36,850	$ 2,382,902	$ 576,095
Interest	$ 3,196,616	$ 320,504	$ 568,214	$ 1,800,660	$ 507,237
Maintenance of Bunk and Mess Facilities	$ 2,057,910	$ 899,754	$ 0	$ 1,061,467	$ 96,690
Freighting	$11,849,738	$ 5,559,997	$ 91,336	$ 6,097,779	$ 100,625
Rental or Leasing of Processing Plant or Site	$ 519,445	$ 519,445	$ 0	$ 0	$ 0
Purchase of Equipment	$ 2,417,456	$ 350,100	$ 27,784	$ 1,596,776	$ 442,796
Travel and Transportation for Employee and Management	$ 1,188,693	$ 468,954	$ 328,909	$ 340,228	$ 50,602
Licenses Fees, Federal/State Taxes including Raw Fish Tax	$ 7,641,321	$ 5,981,022	$ 733,695	$ 45,783	$ 854,472
Business and Property Tax (local)	$ 516,192	$ 492,048	$ 10,419	$ 648	$ 13,077
Total Operational & Maintenance Purchases	**$47,236,590**	**$22,093,744**	**$ 2,076,856**	**$19,691,447**	**$3,348,193**
Percent of Total Operation and Maintenance Purchases by Region		**47%**	**4%**	**42%**	**7%**

Variable and operating expenses include many purchases that vary with the amount of seafood product processed. These include:

- Tendering and general delivery of the seafood harvest to processors;
- Fish processing which includes packing canned and fresh or frozen fish products, packaging of non-canned product, and storage; and
- Utilities, including electricity, fuel oil, and propane.

Variable inputs to fish processing differ by plant, product form and location. Some operations, such as canning, require more inputs in terms of packaging materials than fresh frozen products. On the other hand, storage costs for fresh frozen seafood processing operations are much higher than nonperishable canned products. In 1994, seafood processors spent 36% of their earnings on total variable purchases in Alaska and 64% from Washington and other locations (Table 9).

Table 9. Variable and operating costs of seafood processing firms in Southeast Alaska from the 1994 processor survey

	Total	Southeast	Alaska	Washington	Other
Hauling & Tendering	$ 22,663,258	$ 10,202,868	$ 2,254,922	$ 9,085,495	$ 1,107,524
Fuel, Oil, Propane	$ 1,931,099	$ 1,282,755	$ 6,484	$ 641,861	$ 0
Electricity	$ 2,522,578	$ 2,522,578	$ 0	$ 0	$ 0
Water and Sewer	$ 426,270	$ 426,270	$ 0	$ 0	$ 0
Packaging Materials	$ 26,625,258	$ 270,669	$ 233,564	$ 24,578,540	$ 1,542,485
Other Supplies	$ 2,380,092	$ 280,717	$ 31,430	$ 2,036,515	$ 31,430
Custom Supplies	$ 37,605	$ 37,605	$ 0	$ 0	$ 0
Custom Processing	$ 6,417,073	$ 3,190,968	$ 788,323	$ 1,822,004	$ 341,290
Equipment Rental	$ 481,968	$ 37,683	$ 0	$ 387,803	$ 3,086
Other expenses (non labor component only)	$ 7,020,177	$ 3,590,675	$ 93,295	$ 2,413,983	$ 922,224
Total	**$ 70,505,379**	**$ 21,842,788**	**$ 3,408,018**	**$ 40,966,201**	**$ 3,948,039**
Percent of Total by Region		**31%**	**5%**	**58%**	**6%**

Southeast Alaska, All Alaska, and Washington Direct Employment from Seafood Processing

Employment data for the seafood processing sector originates from two sources, the ADOL and the Seafood Processing survey undertaken for this study. The ADOL data on employment are divided into various industrial sector code numbers called Standard Industrial Codes (SIC). The two SIC codes for canned and fresh frozen seafood are 2091 and 2092, respectively. These codes fit within the large manufacturing category of the SIC code system. Manufacturing sectors are an important source of output in most regions of the U.S. economy except in a few areas of the country that do little manufacturing. Nested within the manufacturing category is the manufacturing of *miscellaneous food and kindred products* (code 209). In Alaska, almost all employment in this food and kindred product category is generated from seafood processing.

Land-based and at-sea processing operations for any fish landed in Alaska must be recorded in the ADF&G catch and production statistics via the Commercial Operators Annual Report. According to these statistics, 166 seafood processors operated in Southeast Alaska in 1994. The best employment data available on land-based processing plants that employ 20 or more persons are from the ADOL quarterly reports. These reports summarize employment by firm for each month. In 1994, the ADOL estimated an average annual employment of 1,706 for processing

plants which included the SIC codes 2091 and 2092. This employment corresponds to the 8 census areas shown in Figure 1. The employment estimate includes the Annette Island Packing Company plant, which was not included in the survey; the annual average employment estimated for this operation estimated for 1994 was 60 employees (K. Tromble ADOL, Juneau, Personel Communication, 1997).

The ADOL data leaves two areas of seafood employment either unaccounted for or inadequately counted: floating processing operations in Southeast Alaska, and small-scale processing operations undertaken by permit holders and vessel owners who processed their own catch. When the employment sample from the ADOL data is expanded to include additional Commercial Operators Annual Report earnings of seafood processors, approximately 50 additional days of average annual employment are generated. Thus, when the ADOL and additional non-reported employment were considered, the average annual seafood processing employment in 1994 was approximately 1,756. This estimate did not account for possible undercounting from floating operations that may not submit fish tickets.

Monthly employment data were collected by the ADOL from seafood processors who responded to the seafood survey administered for 1994. According to these data, direct average annual employment by place of work was estimated at 1,120. The Southeast Alaska survey requested that this number represented all personnel included in the ADOL quarterly employment reports for processing in the region. Expanding the response based upon the pounds of total production per unit of employment in Southeast Alaska produced an estimate of 1,452 average annual employees. This number is approximately 200 employees fewer than that reported by ADOL. Part of this difference may be explained by the lack of reporting by the Annette Island seafood processing plant in the 1994 Commercial Operator Annual Report. If the 60 persons employed by Annette Island Packing were included, the estimated average annual employment from our survey would be 1,512. Given that the sampling protocol for the ADOL monthly employment data was more rigorous than the survey, and to ensure consistency in reported employment numbers from the industry, the ADOL employment data have been used in this study.

Comparison of Direct Income from Seafood Industry with Direct Income From Private Basic Sector

The relative importance of industry, income, and employment throughout a regional economy can be compared in various ways. A common approach is to divide the economy into basic public sectors, basic private sectors, and non-basic sectors (including all support services for the basic sectors). Basic sectors are the group of industries that bring in money from outside the region or state. For Alaska, the basic sector industries are mining (including oil and gas), seafood, tourism, timber, and federal government (including military). Depending on the application of a model, some portion of state government is often included in the basic sector. These basic sectors are defined through the application of economic base theory. Income and employment of Southeast Alaska's basic sectors have been compared in McDowell (1989), Berman and Hull (1987), and U.S Department of Agriculture (1996). This methodology is the most common economic impact technique applied to fisheries in Alaska. Table 10 shows that 17.70% of the basic sector income in the Southeast Alaska economy was from the seafood industry. Federal, state, and local governments also were important sources of income and employment to the Southeast Alaska economy. The seafood industry accounted for 20.56% of the employment in basic sectors in the region.

Table 10. Employment, earnings, and multipliers for resource-dependent industries and basic sectors in 1994.

Industry	1994 Direct Employment	1994 Direct Income	1994 Average Annual Income
Mining[a]	163	$ 10,000,000	$ 61,350
Lumber and Wood Products[a]	2,204	$ 96,000,000	$ 43,557
Harvesting Employment and Income[b]	2,942	$ 109,126,109	$ 37,091
Seafood Processing[c]	1,756	$ 38,109,062	$ 21,702
Recreation and Tourism[d]	3,637	$ 112,732,452	$ 30,996
Subtotal Private Basic Sector (Resource Dependent)	10,702	$ 365,967,623	$ 34,196
Federal Government[e]	2,020	$ 87,978,683	$ 43,554
State Government[e]	5,359	$ 224,931,770	$ 41,973
Local Government[e]	4,747	$ 152,936,390	$ 32,217
Subtotal Basic Sector	22,828	$ 831,814,466	$ 36,438
Total Regional Employment and Income	37,680	$ 1,156,786,145	$ 30,700
Economic Base Model Employment and Income Multipliers	1.65	1.39	

[a] USDA 1996.

[b] Employment and income are from this study.

[c] Employment from J. Boucher, ADOL, Juneau, personal communication, (1998); Lizik and Hadland (1994). Annette Island packing and income data are included.

[d] J. Boucher, ADOL, Juneau, personal communication, (1996).

[e] ADOL (2000).

Using economic base methodology and further dividing the basic sectors of the economy into those derived from private and public sectors, it is possible to compare relative income and employment of the seafood industry with other basic private sectors of the economy. Table 11 shows that 40.23% of the private basic sector income comes from commercial fishing and seafood processing and 43.81% of private basic sector employment in Southeast Alaska comes from fishing. One notable caveat with this comparison is that it does not extend to the indirect impacts among these industries. Wood products, seafood, and mining all have significant direct income and employment impacts. The tourism industry derives its impacts indirectly. Tourists, as consumers of recreation and visits to Alaska, do not receive higher income or employment from this activity. Thus, the comparison of direct resource industries with indirect sectors does not take into account the impacts from purchases of wood products, seafood products, nor products from the mining industries. A detailed study of tourism and mining in the Southeast region would be required to extend these comparisons to the total impacts of these industries.

The wood products sector has the advantage of being made up of firms with large operations that are well represented in the employment and wage data collected by the ADOL. Seafood processing is also relatively well represented. More than 90% of all seafood processing sales are made by firms that report to the ADOL. This was determined by comparing individual earnings in the Processor Annual Report with processing firms that report employment to the ADOL in the region. The mining sector, which is extremely small in the region, is less fully represented in wage and employment data due to an increased number of self-employed individuals.

Table 11. Employment and earnings percentages for resource industries and sectors for Southeast Alaska in 1994.

	Percent of Total Employment	Percent of Total Income	Percent of Basic Employment	Percent of Basic Income	Percent of Basic Private Employment	Percent of Basic Private Income
Mining[a]	0.433%	0.864%	0.714%	1.202%	1.523%	2.732%
Lumber and Wood Products[a]	5.849%	8.299%	9.655%	11.541%	20.594%	26.232%
Harvesting Employment and Income[b]	7.808%	9.434%	12.888%	13.119%	27.491%	29.819%
Seafood Processing[c]	4.660%	3.294%	7.692%	4.581%	16.408%	10.413%
Recreation and Tourism[d]	9.652%	9.745%	15.932%	13.553%	33.984%	30.804%
Subtotal of Sectors	28.400%	31.640%	46.880%	44.000%	100.000%	100.000%

[a] USDA 1996

[b] Employment and income are from this study.

[c] Employment from J. Boucher, ADOL, Juneau, personal communication, (1998); Lizik and Hadland (1994). Annette Island packing and income data are included.

[d] J. Boucher, ADOL, Juneau, personal communication, (1996).

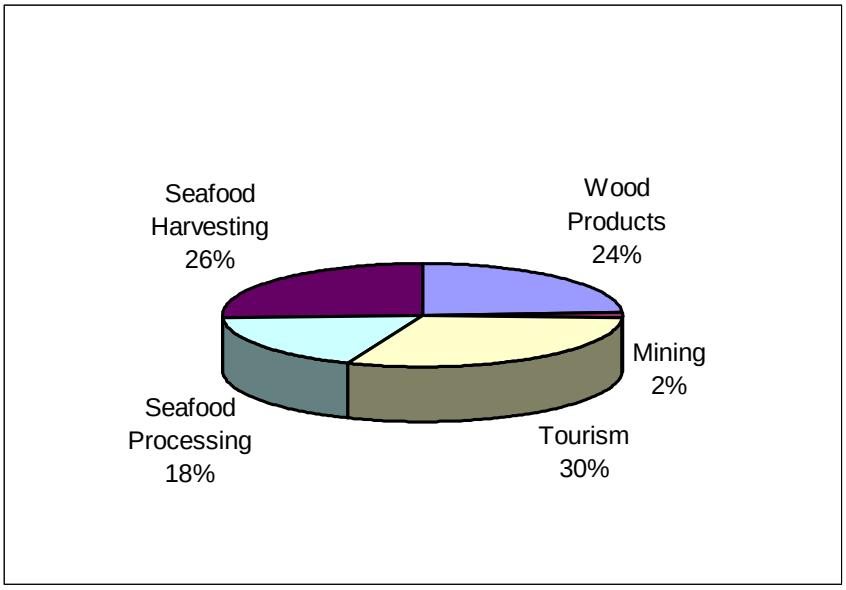

Figure 15. Private basic sector income in Southeast Alaska. Wood products and mining data are from USDA (1996). Tourism data are from J. Boucher, ADOL, Juneau, personal communication, (1996).

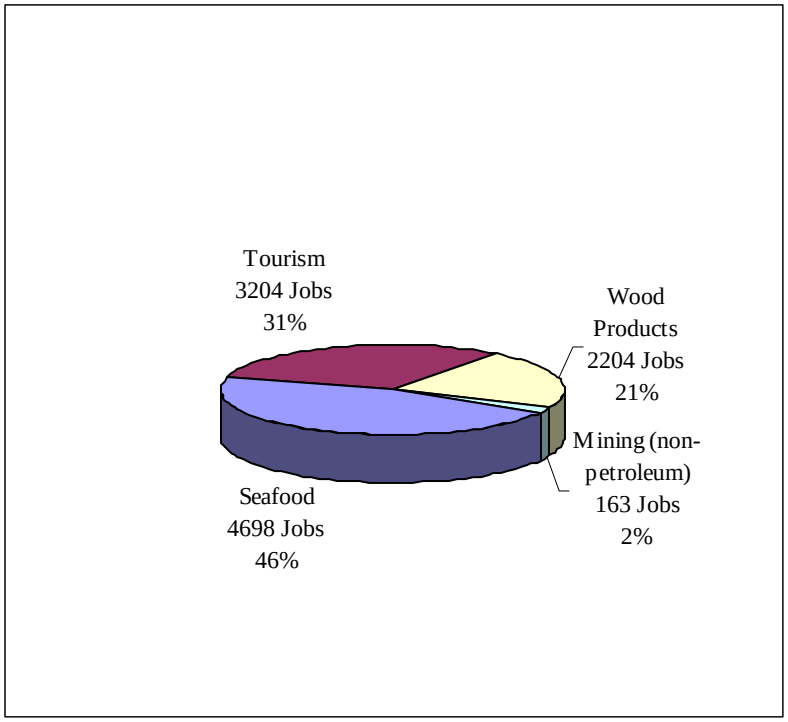

Figure 16. Private basic sector employment in Southeast Alaska. Wood products and mining data are from USDA (1996). Tourism data are from J. Boucher, ADOL, Juneau, personal communication, (1996).

For reasons previously cited in this report, it is not possible to represent seafood harvesting income and employment from routine data collected in 1994 by the Alaska Department of Labor. Tourism and other recreational industries also are hampered by the lack of routinely collected data that would allow for calculation of the labor and income component attributable to visitors.

Economic activity related to tourism is difficult to quantify because tourists purchase throughout multiple sectors in any regional economy. There is no dedicated tourism sector in the ADOL data, and thus no direct means to measure income or employment. As a result, the income and employment used in the industry comparisons are subject to uncertainty. For 1994 there were two independent estimates of tourism employment produced by the U.S. Department of Agriculture (USDA 1996) and Alaska Department of Labor (J. Boucher, ADOL, Juneau, personal communication, (1996). The Revised Supplement to the Draft Environmental Impact Statement for the Tongass Land Management Plan Revision (USDA 1996) estimates that 2,771 direct jobs existed in the tourism-related sectors in 1994 in Southeast Alaska. This estimate is based upon an estimate of expenditures associated with visitor days in the Tongass National Forest. For 1994, the Alaska Department of Labor estimated that 3,637 tourism jobs existed in Southeast Alaska, (J. Boucher, ADOL, Juneau, personal communication, (1996). This estimate was made by applying a proportional increase of 40% to the 1989 data analyzed in the Alaska Visitor Industry Economic Profile (McDowell 1991). These wide-ranging estimates dramatically impact other basic sector contributions to the Southeast Alaska regional economy. For seafood, the basic sector contribution was 44% to 48%. At a midpoint employment of 3,204 for tourism, seafood employment generated 46% of the basic sector employment in Southeast Alaska.

The Southeast Alaska salmon fishery is an important component of the region's commercial fisheries, not only in terms of catch and production but also in terms of direct employment and direct income. The Southeast Alaska harvesting and processing sector surveys were designed to generate statistics specific to the harvesting and processing of salmon. Some caution should be exercised, however, when applying this information to policy questions other than the overall proportion of salmon in the existing regional seafood industry. The salmon industry and other fisheries, such as halibut and sablefish, crab, and herring are economically intertwined. Vessels and crew are often shared in adjoining fishery openings and operation and maintenance activities that contribute to both salmon and non-salmon fisheries.

Economic Impact Results

This section of the study presents economic impact estimates of the seafood industry. Two models are used to estimate the indirect impacts associated with seafood processing and harvesting in the region and then expanded to the remainder of Alaska and Washington. The first impact assessment methodology is an input-output (I-O) analysis, and the second is the simpler economic base model approach that has been applied to Alaska fisheries in the past. In each case, total impacts for employment and income are the sum of the direct, indirect, and induced sources.

Input-Output (I-O) Model Approach

Regional income and employment multipliers estimate the total amount of income or employment generated in a local economy. In an I-O model, this is accomplished by evaluating an initial increase in salaries or number of jobs. The income multiplier is based on the estimated proportion of the initial increase that is retained in the community after each round of re-spending.

An initial increase in income is defined as the wage and salary income directly associated with the basic industry being analyzed. Further inter-industry spending resulting from other purchases of goods and services from local suppliers generates additional income and employment. By determining the amount of local and non local taxes and other "leakage," such as savings and non local expenditures, the proportion of the initial income injection spent on local goods and services is estimated. The distribution of local consumer spending by industry, the income content of these sales, and the income generated by subsequent rounds of consumer and industry re-spending are then estimated. It is assumed that each round of consumer re-spending is subject to the same tax rate, savings rate, and other leakages. Inter-industry effects resulting from consumer re-spending (including local trade and transportation margins on imported commodities) are called "induced effects," and are reported in IMPLAN (MIG Inc. 1999) output tables.

Estimates of Total Employment from Direct, Indirect, and Induced Sources

The default income and employment estimates in the IMPLAN (MIG Inc. 1999) software assume that workers in a region spend their earned income in that region. This assumption is implicit, regardless of where the workers reside, and is built into simulations typically made by the U.S. Forest Service for estimating employment and income impacts of various industries (USDA 1996). This assumption can overestimate both direct income and induced income for an industry where many workers reside in other regions. The induced effect refers to a round of

purchases computed in any I-O model to estimate further impacts from personal consumption expenditure (the amount spent by individuals on non work related living and investment expenses).

In Tables 12 through 15, direct employment is reported by place of work because employment is reported in this manner in the U.S. Bureau of Labor Statistics. The induced effects would vary depending on residency of the workforce. The effects of two different distributions of residency for each impact model are examined. A more detailed description of the methodology used to estimate impacts from place of work and location of residency is included in Appendix D.

Table 12. Harvesting and processing expenditures, total employment, income impacts and output sales from Southeast Alaska fisheries based upon location of workforce

	Total Output	Regional Income $ Millions			Regional Average Annual Employment		
Sector	$ millions	Direct Income	Indirect	Total Income	Direct	Indirect	Total
Harvesting	$ 223.16	$ 106.45	$ 47.33	$ 153.79	2,942	1,764	4,706
Processing	$ 172.51	$ 38.11	$ 31.71	$ 69.82	1,756	1,068	2,824
Total	$ 395.66	$ 144.56	$ 79.04	$ 223.60	4,698	2,831	7,529

Table 13. Harvesting and processing expenditures, total employment, income impacts and output sales from Southeast Alaska fisheries based upon place of residency in Southeast Alaska.

	Total Output	Regional Income $ Millions			Regional Average Annual Employment		
Sector	$ millions	Direct Income	Indirect	Total Income	Direct	Indirect	Total
Harvesting	$ 223.16	$ 67.38	$ 41.70	$ 109.08	2,942	1,590	4,532
Processing	$ 172.51	$ 10.47	$ 27.73	$ 38.20	1,756	867	2,623
Total	395.66	$ 77.85	$ 69.43	$ 147.28	4,698	2,457	7,155

Table 14. Harvesting and processing expenditures and total, direct, and indirect impacts for Alaska workers, in Southeast Alaska seafood harvesting and production, based on place of work.

	Total Output	Regional Income $ Millions			Regional Average Annual Employment		
Sector	$ millions	Direct Income	Indirect	Total Income	Direct	Indirect	Total
Harvesting	$ 223.16	$ 106.45	$ 57.77	$ 164.23	2,942	2,035	4,977
Processing	$ 172.51	$ 38.11	$ 35.70	$ 73.80	1,756	1,172	2,928
Total	$ 395.66	$ 144.56	$ 93.47	$ 238.03	4,698	3,207	7,905

Table 15. Harvesting and processing expenditures and total, direct, and indirect impacts for Alaska workers, in Southeast Alaska from seafood harvesting and production, based upon location of residency.

	Total Output	Regional Income $ Millions			Regional Average Annual Employment		
Sector	$ millions	Direct Income	Indirect	Total Income	Direct	Indirect	Total
Harvesting	$ 223.16	$ 67.38	$ 51.11	$ 118.49	2,942	1,868	4,809
Processing	$ 172.51	$ 10.47	$ 30.98	$ 41.46	1,756	958	2,714
Total	$ 395.66	$ 77.85	$ 82.09	$ 159.95	4,698	2,825	7,523

The full direct, indirect, and induced personal income for the Southeast Alaska commercial seafood industry, estimated from IMPLAN (MIG Inc. 1999) simulations, on a place-of-work

basis, is $223.60 million, and average annual employment is estimated to be 7,529 in the region. Including all direct and indirect employment in Southeast Alaska, approximately 1 out of every 5 jobs arises from the seafood industry.

The major private basic industries in Southeast Alaska all depend to some extent on labor supplied from regions outside of Alaska. The commercial seafood industry is no exception. This is important for measuring the sum of the direct and indirect employment and income impacts to the region. Two industries with an equal-sized labor force will not have equivalent impacts upon a region if the resident participation is much lower or higher than its comparative industry. Resident participation in the region's resource-dependent industries averaged 56.1% in 1994 (Figure 17). Resident participation in the combined commercial fish harvesting and seafood processing sectors was 55% of the total participation. These resident proportions play a large role in the final stage of the employment and income impact assessment, where the direct income and employment is converted to total income and employment through the I-O and Economic Base models.

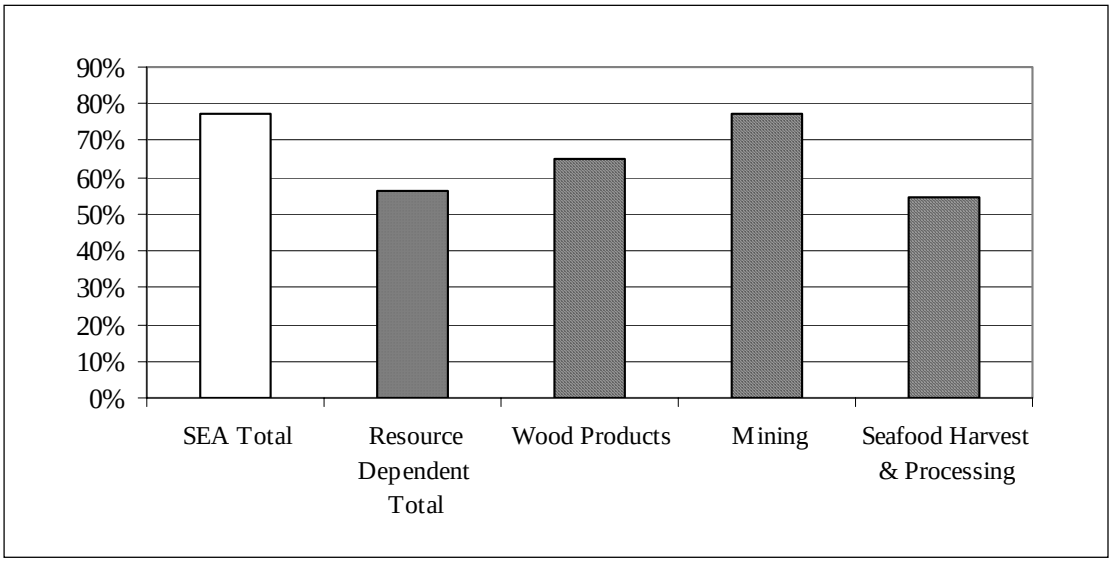

Figure 17. Distribution of resident workers among Southeast Alaska industries in 1994 (USDA 1996). Harvesting and processing data are from this study.

The total income impacts for the commercial fishing and seafood harvesting sectors within Southeast Alaska, calculated as the sum of the direct and indirect income impacts to the residents living in Southeast Alaska, is estimated to be $147.28 million (Table 13). This is the largest component of the total income impacts from the regional seafood industry. Similarly, the total employment of 7,155 residents reflects the regional *resident* component of employment from the region's commercial seafood industry.

The U.S. Bureau of Labor Statistics and the ADOL typically report income by the working location of employees. This reporting convention has the effect of increasing total income and employment as shown in Table 14. Impacts from these fishermen, as well as impacts from fishermen and seafood processors in Southeast Alaska, are combined to generate an "all Alaska" impact from the regional seafood resource. In 1994, $ 238.03 million in total income and 7,905

jobs were generated in Alaska from harvesting and production of Southeast Alaska fisheries based upon a place-of-work analysis of impacts.

Fishermen from regions throughout Alaska make landings in Southeast Alaska, and resident seafood processing employees also participate in the region's seafood processing industry. Adjusting place-of-work estimates to reflect resident participation on direct income and employment within the entire state of Alaska, the total regional income and employment declines to $159.95 million and 7,523 employees (Table 15). This scenario most accurately characterizes total income and employment in Alaska from the fishery resource in Southeast.

Estimates of direct, indirect, and induced income and employment for Southeast Alaska resources have been estimated for the state of Washington. The state of Washington is an IMPLAN statistical area in both the commercial harvesting and seafood processing surveys. There were $95.84 million in purchases made in the state of Washington and $34.07 million in income received by harvesting and seafood processing employees in 1994. These purchases and income resulted in $82.79 million in total income and a 1,615 employment impact in the Washington statewide region (Table 16). The IMPLAN simulation for the state of Washington combines the harvesting and processing production functions.

Table 16. Harvesting and processing total, direct, and indirect income impacts in the state of Washington from the Southeast Alaska seafood harvesting and production based on place of residency in Washington.

Average Annual Employment		
Direct	Indirect	Total
0	1,615	1,615

Table 17. Harvesting and processing total, direct, and indirect income impacts in the state of Washington from the Southeast Alaska seafood harvesting and production based on place of residency in Washington.

Regional Income $ Millions		
Direct	Indirect	Total
34	49	83

ECONOMIC BASE MODEL APPROACH

The most common economic impact modeling approach used for Alaska fisheries is the economic-base model. “Basic sectors” of the economy are the group of industries that generate regional economic activity based upon demand from outside the region or state. For Alaska, the basic sector industries are mining (including oil and gas), fishing and seafood processing, tourism, timber, and federal government (including military) spending. Depending on the application of the model, some portion of state government, including the pass-through from the Alaska Permanent Fund Dividend, is often included as a basic sector in Alaska.

In economic base models, a “multiplier” is computed as the ratio of total economic activity, usually measured in terms of employment of income to basic sector activity. For example, if there are 250,000 jobs in the economy and the basic sector employment is 100,000 jobs, the basic sector multiplier is 2.5. The multiplier shows how basic sector activity is “multiplied” into total economic activity as income generated in basic industries is spent, thus creating demand for non-basic industries such as transportation, retail trade, and services.

To estimate multipliers, the direct increases of employment and income resulting from the fishery and the indirect and induced increases in other industries must be determined. The multiplier is the sum of the direct and indirect increases divided by the direct increase. Economic base models may be adjusted with information from other types of regional impact models. Some economic base models may have more complex features such as two or more fisheries sectors and formal linkages between direct effects in one region and forward indirect effects in other regions.

Economic base multipliers have been estimated for Alaska by Berman and Hull (1987) and McDowell (1989). The methodology has produced employment and income multipliers in the range of 1.5 to 2.0 from a statewide perspective. Regional multipliers, including a smaller number of census areas, may differ from the statewide multiplier if the census areas have less well-developed economies and purchase a greater percentage of goods from beyond their borders. When applying the Berman and Hull (1987) methodology to Southeast Alaska, the employment multiplier is 1.65 and the income multiplier is 1.39 (Table 18). The income multiplier of 1.39 is approximately 12% smaller than the IMPLAN-generated multiplier for the Southeast region of 1.55. The IMPLAN multiplier for employment is 1.60 and is comparable to the estimate of 1.65 provided by comparing total and economic base employment in Southeast Alaska. Given a direct regional income estimate of $144.56 million from workers in the region, an estimated $201.04 million in total personal income is generated (Table 18). Total employment and personal income estimates for the Southeast region of Alaska are similar to IMPLAN place of work estimates of employees. Economic base modeling does not specifically estimate impacts by place of residency, because of the lack of information on the proportion of the multiplier attributable to the indirect effect of industry purchases and to induced impacts from personal consumption.

The total employment estimate of 7,747 employees for the Southeast region of Alaska is similar to IMPLAN estimates of 7,826 employees (based upon place of work).

Table 18. Estimation of personal income impacts based upon 1994 economic base multipliers for Southeast Alaska, and location of work.

	Economic Base Multiplier	Direct Impact	Total Impact
Income	1.39	$144.56 Million	$201.04 Million
Employment	1.65	4,698	7,747

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APPENDIX A. POPULATION, SAMPLING DESIGN, AND WEIGHTS FOR SEAFOOD HARVESTING SURVEY

Parameters To Be Estimated

Seafood harvesting sector survey data are used to estimate parameters for each of 13 strata. These estimated parameters include harvesting purchases, income and employment associated with vessels in the sample. The sampling method chosen for the harvesting survey intentionally skews distribution of gross earnings from the vessels sampled in the population. This presents certain limitations on how the data and expanded samples can be applied to combinations of vessels other than the combinations established in the initial strata. For example, it would be difficult to draw conclusions about how expenditures were spread among Southeast Dungeness crab fishermen, because crab permits appear in more than one stratum. Southeast salmon purse seine permits, however, all fall into one unique stratum, making it possible to determine sub-strata expenditure and employment characteristics for the seine permit component.

Other strata, which contain all available permits in the subpopulation, are Salmon Hand Troll, Salmon Power Troll, Southeast Salmon Driftnet, and Southeast Salmon Setnet. Most parameters reported in the following tables are in terms of total units (expenditures, income and employment) rather than as averages.

Objective of Commercial Fishery Harvesting Sector Sampling Plan and Survey Design

The objective of the sampling plan was to gather financial and operational information on a representative sample of the Southeast Alaska fishing fleet, as well as employment data for the major fisheries operating in Southeast Alaska. These data were used to generate simulations using IMPLAN (MIG Inc 1999), an employment and impact assessment model that requires information on vessel- and permit-related fishing expenses. A sampling procedure was chosen to provide an accurate estimate of the total gross earnings within various fishing strata while keeping the sample size small. Total gross earnings per vessel are already known from the Commercial Fisheries Entry Commission (CFEC) files, so the actual intent of this sampling approach was to generate representative estimates of other economic variables, such as the distribution of purchases from variable costs, income to proprietors, fixed costs of vessel and gear, etc. Annual gross earnings of a vessel is a key variable for estimating income, which is ultimately used for determining the regional economic impacts of Southeast Alaska fishermen. Harvester earnings also explain much of the variability in the amount of share payments to labor and income to vessel owners and permit holders. The vast majority of payments to labor are computed by a share system that is a negotiated percent of the expected gross earnings in a fishery. These percentages reportedly vary little from one vessel to another vessel. Also, a large portion of the variable costs of fishing (e.g., for food, bait, ice, gear repair) increases or decreases with the volume of vessel harvest. These variable costs are translated into direct effects in the Input-Output (I-O) model. Finally, for many fisheries, the number of crew participating in the fishery increases or decreases with the amount of harvest or harvest earnings.

In choosing the sampling design to precisely estimate total variable values for the population or subpopulations (i.e., strata), three other approaches were considered and, for one or more reasons, rejected.

- One sampling design would be to take a simple random sample of all vessels in Southeast Alaska. But due to the large variation in gross earnings from the different vessels, this would require a large sample size to precisely estimate the population total. To estimate total earnings within a ±0.10 error with 90% certainty, a simple random sample of the entire study population would require a response sample of 615 members of the population. Given a 30% response rate, this would require a survey of over 2,000 of the total 3,888 population members (ADF&G-licensed vessels and setnet permit holders).

- A second sampling design would take a stratified random sample of the vessels where the strata cover specific attributes about the population. The population was stratified into major fishing types that were thought to have similar costs and benefits. However, the variability of gross earnings among vessels was still quite large, requiring large sample sizes within strata.

- A third design would take a stratified systematic sample, where the strata may be the same as in the second approach, but the sampling would be done based on some periodic sampling method. The periodic sampling would have to be based on the distribution of gross earnings, which is known for the population.

A fourth sampling design, and the one that was chosen, is based on unequal probability sampling. Strata were chosen based on major fishery types and, within each stratum, a sample was taken to include a large portion of the total gross earnings with a small number of individual vessels. In other words, vessels with high earnings were given a greater chance of being in the sample than those with low earnings. The sample at this point represents a portion of the population that receives a survey asking for information on earnings, expenditures and employment and is referred to as the survey sample. The responses to the survey constitute the sample to be analyzed and are referred to as the response sample.

The Population

The population defined for the harvesting sector survey consists of all fishing vessels that made landings in Southeast Alaska in 1994 whose landings are recorded in the ADF&G fish ticket database and that have social security numbers and associated permits in all of the linked databases. In addition to these vessels, there are setnet permit holders in the population (these are treated as a unique strata) lacking vessel identification, because this gear group is not required to have an ADF&G vessel number. The gross earnings for each vessel and setnet permit holder is known, within a margin of error, from the CFEC gross earnings database.

The population includes 3,733 vessels and 155 setnet permit holders who made landings in 1994. For this study, a vessel includes the owner and all permit holders on the vessel who made landings. All fishing vessels reporting landings in state territorial waters require the permit holder to be present at each landing. It would be difficult to design a sampling frame based on a population of permit holders. A typical fishing vessel in Southeast Alaska fishes with 2 permits, however there may be up to 14 permits fished from a single vessel in a season. In addition, a permit may be fished on more than one vessel in a season, although this is not a frequent practice. Under a permit-based stratification of the population, vessel owners would have a difficult time allocating fixed costs of a vessel among multiple permits. This clearly would make a sample frame based on permits an impractical approach to apply to the Southeast Alaska harvesting sector.

Strata

The population is stratified by grouping the vessels according to the combination of permits used for each. At each landing the vessel identification and permit holder number are recorded, as well as estimates of the number and pounds of fish landed, and, in some cases, initial payments to the fishermen. This is recorded in the ADF&G fish ticket database. The fish ticket database typically includes about one-quarter of a million records per year for the entire state. The fish ticket data set is then transformed into a "gross earnings file" of approximately three-quarters of a million records at CFEC, by disaggregating by ADF&G species codes and adding in components of several other data sets. In this procedure, separate files of permit holders and registered vessels are also be linked to both the landings file (fish ticket) and to the annual landed price file. To determine the best stratification strategy for the population, the CFEC gross earnings, permit, and vessel databases were merged to determine how permits are grouped by vessel. The CFEC gross earnings database is used rather than the ADF&G fish ticket file because it has estimates of annual gross earnings and also includes landings for halibut obtained from the Pacific Halibut Commission.

The approach for selecting strata and estimating sample size per stratum was modified from the stratified systematic sampling methodology used by the Canadian Department of Fisheries and Oceans (Department of Fisheries and Oceans 1992). Thirteen mutually exclusive strata were defined: salmon purse seine, salmon power troll, salmon gillnet, salmon hand troll, sablefish longline 5 Tons and over, halibut longline 5 Tons and over, king and Tanner crab, Dungeness crab, roe herring, halibut longline Less than 5 Tons, miscellaneous invertebrates, other permits from vessels, and setnet permit holders (Table A1). Vessels were assigned to a stratum by going sequentially down the above list, placing them in the first strata in which they had a permit. For example, if a vessel landed fish on a salmon purse seine permit, it was placed in that stratum no matter how many other permits were fished from the vessel. Eventually all vessels were placed in the mutually exclusive strata, with all Yakatut setnet permit holders in a separate stratum.

Sample Size

The samples from each stratum were generated by making the probability of being selected proportional to the gross earnings of the individual within the stratum because gross earnings is known for all individuals in the population. The probability of an individual being selected to the sample was then the individual selection probability times the sample size. An initial target total sample size over all strata was arbitrarily chosen as 400, a reasonable number of surveys to send out. The distribution of this total sample size among strata was generated using the method of Cochran (1977) for stratified random sampling with equal probability of selection within the stratum. This method has the total sample size proportioned among strata according to size of the stratum and the standard deviation of the parameter being measured, in this case, gross earnings. These initial estimates of sample sizes per stratum were then adjusted so that the coefficient of variation (standard deviation divided by mean) of the estimated mean gross earnings for the stratum, given that the coefficient was estimated from a simple random sample within each stratum, would be approximately 20% or less (see Table A1). Sample sizes were increased within each stratum (Table A1) until the total survey sample size over all strata was increased to 775. Sample size was increased to compensate for the expected rate of non responses, and thus, the usable sample size (response sample size) would will be a lower number than the survey sample size.

As with any sampling, the probability of selection must not exceed 1.00. In some draws for a few strata, the specific unequal probability sampling algorithm used for drawing samples could generate a probability of selection of greater than 1.00. for certain dominant vessels. To accommodate this, samples were generated until the desired sample size was drawn and contained no vessel probabilities of selection that exceeded 1.00.

Table A1. Vessel stratum and average gross earnings, standard deviation, population size, sample size, and resultant coefficient of variation for the estimation of selected expenditures per stratum.

Fishery Stratum	Std. Deviation for Total Earnings	Average for Total Earnings	Number in Pop.	Survey Sample Size	Projected CV for ea. Stratum	Response Sample Size	% of Survey Responses
Salmon Purse Seine Southeastern (S01A)	$ 161,447	$ 180,110	479	120	7.1%	47	39%
Salmon Power Gurdy Troll Statewide (S15B)	$ 60,652	$ 58,200	987	75	11.6%	32	43%
Salmon Drift Gillnet Southeast (S03A)	$ 44,754	$ 45,301	513	75	10.5%	23	31%
Salmon Hand Troll, Statewide (S05B)	$ 14,454	$ 9,755	640	100	13.6%	27	27%
Sablefish Longline, 5 Tons & over Statewide, South & North SE (C61B,C61A,C61C)	$ 75,890	$ 95,037	143	25	14.5%	7	28%
Halibut Longline, 5 Tons or over Statewide (B61B)	$ 45,922	$ 25,624	220	61	19.5%	15	25%
King and Tanner Crab, Pot Gear Southeast (K69A)	$ 83,937	$ 84,200	4	4	0.0%	1	25%
Dungeness Crab, Pot Gear, to 50 ft, Southeastern & Yakutat (D09A,D09D)	$ 14,468	$ 13,061	100	25	19.2%	6	24%
Roe Herring, Purse Seine & Gillnet, Southeastern (G01A, G34A)	$ 31,049	$ 22,387	103	40	17.2%	15	38%
Halibut, Longline, Under 5 Tons Statewide (B61B)	$ 14,996	$ 4,985	229	100	22.6%	22	22%
Misc. Invertebrate, Diving Gear Statewide (Z12B)	$ 13,462	$ 10,479	110	50	13.4%	17	34%
All other permits fished from vessels	$ 42,169	$ 16,307	205	74	24.0%	20	27%
Setnet Permit Holders	$ 12,524	$ 22,611	155	26	9.9%	8	31%
Total Number			3,888	775		240	31%
Total Earnings		$ 205,517,329					
Percent of Population Sent Survey				20%			
Percent of Population in Response Sample						6%	

Sampling the Strata

Within each vessel stratum, the population consisted of a relatively few high gross earnings vessels and more vessels with low gross earnings, such that the median gross earnings was less than the mean gross earnings. A sample of vessels were chosen from each stratum, and the vessel owner and all permit holders fishing from that vessel were sent surveys inquiring about variable and fixed costs of their fishing operation. The probability of a vessel or setnet permit holder being included in the survey sample was proportional to its proportion of the total gross earnings for the stratum; this reduced the number of surveys mailed and increased the proportion of the total gross earnings sampled. This does not imply that vessels with small earnings were left out of the sample; they were just less intensively sampled. Assumptions regarding stratification and sampling include:

1. The 13 mutually exclusive strata are representative of important similarities in operations regarding permit combinations, vessel types, and the way operations are conducted.

2. High earning vessels and low earning vessels do not necessarily make similar purchases and income; e.g., the percentage of total gross earnings used for vessel expenses is not necessarily the same for large and small vessels.

3. There is a great deal of consistency between CFEC gross earnings and the reported survey earnings. For purposes of generating response statistics, the reported response

earnings are assumed to be the "observed" value and the CFEC gross earnings are assumed to be estimates.

4. The total gross earnings used for each stratum was based on CFEC gross earnings file estimates for each vessel in the stratum. This assumes that if all vessels were surveyed the total of the reported earnings would equal the CFEC total gross earnings.

Survey Sample

Because the majority of the gross earnings within a vessel stratum came from a small number of boats, a random sample of vessels within each stratum would include only a small proportion of the total gross earnings. Therefore, the probability of including a vessel in the sample was made proportional to the proportion of the total gross earnings the vessel represented within the given stratum. This is referred to as unequal probability sampling (Horvitz and Thompson 1952).

The probability of an individual in the population being selected in one draw is:

$$p_{ij} = \frac{g_{ij}}{G_j},$$

and the probability of being included in the survey sample of size n_j is:

$$\pi_{ij} = \frac{g_{ij}}{G_j} \; n_j,$$

where

p_{ij} = probability of vessel *i* from stratum *j* being selected in a single draw of the sample,
g_{ij} = gross earnings of vessel *i* from stratum *j* as reported by CFEC,
G_j = total gross earnings of all vessels in the stratum as reported by CFEC, and
n_j = desired sample size for stratum *j*.

The probability of selection is illustrated for the seine vessel stratum in Table A2. For illustrative purposes, vessels listed in Table A2 were grouped into earnings range strata to avoid release of individual data. In practice, each vessel was given its own probability of selection based on its earnings.

Table A2. Seine vessel stratum showing probability of selection to the survey sample.

Vessel Group by Earnings	Gross Earnings Range (Millions)	No. of Vessels in Group	Total Gross Income of Group (Millions)	Average Prob. Selection of Vessel to Sample (*n*=120)	No. of Vessels in Sample
1	$ 0–0.2	317	$33	0.14	44
2	$0.2–0.4	122	$34	0.37	45
3	$0.4–0.6	27	$13	0.64	17
4	$0.6–0.8	11	$8	0.97	11
5	$0.8–1.0	1	$1	1.00	1
6	$1.0–1.2	0	0	-	0
7	$1.2–1.4	1	$1	1.00	1
Total		479	$90		119

Any vessel with earnings greater than 1/*n* of the total earnings for the stratum (where *n* = desired sample size) was automatically included in the survey sample; i.e., *p* was set to = 1.00. Of the

samples selected, one for each stratum, there were no instances of p = 1.00 in the power troll strata, but as many as 26 instances occurred in the "other permits" stratum.

Response Sample

The actual sample consisted of those vessels and setnet permit holders for which a fully completed survey was returned. Once the response sample was identified, it was apparent that the gross earnings reported in a survey area was not always the same as the CFEC estimate of the earnings used to determine the probability of selection. In most cases the differences were very small. The CFEC value was applied to each estimate.

Parameter Estimation

Using unequal probability sampling and sampling without replacement, the estimation of the population parameter total can be expressed using the Horvitz-Thompson estimator (Horvitz and Thompson 1952) as:

$$\tau_j = \sum_{i=1}^{m_j} \frac{g'_{ij}}{\gamma_{ij}},$$

where

τ_j = estimate of parameter total, from stratum j.
g'_{ij} = parameter value of individual i in sample from stratum j, in this case, gross earnings reported in the response sample,
γ_{ij} = probability of unit i in stratum j being selected to the sample, and
m_j = size from stratum j.

In this case, the response sample size is used, not the survey sample size. Given a response sample size of m_j, where $m_j < n_j$, a sample weight for vessel I in stratum j may be determined as:

$$w_{ij} = \frac{1}{\gamma_{ij}} = \frac{G_j}{g'_{ij}} \cdot \frac{1}{m_j}.$$

The total gross earnings for a stratum may be estimated by:

$$\hat{G}_j = \sum_{i=1}^{m_j} w_{ij} \cdot g'_{ij},$$

and the total values for other variables measured in the survey may be estimated by:

$$\hat{X}_j = \sum_{i=1}^{m_j} w_{ij} \cdot x_{ij},$$

where x and X represent any other variable and its total value, respectively, in the stratum.

In some cases, the weight of an individual would be less than one, meaning that the individual earnings for that vessel was greater than 1/*m* of the total gross earnings for the stratum. The optimum approach to using this information is to place the sample units with weights less than one into their own substratum and sum the variable value for those units, because discarding individual selected samples could introduce bias into the full sample. The remainder of the units in the sample would have their weights recalculated using the revised total earnings and sample size for the substratum.

In the case of gross earnings, the selection probabilities are proportional to the variable (g_{ij}); therefore, the Horvitz-Thompson (1952) estimator has a variance of zero. For the other variables, the unbiased variance estimate is a function of the joint inclusion probabilities and is tedious to calculate; an alternative estimate is given by Horvitz and Thompson (1952) as:

$$\hat{var}(X_j) = \left(\frac{N_j - m_j}{N_j} \right) \cdot \frac{s_t^2}{m_j},$$

where

N_j = population size of stratum j,
s_t^2 = standard deviation of the estimates t_{ij} from stratum j, and
X_j= the average of the t_{ij} values within stratum j where an individual sample $t_{ij} = (w_{ij} \cdot x_{ij})/m_j$.

The coefficient of variation for any variable is defined as the standard deviation divided by the mean. The coefficients of variation for the variable expenditures for each stratum vary between 0% and 34%. The coefficient of variation for the estimate of expenditures for the total population is estimated to be 3%.

Table A3. Coefficient of variation for the estimate of variable expenditures, by strata, from survey data.

Stratum	*n*	Expenditures	CV
Dive Fisheries	17	$ 804,486	6%
Dungeness Crab	6	$ 738,970	14%
Salmon Drift Gillnet	23	$ 8,953,581	9%
Halibut Longline <5 Tons	22	$ 523,002	17%
Halibut Longline ≥5 Tons	15	$ 2,990,626	6%
Salmon Hand Troll	27	$ 3,409,907	12%
Other Miscellaneous Fisheries	20	$ 2,705,335	34
Salmon Power Troll	32	$ 23,535,918	7%
Roe Herring Gillnet & Purse Seine	15	$ 862,616	21%
Sablefish Longline	7	$ 7,468,804	4%
Salmon Seine	47	$ 46,853,033	4%
Salmon Setnet	8	$ 2,050,831	16%
Tanner Crab	1	$ 138,932	0%
Total	240	$ 101,036,041	3%

APPENDIX B. LINKING SURVEY DATA FIELDS TO IMPLAN MODEL FIELDS

IMPLAN Professional ™(1997) (IMPLAN; MIG Inc. 1999) was used to estimate the economic impacts of seafood harvesting and processing in three economic regions. The model was originally developed by the U.S. Forest Service, and is frequently used in land management planning in Alaska. It quantifies the purchasing relationships among industries and assumes that increasing the output of one industry will require proportionate increases in inputs of commodities from other industries. An input-output (I-O) model, such as IMPLAN, is an accounting system that identifies the economic transactions between local business, households, and governments, as well as transactions between public and private entities. The model can be used to estimate the total economic effect resulting from activities in a single industry.

Ideally, an input-output model would be based on the direct observation of the purchase and sales patterns of all industries in the regional economy. This would allow a precise measurement of the secondary effects of fisheries-related activity. However, primary data collection is prohibitively expensive. Therefore, to keep the cost of impact analysis within reason, a scaled-down derivation of the U. S. Bureau of Labor Statistics national I-O matrix, such as the IMPLAN model (MIG Inc. 1999), is often used to model industry interactions in a study area.

Most of the output of the fishing industry in Southeast Alaska is sold outside the region. Income received from industry sales accrues to Southeast fishermen and processing employees, regional fuel distributors, grocery stores, accountants, hardware stores, engine repair shops, and so on. In turn, the fishermen, processing employees, and employees of businesses supplying goods and services to the fishing industry, buy consumer goods and services. Each pulse of new money generated by products sold to buyers outside the region starts another cycle of spending.

The indirect effects associated with a specific industry depend upon where that industry's expenditures actually occur and how much is actually spent. Information about these purchase patterns is generally collected in national industry surveys. The purchase categories included in the Southeast Alaska seafood industry surveys were chosen on the basis of their familiarity to the industry and the ease with which they could be distributed among the industry sectors of the IMPLAN model. This appendix provides a detailed summary of the redistribution process and assumptions.

The heart of the IMPLAN model, and input-output models in general, is a matrix of inter-industry purchases. Consumer purchases, including the purchases reported in the seafood industry survey, do not correspond directly to the IMPLAN model industry sectors. For example, the survey category of "Food" may represent purchases in any number of fifty food-related industry sectors in IMPLAN, ranging from "Poultry and Eggs" to "Flour and Grain Products." The challenge to the analyst is to determine which combination of IMPLAN model sectors is most likely to represent the distribution of the dollars reportedly spent on "Food." A further complication is that purchases reported by consumers (i.e., the survey respondents) may include retail and wholesale trade margins as well as transportation costs to move the goods from the producer to the purchase location. Again using the example of "Food," purchases reported in this survey category must be reallocated to retail, trade, and transportation industry sectors as well as the appropriate food-related industry sectors.

The IMPLAN model includes margining tables for many manufacturing sectors. The margins used in IMPLAN were developed by the Bureau of Economic Analysis and represent national averages. The Bureau of Economic Analysis margins are price indexed by IMPLAN to the current year data set. A margining table shows how the cost of a dollar's worth of a manufactured consumer product is distributed among the manufacturing, transportation, wholesale, and retail industries that contribute to its production and distribution.

A considerable amount of knowledge about the seafood industry and the regional economy was required to create a bridge between the purchases reported in the survey and the IMPLAN model sectors. The bridging process described below was developed by C. Weise, University of Alaska Marine Advisory Program, Anchorage, and K. S. Morse, Economist, U.S. Department of Agriculture, Forest Service, Juneau.

The selection of the IMPLAN sectors to represent each survey purchase category was based, in part, upon the following observations and assumptions:

- Most of the manufactured goods purchased by fishermen and seafood processors are obtained from retailers or wholesalers. Therefore, each survey category may be comprised of up to four subcategories of IMPLAN sectors including: 1) manufacturing costs; 2) transportation costs; 3) wholesaler trade margin; and 4) retail trade margin.

- Goods and services purchased directly from the producer do not have transportation, wholesale, or retail markups. For example, banking, accounting, repair, and medical services are generally purchased directly from the provider and do not require other industries to get the product to the purchaser. Processors buy fish directly from fishermen and there are no transportation, wholesale, or retail additions to the price of the fish. Processors buy cans and other packaging material directly from manufacturers, and fishermen buy new boats directly from boat builders.

- The IMPLAN regional data set for Alaska (and all other states) contains production and employment information for each industry that exists in Alaska's boroughs or census areas (the political unit that is used if a borough does not exist). The 1993 IMPLAN data sets were used, along with the informed judgment of the study investigators, to determine which IMPLAN sectors to include in the bridging process.

- If a particular survey category corresponds to several manufacturing sectors that do not exist in the region, the total expenditure in these sectors is attributed to a single "surrogate" sector. This simplifies the modeling process without materially affecting the results.

Bridge Process for Commercial Fishing Industry Survey

Each survey expenditure category was allocated across a number of IMPLAN sectors to account for the composite of manufactured goods within the broader survey category and, when applicable, the trade and transportation margins included in the reported purchase values (Table B1). These notes provide some insight into the how more complex allocations patterns were derived.

Table B1. Allocation of Purchase Vector from Commercial Fishing Survey into IMPLAN Sectors.

Permit Section

Food

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
72	Flour and Grain products (surrogate)	0.58	$4,416,585	$3,844,097	$118,781	$431,112	$22,596
435	Truck Transport	0.01	$76,148	$66,278	$2,048	$7,433	$390
436	Water Transport	0.04	$304,592	$265,110	$8,192	$29,732	$1,558
447	Wholesale	0.05	$380,740	$331,388	$10,240	$37,165	$1,948
450	Retail Food	0.20	$1,522,960	$1,325,551	$40,959	$148,659	$7,792
454	Eating and Drinking	0.10	$761,480	$662,775	$20,479	$74,330	$3,896
455	Misc. Retail	0.02	$152,296	$132,555	$4,096	$14,866	$779
	Total	1.00	$7,614,802	$6,627,753	$204,794	$743,297	$38,958

Fuel and Lubricants

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
210	Petroleum Refining	0.63	$6,532,773	$5,905,097	$376,466	$233,905	$17,304
436	Water Transport	0.01	$103,695	$93,732	$5,976	$3,713	$275
438	Pipe Lines except Natural Gas	0.01	$103,695	$93,732	$5,976	$3,713	$275
447	Wholesale Trade	0.15	$1,555,422	$1,405,976	$89,635	$55,692	$4,120
449	General Merchandise	0.02	$207,390	$187,463	$11,951	$7,426	$549
451	Auto Dealers and Service Stations	0.17	$1,762,812	$1,593,439	$101,586	$63,117	$4,669
455	Misc. Retail	0.01	$103,695	$93,732	$5,976	$3,713	$275
	Total	1.00	$10,369,481	$9,373,171	$597,565	$371,278	$27,467

Ice and Bait

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
25	Commercial Fishing	0.38	$1,365,055	$1,252,653	$92,653	$19,749	$0
97	Canned and Cured Processing	0.11	$395,147	$362,610	$26,820	$5,717	$0
98	Fresh/Frozen Processing	0.09	$323,302	$296,681	$21,944	$4,677	$0
102	Macaroni and Spaghetti (surrogate for packaging)	0.13	$466,992	$428,539	$31,697	$6,756	$0
347	Refrigeration Equipment	0.05	$179,612	$164,823	$12,191	$2,599	$0
436	Water Transport	0.01	$35,922	$32,965	$2,438	$520	$0
447	Wholesale Trade	0.08	$287,380	$263,716	$19,506	$4,158	$0
511	Government Electric Utilities	0.08	$287,380	$263,716	$19,506	$4,158	$0
512	Government Enterprise	0.07	$251,457	$230,752	$17,068	$3,638	$0
	Total	1.00	$3,592,249	$3,296,456	$243,823	$51,971	$0

Gear Replacement

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
122	Cordage and Twine	0.46	$4,397,041	$1,929,620	$232,252	$2,127,070	$108,098
436	Water Transport	0.02	$191,176	$83,897	$10,098	$92,481	$4,700
447	Wholesale Trade	0.10	$955,878	$419,483	$50,490	$462,407	$23,500
449	General Merchandise	0.27	$2,580,872	$1,132,603	$136,322	$1,248,498	$63,449
455	Misc. Retail	0.07	$669,115	$293,638	$35,343	$323,685	$16,450
470	Other Business Services	0.08	$764,703	$335,586	$40,392	$369,925	$18,800
	Total	1.00	$9,558,785	$4,194,827	$504,897	$4,624,066	$234,996

Travel and Transportation (Crew/Skipper)

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
210	Petroleum Refining	0.07	$168,081	$110,453	$14,823	$30,140	$12,665
436	Water Transportation	0.30	$720,346	$473,369	$63,525	$129,173	$54,279
437	Air Transportation	0.50	$1,200,576	$788,948	$105,876	$215,288	$90,464
439	Travel Agent	0.10	$240,115	$157,790	$21,175	$43,058	$18,093
451	Auto Dealer/Service Station	0.02	$48,023	$31,558	$4,235	$8,612	$3,619
479	Auto Repair and Service	0.01	$24,012	$15,779	$2,118	$4,306	$1,809
	Total	1.00	$2,401,152	$1,577,896	$211,751	$430,575	$180,929

Permit Principal and Interest

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
447	Wholesale Trade	0.10	$523,906	$334,001	$45,083	$144,727	$94
456	Banking	0.39	$2,043,234	$1,302,603	$175,825	$564,437	$369
V.A.	Other Property Income	0.51	$2,671,921	$1,703,404	$229,926	$738,110	$482
	Total	1.00	$5,239,061	$3,340,008	$450,835	$1,447,274	$945

Other #1 (Permit Expense–Labor)

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
V.A.	Labor	1.00	$4,125,698	$2,451,231	$90,197	$1,571,933	$12,656
	Total		$4,125,698	$2,451,231	$90,197	$1,571,933	$12,656

Other #2 (Permit Expense–Non Labor)

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
276	Hand and Edge Tools	0.54	$1,353,501	$639,782	$102,689	$316,766	$283,430
435	Truck Transport	0.01	$25,065	$11,848	$1,902	$5,866	$5,249
436	Water Transport	0.01	$25,065	$11,848	$1,902	$5,866	$5,249
437	Air Transport	0.01	$25,065	$11,848	$1,902	$5,866	$5,249
447	Wholesale	0.10	$250,648	$118,478	$19,016	$58,660	$52,487
448	Building Materials	0.11	$275,713	$130,326	$20,918	$64,526	$57,736
449	General Merchandise	0.08	$200,519	$94,783	$15,213	$46,928	$41,990
450	Retail Food	0.03	$75,194	$35,543	$5,705	$17,598	$15,746
451	Auto Dealers/Service Stations	0.03	$75,194	$35,543	$5,705	$17,598	$15,746
452	Apparel	0.02	$50,130	$23,696	$3,803	$11,732	$10,497
455	Misc. Retail	0.03	$75,194	$35,543	$5,705	$17,598	$15,746
463	Hotel/Lodging	0.02	$50,130	$23,696	$3,803	$11,732	$10,497
464	Laundry/Cleaning	0.01	$25,065	$11,848	$1,902	$5,866	$5,249
	Total	1.00	$2,506,483	$1,184,782	$190,164	$586,603	$524,870

Vessel Section

Vessel Principal and Interest

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
393	Boat Building/Repair	0.61	$9,246,325	$5,179,208	$1,427,526	$2,094,848	$544,742
456	Banking	0.39	$5,911,585	$3,311,297	$912,681	$1,339,329	$348,278
	Total	1.00	$15,157,910	$8,490,505	$2,340,207	$3,434,177	$893,020

General Maintenance–Self

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
276	Hand and Edge Tools	0.54	$5,357,808	$3,542,377	$465,052	$1,260,978	$89,401
436	Water Transport	0.02	$198,437	$131,199	$17,224	$46,703	$3,311
447	Wholesale	0.11	$1,091,405	$721,595	$94,733	$256,866	$18,211
448	Building Materials	0.08	$793,749	$524,797	$68,897	$186,811	$13,245
449	General Merchandise	0.15	$1,488,280	$983,994	$129,181	$350,272	$24,834
455	Misc. Retail	0.05	$496,093	$327,998	$43,060	$116,757	$8,278
512	State/Local Enterprise	0.05	$496,093	$327,998	$43,060	$116,757	$8,278
	Total	1.00	$ 9,921,866	$ 6,559,957	$ 861,207	$ 2,335,144	$ 165,558

Shipyard Expense

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
393	Boat Building/Repair	1.00	$6,031,660	$ 3,219,673	$ 100,266	$ 2,623,990	$ 87,730

General Repair–Contracted

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
276	Hand and Edge Tools	0.13	$581,481	$398,857	$16,273	$161,741	$4,610
436	Water Transport	0.02	$89,459	$61,363	$2,504	$24,883	$709
447	Wholesale	0.03	$134,188	$92,044	$3,755	$37,325	$1,064
449	General Merchandise	0.07	$313,105	$214,769	$8,762	$87,091	$2,482
473	Services to Buildings	0.75	$3,354,697	$2,301,099	$93,882	$933,121	$26,594
	Total	1.00	$ 4,472,929	$ 3,068,132	$ 125,176	$ 1,244,162	$ 35,459

Vessel Storage and Moorage

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
512	State/Local Gov. Enterprises	1.00	$3,223,527	$2,111,056	$295,392	$781,630	$35,448
	Total	0.00	$3,223,527	$2,111,056	$295,392	$781,630	$35,448

Net and Gear Storage

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
473	Equipment Rental/Lease	1.00	$535,307	$303,395	$1,839	$202,450	$27,623
	Total	1.00	$535,307	$303,395	$1,839	$202,450	$27,623

Insurance

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
460	Insurance Agents and Brokers	1.00	$9,534,767	$2,166,274	$321,872	$5,901,043	$1,145,579
	Total	1.00	$9,534,767	$2,166,274	$321,872	$5,901,043	$1,145,579

Legal and Accounting

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
494	Legal Services	0.35	$519,215	$202,511	$131,370	$153,736	$31,598
507	Accounting Services	0.65	$964,257	$376,092	$243,973	$285,510	$58,681
	Total	1.00	$1,483,472	$578,603	$375,344	$439,246	$90,279

Association Dues

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
502	Non-profit organizations	0.2	$152,483	$116,025	$2,901	$29,890	$3,668
503	Business associations	0.8	$609,933	$464,101	$11,603	$119,558	$14,672
	Total	1.00	$ 762,416	$ 580,126	$ 14,503	$ 149,448	$ 18,340

Vessel License Fees

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
523	State and Local Govt (non edu)	1.00	$1,374,745	$1,031,318	$52,431	$194,222	$96,774
	Total	1.00	$1,374,745	$1,031,318	$52,431	$194,222	$96,774

Safety Equipment

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
276	Hand and Edge Tools	0.54	$746,676	$423,433	$10,131	$286,775	$26,337
436	Water Transport	0.02	$27,655	$15,683	$375	$10,621	$975
447	Wholesale	0.10	$138,273	$78,413	$1,876	$53,107	$4,877
449	General Merchandise	0.25	$345,683	$196,034	$4,690	$132,766	$12,193
455	Misc. Retail	0.09	$124,446	$70,572	$1,688	$47,796	$4,389
	Total	1.00	$1,382,733	$784,134	$18,761	$531,066	$48,772

Supplies

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
276	Hand and Edge Tools	0.54	$2,260,973	$1,447,753	$184,476	$578,961	$49,784
435	Truck Transport	0.01	$41,870	$26,810	$3,416	$10,721	$922
436	Water Transport	0.01	$41,870	$26,810	$3,416	$10,721	$922
447	Wholesale	0.10	$418,699	$268,102	$34,162	$107,215	$9,219
448	Building Materials	0.12	$502,438	$321,723	$40,995	$128,658	$11,063
449	General Merchandise	0.08	$334,959	$214,482	$27,330	$85,772	$7,375
450	Retail Food	0.03	$125,610	$80,431	$10,249	$32,164	$2,766
451	Auto Dealers/Service Stations	0.03	$125,610	$80,431	$10,249	$32,164	$2,766
452	Apparel	0.02	$83,740	$53,620	$6,832	$21,443	$1,844
455	Misc. Retail	0.06	$251,219	$160,861	$20,497	$64,329	$5,532
	Total	1.00	$4,186,987	$2,681,024	$341,622	$1,072,149	$92,192

Taxes

IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
519	Federal Gov.-Military	0.16	$1,554,491	$558,571	$22,659	$143,043	$830,218
520	Federal Gov.-Non-Military	0.64	$6,217,963	$2,234,283	$90,635	$572,173	$3,320,872
522	State/Local Gov.-Education	0.05	$485,778	$174,553	$7,081	$44,701	$259,443
523	State/Local Gov.-Non-Ed.	0.15	$1,457,335	$523,660	$21,243	$134,103	$778,329
	Total	1.00	$9,715,568	$3,491,067	$141,618	$894,020	$5,188,863

Other Vessel Expenses
IMPLAN

Sector	Sector Title	Proportion	Total Expenditure	Southeast	All Alaska	Washington	Other
V.A.	Misc. Labor	0.18	$1,676,376	$1,150,904	$92,967	$417,935	$14,571
210	Petroleum Refining	0.02	$186,264	$127,878	$10,330	$46,437	$1,619
276	Hand and Edge Tools	0.05	$465,660	$319,695	$25,824	$116,093	$4,047
436	Water Transportation	0.01	$93,132	$63,939	$5,165	$23,219	$809
447	Wholesale	0.01	$93,132	$63,939	$5,165	$23,219	$809
449	General Merchandise	0.03	$279,396	$191,817	$15,494	$69,656	$2,428
451	Auto Dealer/Service Station	0.02	$186,264	$127,878	$10,330	$46,437	$1,619
454	Eating and Drinking	0.01	$93,132	$63,939	$5,165	$23,219	$809
463	Hotel/Lodging	0.02	$186,264	$127,878	$10,330	$46,437	$1,619
464	Laundry	0.01	$93,132	$63,939	$5,165	$23,219	$809
470	Other Business Services	0.11	$1,024,452	$703,330	$56,813	$255,405	$8,904
473	Equipment Rent/Lease	0.20	$1,862,640	$1,278,782	$103,296	$464,372	$16,190
479	Auto Repair	0.03	$279,396	$191,817	$15,494	$69,656	$2,428
482	Misc. Repair Shops	0.07	$651,924	$447,574	$36,154	$162,530	$5,666
494	Legal	0.05	$465,660	$319,695	$25,824	$116,093	$4,047
523	State/Local Gov. – Non-Ed.	0.18	$1,676,376	$1,150,904	$92,967	$417,935	$14,571
	Total	1.00	$9,313,200	$6,393,909	$516,481	$2,321,861	$80,949

Grand Total All Expense Items: $114,030,803

Survey Expenditure Categories

Food

IMPLAN Sector 72, "Flour and Other Grain Mill Products," was chosen as the surrogate for the industries directly involved in the manufacture of food items purchased in grocery stores. This includes basic food manufacturing industries such as "Flour and Grain Products" which are located outside Southeast Alaska.

The bulk of food shipped into Southeast Alaska is transported by barge and distributed locally by trucks. Accordingly, most of the transportation margin for food was allocated to IMPLAN sectors "Truck Transport," Sector 435, and "Water Transport," Sector 436.

Ten percent of reported food expenditures were allocated to IMPLAN Sector 454, "Eating and Drinking," to account for restaurant meals and 20% of the food expenditures are allocated to "Retail Foods" Sector 450 to account for retail food market purchasing.

Fuel and Lubricants

The margin table for IMPLAN Sector 210, "Petroleum Refining," was used to allocate reported purchases.

IMPLAN Sector 451, "Auto Dealers and Service Stations," was used as a proxy for marine fuel docks that do not have a specialized sector in IMPLAN.

Ice and Bait

For the most part, ice and bait are produced locally. Fishermen themselves produce much of the bait used in longline and crab fisheries, although a significant portion is imported from suppliers of squid and octopus. Processing plants store bait caught by fishermen for their own use; they also buy bait from some fishermen and outside producers to sell to others. Processing plants are also the primary source of ice for fishing operations. The industries and proportions shown in Table B1 are based on the professional judgment of the researchers. Some local tax and raw fish

tax is associated with the purchase of bait and ice in Southeast Alaska, accounting for a small amount of government enterprise and services. The surrogate category of sector 102, "Macaroni and Spaghetti (surrogate)" is used to represent the general processing and packaging of bait that occurs outside of Alaska.

Gear Replacement
Table B1 applies IMPLAN Sectors: 122, "Cordage and Twine;" that is representative of several industries which supply manufacturers of fishing gear and all have similar margins. Other categories include: 436, "Water Transport;" 447, "Wholesale Trade;" 449, "General Merchandise;" and 455, "Misc. Retail."

IMPLAN Sector 470, "Other Business Services" was added to the industry grouping to account for hired services such as gear hanging, gear mending, and gear preparation.

Travel and Transportation (Crew/Skipper)
The allocation pattern for this expenditure category reflects some assumptions about the way in which fishermen who are not Southeast residents or who live in one part of the region but store their boat in another part, travel to Southeast Alaska (and return) for the fishing season.

Permit Principal and Interest
The payment of principal and interest on commercial fishery entry permits is assumed to generate a small amount of output from regional brokering services, which are typically used in the exchange of limited entry permits. It was assumed that 10% of the seller's cost would go to the broker, 39% would go to the lender as interest expense, and the remainder would be income to the previous owner of the permit. The latter component represents a change in asset values rather than a change in industry output and has no effect on the IMPLAN model results.

Other #1 (Permit Expense–Labor)
This is the first survey category of "other expenses." From survey notes, approximately 50% of these expenditures were for special taxes (Alaska Seafood Marketing Institute, fisheries enhancement). Other miscellaneous expenses were for food, crew, and labor used in equipment repair.

Other# 2 (Permit Expense–Non Labor)
This category represents miscellaneous expenses paid by the permit holder, including contract or short term labor, supplies and equipment, and services. The returned surveys indicate that approximately half of these permit holder expenses were for short-term labor.

IMPLAN Sector 276, "Hand and Edge Tools," was used as a proxy for industries producing the various types of equipment and supplies that were purchased.

The proportions for each of the manufacturing, transportation, and trade sectors used in this purchase category are very small because supplies and equipment account for a small portion of the total expenditure in this survey category. Labor resulting from permit expenditures are covered in the proceeding section and account for approximately one half of permit based expenditures in the permit expense portion of the survey.

Vessel Principal and Interest
Vessel purchase expenses are divided between boat builders and lenders under the assumption that primarily new boats are purchased.

Survey results indicate that approximately 40% of boat payments are interest expense.

General Maintenance - Self
IMPLAN Sector 276, "Hardware," is used here as the representative manufacturing industry. Water transport and trade margins represent a composite of margins for several IMPLAN sectors including: 200, "Paint and Allied Products;" 205, "Adhesives and Sealants;" 275, "Hand Tools;" 278 "Hardware;" 322, "Power Driven Hand Tools;" 347, Refrigeration and Heating Equipment;" 357, "Motors and Generators;" 379, "Storage Batteries;" 381, Engine Electrical Equipment," and 308 "Internal Combustion Engines."

IMPLAN Sector 512, "State and Local Enterprises," is used to account for the fees paid for vessel maintenance at port facilities.

Shipyard Expense
IMPLAN Sector 393, "Boat Building and Repair," is a good fit for this expense category.

General Repair - Contracted
Labor, both skilled and unskilled, is the major component of contract repair work. The survey indicates a mix of 75% labor and 25% parts and supplies.

IMPLAN Sector 473 in Table B1, "Services to Buildings", is used as a proxy for services to fishing boats because it has a production function which is 80% labor ("value added" in economic terms) and only 20% purchases from manufacturing, transportation, trade, and other service industries.

Vessel Storage and Moorage
IMPLAN Sector 512, "State and Local Government Enterprises," is used to represent this cost category because nearly all harbors and much of the surrounding land in Alaska is owned or managed by state and municipal government entities.

Net and Gear Storage
IMPLAN Sector 473, "Equipment Rental or Lease," comes closest to capturing the intent of this cost category.

Insurance
The IMPLAN Sector 460, "Insurance Agents and Brokers" is used to represent all insurance services.

Legal and Accounting
The survey did not break out costs for these two services separately. Approximately two-thirds of the expenditures in this category were assumed to go to accountants.

Association Dues
Payments to fishing associations and special political lobbying efforts are included in this category. The 80% allocation to fishing associations and the 20% allocation to political lobbying is based on discussions with fishermen.

Vessel License Fees
Vessel license fees for all state waters are paid to the State of Alaska under the category of State/Local Government Enterprises.

Safety Equipment
IMPLAN Sector 276, "Hand and Edge tools," is used again as the representative sector for several IMPLAN sectors with similar margins including production of life rafts, EPIRBs, survival suits, flare guns, and communications equipment. This Sector 276 was consistent with a mixed bag of other trade margins including sectors 219, "Fabricated Rubber Products;" 278, "Hardware;" 299, "Small Arms;" 374, Communications Equipment;" 378 "Electronic Components;" 421, Sporting and Athletic Goods;" and 432, "Manufacturing Industries."

Supplies
None of the "supplies" listed in the harvesting sector survey are assumed to be manufactured in Alaska. Thus, for the purpose of allocating purchases of these supplies to IMPLAN sectors for Table B1, the only component relevant to the Alaska economy are the transportation, services, wholesale, and retail inputs required to get these goods to the marketplace and to Alaska harvesters. The survey reported that the types of "supply" items purchased by fishermen range from clothes, cleaning, and disinfecting supplies, to ropes, to trade journals, and tools, the representative IMPLAN sectors that best correspond to these supplies are listed in Table B2.

The margins for the Table B2 supplies are developed in Table B3 from the trade and transportation margins used in IMPLAN. These trade and transportation margins for the selected sectors must sum to 1.00. The last column in Table B3 shows the average trade and transport margins for the eleven IMPLAN sectors chosen to represent "Supplies." To represent the manufacturing component of the supplies a single IMPLAN Sector 276, "Hand and Edge Tools", was used as a proxy for all supply-related manufactured goods. This sector is chosen as a surrogate sector that is completely manufactured outside of Alaska, and thus is treated in IMPLAN as a sector that is 100% exported. Also, note that in the allocation of purchase vectors (Table B1), Furniture and Miscellaneous Retail sectors are combined into a single sector as they are treated identically in IMPLAN for the Southeast and Alaska Regions. Adjustments such as this to the average margin figures were made to more closely reflect fishing business purchase patterns for goods that are manufactured entirely outside of Alaska.

Table B2. IMPLAN Sectors used to represent Supplies.

IMPLAN Sector Number	Sector Title
114	Knit fabric Mills
122	Cordage and Twine
175	Periodicals
196	Soap and Other Detergents
200	Paints and Allied Products
276	Hand and Edge Tools
278	Hardware
322	Power Driven Hand Tools

Table B3. Manufacturing Sector and Margin Value.

Margin Activity		114	122	175	196	200	276	278	322	Average
Average										
Manufacturing	0.47	0.47	0.67	0.59	0.66	0.46	0.47	0.52	0.54	0.5390
Truck Transport	0.00	0.01	0.01	0.02	0.02	0.02	0.00	0.01	0.01	0.0140
Water Transport	0.01	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.01	0.0040
Wholesale	0.03	0.07	0.03	0.14	0.09	0.17	0.16	0.12	0.10	0.1000
Building Materials	0.00	0.03	0.01	0.00	0.22	0.31	0.09	0.32	0.12	0.1220
General Merchandise	0.25	0.19	0.06	0.01	0.00	0.02	0.09	0.02	0.08	0.0800
Food Stores	0.00	0.00	0.04	0.19	0.00	0.00	0.01	0.00	0.03	0.0300
Service Stations	0.02	0.07	0.01	0.01	0.00	0.00	0.08	0.01	0.03	0.0250
Apparel	0.18	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.0260
Furniture	0.01	0.06	0.01	0.00	0.00	0.00	0.04	0.00	0.02	0.0160
Miscellaneous Retail	0.03	0.08	0.15	0.04	0.00	0.01	0.05	0.00	0.04	0.0440
Margin Totals	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0000

Taxes

This cost category includes all payments to governments, including income taxes on self-employed fishing income, permit and vessel licenses, and taxes to various state and local agencies for fisheries enhancement, marketing, and fishing-related property.

An assumption is made that 80% of total taxes are paid to the federal government and the rest goes to state and local governments.

Survey Expenditure Category: Other Vessel Expenses

This is a collection of miscellaneous expenses picked up by the vessel owner or operator. Survey follow-up work indicates that 18% of the total expenditure is labor. The remainder is distributed among service sectors and government. The distribution of the non-labor component is based on professional judgment.

APPENDIX C. BRIDGE FROM PURCHASE VECTOR TO PRODUCTION FUNCTION FOR ALASKA SEAFOOD PROCESSORS

The same bridging process is used to convert expenditure data from the Seafood Processing Survey into a final production function to include in IMPLAN. The data collection, analysis, and final assumptions for the Seafood Processors translation table was supplied by C. Wiese, University of Alaska Marine Advisory Program, Anchorage, and K. Morse, Economist, U. S. Department of Agriculture, Forest Service, Juneau.

Commercial Fishing
IMPLAN sector 25. Raw fish product harvested by commercial fishermen is the largest single purchase category for seafood processors, accounting for typically half of all processing purchases (Table C1). For Southeast Alaska the amount was $ 223.2 million or 56.4% in 1994. All of these purchases are allocated to IMPLAN sector 25, "Commercial Fishing." The expense of transporting fish and shellfish from the fishing grounds to processing plants aboard tender vessels is also a raw product cost; however, it is allocated to the survey expense category called "Hauling and Tendering Costs to Plants."

Advertising
IMPLAN sector 469, "advertising," is the direct IMPLAN corollary of this cost category.

Legal and Accounting Services
IMPLAN sectors 494 "Legal" and 507 "Accounting" are used to represent this cost category in the model. The survey does not specifically identify what components of this category are attributed to legal and accounting services, but typical seafood processing operations in the state spend most of this component on accounting services for federal and state income tax preparation. The distribution of expenditures between these two sectors is arbitrarily chosen to be 35% legal and 65% accounting.

Other Professional and Business Services and Trade Associations
The processing industry uses the services of a variety of professionals from biologists to lobbyists, and from personnel consultants to engineers. Professional services are represented in the bridge by three sectors 474 "Personnel Services;" 506 "Engineering and Architectural Services;" and 508 "Management and Consulting Services." Miscellaneous business services are represented by sector 470, "Other Business Services," and trade associations are represented by industry 503, "Business Associations.

Discussions with processing management personnel suggest the majority of expenditures in this category are for other business services and professional services. The assumed allocation gives the three professional Services sectors total 30% of the category expenditure, while business services are allocated 60% and business associations 10%.

Insurance
There are two insurance sectors in IMPLAN; Sector 460, "Insurance Agents and Brokers," and Sector 459 "Insurance Carriers." Sector 459 is chosen for the translation tables because the insurance payment goes to the carrier, and the production function for this sector includes reimbursement to insurance brokers and agents for their fees.

Telephone
As with insurance, there are two communications sectors in the IMPLAN model. One is for radio and TV broadcasting. Sector 441 covers all other communication, including telephone.

Plant and Equipment Maintenance
Sector 56, "Maintenance and Repair, Other Facilities," (other than residential) directly relates to the cost category. The production function for this sector includes expenditures for parts and supplies needed for building maintenance. Consequently, manufacturing sectors representing parts and supplies were not added to the bridge.

Other than sector 56, IMPLAN has only a few repair sectors, which apply to processing plant repair services. They are 306, "Fabricated Metal Products;" and 472, "Services to Buildings." Sector 472 is included because this industry exists in Southeast Alaska, Alaska, and Washington, and is used as a surrogate to represent repair input services that would be supplied to plant buildings and equipment. The distribution of expenditures between these three sectors was derived from anecdotal information from plant managers.

Total Value-Added $109,126,109

Construction Contracts and Upgrading of Facilities
The choice for this cost category is straightforward. There is just one IMPLAN sector for commercial building construction and that is Sector 49, "New Industrial and Commercial Buildings."

Maintenance of Bunkhouse and Mess Hall or Food Service
The IMPLAN sectors applicable to this cost category are similar to those of plant and equipment maintenance above; the difference is that sector 482, "Miscellaneous Repair Shops," is substituted for sector 472, "Services to Buildings", as a more representative category, though the purchase vectors for these two categories are very similar. The distribution of expenditures is similar to the cost category for plant and equipment maintenance and repair.

Freighting
Barge service is the dominant form of freight transportation in Southeast. Frozen and canned production by processing plants is carried in vans out of Southeast on barges and shipped to warehousing areas, principally in the Seattle region. Packaging materials and other production supplies come north the same way. Consequently, "Water Transport," sector 436 is given the largest share (85%) of freight expenditures in the model.

Sector 435, "Motor Freight Transport and Warehousing," is included to cover local movement of shipping vans and other local freight needs.

Processors ship a portion of fresh fish by air and receive a portion of perishable food purchases by air, along with parts and supplies that must be received quickly. Consequently, sector 437, "Air Transport," is part of the freight bridge that is applied. The distribution of expenditures across IMPLAN sectors for sector 435 and 437 are 5% and 10%, respectively.

Travel and Transportation of Employees/Management
As with most transportation to remote or long-term work locations in Alaska, seafood-processing employees arrive in and depart from the town in which their processing plant resides either by air or ferry. Some may drive to a ferry terminal in Prince Rupert, Haines, or Skagway and bring their vehicle to the processing location. Consequently, limited vehicle costs are incurred for fuel and maintenance, and more common expenditures for air and ferry travel are incurred. Travel agents are assumed to arrange a portion of the travel. The proportions for this category are based on the assumption that the majority of people travel by air.

Taxes, Licenses, and Fees
Expenditures to this cost category are separated into two parts. The first part represents processor payments to the Alaska Seafood Marketing Institute (ASMI) in the form of the ASMI tax seafood tax for marketing. For year 1994 the revenues from this tax in the Southeast region of Alaska are estimated to be approximately $730,237. This amount is set aside for part 1 of "Licenses, Fees, and Taxes" and is allocated to IMPLAN sector 512, "Government Enterprises." "Government Enterprises" is the sector that most closely matches the structure and function of ASMI. The remaining $6.57 million represent state and local government taxes including property taxes, fees, and other local government taxes. This government general fund account is represented by sector 523, "State and Local Government—Non-Education".

Federal Income Taxes
Taxes to the federal government can be represented by sectors 519 and 520, "Federal Government-Military" and "Federal Government-Non-Military". However, in IMPLAN, payments to the federal government have no impact on the economy of Southeast or Alaska.

Local Business and Property Taxes
Sectors 522 and 523, "State and Local Government Education" and "State and Local Government Non Education," come into play just as in the cost category for licenses, fees, and taxes. Economic impacts from expenditures to this cost category are calculated separately from all other sectors.

Other Expenses
Survey results indicate that hired labor for miscellaneous tasks accounts for approximately one-third of "other" expenditures. Beyond that there is no information about the items or services purchased, so personal communications with local businesses are relied upon to allocate these expenses over a representative mixed bag of sectors.

The list of sectors, besides labor, to which "other" expenditures are allocated, is heavily weighted toward manufactured goods and transportation, wholesale, and various retail sectors in the distribution chain. This represents the purchase of miscellaneous parts and supplies, and in the bridge, accounts for 47% of all "other" purchases. The remaining 20% is spread among various services that processing companies use, as well as research and development.

Hauling and Tendering
There are only two sectors in the IMPLAN model applicable to this activity. They are Sector 436, "Water Transportation," and sector 25, "Commercial Fishing." Tender vessels and operations are far more similar to commercial fishing vessels and methods than to the kind of ship or barge operations typical of sector 436. In fact, many fishermen in longline, crab, and to a

lesser extent, groundfish fisheries, tender during the salmon season. Consequently, Sector 25, "Commercial Fishing," is chosen to represent tender operations.

Direct Labor
Labor, whether direct or managerial, has no IMPLAN sector corollary. Labor expenditures are entered into the IMPLAN model directly in the "regional data" section, not through a sector association that links with other sectors. It is one of the most important impact components of any impact model and the second largest expenditure for seafood processors in the region.

Administrative and Managerial Salaries
There is no IMPLAN sector for this category, and these important labor costs are included in the regional data component of IMPLAN.

Fuel Oil, Propane
IMPLAN sector 210, "Petroleum Refining," comes closest to representing this cost category. Fuel oil and propane are bought at wholesale prices, so retail margins are not included in the translation tables. Margins for manufacturing (Sector 210), water transport (Sector 436), and wholesale trade (Sector 447) are included. Proportions are based on percentages found in the IMPLAN margin table for sector 210. As petroleum products are heavily taxed, additional taxes are reflected in Sector 510, "Federal Government-Non-Military". This sector produces no impacts in IMPLAN Alaska regions.

Electricity
Both private and public utilities exist in Southeast. Consequently, expenditures to this cost category are distributed between Sectors 511, "State and Local Electric Utilities," and 443, "Electric Services." Public utilities produce most of the electric power consumed by Southeast Alaska processing plants. This is reflected in the full allocation of electricity purchases to "State and Local Electric Utilities" for Southeast, as well as to all Alaska and Washington.

Water and Sewer
Water and sewer utilities in Southeast are, with minor exceptions, government-owned. Therefore, IMPLAN Sector 512, "Other State and Local Government Enterprises," is the appropriate representative of this cost.

Packaging Materials
This category, and the next category, Other Processing Supplies, include the bulk of the plastic paper products and canning materials utilized in packing the fishery production of the region. Purchases of basic packaging materials for both fresh-frozen and canned products are reported under both sections; a large component of total purchases are allocated into cardboard boxes, plastic bags, and metal cans that make up the bulk of packaging materials for the Alaska seafood industry. These are represented by Sectors 142, "Wood Pallets and Skids;" 164, "Paperboard Products;" 165 "Paper Coated and Laminated Packaging;" and 273 "Metal Cans" under this Packaging Materials heading. The apportioning of material for canning under this heading, and plastic products under the Other Processing Supplies heading is made based upon the general distribution production between fresh-frozen product, and canned product. The processing survey results indicate that there is a small amount of total packaging materials purchased in Alaska or Southeast Alaska, and anecdotal information suggests that there is no actual manufacturing of packaging materials produced in the state.

For packaging material purchases in Southeast Alaska and Alaska, there is no margining of these manufactured products because, for the most part, processors buy packaging materials directly from the manufacturer. Transportation expenses to bring packaging materials north are included in the cost category, "Freighting."

Other Processing Supplies
As noted under Packaging Materials, the bulk of this section is dedicated to the plastic products purchased to package fresh-frozen fishery products. The IMPLAN sector 220 "Miscellaneous Plastics Products" applies appropriately to this category of purchases. Other food processing supplies that may commonly be used are preservatives for canned salmon, glazing materials for frozen products, and brine mixes for sujiko and ikura production. Sector 449, "General Merchandise" was used as a surrogate for these items. Transportation and sales margins Sectors 447 and 449 are applied to this sector because processors often do not buy plastic packing materials directly from the manufacturer.

Custom Supplies Manufactured Locally
It is not surprising that only a very small amount of supplies identified in the seafood processing survey were manufactured locally. Sector 330, "Food Products Machinery" is used as a surrogate for all types of locally-produced parts and supplies.

Custom Processing
Processing plants operating at full capacity may have more fish arriving than can be processed in time to preserve seafood quality. These plants may arrange with nearby plants that are not at full capacity to process fish for them. The requested processing may be canned, frozen, or fresh. Sectors 97, "Canned and Cured Seafoods," and 98, "Prepared Fresh or Frozen Fish or Seafood," are used to represent these additional purchases.

Interest Payments on Capital Purchases
Sector 456, "Banking," and Sector 457, "Credit Agencies," are the only lending industries in IMPLAN. Sector 456 is selected as the surrogate for all interest payments on capital purchases.

Rent or Lease of Site and/or Processing Plant
Sector 462, "Real Estate," is the only IMPLAN industry that relates to real estate transactions. Consequently, all real estate rent or lease expenditures are tied to this sector.

Rent or Lease of Equipment
This category covers leasing and renting of seafood processing equipment and other support equipment. Sector 473, "Equipment Rental and Leasing," is a direct match to this cost category.

Purchase of Equipment
"Packaging Machinery," sector 335, is selected as the surrogate equipment industry for this cost category. The equipment in this category would typically have been purchased directly from the manufacturer and that freight charges are included in "Freighting."

Commercial and Non-Commercial Fish
This sector simply incorporates the revised Sector 25, "Commercial fishing".

Corporate Income before Taxes

There is no IMPLAN sector associated with this category. Corporate income is entered into the IMPLAN model in the same manner as labor and has no sector designation. For the purposes of this study, corporate income does not contribute to the total income or add to indirect and induced income impacts in IMPLAN.

Table C1. Seafood Processing Expenditures in Southeast Alaska for 1994 allocated into IMPLAN sectors.

Processing Operations Fresh-Frozen and Canned		Proportion	Total Expend.	Southeast	All Alaska	Washington	Other
Raw Product Cost							
Implan Code	Title						
25	Commercial Fishing	1.00	$223,156,912	$223,156,912			
	Total	1.00	$223,156,912	$223,156,912	$0	$0	$0
Advertising							
Implan Code	Title						
469	Advertising	1.00	$86,351	$42,423	$308	$27,049	$16,571
	Total	1.00	$86,351	$42,423	$308	$27,049	$16,571
Legal/Accounting Services							
Implan Code	Title						
494	Legal	0.35	$114,735	$47,345	$568	$43,754	$22,394
507	Accounting	0.65	$213,080	$87,926	$1,055	$81,257	$41,589
	Total	1.00	$327,815	$135,271	$1,624	$125,011	$63,983
Other Professional and Business Services and Trade Associations							
Implan Code	Title						
470	Other Business Services	0.60	$288,142	$72,336	$3,517	$211,609	$167
474	Personnel Services	0.10	$48,024	$12,056	$586	$35,268	$28
506	Engineering/Architectural Svcs.	0.10	$48,024	$12,056	$586	$35,268	$28
508	Management/Consulting Svcs.	0.10	$48,024	$12,056	$586	$35,268	$28
503	Business Associations	0.10	$48,024	$12,056	$586	$35,268	$28
	Total	1.00	$480,237	$120,559	$5,861	$352,681	$279
Insurance							
Implan Code	Title						
459	Insurance	1.00	$2,301,547	$2,593	$0	$2,296,360	$2,593
	Total	1.00	$2,301,547	$2,593	$0	$2,296,360	$2,593
Telephone							
Implan Code	Title						
441	Communications Except Radio/TV	1.00	$530,285	$405,475	$57,786	$62,577	$4,448
	Total	1.00	$530,285	$405,475	$57,786	$62,577	$4,448
Plant and Equipment Maintenance							
Implan Code	Title						
56	Maintenance/Repair, Other Fac.	0.60	$5,735,486	$3,136,564	$128,441	$2,100,915	$372,753
306	Fabricated Metal Products	0.10	$955,914	$522,761	$21,407	$350,152	$62,125
472	Services to Buildings	0.30	$2,867,743	$1,568,282	$64,221	$1,050,457	$186,376
	Total	1.00	$9,559,143	$5,227,607	$214,069	$3,501,524	$621,254
Construction Contracts and Upgrading of Facilities							
Implan Code	Title						
49	New Industrial/Comm. Bldg.	1.00	$4,563,841	$1,567,993	$36,850	$2,382,902	$616,626
	Total	1.00	$4,563,841	$1,567,993	$36,850	$2,382,902	$616,626

Table C1. continued

Processing Operations Fresh-Frozen and Canned		Proportion	Total Expend.	Southeast	All Alaska	Washington	Other
Maintenance of Bunkhouse and Mess Hall or Food Service							
Implan Code	Title						
56	Maintenance and Repair-Buildings	0.40	$823,164	$359,901	$0	$424,587	$303
472	Services to Buildings	0.40	$823,164	$359,901	$0	$424,587	$303
482	Misc. Repair Shops	0.20	$411,582	$179,951	$0	$212,293	$151
	Total	1.00	$2,057,910	$899,754	$0	$1,061,467	$757
Freighting							
Implan Code	Title						
435	Motor Frt. Transport and Warehousing	0.05	$592,487	$278,000	$4,567	$304,889	$5,031
436	Water Transport	0.85	$10,072,277	$4,725,998	$77,636	$5,183,113	$85,531
437	Air Transport	0.10	$1,184,974	$556,000	$9,134	$609,778	$10,063
	Total	1.00	$11,849,738	$5,559,997	$91,336	$6,097,779	$100,625
Travel and Transportation of Employees/Management							
Implan Code	Title						
437	Air transport	0.80	$950,955	$375,163	$263,128	$272,183	$9,043
436	Water Transport	0.20	$237,739	$93,791	$65,782	$68,046	$2,261
Taxes, Licenses, and Fees							
Implan Code	Title						
512	Government Enterprises (ASMI)	0.10	$730,237	$598,102	$73,369	$4,578	$51,553
523	State/Local Government Non-Ed.	0.90	$6,572,137	$5,382,919	$660,325	$41,205	$463,973
	Total	1.00	$7,302,374	$5,981,022	$733,695	$45,783	$515,525
Federal Income Taxes							
Implan Code	Title						
519	Federal Government - Military	0.15	$50,842	$0	$0	$0	$50,842
520	Federal Government - Non-Military	0.85	$288,105	$0	$0	$0	$288,105
	Total	1.00	$338,947	$0	$0	$0	$338,947
Local Business and Property Taxes							
Implan Code	Title						
522	State/Local Gov. Education	0.10	$51,619	$49,205	$1,042	$65	$0
523	State/Local Gov. Non Ed.	0.90	$464,573	$442,843	$9,377	$584	$0
	Total	1.00	$516,192	$492,048	$10,419	$648	$0
Other Expenses							
Implan Code	Title						
278	Hardware	0.25	$2,619,469	$1,339,804	$34,811	$900,740	$363,862
436	Water Transport	0.02	$209,558	$107,184	$2,785	$72,059	$29,109
446	Sanitary Services	0.01	$104,779	$53,592	$1,392	$36,030	$14,554
447	Wholesale Trade	0.06	$628,673	$321,553	$8,355	$216,178	$87,327
449	General Merchandise	0.08	$838,230	$428,737	$11,140	$288,237	$116,436
450	Retail Food	0.02	$209,558	$107,184	$2,785	$72,059	$29,109
455	Miscellaneous Retail	0.05	$523,894	$267,961	$6,962	$180,148	$72,772
463	Hotels and Lodging	0.03	$314,336	$160,777	$4,177	$108,089	$43,663
470	Other Business Services	0.05	$523,894	$267,961	$6,962	$180,148	$72,772
476	Security	0.02	$209,558	$107,184	$2,785	$72,059	$29,109
482	Miscellaneous Repair	0.04	$419,115	$214,369	$5,570	$144,118	$58,218
509	Research and Development	0.03	$314,336	$160,777	$4,177	$108,089	$43,663
513	Post Office	0.01	$104,779	$53,592	$1,392	$36,030	$14,554
	Labor	0.33	$3,457,699	$1,768,542	$45,951	$1,188,977	$480,298
	Total	1.00	$10,477,876	$5,359,217	$139,246	$3,602,959	$1,455,450

Table C1. continued

Processing Operations

Fresh-Frozen and Canned		Proportion	Total Expend.	Southeast	All Alaska	Washington	Other
Hauling and Tendering							
Implan Code	Title						
25	Commercial Fishing (Surrogate)	1.00	$22,663,258	$10,202,868	$2,254,922	$9,085,495	$1,107,524
	Total	1.00	$22,663,258	$10,202,868	$2,254,922	$9,085,495	$1,107,524
Direct Labor							
Implan Code	Title						
	Processing Wages	1.00	$27,857,246	$3,849,413	$699,085	$5,592,335	$17,716,414
	Total	1.00	$27,857,246	$3,849,413	$699,085	$5,592,335	$17,716,414
Administrative and Managerial Salaries							
Implan Code	Title						
	Processing Wages	1.00	$6,794,117	$4,856,897	$0	$1,937,219	$0
	Total	1.00	$6,794,117	$4,856,897	$0	$1,937,219	$0
Fuel Oil, Propane							
Implan Code	Title						
210	Petroleum Refining	0.65	$1,255,214	$833,790	$4,214	$417,209	$0
436	Water Transport	0.08	$154,488	$102,620	$519	$51,349	$0
447	Wholesale Trade	0.17	$328,287	$218,068	$1,102	$109,116	$0
520	Federal Gov./Non-Military	0.10	$193,110	$128,275	$648	$64,186	$0
	Total	1.00	$1,931,099	$1,282,755	$6,484	$641,861	$0
Electricity							
Implan Code	Title						
511	State/Local Electric Utilities	1.00	$2,522,578	$2,522,578	$0	$0	$0
	Total	1.00	$2,522,578	$2,522,578	$0	$0	$0
Water and Sewer							
Implan Code	Title						
512	State/Local Gov. Enterprise	1.00	$426,270	$426,270	$0	$0	$0
	Total	1.00	$426,270	$426,270	$0	$0	$0
Packaging Materials							
Implan Code	Title						
142	Wood Pallets and Skids	0.03	$798,758	$8,120	$7,007	$737,356	$46,275
164	Paperboard Products	0.30	$7,987,578	$81,201	$70,069	$7,373,562	$462,745
165	Paper Coated/Laminated Pkg.	0.27	$7,188,820	$73,081	$63,062	$6,636,206	$416,471
273	Metal Cans	0.40	$10,650,103	$108,268	$93,426	$9,831,416	$616,994
	Total	1.00	$26,625,258	$270,669	$233,564	$24,578,540	$1,542,485
	(based upon pounds of canned vs. fresh and frozen)						
Other Processing Supplies							
Implan Code	Title						
220	Miscellaneous Plastics Products	0.54	$1,285,249	$151,587	$16,972	$1,099,718	$16,972
436	Water Transport	0.05	$119,005	$14,036	$1,572	$101,826	$1,572
447	Wholesale Trade	0.08	$190,407	$22,457	$2,514	$162,921	$2,514
449	General Merchandise	0.33	$785,430	$92,637	$10,372	$672,050	$10,372
	Total	1.00	$2,380,092	$280,717	$31,430	$2,036,515	$31,430
Custom Supplies Manufactured Locally							
Implan Code	Title						
330	Food Products Machinery	1.00	$37,605	$37,605	$0	$0	$0
	Total	1.00	$37,605	$37,605	$0	$0	$0

Table C1. continued

Processing Operations Fresh-Frozen and Canned		Proportion	Total Expend.	Southeast	All Alaska	Washington	Other
Custom Processing							
Implan Code	Title						
97	Canned/Cured Foods	0.35	$2,245,976	$1,116,839	$275,913	$637,702	$119,451
98	Fresh or Frozen Fish or Seafood	0.65	$4,171,098	$2,074,129	$512,410	$1,184,303	$221,838
	Total	1.00	$6,417,073	$3,190,968	$788,323	$1,822,004	$341,290
Interest Payments on Capital Purchases							
Implan Code	Title						
456	Banking	1.00	$3,196,616	$320,504	$568,214	$1,800,660	$507,237
	Total	1.00	$3,196,616	$320,504	$568,214	$1,800,660	$507,237
Rent or Lease of Site and/or Processing Plant							
Implan Code	Title						
462	Real Estate	1.00	$519,445	$519,445	$0	$0	$0
	Total	1.00	$519,445	$519,445	$0	$0	$0
Rent or Lease of Equipment							
Implan Code	Title						
473	Rent or Lease Equipment	1.00	$481,968	$37,683	$0	$387,803	$3,086
	Total	1.00	$481,968	$37,683	$0	$387,803	$3,086
Purchase of Equipment							
Implan Code	Title						
335	Packaging Machinery	1.00	$2,417,456	$350,100	$27,784	$1,596,776	$442,796
	Total	1.00	$2,417,456	$350,100	$27,784	$1,596,776	$442,796
	(Surrogate for all equipment, RPC=.045)						
Commercial and Non-Commercial Fish							
Implan Code	Title						
25	Commercial Fishing	1.00	$0	$0	$0	$0	$0
	Total	1.00	$0	$0	$0	$0	$0
Corporate Income Before Taxes							
Implan Code	Title						
	Net Income	1.00	$16,656,328				
	Total	1.00	$16,656,328	$0	$0	$0	$0
			$395,664,270				

APPENDIX D. PROCEDURE FOR ESTIMATING INCOME BY PLACE OF RESIDENCY

IMPLAN estimates induced income impacts assuming non-residents will spend their income at their work location. Although this convention works well in some regions of the country, it can be misleading in locations where many workers reside in a different region than their work location. Thus, the initial purchase of inputs related to disposable income, such as purchase of a TV set, or a new car, are more likely to occur close to the place of residence. As with many other basic industries in Alaska, a certain number of non-resident workers participate in the seafood industry in Southeast Alaska. The earnings of resident and nonresident permit holders is estimated in Table 3 from CFEC gross earnings data. It is also estimated for resident seafood processing workers from survey data. The resident earnings proportion is used to estimate the induced impacts of fishing and processing income that should be attributed to Washington rather than Southeast Alaska or Alaska. In IMPLAN, the induced impacts of the direct income received by fishermen or processing worker is combined with the induced impacts from their indirect spending. The models are linear, and these sources of induced impacts are computed in the same manner, so it is possible to estimate the induced impacts without the nonresident contribution. This is accomplished with the following equation (D. Olsen, MIG Inc., Stillwater, Minnesota, Personal Communication, 1997).

$$I' = I(CD + U / D + U),$$

where

I' = adjusted induced impacts
I = initial induced impact
C = coefficient of resident income (if 80% of earnings are by residents C=0.8)
D = direct income
U = indirect income.

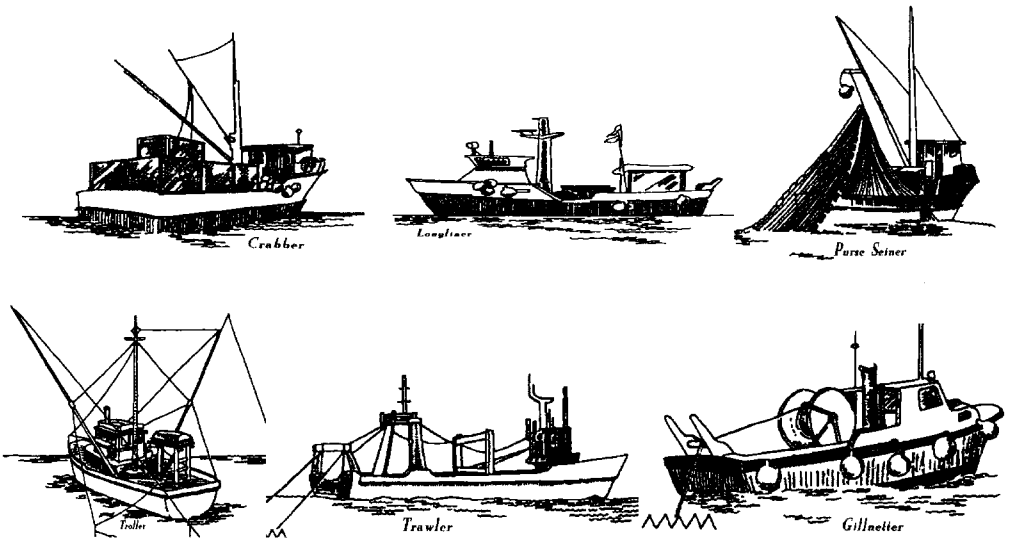
APPENDIX E. SURVEY INSTRUMENTS

Harvesting Survey Instrument

Appendix E1.
In 1994 a mail-out survey was sent to commercial fishermen who made landings in the Southeast Alaska commercial fisheries in 1994. The purpose of the survey was to gather basic information not available from other sources on the vessel operations and crew, and purchase patterns (resulting from variable and fixed costs) of the commercial fishery operations in SE Alaska.

CONFIDENTIAL

1994 Southeast Alaska Commercial Fishing Industry Survey: Vessel and Permit Income, Purchases, and Labor



United Fishermen of Alaska

Department of Fish and Game

U.S. Forest Service

Alaska Seafood Marketing Institute

Endorsed by:

Jim Bacon	**Dale A. Kelley**	**Geoffry Bullock**	**Liz Cabrera**
Board of Directors	**Executive Director**	**Executive Director**	**Executive Director**

You have received this survey because our records show that you are either 1) the owner of the vessel identified in the block at the right or 2) the owner of a permit or quota fished with this vessel in 1994. Unless otherwise noted, the questions in this survey refer to the operation of this specific vessel only. You may want to refer to your 1994 Federal Income Taxes to fill out the survey.

Please include your phone number on the space provided on this label. Please include your address if it is different than the name and address on the label.

EXAMPLE
Vessel No: 58361 John Q. Smith
owner
Permit No: S3412345 Sam G. Johnson
Permit No: G0112345 John Q. Smith owner
Permit No: S3412345 Sam G. Johnson
Permit No: A3412345 Sam G. Johnson
Permit No: S3412345 Sam G. Johnson
Permit No: H412345 Sam G. Johnson

John Q Smith EXAMPLE
228 Evergreen Dr.
Juneau, AK 99801
( )_____ contact phone number

_____ Name
_____ Mailing Address
_____ Mailing Address
_____ City, State, Zip

1. Please indicate which of the following best describes your situation *(check one number below):*

☐ 1a. I own this vessel. However, I did not fish any permits with it in 1994.
☐ 1b. I own this vessel and I fished one or more permits with it in 1994.
☐ 1c. I do not own this vessel. However, I did fish one or more permits with this vessel in 1994.
☐ 1d. I do not own this vessel and I did not fish with it in 1994.

Note: If you are not the vessel owner respond to questions 2 - 5 with regard to your investment in fishing gear, nets, pots, etc.

2/3. What is the replacement cost and current market value of your vessel, including, fishing gear (power or drum roller, winch(es), reels, etc.), nets (float lines, lead lines, and webbing), pots, skiff, electronic equipment, etc.?

2. Replacement Cost

$_____

3. Market value from current marine survey or best estimate

$_____

4. For the entire year of 1994, how much did you pay as principal and interest for loans directly related to the operation of this vessel (excluding permits which are covered in question #14) including the vessel, fishing gear, nets, pots, skiff, electronic equipment, storage, land, vehicles, and tangible assets, etc.?

$_____

5. For the 1994 tax year, how much total depreciation did you claim on your vessel, fishing gear, nets, pots, skiff and electronic equipment. Total business depreciation can be identified from Schedule C form 1040, Part II, line 13.

$_____

6. Some expenses associated with commercial fishing cannot be tied directly to an individual fishery but are supportive of all fishing activity during the course of the year. Place an "X" in the box marked "YES" below if you had expenditures in 1994 for any of the items listed, and tell us how much you spent during the entire year. In order to accurately model the economic effects of your expenditures we also need to know where they occurred. So, for each category, please also tell us the percent of your total expenditure that was made in Southeast Alaska, elsewhere in Alaska, Washington State or elsewhere in the U.S. or foreign countries. Put an "X" in the box marked "YES" if you had expenses in a particular category. If it is difficult to extract the percents from your records, please provide your best informed estimate.

Item	**Yes**	**Amount**	SE AK %	Other AK %	WA State %	Other %
6. Example Item	*X*	***$ 4,000***	***80 %***	***10 %***	***10 %***	***0 %***
6a. Expenditure related to general maintenance and repair of vessel and engine, you do yourself including haulout, painting, fiberglass repair, caulking, other misc. engine repair, etc.		$				
6b. All shipyard expenses such as haulout, painting, engine repair, deck layout, bulwarks, pilot house, deck house, etc.		$				
6c. Expenditures (not included in 6a or 6b) for contracted services such as engine repair, general maintenance and repair of transmission, electronics, refrigeration, plumbing, heating and/or other primary systems.		$				
6d. Vessel storage and moorage fees.		$				
6e. Net and gear storage fees.		$				
6f. Insurance premiums.		$				
6g. Legal, accounting, and professional fees.		$				
6h. Association dues.		$				
6i. Vessel lease or share payment (if not vessel owner).		$				
6j. Vessel license fees.		$				
6k. Purchase and repair of safety equipment (survival suits, EPIRB, life jackets, signaling devices, fire extinguishers, inflatable rafts, etc.).		$				
6l. Misc. supplies (clothing, gloves, knives, rope, tools, etc.).		$				
6m. Federal and state taxes on income received from use of this vessel.		$				
6n. Other expenses on this vessel related to commercial fishing.		$				

7. Please report your gross earnings from the use of this vessel in 1994, including earnings from Alaskan and non-Alaskan fisheries, leasing or renting this vessel to others, and non-commercial fishing operations (e.g. guided sport fishing, freighting, non-fishing tours, charter operations).

$ _____

8. Please tell us the percent of the gross earnings reported above that you earned from each of the sources listed below (percentages should add to 100%).

	%	8a. Southeast fishing permits listed on Page 3.
	%	8b. Other Alaskan fisheries.
	%	8c. Non-Alaskan fisheries.
	%	8d. Leasing or renting this vessel to others.
	%	8e. Other income (guided sport fishing etc.).
100	**%**	Total Percent.

9/10. Please indicate which of the following permits you owned and fished with this vessel in 1994 by checking the "Yes" box, and provide the crew data requested.

Column Number	Fishery Code	1994 SOUTHEAST ALASKA PERMITS	9a. Yes	9b. What was your average crew size, while fishing this permit? Include skipper & permit holder.	
1	A11B	ABALONE, DIVING GEAR, STATEWIDE			
2	K59A	BROWN KING, TANNER CRAB, POT GEAR, SOUTHEASTERN			
3	R23B	CLAMS, MECHANICAL DIGGER, STATEWIDE			
4	Y05A	DEMERSAL SHELF ROCKFISH, HAND TROLL/HAND LINE, SOUTHEAST			
5	Y61A	DEMERSAL SHELF ROCKFISH, LONGLINE, 5 TONS OR OVER,			
6	Y06A	DEMERSAL SHELF ROCKFISH, LONGLINE, UNDER 5 TONS, SOUTHEAST			
7	Y26A	DEMERSAL SHELF ROCKFISH, MECHANICAL JIG, SOUTHEAST			
8	D91D	DUNGENESS CRAB, POT GEAR, OVER 50 FT, YAKUTAT			
9	D91A	DUNGENESS CRAB, POT GEAR, OVER 50 FT, YAKUTAT			
10	D09A	DUNGENESS CRAB, POT GEAR, TO 50 FT, SOUTHEASTERN			
11	D09D	DUNGENESS CRAB, POT GEAR, TO 50 FT, YAKUTAT			
12	B05B	HALIBUT, HAND TROLL, STATEWIDE			
13	B61B	HALIBUT, LONG LINE, 5 TONS OR OVER, STATEWIDE			
14	B06B	HALIBUT, LONG LINE, UNDER 5 TONS, STATEWIDE			
15	L21A	HERRING SPAWN, POUND, SOUTHEAST			
16	H21A	HERRING, POUND, SOUTHEASTERN			
17	H01A	HERRING, PURSE SEINE, SOUTHEASTERN			
18	K69A	KING AND TANNER CRAB, POT GEAR, SOUTHEAST			
19	K91D	KING CRAB, POT GEAR, OVER 50 FT, YAKUTAT			
20	K09D	KING CRAB, POT GEAR, TO 50 FT, YAKUTAT			
21	R18B	LITTLE NECK CLAMS, SHOVEL, STATEWIDE			
22	M05B	MISC SALTWATER FINFISH, HAND TROLL, STATEWIDE			
23	M26B	MISC SALTWATER FINFISH, JIG, STATEWIDE			
24	M61B	MISC SALTWATER FINFISH, LONG LINE, 5 TONS OR OVER, STATEWIDE			
25	M06B	MISC SALTWATER FINFISH, LONG LINE, UNDER 5 TONS, STATEWIDE			
26	M07B	MISC SALTWATER FINFISH, OTTER TRAWL, STATEWIDE			
27	M05B	MISC TROLL, ALL SPECIES			
28	K29A	RED/BLUE AND BROWN KING CRAB, POT GEAR, SOUTHEASTERN			
29	K19A	RED/BLUE KING CRAB, POT GEAR, SOUTHEASTERN			
30	K49A	RED/BLUE KING/TANNER CRAB, POT GEAR, SOUTHEASTERN			
31	G34A	ROE HERRING, GILL NET, SOUTHEASTERN			
32	G01A	ROE HERRING, PURSE SEINE, SOUTHEASTERN			
33	C61C	SABLEFISH, LONG LINE, 5 TONS OR OVER, SOUTHERN SOUTHEAST			
34	C61B	SABLEFISH, LONG LINE, 5 TONS OR OVER, STATEWIDE			
35	C06B	SABLEFISH, LONG LINE, UNDER 5 TONS, STATEWIDE			
36	C61A	SABLEFISH, LONGLINE, NORTHERN SOUTHEAST			
37	S03A	SALMON, DRIFT GILL NET, SOUTHEASTERN			
38	S05B	SALMON, HAND TROLL, STATEWIDE			
39	S15B	SALMON, POWER GURDY TROLL, STATEWIDE			
40	S01A	SALMON, PURSE SEINE, SOUTHEASTERN			
41	S04D	SALMON, SET GILLNET			
42	W22B	SCALLOPS, DREDGE, STATEWIDE			
43	Q11B	SEA CUCUMBER, DIVING/HANDPICKING, STATEWIDE			
44	P17B	SHRIMP, BEAM TRAWL, STATEWIDE			
45	P07B	SHRIMP, OTTER TRAWL, STATEWIDE			
46	P91B	SHRIMP, POT GEAR, OVER 50 FT, STATEWIDE			
47	P09B	SHRIMP, POT GEAR, TO 50 FT, STATEWIDE			
48	T91D	TANNER CRAB, POT GEAR, OVER 50 FT, YAKUTAT			
49	T19A	TANNER CRAB, POT GEAR, SOUTHEASTERN			
50	T09D	TANNER CRAB, POT GEAR, TO 50 FT, YAKUTAT			
51	T10A	TANNER CRAB, RING NETS, SOUTHEASTERN			

10a. Please tell us the average number of persons employed each month (including yourself) either fishing this permit type and/or in pre- and post-season activity related to this fishery.														10b. Please tell us the number of crew reported in question #9b who were residents of the locations listed below.			
Col. No.	**Fishery Code**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**SE AK**	**Other AK**	**WA State**	**Other U.S. & Foreign**
1	A11B																
2	K59A																
3	R23B																
4	Y05A																
5	Y61A																
6	Y06A																
7	Y26A																
8	D91D																
9	D91A																
10	D09A																
11	D09D																
12	B05B																
13	B61B																
14	B06B																
15	L21A																
16	H21A																
17	H01A																
18	K69A																
19	K91D																
20	K09D																
21	R18B																
22	M05B																
23	M26B																
24	M61B																
25	M06B																
26	M07B																
27	M05B																
28	K29A																
29	K19A																
30	K49A																
31	G34A																
32	G01A																
33	C61C																
34	C61B																
35	C06B																
36	C61A																
37	S03A																
38	S05B																
39	S15B																
40	S01A																
41	S04D																
42	W22B																
43	Q11B																
44	P17B																
45	P07B																
46	P91B																
47	P09B																
48	T91D																
49	T19A																
50	T09D																
51	T10A																

11. During 1994, did you use this vessel to earn income from the following fisheries? → For each fishery marked "yes", please enter income and expense breakdowns for the items listed below:	***EXAMPLE FISHERY*** **Yes ☐ No ☐** ↓	**a) Salmon Seine** **Yes ☐ No ☐** ↓	**b) Salmon Troll** **Yes ☐ No ☐** ↓
12. What was your total income from gross fish sales?	**$100,000**	**$_____**	**$_____**

13. Did you deduct any of the following expenses from total fish sales before determining crew shares?															
13a. Food	**yes ☐ no ☐**					**yes ☐ no ☐**					**yes ☐ no ☐**				
13b. Fuel, oil and grease	**yes ☐ no ☐**					**yes ☐ no ☐**					**yes ☐ no ☐**				
13c. Bait, ice, and salt	**yes ☐ no ☐**					**yes ☐ no ☐**					**yes ☐ no ☐**				
13d. Other (specify) [3]	**yes ☐ no ☐**					**yes ☐ no ☐**					**yes ☐ no ☐**				
14. For each category below, tell us how much you spent in this particular fishery while using this vessel. In the boxes at the right estimate the percent spent in each category by region.		% Purchased from Southeast AK	% Purchased from other Alaska	% Purchased from Washington State	% Purchase from other U.S./Foreign		% Purchased from Southeast AK	% Purchased from other Alaska	% Purchased from Washington State	% Purchase from other U.S./Foreign		% Purchased from Southeast AK	% Purchased from other Alaska	% Purchased from Washington State	% Purchase from other U.S./Foreign
14a. Food	**$ 5,000**	90		10		**$_____**					**$_____**				
14b. Fuel, oil and grease	**$15,000**	90	10			**$_____**					**$_____**				
14c. Bait, ice, and salt	**$ 300**	50	50			**$_____**					**$_____**				
14d. Purchase of nets and fishing gear	**$10,000**	90	10			**$_____**					**$_____**				
14e. Travel and transportation costs for skipper/crew	**$ 1,000**	30		70		**$_____**					**$_____**				
14f. Crew share (exclude skipper and owner)	**$25,000**	**N/A**				**$_____**	**N/A**				**$_____**	**N/A**			
14g. Skipper share (if not vessel owner)	**$ 0**					**$_____**					**$_____**				
14h. Boat share (if not vessel owner)	**$ 0**	**N/A**				**$_____**	**N/A**				**$_____**	**N/A**			
14i. Principal and interest on permit	**$10,000**	90	10			**$_____**					**$_____**				
14j. Other expense Specify _____	**$ 3,000**	95	5			**$_____**					**$_____**				
14k. Other expense Specify_____	**$ 0**					**$_____**					**$_____**				

[3] Other expenses include salmon enhancement tax, and ASMI tax.

c) Salmon Gillnet Yes ☐ No ☐				
$__________				
yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐	% Purchased from Southeast AK	% Purchased from other Alaska	% Purchased from Washington State	% Purchase from other U.S./Foreign
$__________				
$__________				
$__________				
$__________				
$__________				
$__________	N/A			
$__________				
$__________	N/A			
$__________				
$__________				
$__________				

d) Sablefish Longline Yes ☐ No ☐				
$__________				
yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐	% Purchased from Southeast AK	% Purchased from other Alaska	% Purchased from Washington State	% Purchase from other U.S./Foreign
$__________				
$__________				
$__________				
$__________				
$__________				
$__________	N/A			
$__________				
$__________	N/A			
$__________				
$__________				
$__________				

e) Halibut Longline Under 5 Tons Yes ☐ No ☐				
$__________				
yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐	% Purchased from Southeast AK	% Purchased from other Alaska	% Purchased from Washington State	% Purchase from other U.S./Foreign
$__________				
$__________				
$__________				
$__________				
$__________				
$__________	N/A			
$__________				
$__________	N/A			
$__________				
$__________				
$__________				

f) Halibut Longline 5 Tons or Over Yes ☐ No ☐				
$__________				
yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐	% Purchased from Southeast AK	% Purchased from other Alaska	% Purchased from Washington State	% Purchase from other U.S./Foreign
$__________				
$__________				
$__________				
$__________				
$__________				
$__________	N/A			
$__________				
$__________	N/A			
$__________				
$__________				
$__________				

11. During 1994, did you use this vessel to earn income from the following fisheries? → For each fishery marked "yes", please enter income and expense breakdowns for the items listed below:	**g) King, Tanner, Brown, Blue, and Red Crab Pot Gear** [4] **Yes ☐ No ☐** ↓					**h) Dungeness Crab Pot Gear** [5] **Yes ☐ No ☐** ↓					**i) Roe Herring Seine Yes ☐ No ☐** ↓				
12. What was your total income from gross fish sales?	**$**_____					**$**_____					**$**_____				
13. Did you deduct any of the following expenses from total fish sales before determining crew shares?		% Purchased from Southeast AK	% Purchased from other Alaska	% Purchased from Washington State	% Purchase from other U.S./Foreign		% Purchased from Southeast AK	% Purchased from other Alaska	% Purchased from Washington State	% Purchase from other U.S./Foreign		% Purchased from Southeast AK	% Purchased from other Alaska	% Purchased from Washington State	% Purchase from other U.S./Foreign
13a. Food	**yes ☐ no ☐**					**yes ☐ no ☐**					**yes ☐ no ☐**				
13b. Fuel, oil and grease	**yes ☐ no ☐**					**yes ☐ no ☐**					**yes ☐ no ☐**				
13c. Bait, ice, and salt	**yes ☐ no ☐**					**yes ☐ no ☐**					**yes ☐ no ☐**				
13d. Other (specify) [6]	**yes ☐ no ☐**					**yes ☐ no ☐**					**yes ☐ no ☐**				
14. For each category below, tell us how much you spent in this particular fishery while using this vessel. In the boxes at the right estimate the percent spent in each category by region.															
14a. Food	**$**_____					**$**_____					**$**_____				
14b. Fuel, oil and grease	**$**_____					**$**_____					**$**_____				
14c. Bait, ice, and salt	**$**_____					**$**_____					**$**_____				
14d. Purchase of nets and fishing gear	**$**_____					**$**_____					**$**_____				
14e. Travel and transportation costs for skipper/crew	**$**_____					**$**_____					**$**_____				
14f. Crew share. Exclude skipper and owner	**$**_____	**N/A**				**$**_____	**N/A**				**$**_____	**N/A**			
14g. Skipper share. Exclude crew and owner	**$**_____					**$**_____					**$**_____				
14h. Principal and interest on permit	**$**_____					**$**_____					**$**_____				
14i. Other expense Specify_____	**$**_____					**$**_____					**$**_____				
14j. Other expense Specify_____	**$**_____					**$**_____					**$**_____				
14k. Other expense Specify_____	**$**_____					**$**_____					**$**_____				

[4] Crab fisheries in this group include K69A, K49A, T91A,T09D, K29A, K59A, K09D, K91D
[5] Dungeness fisheries in this group include: DO9A, D91D, DO9D, D91A
[6] Other expenses include salmon enhancement tax and ASMI tax.

j) Roe Herring Gillnet Yes ☐ No ☐					k) Miscellaneous Invertebrate Dive Fisheries [7] Yes ☐ No ☐					l) Other Miscellaneous Fisheries [8] Yes ☐ No ☐					m) Other Miscellaneous Fisheries Yes ☐ No ☐				
$__________					$__________					$__________					$__________				
yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐	% Purchased from Southeast AK	% Purchased from other Alaska	% Purchased from Washington State	% Purchase from other U.S./Foreign	yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐	% Purchased from Southeast AK	% Purchased from other Alaska	% Purchased from Washington State	% Purchase from other U.S./Foreign	yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐	% Purchased from Southeast AK	% Purchased from other Alaska	% Purchased from Washington State	% Purchase from other U.S./Foreign	yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐ yes ☐ no ☐	% Purchased from Southeast AK	% Purchased from other Alaska	% Purchased from Washington State	% Purchase from other U.S./Foreign
$__________					$__________					$__________					$__________				
$__________					$__________					$__________					$__________				
$__________					$__________					$__________					$__________				
$__________					$__________					$__________					$__________				
$__________					$__________					$__________					$__________				
$__________	N/A				$__________	N/A				$__________	N/A				$__________	N/A			
$__________					$__________					$__________					$__________				
$__________					$__________					$__________					$__________				
$__________					$__________					$__________					$__________				
$__________					$__________					$__________					$__________				
$__________					$__________					$__________					$__________				

[7] Miscellaneous invertebrate dive fisheries in this group include Q11B, A11B

[8] Miscellaneous other fisheries include: L21A, M26B, M61B, Y61A, B06B, Y26A, MO6B, Y06A, B05B, M05B, Y05A, MO5B, M07B, S01E, M17B, H21A, FO2B W22B, P09B, P91B, P10A, R18B, R23B, P07B.

Processing Survey Instruments

Appendix E2.
A second survey was sent to a census of the larger Alaska seafood producers who processed finfish and shellfish in Southeast Alaska in 1994. This survey covered 97 % of the seafood earnings in terms of pounds of production. The survey is stratified into major fisheries.

CONFIDENTIAL

1994 Southeast Alaska Processing Sector Survey:
Distribution of Employment, and Purchases by Region

Alaska Department of Fish & Game. Contact: Jeff Hartman (907) 465-6155

You have received this survey because the 1994 Commercial Operator's Annual Report shows that you operated one of Southeast Alaska's 25 largest processing plants in 1994. This survey may relate to some of the information in your 1994 taxes. Please indicate if there are any errors in our data regarding your plant address and phone number.

EXAMPLE
Processor Name
228 Evergreen Dr.
Juneau, AK 99801
( )_____ contact phone number

_____ Name
_____ Mailing Address
_____ Mailing Address
_____ City, State, Zip

This survey is intended to filled out by processors or through phone or personal interview by an ADF&G researcher. If you have not been contacted by one of the researchers working on this survey, please feel free to contact Jeff Hartman by phone at (907) 465-6155. We will be happy to return your call.

1. Please indicate which of the following best describes your situation *(check one number below):*

☐ 1a. Our firm owned one or more vessels that were fished in Southeast waters in 1994.
☐ 1b. Our firm owned no vessels that were fished in Southeast waters 1994.

2. Please state the ADF&G number of each vessel you owned and which was fished 1994.

unit	Vessel ADF&G #
Example 1	63021
1	
2	
3	
4	
5	
6	
7	
8	
9	

MONTHLY EMPLOYMENT SECTION

3a. Please fill out the [Total Number of Employees] box with the average number of persons employed each month (including management staff) either involved in processing or management of processing activities. Estimate the approximate % of this employment that is allocated to processing the major fisheries listed in salmon, groundfish, etc. The employment data is only for 1994 and is intended to account for all sources of employment for this operation.

Row no.	Processing Employment for Major Fishery and Administrative Categories	*Example*	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1.	Average MONTHLY employment for plant (# of people)	*40*												
2.	% of average employment for SALMON	*50%*												
3.	% of average employment for processing CRAB	*10%*												
4.	% of average employment for HALIBUT/SABLEFISH	*20%*												
5.	% of average employment for HERRING (ALL)	*5%*												
6.	% of average employment for DIVE FISHERY SPECIES	*5%*												
7.	% of average employment for all other Miscellaneous INVERTEBRATE FISH SPECIES	*5%*												
8.	% of average employment for ALL OTHER Fish Processing not included in 1-7.	*0%*												
9.	% of average emp. for ADMINISTRATIVE & MANAGEMENT and OTHER	*5%*												
10.	% of Total employment for all Categories listed above.	*100 %*	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

NOTE: CRAB SPECIES INCLUDE: KING, TANNER, BROWN, BLUE, RED, AND DUNGENESS CRAB
Note: Herring are to include: All Seine and Gillnet caught processing, excluding herring pound product.
Note: Dive Fishery species include: Abalone, Geoduck and Sea Cucumbers.
NOTE: MISCELLANEOUS INVERTEBRATE AND FIN FISH SPECIES INCLUDE: SHRIMP,
Note: All other Fish Processing is to include: Rockfish, Lingcod Pacific Cod, Herring Pound and all other species

TOTAL EMPLOYMENT SECTION

3b. Please provide your best estimate the number of total employees who were residents of the locations listed below. Also, provide the percent of that total employment that provided labor for processing salmon, crab, herring, shellfish from dive fisheries, and administration and management. Other U.S. and Foreign covers all other national and international locations of residence. The employment data is only for 1994.

Row no.	Processing Employment for Major Fishery and Administrative Categories	*Example Total employment*	# Total Employment	Southeast Alaska Residents	# Other Alaska Regions (not SE)	# Washington State Residents	# Other U.S. & Foreign Residents.
1.	Average TOTAL employment for plant (# of people)	*398*					
2.	% of TOTAL employment for SALMON	*50%*					
3.	% of average employment for CRAB	*10%*					
4..	% of TOTAL employment for HALIBUT/SABLEFISH	*20%*					
5.	% of TOTAL employment for HERRING (ALL)	*5%*					
6.	% of TOTAL employment for DIVE FISHERIES	*5%*					
7.	% of average employment for all other Miscellaneous INVERTEBRATE FISH SPECIES	*5%*					
8.	% of average employment for ALL OTHER Fish Processing not included in 1-7.	*0%*					
9.	% of TOTAL emp. for ADMINISTRATIVE, MANAGEMENT & OTHER	*5%*					
10.	% of TOTAL employment for all Categories listed above.	*100 %*	100 %	100%	100%	100%	100%

Note: **Total Employment** is sum of monthly employment divided by 12**.**
Note: We realize that employees may work on more than 1 fishery making it difficult to apportion the total employment. Please provide the best estimate possible based upon total employee years in each type of fishery or administrative, management or other category listed in 1– 9.

PURCHASES OF SHIPPING LABOR, DIRECT MATERIALS AND CAPITAL EXPENSE

4a. Please include the amount of labor paid and purchases, covering all plant operations for the Year 1994, including the percent of the purchases occurring in each location.						
ROW #	Purchasing Category	Amount Purchased	% Purchased from Southeast Alaska	% Purchased from Other Alaska	% Purchased from WA State	% Purchased from Other U.S. and Foreign.
1.	*Example category*	$ 100,000	30 %	0 %	50 %	20 %
2.	Hauling and Tendering Costs to Plant.	$_____	_____%	_____%	_____%	_____%
3.	Direct Labor of packaging.	$_____	_____%	_____%	_____%	_____%
4.	Administrative and Managerial Salaries	$_____	_____%	_____%	_____%	_____%
5.	Fuel Oil, Propane.	$_____	_____%	_____%	_____%	_____%
6.	Electricity.	$_____	_____%	_____%	_____%	_____%
7.	Water and Sewer	$_____	_____%	_____%	_____%	_____%
8.	Packaging Materials	$_____	_____%	_____%	_____%	_____%
9.	Other Processing Related Supplies.	$_____	_____%	_____%	_____%	_____%
10.	Custom supplies manufactured by local firms (if applicable).	$_____	_____%	_____%	_____%	_____%
11.	Interest paid on investment in plant or equipment.	$_____	_____%	_____%	_____%	_____%
12.	Rent/lease of site and/or processing plant.	$_____	_____%	_____%	_____%	_____%
13.	Rent or lease of equipment.	$_____	_____%	_____%	_____%	_____%
14.	Purchase of equipment.	$_____	_____%	_____%	_____%	_____%

PURCHASES AND EXPENDITURES OF SERVICES AND MISC.

4b. Please include the amount of labor paid and purchases, covering all plant operations for the Year 1994, including the percent of the purchases occurring in each location.						
Row #	Purchasing Category	Amount Purchased	% Purchased from Southeast Alaska	% Purchased from Other Alaska	% Purchased from WA State	% Purchased from Other U.S. and Foreign.
1.	*Example*	$ 100,000	30 %	0 %	50 %	20 %
2.	Advertising.	$_____	_____%	_____%	_____%	_____%
3.	Legal and accounting Services.	$_____	_____%	_____%	_____%	_____%
4.	Other professional and business services	$_____	_____%	_____%	_____%	_____%
5.	Insurance	$_____	_____%	_____%	_____%	_____%
6.	Telephone	$_____	_____%	_____%	_____%	_____%
7.	Maintenance and repair of plant and equipment.	$_____	_____%	_____%	_____%	_____%
8.	Freighting.	$_____	_____%	_____%	_____%	_____%
9.	Travel and transportation for employees/managers	$_____	_____%	_____%	_____%	_____%
10.	Licenses, fees and taxes, including raw fish tax and AK corporate income tax.	$_____	_____%	_____%	_____%	_____%
11.	Income Tax (federal)	$_____	_____%	_____%	_____%	_____%
12.	Business and Property Tax (local)	$_____	_____%	_____%	_____%	_____%
13.	Other expenses not accounted for above.	$_____	_____%	_____%	_____%	_____%