

# Oregon Commercial Fishing Industry Economic Contributions in 2011 and Outlook for 2012

**Briefing Report  
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prepared for  
Oregon Department of Fish and Wildlife  
and  
Oregon Coastal Zone Management Association

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## ***Introduction***<sup>1,2,3</sup>

Preliminary economic contribution estimates show 2011 was an average year for some Oregon commercial fisheries and an exceptional year for others. While overall it was an excellent year, some harvesters and processors dependent on certain fisheries had disruptions in their business opportunities. Further, the Year 2011 improved economic contributions were not evenly distributed among all coastal ports. Trends in vessel industrialization and processor consolidation continued 2011.<sup>4</sup>

The commercial fishing industry takes place in a time-demanding, shifting regulatory, technologically changing, and high risk economic environment (Table 1). A mosaic of federal and state fishery management, enforcement, and research agencies face a huge task for annually setting forth regulations to conserve fish stocks and still allow viable fisheries.<sup>5</sup> The industry must conduct business in the complex regulatory setting; and, all the while, stay knowledgeable, keep engaged, and deal with the challenging economic conditions. Having a successful business in such circumstances requires hard work and smart decisions by all participants.



*The Lingcod (Ophiodon elongatus) was declared overfished in 1999 and through stringent landing limits was assessed to be rebuilt in 2005. Approximately 421 thousand pounds were landed in Oregon in 2011 with an average harvest price of \$1.08. The usual product form is fillet and production has high exports to Japan. Their nickname is bucket head after their enormous mouths and jaws set on a head that looks too big for its body. (Photo courtesy of Chad King, Monterey Bay National Marine Sanctuary)*

This report is a short accounting about onshore landings volume, harvest value, processor production, participant characteristics, and fishing industry economic contribution estimates in 2011.<sup>6</sup> Economic contributions from distant water fisheries are mentioned. An outlook for 2012 and description of industry challenges is also provided.

## ***Landings Volume***

In terms of volume, 285.1 million pounds of fish were delivered to Oregon ports in 2011 (Table 2 and Figures 1 and 2). This is up from 216.6 million pounds in 2010. Itemized descriptions for seven major fishery categories follow.

- Salmon deliveries totaled about 2.4 million pounds, which is slightly lower than 2010 due to decreases in ocean troll and Columbia River gillnet and treaty fisheries.<sup>7</sup> Pre-season expectations for higher numbers of salmon stocks that contribute to the mixed-stock ocean fisheries (such as the Sacramento River fall Chinook) did not materialize for the ocean season.
- Dungeness crab had an upswing with 17.1 million pounds landed in the calendar year as compared to 15.9 million pounds in 2010. The crab season starts on December 1 and runs through August 14 of the following year. A delay in season start due to a low pick-out rate resulted in only 6.3 million pounds landed in December 2011 - the lowest

opening season month since 2006 (Table 3).<sup>8</sup> About 64 percent of volume and 55 percent of value for Dungeness crab season landings typically occur in December.

- Pink shrimp at 48.3 million pounds is over 50 percent higher than the 31.5 million pounds landed in 2010. The pink shrimp fishery is managed by Oregon Department of Fish and Wildlife (ODFW). It begins on April 1 and extends through October 31. ODFW had new gear regulations in 2011 to reduce eulachon smelt bycatch. Despite causing some catch interference, catch rates were high during the year.
- Albacore tuna landings were about the same as previous five year and 10 year averages at 9.5 million pounds in 2011. Many vessels that participate in the salmon fishery also rely on the albacore tuna fishery to maintain revenue levels.
- Non-whiting groundfish landings at 28.5 million pounds in 2011 had decreased landings of about 23 percent over the previous year. The two highest contributors (flatfishes and black cod) as measured by weight had significantly lower assigned TAC (total allowable catch) in 2011.
- There have been significant onshore landing decreases the last couple of years for Pacific whiting (69.5 million pounds in 2010) and sardines (46.0 million pounds in 2010). However, Pacific whiting increased to 151.5 million pounds in 2011, while sardines decreased further to 24.3 million pounds in 2011. The 2011 landings of Pacific whiting are the highest since 1999, and the 2011 landings of sardines are the lowest since the beginning of the current abundance cycle in 2000. The Pacific whiting harvest delivered to motherships or caught by catcher-processors from all along the West Coast (includes tribal fisheries) was 282.2 million pounds in 2011 as compared to 233.7 million pounds in 2010.

### *Harvest Prices*

In general, prices paid to harvesters increased in 2011 (Table 4 and Figure 3). Harvest prices are the result of a complicated set of determinates filtered through negotiated ask-bid arrangements. The harvester sells to processors and other buyers who are responding to what their wholesale customers are willing to pay and amounts to be purchased. The major price determinants for 2011 would include the following.

- Growing global demand combined with a weaker dollar against foreign currencies in countries that import U.S. seafood product. Purchasers in a foreign country when paying the same dollar amount causes a greater volume demand which raises U.S. seafood prices. The dollar has been weakening against the Japanese yen and Chinese yuan, but strengthening against the Euro, Canadian dollar, and Russian ruble (Figure 4). Application of this determinate must be carefully considered, because there are worldwide substitutes for nearly every species and product form.
- Modest recovery in the national general economy that helps overcome previous years' consumer reluctance for purchasing seafood since it is perceived as a higher priced protein food item; and, increased foodservice demand from people eating out more often.
- Higher distributor demand due to liquidation of hold-over inventories.

- Continued customer awareness about seafood's nutritional value and interest in purchasing from capture fisheries certified as sustainable.

Harvest prices for the major fishery categories were as follows:

- The troll gear caught Chinook salmon price increased six percent from 2010, which was up from a recent year's low in 2009, to be \$5.18 in 2011. The troll gear harvested Chinook supply an Oregon wild-caught branded niche market. It would be expected that higher prices in this niche market would continue.
- Dungeness crab price was higher at \$2.59 in 2011 as compared to \$2.11 in 2010. Growing demand from Asia for live product helped drive this price increase. Crab prices at the start of the season are at their lowest when production is oriented towards the West Coast retail market for whole-cooked product form (Figure 5). After the first of the year, prices increase and the production switches to a section product form for the national food service market.
- There was a welcome jump in pink shrimp prices to \$0.51 per pound in 2011 from the lower and middle 30 cent prices the last two years. The jump was due to decreased supplies in Canada for a similar species and strong demand from Europe, Japan, and China. Japan and China demand was also prompted by a weakened U.S. dollar against those countries' currencies. The Year 2011 Oregon catch had a higher proportion of large sizes which receives a higher price. Establishment of new processing standards by some of Oregon's seafood companies helped pave the way for opening up European markets and increasing price.
- The albacore tuna price increased from \$1.19 per pound in 2010 to \$1.94 in 2011. There was strong European (especially Spain) demand for frozen loin product form. There was an intensive canned tuna marketing campaign by the major world distributors which caused lower available worldwide tuna supplies. The Oregon Albacore Commodity Commission also had an aggressive marketing campaign. The increased demand for this species may also be for the Japanese sushi market where there is consumer awareness about the overfishing status for other tuna species, such as the Pacific bluefin tuna. Adherence to better handling standards is necessary for the sushi market, but is justified by fetching a higher price. Worldwide supplies were also interrupted due to the March 2011 tsunami destroying two major Japanese tuna fleet ports.
- The prices for most groundfish flatfish and rockfish species increased or were about the same (flatfish price up 37 percent, lingcod price down 16 percent, thornyheads up 16 percent, and other rockfish down nine percent). The price of black cod increased dramatically in 2011 by about \$1.00 per pound to \$3.45. The European fresh/frozen white flesh fillet market was generally very strong in 2011, although there was weakening in the eastern European market in the last half of the year.
- The high-volume and low-price Pacific whiting fishery continued to recover from the price collapse in 2009. It was about a third higher than that experienced in 2010 at 10.9 cents per pound. The market for whole (headed and gutted) and fillet product forms from Pacific whiting was up in 2011 after suffering a crash in 2009.

- Sardines are also a high-volume and low-price fishery. The price increases experienced in 2008 were sustained in 2009 and 2010 and increased somewhat higher to \$0.13 in 2011. The market for the favored larger size sardine in Oregon/Washington fisheries is mostly exported to Asia for use as longline gear bait and somewhat for human consumption. There is also a market use for bluefin tuna fattening feed product.

### *Harvest Value*

The higher prices in most fisheries, and the higher volume in the pink shrimp and Pacific whiting fisheries helped raise the harvest value of Oregon onshore landings from \$105.1 million in 2010 to a 23-year high of \$145.5 million in 2011 (Tables 5 and 6). This is about 44 percent above the last ten years annual average of \$101.2 million (adjusted to 2011 dollars). The following provides itemized harvest value numbers for major fishery categories in decreasing share of total harvest value in 2011.

- (1) Oregon harvest value in recent years is usually dominated by the Dungeness crab fishery, which accounts for about 40 percent of the onshore landing total value. The Year 2011 harvest value at \$44.3 million is a bit lower than typical with a proportion of about 30 percent.
- (2) The second highest contributing fishery harvest value is usually the non-whiting groundfish fishery, which at \$28.2 million in 2011 continues to hold the ranking.
- (3) In good years of the pink shrimp cyclical abundances, the fishery can be the third highest harvest value generator. The increased price and higher volume in 2011 realized \$24.6 million harvest value, a 19-year high.
- (4) The albacore tuna fishery (a 33-year high of \$18.4 million in 2011) is especially important as a substitute and opportunity fishery when the highly variable salmon fishery has downturns.
- (5) The Pacific whiting onshore fishery had \$16.5 million landed harvest value in 2011. (The onshore landed value does not include the harvesting by the dozen or so Oregon based vessels making deliveries to offshore motherships. The at-sea deliveries are included in distant water fisheries economic contributions.)
- (6) The ocean and in-river commercial salmon fisheries harvest value was in \$6.7 million in 2011. This value was the second highest in the last six years, but less than in Year 2010 (\$7.7 million).
- (7) The sardine fishery's \$3.2 million harvest value in 2011 is down from \$5.3 million in 2010. The continued decreased TAC for the northern West Coast stocks resulted in Oregon landings to be about one-quarter of its previous high in 2005. The lower catch and somewhat stagnant price the last three years lowered the harvest value to what was experienced in the early 2000's.

The total estimated wholesale value of the Oregon onshore harvests was \$291 million in 2011 using rule-of-thumb factor for usual processor production and distributor markets. The wholesale value gets upped again to account for exports to domestic and foreign markets, and

other distribution chain transactions before it reaches the consumer. This large number economic measurement shows the importance and integration of this industry with the Oregon Coast economy and world markets.

While the Oregon commercial fishing industry production is substantial, the State and the U.S. are net importers of seafood for consumption. Most of Oregon's production is shipped elsewhere to satisfy niche and commodity markets. About one-third of it would be for domestic markets and two-thirds for foreign markets if it followed U.S. production trade characteristics. The U.S. imported 86 percent of its seafood consumption in 2010. (Year 2011 trade statistics data from NOAA Fisheries are not yet available.) The Year 2010 per capita consumption at 15.8 pounds of fish and shellfish is a slight decline from the 2009 figure of 16.0 pounds.

### *Participants*

While individual fisheries harvest value is an important indicator for showing commercial fishing industry trends, the health of the industry has a social context for the well-being of harvesters, processor workers, fisheries managers/enforcers, and ultimately the public. Studies show Oregonians not only care about natural resource conservation, but have empathy and appreciate the life style of the participants. Those involved in the industry know its vagaries: part-time employment, changes in abundances, dangerous weather conditions, volatile prices, and seeming unending surprises in management and regulations. Families and businesses must be dynamic and flexible to survive and prosper. Their resilience is appreciated by all those that favor and enjoy Oregon origin seafood.



There were a total of 1,170 vessels that made 24,422 deliveries to Oregon ports in 2011 (Table 5). This is down from 1,180 vessels and 24,631 deliveries in 2010. There were a total of 181 first-purchase active (purchased more than \$500) businesses in 2011 which is down from 219 in 2010.<sup>9</sup> The average revenue for active (harvest revenue more than \$500) vessels was \$133,457 in 2011, which is up by \$41,112 from 2010. The active vessel median revenue was \$27,764 in 2010 and \$33,197 in 2011. Most of the harvest revenue (70 to 80 percent depending on the fishery) is accomplished by a minor number (20 to 30 percent) of vessels (Figure 6). A similar assessment can be said of the processing

sector where there are several dominant companies that make harvest purchases. (Or in other words, an average statistic is not a revealing economic performance indicator for the fishing industry due to fleet and processor business heterogeneity).

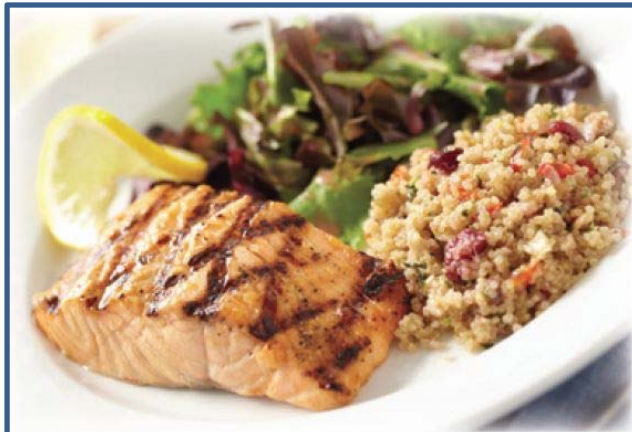
In addition to the trend of lesser number of vessels and consolidation of processor ownerships, there is a shift in landings being made at small ports to being made at regional fisheries centers



(Figure 7).<sup>10</sup> The landings that still are occurring at small ports are purchased by large processors using little labor and requiring limited facilities at the ports. The fish is then hauled to centralized processor plants for processing and warehousing.

### ***Economic Contribution Estimates***

The fishing industry generated \$284 million total personal income in 2011 due to onshore landings (Table 7). This compares to a 2010 economic contribution of \$228 million. Year 2011 was a 16.3 percent higher economic contribution than the previous five year average of \$244 million. This includes the income generated by the spending from harvesting and primary



*The Oregon commercial fishing industry is highly regulated by government, but also receives economic development assistance from government. For example, the Oregon Department of Agriculture assists with market maintenance and development service through administration of four seafood product related commodity commissions: albacore tuna, Dungeness crab, salmon, and trawl gear fisheries. The commodity commissions are supported through ad valorem assessments on particular species landing revenues. Oregon State University administers several programs supporting the industry, including Sea Grant, Extension Service, Seafood Research and Education Center, Coastal Oregon Marine Experiment Station, and the interests from several academic departments. The State has provided funds for the Community Seafood Initiative to further intelligence and market development programs. Local governments and coastal port districts provide public services and advocates industry causes. (Photo courtesy of USDA.)*

processing sectors. The economic contributions also include the income generated by the expenditures from supporting industries and businesses in the region as well as re-spending by households who receive earnings from the fishing and supporting industry (or the so-called multiplier effect).<sup>11</sup>

Distant water fisheries are a significant component of the commercial fishing industry's total economic effects in Oregon. These fisheries are the West Coast offshore, Alaska, and the western Pacific. The economic contributions are from: vessels that home-port and/or get provisions and are repaired in Oregon that travel to these fisheries; people who own vessels and permits that are home-ported elsewhere but have residence in Oregon; or, crew members and processor workers that return wages to Oregon. Detailed estimates are not yet available, but indications are that the economic contributions in 2011 were higher

than the 2010 estimate of \$232 million. The estimates for 2012 will probably be lower than they were in 2011 due to lower forecasted harvests in Alaskan fisheries.

The estimated total personal income generated by the Oregon commercial fishing industry (onshore and distant water fisheries) in 2011 is at least \$518 million, depending on the final modeling results for distant water fisheries. (Shellfish aquaculture is not included in these estimates since it is typically classified as an agriculture product. It has been estimated to have generated \$9 million in 2008.) At a partial and full-time equivalent job income of \$32,000, economic contribution estimate is equivalent to about 16 thousand jobs. This is about a 13 percent increase in economic impacts over the previous five years. The commercial fishing industry represents about one-half percent of all Oregon net earnings. The share Oregon Coast

local net earnings ranges from 16 percent in Lincoln County to less than two percent in Tillamook County.

There were opportunities for harvesters to be paid for research, management collaboration, and other programs (such as participation in halibut survey programs, salmon genetic stock identification CROOS Project, and retrieval of derelict crab gear) in 2011. The three years of State and federal salmon disaster aid programs awarded due to the collapse of the Klamath River and Sacramento River fish stocks played out in 2010. The program's direct payments were made to Oregon salmon trollers, gillnetters, charterboat owners, processors, and associated businesses in 2008 through 2010. A rough estimate of these programs economic impacts that assumes spending using the payments as if it was fishery revenue is \$60 million in personal income. This is a significant subtraction in communities that have some dependency on the salmon fisheries.

### *Near Term Outlook*

The near-term outlook for 2012 fisheries is mixed.

- It is expected the **ocean commercial salmon fishery** South of Cape Falcon will again be structured by forecasted returns to Klamath and Sacramento River fall Chinook stocks and the lower Columbia River natural tule Chinook stocks. Other Columbia River ESA (Endangered Species Act) listed stocks may also be a constraint. Pre-season modeling in 2011 greatly over-predicted adult returns for some of these constraining stocks, especially the Sacramento River fall Chinook. (This is an important stock for Oregon ocean fisheries as it contributes in good return years over 40 percent of Oregon harvests south of Cape Falcon.) The preseason forecast for both the Klamath and Sacramento River fall Chinook stocks is very good for 2012. On the other hand, the preseason forecast for ocean abundance of hatchery coho is poor in 2012. An encouraging aspect in the preseason forecasts is that Oregon Coast Natural coho stocks are on the upswing. North of Cape Falcon ocean commercial fisheries usually mirror stock abundance forecast for Columbia River in-river commercial non-Indian and treaty net fisheries. They can also be greatly influenced by harvest sharing provisions in the Pacific Salmon Treaty. The Columbia River net fisheries are expected to see a better than recent year average for landing volume; and, prices are expected to maintain at higher levels. The spring Chinook forecast is strong - about one-third higher than last year. Fall Chinook stocks forecasts are about the same as the last two year's returns. The coho forecast is down from last year's returns. The sturgeon forecast is down, which will greatly limit fish numbers available to the commercial fishery.
- **Dungeness crab** landed volume was modest in 2011 as compared to some recent years. There are not stock assessments made that can serve to predict future year abundances, so other predictors (like the previous year catch rate) have to be looked at for prognosis information. Catch rates were low after the delayed season start in December 2011. This may portend a slow year for the balance of 2012. The price increase in 2011 carried through into December 2011 and has helped offset the long soaked times causing increased cost per catch. The mainstay Dungeness crab early season product form is cooked whole crab. Retailers may benefit from a growing consumer demand for sectional and picked meat product forms which have higher profit margins. A growing



niche market is to ship live crab to China via air freight charters leaving from Vancouver, Canada. The Oregon fishery is Marine Stewardship Council (MSC) certified, which should help in marketing campaigns oriented to consumer awareness about seafood quality and embracing the concept for buying products from sustainable fisheries.

- **Pink shrimp** volumes may see another good year in 2012 if predicted using the natural cycle trends. Experts are saying offsetting downturns in density dependent biological age recruitment into fishery size shrimp and lessened predator-prey effects from Pacific whiting may lead to a similar harvest year in 2012 as experienced in 2011. Shrimp prices are highly susceptible to export prices and a strengthening U.S. currency means more favorable exchange rate for Canadian exporters. Progress has been made on lifting European Union policy for penalty tariffs placed on U.S. exports. The policy change may partially occur in 2012. The European demand for the cooked and peeled product form was diverted to U.S. production last year since Canadian production was down. But Canadian production may recover in 2012 which will place downward pressures on U.S. shrimp prices. The Oregon pink shrimp fishery has MSC certification. The pink shrimp fishery has a bycatch issue with ESA listed species. Essential fish habitat designated for the purpose of assisting in species recovery for ESA listed green sturgeon and eulachon species includes pink shrimp fishing grounds. Future regulations may mean additional costs would be incurred by harvesters for gear excluders and operational avoidance.
- The north Pacific **albacore tuna** fishery is also MSC certified which may have contributed to last year's augmented demand and resulting price increases. There is European demand for the albacore tuna species, but a strengthening U.S. dollar may stymie the purchase interest. This open access fishery may have limited entry requirements and federal restrictive quotas in the future due to management under international treaties.
- The **non-whiting, multi-species groundfish fishery** is managed as a trawl ITQ (individual transferable quota), a fixed gear limited entry fishery, and a small open-access fishery. Year 2012 will be the second year of the ITQ management approach and transitional effects will still be occurring. Vessels with small quota shares (QS) are leasing to vessels with larger QS amounts and exiting the fishery. A moratorium on selling QS expires in 2013, which when allowed should accelerate efficiency gains by reducing the number of participating vessels. The fishery is challenged by eight species being declared in overfished status. Avoidance of overfished flatfish stocks (like petrale sole) and rockfish stocks (like canary) that inhabit the same locations as healthy stocks may mean overall harvests will be less than TAC's allow. The Pacific Fishery Management Council (PFMC) is developing opportunities within the ITQ management approach for exemptions to strict individual bycatch limits. There are added costs for the fishery from buyback loan re-payment, ITQ administrative cost recovery, and the 100 percent observer program. Black cod (caught with both trawl and longline/pot gear) makes up half of the groundfish fishery revenue. There is a Japanese prized specialty market for the species and growing domestic market. The markets have been strong in recent years leading to price increases.
- The **Pacific whiting** market has strengthened for whole (headed and gutted) and fillet product forms. These higher value white-fish products allow processors to pay harvesters

more than if the landings were processed into surimi. There are strong year classes available to the 2012 fisheries, therefore there are expectations the 2011 high levels of landings will be sustained. Future year TAC's may not be able to rely on the strong year classes that are allowing for elevated catch levels. The non-treaty quota share will be reduced somewhat because of recently increased shares going to Washington Coast tribal fisheries.

- Lower **sardine** stock assessments than in previous years means landings will not increase. Price increases are not expected without a change in demand from the Asia export market or until a new human consumption market develops.
- Oregon's small commercial directed **halibut** fishery's TAC comes from the International Pacific Halibut Commission (IPHC) via a total annual catch apportioned to the West Coast, British Columbia, and Alaska. The PFMC's catch-share plan further specifies which sectors get the West Coast apportionment. The IPHC has notified member countries that exploitable biomass has been over estimated in the past and new modeling procedures will decrease allowable catch in the near-term.

The fishing industry is becoming more industrialized. Fewer vessels are participating and those that do participate require higher annual revenues to be a profitable business. The trend in processor ownership consolidation and centralization of operations continues. Landings are hauled elsewhere, precluding the need for local labor and support businesses.

Other issues that the commercial fishing industry is facing are:

- Pressure to set aside areas for: (1) no-take marine protection areas for research and to preserve their intrinsic values, and (2) other conflicting use of ocean, such as wave/wind energy generation.
- Social policies for allocations among user groups (commercial, recreational, and tribal fishermen) and communities.
- Judicial decisions on habitat protection and incidental take issues brought to the forefront by conservation organizations, like protection of sea birds and mammals either impacted by fishing techniques or dependent on protein from the same fish species now exploited; Compacts and international treaties, such as with Canada for allocation of Pacific whiting, salmon, and tunas; and, multi-national interests in highly migratory fish stocks in the western and central Pacific Ocean.
- Better understanding in the science of ecosystem interactions and improved stock assessments that may cause fishery management agencies to reduce exploitation rates, control fishing gear, reduce trip limits, or have further restrictions in time/area closures through new initiatives to develop an ecosystem fishery management plan. Stock building programs calculated using variables with large uncertainties; rebuilding programs will take many years for depleted species to return to maximum sustainable harvest levels because of life cycle characteristics of these fish.

- Restrictions on harvests for species in a healthy stock status condition due to fishing techniques that have unavoidable mortalities on species in a depleted stock status where species occupy the same space at the same time. There is a need to develop innovative methods to share real time information among vessels to avoid hotspots where the depleted species are congregating.
- For the most part, there are not major populations of underutilized species which harvesters can exploit, but new fisheries may develop around some minor opportunities for filling niche markets.
- Increasing costs for prosecuting fisheries, such as for fuel, safety equipment, insurance, moorage, etc. New, more selective management requirements requiring different gear, area/time closures related to ocean depth, and more intrusive harvest verification techniques (log books, observers, satellite signal location registry programs, etc.) will add to operation costs.
- Implementation of the 2006 Magnuson-Stevens Act reauthorization, including new definitions and processes for avoiding species overfishing.
- Use of limited access privilege programs with transferable quotas for vessels, processors, and cooperatives participating in the groundfish and Pacific whiting fisheries.
- The proliferation of certification programs for seafood product quality and capture fisheries sustainability has burdened harvesting associations and processors. The certification concept has merit, but there is confusion and expense in trying to respond to duplicate systems. The multiple systems can confuse rather than inform consumers, which is the opposite intent of the programs.

Goals for the industry would be to extract more value from the fishery resources that are available. Raising resource value has several challenges. There will be continuing price pressures on seafood products from substitute aquaculture products. Consumer concerns about quality (freshness, inclusions of toxics, etc.) will affect seafood product demands. Considerations about health and wholesomeness of natural wild-caught, coldwater fish could be a marketing advantage to Oregon's industry. Seafood traceability systems exist for allowing source and quality information to be tracked through all steps of production, distribution, and sales. This informs the consumer about purchasing decisions and provides for quick and complete product recall procedures. Modernization of vessels for better handling capabilities and initial onboard processing, and modernization of processing plants will improve seafood products. Assistance through commodity commissions and other entities for developing marketing strategies that will gain market power for Oregon seafood products should help the industry raise value at all levels of seafood production.

### ***Endnotes***

1. *The briefing report is one document that comes from a project sponsored by the Oregon Department of Fish and Wildlife (ODFW). The project is administered by the Oregon Coastal Zone Management Association (OCZMA). The project affords a preliminary commercial fishing industry activity and economic assessment description as soon as possible after the end of the calendar year. Another more detailed report is developed for the project on a two- year schedule. The briefing report and more detailed report are available at [www.oczma.org](http://www.oczma.org). The Research Group, Corvallis, Oregon was the consulting firm for the most recent economic*

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assessment project. The OSU Coastal Oregon Marine Experiment Station, Newport, Oregon assisted in developing the briefing report.

2. For reader convenience, an informal writing practice is adopted. The narrative is not interrupted with citations to material/communications from others. It is assumed that the reader is familiar with the report's topic. Fishing industry terms and economic assessment methods are not always defined nor explained.
3. The landings and fleet characteristics data used to describe Year 2011 fisheries in this report are still being compiled. The stock abundance, management specifications, and market information used in describing the Year 2012 outlook is tentative. The available data and authors' inferences should prove valuable for the project's purpose, but no absolute assurances can be given that the descriptions and interpretations will be realized. Therefore, the report's authors caution using any descriptions for making business investment or operational decisions. The report has not been reviewed by project sponsors or other independent reviewers. Neither the sponsors nor authors shall be responsible for any direct, indirect, special, incidental, or consequential damages in connection with the use of the information. Authorization is granted for the study report's contents to be quoted either orally or in written form without prior consent of the authors. Customary reference to authorship, however, is requested.
4. The term vessel industrialization is an economic efficiency term meaning less capital (i.e. fewer vessels) is being used to generate same or more revenue (i.e. harvests). The term processor consolidation refers to the number of firms is being reduced due to business mergers, another firm buyout, or a business shut down. Processor consolidation is usually accompanied by manufacturing centralization. That is, harvest deliveries may occur at one port, but the catch is hauled to another location for processing and distribution.
5. The Pacific Fishery Management Council (PFMC) recommends manage measures for fisheries within the U.S. West Coast's Exclusive Economic Zone (200 nautical mile ocean area adjacent to Oregon) or decides to abdicate jurisdiction to states. In regards to the seven major fishery categories referenced in this report, the ODFW manages in cooperation with other states the Dungeness crab and pink shrimp fisheries. The federal National Marine Fisheries Service (NMFS) provides research, sets regulations, and ensures compliance with all laws pertaining to protection of marine species. Seafood product safety in Oregon is under the purview of the Oregon Department of Agriculture (ODA).
6. The fishing industry is defined to include harvesting and primary processing/distribution activities. Economic contribution estimates include the "multiplier effect" that includes the share of business activities from suppliers, provisioners, and services that sell to the harvesting and processing sector. It also includes the "induced effect" from responding generated income within an economic region. The economic region adopted for this report is the state.
7. The ocean salmon fishery uses troll gear to catch Chinook and coho salmon. Coho has been a prohibited ocean fisheries species south of Cape Falcon since 1993, although there have been limited coho late-seasons in some years. There is an ocean troll coho salmon fishery north of Cape Falcon. The Columbia River freshwater salmon fishery uses gillnet and other types of net gear to catch Chinook and coho in non-Indian and treaty fisheries.
8. Harvesters and processors were in disagreement on price, and no fishing occurred the first weeks in December 2006. When a price was settled, weather worsened the last half of December which curtailed landings.
9. Those that harvesters sell to are sometimes referred to as "first-purchasers." This is because not all harvests are sold to what is a traditional seafood processor. For example, harvesters can sell directly to the public. An example of a non-traditional processor would be a buyer representing a broker type business who re-sells the product to a processor.
10. Regional fishing centers are defined to be Astoria, Newport, and Charleston. Other coastal ports identified in the PacFIN database include (alphabetically) Bandon, Brookings, Cannon Beach, Depoe Bay, Florence, Gold Beach, Gearhart/Seaside, Nehalem Bay, Netarts Bay, Port Orford, Pacific City, Siletz Bay, Salmon River, Tillamook/Garibaldi, Winchester Bay, Waldport, Yachats, and some Washington landings transported to Oregon in some years. The PacFIN database includes deliveries made to Warrenton as deliveries made to Astoria.

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11. *The economic contribution estimates are from application of the Fishery Economic Assessment Model (FEAM). The FEAM was originally developed by Hans Radtke and William Jensen for the West Coast Fisheries Development Foundation in 1984. The FEAM utilizes the basic framework of a secondary input/output model combined with fishing industry information. The FEAM relies on response coefficients from IMPLAN to estimate total personal income generated from harvester and processor activities. The FEAM has been useful because much of the commercial fishing industry information is not described in published employment data. The Research Group updates the FEAM periodically using new fleet and processor structural information, changed industry cost-earnings profiles, and new data IMPLAN models. Application of the FEAM adjusts fisheries' multipliers to the current year's harvest prices.*

Table 1  
Commercial Fishing Industry Assessment Dimensions and Setting

Value Chain Nodes	Assessment Measures	Operational Challenges	Industry Influences
<u>Assessed sectors</u> Harvesting Primary processing	<u>Onshore landings by fisheries</u> Volume Prices Harvest value Added value Economic contributions	<ul style="list-style-type: none"> <li>• Fishery management regimes</li> <li>• Ocean planning mandates</li> <li>• Research results that change fish resource biomass and allowable harvest estimates</li> <li>• Strong competition for changing harvest user group shares</li> <li>• Environmental protection initiatives</li> <li>• New but expensive technology opportunities</li> <li>• Dangerous working conditions</li> <li>• Challenging firm financial conditions</li> <li>• Shoreside services available (moorage, repair, provisioning, suppliers, surface transportation, warehousing)</li> <li>• Education and training opportunities</li> <li>• NGO and government incentive programs</li> <li>• Government and academic research projects</li> </ul>	<ul style="list-style-type: none"> <li>• National general economic conditions</li> <li>• Currency exchange rates</li> <li>• Worldwide seafood substitutes</li> <li>• United Nations and other global organization conservation programs</li> <li>• Consumer perceptions and preferences</li> <li>• Sustainability certification programs</li> <li>• Marketing campaigns for seafood quality, environmental sustainability</li> <li>• International fishery treaties</li> <li>• Distribution hold-over inventories</li> <li>• Seafood product development and standards</li> </ul>
<u>Not assessed sectors</u> Aquaculture Export/import Wholesale Retail Store Food service	<u>Fleet and first-purchasers</u> Entity counts Products		
	<u>Distant water fisheries</u> Economic contributions		
	<u>Industry participants (assessed sectors)</u> Harvesting Fishery permit and vessel owners Vessels Captains and crewman Processing Company investors Plant owners Facilities for buying, processing, and warehousing Mangers and workers Suppliers, service providers, etc.		

Source: Study.

Table 2  
Onshore Landed Volume by Species Groups in 1981 to 2011

Year	Salmon	D. Crab	P. Shrimp	A. Tuna	Groundfish	P. Whiting	P. Sardine	Other	Total
1981	7,009	6,981	25,904	7,693	81,835	360	--	17,764	147,546
1982	8,572	7,020	18,429	1,855	90,084	3	--	2,816	128,779
1983	2,669	5,332	6,532	3,397	77,369	143	--	4,531	99,972
1984	3,595	4,999	4,844	1,594	61,309	746	--	6,757	83,844
1985	6,570	7,358	14,840	1,518	61,920	1,950	--	5,089	99,245
1986	13,792	4,658	33,884	2,461	54,883	927	--	2,913	113,517
1987	15,094	5,991	44,589	2,288	67,176	403	--	2,841	138,383
1988	17,789	9,417	41,846	3,967	70,495	543	--	4,068	148,126
1989	11,724	11,676	49,129	1,080	81,047	196	--	10,556	165,408
1990	5,412	9,510	31,883	2,079	73,305	5,058	--	11,656	138,903
1991	5,344	4,924	21,711	1,259	80,847	29,109	--	6,681	149,875
1992	2,364	11,908	48,033	3,896	75,215	107,939	9	7,456	256,820
1993	1,848	10,456	26,923	4,754	81,303	78,970	1	6,039	210,294
1994	1,285	10,638	16,386	4,698	64,265	143,563	0	4,766	245,602
1995	2,862	11,954	12,106	5,034	55,066	147,355	--	4,198	238,574
1996	2,842	19,302	15,727	8,948	57,002	155,590	0	3,041	262,452
1997	2,245	7,777	19,560	9,168	52,703	162,782	0	6,644	260,877
1998	1,978	7,410	6,096	10,603	41,806	157,895	2	4,612	230,402
1999	1,560	12,347	20,451	4,553	44,119	160,965	1,710	3,690	249,394
2000	3,142	11,180	25,462	8,757	39,311	151,461	21,005	3,105	263,423
2001	5,266	9,690	28,482	8,959	31,645	117,673	28,176	3,781	233,671
2002	6,119	12,444	41,584	4,362	21,102	71,220	50,069	3,213	210,112
2003	6,722	23,930	20,546	9,165	25,934	80,648	55,683	3,003	225,632
2004	5,936	27,273	12,207	10,754	25,590	130,238	79,610	2,609	294,217
2005	4,688	17,730	15,784	8,087	27,231	135,503	99,450	3,967	312,439
2006	1,814	33,316	12,195	8,536	27,395	135,186	78,634	3,467	300,543
2007	1,384	17,026	20,125	10,468	30,881	94,360	92,911	3,842	270,997
2008	1,923	13,888	25,520	8,864	37,922	61,466	50,593	4,589	204,765
2009	2,312	21,854	22,153	10,072	41,400	62,988	47,357	2,676	210,811
2010	2,774	15,868	31,463	10,700	36,855	69,530	45,971	3,456	216,618
2011	2,401	17,119	48,315	9,513	28,510	151,464	24,302	3,443	285,067

- Notes:
1. Landings are reported in thousands of round pounds. Landing data is preliminary for 2011.
  2. Salmon includes landings of steelhead, which have come exclusively from the treaty Indian fisheries since 1975.
  3. D. crab includes only Dungeness crab; P. shrimp includes only pink shrimp; and A. tuna includes only albacore tuna.
  4. Pacific whiting (also known as hake) did not emerge as a major fishery species until after 1990. Groundfish in 2011 includes (thousands of round pounds) flatfish (16,222), sablefish (4,993), thornyheads (1,608), rockfish other than thornyheads (2,314), cods other than sablefish (1,080), and other species (2,293).
  5. Biological studies have found the northern population of the Pacific sardine has a three decade or so abundance cycle, and did not emerge as a major fishery species until 2000 in the latest cycle.
  6. "Other" in 2011 includes landings (thousands of round pounds) of hagfish (2,019), red sea urchin (588), Pacific halibut (220), basket cockle (186), white sturgeon (107), ghost shrimp (56), and other species (266). Shellfish volume excludes aquaculture harvests.

Source: PacFIN annual vessel summary, March 2008, April 2009, March 2010, July 2011, and February 2012 extractions.



Table 3  
Dungeness Crab Landings in December for 1981 Through 2011

Year	Round Pounds	Nominal Value	Real Value	Real Price	
				Amount	% Change
1981	3,184,544	2,844,666	6,159,854	1.93	
1982	1,468,583	1,562,528	3,189,201	2.17	12%
1983	2,473,459	3,743,129	7,349,844	2.97	37%
1984	2,808,790	4,014,698	7,597,511	2.70	-9%
1985	5,258,744	6,928,882	12,727,212	2.42	-11%
1986	2,816,713	3,528,700	6,340,714	2.25	-7%
1987	4,065,019	5,078,231	8,877,149	2.18	-3%
1988	4,792,231	5,709,134	9,648,229	2.01	-8%
1989	5,237,156	6,351,575	10,343,320	1.97	-2%
1990	5,450,504	8,221,648	12,889,425	2.36	20%
1991	2,040,578	2,512,536	3,804,665	1.86	-21%
1992	6,288,449	6,297,642	9,315,252	1.48	-21%
1993	5,817,981	6,733,210	9,745,041	1.67	13%
1994	6,112,761	8,568,975	12,146,430	1.99	19%
1995	2,975,528	3,751,354	5,208,875	1.75	-12%
1996	4,587,428	7,477,063	10,188,369	2.22	27%
1997	5,316,372	8,762,961	11,732,719	2.21	-1%
1998	5,616,262	8,728,140	11,555,964	2.06	-7%
1999	8,819,318	15,514,668	20,243,212	2.30	12%
2000	4,301,154	7,443,190	9,505,495	2.21	-4%
2001	6,585,185	11,047,470	13,796,340	2.10	-5%
2002	5,848,903	8,182,682	10,056,786	1.72	-18%
2003	12,500,377	19,428,832	23,386,053	1.87	9%
2004	15,994,101	23,065,574	27,003,338	1.69	-10%
2005	3,339	4,882	5,531	1.66	-2%
2006	5,698,047	10,502,130	11,526,535	2.02	22%
2007	7,472,442	15,417,796	16,444,769	2.20	9%
2008	8,991,377	15,094,414	15,753,721	1.75	-20%
2009	17,807,492	31,363,825	32,385,638	1.82	4%
2010	10,415,450	19,199,106	19,598,136	1.88	3%
2011	6,290,048	14,696,747	14,696,747	2.34	24%

- Notes: 1. Prices adjusted to real 2011 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. The Oregon crab season is from December 1 through August 14. The opening for the 2005-2006 season was delayed due to low pickout-rate.
- Source: PacFIN fish ticket data, March 2008, April 2009, March 2010, and July 2011 extractions. Preliminary 2011 from ODFW commercial landing Table 5 and Table 43.

Table 4  
Annual Ex-Vessel Prices by Selected Species and Species Groups in 2000 to 2011

	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>
Troll Chinook	2.23	1.75	1.65	2.07	3.52	3.14	5.22	5.25	5.28	4.50	4.87	5.18
Pink shrimp	0.51	0.33	0.34	0.30	0.45	0.50	0.40	0.50	0.57	0.32	0.36	0.51
Dungeness crab	2.71	2.49	2.05	1.87	1.84	1.70	1.77	2.39	2.19	2.00	2.11	2.59
Sablefish	1.89	1.75	1.70	1.85	1.44	1.68	1.84	1.89	2.20	2.26	2.44	3.45
Albacore tuna	1.09	1.05	0.83	0.81	1.00	1.24	1.04	0.96	1.25	1.04	1.19	1.94
Pacific whiting	0.051	0.044	0.056	0.054	0.042	0.059	0.065	0.073	0.116	0.061	0.079	0.109
Dover sole	0.47	0.46	0.45	0.45	0.44	0.43	0.41	0.39	0.38	0.33	0.31	0.41
Thornyhead, longspine	1.09	1.10	1.04	0.77	0.60	0.66	0.67	0.48	0.41	0.28	0.31	0.37
Sardines	0.070	0.072	0.069	0.064	0.072	0.071	0.052	0.052	0.117	0.115	0.117	0.131

Notes: 1. Notes and sources from Figure 3 apply.

Table 5  
Count of Vessels Within Species Revenue Groups in 2011

<u>Fisheries</u>	Sum of Revenue (thousands)	Vessel Count	Count of Vessels Within Fisheris Revenue Bins			
			<u>&lt;\$500</u>	<u>\$500-\$5K</u>	<u>\$5K-\$50K</u>	<u>&gt;\$50,000</u>
Salmon	5,804	545	10%	20%	46%	24%
D. crab	44,328	396	2%	4%	21%	72%
Pink shrimp	24,612	62	0%	0%	3%	97%
Tuna	18,081	440	2%	13%	36%	48%
Groundfish	28,156	342	6%	11%	32%	51%
Pacific whiting	16,517	54	0%	0%	4%	96%
Sardines	3,192	26	0%	4%	12%	85%
Other	3,199	380	1%	7%	45%	47%
Total	143,888	1,170	8%	16%	38%	38%

- Notes: 1. Includes vessels that made landings in Oregon and excludes vessels with identifier "NONE" or "ZZ..." This identification is usually associated with vessels making tribal commercial fisheries deliveries.
2. Total revenue does not include deliveries to offshore processors nor revenues from distant water fisheries.

Source: PacFIN annual vessel summary, February 2012 extraction.

Table 6  
Onshore Landed Value by Species Groups in 1981 to 2011

Year	Price Index	Salmon		Dungeness Crab		Pink Shrimp		Albacore Tuna		Groundfish		Pacific Whiting		Pacific Sardine		Other		Total	
		Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal
1981	46.2	23,922	11,047	14,528	6,709	28,225	13,034	14,415	6,657	31,389	14,496	55	25	--	--	11,639	5,375	124,172	57,344
1982	49.0	25,219	12,356	15,375	7,533	18,919	9,269	2,511	1,230	40,952	20,064	0	0	--	--	2,550	1,249	105,526	51,702
1983	50.9	5,970	3,040	15,531	7,910	9,146	4,658	3,699	1,884	36,030	18,349	47	24	--	--	4,235	2,157	74,659	38,023
1984	52.8	9,686	5,118	14,659	7,746	4,074	2,153	1,680	888	28,351	14,981	111	59	--	--	5,841	3,087	64,402	34,031
1985	54.4	16,635	9,056	19,569	10,654	9,618	5,236	1,505	819	31,091	16,927	318	173	--	--	4,999	2,722	83,736	45,587
1986	55.7	27,279	15,181	11,836	6,587	32,579	18,131	2,381	1,325	31,182	17,353	108	60	--	--	5,811	3,234	111,176	61,871
1987	57.2	47,188	26,994	14,598	8,351	52,920	30,273	2,936	1,680	42,572	24,353	60	34	--	--	5,262	3,010	165,536	94,696
1988	59.2	65,942	39,020	19,063	11,280	28,982	17,150	5,625	3,328	40,615	24,033	70	41	--	--	4,665	2,760	164,962	97,612
1989	61.4	23,170	14,228	22,088	13,564	29,158	17,905	1,444	887	41,071	25,221	24	15	--	--	8,741	5,367	125,697	77,187
1990	63.8	15,008	9,573	22,817	14,554	24,503	15,629	2,765	1,764	36,289	23,147	344	220	--	--	10,697	6,823	112,423	71,710
1991	66.0	8,825	5,828	11,299	7,462	18,286	12,076	1,483	979	43,633	28,814	2,075	1,370	--	--	8,409	5,553	94,010	62,083
1992	67.6	5,453	3,687	19,802	13,388	25,422	17,187	5,870	3,969	39,561	26,745	7,512	5,078	--	--	5,994	4,053	109,615	74,106
1993	69.1	3,510	2,425	17,220	11,898	12,898	8,912	5,619	3,883	40,001	27,638	3,313	2,289	--	--	5,520	3,814	88,081	60,859
1994	70.5	2,069	1,459	20,500	14,462	13,645	9,626	5,315	3,750	40,780	28,769	6,092	4,298	--	--	4,674	3,297	93,075	65,662
1995	72.0	4,962	3,574	27,832	20,044	11,940	8,599	5,623	4,050	43,008	30,974	9,720	7,000	--	--	4,479	3,226	107,566	77,467
1996	73.4	4,480	3,288	35,673	26,180	12,756	9,362	10,124	7,430	41,253	30,275	5,650	4,147	--	--	2,647	1,942	112,583	82,623
1997	74.7	3,711	2,772	19,596	14,636	10,591	7,910	9,830	7,342	37,472	27,987	9,135	6,823	--	--	2,815	2,103	93,151	69,573
1998	75.5	3,429	2,590	16,575	12,519	4,222	3,189	8,659	6,540	25,806	19,491	4,974	3,756	1	1	2,540	1,918	66,206	50,005
1999	76.6	2,664	2,042	30,150	23,107	12,488	9,571	4,937	3,784	28,955	22,192	7,721	5,917	112	86	2,273	1,742	89,300	68,441
2000	78.3	5,145	4,029	30,279	23,709	13,016	10,192	9,564	7,489	31,126	24,373	7,766	6,081	1,467	1,149	3,461	2,710	101,823	79,732
2001	80.1	7,301	5,847	24,098	19,296	9,442	7,560	9,439	7,559	25,483	20,405	5,160	4,132	2,021	1,619	3,369	2,698	86,314	69,116
2002	81.4	8,521	6,933	25,516	20,761	13,953	11,353	3,628	2,952	17,464	14,210	3,957	3,219	3,465	2,819	3,567	2,902	80,070	65,149
2003	83.1	10,675	8,869	44,677	37,117	6,080	5,051	7,426	6,169	21,273	17,673	4,384	3,642	3,540	2,941	2,436	2,024	100,491	83,487
2004	85.4	15,214	12,995	50,288	42,954	5,550	4,740	10,706	9,145	19,132	16,342	5,433	4,641	5,701	4,870	2,392	2,043	114,415	97,730
2005	88.3	11,827	10,438	30,136	26,597	7,820	6,901	9,989	8,816	20,934	18,475	8,053	7,107	7,024	6,199	2,757	2,433	98,538	86,965
2006	91.1	5,422	4,940	59,055	53,807	4,933	4,494	8,854	8,067	21,877	19,933	8,752	7,974	4,108	3,743	2,165	1,973	115,166	104,931
2007	93.8	4,972	4,662	40,746	38,202	9,989	9,365	10,099	9,468	21,863	20,497	6,934	6,501	4,854	4,551	2,371	2,222	101,827	95,468
2008	95.8	4,425	4,240	30,438	29,164	14,548	13,939	11,116	10,651	28,120	26,943	7,128	6,830	5,913	5,665	3,044	2,917	104,732	100,349
2009	96.8	3,659	3,544	43,786	42,404	7,035	6,813	10,511	10,179	29,051	28,135	3,841	3,720	5,463	5,291	2,370	2,295	105,716	102,380
2010	98.0	7,858	7,698	33,427	32,746	11,211	10,982	12,681	12,422	26,162	25,629	5,526	5,414	5,361	5,252	2,910	2,851	105,136	102,996
2011	100.0	6,695	6,695	44,328	44,328	24,612	24,612	18,430	18,430	28,156	28,156	16,517	16,517	3,192	3,192	3,535	3,535	145,466	145,466

- Notes: 1. Nominal value is the revenue received by fishermen/harvesters in the landing year. Real value is in thousands of 2011 dollars adjusted using the GDP implicit price deflator developed by U.S. Bureau of Economic Analysis.
2. Groundfish in 2011 includes landings (real ex-vessel value in thousands) of sablefish (\$17,235), flatfish (\$6,655), thornyheads (\$774), rockfish other than thornyheads (\$1,660), cods other than sablefish (\$1,186), and other (\$646). "Other" in 2011 includes (real ex-vessel value in thousands) hagfish (\$1,320), Pacific halibut (\$1,142), red sea urchin (\$313), white sturgeon (\$272), other shrimp (\$145), ghost shrimp (\$144), basket cockle (\$99), razor clam (\$45), gaper clam (\$17), and other species (\$38). Shellfish value excludes private lands harvest.
3. Notes and sources from volume table concerning species composition also apply to this table.

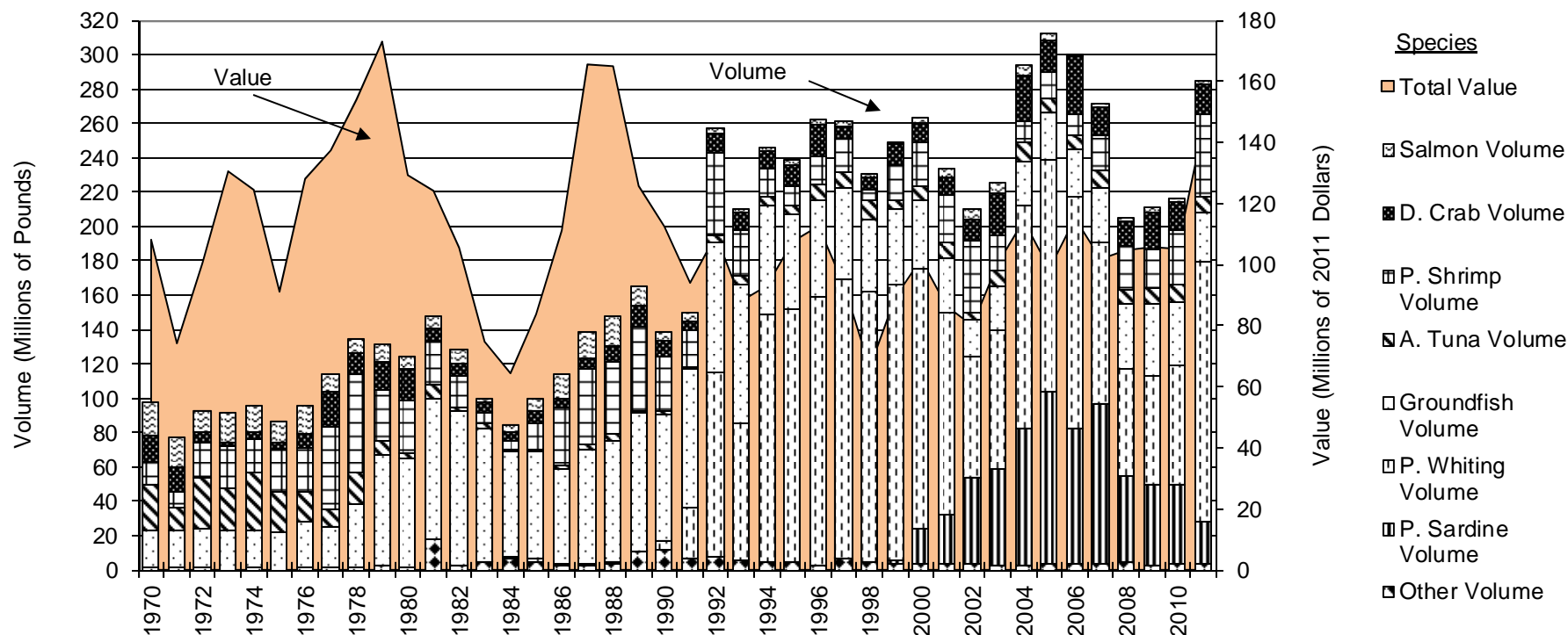
Table 7  
Economic Contributions by Species Group in 1973 to 2011

Years	Onshore Landings						Total Landed Fish	Distant Water	
	Salmon	D. Crab	Pink Shrimp	Groundfish	Pacific Whiting	Other Finfish and Shellfish		Fisheries	Total
1973	95.7	5.9	23.5	20.7	-	65.0	210.8	-	210.8
1974	76.8	11.4	14.9	23.1	-	83.5	209.7	-	209.7
1975	65.3	11.4	20.0	20.7	-	52.5	169.9	-	169.9
1976	112.5	17.9	19.6	26.7	-	52.7	229.5	-	229.5
1977	80.1	36.3	42.0	26.6	-	40.9	225.9	-	225.9
1978	59.3	28.0	51.1	41.1	-	80.3	260.0	-	260.0
1979	87.0	32.8	31.2	75.8	-	52.2	279.0	-	279.0
1980	41.9	33.7	40.7	58.0	-	36.3	210.6	-	210.6
1981	40.8	15.7	29.1	73.8	-	54.2	213.6	-	213.6
1982	49.4	15.9	15.7	84.5	-	29.5	195.0	-	195.0
1983	12.0	15.5	8.9	74.9	-	21.2	132.4	-	132.4
1984	19.3	14.8	4.6	59.9	-	22.0	120.6	-	120.6
1985	34.0	20.3	12.9	63.2	-	26.0	156.3	-	156.3
1986	57.5	12.9	34.3	58.0	-	36.9	199.5	122.7	322.2
1987	77.5	16.0	48.8	77.0	-	43.3	262.7	113.6	376.2
1988	122.2	20.8	35.9	78.9	-	47.3	305.1	107.1	412.2
1989	44.6	23.4	41.9	83.3	-	56.9	250.1	102.1	352.1
1990	30.0	23.6	29.9	74.5	1.2	49.5	208.8	132.2	340.9
1991	20.1	12.1	20.7	85.1	10.0	29.5	177.6	89.5	267.0
1992	8.6	29.2	46.3	71.9	25.8	23.1	204.9	86.8	291.7
1993	5.7	25.3	24.3	73.1	14.0	21.0	163.4	85.1	248.5
1994	3.3	29.3	21.0	67.9	29.6	16.8	167.9	90.2	258.0
1995	8.6	41.2	19.0	73.9	44.8	17.9	205.3	94.1	299.4
1996	8.2	57.4	21.3	72.0	41.1	24.1	224.2	120.0	344.1
1997	6.7	30.5	19.8	65.1	50.2	28.4	200.8	129.6	330.4
1998	5.5	28.5	7.9	48.0	35.5	24.0	149.4	146.5	295.9
1999	4.7	51.7	22.1	53.6	43.5	16.5	192.0	176.7	368.7
2000	10.7	53.0	27.5	59.8	38.0	39.9	228.8	146.8	375.6
2001	15.0	43.0	23.6	48.8	27.9	45.5	203.8	156.7	360.5
2002	17.4	47.3	34.4	33.0	18.0	50.9	201.0	166.5	367.4
2003	19.7	83.1	15.7	40.7	24.6	63.7	247.5	175.0	422.5
2004	24.8	93.1	11.6	37.6	36.5	85.6	289.3	166.1	455.5
2005	19.0	56.6	15.6	40.2	40.0	96.3	267.8	178.2	446.0
2006	8.3	107.8	10.6	41.6	41.0	75.1	284.5	164.4	448.9
2007	7.5	68.7	19.5	41.9	28.5	86.3	252.4	187.9	440.2
2008	6.9	52.1	26.9	52.9	21.9	62.5	223.2	256.8	480.0
2009	6.2	76.5	16.3	55.3	20.3	58.4	233.0	224.7	457.7
2010	12.1	57.5	24.5	49.4	23.7	61.0	228.3	238.8	467.1
2011	10.3	72.5	46.6	48.9	55.5	50.7	284.4	233.9	518.4

- Notes:
1. Economic contributions are expressed as personal income in millions of 2011 dollars. Adjustments to 2011 dollars use the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
  2. Years 2010 to 2011 are preliminary. Distant water estimated economic contributions in 2009 to 2011 are preliminary.
  3. The economic contributions from salmon fisheries include ocean troll and Columbia River gillnet fisheries, so the estimates will be greater than ocean salmon fisheries as reported by the PFMC.
  4. Groundfish in 2011 includes (personal income in thousands) flatfish (\$14,019), sablefish (\$26,544), cod/rockfish (other than sablefish) (\$6,452), and sharks/skates (\$1,868).
  5. "Other" in 2011 includes (personal income in thousands) Pacific sardines (\$18,388), albacore tuna (\$25,803), Pacific halibut (\$1,719), sturgeon (\$425), sea urchins (\$461), and other species (\$3,909).
  6. Economic contributions from fish meal production are included in Pacific whiting. The largest source of fish carcasses in past years has been mostly from surimi production. Pacific whiting demand has shifted to H&G and fillet product forms which have higher resource yields and lesser material available for fish meal production.
  7. The economic contribution from distant water fisheries includes the effects of vessel revenue returned to Oregon's economy from U.S. West Coast at-sea fisheries, Oregon home-port vessels landing in other U.S. West Coast states and Alaska, southern Pacific Ocean, and other fisheries. New fishing vessel construction, fishery management, and fishery research and training are not included.

Source: Study using Fishery Economic Assessment Model (FEAM).

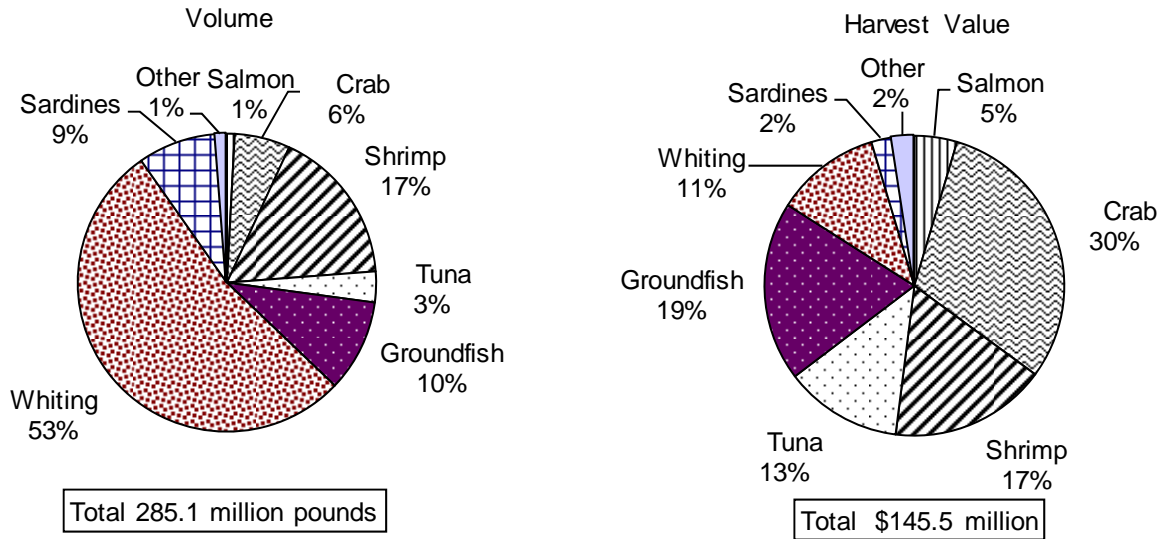
Figure 1  
Onshore Landed Value and Volume by Species Groups in 1970 to 2011



- Notes:
1. Salmon includes landings of steelhead, which have come exclusively from the treaty Indian fisheries since 1975.
  2. D. crab includes only Dungeness crab; P. shrimp includes only pink shrimp; and A. tuna includes only albacore tuna, except tuna includes landings of albacore, yellowfin and skipjack tuna for 1970 to 1979. Essentially all tuna landings from 1980 forward are albacore.
  3. Groundfish includes landings of halibut and Pacific whiting until 1980. Pacific whiting (also known as hake) did not emerge as a major fishery species until after 1990. Groundfish in 2011 includes (thousands of round pounds) flatfish (16,222), sablefish (4,993), thornyheads (1,608), rockfish other than thornyheads (2,314), cods other than sablefish (1,080), and other species (2,293).
  4. Biological studies have found the northern population of the Pacific sardine has a three decade or so abundance cycle, and did not emerge as a major fishery species until 2000 in the latest cycle.
  5. "Other" in 2011 includes landings (thousands of round pounds) of hagfish (2,019), red sea urchin (588), Pacific halibut (220), basket cockle (186), white sturgeon (107), ghost shrimp (56), and other species (266). Shellfish volume excludes aquaculture harvests.
  6. Landing data is preliminary for 2011.

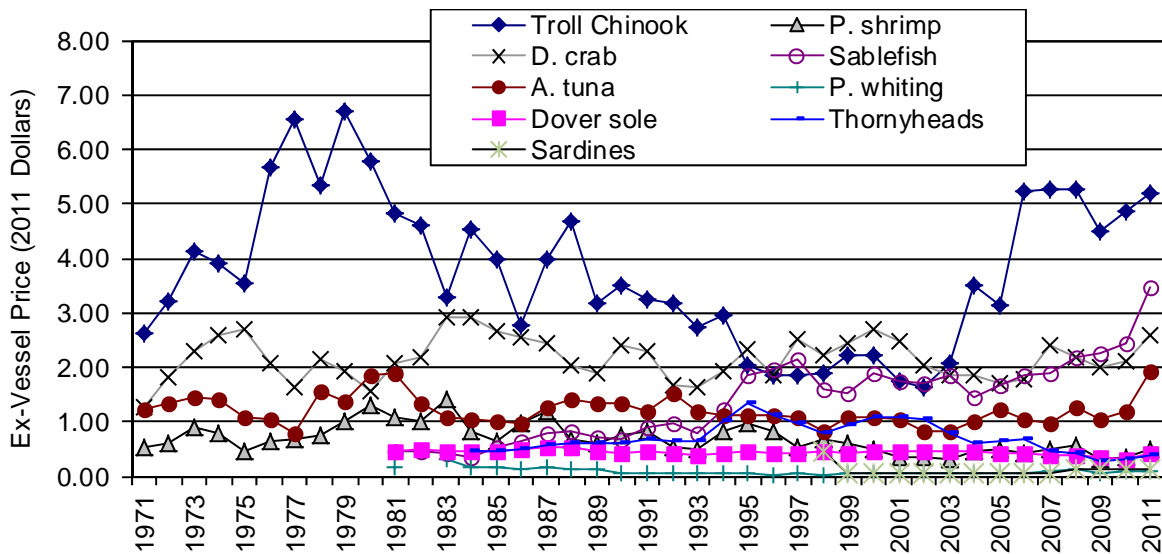
Source: Oregon Department of Fish and Wildlife, Table 4 and 42 for years 1970 to 1980; PacFIN annual vessel summary, March 2008, April 2009, March 2010, July 2011, and February 2012 extractions for years 1981 to present.

Figure 2  
Onshore Landed Volume and Harvest Value by Species Groups in 2011



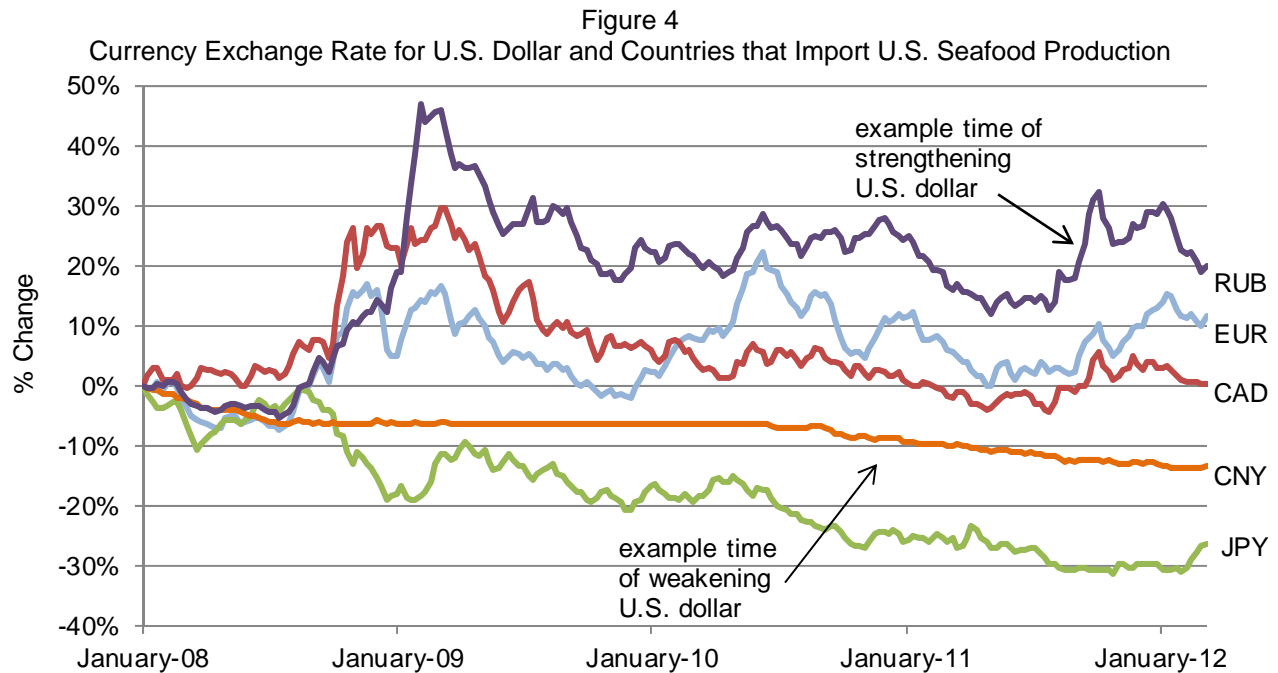
Source: PacFIN annual vessel summary data, February 2012 extraction.

Figure 3  
Selected Species Annual Ex-Vessel Price Trends in 1971 to 2011



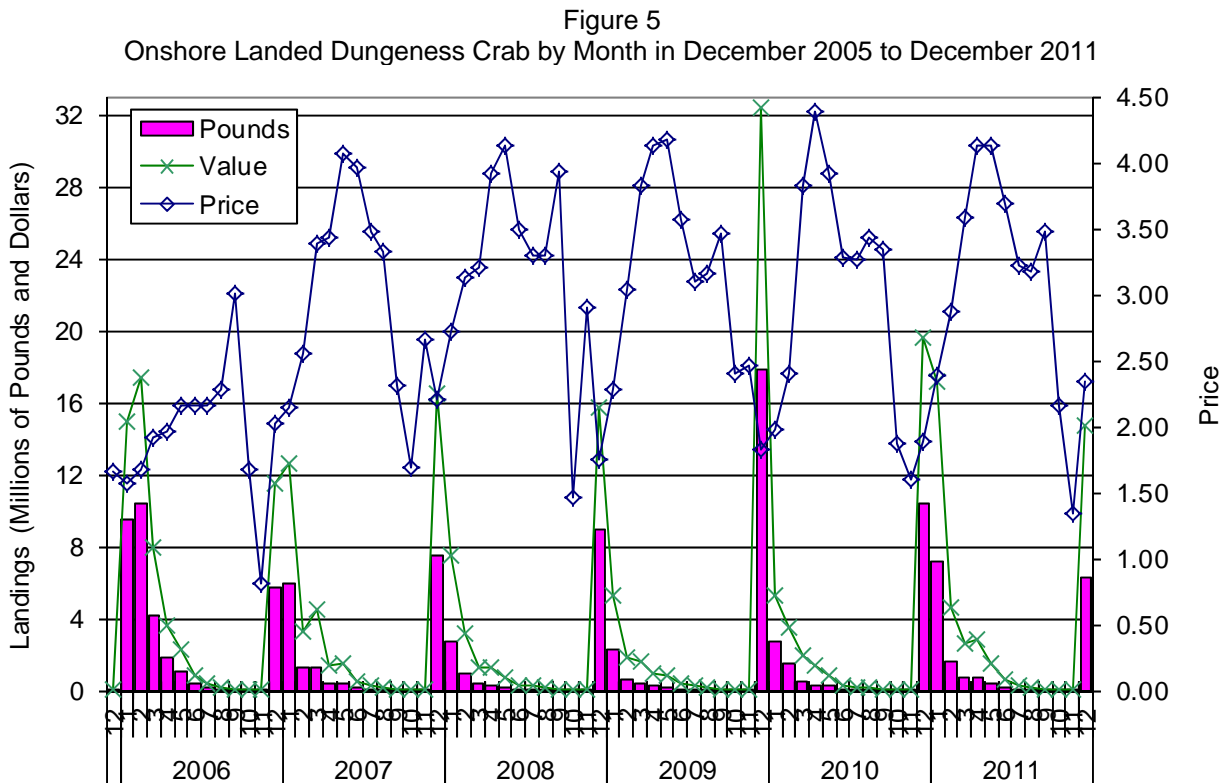
- Notes:
1. Prices adjusted to real 2011 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
  2. Ex-vessel price is the amount paid to fishers at the time of fish delivery. Deliveries are for onshore landings.
  3. Thornyheads prices are for longspine from 1995 to present, and prior years are mixed longspine and shortspine.
  4. Prices are annual and averaged across harvests made in different fisheries. Prices are expressed in round weight equivalents, except for troll Chinook prior to 1981 which are based on dressed weight. Average prices for salmon are across seasons and sizes.

Source: Oregon Department of Fish and Wildlife for years prior to 1981. PacFIN March 2008, April 2009, March 2010, July 2011, and February 2012 extractions for 1981 onward.



Notes: 1. Currencies are weekly percent change from first week of January 2008 = 0%.  
 2. USD = U.S. dollar; EUR = Euro; CAD = Canadian dollar; JPY = Japanese yen; CNY = Chinese yuan renminbi; RUB = Russian rouble.

Source: OANDA.

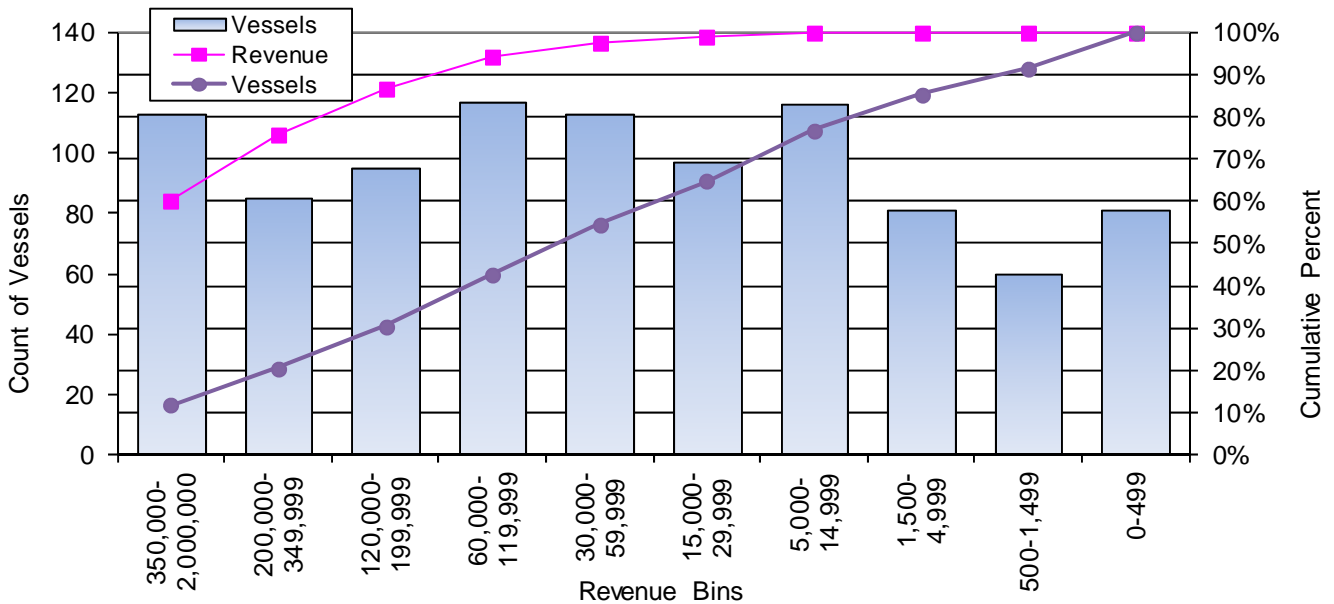


Notes: 1. Values and prices are in 2011 dollars adjusted using the GDP implicit price deflator developed by U.S. Bureau of Economic Analysis.  
 2. December 2005 landings are zero because season was delayed due to low pick-out rate.

Source: PacFIN fish ticket data, March 2008, April 2009, March 2010, and July 2011 extractions. Preliminary 2011 from ODFW commercial landing Table 5 and Table 43.

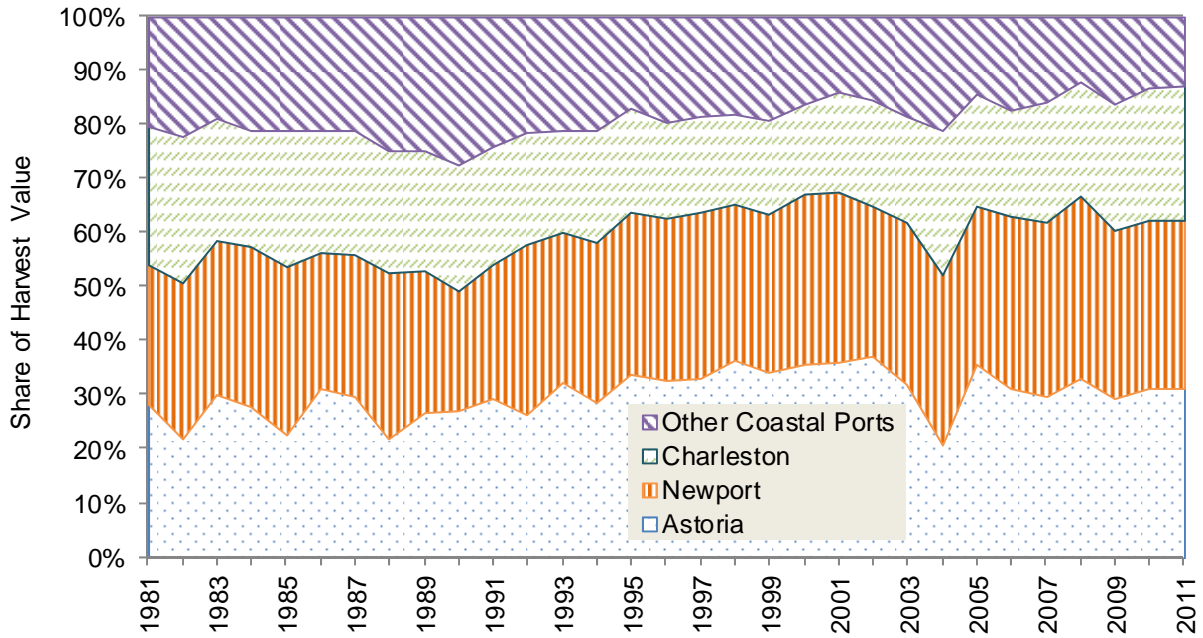


Figure 6  
Ocean Onshore Landing Revenue Bins Showing Cumulative Revenue and Vessel Counts in 2011



- Notes: 1. Excludes vessels with identification "NONE" or starting with "ZZ". This identification is usually associated with vessels making tribal commercial fisheries deliveries.
- 2. Revenue filtered for ocean area-of-catch.

Figure 7  
Historical Proportion of Ocean Fisheries Harvest Value Landed at Regional Fishing Centers and Other Coastal Ports



- Notes: 1. Harvest value is ex-vessel revenue from ocean catch (excludes Columbia River catch).