

The Global Salmon Industry

by
Neal Gilbertsen
Labor Economist

And its impacts in Alaska

On September 5, 2000, the Marine Stewardship Council certified Alaska's statewide commercial salmon fisheries program as well managed and sustainable. Alaska's was the only salmon fishery in the world to meet the council's rigorous environmental standards and earn this distinction. Yet even as Alaska's preeminence in biological management was being recognized, Alaska's salmon fishermen had fallen on hard times.

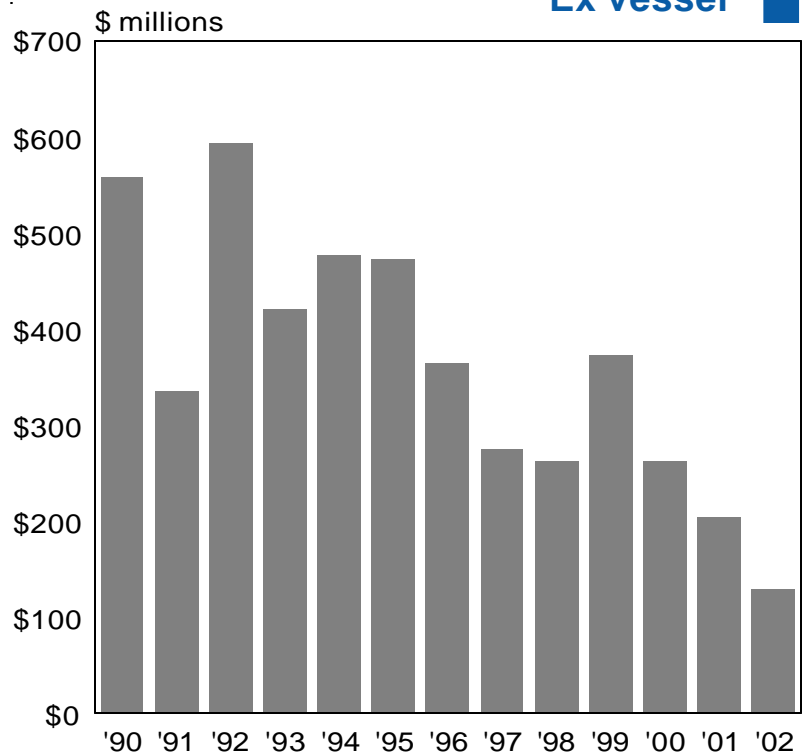
Catches remain high through 2003 when measured against historical levels, but the value of the salmon harvest has plummeted. Fishermen have seen the value of their permits and vessels collapse along with the prices they receive for their product. The number of fishermen participating in the salmon fisheries has declined by 37 percent from 1990 to 2002, and many of those remaining are facing economic difficulties. In 2003, it is clear that while the fishery is biologically sustainable, it is no longer economically viable for a large number of Alaska's fishermen.

While perhaps unavoidable, this economic crisis was predictable under the laws of supply and demand. Farmed salmon created a major new source of supply on the world market. As the global supply of farmed salmon increased, prices fell. Alaska's relative share of the world production declined and its ability to influence prices retreated. By the late 1990s, the Alaska salmon industry lacked both the supply and market demand to significantly affect prices.

What happened?

In terms of employment, salmon is by far Alaska's largest fishery. In 1990, according to the Commercial Fisheries Entry Commission (CFEC), 72 percent of the 14,587 individuals who owned and fished monitored permits fished for salmon. By 2002, only 8,823 individuals were still actively fishing permits, but 74 percent were still fishing for salmon. While many participated in other

Value of Alaska Salmon Harvest Ex vessel



Source: Commercial Fisheries Entry Commission (CFEC)

2 Ex-Vessel Prices Collapse 1988 to 2002

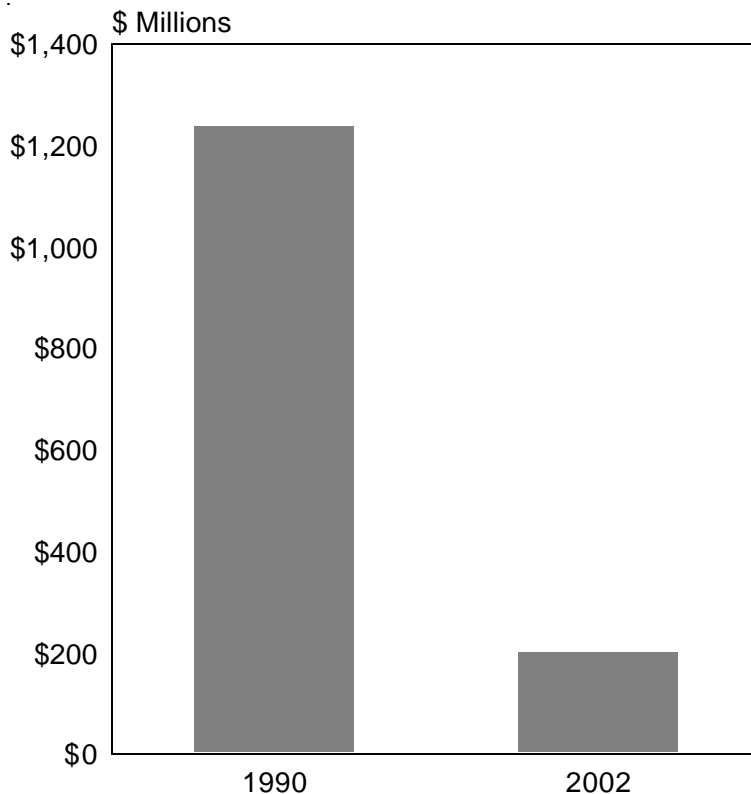
	1988 prices nominal \$	1988 prices in 2002 CPI adjusted \$	2002 prices nominal \$	% Decline '88-'02 nominal value	% Decline '88-'02 adj. value
Pink	\$.79	\$1.20	\$.06	-92%	-95%
Sockeye	2.37	3.60	.55	-77%	-85%
Chum	.86	1.31	.16	-81%	-88%
Coho	1.72	2.62	.37	-78%	-86%
King	2.69	4.09	1.23	-54%	-70%

Source: Alaska Department of Fish and Game

fisheries, salmon was usually considered the mainstay, and other fisheries were often merely off-season supplements to income. In recent years, this relationship has been changing. (It should be noted that these data do not include crew, but rather represent the number of fishing endeavors. In other words, the number of people affected is larger than the number of permits.)

In 1990, the Alaska wild salmon harvest yielded 302,600 metric tons, with fishermen receiving \$559 million for their catch. By 2002, the volume of the harvest was lower at 238,000 metric tons, but the value had fallen to \$130 million. The 21 percent decline in volume did not approach the much larger decline in value. Processors, in an attempt to remain competitive with farmed fish on world markets, lowered wholesale prices, which translated into lower prices for fishermen. (See Exhibit 1.)

3 Alaska Salmon Permits Market value



Source: Commercial Fisheries Entry Commission (CFEC)

Over the last decade and a half, the ex-vessel prices (the prices fishermen receive) paid to Alaska fishermen have fallen from record highs in 1988 to record lows in 2002. This decline is even more dramatic if inflation is taken into account. As operating costs continued to rise, real prices (adjusted for inflation) fell on the order of 85 percent or more. (See Exhibit 2.)

As the prices paid for fish collapsed, the value of fishermen's investments in vessels and gear followed a similar trajectory. In 1990, CFEC estimated the market value of the 12,084 valid salmon limited entry permits at \$1.247 billion. By 2002, estimates placed the value of the remaining 11,421 permits at \$204 million. (See Exhibit 3.) This billion-dollar decline in asset valuation amounted to 84 percent, and was probably matched by a similar trend in vessel valuation. The value of salmon permits varies and these losses impacted some fisheries more severely than others; still, the average decline in value of a generic salmon permit amounted to \$91,347. This loss of equity, which for self-employed fishermen is equivalent to retirement accounts, will continue to reverberate throughout the Alaska economy in coming years.

The low prices paid for salmon caused fishing incomes to drop and many fishermen were forced out of the industry, while others left voluntarily. In 1990, 10,487 individual permit holders fished for salmon in Alaska. By 2001, statewide participation in the fisheries had declined to 6,567 permit holders. This 37 percent decline in fishing effort resulted in fewer fishing opportunities for crew members, thus fewer jobs for Alaska's coastal communities. The Alaska Department of Fish and Game reports that the 1990 sale of unduplicated crew licenses amounted to 31,607. By 2002, only 16,995 unduplicated licenses were issued. While there are other reasons that partially explain this decline, reductions in the number of vessels fishing for salmon and reduced earnings in the fishery are clearly linked to this trend.

Seafood processors have also sought greater efficiencies through consolidation of operations, plant closings, reductions in fleet size and "just in time" hiring. As a result, many salmon fishermen have lost markets and Alaska's average monthly seafood processing employment has declined from 11,200 in 1992 to 7,400 in 2002. This 22 percent decline would have been greater, had not the Bering Sea groundfish industry partially offset the jobs lost in the salmon industry. (See Exhibit 4.)

Some multinational firms, like George Weston Ltd. (Nelbro) left the Alaska salmon fisheries to invest in Chilean and Canadian farms. Others like Nichiro (Peter Pan) retained Alaska operations but also invested in Chilean farmed production. Smaller processors, perhaps lacking the financial resources of their multinational competition, struggled to find niche markets or closed their doors. Wards Cove Packing Company, one of the largest and longest operating firms in the state, announced its decision to cease all Alaska salmon operations in 2002.

Why it happened

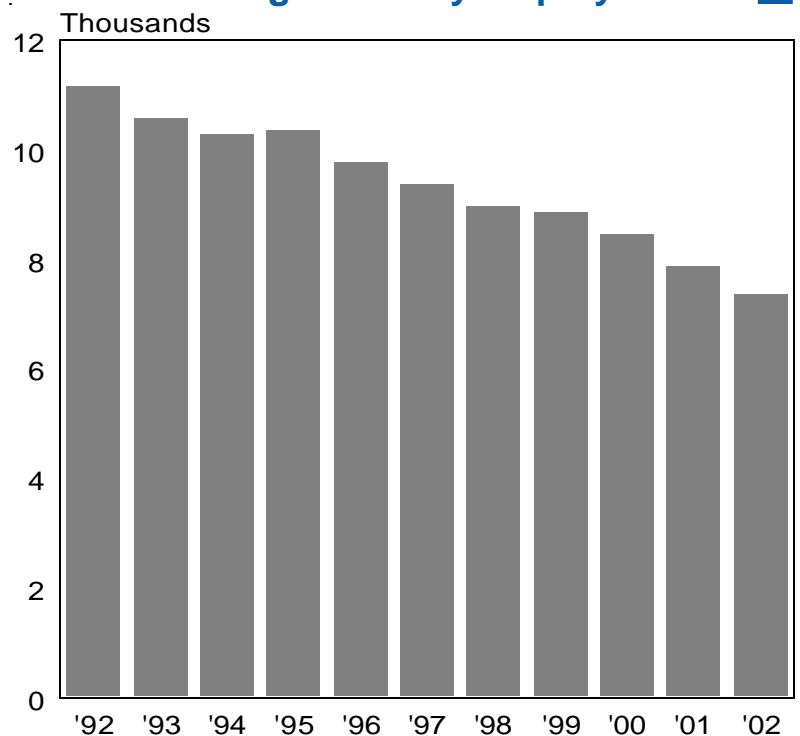
Farmed salmon enjoys a number of competitive advantages. Unlike seasonal wild harvests, pen reared salmon are available fresh on a year round

basis. Quality control is enhanced when salmon are harvested and processed at the more leisurely pace farms allow. Most importantly, the supply of farmed salmon is predictable, and production can be planned to meet anticipated demand.

The two major suppliers of farmed salmon to the U.S. market are Canada and Chile. Canadian farms benefit from their proximity to U.S. population centers and a well-developed transportation network. In addition, Canada is a partner in the North American Free Trade Agreement (NAFTA), which has removed many trade barriers to their products.

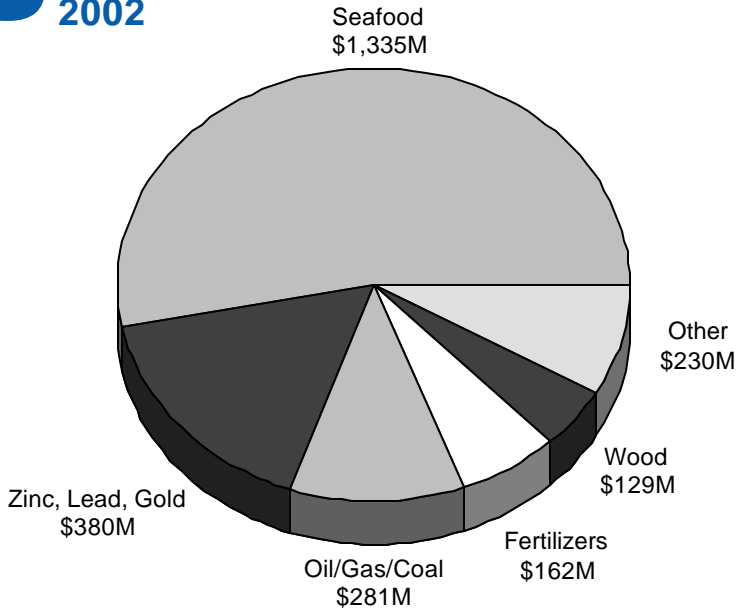
The competitive advantage Chilean farmed salmon enjoys is largely based on less stringent environmental regulation and the low cost of labor. Over 90 percent of Chile's salmon industry is located in The Region of the Lakes, one of the poorest areas in the country. In 2001, the average wage paid to Chilean workers in the salmon industry was \$199 U.S. per month, with 80 percent

Alaska Seafood Processing **4** Average monthly employment



Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

5 Alaska Exports to Foreign Countries 2002



Source: U.S. Census Bureau

of the workers averaging \$133. In the same year the Chilean government's poverty level for a family of four was \$240. Alaska seafood processing workers, protected by minimum wage laws, earned an average monthly salary in excess of \$2,100 in 2001.

Seafood is important to Alaska

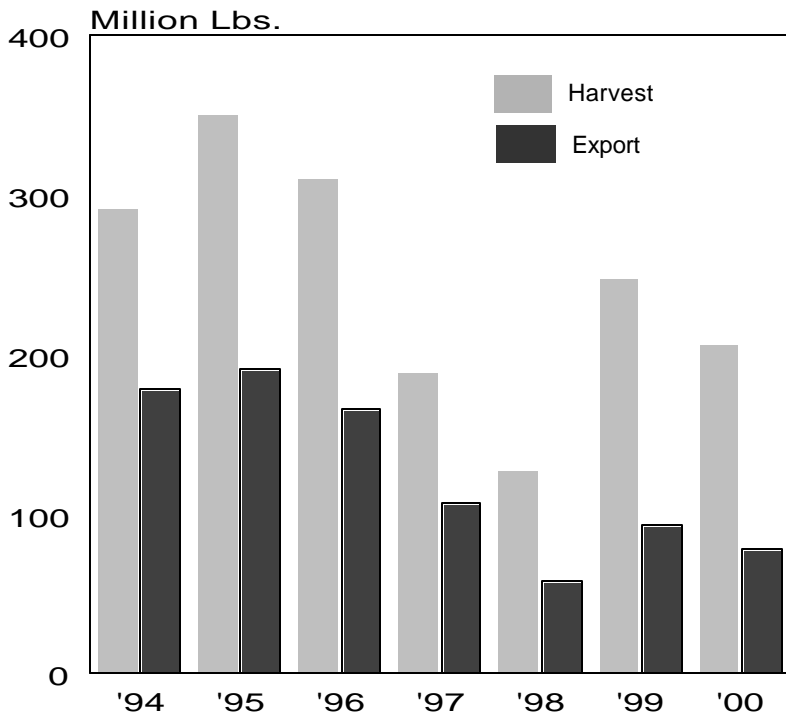
Of Alaska's direct foreign exports, seafood accounted for \$1.33 billion in 2002, or 53 percent of Alaska's \$2.5 billion export market. (See Exhibit 5.) Though large, this number understates the importance of the industry, due to the way in which the U.S. Census Bureau monitors exports. Unlike Alaska's mineral and timber resources, which are for the most part shipped directly from Alaska ports, much of Alaska's seafood harvest, including most canned and frozen salmon, 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 Washington exports. U.S. Census Bureau data show that the port of Seattle alone exported \$930 million of fishery products in 2001. Much of this (including \$142 million of frozen and \$150 million of canned salmon) was most likely of Alaska origin.

The Japanese connection

In 2002, Japan provided a market for 53 percent of Alaska's seafood exports. This was down from 69 percent in 2000. Much of this was processed by Alaskan affiliates of Japanese firms. These included Marubini-owned North Pacific Processors, Maruha-owned Western Alaska Seafoods, Nippon Suisan-owned Unisea, and Nichiro-owned Peter Pan. The foreign direct investment of such companies, which is another aspect of globalization, results in processing jobs for Alaskans as well as markets for Alaska fishermen.

In 2002, Alaska direct seafood sales to Japan amounted to \$707.8 million. While this is an impressive figure, it was down considerably from the 1990-1995 period when annual sales were

6 Sockeye Harvests and Exports Japan accounts for 90%+ of exports



Source: Alaska Department of Community and Economic Development

consistently above the \$1 billion mark. The peak year was 1992, when direct seafood sales to Japan reached \$1.56 billion. Since that time annual sales have declined 55 percent in value. This decline is largely explained by the globalization of the salmon industry, and the displacement of Alaska's exports of salmon.

In the early 1990s significant quantities of fresh and frozen sockeye salmon were shipped directly from Alaska to Japan, and thus contributed to Alaska's export total. Indeed, U.S. exports of fresh/frozen sockeye salmon slipped from 61 percent of the total 1994 harvest of nearly 292 million pounds, to only 38 percent of the much smaller 2000 harvest of 206 million pounds. (See Exhibits 6 and 7.)

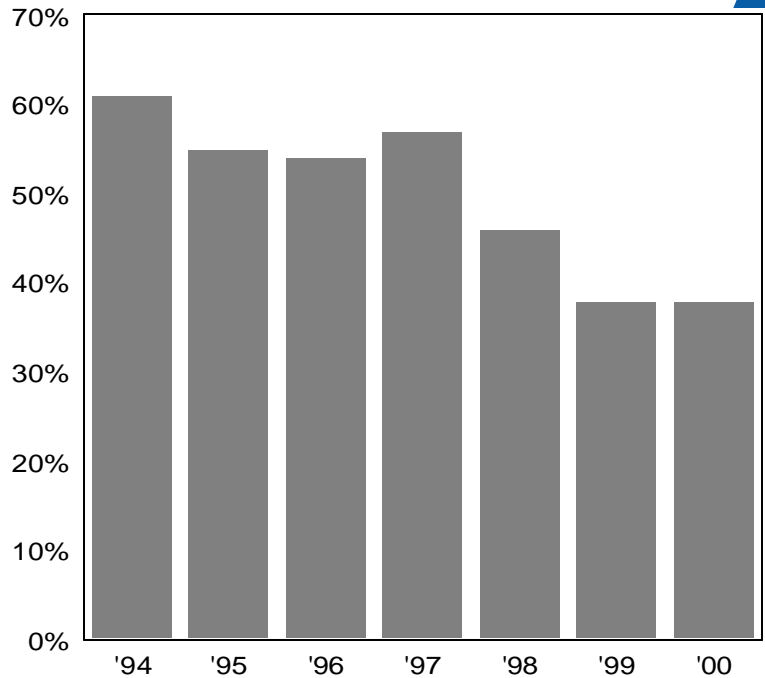
This was also a period before the Japanese recession had established a firm hold on the economy, and the yen was stronger in relation to the dollar. Holding a near monopoly on both production and the tastes of the Japanese consumer, Alaska sockeye commanded premium prices. But this was also the period when imports of pen-reared salmon began making inroads in the increasingly budget conscious Japanese diet. The salmon industry was being globalized!

Globalization of the salmon industry

In the 1970s and 1980s, Alaska enjoyed a dominant position in the world salmon market. Siberian runs, the only real rival in terms of wild stock harvests, were safely behind the iron curtain, and not available on free world markets. Japanese high seas interceptions of Alaska salmon had been largely eliminated. Wild Atlantic harvests were miniscule, and techniques of pen rearing had not yet been perfected.

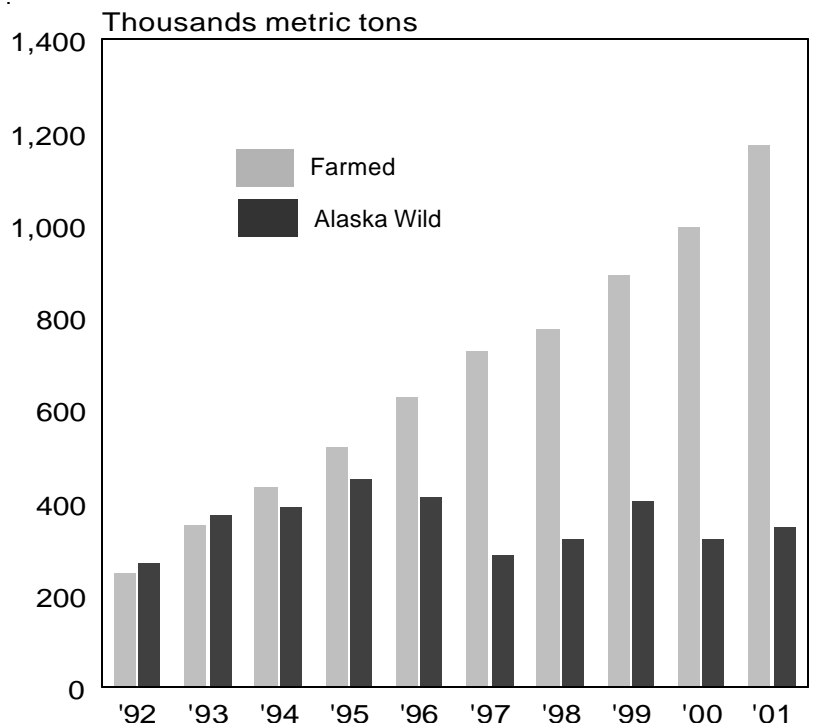
In this period when wild salmon harvests dominated world markets, years of large harvests led to lower unit prices, while years of low harvests resulted in higher prices to fishermen. Variations in catches were at least partially offset by variations in unit value.

Sockeye Exported Fresh/Frozen Percent of Harvest



Source: Alaska Department of Community and Economic Development

Farmed Atlantic & Coho vs. Alaska wild salmon harvest



Sources: F.A.O. and Alaska Department of Fish and Game

In 1980, farmed salmon amounted to only one percent of the world's salmon production. By 1991, the output of pen reared salmon exceeded the entire wild stock harvest of the United States. By 1992, it accounted for 32 percent of the world's production, and by 2002 it accounted for over 60 percent of the global supply of salmon. (See Exhibits 8 and 9.)

Because farmed salmon has the economic advantage of predictability, it allows for planned levels of harvest. These levels are based upon anticipated demand, and are of such scale as to dominate world supplies. This effectively sets the world price for salmon.

Alaska's shrinking market share

In the course of two decades, Alaska has fallen from world leadership in salmon production to a

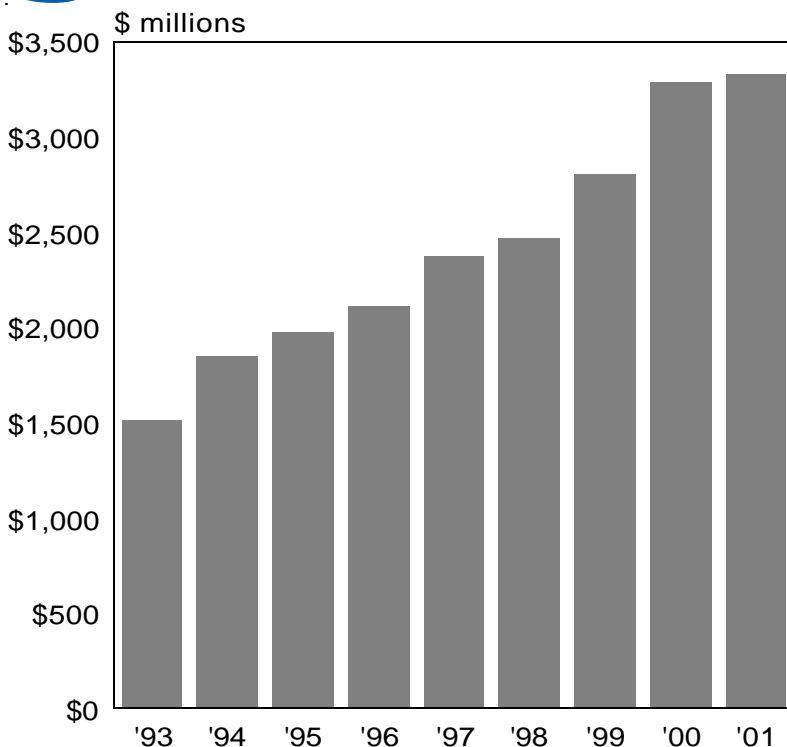
marginal position. In 1990, Norwegian farmed salmon had begun to make inroads into what had been the traditional domestic markets for the Alaska harvest. In September of that year, the U.S. Department of Commerce imposed a 2.96 percent anti-dumping duty on fresh and chilled Atlantic salmon from Norway. It later imposed company specific dumping margins ranging from 15.65 percent to 32.8 percent. As a result, U.S. imports of Norwegian farmed salmon plummeted from 9,450 metric tons in 1990 to 1,320 metric tons in 1991. On a broader scale, however, these measures proved ineffective, as Norwegian firms shifted production to other countries and U.S. imports of farmed salmon continued to grow.

Domestic market

In 2002, the United States imported 213,674 metric tons of processed and semi-processed salmon valued at \$920 million. This compared with a total Alaska round weight harvest of 146,800 metric tons (excluding pink salmon, which is mostly canned and does not directly compete with farmed salmon). In comparing these volumes, it should be remembered that round weights should be adjusted downward by at least 25 percent in order to account for weight losses due to heading and gutting. Moreover, much of the imported salmon was in fillet form, which involves far greater weight losses.

By far the greatest part of the U.S. imports, 187,357 metric tons, was Atlantic pen reared salmon, valued at \$818 million. Canada and Chile accounted for 94 percent of the total, with Chile garnering \$384.4 million in revenue, compared to Canada's \$373.4 million. Ironically, Norwegian firms who had seen their Scandinavian salmon forced off the U.S. market controlled a significant amount of both countries' production. The fact that Canada is a NAFTA partner, and that the U.S. has just approved a bilateral free trade agreement with Chile, would seem to indicate that these imports will continue to grow. (See Exhibit 10.)

9 Farmed Atlantic & Coho Salmon Value of world production



Source: F.A.O.

As mentioned above, lower priced pink salmon are usually canned and are less directly impacted by pen-raised imports. That is not to say, however, that Alaska pink salmon does not have competition on the world market. Low cost canned Siberian pink salmon is becoming more available on European markets. In addition, Alaska pinks must compete with a sea of low priced canned tuna, mostly from Thailand. While not directly comparable, there is considerable product substitution, with consumers buying two or three cans of tuna rather than a single can of more expensive salmon. In 2002, the United States imported 171,500 metric tons of canned tuna valued at \$399 million. U.S. canned salmon exports in the same year amounted to 41,800 metric tons valued at \$133 million.

Export market

Just as Alaska salmon has been displaced from its traditional domestic market, it has suffered severe setbacks in the Japanese market. In 1990, Chile was a minor player harvesting only 23,313 metric tons of farmed salmon. By 2001, the Chilean farmed salmon industry had grown to rival that of Norway, harvesting 404,550 metric tons round weight compared to Norway's 426,000. Not only was it the largest supplier of fresh Atlantic salmon to the United States, it had made major inroads into the Japanese market where inexpensive farm raised coho displaced Alaska sockeye salmon.

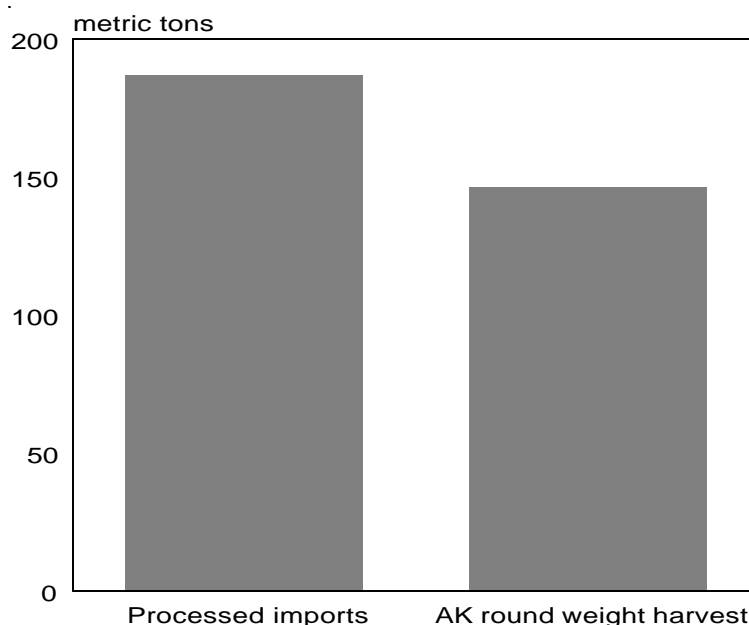
At one time, Alaska supplied 90 percent of the salmon consumed in Japan. By 2001, Chile was selling more than 160,000 metric tons to Japan and had captured 70 percent of the market. In that year, Japan imported 45 percent of Chile's farmed salmon production valued at \$435 million, while the United States imported 38 percent of the country's output valued at \$364 million. This accounted for 47 percent of the total U.S. imports of farmed salmon valued at \$767 million, and matched the value of farmed salmon imported from neighboring Canada. (See Exhibit 11.)

Over the same period, U.S. exports of salmon (mostly of Alaska origin) declined significantly in value. In 1990, U.S. salmon exports totaled 171,000 metric tons valued at \$859 million. Japan was by far the largest consumer, importing 118,000 metric tons valued at \$644.5 million. By 2001, total U.S. exports of salmon had fallen to 152,000 metric tons valued at \$547 million, while Japanese consumption had fallen to 41,800 metric tons valued at \$228.7 million.

Companies are international

Multinational companies often have facilities in several countries, and base decisions concerning production on overall corporate profits. Norwegian firms such as Stolt Seafarms, Cermaq and Fjord Seafood control 40 percent of Chile's salmon production. European companies like Marine Harvest as well as Japanese and North American firms also control a significant percentage.

U.S. Imports of Atlantic Salmon¹⁰ And Alaska round weight harvest



Source: National Marine Fisheries Service and Alaska Department of Fish and Game

The growth of the farmed salmon industry and the resulting competition for markets has also led to transnational consolidations. Four large companies, Stolt Sea Farms A/S, Pan Fish ASA, Marine Harvest and Heritage Salmon now produce more than half the farmed salmon sold in North America. All four have pen-rearing operations in Europe and Canada, and all except Pan Fish, (which owns all the farms in Washington state), own farms in Chile.

Marine Harvest, the largest, is a subsidiary of the Dutch giant Nutreco which operates over 200 salmon farms in Norway, Scotland, Ireland, Chile, Canada, and Australia. By various estimates, it accounts for between 16 and 20 percent of global farmed salmon production. Its corporate parent, Nutreco also supplies approximately 40 percent of the world's salmon feed. More ominously for Alaska's other fisheries, the company has begun operations involving pen reared halibut and cod, while others have instigated projects involving sablefish.

Heritage Salmon, another of the four dominant companies, is a division of George Weston Ltd., a giant Canadian food company that once dominated the Canadian wild salmon industry with its subsidiary B.C. Packers. The company also operated in Alaska under the name Nelbro. Weston has since divested itself of its wild salmon ties, and has instead invested in large scale salmon farming in Maine, New Brunswick, British Columbia and Chile. With the moratorium on British Columbia pen rearing sites being lifted, it is expected that Heritage and other B.C. farms will soon expand these operations.

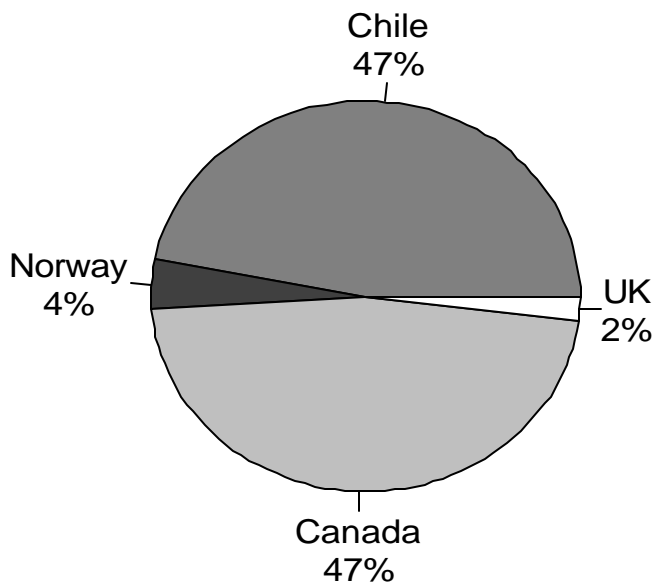
Alaska resists a global trend

For a variety of political as well as biological and environmental reasons, Alaska has adopted legislation that prohibits salmon farming. While there remains considerable debate over the environmental hazards and health risks posed by farmed salmon, there is no longer any doubt about its economic success. With or without Alaska's participation, the industry will continue to grow, and farmed salmon will continue to dominate both world markets and prices.

Canada does not

Unlike Alaska, Canada has adopted policies fostering farms. The economic displacement of Canadian salmon fishermen has, however, been somewhat mitigated by a buy-back program commonly known as the Mifflin Plan. This involved the elimination of licenses as well as cash incentives for salmon fishermen to leave the fisheries. While environmental groups, First Nations and neighboring Alaska continue to object, the B.C. Provincial government as well as the Canadian national government are pursuing policies intended to enhance salmon farming opportunities and increase production, especially in northern B.C. These farms are not only economic rivals to the Alaska industry, but according to the Alaska Department of Fish and Game, may pose a biological risk to healthy wild stocks in the Province as well as Alaska.

11 Imports of Farmed Salmon Market share by value



Source: U.S. Department of Commerce, Seafood Market Analyst

Can pollock take the place of salmon?

While the recent investment strategies of transnational corporations have resulted in major displacements in Alaska's salmon industry, they have also contributed to the Alaska economy by developing the Bering Sea pollock fishery. This is now the largest single species food fishery in the world in terms of volume, and the largest fishery in the state in terms of value. The collapse of the Atlantic cod fishery played a major role in allowing market opportunities that the industry has exploited and filled. Both Norwegian and Japanese firms were instrumental in the development of this fishery, and the latter continue to play an important role in onshore processing.

While the volume of the pollock harvest is many times that of the salmon fishery, the employment opportunities in the harvest sector are far more limited. Unlike the salmon fishery, which has traditionally relied on a large number of small boats, the pollock fishery involves a relatively small number of large vessels. In 2002, only 262 individual vessel operators made landings in the Bering Sea trawl fishery, which amounted to an astounding 2.7 billion pounds. If one assumes a crew of six aboard each of these trawl vessels, total harvesting employment would have ranged between 1,500 and 1,600. This number is an order of magnitude smaller than the jobs generated by the 6,567 salmon permits now remaining. Still, the volume of the pollock catch creates a large number of processing jobs.

The economic returns from the salmon fishery are widely distributed among the small fishing ports of Alaska. The pollock fishery, by contrast, is concentrated in Dutch Harbor, which consistently leads the nation in terms of volume of fisheries landings. Most of the vessels are Seattle based, as are most of the processors.

Although the pollock fishery does not touch as many Alaskans as the salmon fishery, there have been winners. The Community Development

Quota (CDQ) program, which allocates harvest shares of crab as well as groundfish, has produced significant economic benefits for Western Alaska villages bordering the Bering Sea. Not only does the CDQ program bring direct funds to the community, it provides employment opportunities in both harvesting and processing. This is especially important to these rural communities, as the traditional salmon fisheries become less profitable.

Conclusion

The world salmon industry is only one example of the ongoing process of globalization. While Alaska has suffered an economic shock in this particular case, it has also profited from foreign direct investments in its other industries. Whether globalization will ultimately be beneficial or detrimental to Alaska remains an open question. Whether it will continue to play an ever-larger role in the state's economy, does not. Alaska and Alaskans have little choice but to adapt to this reality, and to carve out a place for themselves in this new global economy.