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Stream: Multiple Commons, Fisheries.

## **Effect of 1996 Magnuson-Stevens Fishery Conservation and Management Act on the Pacific Groundfish Fishery**

### Table of Contents

Background .....	1
Economic Contribution of Fisheries in Oregon.....	3
1996 Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens 1996 Act)            7	
Emerging Issues in Oregon's Groundfish Fishery .....	10

## List of Tables and Figures

Table 1:	Economic Impacts of Recommended 1998 Groundfish Harvest Reductions.....	9
Figure 1:	1970-1997 Oregon Commercial Seafood Landing Trends (Thousands of Round Pounds) .....	4
Figure 2:	1970-1997 Landed Value Trends of Oregon Commercial Seafood (Thousands of 1996 Real Dollars) .....	5
Figure 3:	Statewide Economic Impacts by Species Landed in Oregon.....	6
Figure 4:	1971-1996 Selected Aggregate Species Annual Commercial Seafood Ex-Vessel Prices Trends (Adjusted for Inflation, 1996 Base).....	7
Figure 5:	1970-1998 Ex-Vessel Value of Oregon Groundfish (Millions of 1996 Real Dollars).....	8

### Background

Long before Oregon became a state, fishing was an important part of the Pacific Northwest economy. As early as 1928, various trading companies were purchasing and exporting salmon caught by the Indians in the Columbia River. The industry expanded rapidly with the influx of settlers and improvements in technology.

Development of the canning process in the mid-1800's created a huge demand for salmon and the lower Columbia River, where Scandinavian and French immigrants worked with gillnets, beach seines and fish wheels to harvest the abundant fish, became the center of the packing industry. In 1912, a few gillnet boats equipped with the new gasoline engines began to cross the bar and fish in the open ocean. By 1915, an estimated 500 boats were working off the mouth of the Columbia, and by 1920 at least 1,000 trollers were operating out of a number of coastal ports in Oregon and Washington. This expansion was encouraged by the lack of seasonal restrictions on ocean fishing and by markets which demanded a more steady supply of salmon than the river fisheries could provide.

By 1940, salmon were becoming less abundant. The troll fishery hit an all-time low in 1943, with only 86,000 fish harvested. Fishery managers and legislators responded to this decline with increased gear restrictions and quotas, and they improved hatchery facilities on the river so that fish were raised to the smolt stage before release, dramatically increasing their survival rate.

The trawl fishery developed off the West Coast during the late 1930's. Wartime shortages of red meat and a demand for Vitamin A from shark and fish livers caused a tenfold increase in trawl landings between 1940 and 1943. After the war, the trawlers moved further offshore and concentrated on sole, flounder, and Pacific Ocean perch. When demand for fish dropped in the early 1950's, the use of groundfish in feed for Oregon's expanding mink industry helped to stabilize the fishery until 1957, when the market for fillet fish improved.

Because crab meat is extremely perishable, the Dungeness crab fishery did not begin to grow until the 1930's when improvements were made in refrigeration and transportation. After a peak harvest of almost 11 million pounds in 1943, it followed an eight to 11-year cycle with lows near six million pounds.

Prior to 1890, albacore tuna was considered a trash fish. In 1906, the first tuna cannery opened in San Diego, and during the early years the fishery consisted entirely of hook-and-line "bait boats" and then trollboats off California. The first commercial landings in Oregon were made in 1930, and since that time the albacore fishery has become a major component of the State's commercial fishery.

The late 1950's marked the birth of a fishery that has, in recent years, become one of Oregon's most important: pink shrimp. While a small fishery had existed in Puget Sound since the turn of the century, it was not until 1951 and 1952 that exploratory fishing located shrimp beds off Oregon. Until new peeling machines designed specifically for the small shrimp were introduced in 1967, the growth of the fishery remained slow.<sup>1</sup>

From 1960 to the present has been the most turbulent period in the history of Oregon's commercial fishery. Some fishermen became quite successful during the 1960's and then lost all they had gained. Several fisheries declined drastically during the early 1980's, but in the last few years catches have either leveled off or improved, with the catch in some fisheries approaching record levels.

Increased earnings in the salmon and crab fisheries meant that for many Oregon fishermen the late 1960's were a time of prosperity. Many invested their profits in new vessels and equipment, aided by federal programs such as the Farm Credit Act, the Capital Construction Fund, and the Fishing Vessel Obligation Guarantee Program. Landings continued to increase through most of the 1970's, with shrimp a particular success; in 1978, the ex-vessel value of shrimp exceeded that of troll salmon.

Japanese and Soviet vessels, fishing off the Oregon coast since the mid-1960's and off Alaska a decade earlier, had severely damaged the stocks of halibut, Pacific Ocean perch, and other species. However, passage of the Magnuson Fishery Conservation and Management Act (MFCMA) in 1976 declared U.S. jurisdiction over all living marine resources within 200 miles of our coastline, and optimism regarding the future of the commercial fishing industry rose to extremely high levels. The result was a burst of boat building - shrimpers, bottom trawlers, and midwater trawlers - unmatched in the history of the commercial fishery.

In the late 1970's, the salmon and shrimp fisheries declined dramatically, but the joint venture and trawl fisheries continued to prosper. A midwater trawl fishery for widow rockfish developed off Oregon in 1978 and grew rapidly. The first joint venture operations off Oregon also took place in 1978, when a catch of hake (whiting) was passed to a Soviet processor.

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1. West Coast Fisheries Development Foundation. Oregon's Commercial Fishing Industry: Its Importance to Oregon's Economy. Portland, Oregon. 1989. Page 3.

The years from 1980 to 1984 brought tremendous upheaval. The commercial fishery was overcapitalized, with too many boats competing for declining resources. The oil price hikes of 1979, high interest rates, and subsequent insurance rate increases hit fishermen quite hard.

And then in 1982 an El Niño caused havoc all along the coast. (An El Niño event occurs when normal wind patterns over the Pacific break down, allowing warm surface water to back up and spread out over the coastal eastern Pacific. This can result in changed fish migration patterns, reduced growth and survival rates, and a number of other changes.) This El Niño, one of the strongest on record, devastated the industry. Boat payments were missed, and some fishermen lost homes and other possessions.

About the only success story in this period was the distant water fishery. More and more fishermen joined in such Alaskan fisheries as Dungeness crab, sablefish, halibut, groundfish, and pink shrimp. In some Oregon ports, the income brought back from Alaska soon represented a substantial portion of all fishery income.<sup>2</sup>

Another El Niño in the late 1990's, stronger and more persistent than the 1982 event, has devastated the salmon runs and is affecting all other fisheries off the Pacific Northwest coast.

### Economic Contribution of Fisheries in Oregon

The Magnuson Fishery Conservation and Management Act of 1976 (Magnuson Act) provided opportunities for expansion of existing and development of new fisheries on the Pacific Northwest coast. The Magnuson Act declared U.S. jurisdiction over all living marine resources within 200 miles of the U.S. coastline. Within 14 years of the Act, most foreign fishing was removed from the U.S. coastline. On the Pacific coast (Washington, Oregon, and California), about 250,000 metric tons of foreign harvesting/processing of groundfish was converted to domestic production.

Total pounds of fish landed in Oregon expanded from 100 million pounds in 1970 to 260 million pounds in 1997 (Figure 1). However, most of the expanded fishery was in low value, high volume species; therefore, the real value of landed fish in Oregon today is about equal to the value in 1970 (Figure 2).

The increased landings and strong prices in 1988 for salmon produced \$270 million in personal income to the Oregon economy. A good share of this income, \$108 million, was generated by salmon landings (Figure 3).

The first indication of the problems in Oregon's fishery was a simultaneous collapse of prices and numbers of salmon. As a result of increased farmed salmon production, mostly from Norway and Chile, the real price of chinook dropped from \$4 per pound in 1988 to \$1.35 per pound in 1996 (Figure 4). At the same time, salmon landings in Oregon decreased from 18 million pounds in 1988 to less than 2 million pounds in the 1990's. Several years of drought, minimal snowpack, habitat decline, dams, overfishing, predation, and an extreme El Niño warming event have all

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2. Ibid. Page 4.

contributed to the severe decline in the chinook and coho salmon fisheries. In 1994, a fishery resource disaster was declared for three Pacific Northwest states, and a one time \$15.7 million emergency aid package was announced. The collapse of the salmon resource in Oregon is continuing.

As salmon income declined dramatically, groundfish based income has increased (Figure 3). However, the expansion of the groundfish fishery has resulted in signs of stress on several groundfish stocks.

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Figure 1  
1970-1997 Oregon Commercial Seafood Landing Trends (Thousands of Round Pounds)

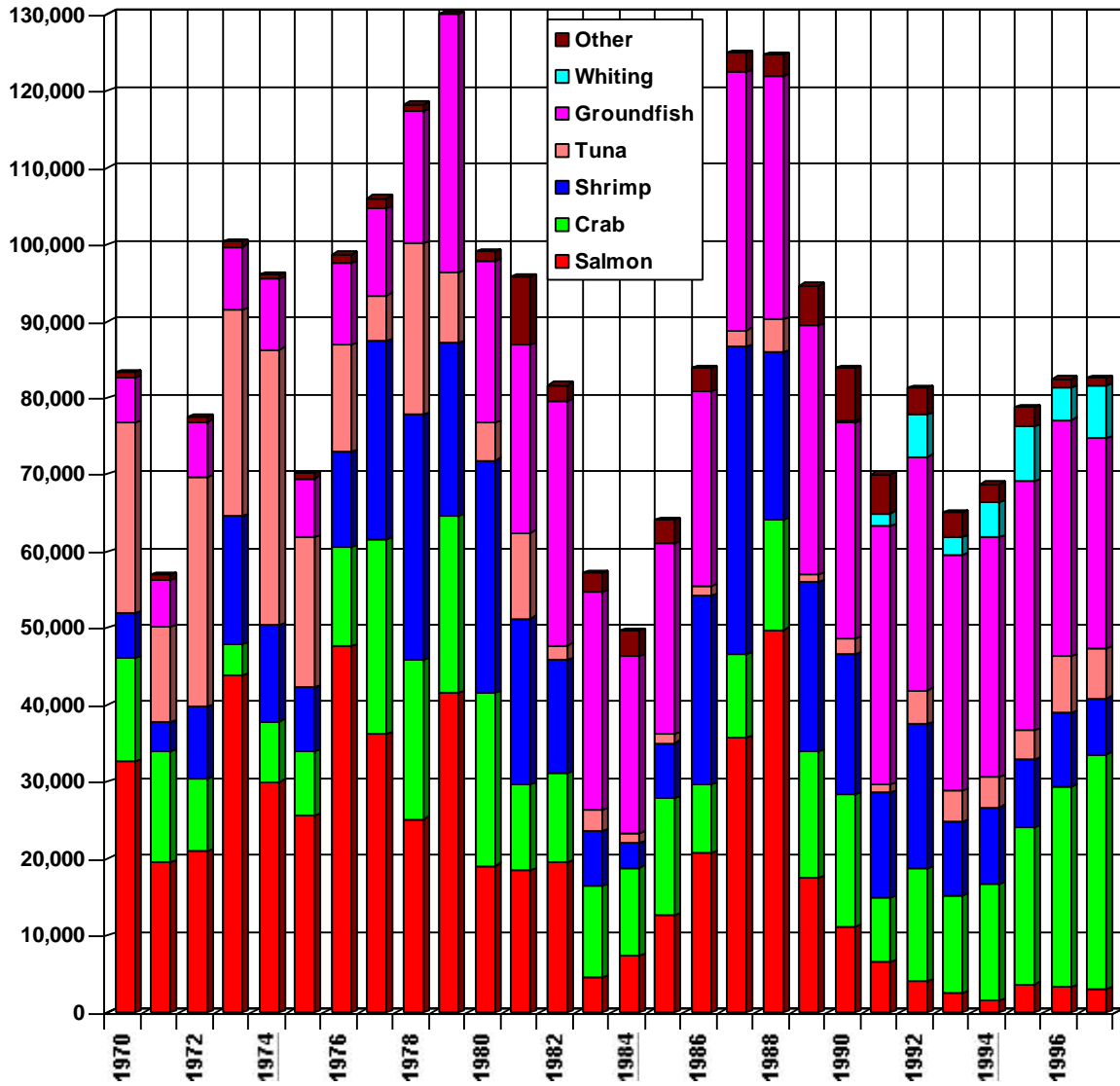


- Notes:
1. SALMON includes landings of steelhead, which have come exclusively from the Treaty Indian fisheries since 1975.
  2. Dungeness crab only.
  3. TUNA includes landings of albacore, yellowfin and skipjack tuna for 1970 - 1979. Essentially all tuna landings from 1980 on are albacore.
  4. GROUND FISH includes landings of cods, rockfish (snapper), sablefish, soles, flounders, halibut, and Pacific whiting (until 1990).
  5. Pacific whiting (also known as hake) did not emerge as a major fishery species until after 1990. Landings are included in GROUND FISH until 1990.
  6. OTHER includes landings of sea urchins, sturgeon, shad, smelt, clams, scallops, squid, crayfish and other species.
  7. Year 1997 data are very preliminary and were estimated by using a ratio of January to September landings ratio in year 1996 to all of annual landings and then using these ratios to estimate total 1997 landings. For most categories, this is most likely a fairly accurate estimate. For crab landings, an average for the last five years was used, since 1997 crab landings have been below average and the December 1997 landings may also be very poor.

Source: The Research Group, Corvallis, Oregon, using data provided by Oregon Department of Fish and Wildlife and The Research Group, Economic Assessment of Oregon's Groundfish Fisheries and the Impacts from Proposed Management Measures in 1998, Oregon Coastal Zone Management Association, November 1997 for 1997 estimates.

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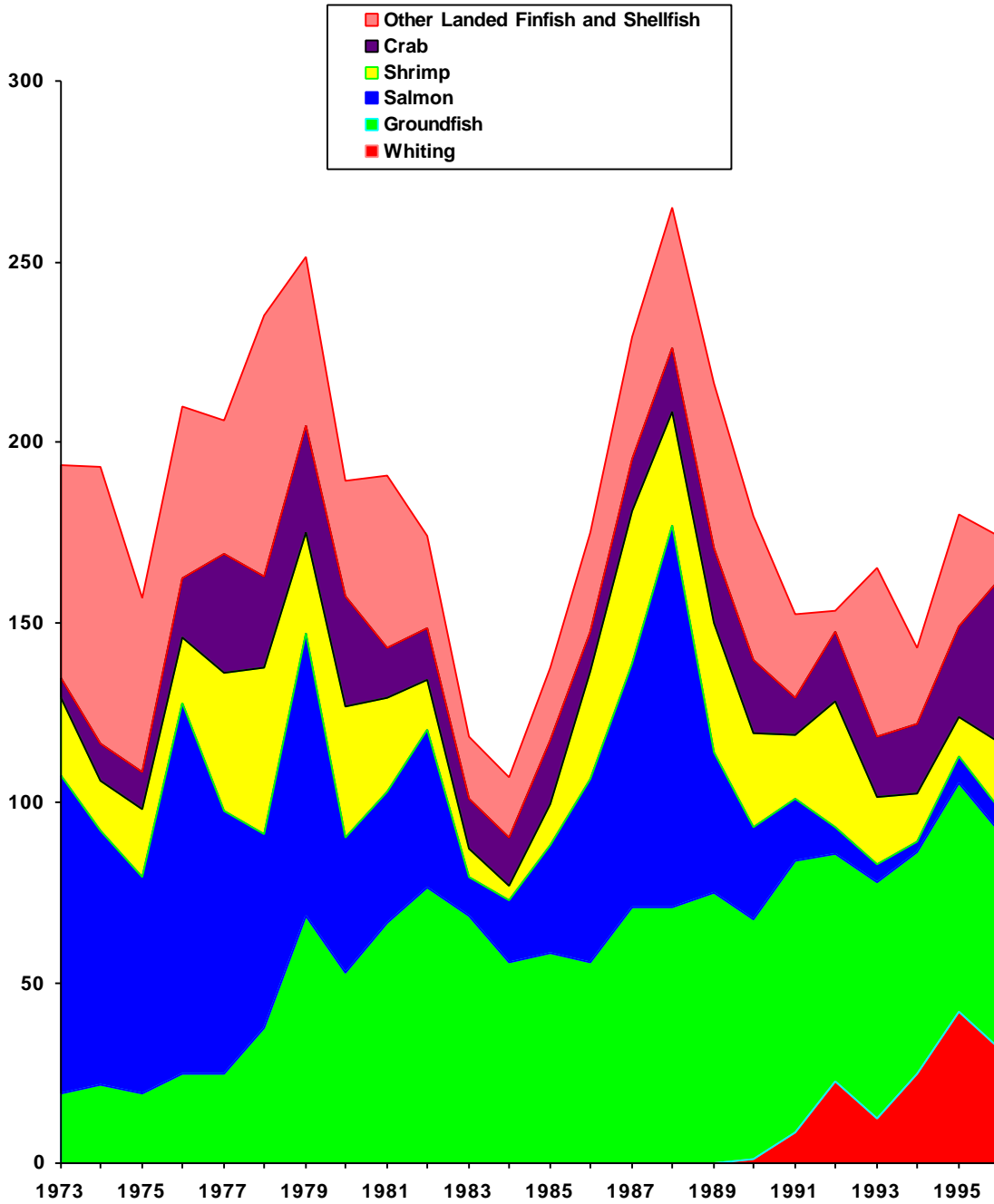
Figure 2  
1970-1997 Landed Value Trends of Oregon Commercial Seafood (Thousands of 1996 Real Dollars)



- Notes:
1. Ex-vessel value is the value or revenue received by fishermen/harvesters.
  2. SALMON includes landings of steelhead, which have come exclusively from the Treaty Indian fisheries since 1975.
  3. CRAB is Dungeness crab only.
  4. TUNA includes landings of albacore, yellowfin and skipjack tuna for 1970 - 1979. Essentially all tuna landings from 1980 on are albacore.
  5. GROUND FISH includes landings of cods, rockfish (snapper), sablefish, soles, flounders, halibut, and Pacific whiting (until 1990).
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  9. Adjustment used gross national product implicit price deflator developed by U.S. Bureau of Economic Analysis. (1996 is 100.) Values in 1997 are not adjusted because of the preliminary nature of these estimates.

Source: The Research Group, Corvallis, Oregon, using data provided by Oregon Department of Fish and Wildlife and The Research Group, Economic Assessment of Oregon's Groundfish Fisheries and the Impacts from Proposed Management Measures in 1998, Oregon Coastal Zone Management Association, November 1997 for 1997 estimates.

Figure 3  
 Statewide Economic Impacts by Species Landed in Oregon

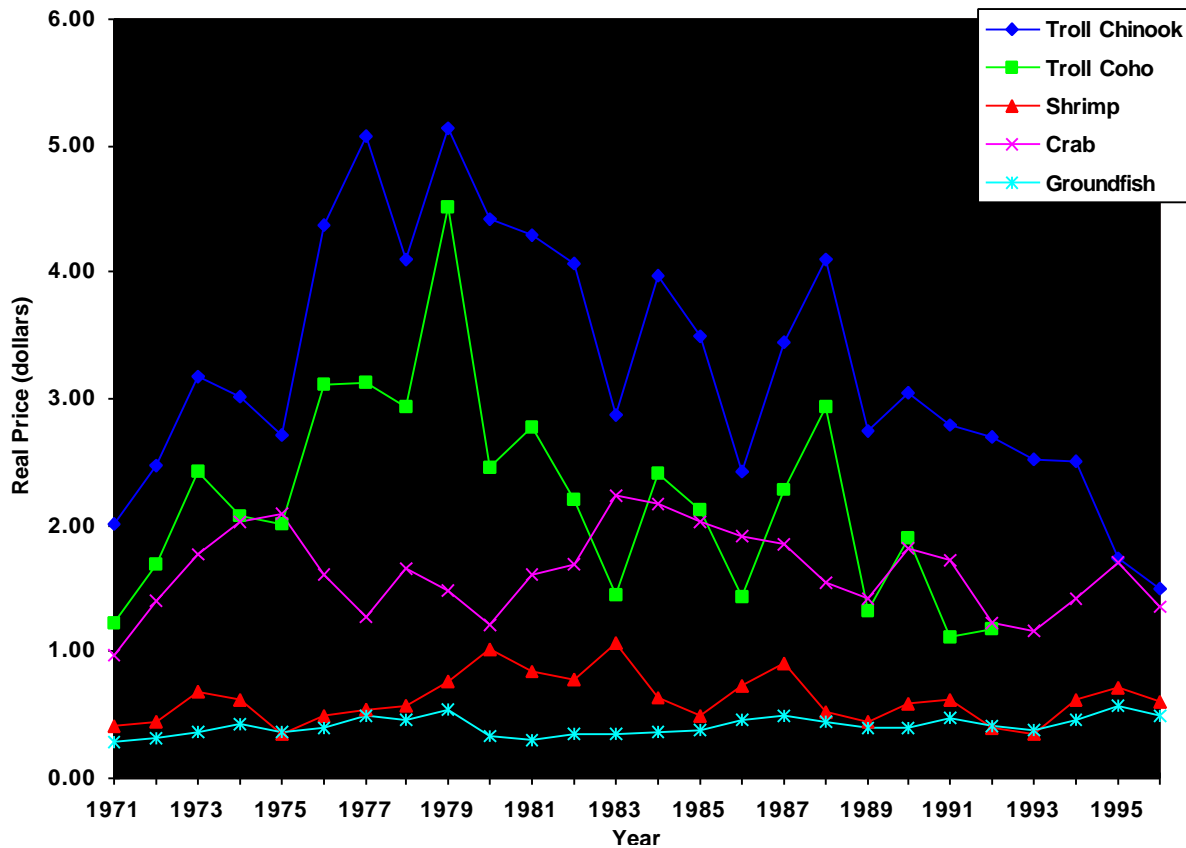


Notes: 1. Millions of 1996 real dollars in total personal income from Oregon landings and seafood processing. The economic impacts of distant water fisheries is not included.  
 2. The economic impacts for years before 1986 are rough estimates based on the level of prices at harvest.

Source: Study.



Figure 4  
 1971-1996 Selected Aggregate Species Annual Commercial Seafood Ex-Vessel Prices Trends  
 (Adjusted for Inflation, 1996 Base)



- Notes:
1. Prices adjusted to real 1996 dollars using the gross national product implicit price deflator developed by the U.S. Bureau of Economic Analysis.
  2. Groundfish price calculation does not include Pacific whiting.
  3. Prices are annual and species averaged and are for Oregon landings only, except Cod, which is all U.S. landings. Cod is included to show a general fish price trend of white fish.
  4. Average prices for salmon include seasonal and size considerations.
  5. Ex-vessel price is the amount paid to fishers at the time of fish delivery.

Source: The Research Group, Corvallis, Oregon, using data provided by Oregon Department of Fish and Wildlife

### 1996 Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens 1996 Act)

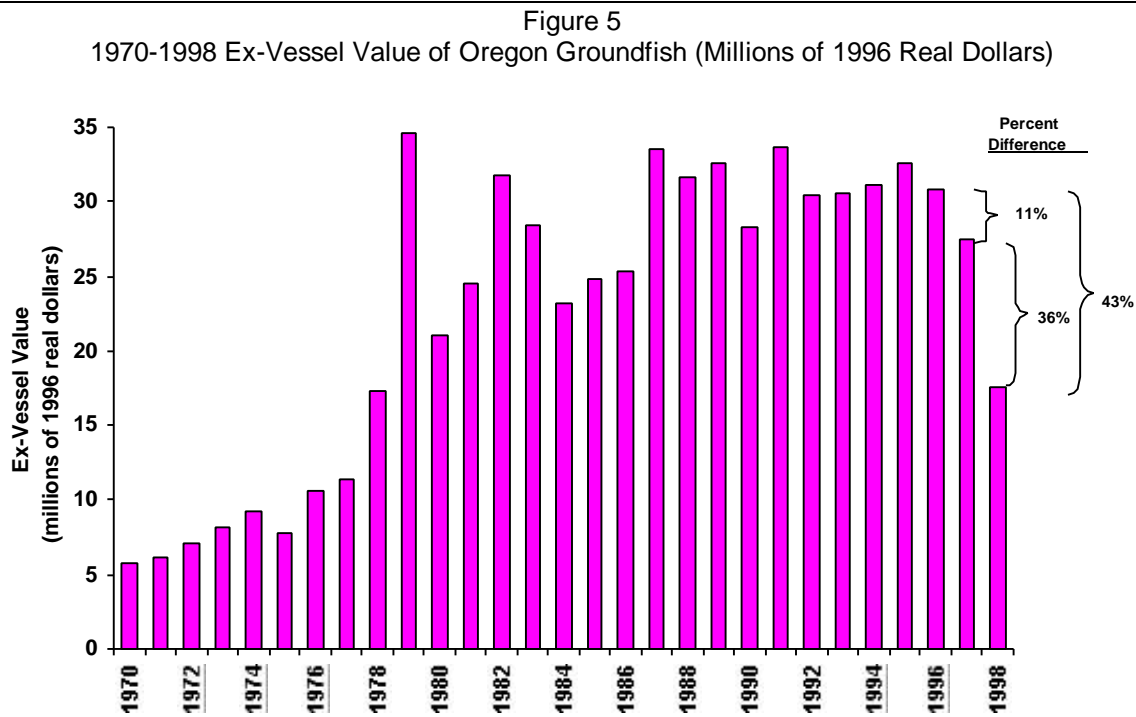
The 1996 Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens 1996 Act)<sup>3</sup> requires the regional Councils to utilize the most recent stock assessments to determine harvest guidelines and to avoid overfishing of any individual stocks. Under the new guidelines, the Pacific Fishery Management Council (PFMC) and the National Marine Fishery Service (NMFS) imposed a reduction of between 6 percent and 65 percent for species such as lingcod and sablefish. This will result in a reduction of 36 to 43 percent in groundfish revenues

3. Magnuson-Stevens Fishery Conservation and Management Act. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service.

(Figure 5) or about \$14 million in income, equivalent to a loss of 700 jobs for coastal communities in Oregon (Table 1).<sup>4</sup> As new assessments are completed in future years, additional reductions are expected.

The key provisions of the Magnuson-Stevens 1996 Act that provide for reassessment of fishery stocks are the "Definition of Overfishing" and "Defining/Protecting Essential Fish Habitat." New standards for overfishing may well put many stocks into a rebuilding status from current levels and result in further reduction of harvests from those established for 1998. This will mean that the "groundfish crisis" will surely be a longer term trend resulting in a fundamental change in the industry before new research work can confirm the true status of stocks.

The term "essential fish habitat" is leading to discussion of "refugia" as a management tool. Some biologists and marine economists are calling for up to 50 percent of productive fishing



Notes:

1. Pacific whiting (also known as hake) did not emerge as a major fishery species until after 1990. The value is included in GROUND FISH until 1990.
2. 1997 data are very preliminary and were estimated by using a ratio of January to September landings ratio in year 1996 to all of annual landings and then using these ratios to estimate total 1997 landings. For most categories, this is most likely a fairly accurate estimate. For crab landings, an average for the last five years was used, since 1997 crab landings have been below average and the December 1997 landings may also be very poor. Estimates for 1998 are very preliminary and are based on proposed harvest guidelines (high estimates) for groundfish and 1997 landings for other species.
3. Adjustment used gross national product implicit price deflator developed by U.S. Bureau of Economic Analysis. (1996 is 100.) Values in 1997 and 1998 are not adjusted because of the preliminary nature of these estimates.

Source: Oregon Department of Fish & Wildlife and The Research Group, Economic Assessment of Oregon's Groundfish Fisheries and the Impacts from Proposed Management Measures in 1998, Oregon Coastal Zone Management Association, November 1997 for estimates 1997 and 1998.

4. The Research Group. Economic Assessment of Oregon's Groundfish Fisheries and the Impacts from Proposed Management Measures in 1998. Oregon Coastal Zone Management Association. November 1997.

Table 1  
Economic Impacts of Recommended 1998 Groundfish Harvest Reductions

Ports	Personal Income (thousands)	1997 Percent Contribution		Job Equivalents	Vessel Equivalents
		Groundfish	Total		
Astoria	-4,768	-21%	-5%	-238	-19
Garibaldi	-63	-20%	-2%	-3	-2
Pacific City	-9	-13%	0%	0	-2
Depoe Bay	-5	-31%	-1%	0	0
Newport	-3,529	-23%	-3%	-176	-34
Florence	-13	-6%	-1%	-1	0
Winchester Bay	-70	-36%	-4%	-3	-15
Charleston	-3,776	-24%	-11%	-189	-22
Bandon	0	-17%	0%	0	0
Port Orford	-636	-32%	-12%	-32	-15
Gold Beach	-4	-12%	-3%	0	0
Brookings	-996	-28%	-7%	-50	-15
Total State	-13,559	-23%	-5%	-678	-87
<u>County</u>					
Clatsop	-4,768	-21%	-5%	-238	-19
Tillamook	-72	-18%	-1%	-4	-3
Lincoln	-3,534	-23%	-3%	-177	-34
Lane	-13	-6%	-1%	-1	0
Douglas	-70	-36%	-4%	-3	-15
Coos	-3,776	-24%	-11%	-189	-22
Curry	-1,636	-29%	-8%	-82	-31
Total	-13,559	-23%	-5%	-678	-87

- Notes: 1. Job equivalents assume \$20,000 net earnings per job.  
2. Vessel equivalents assume average vessel groundfish revenues as shown in Table 7 and the projected groundfish ex-vessel harvest values as shown in Table 4. The appendix contains the same vessel and harvest information by port. Total State vessel equivalents is based on a weighted average for vessel groundfish revenues and is not the sum of individual ports.  
3. Sum of ports will not equal total State economic impacts due to some landings being made to non-port areas.

Source: The Research Group, *Economic Assessment of Oregon's Groundfish Fisheries and the Impacts from Proposed Management Measures in 1998*, Oregon Coastal Zone Management Association, November 1997.

areas to be set aside as nursery areas and bio-diversity centers. In addition to the reductions expected from the Magnuson-Stevens 1996 Act, the Pacific Northwest fishing industry is also experiencing natural cycle low abundance years in Dungeness crab and pink shrimp. The results are effort shifting and serious interactions between fisheries. This causes a cascade effect, where some vessels move into different fisheries they have not traditionally fished. An example is groundfish trawlers moving into shrimp trawling or crabbing, creating more competition in those fisheries. Another example is salmon trollers and small hook and line vessels moving inshore to harvest rockfish, competing with recreational fisheries that are highly dependent on near shore reefs. These types of shifts will cause serious allocation issues and conflicts.

The overall impact of the Magnuson-Stevens 1996 Act is to send strong signals on conservation, but weak signals on management tools to implement these principles. The Act recognizes the need for capacity reduction and reducing discards, and also allows community development quotas in certain Alaskan waters. However, the Act does not allow the expanded use of individual transferable fishery quotas as a management tool until a comprehensive review of this issue has been completed.

In summary, the Magnuson Act of 1976 was instrumental in developing the groundfish fishing industry on the West Coast of the United States. This industry is today facing new challenges, partly resulting from the rapid growth of the fishing industry, and partly from the realization that sustainable levels of fishing may mean substantial reductions in harvest. The fishing industry in Oregon most likely will decline to generating about \$120 million in income per year, down from \$270 million in 1988.

### Emerging Issues in Oregon's Groundfish Fishery

The challenge of the West was to utilize its abundance resources for economic growth. The present challenge is to maintain economic activity within sustainable levels of natural resource use. Overall, this means that the fishing industry and dependent communities' expectations of income derived from marine resources will be lower than what was experienced just a few years ago.

As we approach this reduced level of resource use, there are several emerging groundfish issues facing Oregon. These are:

- Capacity reduction. Actual and potential stock declines will require reduction of fishing capacity to assure an economically viable fleet. The challenge will be to funnel any federal aid to effort reduction, both capital and human, and not to income maintenance of existing capacity.
- Improved stock assessment. Uncertainties of stocks and improvement to assessment models will require more and better fisheries information on catches and their biological characteristics. The challenge will be to invest in research in strategic areas. Stock assessment costs for some species may be higher than the value received from harvesting these stocks.
- Reduction of waste - full utilization. Discard of incidentally caught fish and fish not landed for regulatory reasons needs to be reduced. Full utilization (landing all catch) is feasible, but will require changes in fishing practices, management, and development of markets and infrastructure. Developing more selective fishing gears in some fisheries also offers potential.
- Commercial-recreational conflicts. Displacement of commercial fisheries and reduced stocks will create continuing and new allocation timing and area conflicts for these competing fisheries.