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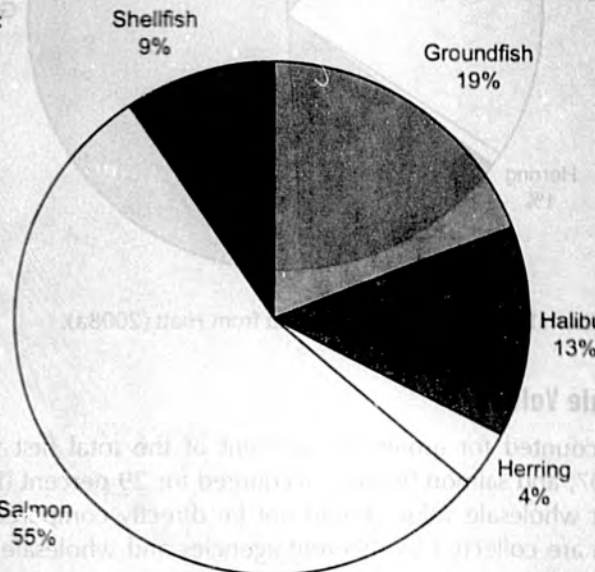
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4.2.3 Employment

Figure 19 shows the estimated harvesting employment associated with each of the major species. Salmon generates more harvesting jobs than any other fishery, accounting for an estimated 55 percent of the harvesting employment in 2006. Groundfish fisheries provided about 19 percent of the total harvesting workforce. Comparable estimates of employment (and payments to labor) by species in the processing sector are unavailable because the large shorebased processing facilities participate in all of Alaska's major fisheries, and workers often switch back and forth between various species.

Figure 19. Percentage of Alaska Seafood Harvesting Workforce by Major Species, 2006

Harvesting Employment:
27,713 Workers



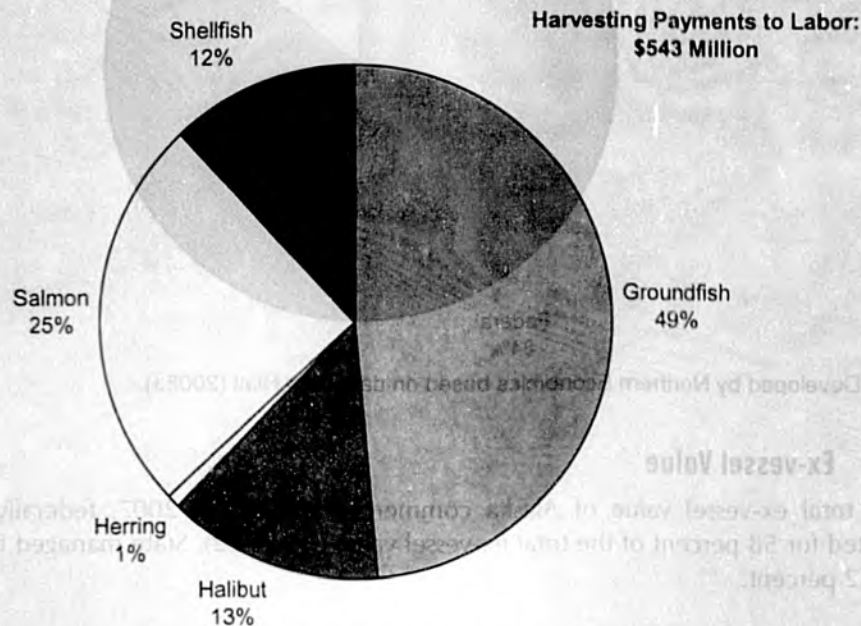
Note: Workforce estimates for 2006 were not available at the time this report was prepared.

Source: Developed by Northern Economics from ADOLWD (2007a) and Hiatt (2008a).

4.2.4 Payments to Labor

Although salmon fisheries provided the most jobs, pollock and other groundfish fisheries generated the greatest amount of payments to labor in 2007 (Figure 20). Groundfish generated 49 percent of payments to labor, while salmon provided 25 percent. As discussed above, it is not possible to estimate payments to labor by species for the processing sector, because workers at large shore plants work on many different species during the course of their employment.

Figure 20. Percentage of Alaska Seafood Harvesting Payments to Labor by Major Species, 2007



Source: Developed by Northern Economics from ADOLWD (2008b) and Hiatt (2008a).

4.3 Economic Impacts by Fisheries Jurisdiction

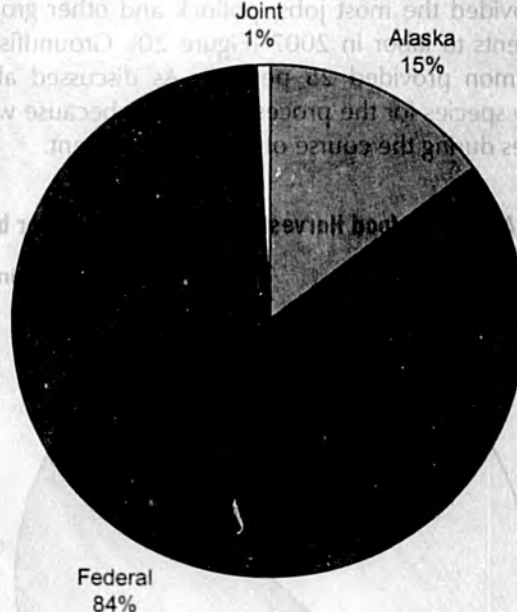
This section separates the economic impacts of Alaska's seafood industry according to fisheries jurisdiction. Fisheries in Alaska are under state management, federal management or joint-management (these are primarily fisheries in federal waters managed by the State of Alaska under federal delegation). The federal government has primary jurisdiction over groundfish, halibut (in cooperation with the IPHC) and most sablefish fisheries. Joint jurisdiction, resulting from a federal delegation of authority, is found in the Bering Sea crab fisheries as well as in the Southeast Alaska Chinook salmon troll fishery. The state has primary jurisdiction over all other major fisheries in Alaska, including salmon and herring. In addition, it manages inshore sablefish fisheries in Southeast Alaska and a portion of the pollock and Pacific cod fisheries.

Because most shore-based processing plants process fish from all jurisdictions, often simultaneously, data to estimate harvesting and processing employment by fisheries jurisdiction are not available.

Figure 21 shows that of the 2.8 million metric tons that was landed in 2007, 84.4 percent was landed in federally managed waters. As mentioned above the federal government has primary jurisdiction over groundfish and halibut.

Figure 21. Percentage of Volume Landed of Alaska Seafood Industry by Fisheries Jurisdiction, 2007

Total Volume Landed:
2.8 Million Metric Tons



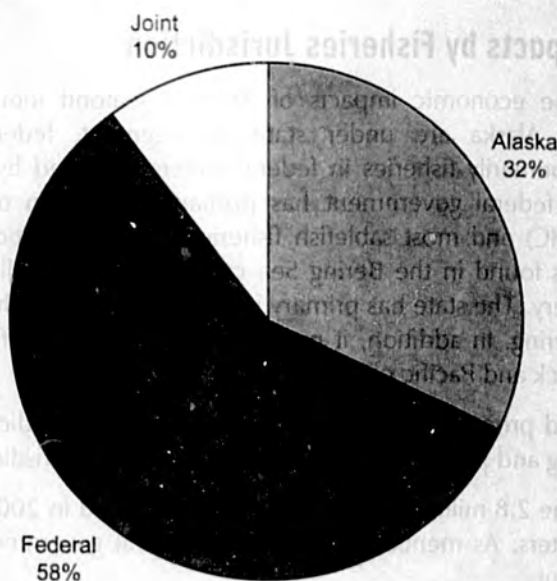
Source: Developed by Northern Economics based on data from Hiatt (2008a).

4.3.1 Ex-vessel Value

Of the total ex-vessel value of Alaska commercial landings in 2007, federally managed fisheries accounted for 58 percent of the total ex-vessel value (Figure 22). State managed fisheries represented about 32 percent.

Figure 22. Percentage of Ex-vessel Value of Alaska Seafood Industry by Fisheries Jurisdiction, 2007

Total Ex-Vessel Value:
\$1.55 Billion



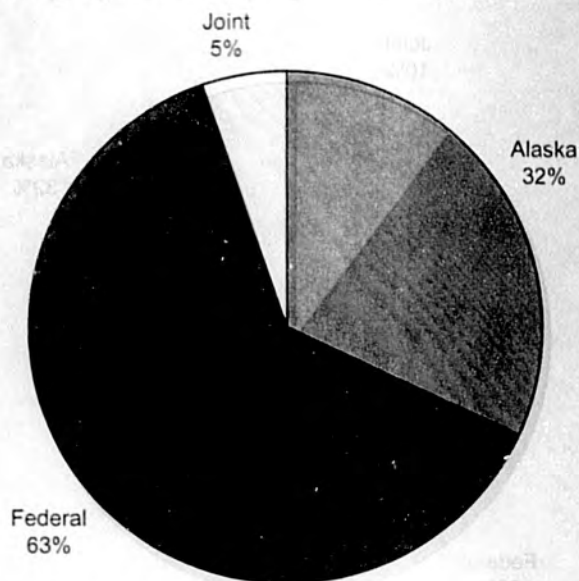
Note: Includes imputed ex-vessel values of fish harvested by catcher processors
Source: Developed by Northern Economics based on data from Hiatt (2008a).

4.3.2 First Wholesale Value

As shown in Figure 23, the first wholesale value of seafood caught in federal fisheries represented about 63 percent of the total value of \$3.63 billion in 2007. Harvests from state-managed fisheries accounted for about 32 percent of the total first wholesale value, with joint fisheries accounting for the remaining 5 percent.

Figure 23. Percentage of Wholesale Value of Alaska Seafood Industry by Fisheries Jurisdiction, 2007

Total Wholesale Value:
\$3.63 Billion



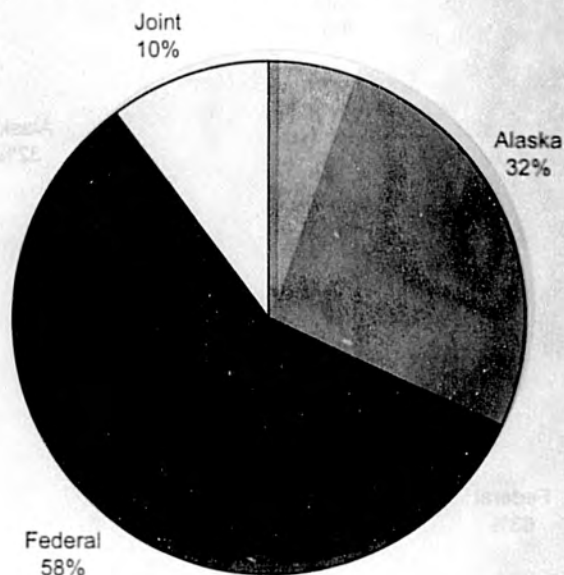
Source: Developed by Northern Economics based on data from Hiatt (2008a).

4.3.3 Payments to Labor

Figure 24 shows the estimated harvesting payments to labor associated with each of the three fisheries jurisdictional areas. Fisheries under federal jurisdiction accounted for the largest share (58 percent) of payments to labor in 2007. State fisheries accounted for about 32 percent of payments to labor. Comparable estimates of payments to labor in the processing sector are unavailable because the large processing facilities receive fish and shellfish caught in all jurisdictional areas.

Figure 24. Percentage of Alaska Seafood Harvesting Payments to Labor by Fisheries Jurisdiction, 2007

Total Payments to Labor:
\$543 Million

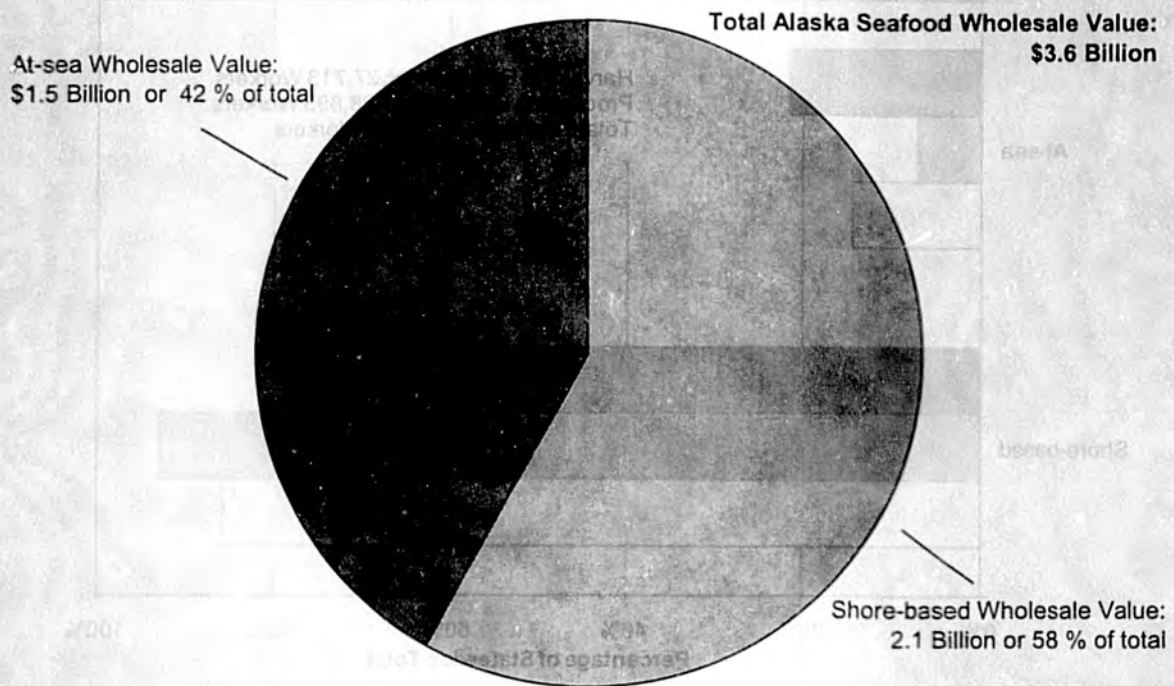


Source: Developed by Northern Economics from Hiatt (2008a).

4.4 Comparison of Shore-based and At-Sea Sectors

The at-sea fisheries make an important contribution to the Alaska fisheries. The at-sea sector, is primarily involved in the capture and processing of Bering Sea and Aleutian Island resources, mainly groundfish but also some at-sea crab and halibut.³⁰ In addition, some at-sea processing is done in the Gulf of Alaska. Figure 25 shows the percentage of first wholesale value of the Alaska seafood industry harvest in 2007 divided between the at-sea and shore-based sectors. In 2007 the total wholesale value was \$3.6 billion and 42 percent, (\$1.5 billion) of that came from the at-sea sector.

Figure 25. Percentage of Wholesale Value of Alaska Seafood Industry, At-sea and Shore-based, 2007



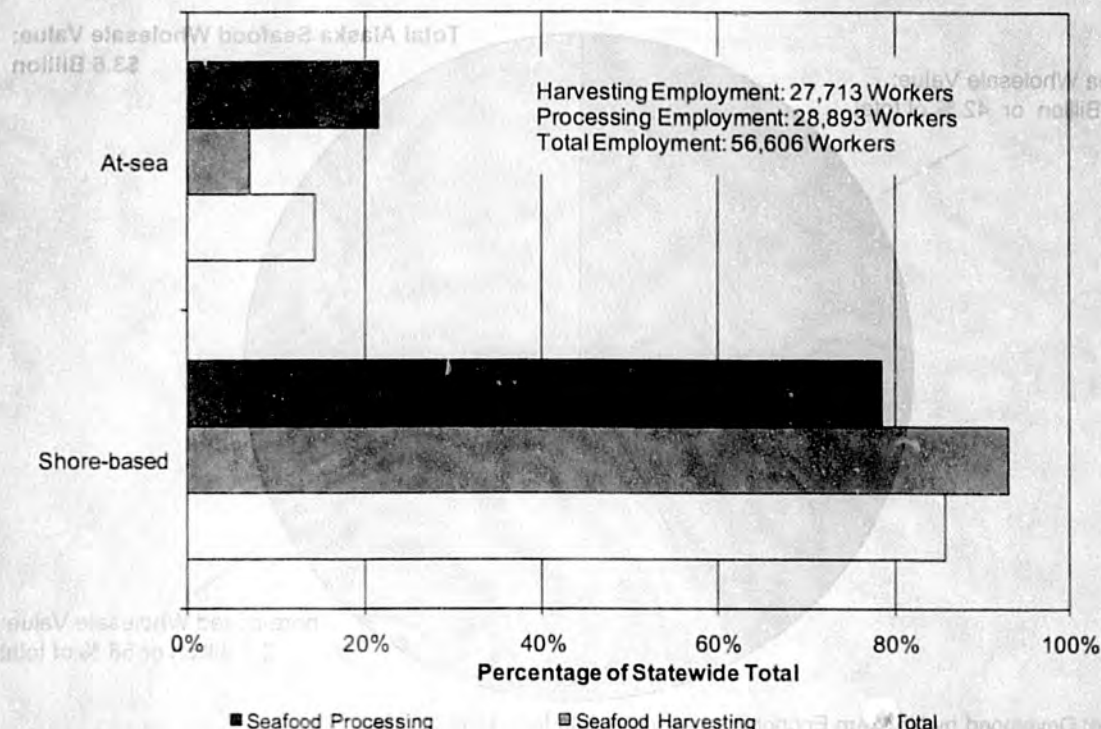
Source: Developed by Northern Economics based on data from Hiatt (2008a).

³⁰ The at-sea numbers also includes small amounts of fish landed at shore plants outside Alaska.

Figure 26 shows the number of workers employed in seafood harvesting and seafood processing divided between the at-sea and shore-based sectors in 2006.³¹ The figure shows percentages of Alaska seafood processing and harvesting workforce in the at-sea and shore-based sectors, as well as percentages of the state's total seafood industry in at-sea and shore-based sectors.

The figure shows that 93 percent of the harvesting jobs and 79 percent of the processing jobs are found in the shore-based sector of the industry.

Figure 26. Percentage of Alaska Seafood Processing and Harvesting Workforce in the At-sea and Shore-based Sectors, 2006



Note: Workforce refers to the number of individual workers employed in an industry for any amount of time during the year.

Source: Developed by Northern Economics from ADOLWD (2007a) and Hiatt (2008a).

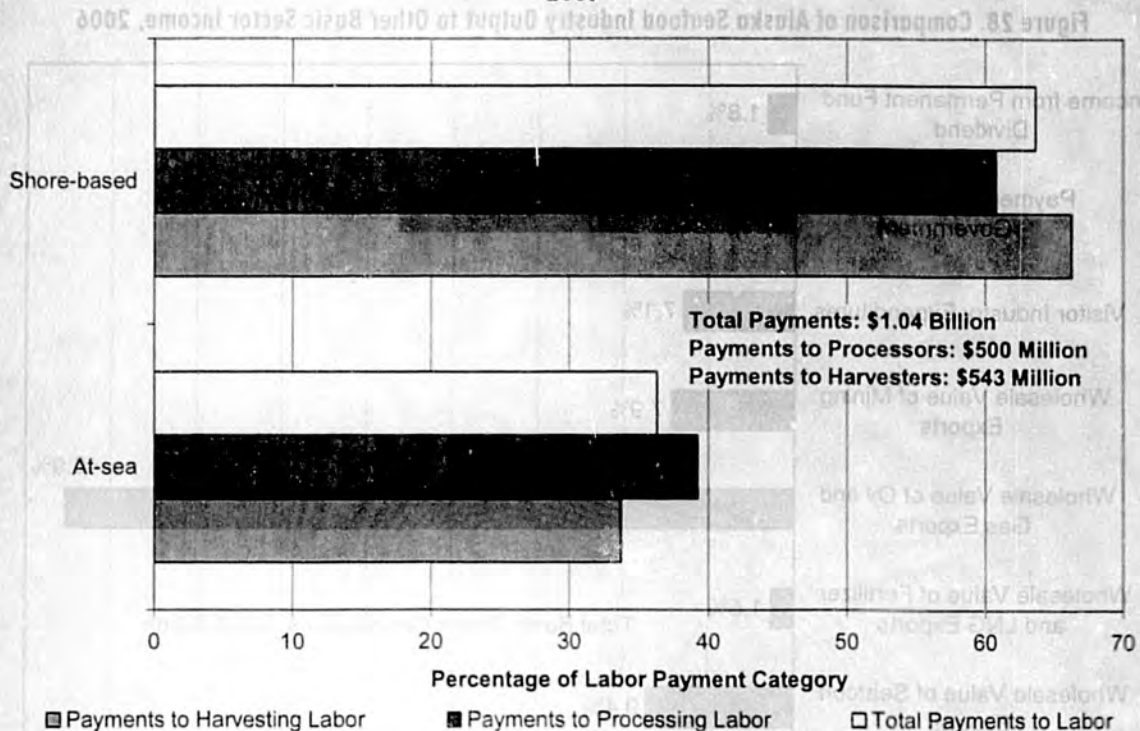
Figure 27 shows the percentages of Alaska seafood industry payments to labor divided between the at-sea and shore-based sectors in Alaska in 2007. The estimated total payment to labor was \$1.04 billion. Payments to the shore based sector accounted for 64 percent of the all payments to labor, while the at-sea sector accounted for 36 percent.

In total, the figure shows that 36 percent of total payments to labor went to the at-sea sector. As indicated in Figure 26 above, it is estimated that the at-sea sector accounted for only about 14 percent of seafood industry workforce in 2006. One reason that the payments to labor in the at-sea sector are disproportionately large in comparison to the number of employees is that on average they are employed for relatively long periods of time. In addition, unlike shore-side processing workers, who are usually paid an hourly wage, the majority of at-sea processing workers are paid by

³¹ Workforce estimates of the shore-based processing sector for 2007 were not available at the time of this publication, and therefore these numbers reflect the estimated workforces in 2006.

percentage of catch or by what is called a case rate based on the market value of the product being produced.

Figure 27. Percentage of Alaska Seafood Industry Payments to Labor in the At-sea and Shore-based Sectors, 2007



Source: Shore-based processing estimates from ADOLWD (2008b). Harvesting and at-sea estimates were based on data from Hiatt (2008a).

4.5 Statewide Importance of Alaska Seafood Industry

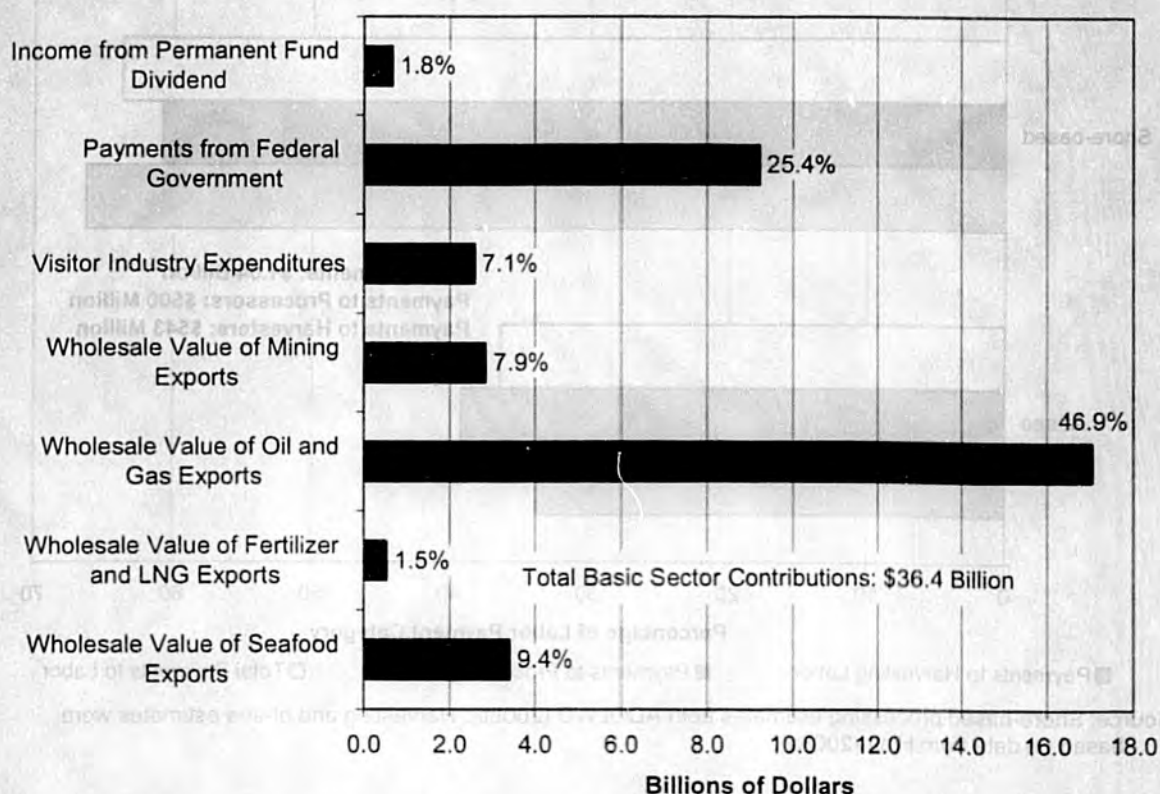
The seafood industry is a particularly important component of Alaska's economy because it is a major part of the basic sector. By bringing money into the State from outside sources, the basic sector is considered the "engine" of the economy. The non-basic sector, which consists of firms that sell goods and services to local businesses and consumers, is dependent on the basic sector to keep the economy running. In addition to the seafood industry, Alaska's basic sector includes the Cook Inlet and North Slope oil and gas industry, mining industry, tourism, payments from the federal government and the Permanent Fund.

Figure 28 provides a comparison of the contributions of the components of the basic sector to Alaska's economy. Northern Economics estimated that the basic sector brought approximately \$36.4 billion into the state in 2006.³² Of this total, the seafood industry contributed \$3.4 billion, or 9.4 percent. This estimate does not include federal government expenditures on commercial fisheries management and research in Alaska (Section 4.8). The seafood industry ranks third in importance behind the North Slope oil and gas industry and federal government in terms of generating basic

³² The estimate of basic sector income does not include private investment income or private pension income earned by individuals or entities such as the Alaska Native Corporations. Reliable estimates of the income of these components of the basic sector were not readily available.

economic activity in Alaska. According to ADCCED (2007), seafood is Alaska's top international export—seafood exports accounted for half of the state's total export value.³³ Exports of Alaska seafood were shown in Figure 12 and Figure 13 in the discussion of the importance of Alaska seafood in the global seafood market.

Figure 28. Comparison of Alaska Seafood Industry Output to Other Basic Sector Income, 2006



Note: At the time of publication 2007 data were not available for all sectors, so 2006 data were used.

Source: Developed by Northern Economics based on data from ADOR (2007b), U.S. Census Bureau (2007), ADCCED (2007b) Cruise Line International Association (2006), Alaska Office of the Governor (2007); and Hiatt (2008a)

As discussed in Section 4.5.1 below, Alaska's seafood industry generates millions of dollars in revenue through taxes and fees paid to the state and local governments. A testament to the longtime importance of the seafood industry in Alaska is the fact that the 1899 fisheries business tax is the oldest tax in the state (Alaska Department of Revenue 2006a).³⁴ While Alaska's seafood industry is currently far overshadowed by the state's petroleum industry in terms of generating state tax revenues, it is worth noting that since fish is a renewable resource, its long-term value to Alaska's economy ultimately has the potential to be greater than that of non-renewable petroleum (ADCCED 2002).

³³ ADCCED's export figure may understate the importance of Alaska's seafood industry due to the way in which the exports are monitored. Unlike Alaska's mineral and timber resources, which are for the most part shipped directly from Alaska ports, much of Alaska's seafood harvest, is first transported to Seattle and other Puget Sound area cities before being shipped to foreign countries. As a result, these products of Alaska origin are counted as exports from the State of Washington.

³⁴ In 1899, the U.S. Congress adopted a "salmon case" tax to fund fisheries-related activities in pre-territorial Alaska (ADOR 2006a).

Employment statistics also provide a sense of the scale of the economic contribution of the seafood harvesting and processing sectors to the Alaska economy. Extending a trend begun four years ago, total earnings and employment in the Alaska seafood industry are some of the highest in recent years. Including all harvesting and processing, Alaska's seafood industry is the largest private sector employer in the state.³⁵ In 2005, seafood harvesting jobs accounted for 3.2 percent of all private sector employment.³⁶ When seafood processing's 3.6 percent is added to harvesting, the combined seafood industry makes up 6.8 percent of Alaska's private sector employment (Robinson and Gilbertsen 2006).

In 2006, seafood processing made up more than one-fifth of the annual average employment in Alaska's "goods producing" sector and accounted for about 80 percent of all manufacturing employment (ADOLWD 2008). No other state has this level of industry concentration (Fried 1996). Eight seafood companies are on the list of Alaska's 100 largest employers (Fried 2007).³⁷

Figure 29 provides a comparison of the size of the Alaska seafood industry workforce (both harvesters and processors) to workforces in other sectors for 2006. With an estimated workforce of 56,606, the seafood industry employs more workers than any other industry sector. The retail and wholesale trade sector with a workforce of 56,445 is ranked second, while the government and education sector is third with 52,363 workers.



Notes:
 1) Workforce refers to the number of workers employed for any amount of time during the year.
 2) ADOLWD does not estimate the number of all workers employed in the seafood processing sector. Based on NMFS crew count data for these ports it was estimated that this sector employs about 6,200 processing workers and 1,336 harvesting workers.
 3) 2007 data are not available.
 Source: Developed by Northern Economics based on ADOLWD (2007, 2008) and Hult (2008).

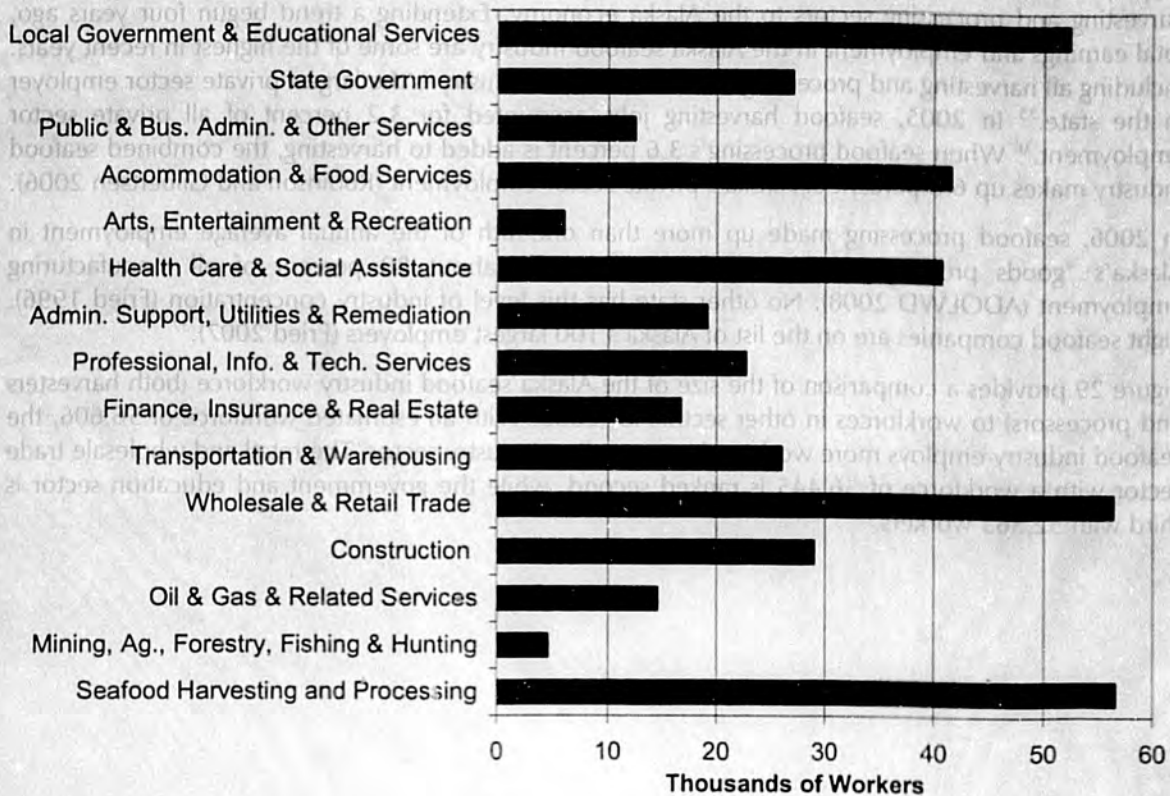
While Figure 29 shows the size of total seafood workforce, Figure 30 below compares annual average employment in the seafood industry with other industries in the state in 2007. Because the seafood industry is very seasonal in nature (see Figure 32), the estimated average number of employees across all months of the year (16,606) is much less than the total size of the seafood workforce. The seafood industry is still the dominant employer among the natural resource-based industries which also include agriculture, forest products, mining and oil and gas.

³⁵ As the state's economy has expanded and diversified, the relative importance of the seafood industry in terms of employment has declined. Two decades ago one of every eight jobs in Alaska's private sector was involved directly in fisheries, and the combined payroll in the seafood processing and harvesting sectors accounted for one-sixth of the state's total private sector economic base (Tremaine 1989).

³⁶ "Private sector employment" is defined here to mean all private wage and salary jobs combined with the fish harvesting employment discussed here. Self-employment, employment in industries not covered by state unemployment insurance laws and all other agricultural employment are excluded (Robinson and Gilbertsen 2006).

³⁷ The eight seafood processing companies on the 2006 *Trends* 100 list and their average monthly employment were Trident Seafoods (1,951), UniSea (923), Icicle Seafoods (783), Westward Seafoods (686), Peter Pan Seafoods (628), Ocean Beauty Seafoods (596), North Pacific Seafoods (402) and NorQuest Seafoods (351).

Figure 29. Comparison of Alaska Seafood Workforce to Workforces in Other Sectors, 2006



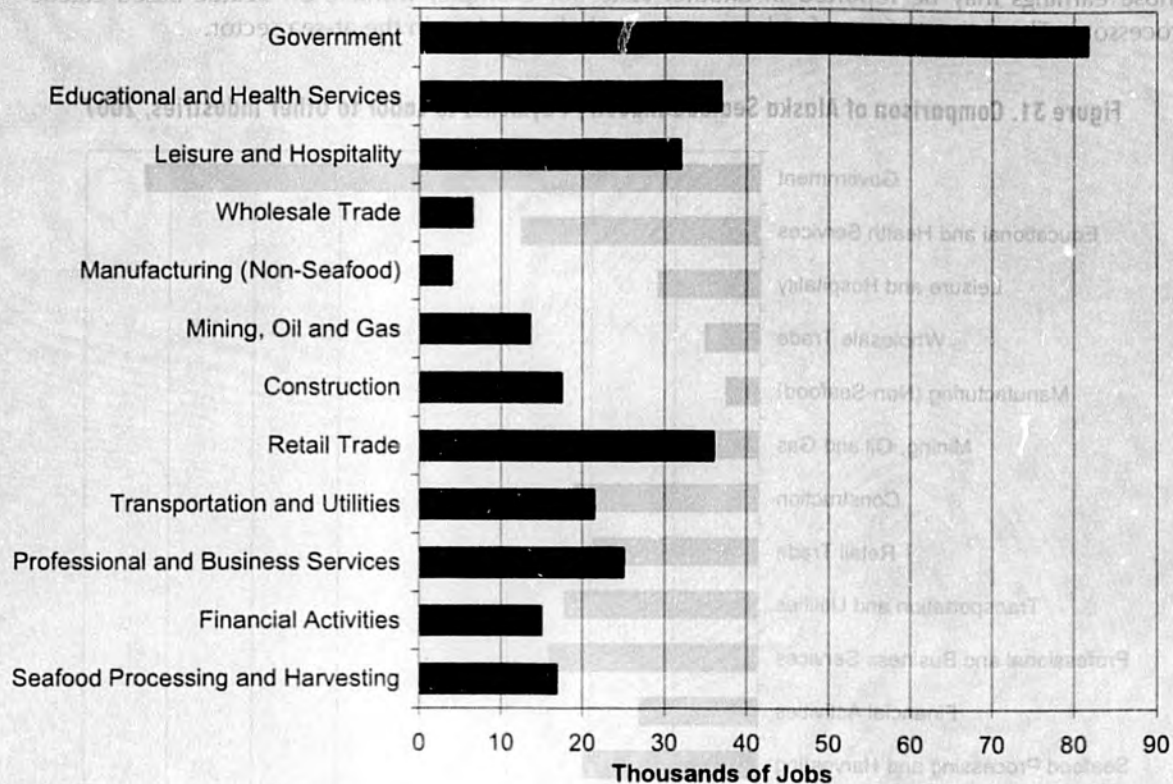
Notes:

- 1) Workforce refers to the number of workers employed for any amount of time during the year.
- 2) ADOLWD does not estimate the number of all workers employed in the at-sea processing sector. Based on NMFS crew count data for these boats it was estimated that this sector employs about 6,203 processing workers and 1,936 harvesting workers.
- 3) 2007 data are not available.

Source: Developed by Northern Economics based on ADOLWD, (2007a, 2008b) and Hiatt (2008a).

While Figure 29 above shows the size of total seafood workforce, Figure 30 below compares annual average employment in the seafood industry with other industries in the state in 2007. Because the seafood industry is very seasonal in nature (see Figure 32), the estimated average number of employees across all months of the year (16,886) is much less than the total size of the seafood workforce. The seafood industry is still the dominant employer among the natural resource-based industries, which also include agriculture, forest products, mining and oil and gas.

Figure 30. Comparison of Alaska Seafood Processing Industry Annual Average Employment to Other Industry Annual Average Employment, 2007



Notes:

- 1) Annual average employment refers to the average number of monthly jobs over the full calendar year.
- 2) Data from ADOLWD do not include jobs in the at-sea processing sector. An estimate of the number of these jobs was derived from NMFS vessel and crew count data.

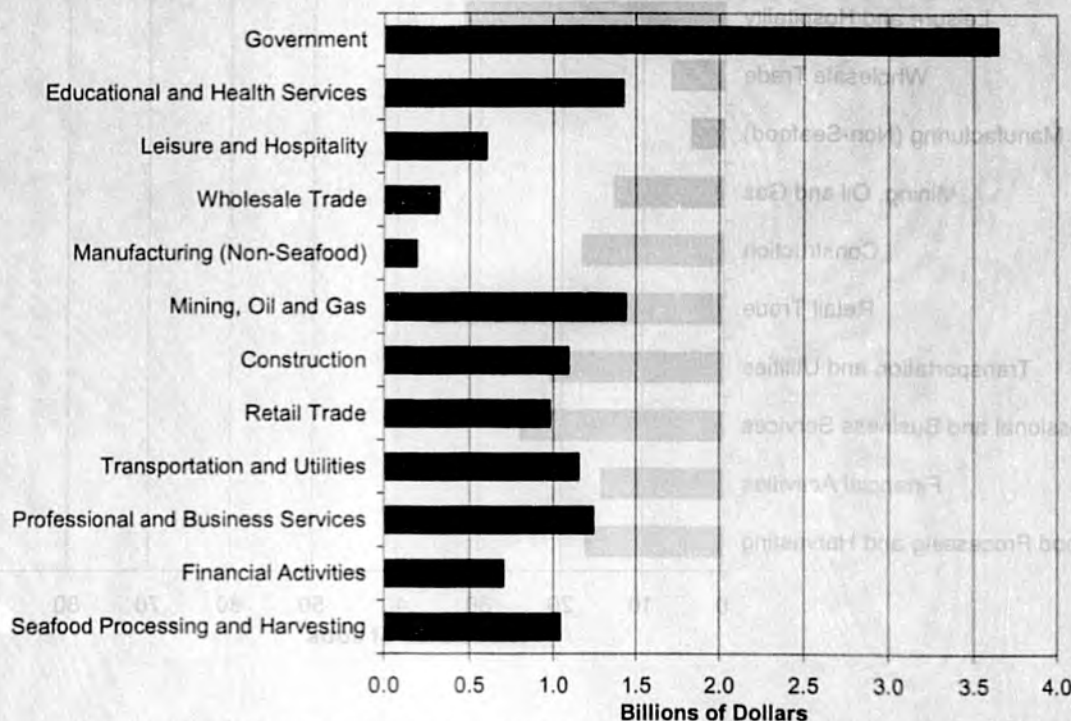
Source: Developed by Northern Economics based on ADOLWD, (2007a, 2008b) and Hiatt (2008a).

While the Alaska seafood industry generates a large number of jobs, the industry is highly seasonal. The industry's employment is concentrated in the third and fourth quarters of the year, with a significant peak in the fourth quarter. This seasonal pattern is reflected in the annual average employment data, which shows a much lower average than the peak employment levels. The seasonal nature of the industry is a result of the timing of the fishing season and the processing of the catch. The fishing season typically begins in the summer months and continues through the fall, with the peak of the season occurring in the third and fourth quarters. The processing of the catch also occurs during this period, leading to a high concentration of jobs in the third and fourth quarters. This seasonal pattern is a key characteristic of the Alaska seafood industry and is reflected in the annual average employment data.

Figure 30 shows that the annual average employment in the seafood processing and harvesting industry is significantly higher than in most other industries. This is due to the large number of jobs generated by the industry, particularly in the third and fourth quarters. The industry's employment is concentrated in the third and fourth quarters, with a significant peak in the fourth quarter. This seasonal pattern is reflected in the annual average employment data, which shows a much lower average than the peak employment levels. The seasonal nature of the industry is a result of the timing of the fishing season and the processing of the catch. The fishing season typically begins in the summer months and continues through the fall, with the peak of the season occurring in the third and fourth quarters. The processing of the catch also occurs during this period, leading to a high concentration of jobs in the third and fourth quarters. This seasonal pattern is a key characteristic of the Alaska seafood industry and is reflected in the annual average employment data.

Figure 31 compares payments to labor in the seafood industry with total wages in other industries in 2007. Payments to labor for the seafood industry include estimated payments made to nonresidents whose earnings may be reported in another state (for example, workers on Seattle-based catcher-processors). The estimate for seafood processing includes workers in the at-sea sector.

Figure 31. Comparison of Alaska Seafood Industry Payments to Labor to Other Industries, 2007

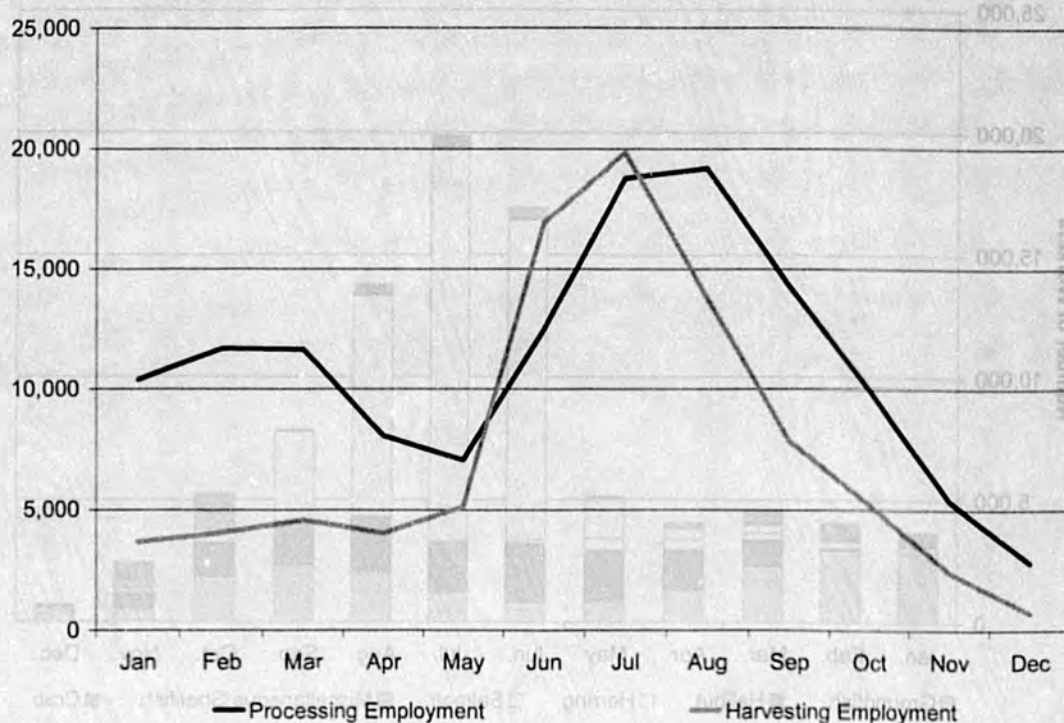


Notes: Data from ADOLWD only includes data on standard employee/employer relationships where wages and unemployment taxes are paid and collected. Only the shore-based processing portion of the seafood industry fall into this category, thus payments to labor for harvesters and the at-sea sector are estimated by Northern Economics.

Source: Developed by Northern Economics based on ADOLWD, 2007a, 2008b) and Hiatt (2008a)

While the Alaska seafood industry generates a large number of jobs, these jobs do not necessarily provide year-round employment. No other state's labor force shows as much seasonal fluctuation as Alaska's, and, except for the visitor industry, seafood harvesting and processing is Alaska's most seasonal industry (Fried 1996; Rae 1997). As shown in Figure 32, employment in the seafood processing sector in 2006 varied more than six-fold from the peak month (July) to the bottom month (December).³⁸ Figure 32 also shows the seasonality of jobs in the seafood harvesting sector. As with processing employment, harvesting employment typically reaches its peak in July before declining to the seasonal low point in December.

³⁸ Fried (1996) notes that the seasonality of seafood processing employment has varied over the years with the length and diversity of Alaska's fisheries. In the late 1970s and early 1980s, the king crab winter harvests boosted employment during traditionally low months. After the crash of the king crab fishery, seasonality increased dramatically. With the advent of the huge harvest of groundfish during the non-summer months, employment became year-round.

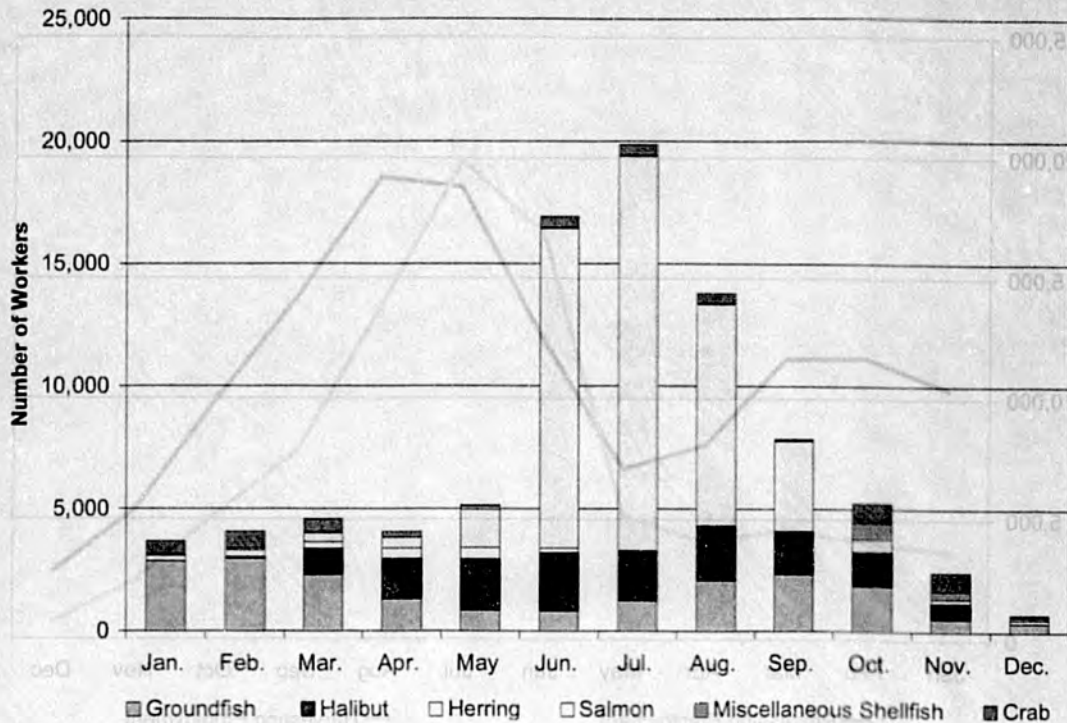
Figure 32. Alaska Seafood Processing and Harvesting Average Monthly Employment, 2006**Notes:**

- 1) Average monthly employment refers to the average number of monthly jobs.
- 2) Data from ADOLWD do not include jobs in the at-sea sector. An estimate of the number of these jobs was derived from NMFS vessel and crew count data.
- 3) 2007 data were not available at the time of this publication.

Source: Developed by Northern Economics based on data from ADOLWD (2008b) and Hiatt (2008a).

In contrast to the highly seasonal salmon fishery, Alaska's halibut and various groundfish fisheries provide a more constant number of jobs month to month (Figure 33). Also unlike employment in the salmon fishery, the peak months for jobs in the crab fishery occur in the less hospitable winter months (Olson and Robinson 2004). The crab fishery starts the year with the Bering Sea snow crab fishery, which reaches full strength in February, while the Bristol Bay red king crab fishery ramps up jobs in the late fall, especially October.³⁹ The summer months in between concentrate jobs primarily in the dungeness crab fishery in the Southeast region. Miscellaneous shellfish jobs spike in October with the shrimp pot fishery in the Southeast. Harvesting in Alaska's sac roe herring fisheries occurs in the spring with peak employment in May spread out in all regions of the state (Olson and Robinson 2004).

³⁹ Robinson and Gilbertsen (2006) note that rationalizing the Bristol Bay red king crab fishery in 2005 has lowered employment in the peak month of October and raised employment levels in November and December as harvesters with quota shares are no longer in a race to harvest the available catch and they take longer to harvest their quotas. Additional information on the effects of rationalization on employment in the BSAI crab fisheries is provided in Section 2.5.

Figure 33. Alaska Shore-based Harvesting Average Monthly Employment by Species, 2006

Notes:

- 1) 2006 halibut fishing employment data are unavailable; 2005's monthly halibut figures have been used as a proxy for 2006.
- 2) Data from ADOLWD do not include jobs in the at-sea processing sector. An estimate of the number of these jobs was derived from NMFS vessel and crew count data.
- 3) 2007 data are not available.

Source: Developed by Northern Economics based on data from ADOLWD (2007c) and Hiatt (2008a).

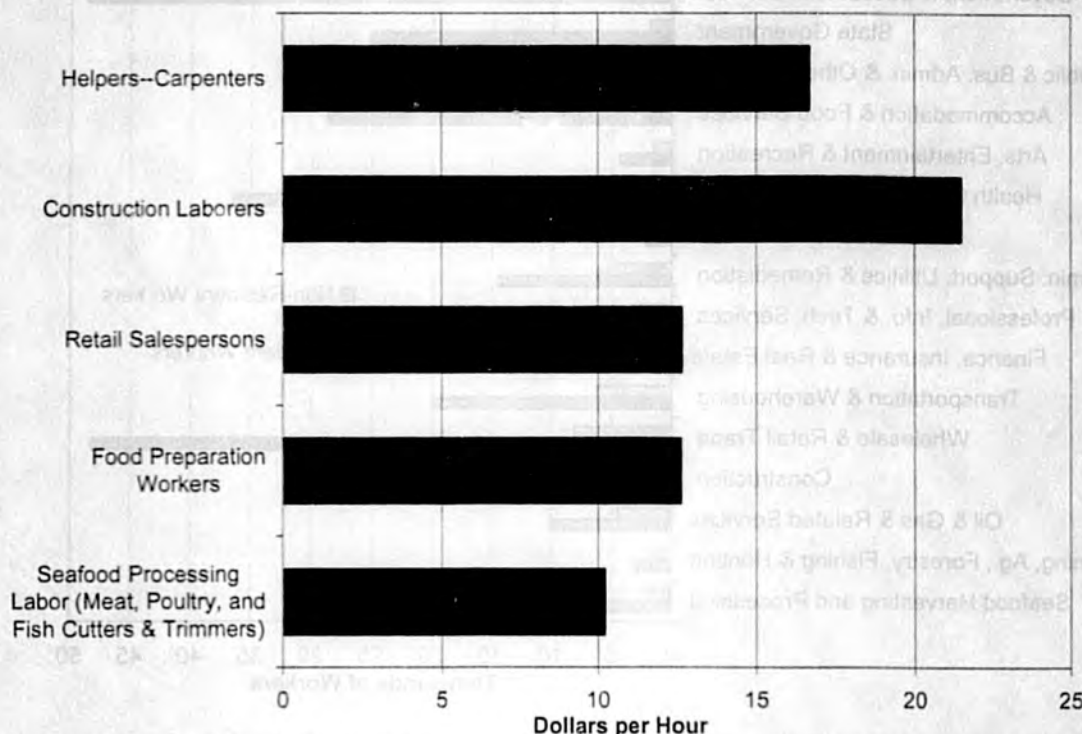
Because some fishing seasons are so short, many seafood harvesters work wage and salary jobs to supplement their income from a fishing operation. Based on an analysis of active CFEC commercial fishing permit holders and their adult crew members, Wink et al. (2006) found that more than half of all resident Alaska harvesters relied on a wage and salary job in addition to their fish harvesting work to earn a living in 2006. That's a higher rate of multiple job holding than for Alaska wage and salary workers in general, where only about 32 percent held multiple jobs in 2006.

In addition to the length of the fishing season, gear type and amount of required capitalization dictates whether it is possible, or prudent, for Alaska seafood harvesters to hold down a shore-side job. The gear types with permit holders that had the highest percentages of non-fishing jobs in 2006 were set gillnet (64 percent), hand troll (55 percent), drift gillnet (42 percent) and longline (36 percent). The set gillnet and hand troll gear, for instance, are for fisheries that have short seasons and require less capital. Otter trawl (12 percent), power troll (18 percent), purse seine (21 percent) and pot gear (26 percent) permit holders possessed the lowest percentages of wage and salary

participation. Pot gear, for instance, is used mostly for the crab fisheries that have short seasons and require a lot of capital (Wink et al 2007).⁴⁰

In addition to job duration, it is important to examine the level of compensation that seafood industry jobs offer. In 2007, the average hourly wage for jobs in the seafood on-shore processing sector was \$10.22.⁴¹ Other jobs in Alaska pay considerably more (Figure 34). Entry-level, on-shore processors in some remote areas earn the Alaska minimum wage rate of \$7.15 per hour. In most cases, room and board and transportation are provided as well. Urban work sites without company housing pay a slightly higher wage (ADOLWD 2007b). On the other hand, as noted in Section 4.4, many at-sea processing workers are paid on a "share of catch" basis, and if a company has a good catch, a worker's earnings can be very high. It is also important to note that many fish processing occupations are highly skilled and well compensated, such as roe technicians (who grade the salmon roe and oversee its packing), machine maintenance occupations (including Baader filleting machine technicians) and surimi technicians (Fried 1996). The higher a particular shore-based processing job pays, the more likely an Alaska resident will be in that job (Miller 2002).

Figure 34. Comparison of Alaska Seafood Processing Average Hourly Wage to Other Occupational Average Hourly Wages, 2007



Note: Seafood Processing Labor is part of the class of workers officially titled Meat, Poultry, and Fish Cutters & Trimmers. In Alaska the number of this class of workers that are not in the seafood industry is *de minimus*.

Source: Developed by Northern Economics based on data from ADOLWD (2008c).

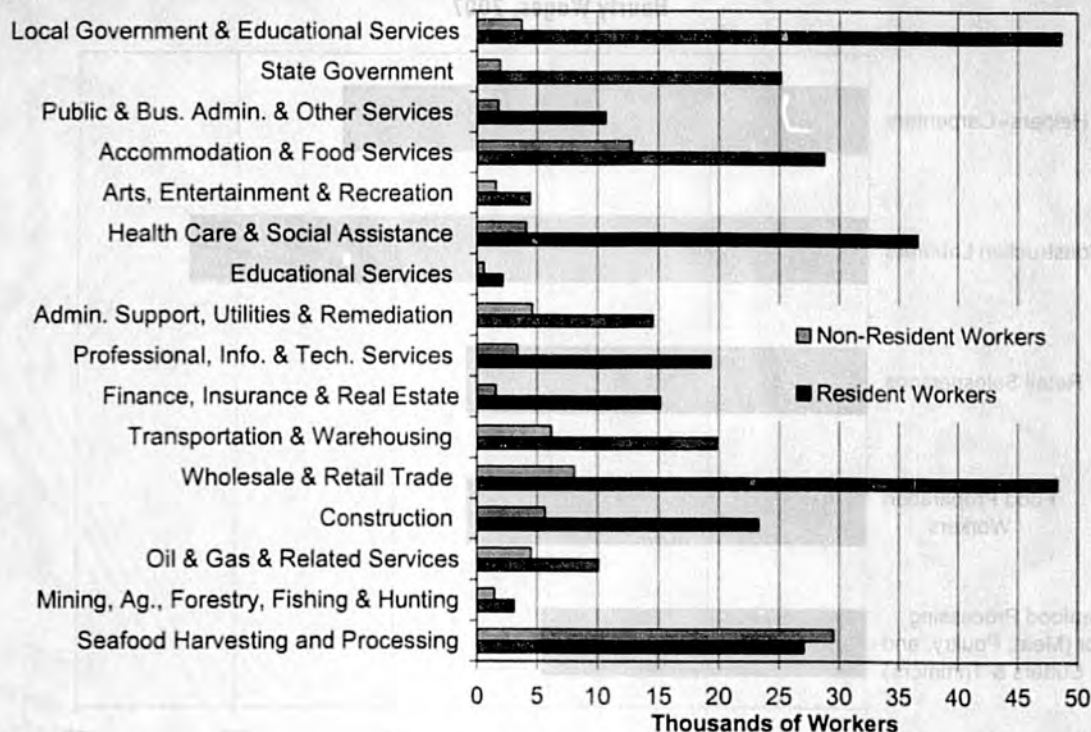
⁴⁰ Purse seiners, gillnetters and trollers participate in salmon fisheries. Herring is also caught by purse seiners. Pot boats catch crab and groundfish, while longliners harvest halibut and groundfish and trawlers focus on groundfish.

⁴¹ Many processing workers, particularly in remote areas, receive room and board in addition to their wages.

In a discussion of the relative economic impact of the Alaska seafood industry it is important to examine the state of residency of seafood industry workers. As noted in Section 4.7, Alaska's seafood processing sector generates thousands of jobs but employs relatively few residents of Alaska (Figure 35). In 2006, the seafood processing sector employed the highest number and greatest percentage of nonresident workers of any industry sector in the state (ADOLWD 2008).⁴² Nonresident seafood processing workers accounted for 22 percent of the private, nonresident workforce in Alaska (ADOLWD 2008). What this high percentage of nonresident employee means is that while seafood processing is an important driver of the state economy, much of the labor income earned in the sector flows out of Alaska.

With respect to seafood harvesters, data from ADOLWD indicate that residents hold most fish harvesting jobs in Alaska, but most of the earnings generated by harvesters accrue to nonresidents—primarily from the harvest of groundfish. In 2006, nonresident individuals accounted for \$1.08 billion of the \$1.48 billion landed in all Alaska fisheries. This means that nearly three-quarters of the total ex-vessel value accrued to nonresident seafood harvesters.

Figure 35. Comparison of Resident and Non-Resident Workforces by Sector, 2006



Notes:

- 1) Workforce refers to the number of workers employed for any amount of time during the year.
- 2) ADOLWD does not estimate the number of all workers employed in the at-sea processing sector. Based on NMFS crew count data for these boats it was estimated that this sector employs about 6,203 processing workers and 1,936 harvesting workers.
- 3) 2007 data are not available.

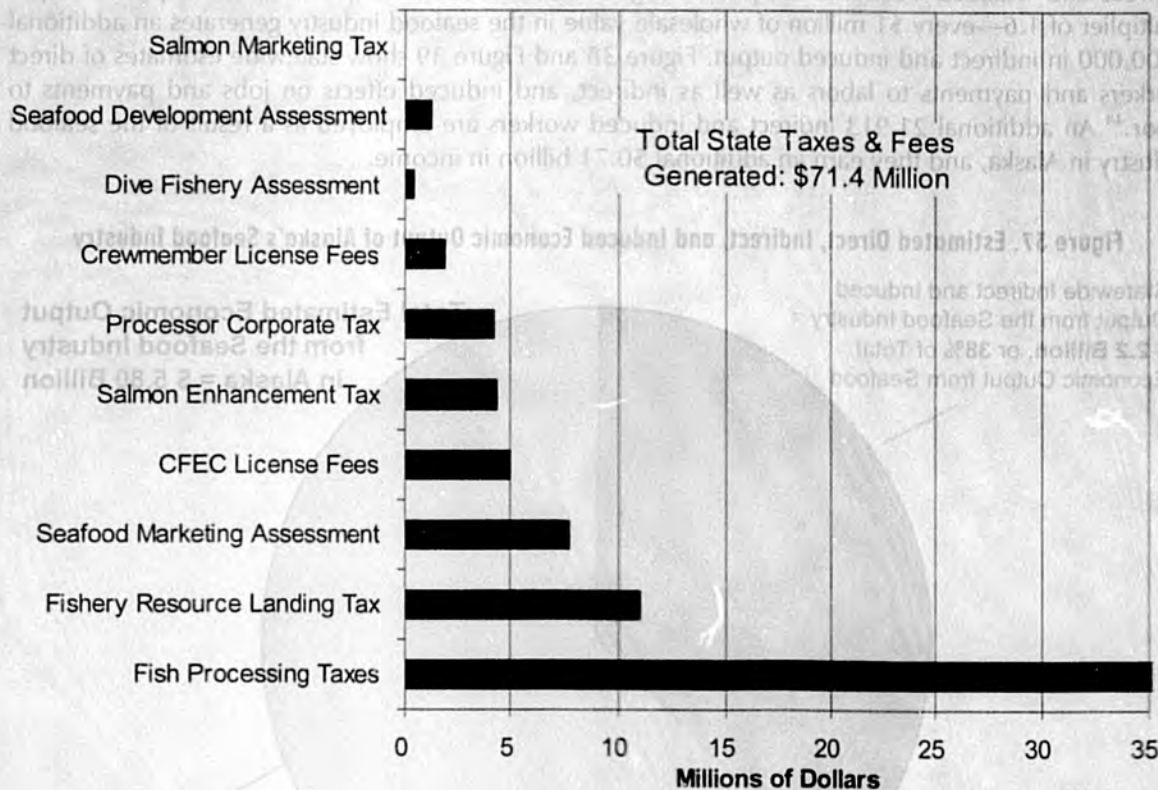
Source: Developed by Northern Economics based on data from (ADOLWD (2007a and 2008b) and Hiatt, 2008a)

⁴² Whereas many of the early salmon cannery workers were Filipinos (Footnote 11), in more recent years immigrants in Alaska's seafood processing sector tend to be from Mexico and Central America. (Gerjevic 1998).

4.5.1 State Taxes and Fees

Alaska's seafood industry contributed about \$71.4 million in state taxes and fees in 2007 (Figure 36). The industry also pays a significant portion of the marine fuel taxes collected in the state, although estimates of these tax payments are not readily available.

Figure 36. State Revenue Generated by Alaska's Seafood Industry, 2007



Note: CFEC Licenses Fees, Crewmember License Fees and Processor Corporate Taxes reflect 2006 values.

Source: Developed by Northern Economics based on data from ADCCED (2007), ADOR (2008).

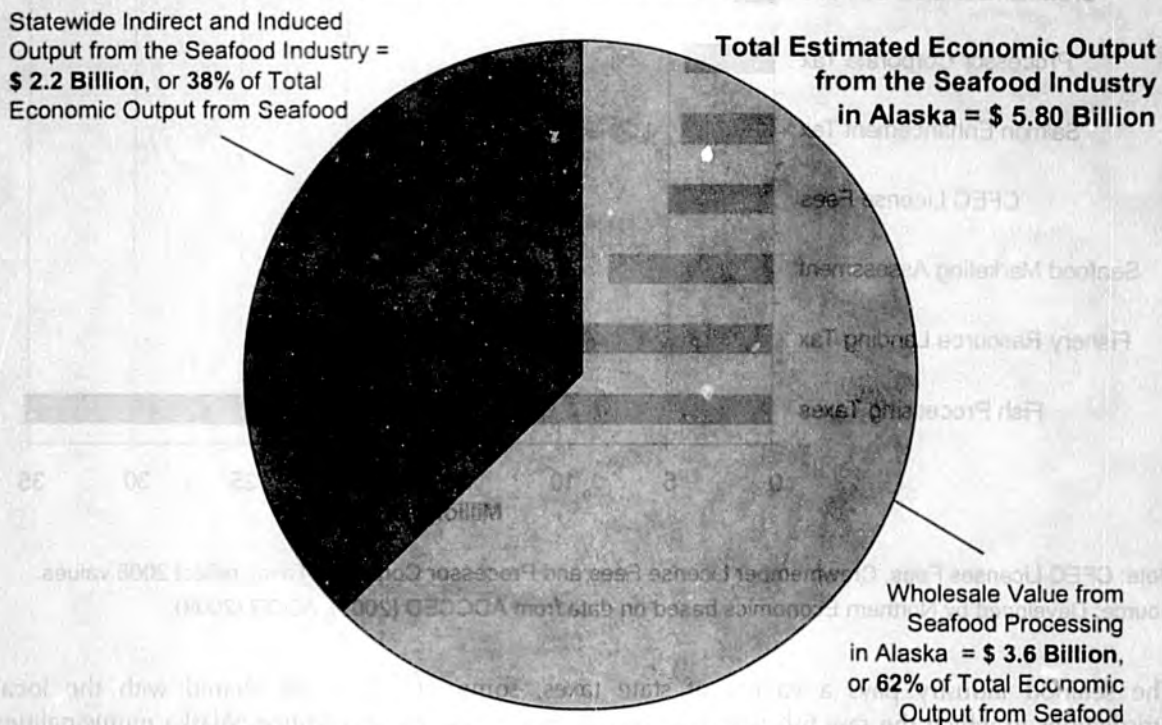
The seafood industry pays a variety of state taxes, some of which are shared with the local jurisdictions in which the raw fish or processed product is landed. In addition, Alaska municipalities have the power to implement their own local tax on the sale of fish to processors and other local fisheries-related taxes. The total of these municipal taxes in 2006 was approximately \$13.9 million. Both shared state taxes and municipal taxes are discussed in more detail in Section 4.6.5.

4.5.2 Economic Multiplier Effects of Alaska's Seafood Industry

Alaska seafood not only generates direct economic output, jobs, and payments to labor (income) within the industry, it also generates economic output, jobs and payments to labor in the industries that supply fuel, parts, processing materials and transportation. Collectively, the impacts in these supply industries are known as indirect effects. In addition, Alaska seafood induces further economic activity in Alaska, through the payments to labor that are made both to workers in the seafood industry and to workers in the supply industries. These induced effects occur as workers spend their income on food, clothing, housing and other consumer goods and services.

Figure 37 shows the estimated direct, indirect, and induced economic output from Alaska's seafood industry in Alaska for 2007. Estimates of direct output are equal to estimated wholesale value from both at-sea and shore-based processors discussed in earlier sections.⁴³ Estimates of indirect and induced impacts (sometimes referred to as multiplier effects) have been generated for the Alaska Seafood industry using software and data from IMPLAN™. It is estimated that the \$3.6 billion in wholesale value generated by the seafood processing industry generates an additional \$2.2 billion in indirect and induced economic output throughout the state. This represents an output-to-output multiplier of 1.6—every \$1 million of wholesale value in the seafood industry generates an additional \$600,000 in indirect and induced output. Figure 38 and Figure 39 show statewide estimates of direct workers and payments to labor as well as indirect, and induced effects on jobs and payments to labor.⁴⁴ An additional 21,913 indirect and induced workers are employed as a result of the seafood industry in Alaska, and they earn an additional \$0.71 billion in income.

Figure 37. Estimated Direct, Indirect, and Induced Economic Output of Alaska's Seafood Industry



Source: Estimated by Northern Economics, Inc., using multipliers from IMPLAN software.

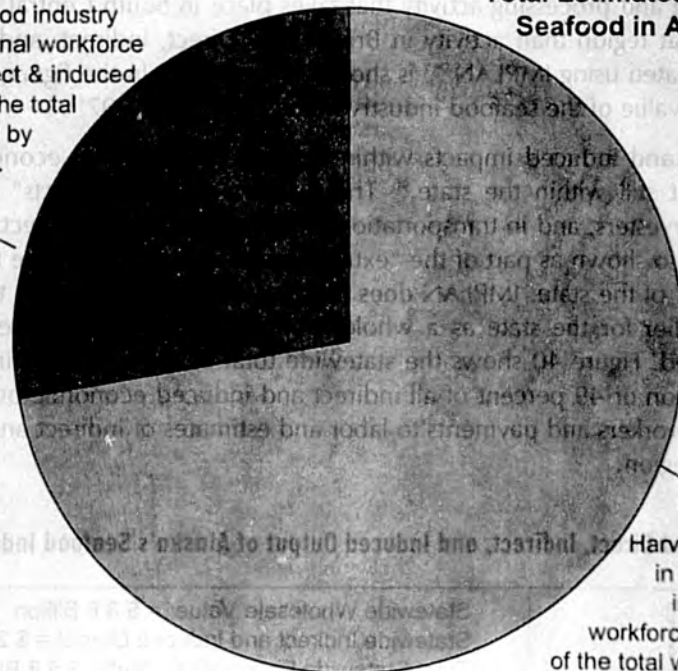
⁴³ The estimate of indirect and induced output includes the ex-vessel payments made to harvesters. This is proper since fish harvesters supply goods and services to the processing industry similar to other industry suppliers such as the paper industry and the transportation industry.

⁴⁴ In these two figures the entire harvesting workforce and all payments to labor made to harvesters are included in the estimates of direct effects. The indirect and induced effects have been adjusted to account for this and to avoid double counting.

Figure 38. Estimated Direct, Indirect, and Induced Workers in the Seafood Industry in Alaska

Statewide, the seafood industry generates an additional workforce of **21,913** from indirect & induced activities, or **28%** of the total workforce generated by the seafood industry.

Total Estimated Workforce from Seafood in Alaska = 78,519



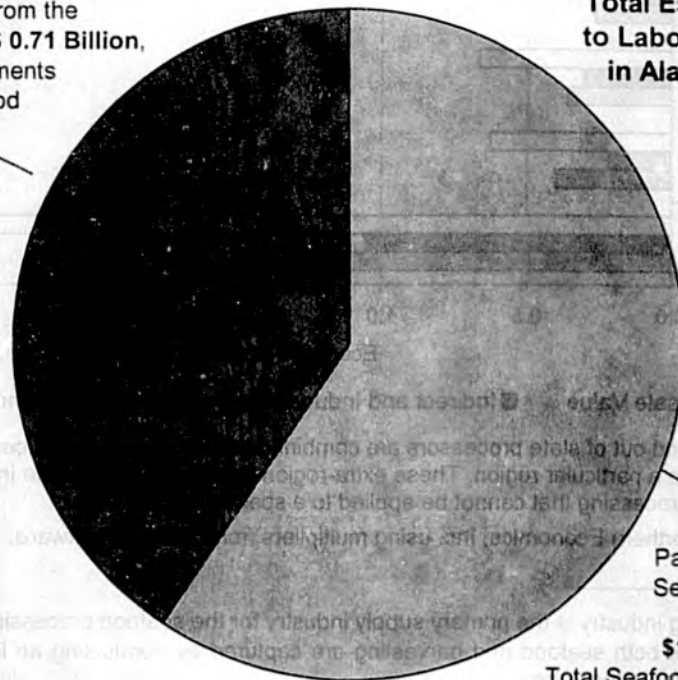
Harvesting & processing in the Alaska Seafood industry generates a workforce of **56,606**, or **72%** of the total workforce generated by the seafood industry

Source: Estimated by Northern Economics, Inc. using multipliers from IMPLAN software.

Figure 39. Estimated Direct, Indirect, and Induced Payments to Labor in the Seafood Industry in Alaska

Statewide Indirect and Induced Payments to Labor from the Seafood Industry = **\$ 0.71 Billion**, or **40%** of Total Payments to Labor from Seafood

Total Estimated Payments to Labor from the Seafood in Alaska = \$ 1.75 Billion



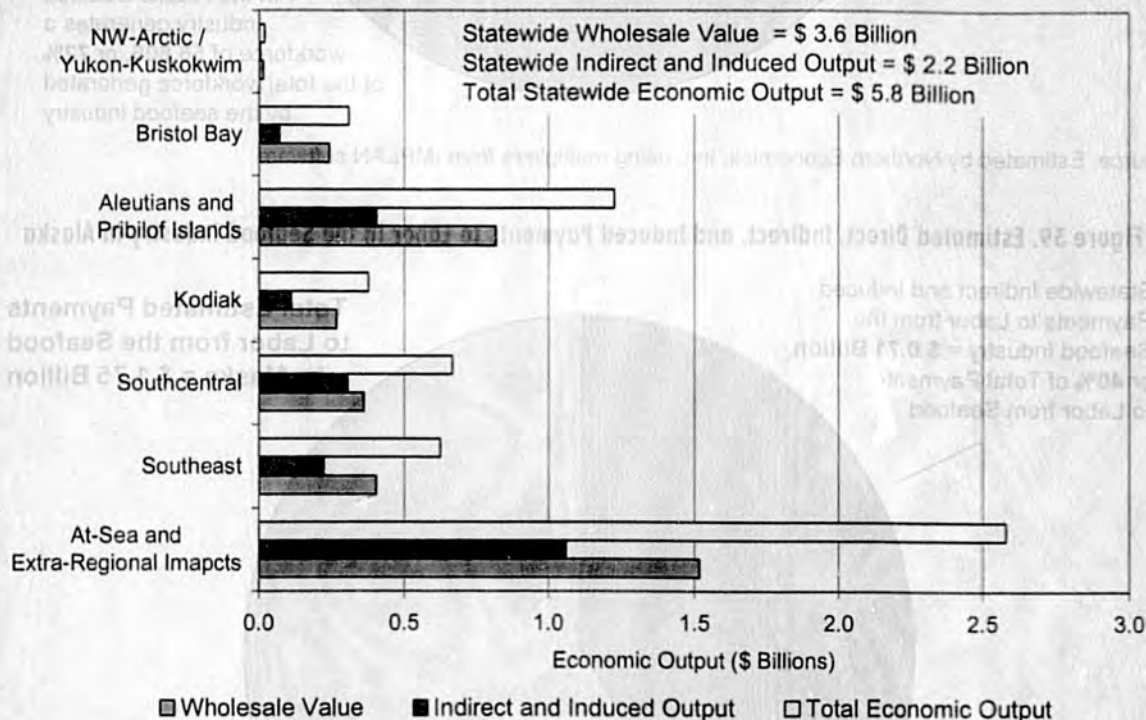
Payments to Labor from Seafood Harvesting and Processing in Alaska **\$1.04 Billion** or **60%** of Total Seafood Payments to Labor

Source: Estimated by Northern Economics, Inc. using multipliers from IMPLAN software.

The seafood industry has variable levels of impacts within different regions. In general, the more developed a region's economy, the greater the additional impact the industry has inside the region. For example, harvesting and processing activity that takes place in South Central Alaska has a greater economic impact in that region than activity in Bristol Bay. Direct, indirect, and induced economic output by region (estimated using IMPLAN™) is shown in Figure 40. In the figure, the direct output is equal to the wholesale value of the seafood industry in the region for 2007⁴⁵.

In addition to indirect and induced impacts within the region, additional economic activity occurs outside the region, but still within the state.⁴⁶ These "extra-regional impacts" occur in the home regions of non-local harvesters, and in transportation and supply hubs. The direct effects of the at-sea processing sector are also shown as part of the "extra-regional" impacts, because they are not specific to any particular region of the state. IMPLAN does not provide data on linkages to other regions, but does provide a multiplier for the state as a whole, through which the extra-regional impacts as a whole can be calculated. Figure 40 shows the statewide total of extra-regional indirect and induced impacts to be \$1.1 billion or 49 percent of all indirect and induced economic output. Figure 41 and Figure 42 show direct workers and payments to labor and estimates of indirect and induced jobs and payments to labor by region.

Figure 40. Estimated Direct, Indirect, and Induced Output of Alaska's Seafood Industry, by Region



Note: Impacts of at-sea and out of state processors are combined with indirect and induced impacts that cannot be specifically assigned to a particular region. These extra-regional impacts also include indirect and induced impacts of shore based processing that cannot be applied to a specific region.

Source: Developed by Northern Economics, Inc. using multipliers from IMPLAN software.

⁴⁵ The seafood harvesting industry is the primary supply industry for the seafood processing industry. Thus, all of the economic impacts of both seafood and harvesting are captured by conducting an input-output analysis of the seafood processing industry alone.

⁴⁶ There are also significant amounts of economic activity that leak out of the state to other states and countries.

Figure 41. Estimated Direct, Indirect, and Induced Workers in Alaska's Seafood Industry, by Region

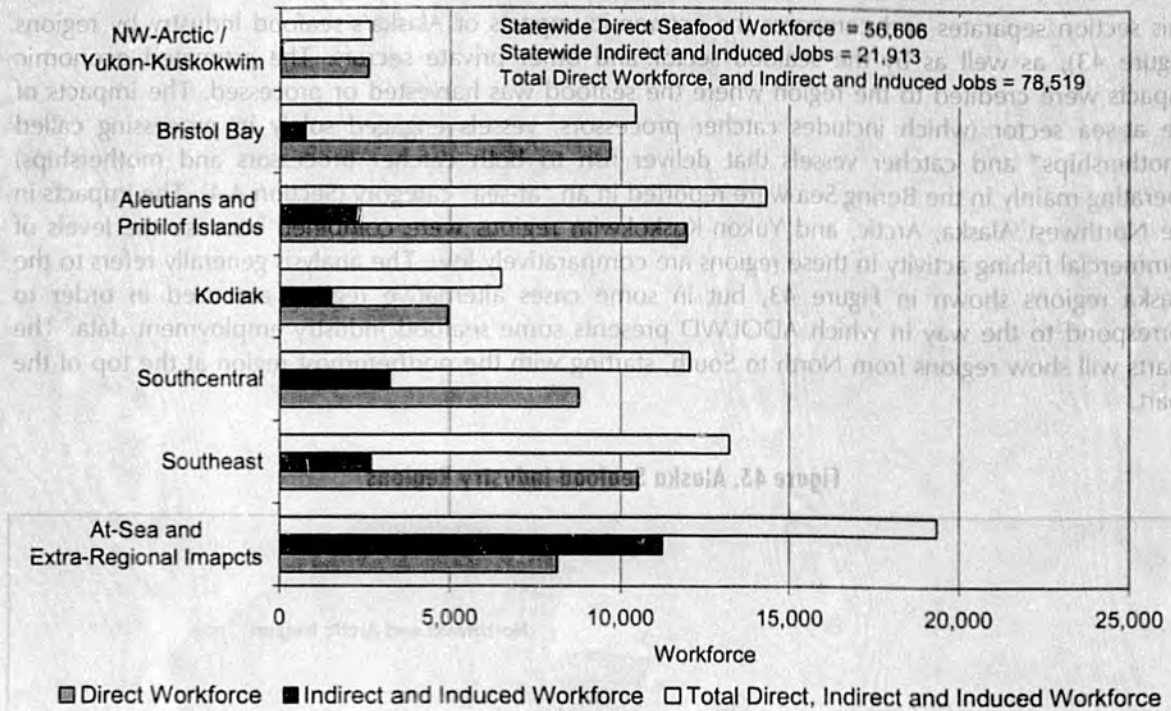
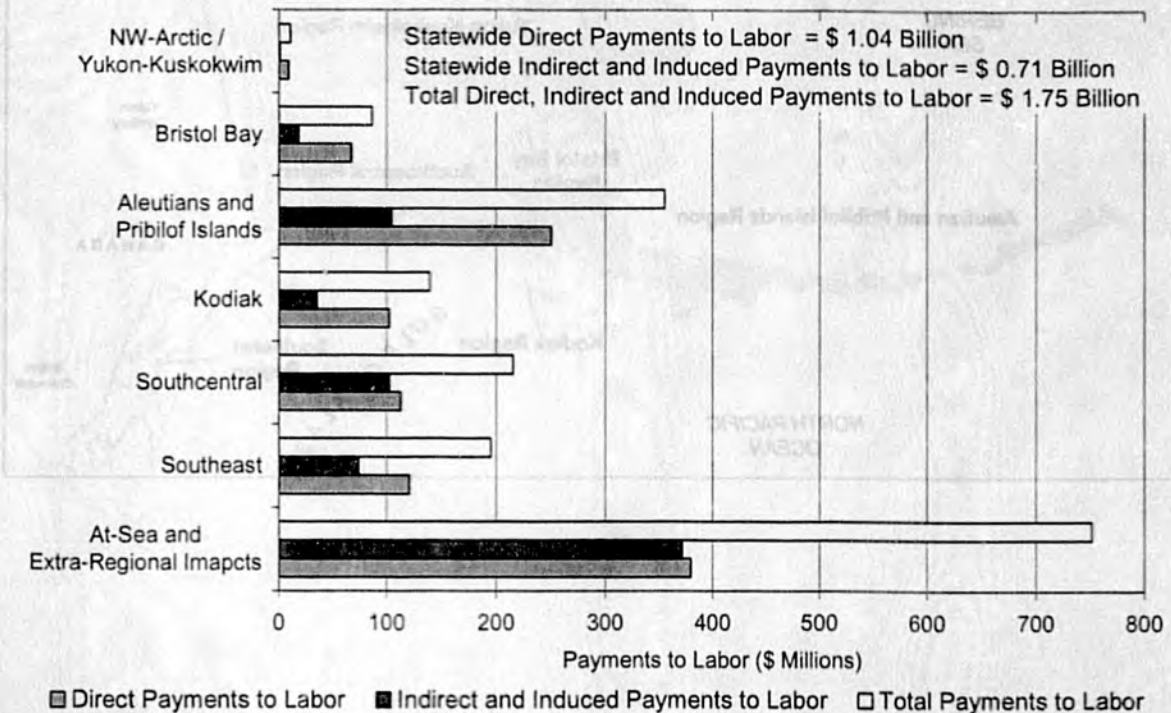


Figure 42. Estimated Direct, Indirect, and Induced Payments to Labor, by Region



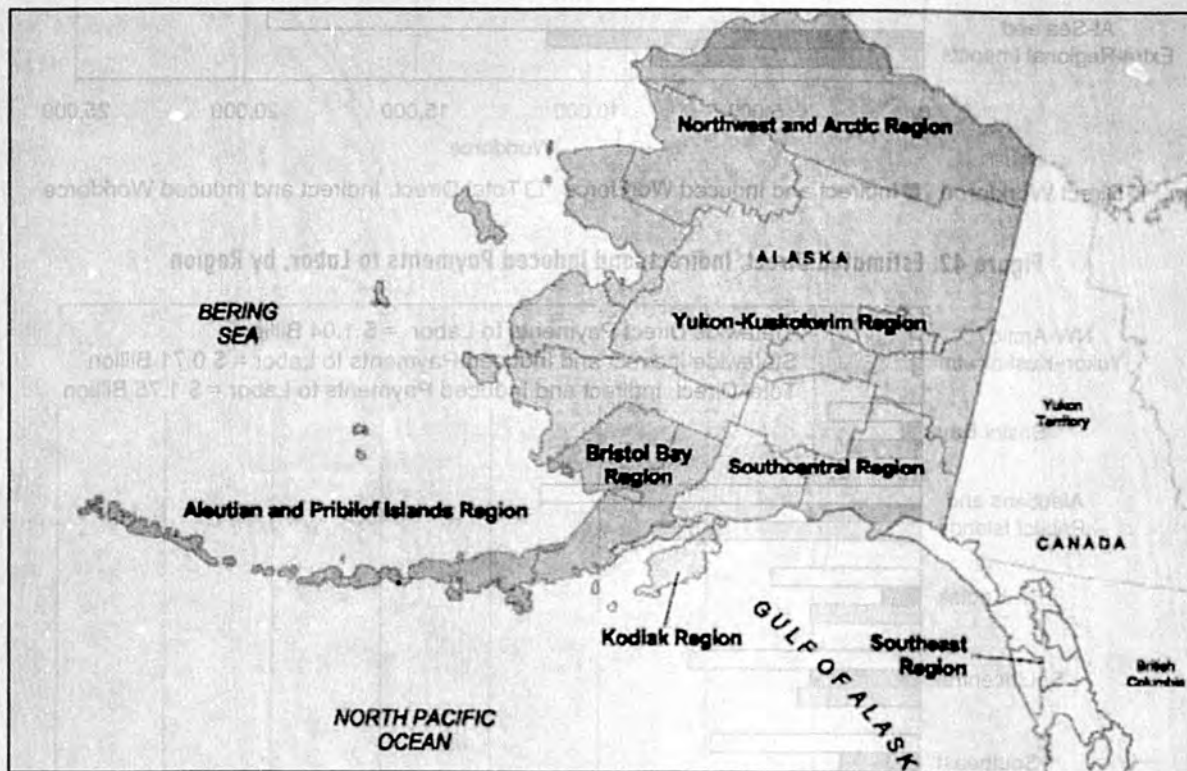
Note for Figure 41 and Figure 42: Impacts of at-sea and out of state processors are combined with indirect and induced impacts that cannot be specifically assigned to a particular region. These extra-regional impacts also include indirect and induced impacts of processing that cannot be applied to a specific region.

Source: Developed by Northern Economics, Inc. using multipliers from IMPLAN software.

4.6 Economic Impacts by Alaska Geographic Region

This section separates and compares the economic impacts of Alaska's seafood industry by regions (Figure 43), as well as by the seafood sector and other private sectors. The estimated economic impacts were credited to the region where the seafood was harvested or processed. The impacts of the at-sea sector (which includes catcher processors, vessels engaged solely in processing called "motherships" and catcher vessels that deliver fish to both catcher processors and motherships) operating mainly in the Bering Sea were reported in an "at-sea" category (Section 4.4). The impacts in the Northwest Alaska, Arctic, and Yukon-Kuskokwim regions were combined because the levels of commercial fishing activity in these regions are comparatively low. The analysis generally refers to the Alaska regions shown in Figure 43, but in some cases alternative regions are used in order to correspond to the way in which ADOLWD presents some seafood industry employment data. The charts will show regions from North to South, starting with the northernmost region at the top of the chart.

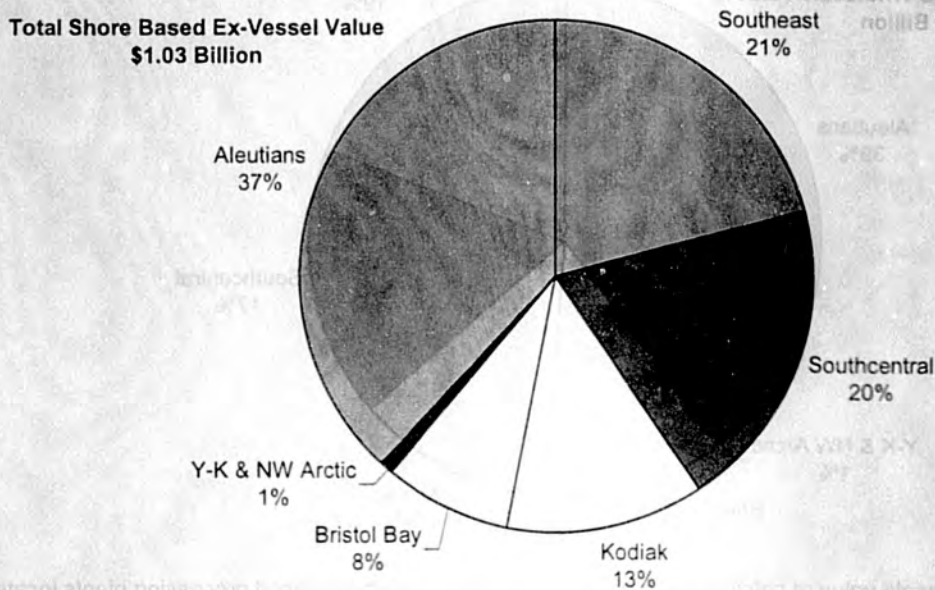
Figure 43. Alaska Seafood Industry Regions



4.6.1 Ex-vessel Value in Alaska Regions

Figure 44 divides the estimated statewide ex-vessel value of fish and shellfish harvests in 2007 among regions. The \$1.03 billion total ex-vessel value shown in the figure does not include \$522 million in estimated ex-vessel value for the at-sea sector and shore-based processors located outside the State of Alaska. The Aleutian and Pribilof Islands was clearly the dominant region in Alaska, with commercial landings valued at \$392 million, 37 percent of the total ex-vessel value of all the regions. Southeast and Southcentral accounted for respectively 21 and 20 percent of the total ex-vessel value.

Figure 44. Percentage of Ex-vessel Value of Alaska Shore-based Seafood Industry Harvest by Region, 2007



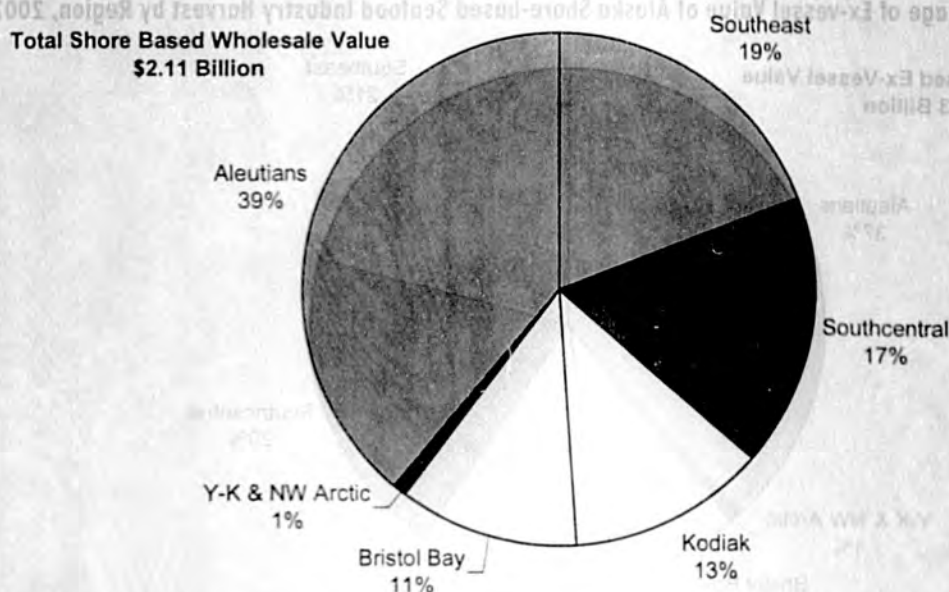
Note: Excludes ex-vessel payments by motherships, shore-based processing plants located outside of Alaska, and the imputed ex-vessel value of catcher processors.

Source: Developed by Northern Economics based on data from Hiatt (2008a).

4.6.2 First Wholesale Value in Alaska Regions

As shown in Figure 45, the Aleutian and Pribilof Islands region was also the largest region in terms of first wholesale value. The accounted for about 39 percent, or \$821.9 million of the region's first wholesale value of shore-side processed seafood. The total wholesale value of Alaska seafood industry harvest for the regions were \$2.11 billion in 2007, Southeast and Southcentral regions accounted for 19 and 17 percent this total.

Figure 45. Percentage of First Wholesale Value of Alaska Seafood Industry Harvest by Region, 2007



Note: Excludes wholesale value of catcher processors, motherships, and shore-based processing plants located outside of Alaska

Source: Developed by Northern Economics based on data from Hiatt (2008a).

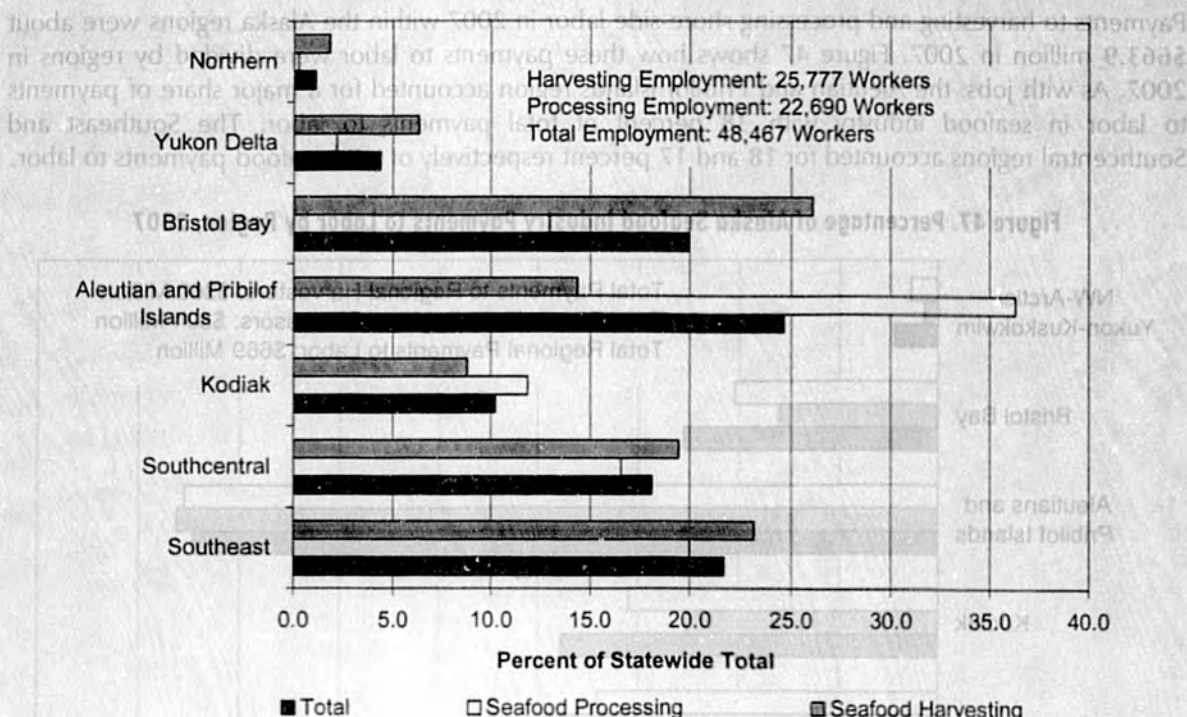
4.6.3 Seafood Employment in Alaska Regions

Figure 46 shows the number of workers employed in the shore-side seafood industry by region in 2006.⁴⁷ The Aleutian and Pribilof Islands region, with its concentration of large seafood processing facilities, accounted for 36.3 percent of the seafood processing jobs.⁴⁸ Bristol Bay accounted for a substantial portion of Alaska's seafood harvesting jobs due to the large salmon fisheries occurring in the region. The Southeast, Southcentral and Kodiak regions, which have sizeable harvesting as well as processing sectors, also made important contributions to statewide seafood industry employment. The figure shows percentages of Alaska Seafood processing and harvesting shore-side workforce by region, as well as percentage of the state's total seafood industry workforce by region. As an example, the figure shows that Bristol Bay has about 13 percent of Alaska's total seafood processing jobs, 26.1 percent of the state's total seafood harvesting jobs, and about 19.9 percent of the state's workforce in seafood harvesting and seafood processing combined.

⁴⁷ Seafood harvesting workforce estimates for 2007 were not available at the time this report was developed.

⁴⁸ Fishing ports in the Aleutian and Pribilof Islands region with large seafood processing facilities include Dutch Harbor-Unalaska (which has six processing plants), Akutan (where Trident Seafoods has the largest seafood processing operation in North America), Adak, Atka, King Cove, St. Paul, Port Moller, and Sand Point.

Figure 46. Percentage of Alaska Shore-side Processing and Harvesting Workforce by Region, 2006



Notes:

- 1) Workforce refers to the number of workers employed in an industry for any amount of time during the year.
- 2) Yukon Delta Includes data from the Bethel and Wade Hampton census areas; Northern includes data from the Denali, Fairbanks North Star, North Slope and Northwest Arctic boroughs and the Nome, Southeast Fairbanks and Yukon-Koyukuk census areas. Other regions are as shown in Figure 43.
- 3) 2007 data are not available.

Source: Developed by Northern Economics based on data from ADOLWD (2007a).

4.4.2 Regional Importance of Alaska Seafood Industry

The economic importance of the seafood industry in Alaska goes beyond the value of products harvested and processed in the state each year. The estimated \$3.6 billion of economic output generated by the shore-based seafood industry gives an indication of the economic importance of the industry. However, if the seafood industry were to go away, many communities would experience lasting effects.

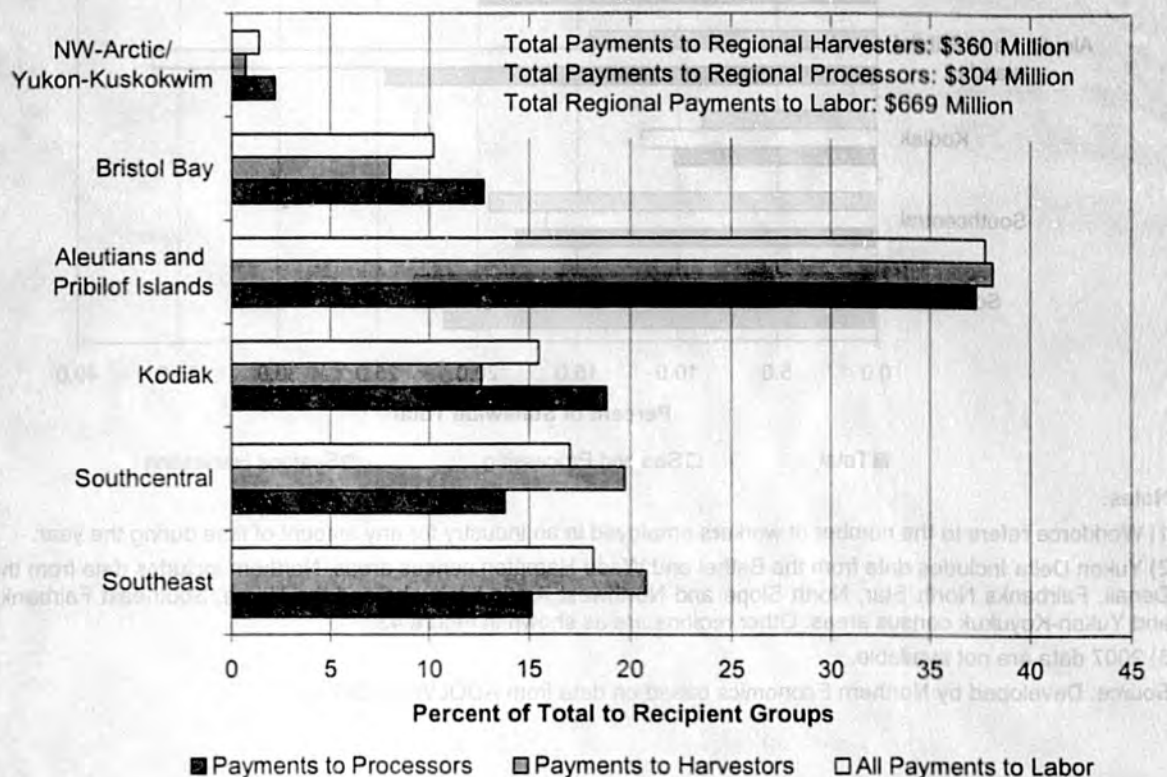
One of the transportation challenges faced in Alaska is the high cost of bringing goods into the state. One of the factors causing these high transportation costs is the fact that the quantity of goods being shipped to Alaska far exceeds the quantity of goods being shipped from Alaska. The lack of exports means that more of the round-trip transportation cost has to be covered by charges on imported goods sent than would be the case if imports and exports were more balanced.

In communities where the seafood industry is established, seafood exports help to increase marine transportation activity and reduce transportation costs. The industry is also responsible for a substantial amount of air traffic as harvesting and processing workers travel to and from fishing areas with the

4.6.4 Payments to Labor in Alaska Regions

Payments to harvesting and processing shore-side labor in 2007 within the Alaska regions were about \$663.9 million in 2007. Figure 47 shows how these payments to labor were divided by regions in 2007. As with jobs, the Aleutian and Pribilof Islands region accounted for a major share of payments to labor in seafood industry with 38 percent of total payments to labor. The Southeast and Southcentral regions accounted for 18 and 17 percent respectively of total seafood payments to labor.

Figure 47. Percentage of Alaska Seafood Industry Payments to Labor by Region, 2007



Source: Developed by Northern Economics based on data from ADOLWD (2008b) and Hiatt (2008a).

4.6.5 Regional Importance of Alaska Seafood Industry

The economic importance of the seafood industry in Alaska goes beyond the value of products harvested and processed in the state each year. The estimated \$3.65 billion of economic output generated by the shore-based seafood industry gives an indication of the economic importance of the industry. However, if the seafood industry were to go away, many communities would experience lasting effects.

One of the transportation challenges faced in Alaska is the high cost of bringing goods into the state. One of the factors causing these high transportation costs is the fact that the quantity of goods being shipped to Alaska by far exceeds the quantity of goods being shipped from Alaska. The lack of exports means that more of the round-trip transportation cost has to be covered by charges on imported goods sent than would be if the imports and exports were more balanced.

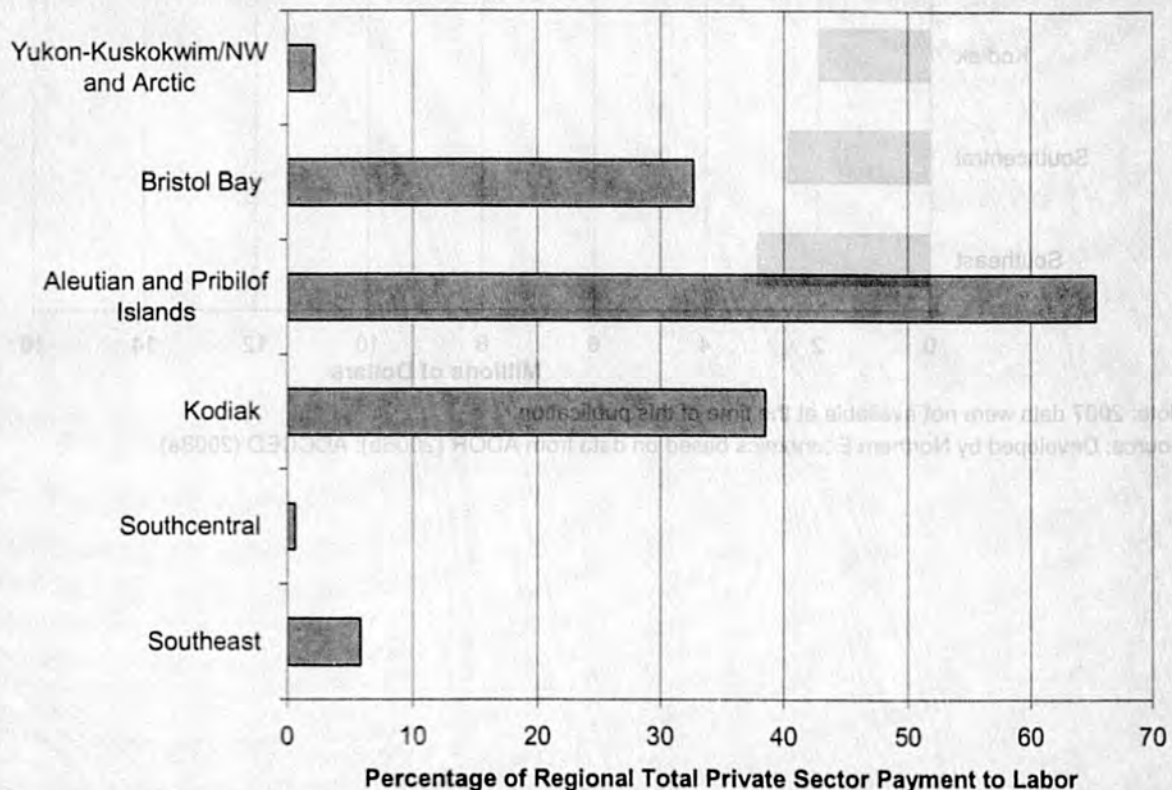
In communities where the seafood industry is established, seafood exports help to increase marine transportation activity and reduce transportation costs. The industry is also responsible for a substantial amount of air traffic as harvesting and processing workers travel to and from fishing areas with the

seasons. While the effect of the industry's presence is hard to quantify, if the seafood industry were to go away, many communities would likely see a decrease in transportation options and the frequency of trips, as well as an increase in the cost of those transportation linkages.

Many communities rely on the seafood industry as an important part of the tax base, including revenues generated from property taxes (both for processing facilities and equipment and for the year-round residents who are in the community due to their fishing employment), sales taxes (including for purchases made by seafood workers), and port charges (including dockage, wharfage, and moorage). From the private sector to the public sector, it is important to recognize that a closure of the seafood industry would have far-reaching implications.

This section describes the importance of the seafood industry by Alaska region in terms of employment and local government taxes. In many coastal areas of Alaska, seafood processing and harvesting provides a large proportion of jobs. Figure 48 shows the percentage of private sector payments to labor from Alaska Seafood Processing by region in 2007. Payments to harvesting labor have not been included as it is not reported in the ADOLWD data (see Section 1.2). With the concentration of major fishing ports in the Aleutian and Pribilof Islands region, seafood processing accounted for 65 percent of all private sector payments to labor in 2007 (Figure 48). The seafood industry accounted for over 33 percent of payments to labor in Bristol Bay and 39 percent in Kodiak. The seafood industry accounted for over 33 percent of payments to labor in Bristol Bay and 39 percent in Kodiak.

Figure 48. Percentage of Private Sector Payments to Labor from Alaska Seafood Processing by Region, 2007

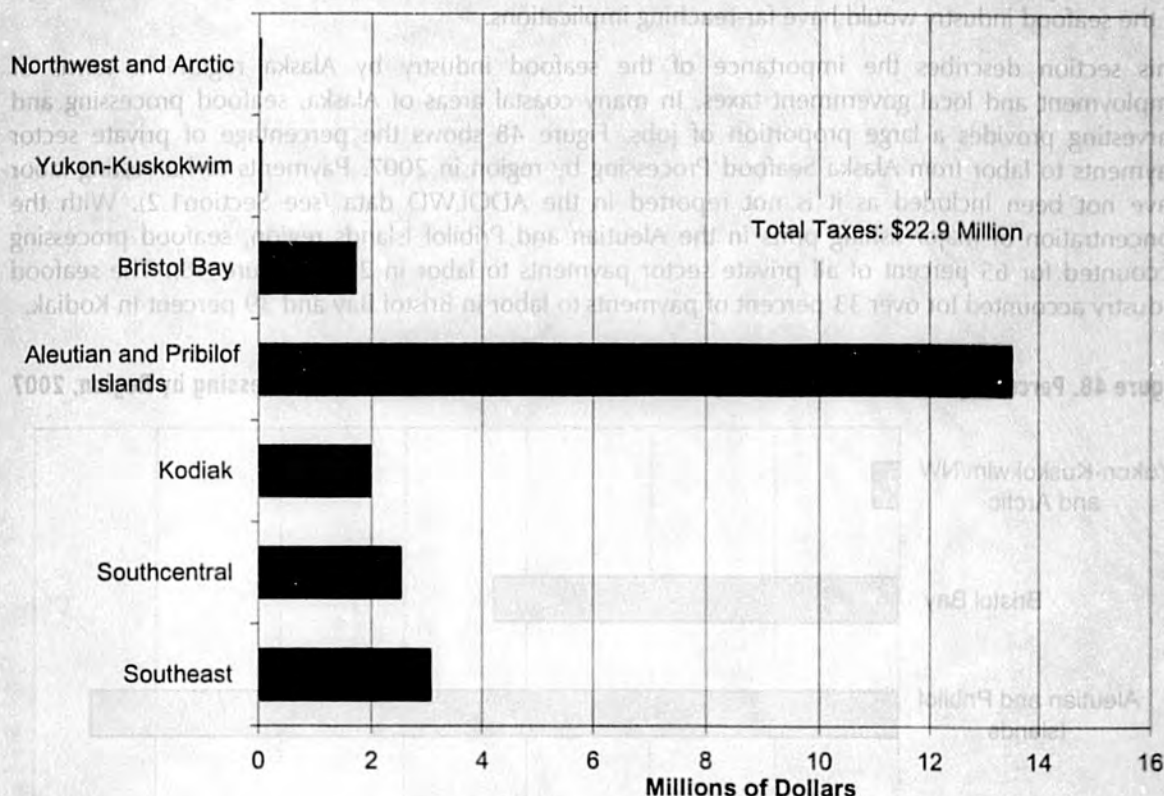


Note: The private sector excludes government and education labor, but includes labor in regional, village and tribal organizations.

Source: Developed by Northern Economics based on data from ADOLWD (2008b).

As discussed in Section 4.5.1, Alaska municipalities may receive fish-related tax revenues through programs which provide for an annual sharing of state fisheries business taxes and fishery resource landing taxes. Under these programs, the state shares 50 percent of such taxes with eligible local governments. The shared tax revenues are received by municipalities two years after the fishing season on which they are based. Figure 49 shows the distribution of this important source of local government revenues in 2006.

Figure 49. Distribution of Fisheries Business and Fishery Resource Landing Taxes by Region, 2006

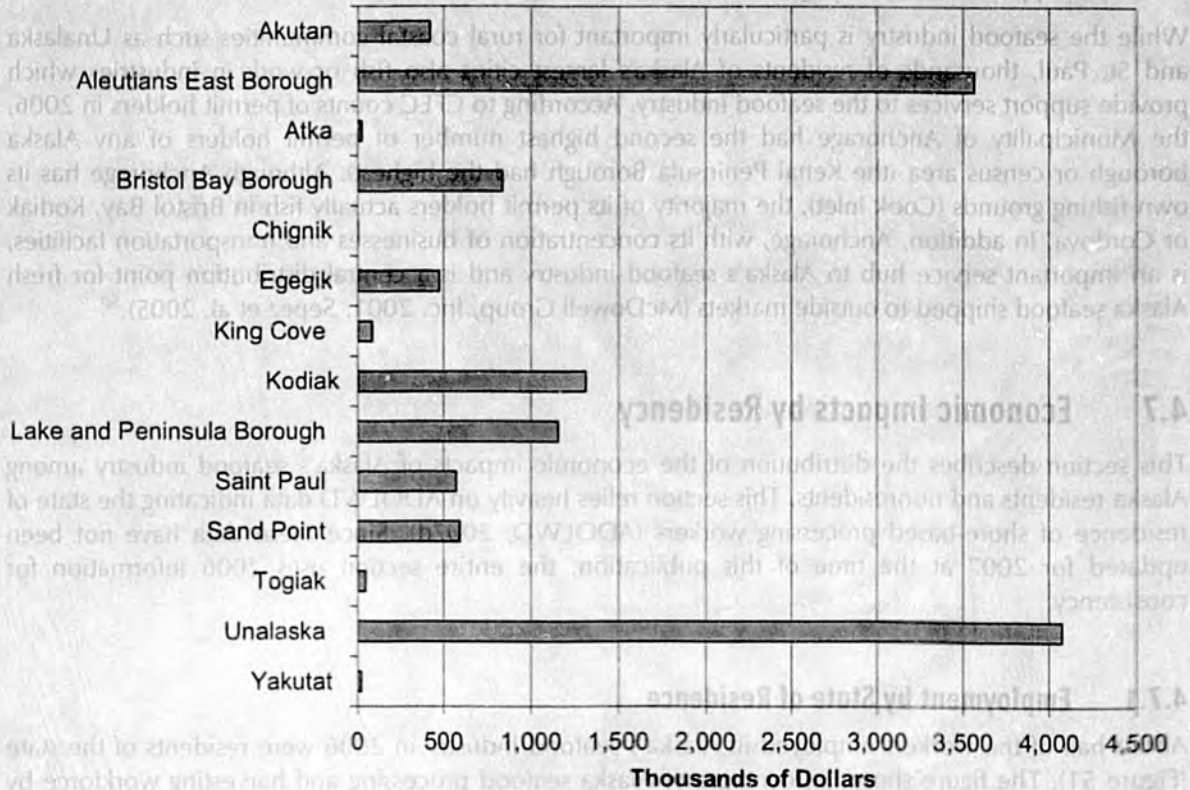


Note: 2007 data were not available at the time of this publication.

Source: Developed by Northern Economics based on data from ADOR (2006b); ADCCED (2008a).

In addition to the shared state taxes collected from fishery resources, municipalities have the power to levy their own local tax on the sale of fish to processors, and many municipalities have chosen to do so (Figure 50). In the figure, the municipalities are listed in alphabetical order.

Figure 50. Alaska Seafood Industry-Related Municipal Taxes and Revenues by Municipality, 2007



Note: Chart only shows fish taxes, not property or sales taxes.

Source: Developed by Northern Economics based on data from ADCCED (2008b).

For many of the coastal communities within the important fishing regions discussed above, seafood harvesting and processing are often the only significant private sector activities, and fisheries taxes are the most important source of local government revenues. For example, the economy of the City of Unalaska, located in the Aleutians West Census Area, is based almost entirely on the seafood industry. The industry is the major source of employment, accounting for over 90 percent of jobs (Sepez et al. 2005). In FY 2006, \$11,371,533, or 43 percent of Unalaska's general fund revenues, were derived from the city's share of the fisheries business tax and fishery resource landing tax and from its seafood sales tax (raw fish tax) (City of Unalaska 2006).⁴⁹

Another way of assessing the economic dependence of Alaska municipalities on the seafood industry is to examine the fiscal impacts when fishery harvests decline. For instance, Scholz et al. (2007) described the effects of the sharp drop in Bering Sea snow crab landings (Section 2.3) on the fiscal condition of the City of St. Paul in the Pribilof Islands. In 1999, the operating revenue for St. Paul was \$11,672 per capita. In 2000, after the snow crab fishery's sudden collapse, the operating revenue was \$6,491 per capita, a decrease of almost 50 percent. The downturn in the snow crab fishery was also

⁴⁹ The City of Unalaska charges a general sales tax of three percent for the goods and services provided locally. Most of this revenue is derived from fuel sales to the fishing fleet and processing plants (City of Unalaska 2006).

matched by a steep decline in the city's population. More recently, the economy of St. Paul has appeared to be stabilizing due in large part to the community's participation in CDQ Program fisheries (Scholz et al. 2007). In short, it is no exaggeration to say that many communities in the Aleutian and Pribilof Islands region—and others scattered throughout much of coastal Alaska—would virtually disappear without fishing (Patton and Robinson 2006).

While the seafood industry is particularly important for rural coastal communities such as Unalaska and St. Paul, thousands of residents of Alaska's largest cities also fish or work in industries which provide support services to the seafood industry. According to CFEC counts of permit holders in 2006, the Municipality of Anchorage had the second highest number of permit holders of any Alaska borough or census area (the Kenai Peninsula Borough had the highest). Although Anchorage has its own fishing grounds (Cook Inlet), the majority of its permit holders actually fish in Bristol Bay, Kodiak or Cordova. In addition, Anchorage, with its concentration of businesses and transportation facilities, is an important service hub to Alaska's seafood industry and is a central distribution point for fresh Alaska seafood shipped to outside markets (McDowell Group, Inc. 2001; Sepez et al. 2005).⁵⁰

4.7 Economic Impacts by Residency

This section describes the distribution of the economic impacts of Alaska's seafood industry among Alaska residents and nonresidents. This section relies heavily on ADOLWD data indicating the state of residence of shore-based processing workers (ADOLWD, 2007d). Since these data have not been updated for 2007 at the time of this publication, the entire section uses 2006 information for consistency.

4.7.1 Employment by State of Residence

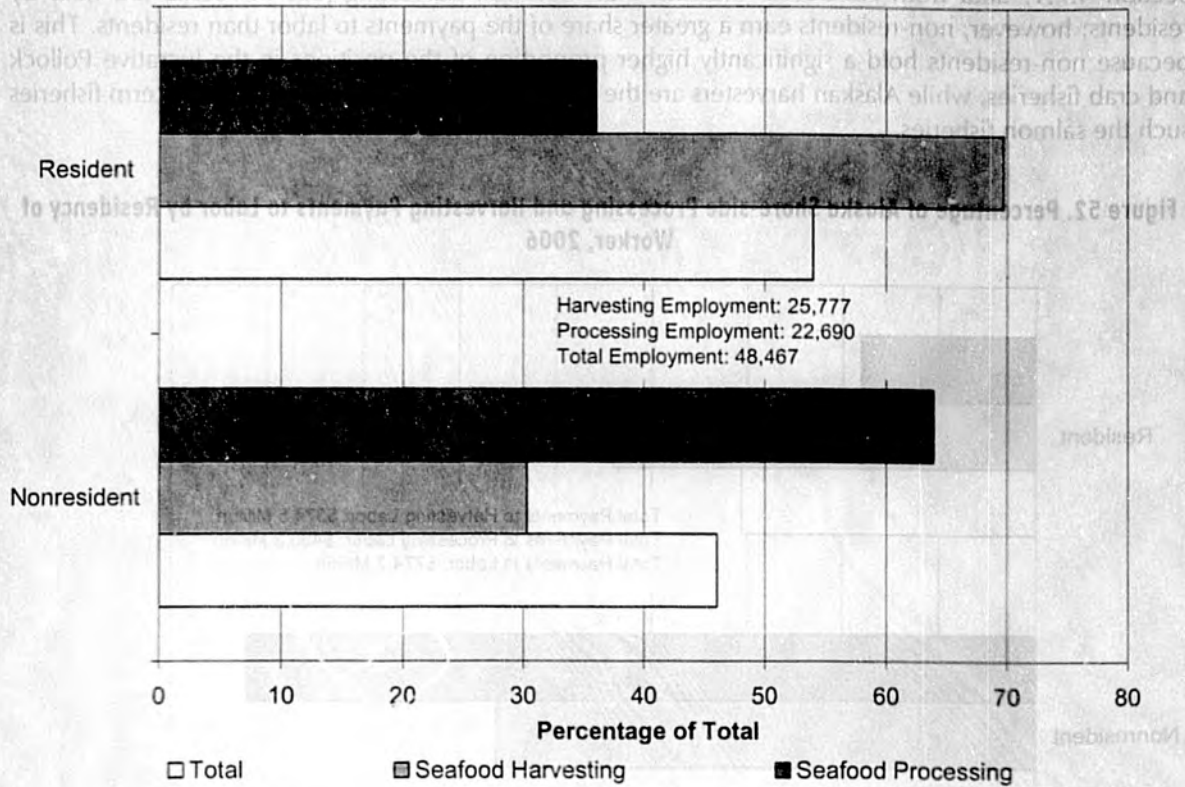
About half of the workers employed in Alaska's seafood industry in 2006 were residents of the state (Figure 51). The figure shows percentages of Alaska seafood processing and harvesting workforce by residency of worker, as well as percentage of the state's total seafood industry workforce by residency of workers. Residents account for 30 percent of the seafood processing labor, 70 percent of seafood harvesting labor, and 48 percent of total workforce in the Alaska seafood industry. Although the seafood processing sector generates thousands of jobs, it employs relatively few residents. According to data for 2006, only about one-third of the seafood processing workforce are Alaskans. In contrast, Alaskans accounted for about two-thirds of the harvesting labor force in the Alaska seafood industry.

Alaska's processing companies make significant efforts to hire Alaskan residents. According to industry sources, processing hire virtually every Alaskan that is willing to work, and that can meet the basic physical requirements of the job. The Division of Employment Security in ADOLWD runs a seafood industry web site that is dedicated to helping Alaskans find processing jobs (ADOLWD, 2007b). While

⁵⁰ The following excerpt from McDowell Group, Inc. (2001:1) highlights the importance of Anchorage as a fresh seafood distribution center: "For air shipments, seafood is either trucked or flown to Anchorage where it's distributed to Lower 48 markets on passenger and cargo flights. A very small quantity is shipped on dedicated cargo freighters. Fresh seafood that is trucked directly to outside markets originates primarily out of Homer, Seward, Kenai, and Valdez. Some fresh product is trucked or flown to Anchorage, then redistributed by truck to outside markets. This fresh product usually comes from Western Alaska waters, the Kodiak area, and Prince William Sound. A small amount of fresh seafood is trucked from other Southcentral communities to Anchorage, then loaded on container ships for delivery to Tacoma, Washington. In addition, some fresh salmon is shipped out of Cordova using a landing craft to Whittier, where it is loaded on a truck, delivered to Anchorage and positioned on the ship."

there are plenty of seafood processing jobs available, Alaskan workers tend not to apply for these jobs, preferring instead to work in the harvesting sector.

Figure 51. Percentage of Alaska Shore-side Processing and Harvesting Workforce by Residency, 2006



Source: Developed by Northern Economics based data from ADOLWD (2007d; 2007e).

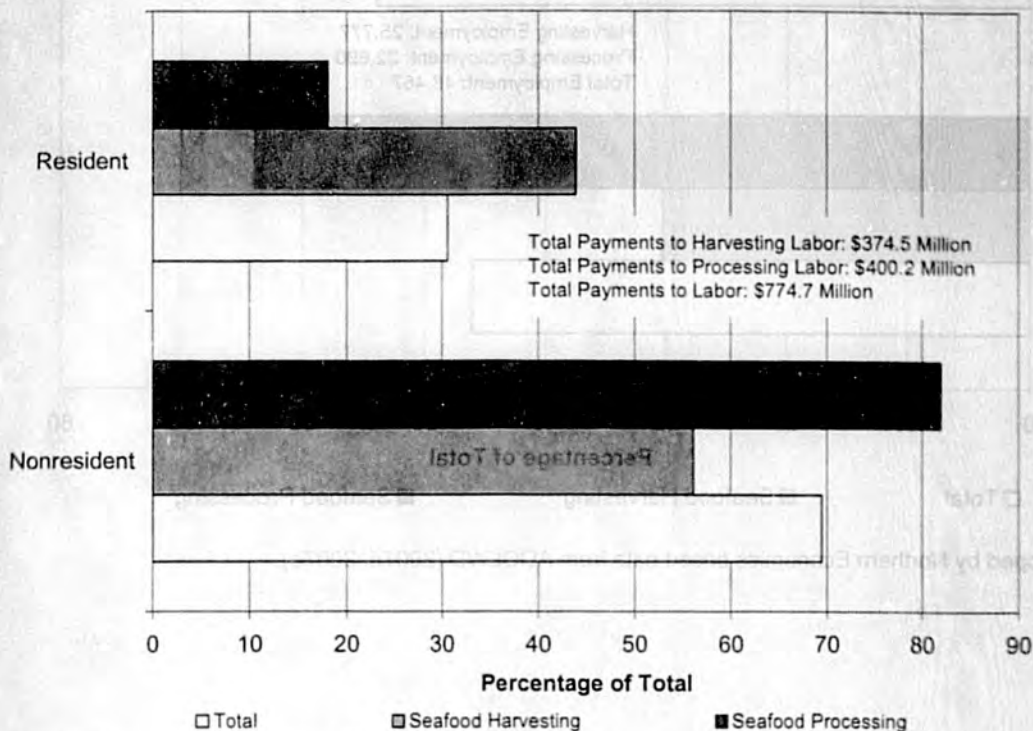
4.8 Economic Impacts of Commercial Fisheries Management and Research

The development of Alaska's commercial fisheries has been a complex process, involving the establishment of increasingly complex management systems. The economic health of those fisheries, which in turn, has led to the development of the commercial fisheries industry in Alaska. This section examines the current level of expenditures for commercial fisheries and the impact of those expenditures on the economy. Expenditures for marketing and business development are not included in this discussion, but are included in the management and research section. Estimates of state and federal expenditures in support of Alaska's commercial fisheries management and research in 2006 are presented in figure 52. The total amount spent was \$17.8 million.

4.7.2 Payments to Labor

In 2006, nonresident seafood processing workers earned about \$328 million (82 percent) of the \$400.2 million paid to all seafood processing workers (Figure 52). About 56 percent of the payments to labor in the harvesting sector, totaling around \$209.9 million, went to nonresidents. As noted in Section 4.7.1, data from ADOLWD indicate that most fish harvesting jobs in Alaska are held by residents; however, non-residents earn a greater share of the payments to labor than residents. This is because non-residents hold a significantly higher proportion of the positions in the lucrative Pollock and crab fisheries, while Alaskan harvesters are the vast majority in less lucrative or short term fisheries such as the salmon fisheries.

Figure 52. Percentage of Alaska Shore-side Processing and Harvesting Payments to Labor by Residency of Worker, 2006

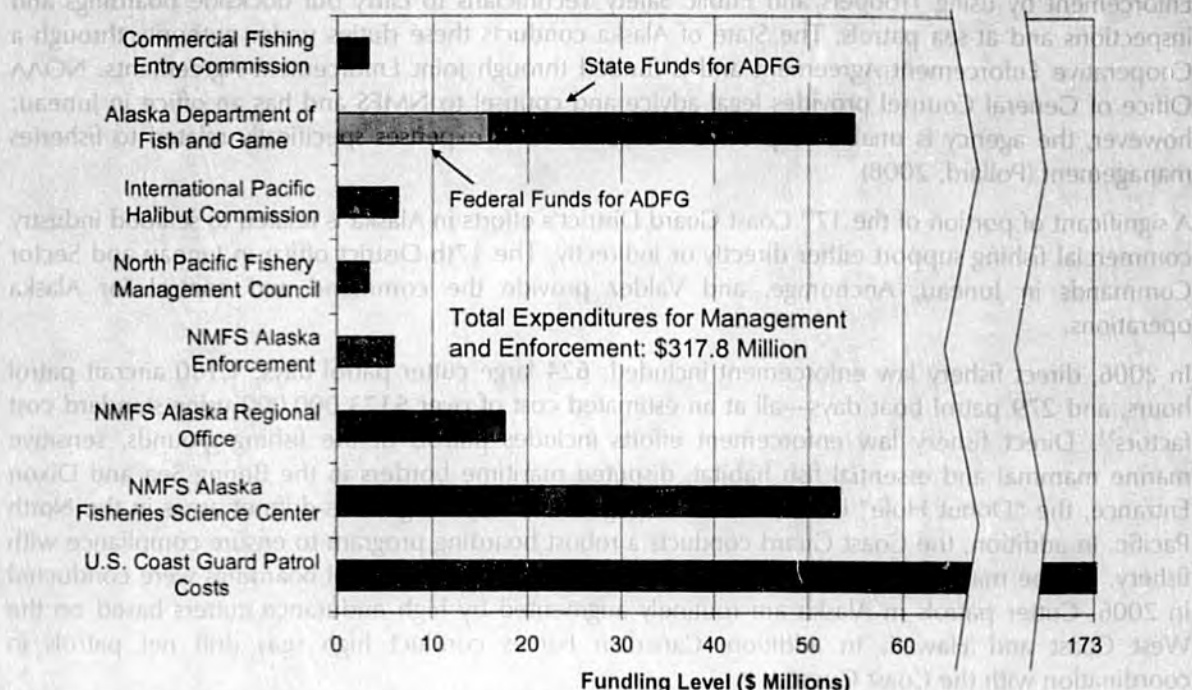


Source: Developed by Northern Economics based on data from ADOLWD (2007d, 2007e) and Hiatt (2008a).

4.8 Economic Impacts of Commercial Fisheries Management, Enforcement, and Research

The development of Alaska's commercial fisheries over the past 130 years has been accompanied by the establishment of increasingly complex management regimes designed to ensure the biological and economic health of those fisheries. State of Alaska and federal agencies have spent considerable funds to conduct stock research, make fishery management decisions, and enforce those decisions. This section examines the current level of expenditures on commercial fisheries management in Alaska. Expenditures for marketing and business development programs for Alaska's commercial fisheries are not included in this discussion, nor are expenditures for research outside of government agencies.

Estimates of state and federal expenditures in support of Alaska commercial fisheries management and research in 2006 are presented in Figure 53. The total amount spent was about \$317.8 million.

Figure 53. State and Federal Expenditures for Alaska Commercial Fisheries Management, 2006

Source: Developed by Northern Economics based on data from ADF&G (Undated), Bruce (2008), Ferrero (2008), Jones (2008), Leman (2008), Oliver (2008), Penrose (2008), Paterni (2008), Ragone (2008).

Expenditures by the ADF&G Division of Commercial Fisheries were about \$54.8 million (ADF&G undated). Federal funding, including significant amounts from Congressional earmarks, accounted for 29 percent of these expenditures. In 2006, the Division of Commercial Fisheries employed 303 full time staff and 508 seasonal workers (ADF&G undated). The Alaska Commercial Fisheries Entry Commission (CFEC), which issues permits and vessel licenses to qualified individuals in limited entry and other fisheries, had an operating budget in 2006 of approximately \$3.3 million (Penrose, 2008). Tax revenues generated by the seafood industry exceeded state expenditures on commercial fisheries management and research in FY 2006 (Section 4.5.1).

Tracking federal expenditures for Alaska commercial fisheries management and research is difficult because these expenditures are spread across several entities, some of which are not located in Alaska and/or have functions besides fisheries management and research. Some management and research functions are performed by the NMFS Alaska Regional Office based in Juneau. This NMFS regional office had an annual operating budget of about \$17.6 million in 2006 and a staff of 121 (Jones, 2009). However, most of the federally funded research on living marine resources in the waters off Alaska is conducted by the NMFS Alaska Fisheries Science Center, which is based in the NOAA Western Regional Center's Sand Point Facility in Seattle. The operating budget for the Alaska Fisheries Science Center in 2006 was around \$53.3 million (Ferrero 2008). The North Pacific Fishery Management Council, which oversees management of most groundfish fisheries in the waters off Alaska and jointly manages Bering Sea crab fisheries, had an annual operating budget in 2006 of about \$3.4 million and a staff of 15 (Oliver 2008).

NMFS Office for Law Enforcement, which is involved in the enforcement of fisheries management regulations in the EEZ, has offices in Juneau, Anchorage, Homer and Petersburg. Fully staffed, these Alaska offices operate with 17 Special Agents and 15 Enforcement Officers. Their total budget was

about \$6.0 million in 2006 (Paterni, 2008). The Alaska State Troopers assist the NMFS Office for Law Enforcement by using Troopers and Public Safety Technicians to carry out dockside boardings and inspections and at-sea patrols. The State of Alaska conducts these duties under authority through a Cooperative Enforcement Agreement and is funded through Joint Enforcement Agreements. NOAA Office of General Counsel provides legal advice and counsel to NMFS and has an office in Juneau; however, the agency is unable to provide a breakdown of expenses specifically related to fisheries management (Pollard, 2008).

A significant portion of the 17th Coast Guard District's efforts in Alaska is related to seafood industry commercial fishing support either directly or indirectly. The 17th District office in Juneau and Sector Commands in Juneau, Anchorage, and Valdez provide the command and control for Alaska operations.

In 2006, direct fishery law enforcement included: 624 large cutter patrol days, 1,160 aircraft patrol hours, and 279 patrol boat days—all at an estimated cost of over \$173,000,000 using standard cost factors⁵¹. Direct fishery law enforcement efforts includes patrols of the fishing grounds, sensitive marine mammal and essential fish habitat, disputed maritime borders in the Bering Sea and Dixon Entrance, the "Donut Hole" in the Central Bering Sea, and the high seas driftnet areas in the North Pacific. In addition, the Coast Guard conducts a robust boarding program to ensure compliance with fishery, marine mammal, safety, and immigration rules; 748 fishing vessel boardings were conducted in 2006. Cutter patrols in Alaska are routinely augmented by high endurance cutters based on the West Coast and Hawaii. In addition, Canadian Forces conduct high seas drift net patrols in coordination with the Coast Guard.

Three medium endurance cutters – STORIS, ACUSHNET, and ALEX HALEY—are based in Alaska for the primary purpose of fishery enforcement. Six 110' patrol boats spend considerable time on enforcement. In addition, the air stations at Kodiak and Sitka provide both law enforcement patrols and search and rescue (SAR). The Kodiak Fishery Training Center has 15 personnel dedicated to supporting the fishery mission and the 17th District staff in Juneau has four dedicated personnel, with 6 more inspectors stationed at the Sectors or Marine Safety Detachment. These inspectors, along with other personnel, conducted nearly 1,100 fishing vessel safety exams in 2006, and issued approximately 700 safety decals to those vessels which passed their exams as part of this voluntary program. Small boat stations in Ketchikan and Juneau routinely enforce IFQ regulations. Four HH65 helicopters with 53 personnel are based in Kodiak for the primary purpose of supporting fisheries enforcement. The total number of personnel primarily dedicated to fishery enforcement is 321.

Six buoy tenders maintain aids to navigation in ports and waterways important to commercial fishing and transport of fish products or supporting logistics. Marine safety personnel support commercial fishing and processing through safety and pollution prevention and response programs. In addition to short range aids to navigation, seven LORAN stations provide electronic navigation. Support centers in Kodiak and Ketchikan provide logistical, medical, and engineering support to the operating forces in Alaska.

In 2006, approximately 2,550 active duty, reserve, and civilian Coast Guard personnel were based in Alaska⁵². It is difficult to estimate the exact proportion of personnel dedicated to commercial fishing enforcement and the economic activity they and their families generate in addition to the economic

⁵¹ Computed from 17th Coast Guard District 2006 year in Review Report to the North Pacific Fishery Management Council and Commandant Instruction 7310.1J

⁵² USCG Alaska Fact Sheet (2006)

activity generated by Coast Guard units; however, a conservative estimate is that 765 or 30 percent or more of total personnel are based in Alaska as a result of commercial fishing.

It is estimated that management of Alaska halibut fisheries represented about \$6.4 million of IPHC's total annual expenditures in 2006 (Leman 2008).

State and federal expenditures toward commercial fisheries management and research directly support the functions of the institutions carrying out the research. In the case of universities, research funds support faculty investigators, student assistants and others directly involved in the research activity. The administration of research projects and various research-supporting activities generate additional permanent and temporary positions within the universities. In the case of other institutions, such as ADF&G and NMFS, fisheries management and research money is a primary source for funding the employment of in-house researchers, supporting staff and other workers.

It is also important to discuss federal research programs that are not directly related to Alaska commercial fisheries but are intended to indirectly benefit those fisheries. Most notable among these programs is the Steller sea lion research program, which was expanded out of a concern that the Alaska groundfish fishery might face costly restrictions as a result of scientific uncertainty about the fishery's role, if any, in the decline of the Steller sea lion population (NMFS 2007a). It was hoped that with this program the fishery could remain open while, simultaneously, more research and protection of Steller sea lion could occur.⁵³ Between FY 2000 and FY 2006, a total of \$166.75 million was appropriated for Steller sea lion research and management through Congressional earmarks or the NMFS budget (NMFS 2007a).⁵⁴ Although much of this funding has been channeled into institutions outside of Alaska, several in-state entities have also been recipients, including ADF&G, NPFMC, Alaska SeaLife Center, University of Alaska Fairbanks, Alaska Fisheries Development Foundation and Prince William Sound Science Center (NMFS 2007a).

Research-related spending not only generates jobs and income in the entities that are recipients of the research funds, it can have a "ripple" economic effect throughout a region. For example, research funding can benefit a large variety of businesses in the private economy by providing funding recipients with procurement budgets that allow them to purchase research-related equipment, supplies and services (e.g., computer components and other high-tech equipment, professional and maintenance services, travel services, aircraft and vessel charters and printing and photographic services). The periodic convening of researchers at research symposia and workshops can also benefit private businesses in the service sector, such as hotels and restaurants. In addition, the majority of the wages and salaries of researchers and other research-related workers circulate back into the local economy through purchases of local goods and services, thereby providing a foundation for other jobs in the retail and service sectors.

⁵³ NMFS (2007a:3-31) summarized the importance of the Steller sea lion research program to Alaska commercial fisheries as follows: "Several of the largest U.S. fisheries operate within the range of the [Steller sea lion]; the fisheries' role, if any, in the decline of the western [Steller sea lion population] remains both a topic of debate ... and a significant issue for ongoing litigation (*Greenpeace et al. v. NMFS and At-Sea Processors et al.*, Civ. No. C98-0492-C). On the one hand, if fisheries play a significant part in the decline and lack of recovery, then actions should be taken to avoid those effects. On the other hand, if fisheries do not impede recovery, then the economic viability of those fisheries should not be unnecessarily compromised by regulations or other legal requirements related to protection of [Steller sea lions]. In either case, [Steller sea lion] scientific information is critical to the future of both the [Steller sea lion] population and commercial fisheries in Alaska."

⁵⁴ The budget for Steller sea lion research (including research outside of government agencies) since 2001 has been the largest for a species listed as threatened or endangered under the U.S. Endangered Species Act (Holmes et al. 2006).

4.9 Economic Impacts of the Western Alaska Community Development Quota Program

As described in Chapter 2, the full development of the domestic fishing and processing sectors in the BSAI fisheries between 1976 and 1990 generated substantial wealth; however, little of that wealth flowed to the small, rural villages along the coast of western Alaska. While the communities bordered some of the richest fishing grounds in the world, the high capital investment required to compete in these large-scale, industrialized fisheries precluded small communities from participating in their development.⁵⁵ This concern provided part of the impetus behind the creation of the Community Development Quota (CDQ) Program (National Research Council 1999; Northern Economics 2002).⁵⁶

This section describes the economic effects of the CDQ Program with respect to revenues, royalties, assets, employment and wages. The most recent year for which data are available is 2005—annual CDQ statistics have not been compiled and published by the State of Alaska or NMFS after 2006 amendments to the CDQ provisions of the Magnuson-Stevens Act altered the administrative aspects of the CDQ Program, including the CDQ reporting requirements and oversight roles of NMFS and the state.⁵⁷ To show how the CDQ Program has developed since its inception, this section includes historical information as well as the most current update.

The CDQ Program was created by the NPFMC in 1992 as part of the inshore/offshore allocations of pollock in the BSAI fishery. Initially, the CDQ Program set aside 7.5 percent of the BSAI's annual total allowable catch for pollock for allocation to qualifying communities. Over the years, the CDQ Program expanded to become multi-species in nature, encompassing both groundfish and non-groundfish fisheries.

Currently, 65 communities located along the Bering Sea are eligible for the CDQ Program. These communities are aligned into six CDQ groups: Aleutian Pribilof Island Community Development Association, Bristol Bay Economic Development Corporation, Central Bering Sea Fishermen's Association, Coastal Villages Regional Fund, Norton Sound Economic Development Corporation, and Yukon Delta Fisheries Development Association.

The total net income generated by the CDQ Program from 1992 through 2005 was approximately \$362 million (Figure 54). Initially, program revenues were from royalties obtained from leases of quota species. Between 1992 and 2005, approximately \$454 million were generated from these royalty payments (Figure 55). Eventually, revenues were obtained from other sources such as investments and other business activities. Revenues minus royalty income for the program, 1992 through 2000, were equal to nearly \$318 million. The dramatic increase in CDQ revenues in 2004 was due, in part, to investment payouts to several CDQ groups, high pollock and crab prices, and

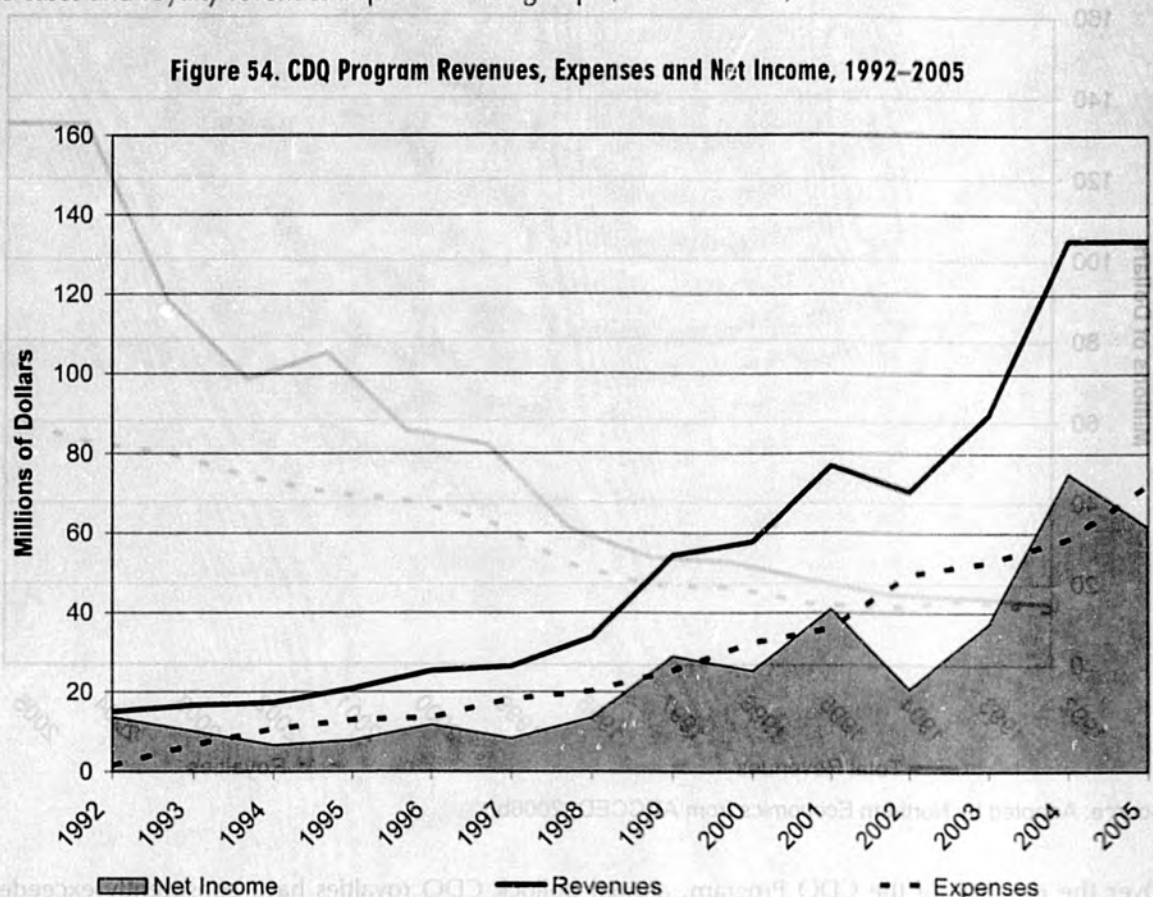
⁵⁵ The economic barriers to participation in the offshore groundfish fishery are summarized by ADCCED (undated) as follows: "Involvement in Alaska's groundfish fishery operations requires considerable investment and expertise. Factory trawler companies are multimillion-dollar operations. Their employees must possess sophisticated business and technical skills to compete in the industry. These companies not only employ seasoned captains, engineers, plant managers, maintenance crews, deckhands and processors, but headquarters are staffed with accountants, human resource professionals, administrators, lobbyists, marketing arms and sales forces."

⁵⁶ As defined by section 305(i)(1)(A) of the Magnuson-Stevens Act, the purpose of the CDQ Program is to 1) provide eligible western Alaska villages with the opportunity to participate and invest in fisheries in the BSAI Management Area; 2) support economic development in western Alaska; 3) alleviate poverty and provide economic and social benefits for residents of western Alaska; and 4) achieve sustainable and diversified local economies in western Alaska. The communities in western Alaska are predominantly Alaska Native villages.

⁵⁷ The CDQ provisions of the Magnuson-Stevens Act were amended by the Coast Guard and Maritime Transportation Act of 2006.

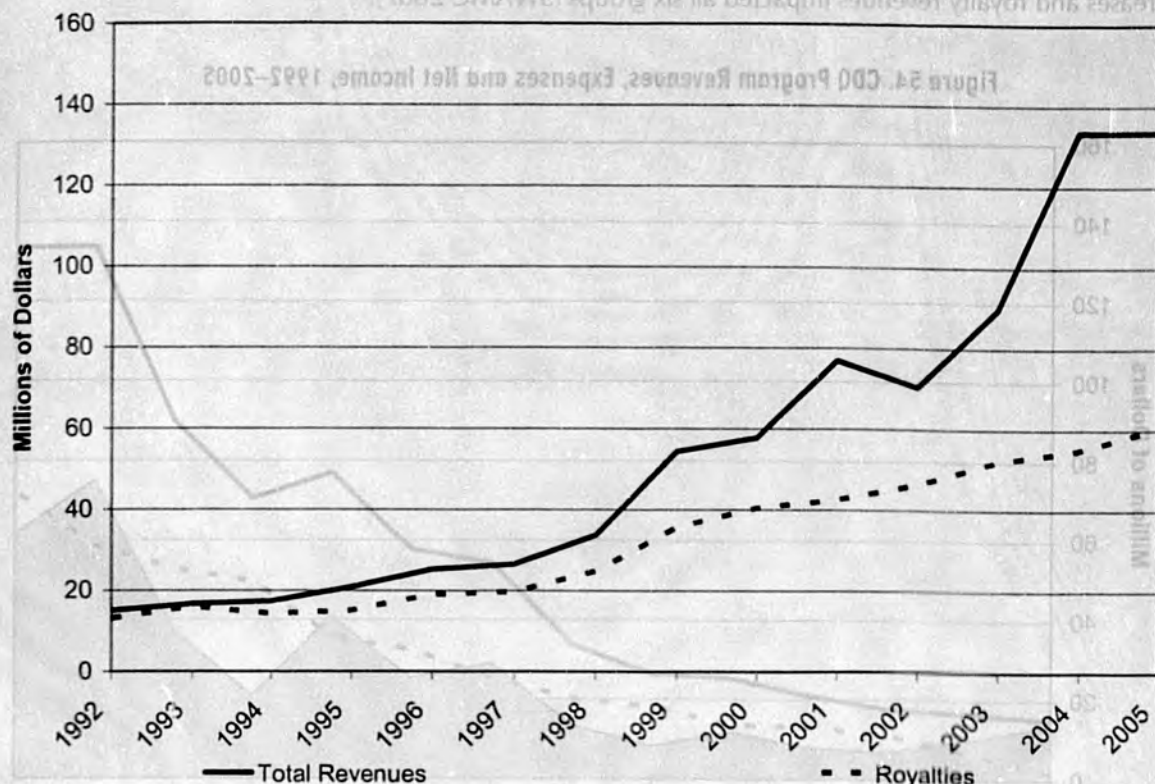
some increase in royalty revenues. Investment payouts affected only a few groups, while price increases and royalty revenues impacted all six groups (SWAMC 2007).

Figure 54. CDQ Program Revenues, Expenses and Net Income, 1992-2005



Source: Adapted by Northern Economics from ADCCED, 2006a.

Figure 55. CDQ Program Royalties and Revenues, 1992–2005

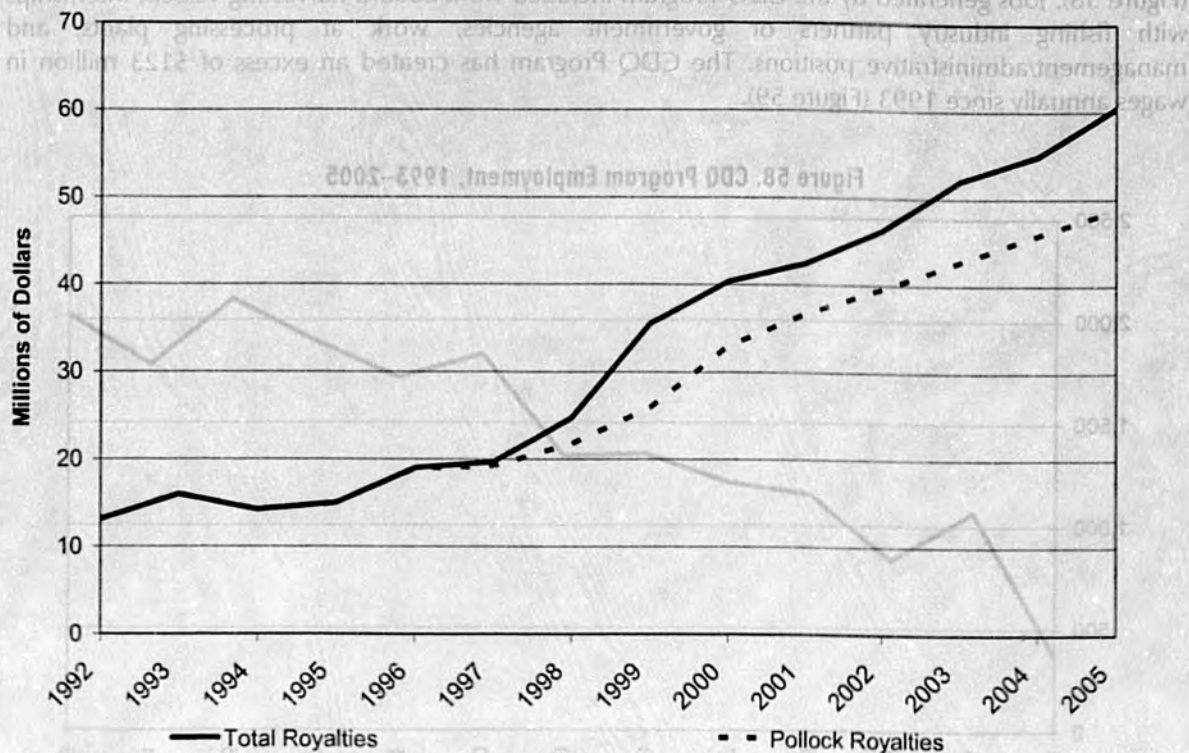


Source: Adapted by Northern Economics from ADCCED, 2006b.

Over the duration of the CDQ Program, annual pollock CDQ royalties have consistently exceeded \$13 million (Figure 56). In 2005, the CDQ groups received nearly \$49 million in pollock CDQ royalties, while royalties from the multi-species program provided the groups an additional \$11.7 million. The revenue stream from the lease of CDQ allocations has permitted the CDQ groups to make substantial fisheries-related investments. The value of CDQ group assets in aggregate increased from about \$13.3 million in 1992 to over \$415 million in 2005 (Figure 57). The CDQ groups have acquired ownership interests in the at-sea processing sector and catcher vessels. In addition, some CDQ groups have invested in inshore processing plants, motherships, and catcher-processors that operate in the crab, halibut and groundfish fisheries. A number of CDQ groups have also promoted investment in local, small-scale fishing operations targeting salmon, herring, halibut, or other species. For example, CDQ groups have channeled significant resources toward local fisheries-related infrastructure development (Northern Economics, Inc. 2002). In 2004, CDQ earned income exceeded royalty revenues for the first time in program history, and earned income doubled royalty revenues in 2005. As CDQ groups continue to make investments in various fisheries assets, capacity for earned income will continue to increase in future years (SWAMC 2007).⁵⁸

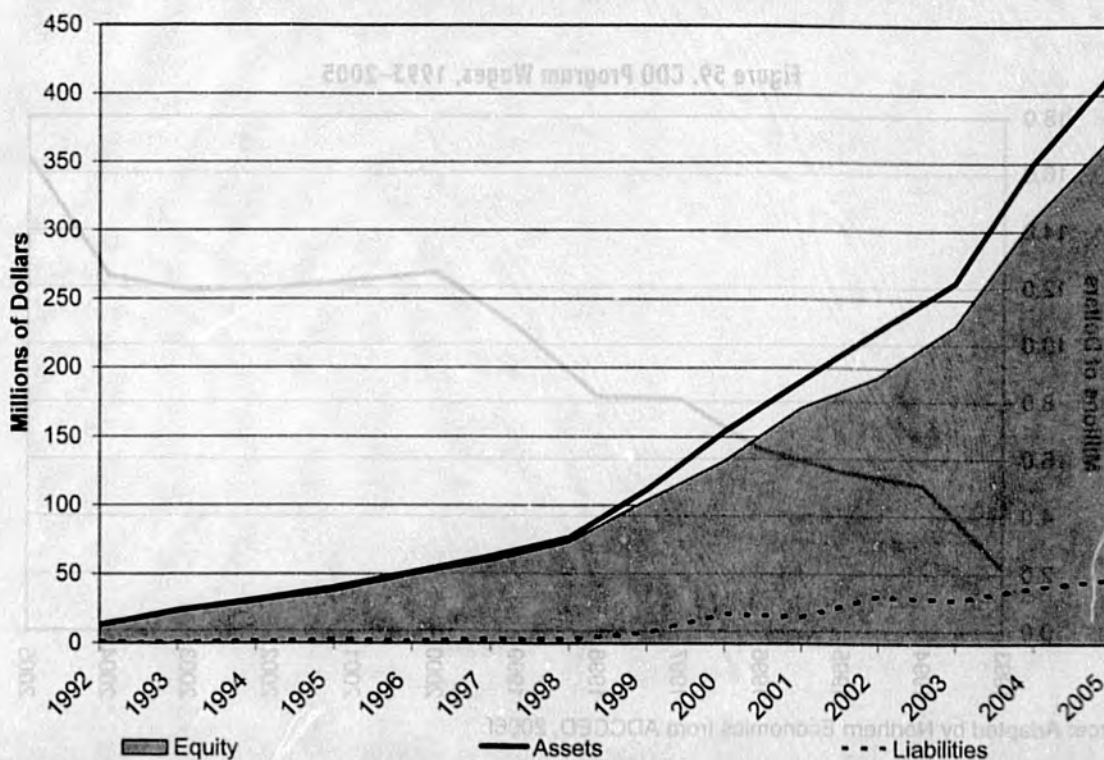
⁵⁸ In 2006, CDQ Program regulations were amended to allow CDQ groups to make up to 20 percent of their annual investments in projects that are not fishery-related, including matching grants or leveraging dollars with other agencies, foundations or non-profit projects, but only within the regions and communities that the CDQ groups serve.

Figure 56. CDQ Program Pollock Royalties and Total Royalties, 1992-2005



Source: Adapted by Northern Economics from ADCCED, 2006c.

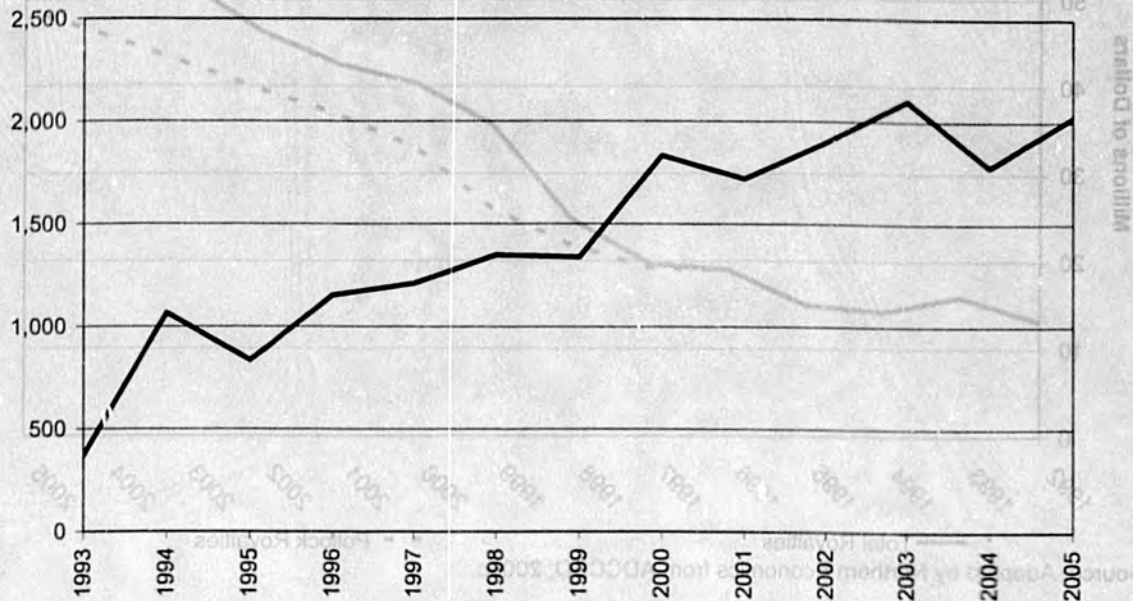
Figure 57. CDQ Program Assets, Liabilities and Equity, 1992-2005



Source: Adapted by Northern Economics from ADCCED, 2006d.

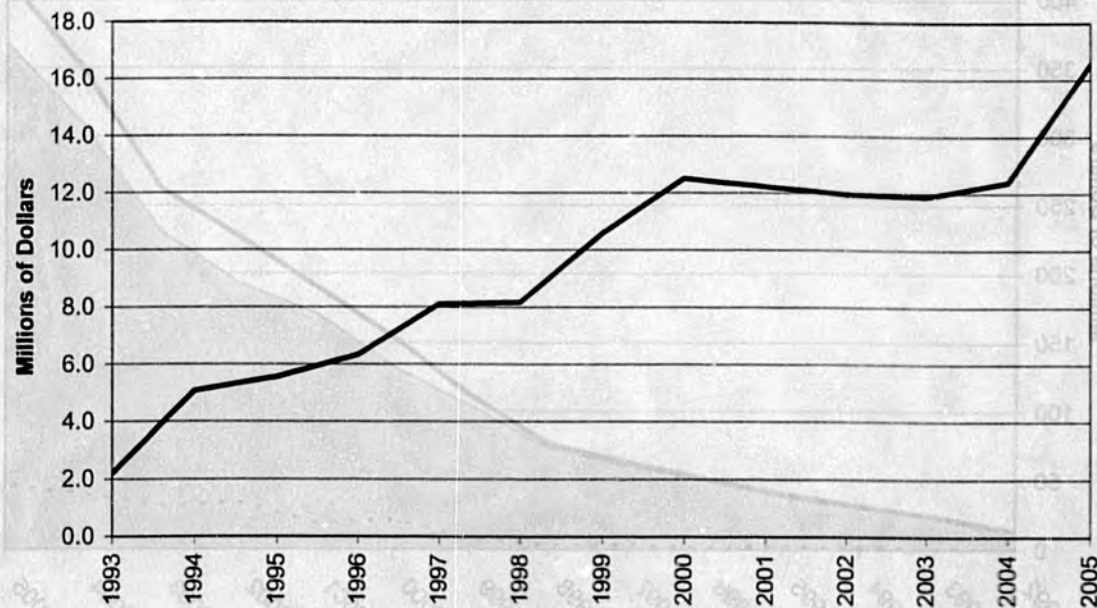
Employment opportunities have been one of the most tangible direct benefits of the CDQ Program (Figure 58). Jobs generated by the CDQ Program included work aboard harvesting vessels, internships with fishing industry partners or government agencies, work at processing plants, and management/administrative positions. The CDQ Program has created an excess of \$123 million in wages annually since 1993 (Figure 59).

Figure 58. CDQ Program Employment, 1993–2005



Source: Adapted by Northern Economics from ADCCED, 2006e.

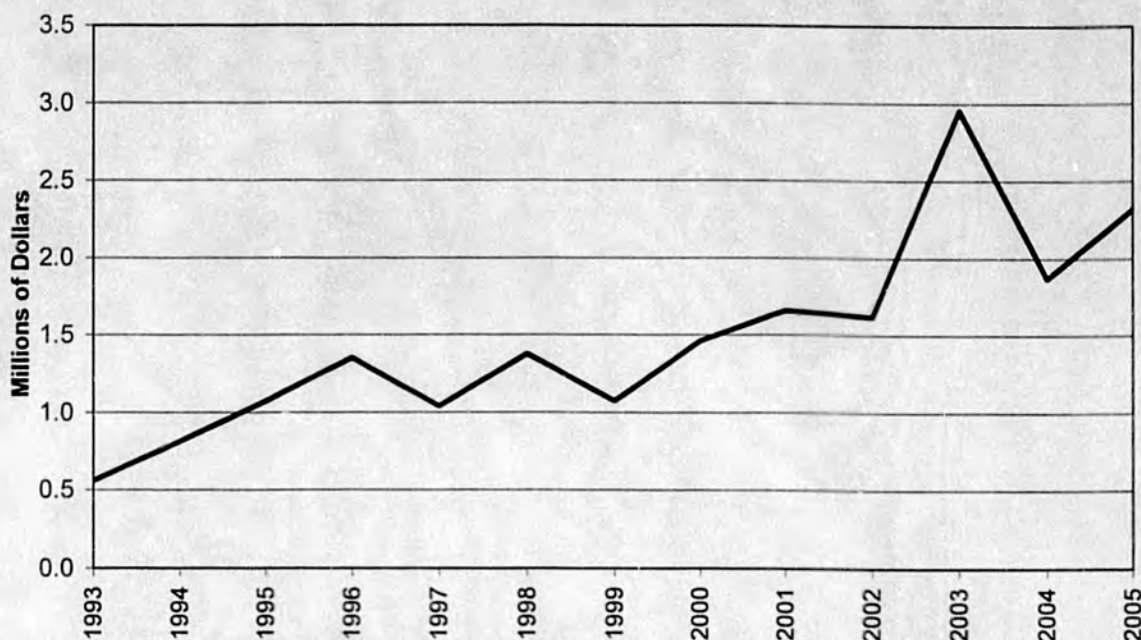
Figure 59. CDQ Program Wages, 1993–2005



Source: Adapted by Northern Economics from ADCCED, 2006f.

Training of CDQ community residents has been a primary objective for CDQ groups from the onset of the program and has been promoted as an essential means to developing a sustainable, locally-based fishery economy. Each CDQ group provides training for their residents based not only on the individual needs of the trainee, but also on the overall needs of the community (Northern Economics, Inc. 2002). Figure 60 shows CDQ group expenditures for training and education. According to CDQ group statistics compiled by ADCCED, approximately 13,350 people received training between 1993 and 2005 (there may be some double counting in this estimate because an individual can take advantage of more than one training program).

Figure 60. CDQ Program Training Expenditures

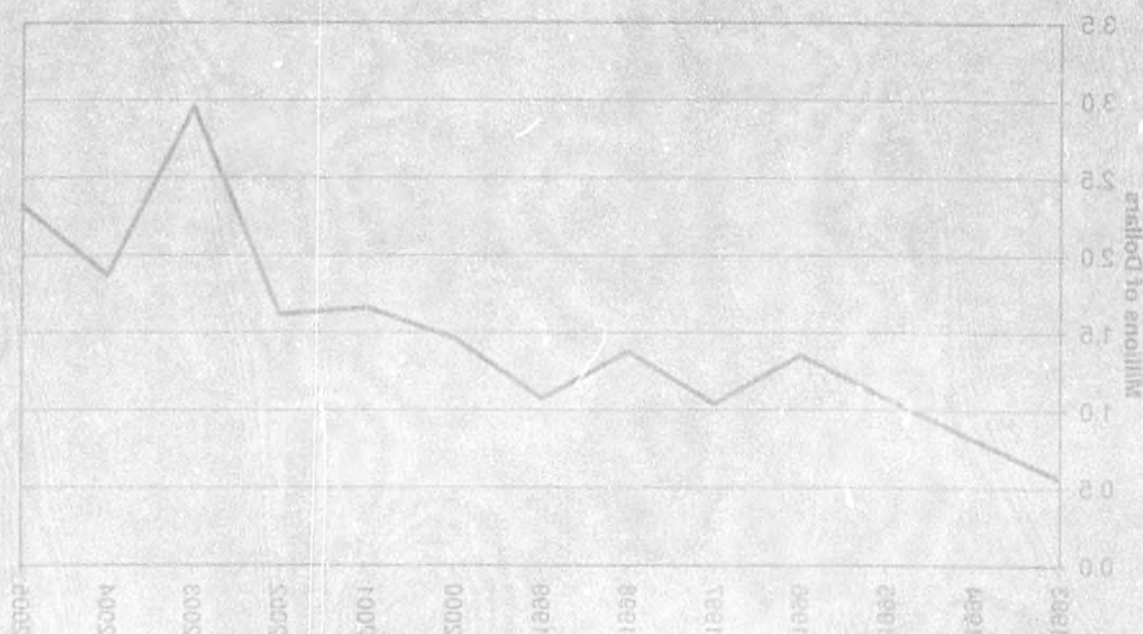


Source: Adapted by Northern Economics from ADCCED, 2006g.

Another important effect of the CDQ Program has been its "Alaskanizing" influence on the state's seafood industry (ADCCED 2002). Alaska's seafood processors are dominated by businesses headquartered out of state; few, if any, major "Alaska" shore-side facilities or at-sea catcher-processor vessels are headquartered in Alaska (ADCCED 2002). While the groundfish and crab fisheries continue to be dominated by Seattle-based companies, CDQ group investments in inshore processing plants, motherships and catcher-processors that operate in the crab and groundfish fisheries have significantly increased the participation of Alaska residents in those fisheries (Northern Economics, Inc. 2002). No other mechanism has been as successful as the CDQ program in promoting involvement of Alaskans in the harvest and processing of offshore Bering Sea fishery resources (ADCCED undated).

Training of CDO community residents has been a primary objective for CDO groups from the onset of the program and has been promoted as an essential means to developing a sustainable, locally-based fishery economy. Each CDO group provides training for their residents based not only on the individual needs of the trainees, but also on the overall needs of the community (Northern Economics, Inc. 2002). Figure 60 shows CDO group expenditures for training and education. According to CDO group statistics compiled by ADCCED, approximately 13,350 people received training between 1993 and 2002; there may be some double counting in this estimate because an individual can take advantage of more than one training program.

Figure 60. CDO Program Training Expenditures



Source: Adapted by Northern Economics from ADCCED, 2006g.

Another important effect of the CDO Program has been its Alaska-wide influence on the state's seafood industry (ADCCED 2002). Alaska's seafood processors are dominated by businesses headquartered out of state; few, if any, major Alaska shore-side facilities or at-sea catcher-processor vessels are headquartered in Alaska (ADCCED 2002). While the groundfish and crab fisheries continue to be dominated by Seattle-based companies, CDO group investments in inshore processing plants, motherhips and catcher-processors that operate in the crab and groundfish fisheries have significantly increased the participation of Alaska residents in those fisheries (Northern Economics, Inc. 2002). No other mechanism has been as successful as the CDO program in promoting involvement of Alaskans in the harvest and processing of offshore, longline fishery resources (ADCCED undated).

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The Seafood Industry in Alaska's Economy

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Addendum

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Testimony offered to Cook Inlet Salmon Task Force

Alaska State Legislature

October 9, 2008

by Ray Riutta, Executive Director

Alaska Seafood Marketing Institute

Thank you, Mr. Chairman, and members of the Task Force. ASMI was asked to come and share information about sustainability, and how it figures in Alaska's seafood promotion effort. Alaska is the model for sustainable fisheries management, and this is increasingly important in today's global seafood marketplace.

Ten years ago, we increased the amount of emphasis we were putting on sustainability, and incorporated it into our key messaging, however at that time it was arguably a third-tier message for Alaska Seafood. Now it is one of the top-tier messages we are communicating to our customers. It is one of our major points of differentiation, where we point out what distinguishes Alaska seafood from other products in the market.

Sourcing seafood sustainably has become more important to retailers, chefs and foodservice operators. This is not just a fad in corporate culture, or a nod to conservation groups. It is a real

scramble for raw materials in the face of increasing demand for seafood, combined with awareness that to build a strong business you have to be able to rely on a stable source of supply.

Alaska accounts for over half the nation's commercial seafood harvest, and because our fisheries are managed sustainably, we are an attractive source for premium quality seafood for customers all over the world.

In the face of a proliferation of eco-labels for seafood, springing up in Europe and the U.S., Alaska Seafood needs to stand on its own. Outside eco-labeling regimes are trying to define which seafood is sustainable and determine how fisheries are managed. Our challenge is to separate Alaska seafood -- the entire portfolio of Alaska seafood products -- from other products in the marketplace, and to communicate to customers that the Alaska Seafood logo appears on products that all are harvested in accordance with principles of sustainable fisheries management. We are up against stiff competition from eco-labeling concerns at home and abroad.

We invited 100 key Alaska seafood customers from the U.S., Europe and Asia to our sustainability forum in Anchorage this past July. They heard first from a sustainable fisheries expert with the "FAO" -- Food and Agriculture Organization of the United Nations -- which has developed internationally recognized criteria

for sustainable fisheries management. Alaska's management meets or exceeds these international criteria. The forum also included presentations from the head of NMFS, ADF&G, the IPHC (Halibut Commission), and the deputy director of our North Pacific Fisheries Management Council. As a result, forum attendees heard in great detail about every aspect of our management, and how for fifty years Alaska has managed its fisheries sustainably as mandated in the Alaska Constitution. They learned that Alaska makes its decisions based on sound science. They heard about the separation of management from allocation, the transparency of the allocation process, habitat protection, enforcement, and strict adherence to harvest limits. It was all of great interest to these big buyers, for they are under the gun to advance sustainable sourcing at their own companies. The Forum resulted in positive media coverage for Alaska, and is expected to exert positive impact on purchasing decisions.

We have developed a family of printed resources, most also published on the internet to support our effort to educate customers and consumers about sustainable Alaska seafood. You have a kit before you, and much of the information is also published on the web at www.AlaskaSeafood.org.

Let me emphasize that ASMI had witnessed brand displacement in some markets, and the purpose of the ASMI

sustainability initiative is to reclaim brand equity, stimulate more widespread use of the Alaska Seafood logo by the Alaska industry and its customers, and raise awareness that the logo signifies seafood from sustainably managed fisheries.

It is incorporated into all of our programs: U.S. retail, U.S. foodservice and international marketing, communications and seafood technical. It is also a cornerstone of public relations and media activities. Here are some examples of activities and resources:

- * The on-line interactive Seafood U training tool for foodservice and retail staff includes information on sustainability.
- * Many of the sustainability materials have already been translated into European and Asian languages to facilitate educating our overseas customers.
- * Outreach to the conservation community is ongoing.
- * New advertisements in consumer and trade publications provide additional emphasis on sustainability (examples can be seen on the ASMI website and in ASMI's e-newsletter for the Alaska seafood industry, Newsbrief--- sign up today on the ASMI homepage

www.alaskaseafood.org or just look at back issues archived on the seafood industry portion of the website).

- * New retail and foodservice themed promotional materials advance the sustainability theme.

- * Sustainability centers established at trade show booths at International Boston Seafood Show, and European Seafood Exposition; sustainability materials showcased at all trade shows.

- * Pacific Marine Expo will include a joint UFA-ASMI presentation celebrating 50 years of sustainable fisheries management and Alaska Statehood.

- * ASMI's next meeting of its Board and all Committee members will focus on sustainability, to raise awareness within the industry of the particular points included in Alaska's key sustainability messages.

- * A new sustainability section has been added to the ASMI website. This section has a variety of materials posted on it, including the presentations from the Sustainability Forum and numerous brochures and fact sheets. Sections include resource