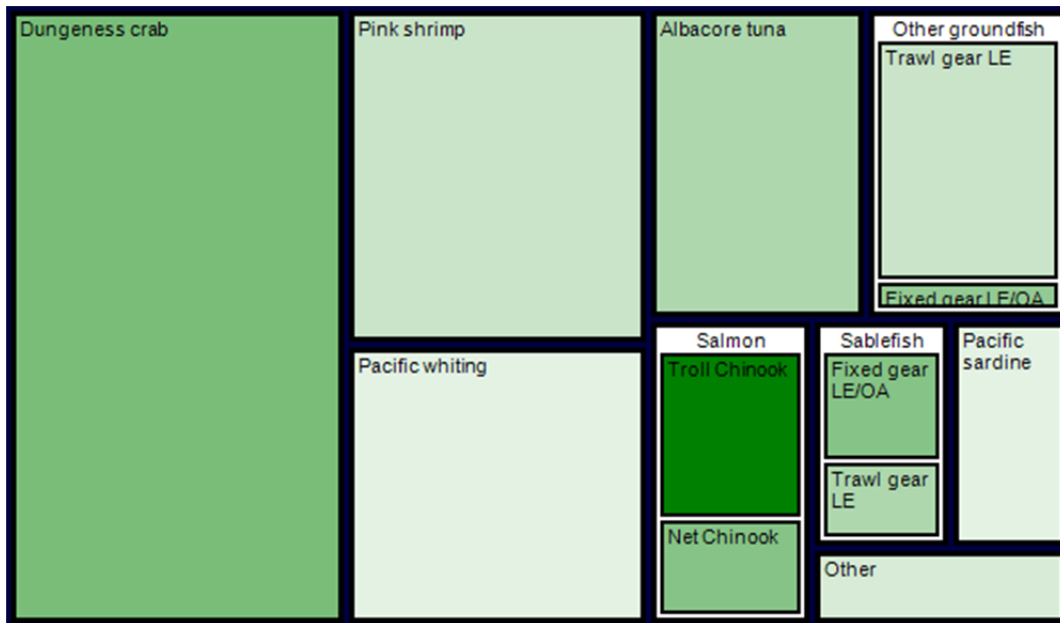


# Oregon Commercial Fishing Industry in 2013 Briefing Report



*Depiction of relative landed harvest value of Oregon's major fisheries in 2013 (preliminary). The fishery block size is proportional to total revenue and color shade intensity indicates relative price. The accounting period is for calendar year 2013 except the commercial ocean Dungeness crab fishery, which is the traditional season for December 1 through August 14.*

**Oregon Department of Fish and Wildlife**

**Oregon Coastal Zone Management Association**

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# **Oregon Commercial Fishing Industry in 2013 Briefing Report**

**Version 1.3**

prepared for

Oregon Department of Fish and Wildlife

and

Oregon Coastal Zone Management Association

prepared by

The Research Group, LLC

Corvallis, Oregon

with assistance from

Oregon State University

Coastal Oregon Marine Experiment Station

Newport, Oregon

**March 2014**

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## Preface

The Research Group, LLC, Corvallis, Oregon prepared this report for the Oregon Department of Fish and Wildlife (ODFW) and the Oregon Coastal Zone Management Association (OCZMA). Shannon Davis was the principal author. A special thanks to Gil Sylvia, Ph.D., Director of the Coastal Oregon Marine Experiment Station for his input. Hans Radtke, Ph.D. natural resource economist Yachats, Oregon provided valuable insight. There were other reviewers that are thanked anonymously because permission for revealing their names was not secured.

The purpose of the report is to assess the activity level of Oregon's harvest sector commercial fishing industry in 2013 using up-to-date landing information and any available seafood market data. We also provide some preliminary analysis and compare activity levels to previous years. This quick and early look at 2013 is not intended to be a comprehensive treatment of industry economic health and resource conservation issues. The same authors provide more detailed analysis in a biennium serial publication and past reports that are hosted on the ODFW and OCZMA websites.

For reading convenience the authors have adopted a less technical writing style. The narrative is not extensively interrupted with citations to material/communications from others. It is also assumed that the reader is somewhat familiar with Oregon's commercial fishing industry. A glossary is included, but not all fishing industry terms and economic assessment methods are defined nor explained.

Harvest and processor data for this report was provided by the Pacific States Marine Fisheries Commission (PSMFC) PacFIN program. The data should be considered preliminary since PacFIN indicates that groundfish data may not be quite complete (within 90 to 99 percent). The landings data was supplemented with data gathered from personal interviews with managers from the ODFW Marine Resources Program and Columbia River fishery, as well as industry participants. Market reports from [seafoodsource.com](http://seafoodsource.com), [minato-tsukiji.com](http://minato-tsukiji.com), [globefish.org](http://globefish.org), [firstchoice.com](http://firstchoice.com), [alaskaseafood.org](http://alaskaseafood.org), and other sources were also consulted.

Independent reviewers provided useful input and made comments on previous drafts for this report, however the author is responsible for entire contents including narrative, tables, and figures. The author does not assume any liability for the information and shall not be responsible for any direct, indirect, special, incidental, or consequential damages in connection with the use of the information.

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## Appendix

### A. Calendar Year Onshore Fisheries Harvest Volume, Value, and Prices

## Glossary

FEAM	Fishery Economic Assessment Model used to calculate fishing industry economic contributions. The FEAM is a derivation of the IMPLAN input-output model.
Harvest volume	Landings are depicted by weight in round pounds. Round pounds are either the actual weight of fish when purchased by the buyer or processor, or the weight corrected by an adjustment factor in the case that the fish was dressed (gutted, gilled, and headed) when sold to the buyer or processor. Readers are cautioned that other state and federal agencies may use dressed weight in their reports.
Harvest value	Landings are depicted in prices paid to harvesters. Payments to harvesters (sometimes called harvester revenue or ex-vessel value) are simply the amount of the transaction between the harvester and the purchaser, which is usually a seafood processor. The harvester can also sell directly to the public through provisions of a special license. The value of seafood products with primary manufacturing in Oregon is called first wholesale value (sometimes also called ex-processor value). All values, prices, and economic impact estimates have been adjusted to real dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis, except where noted.
H&G	headed and gutted
IBQ	individual bycatch quota
IFQ	individual fishing quota
MSA	Magnuson-Stevens Act
MSC	Marine Stewardship Council
OCZMA	Oregon Coastal Zone Management Association
ODFW	Oregon Department of Fish and Wildlife
PacFIN	Pacific Fisheries Information Network
Personal income	Income accruing to households in the form of net earnings from wages, salaries, and proprietorship income.
PFMC	Pacific Fishery Management Council, headquartered in Portland, Oregon. A U.S. federal board which oversees management of marine fisheries in federal waters off Washington, Oregon and California. The PFMC recommends management measures for fisheries within the U.S. West Coast's Exclusive Economic Zone (EEZ) (200 nautical mile ocean area adjacent to Oregon) or may allow for jurisdiction by the 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) conducts 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).

Regional  
economic  
impact (REI)

Economic contribution and REI are slightly different concepts, but in this report the two terms are used interchangeably. A stricter use of the term "contribution" would be for an economic activity that already exists. The use of the term "impact" would be when an economic activity is to be subtracted or added. It is the share of the regional economy supported by the expenditures made by the industry being analyzed. It can be expressed in terms of a variety of economic metrics, including personal income, equivalent jobs, business output, product added value, and taxes generated. Economic contribution estimates include the "multiplier effect" that represents 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 respending generated income within an economic region. The economic region adopted for this report is the state of Oregon.



## I. Summary

The Oregon commercial fishing industry is an important contributor to the State's economy as well as having high social and cultural value. Economic contribution due to the industry may be generated from many activities – for example, tourists attracted to working waterfronts. There are also boat building and repair business services at some ports. Management, safety, research, education, and training are related contributors. Oregon's seafood production is part of a global marketplace and is successful because of a reputation for quality and environmental stewardship. Aquaculture operations and commercial wild harvest share natural resources with a large ocean and inland recreational fisheries sector. Complex management by federal and state agencies ensure reasonable access by both sectors, yet conserve the resource to achieve sustainability. The scope of this report is to provide brief descriptions of Oregon's commercial fisheries (including tribal commercial fisheries) that occurred in 2013.<sup>1</sup>

Oregon's commercial onshore harvest value in 2013 was \$154.8 million (Table 1). This estimate is derived from calendar year data for all fisheries except Dungeness crab which is based on the traditional crab season (December 1 through August 14).<sup>2</sup> [If a calendar year is used for all fisheries, then the harvest value is \$176.9 million in 2013 (Appendix A)].<sup>3</sup> This harvest value represents revenue produced by 1,139 different vessels making landings in Oregon (Table 2). Year 2013 was another excellent year exceeding the 2012 harvest value of \$141.9 million by nine percent. It also was 25 percent greater than the five year 2008-2012 average. Year 2013 is the second highest harvest value year in the last 25 year period going back to 1988. Year 2011 was the highest in the last 25 years when \$156.0 million was landed, and 2012 was the third highest. [If a calendar year is used for all fisheries, then 2013 was the highest year going back to 1981 using inflation adjusted harvest value.]

Oregon onshore landings from harvests in the Pacific Ocean and Columbia River catch areas are processed into seafood products locally or are shipped to high volume processing and distribution centers. The centers are likely to be in Washington and northern California where large cold storage warehouses are located. The seafood products enter niche domestic markets and/or global commodity markets. Those "commodity" markets include product substitutes that influence the price paid to processors and distributors that buy from Oregon harvesters. For example, many of the species landed in Oregon also are landed in greater numbers in Alaska and British Columbia (B.C.). For a comparison, Oregon's harvest value in 2012 was only five percent of all West Coast, Alaska, and B.C. landings.



*The Lingcod (Ophiodon elongatus) was declared overfished in 1999 and through stringent landing limits was assessed to be rebuilt in 2005. Approximately 616 thousand pounds were landed in Oregon in 2013 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)*

Harvest prices are the result of a complicated set of determinates filtered through negotiated ask-bid arrangements. Ultimately, the domestic market consumer and foreign market importer will influence and bound the price that processors can pay harvesters. The recent modest recovery in the national general economy has not helped overcome consumer reluctance for purchasing more seafood. Fish is perceived as a higher priced protein food item and consumers will turn to other protein sources when incomes are lower and/or seafood prices rise. At the national level, seafood retail sale consumption (comprises about 32 percent of all U.S. consumption) slightly increased in 2012 over 2011 while food service consumption (comprises about 67 percent) was down in 2012 over 2011. There has been an overall downward per-capita consumption of seafood in the U.S. for the last six years (years 2006 through 2012).<sup>4</sup>

China has now replaced Japan as the leading importer of U.S. seafood exports. Japan at second place had only half of China's imports from the U.S. The largest importer of Oregon's seafood products is Canada followed in order by Japan, Malaysia, Ukraine, and China. Oregon's seafood exports totaled \$73.9 million in 2013, down from \$89.7 million in 2012.<sup>5</sup> The export market is highly influenced by currency exchange rates. A weakening dollar relative to other currencies will decrease import prices, increase demand, and tend to raise exporter and subsequently harvester prices (Figure 5). In contrast, a strengthening dollar – for example the decrease in value of the Japanese yen – will contribute to falling prices in products exported to Japan such as sablefish. The largest proportion of seafood consumed in Oregon was from product imported from overseas. In 2012, almost 94 percent of seafood consumed in the U.S. was derived from imported product (measured by volume).<sup>6</sup>

The Oregon commercial fishing industry generated \$353 million in total personal income in 2013 due to onshore landings (using calendar year accounting for all fisheries) (Table 3). This compares to a 2012 inflation adjusted economic contribution of \$284 million. Year 2013 had a 29 percent higher economic contribution than the previous five year average of \$251 million. Distant water fisheries are a significant additional component of the commercial fishing industry's total economic effects in Oregon. While detailed estimates are not yet available for 2013, economic contributions in 2012 were estimated at \$265 million. When distant water economic effects are added, the total economic contribution in 2013 was estimated at \$618 million. This translates roughly into 19 thousand jobs generated by the industry (using an equivalence annual average for coastal counties of \$33,000).

The next section of the report provides a glimpse of eight major Oregon onshore delivered fisheries. The descriptions include tallies for onshore landings volume and harvest prices. Processor production and seafood product forms are also discussed. Later sections in the report include detail about participant characteristics, fishing industry economic contribution estimates, and current industry challenges.

## **II. Fisheries**

In terms of volume, 341.3 million pounds of fish were delivered to Oregon ports in 2013 (Table 1 and Figure 1). This is up from 312.4 million pounds in 2012. With a few exceptions, the higher harvest price increases observed over the last few years continued in 2013 (Figure 3).

There was a notable decrease in sablefish prices (Figure 5). The increase in volume and prices allowed for an overall onshore harvest value of \$154.8 million in 2013 (Figure 2). This is nine percent greater than 2012 when \$141.9 million was landed. Eight major onshore fisheries plus an "other" fisheries category are discussed in this section. ODFW (October 2013) has additional information about research and management for the fisheries categories.

The Oregon ocean *salmon* fishery harvested with troll gear in 2013 in general was crafted to take advantage of high estimates for returning hatchery produced Sacramento River fall Chinook and hatchery reared lower Columbia River stocks while avoiding Endangered Species Act listed stocks (PFMC February 2014).<sup>7</sup> The ocean troll gear and the Columbia River net gear Chinook fisheries were up substantially in 2013 over 2012 and the 2008-2012 five year average. Ocean troll gear caught Chinook harvest value is estimated to be over 75 percent greater in 2013 than in 2012, while prices between the two years were nearly the same. Revenue for the Columbia River Chinook net gear fishery by tribal and non-Indian participants is about 70 percent greater than the 2012 value, despite slightly lower prices.<sup>8</sup> Troll caught coho in 2013 was only one-tenth the recent five year average and net caught coho was about two-thirds the five year average. Overall, Oregon salmon landings in 2013 produced 77 percent higher revenues than 2012.<sup>9</sup>

There were 531 active salmon vessels in Oregon in 2013, and 494 in 2012, not counting tribal fishery vessels (Table 2). Of the active number of vessels in 2013, there were 371 vessels using troll gear and 160 vessels in non-Indian fisheries using net gear. There is substantial latent capacity in the ocean salmon fishery with over 1,000 permits issued in the troll fishery. Similarly for the Columbia River non-Indian net fishery, there were 318 permits issued by Oregon and 258 issued by Washington in 2004 (TRG 2006).<sup>10</sup>

The forecasted higher ocean salmon abundance, a stable price in the albacore troll tuna fishery, and fishable weather conditions attracted more participation in the 2013 troll fishery. While the total ocean salmon catch volume was up by 73 percent in 2013 from 2012, the average volume per active vessel only increased from 2,633 to 4,003 pounds or 52 percent for troll Chinook. For the vessels making Oregon landings in the Columbia River non-Indian fishery, the average pounds of salmon (Chinook and coho) increased from 5,139 to 8,770 pounds per vessel during the two year period.

The *Dungeness crab* fishery, which accounted for one-third of all the onshore harvest value in the previous five years, experienced lower prices in the 2012-2013 season (\$2.69) than in the 2011-2012 season (\$3.02). The real dollar 2008-2012 five year average was \$2.39 per pound. There is a small but growing market demand from Asia for the live product. 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. After the first of the year, prices increase and the production switches to a section product form for the national food service market. A market substitute for this product form is snow crab harvested in Alaska. The 2012-2013 season is estimated to have produced total value of \$49.0 million which was 32 percent of all landed value from all fisheries. There were 323 active vessels in the 2012-2013 season as compared to 336 vessels in the 2011-2012 season (Table 2). The 2012-2013 season got off to a late start due to meat density not meeting standards (Figure 6). Prices increased significantly from the preseason negotiated agreement when the fishery finally began after January 1, 2013.

The higher prices seen in the *Pink shrimp* fishery in 2011 and 2012 continued in 2013. Oregon processors willing to meet European import standards helped keep overall demand high for the cold water shrimp product. Supplies to the European market have recently decreased due to low landings from the Canadian Atlantic pink shrimp fishery. There is also a growing China export market for a frozen head-on product form. The Oregon fishery is managed for shrimp size, so harvesters attempt to catch older size classes which have higher prices (Hannah and Jones February 2013). With a volume and price about the same as in 2012, the estimated 2013 harvest value is almost one and a half times the previous five year average. There were 60 active vessels that made deliveries in 2013 and 64 active vessels in 2012.

The *Albacore tuna* fishery saw prices increase slightly compared to 2012. The price at \$1.58 per pound was 11 percent greater than the five year average of \$1.42. There is continuing strong demand for U.S. West Coast supplies due to concerns about Japanese tsunami caused radiation in that country's local harvests and European demand for frozen loin product form (Chappell March 2012). The harvest in 2013 was 10.2 million pounds which had a harvest value of \$16.1 million, both of which are slightly higher than 2012. In 2013, there were 360 active vessels in the fishery. This compares to 2012 when 431 active vessels made landings. Because of the U.S.-Canada Albacore Tuna Treaty reciprocity restrictions, there were no West Coast landings by Canadian vessels in 2012. There were \$180 thousand of Washington landings by Canadian vessels without unique vessel identifiers in 2013.<sup>11</sup>

*Groundfish* other than sablefish and Pacific whiting is estimated to have a harvest volume about 15 percent higher in 2013 compared to 2012. Some species prices including thornyheads and some flatfish decreased in 2013 over 2012. With the higher harvest volume and increased overall prices, the estimated 2013 harvest value was almost 18 percent higher in 2013 than 2012. There were 228 active vessels in the fishery in 2013 and the same number of active vessels in 2012.<sup>12,13</sup>

Year 2013 is the third year of the new LE trawl gear individual fishing quota (IFQ) program. A smaller number of IFQ vessels are prosecuting the fishery and per delivery volume is greater than before the program was initiated. IFQ vessels have been able to temporarily transfer quota pounds with other quota holders since the program started. There was a moratorium on permanently transferring quota shares until 2014. IFQ vessels also have individual bycatch quotas (IBQ) which cannot be exceeded without severe penalties. It appears from the data that vessel owners are developing successful strategies to avoid bycatch species (such as overfished species, halibut, mammals, etc.) and are using voluntary risk pools from other vessels to cover overages (NOAA Fisheries June 2012 and Matson August 2012). The concern about increased effort in other fisheries (spillover effect) by vessels electing not to participate in the fishery and leasing their quota pounds has not occurred (Adkisson and Kirchner June 2012). The industry has testified about the difficulty, especially for small scale vessels, for absorbing the added costs for the program's required 100 percent observer coverage. NOAA Fisheries is subsidizing the monitoring through a transition period and research is underway to determine the potential for developing electronic monitoring technologies.<sup>14</sup>

**Sablefish** demand especially from Chinese purchasers drove prices to record levels in Alaska and along the West Coast in 2011 (Coomes September 2011). The demand decreased in 2012 and 2013 due to the weakening Chinese economy, decreasing value of the Japanese yen, and high hold-over inventories. Prices decreased 20 percent compared to the five year average (Table 1). A small but growing amount of the groundfish trawl IFQ program sablefish is now harvested with fixed gear. Sablefish caught with fixed gear fetches comparatively higher price due to higher quality. (For the IFQ vessels that switch gear and catch their sablefish quota pounds with fixed gear, the higher price is reflected in the table in the trawl gear row.) The LE fixed gear sablefish management program is a quasi catch-share program accomplished by the use of stacked permits. Each permit type has an assigned sablefish quota, and the total amount of sablefish that can be harvested by a vessel depends on its number and type of permits. Sablefish abundance was estimated to be at a "precautionary" level and there was a slight decrease in management quotas in 2013. With the lower volume and lower prices, the harvest value in 2013 was estimated to be only two-thirds of the 2012 value. There were 119 active vessels in Year 2013. In all of 2012, there were 155 active vessels.

The **Pacific whiting** price change that occurred in 2012 when the price jumped to almost \$0.14 per pound eroded to \$0.12 in 2013 (TRG 2013). However, even \$0.12 was double the prices of just a few years ago. This is the result of strong global demand (especially eastern European



*Pacific whiting is harvested with mid-water trawl net gear. It is Oregon's highest volume harvested species delivered onshore. In 2013 (preliminary), the deliveries total 75,977 metric tons. New handling techniques have allowed the species to be marketed in headed and gutted and fillet product forms rather than the manufacturing of surimi (fish paste used to mimic the texture and color of other seafood). The new product forms have a higher market value and allow for increased prices paid to harvesters than the surimi product form. (Photo courtesy of NMFS Northwest Fisheries Science Center)*

countries) for headed and gutted (H&G) product that is a lower price substitute for white flesh seafood. Abundances were up due to strong recruitment from three year classes contributing to harvest size fish, and catch in 2013 was one and a half times the 2012 harvest. One processor in Newport manufactured surimi in addition to H&G product forms. There is industry worry that continued increasing supplies of whiting and political volatility in export markets will put additional price pressures on whiting products. There were 24 active vessels that made Pacific whiting onshore deliveries in Year 2013, and 21 active vessels in all of 2012. There was also good news in 2012 in that widow rockfish was removed from the list of overfished species. This species is caught coincidentally with the same

mid-water trawl gear used in the whiting fishery. It appears that a small amount of widow will be available for an incidental fishery and that Pacific whiting harvests cost may decrease due to avoidance costs associated with minimizing widow rockfish bycatch.

**Sardine** prices in 2013 were similar to the five year average. There was lower export foreign demand for sardine products (including canned and frozen whole) for human consumption. The export demand for sardines used as longline gear bait and tuna farm fattening supplement, however, continued to be strong. Demand for human consumption is highly dependent on fish size and quality. Belly thickness, average size, and oil content can all influence the quality of the fish and therefore price. All of these factors reach a peak in August and September, but management quotas allow harvesting prior to August. There are management concerns about the sardine populations rapidly decreasing due to a down cycle and quotas were drastically reduced in 2013. Oregon deliveries in 2013 were half of 2012 levels. The slightly higher price produced a \$6.3 million harvest value which was down from \$9.1 million in 2012. There were 14 active vessels in Year 2013 as compared to 21 active vessels in all of 2012. Three of the active fishery vessels also make sardine and other coastal pelagic species landings in California and Washington.

In addition to these major fisheries, there are "**other species**" harvested and delivered to Oregon Coast ports. One unusually high species delivery in 2013 was **Pacific (chub) mackerel** at 1.0 million pounds. About two-thirds of all of the chub mackerel deliveries were "weigh-backs" that have zero revenue for harvesters. The five year average is 858 thousand pounds with a \$0.04 price. Chub mackerel is caught coincident with sardines. The species has a separate management quota and specific management rules which can limit the trip ratio of sardines and mackerel. This species can be sold for human consumption or is rendered and used in manufacturing as a livestock and pet food product. Another "other" fishery is **hagfish**. About 2.7 million pounds were landed and sold at an average price of \$0.84 per pound in 2013. Hagfish are dried and sold whole as a delicacy in mostly Korean markets. The **Pacific halibut** fishery is included as an "other species." The halibut volume and price in 2013 were 205 thousand pounds and \$4.79 per pound. The Oregon halibut fishery is an open access directed species fishery using longline gear with high participation by vessels that also have fixed gear groundfish permits. It is also an "incidental fishery" managed as a ratio to salmon harvests. Over the last few years in Oregon, the directed fishery has only lasted a couple of 10 hour fishing periods during summer months. As halibut abundances have dipped in recent years, there is growing concern for tightening the discard mortality for this species in the LE trawl groundfish fishery.<sup>15</sup> **Red sea urchins** harvested off the southern Oregon Coast by divers is another "other" species. The 2013 harvest for red sea urchin was 642 thousand pounds and \$0.56 price.

Oregon **aquaculture** products such as oysters and economic effects from **distant water fisheries** are not included in these brief descriptions. Distant water fisheries include vessels that moor at Oregon ports and deliver Pacific whiting to offshore motherships. Vessels with ties to Oregon businesses commute to participate in Alaska and western Pacific fisheries. Oregon residents own harvesting permits in Alaska, but keep vessels year around at Alaska ports. Sometimes owners will lease permits for others to harvest the permit quota shares. Oregon residents will also hire-on as crewman or processor workers and return paychecks that are spent in Oregon. The derived distant water fisheries income can add up to 40 percent or more of the total economic effects of Oregon's commercial fishing industry.

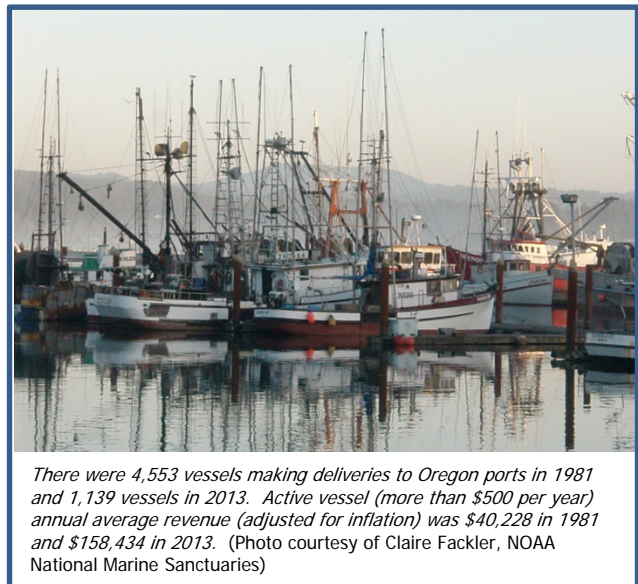
### III. Participants

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, processors, 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 and innovation is celebrated by those that enjoy Oregon seafood.

In 2013, there were 32,322 deliveries to Oregon ports by 1,139 vessels (Table 2). This is up from 27,365 deliveries by 1,140 vessels in 2012. There were a total of 184 first-purchase "active" businesses (purchased more than \$500) in 2013 which is down from 195 in 2012. The average revenue for active (harvest revenue more than \$500) vessels was \$158,434 in 2013, which is an increase of 36 percent or \$42,751 compared to 2012. The active vessel median revenue was \$29,012 in 2012 and \$35,852 in 2013. 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 7). A similar assessment is also true for the processing sector where there are several dominant companies. The significant differences between the average and the median indicates that the industry is highly heterogeneous.

There has been a trend over the last three decades for lesser number of vessels and consolidation of processor ownership. There is also a shift in landings and processing at small ports to those being made at the three larger "regional fisheries centers" (Figure 8).<sup>16</sup> The landings still 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.

There are a large number of seafood distribution chain transactions before Oregon fishery harvests reach the consumer. This shows the importance and integration of this industry with the Oregon Coast economy, national markets, and global markets. Five of Oregon's fisheries (Dungeness crab, pink shrimp, albacore tuna, and Pacific whiting, plus groundfish trawl is being assessed) out of 205 global fisheries (as of September 2013) are certified by the Marine Stewardship Council (MSC) to be sustainably managed. The certification can have benefits from consumer awareness for product quality and resource sustainability. The MSC advocates that premium prices and access to new markets can accompany the certification.

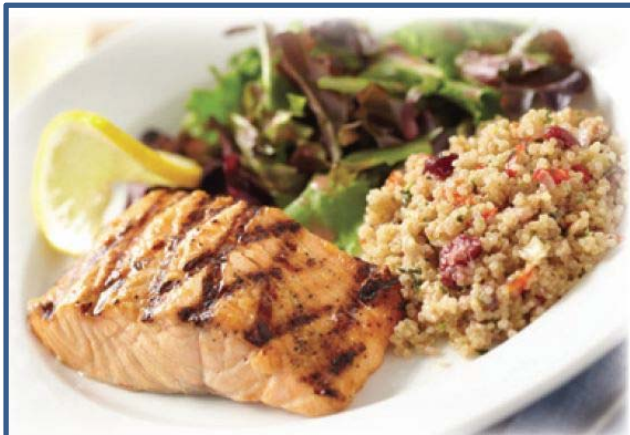


While the Oregon commercial fishing industry production is substantial, the State and the U.S. are net importers of seafood for consumption. Most of Oregon's production is shipped elsewhere to satisfy niche and commodity markets. About one-third is destined for domestic markets and two-thirds for foreign markets if market trends follow U.S. seafood production trade characteristics (NMFS 2013).

#### IV. Economic Contributions

The Oregon fishing industry (not including distant water fisheries) generated \$353 million total personal income in 2013 (Table 3). This compares to a 2012 economic contribution of \$284 million. Year 2013 generated an economic contribution 29.0 percent higher than the previous five year average of \$251 million. This includes the income generated by the spending from harvesting and primary 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>17</sup>

Distant water fisheries are a significant component of the commercial fishing industry's total economic effects in Oregon. These fisheries include the West Coast "offshore," Alaska, and the



*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: salmon, albacore tuna, Dungeness crab, 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. Local governments and coastal port districts provide public services and advocate industry causes. (Photo courtesy of USDA.)*

western Pacific. The economic contributions are produced by: 1) vessels that home-port and/or get provisions and are repaired in Oregon that travel to these fisheries; 2) people who own vessels and permits that are home-ported elsewhere but have residence in Oregon; and/or 3) crew members and processor workers that return wages to Oregon. Detailed estimates are not yet available for 2013. The economic contributions in 2012 were \$265 million.

The estimated total personal income generated by the Oregon commercial fishing industry (onshore and using 2012 estimated distant water fisheries) in 2013 is at least \$618 million, depending on the final modeling results for 2013 distant water fisheries. (Shellfish aquaculture is not included in these estimates since it is typically classified as an "agricultural product." It has been estimated to have

generated \$9 million in 2012.) At a coastal county part-time and full-time equivalent job income of \$33,000, economic contribution estimate is equivalent to about 19 thousand jobs. This is about a 19 percent increase in economic impacts over the previous five years. The commercial



fishing industry represents about one-half percent of all Oregon net earnings. In 2012, the commercial fishing industry share of Oregon Coast local net earnings ranges from 20 percent in Lincoln County to less than two percent in Tillamook County.

There were also opportunities for harvesters to be paid for research, management collaboration, and other programs in 2013 (for example, participation in halibut survey programs, salmon genetic stock identification for the Collaborative Research Oregon Ocean Salmon (CROOS) project, and retrieval of derelict crab gear). 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 the economic impacts of the programs that assumes spending using the payments as if they were fishery revenue is \$60 million in personal income.

## **V. Discussion**

Over the last 30 years, the Oregon fishing industry has shifted from low-volume and high-value species, such as salmon and crab, to high-volume and low-value species (Figure 4). In 2013, about two-thirds of the volume landed was Pacific whiting and sardines, but these high-volume species comprised less than one-fifth by landed value. This trend has had the effect of concentrating landings at regional fisheries center ports that have high-volume harvesting and processing capabilities. Fewer vessels are participating, and for the boats remaining active, there has been an increased trend in annual average revenues.

These data observations have a fishing industry business structure perspective. The fishing industry is becoming more industrialized. The fewer vessels participating require higher annual revenues to be a profitable business. There is processor ownership consolidation and centralization of operations. Landings are often hauled elsewhere, precluding the need for local labor and support businesses.

Issues that the commercial fishing industry is confronting include:

- 1) Pressure to set aside areas for: (a) no-take marine protection areas for research and habitat protection, (b) wave/wind energy generation, (c) other uses (e.g., underwater cables or temporary closures to minimize fishery bycatch).
- 2) Social policies for allocation among user groups (commercial, recreational, tribal fishermen, and communities).
- 3) Judicial decisions on habitat protection and incidental take issues brought to the forefront by conservation organizations, including protection of sea birds and marine mammals either impacted by fishing techniques or dependent on protein from harvested fish species; compacts and international treaties, for example 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.
- 4) Better understanding in the science of ecosystem interactions and improved stock assessments that may cause fishery management agencies: a) to reduce exploitation

rates, control fishing gear, reduce trip limits, or have further restrictions via time/area closures through new initiatives to develop ecosystem-based fishery management plans; b) develop stock building programs calculated using variables with large uncertainties; and, c) design rebuilding programs that will take many years due to the life history characteristics of certain species.

- 5) 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 aggregating.
- 6) In general, there are not major populations of underutilized species which harvesters can exploit, but new fisheries may develop around minor opportunities for filling niche markets.
- 7) Increasing costs for prosecuting fisheries, including 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.
- 8) Uncertainty about new conservation standards pending for inclusion in the Magnuson-Stevens Act (MSA) reauthorization in 2014. (At the time of this publication release, there were significant differences between U.S. Senate and House wording of the act to reauthorize MSA.)
- 9) Increasing use of catch-share programs with transferable and tradable quotas.
- 10) The proliferation of certification programs for seafood product quality and capture fisheries sustainability has potential benefits but also costs that may burden harvesting associations and processors. The certification concept has merit, but there is 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 should include generating more value from available fishery resources, but increasing resource value has several challenges. There will be continuing price pressures on seafood products from substitute aquaculture products. Consumer concerns about quality (freshness, toxins, bacteria, etc.) will affect seafood product demand. 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 rapid 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.

## VI. Bibliography

- Adkisson, Kelsey and Gway Kirchner. Individual Fishing Quota Program Off Oregon. Prepared by the Oregon Department of Fish and Wildlife Marine Resources Program. June 2012.
- Chappell, Aaron C. Annual Oregon Albacore Tuna (Thunnus Alalunga) Report, 2011. Prepared by Oregon Department of Fish and Wildlife Marine Resources Program. March 2012.
- Coomes, Steve. Opportunity Asia: Markets in China and Surrounding Regions Hold Promise, But Seller Beware. SeaFood Business. September 2011.
- Hannah, Bob and Steve Jones. Annual Pink Shrimp Review 24<sup>th</sup> Edition. Oregon Department of Fish and Wildlife. February 2013.
- Jannot, J.E., A.W. Al-Humaidhi, M.A. Bellman, N.B. Riley, and J. Majewski. Draft Pacific Halibut Bycatch in the U.S. West Coast IFQ Groundfish Fishery (2011) and Non-IFQ Groundfish Fisheries in 2002-2011. NOAA Fisheries, NWFSC Observer Program. September 2012.
- Matson, Sean E. West Coast Groundfish IFQ Fishery Mid-year Catch Report (January-June) 2012 Emerging Trends. Prepared by the National Marine Fisheries Service NWR, Sustainable Fisheries Division. August 23, 2012.
- National Marine Fisheries Service (NMFS). Fisheries of the United States 2012. Office of Science and Technology Current Fishery Statistics No. 2012. September 2013.
- NOAA Fisheries. The West Coast Groundfish IFQ Fishery: Results from the First Year of Catch Shares in 2011. June 2012.
- Oregon Department of Fish and Wildlife (ODFW), Marine Resource Program. Oregon's Ocean Commercial Fisheries. Via Internet: [http://www.dfw.state.or.us/MRP/docs/E2\\_Backgrounder\\_Comm\\_Fishing\\_2013-10-03.pdf](http://www.dfw.state.or.us/MRP/docs/E2_Backgrounder_Comm_Fishing_2013-10-03.pdf). October 3, 2013.
- Pacific Fishery Management Council (PFMC). Review of 2013 Ocean Salmon Fisheries. February 2014.
- The Research Group (TRG). Select Area Fishery Evaluation Project, Economic Analysis Study, Final Report. Prepared for Bonneville Power Administration, Washington Department of Fish and Wildlife, and Oregon Department of Fish and Wildlife. November 2006.
- The Research Group, LLC (TRG). Oregon Marine Recreational Fisheries Economic Contributions in 2011 and 2012. Prepared for Oregon Department of Fish and Wildlife and Oregon Coastal Zone Management Association. July 2013.
- The Research Group, LLC (TRG). Oregon's Commercial Fishing Industry, Year 2011 and 2012 Review. Prepared for Oregon Department of Fish and Wildlife, and Oregon Coastal Zone Management Association. September 2013.

## Endnotes

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1. See TRG (July 2013) for economic contribution information about coastal Oregon recreational fisheries.
2. The commercial Oregon ocean Dungeness crab fishery traditionally has a December 1 opening and runs through August 14. The fishery opening date can be delayed until a meat quality and density standard is met. The season start can also be delayed due to harvesters and processors not being in agreement on opening season price. An example was in December 2006 when no fishing occurred the first two weeks. When a price was settled, weather worsened during the last half of December which curtailed landings. There is a smaller commercial bay crab fishery which operates under different season and gear restrictions than does the ocean fishery.
3. Calendar year accounting caused an anomaly for the ocean Dungeness crab fishery's 2012-2013 season. There was a delayed start to the usual December 1, 2012 season until January 1, 2013. There was also a delayed start to the December 1, 2013 season, but only for two weeks. The remaining two weeks in December 2013 had high catch rates.
4. Annual per capita seafood consumption decreased in 2012 to 14.4 pounds from 15.0 pounds in 2011 and 15.8 pounds in 2010.
5. State exports are from U.S. Department of Commerce, International Trade Administration (ITA) (<http://tse.export.gov/TSE/TSEhome.aspx>), using NAICS codes 11411 (fish and other marine products), 11251 (aquaculture), and 31171 (prepared seafood products).
6. A portion of this imported seafood is caught by American fishermen, exported overseas for processing and then re-imported to the U.S.
7. Management objectives for Chinook fisheries south of Humbug Mt. have different constraining factors than the rest of the Oregon Coast. In 2013 the south of Humbug Mt. management was mainly constrained by concerns for the Klamath Rivers' year-4 fall Chinook abundance. The Cape Falcon to Humbug Mt. area was constrained by impacts to the lower Columbia River natural tule Chinook abundance as well as the Klamath Rivers' year-4 fall Chinook abundance. The ocean catch area north of Cape Falcon management was limited by many ESA listed Columbia River stocks, and to the extent possible meet treaty Indian sharing obligations and provisions of the Pacific Salmon Treaty (PST) for Chinook stocks of concern. Management objectives for coho fisheries are primarily guided similar to Chinook by maximum impacts to ESA listed stocks. The lower Columbia River natural coho was a particularly vexing ESA listed stock for designing fishery seasons. For both Chinook and coho, incidental catch in other fisheries (such as the midwater trawl whiting fishery) and all inland fisheries harvests are taken into account in determining ocean management seasons.
8. The total value of Columbia River salmon harvested in 2013 was \$11.8 million, with 41 percent from landings on the Oregon side and 59 percent from landings on the Washington side. The value of the Oregon side landings was 76 percent from non-Indian fisheries and 24 percent from tribal fisheries, and the value of the Washington side landings was 25 percent from non-Indian fisheries and 75 percent from tribal fisheries.
9. The combined river harvested price for spring and fall Chinook is about half of the ocean harvested price. However, the comparison between prices received for river net caught salmon and for ocean troll caught salmon should have careful financial and economic analysis. For example, the average weight of a net caught Chinook is much larger than the average weight of a troll caught Chinook. Troll harvesting will also have a by-catch of "shakers," whose mortality would have to be subtracted from available fish in net harvesting which is mostly retainable marketable adults. Also included in any comparison should be the semi-processing for troll caught fish and the extra egg value for net caught fish. A rule of thumb is any comparison for total value will show that net and troll harvested fish will come out to be about equal.
10. There were 224 non-Indian vessels landing Columbia River net salmon in 2013 on either the Washington or Oregon side of the Columbia River, with 144 landing only on the Oregon side, 54 landing only on the Washington side, and 26 on both sides.
11. The U.S.–Canada Treaty on Pacific Coast Albacore Tuna Vessels and Port Privileges agreed in 1981, amended in 2002, and codified by law in April 2004 has lapsed and negotiations are at an impasse. Temporary negotiated conditions are restricted reciprocity for flagged vessel fishing catch-areas.

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12. *Management quotas are assigned to a limited entry (LE) program for boats using trawl gear and separately for fixed gear (pots and longlines). There is a small allocation (about 10 percent over all species) assigned to an open access fishery where boats must also use fixed gear and management is accomplished by trip limits. The LE fixed gear vessels groundfish (except sablefish) harvests are also managed with trip limits.*
  13. *There were eight groundfish species in an overfished status in 2011 of which six are typically found in waters off of Oregon: canary, darkblotched rockfish, Pacific Ocean perch, widow rockfish, yelloweye rockfish, and petrale sole. In 2012, widow rockfish was removed from this list.*
  14. *A financial issue for the industry is taking on the full cost for the 100 percent observer coverage now called for in the IFQ program design. The observer costs would be in addition to payments on a 2003 LE trawl permitted vessel buyout program loan; and, cost recovery (no more than three percent of harvest value of the shoreside sector, and estimated to be two percent in the mothership sector and one percent in the catcher-processor sector) for NOAA Fisheries administration of the IFQ program. The observer coverage accounting basis is cost per trip no matter the vessels harvest levels. The unintended consequences would be to encourage small scale vessel leasing of quota pounds to larger scale vessels that have profit margins that allow for the new trip costs. There is concern about stock status for China rockfish and kelp greenling.*
  15. *The International Pacific Halibut Commission (IPHC) Area 2A allocated halibut bycatch mortality in the commercial West Coast trawl fishery exceeded the allocations in the commercial non-tribal directed and incidental fishery in 2011. The PFMC addressed this concern by reducing the allocations in the Groundfish FMP Amendment 21-1 to about half of previous allocations starting in the 2012 season. There will be further capped reductions after four years. The trawl fishery only attained about one-third of the allocated mortality in 2011. The attainment was 87 percent less than in 2010 (Jannot et al. September 2012). The bycatch rate of halibut in the LE trawl fishery has been two to five percent of retained fish. The mortality rate of the halibut discards ranges from 20 percent of those in excellent condition, 55 percent of those in poor condition, and 90 percent of those thought dead.*
  16. *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.*
  17. *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, LLC 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  
Oregon Harvested Volume and Ex-Vessel Value by Fishery  
for Five-Year Average, 2012, and 2013 (Preliminary)

Fishery	2008-2012 Five Year Average			2012			2013 (Preliminary)		
	Volume	Value	Price	Volume	Value	Price	Volume	Value	Price
Salmon	2,272	6,079	2.68	1,927	7,022	3.64	3,512	12,412	3.53
Troll Chinook	398	2,037	5.12	853	4,300	5.04	1,486	7,596	5.11
Troll coho	34	65	1.91	4	8	1.94	3	6	2.17
Net Chinook	1,276	3,182	2.49	949	2,527	2.66	1,730	4,302	2.49
Net coho	512	735	1.44	99	162	1.64	272	497	1.83
Other species/gear	51	61	1.18	21	25	1.16	21	11	0.54
D. crab	16,869	40,371	2.39	14,351	43,284	3.02	18,227	49,003	2.69
Pink shrimp	35,319	16,839	0.48	49,144	25,033	0.51	47,629	24,153	0.51
Albacore tuna	9,841	13,999	1.42	9,886	15,290	1.55	10,205	16,079	1.58
Groundfish (other than sablefish and whiting)	28,734	12,451	0.43	23,731	12,479	0.53	27,264	14,724	0.54
Trawl gear LE	28,081	11,043	0.39	23,056	10,948	0.47	26,618	13,243	0.50
Fixed gear LE/OA	653	1,409	2.16	675	1,530	2.27	647	1,481	2.29
Sablefish	5,984	15,420	2.58	4,745	11,692	2.46	3,842	7,663	1.99
Trawl gear LE	3,337	6,780	2.03	1,979	3,474	1.76	1,925	3,127	1.62
Fixed gear LE/OA	2,647	8,641	3.26	2,766	8,218	2.97	1,917	4,536	2.37
Pacific whiting	90,620	9,769	0.108	107,652	14,816	0.138	167,499	19,997	0.119
Pacific sardine	52,436	5,927	0.113	93,957	9,103	0.097	57,817	6,283	0.109
Other	4,234	3,083	0.73	7,008	3,192	0.46	5,336	4,456	0.84
Hagfish	1,559	1,030	0.66	1,610	1,178	0.73	2,720	2,282	0.84
Red sea urchin	549	280	0.51	567	332	0.58	642	360	0.56
Pacific (chub) mackerel	858	38	0.044	3,923	174	0.044	968	80	0.082
Pacific halibut	215	924	4.29	197	978	4.96	205	982	4.79
<b>Total</b>	<b>246,308</b>	<b>123,940</b>	<b>0.50</b>	<b>312,400</b>	<b>141,910</b>	<b>0.45</b>	<b>341,331</b>	<b>154,769</b>	<b>0.45</b>

- Notes: 1. Volume and ex-vessel value are in thousands. Values are in 2013 dollars adjusted using the GDP implicit price deflator developed by U.S. Bureau of Economic Analysis.
2. Acronyms: LE - limited entry, OA - open access.
3. D. crab is shown seasonally by December to November for each year, for example 2011 D. crab includes December 2010 to November 2011.
4. Starting in 2011 a small amount of sablefish in the LE trawl ITQ program is harvested with fixed gear.
5. Ex-vessel price is the amount paid to fishers at the time of fish delivery. Deliveries are for onshore landings. Prices are annual and averaged across harvests made in different fisheries. Prices are expressed in round weight equivalents. Average prices for salmon are across seasons and sizes.

Source: PacFIN annual vessel summary and fish ticket data, April 2009, March 2010, July 2011, April 2013, and January 2014 extractions.

Table 2  
Oregon Vessel Counts and Deliveries by Fishery in 2012 and 2013 (Preliminary)

Fishery	2012			2013 (Preliminary)		
	Vessel Counts		Deliveries	Vessel Counts		Deliveries
	Total	>\$500	Total	Total	>\$500	Total
Salmon	578	494	8,337	588	531	10,610
Troll Chinook	369	323	3,798	397	371	5,249
Troll coho	30	7	50	40	4	56
Net Chinook	186	168	4,141	167	158	4,917
Net coho	140	73	1,386	144	98	1,852
D. crab	354	336	6,965	342	323	6,626
Pink shrimp	64	64	1,123	60	60	1,017
Albacore tuna	447	431	1,709	380	360	1,365
Groundfish (other than sablefish and whiting)	334	228	5,912	339	228	6,204
Sablefish	175	155	1,785	143	119	1,268
Trawl gear LE	56	47	756	57	41	672
Fixed gear LE	56	56	693	45	45	424
Fixed gear OA	66	55	335	42	34	170
Pacific whiting	51	21	805	45	24	1,065
Pacific sardine	35	21	843	25	14	458
Other	372	223	5,391	337	179	6,688
All fisheries	1,140	1,086	27,365	1,139	1,094	32,322

- Notes:
1. Vessel counts include vessels that landed at Oregon ports, and had a valid vessel identification number. Vessels or non-vessels (such as from a dock) with identification of "NONE" or "ZZ..." are excluded. These are typically vessels delivering in tribal fisheries. Total deliveries include those with no valid vessel identification number.
  2. The columns titled ">\$500" show the number of vessels that landed over \$500 of ex-vessel revenue from the shown fishery in Oregon, and is an arbitrary threshold to filter for vessels that are actively participating in the shown fishery. The fisheries are counted separately, so the \$500 filter is applied to each. Statewide, the \$500 threshold may be landed at any combination of fisheries.
  3. Vessel counts and deliveries across fisheries will not sum to the statewide total because vessels can participate in more than one fishery, deliveries can include more than one fishery, and/or there are other important fisheries not itemized. For example, the Columbia River fisheries include tribal fisheries.
  4. D. crab is shown seasonally by December to November for each year, for example 2012 D. crab includes December 2011 to November 2012.

Source: PacFIN annual vessel summary data, April 2013 and January 2014 extractions.

Table 3  
Economic Contributions by Species Group in 1973 to 2013

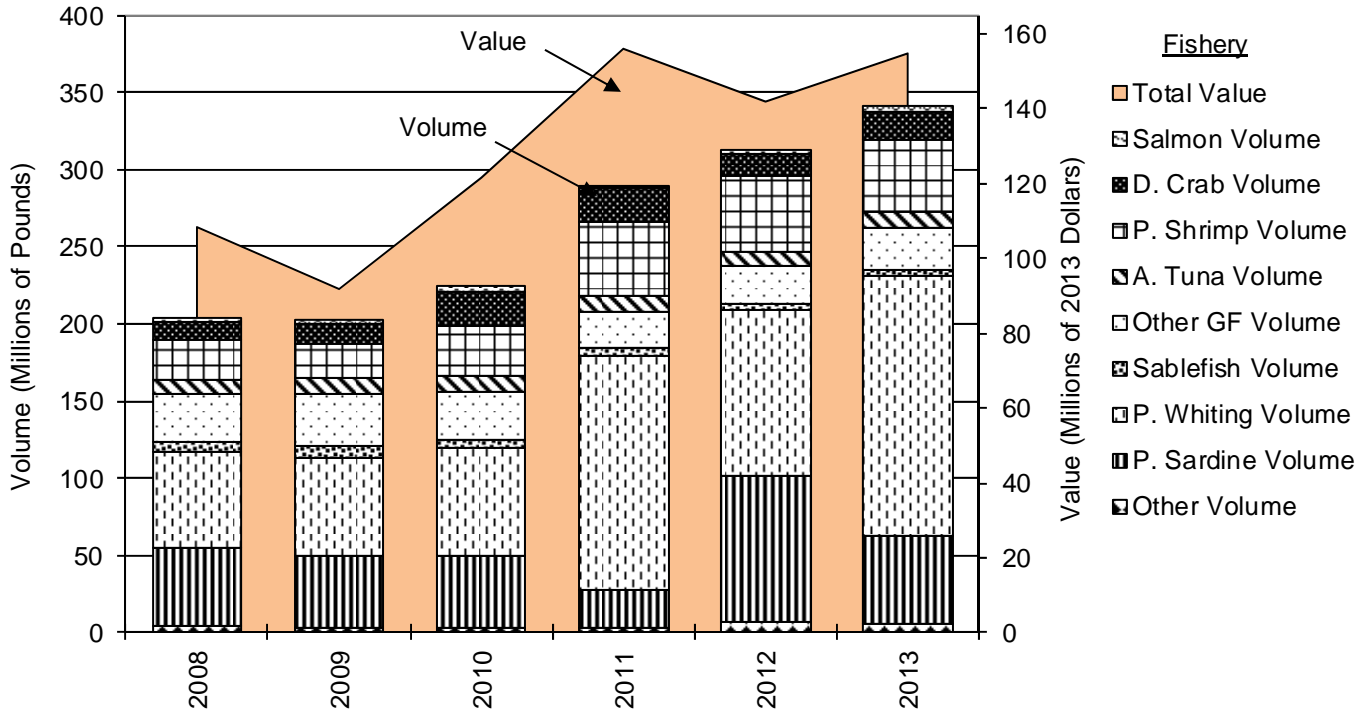
Years	Onshore Landings							Distant Water Fisheries	Total
	Salmon	D. Crab	Pink Shrimp	Pacific Groundfish	Whiting	Other Finfish and Shellfish	Total Landed Fish		
1973	95.9	5.9	23.6	20.7	-	65.1	211.2	-	211.2
1974	77.1	11.4	15.0	23.1	-	83.7	210.3	-	210.3
1975	65.6	11.4	20.1	20.8	-	52.7	170.7	-	170.7
1976	113.3	18.1	19.8	26.9	-	53.1	231.1	-	231.1
1977	80.8	36.7	42.4	26.8	-	41.2	227.9	-	227.9
1978	59.8	28.3	51.6	41.5	-	81.0	262.2	-	262.2
1979	87.8	33.1	31.5	76.5	-	52.7	281.6	-	281.6
1980	42.3	34.1	41.1	58.6	-	36.7	212.7	-	212.7
1981	41.3	15.8	29.4	74.6	-	54.8	215.9	-	215.9
1982	49.9	16.1	15.9	85.4	-	29.8	197.0	-	197.0
1983	12.1	15.7	9.0	75.7	-	21.4	133.8	-	133.8
1984	19.6	15.0	4.6	60.7	-	22.3	122.1	-	122.1
1985	34.4	20.5	13.0	63.9	-	26.2	158.0	-	158.0
1986	58.2	13.1	34.7	58.7	-	37.3	202.1	124.2	326.3
1987	78.8	16.3	49.5	78.3	-	44.0	266.9	115.4	382.4
1988	124.2	21.1	36.4	80.2	-	48.0	309.9	108.8	418.7
1989	45.3	23.8	42.5	84.5	-	57.7	253.7	103.5	357.3
1990	30.5	24.0	30.4	75.7	1.2	50.2	212.1	134.3	346.4
1991	20.4	12.4	21.1	86.6	10.2	30.1	180.8	91.1	271.9
1992	8.8	29.7	47.2	73.3	26.3	23.6	208.8	88.5	297.3
1993	5.8	25.7	24.7	74.4	14.3	21.3	166.3	86.6	252.8
1994	3.3	29.8	21.3	69.1	30.1	17.1	170.7	91.7	262.5
1995	8.7	41.9	19.3	75.1	45.5	18.2	208.8	95.7	304.6
1996	8.3	58.5	21.7	73.3	41.8	24.6	228.2	100.6	328.8
1997	6.8	31.1	20.2	66.3	51.1	29.0	204.4	118.7	323.2
1998	5.6	29.1	8.0	48.9	36.1	24.5	152.2	132.8	285.1
1999	4.8	52.7	22.5	54.6	44.4	16.8	195.7	161.0	356.7
2000	10.8	54.0	28.0	60.9	38.7	40.6	232.9	135.1	368.1
2001	15.3	43.8	24.0	49.7	28.4	46.3	207.4	143.3	350.7
2002	17.7	48.2	35.0	33.6	18.4	51.8	204.7	151.9	356.6
2003	20.1	84.7	16.0	41.5	25.1	64.9	252.4	160.6	412.9
2004	25.3	95.0	11.9	38.4	37.3	87.4	295.3	154.2	449.5
2005	19.4	57.9	16.0	41.1	40.9	98.4	273.6	168.0	441.6
2006	8.5	110.4	10.8	42.6	41.9	76.9	291.2	156.2	447.3
2007	7.7	70.5	20.0	42.9	29.2	88.5	258.8	179.4	438.2
2008	7.2	51.5	25.4	49.8	21.2	63.2	218.3	271.3	489.6
2009	6.4	75.8	15.9	52.4	21.8	59.4	231.7	213.8	445.5
2010	12.4	56.9	23.8	46.9	25.1	62.2	227.4	227.8	455.2
2011	10.5	72.3	44.3	46.8	65.3	53.4	292.6	285.5	578.2
2012	10.5	44.1	43.9	39.7	50.9	94.7	283.7	265.0	548.7
2013	18.4	110.4	42.2	37.5	70.9	73.8	353.1	265.0	618.0
Avg08-12	9.4	60.1	30.6	47.1	36.9	66.6	250.7	252.7	503.4

- Notes:
1. Economic contributions are expressed as personal income in millions of 2013 dollars. Adjustments to 2013 dollars use the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
  2. Year 2013 is preliminary. Distant water for 2013 is not a model result and just repeats 2012.
  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 PPMC.
  4. Groundfish in 2013 includes (personal income in thousands) flatfish (\$16,891), sablefish (\$12,080), cod/rockfish (other than sablefish) (\$7,042), and sharks/skates (\$1,456).
  5. "Other" in 2013 includes (personal income in thousands) Pacific sardines (\$40,050), albacore tuna (\$25,533), Pacific halibut (\$1,389), sturgeon (\$201), sea urchins (\$488), and other species (\$6,126).
  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).

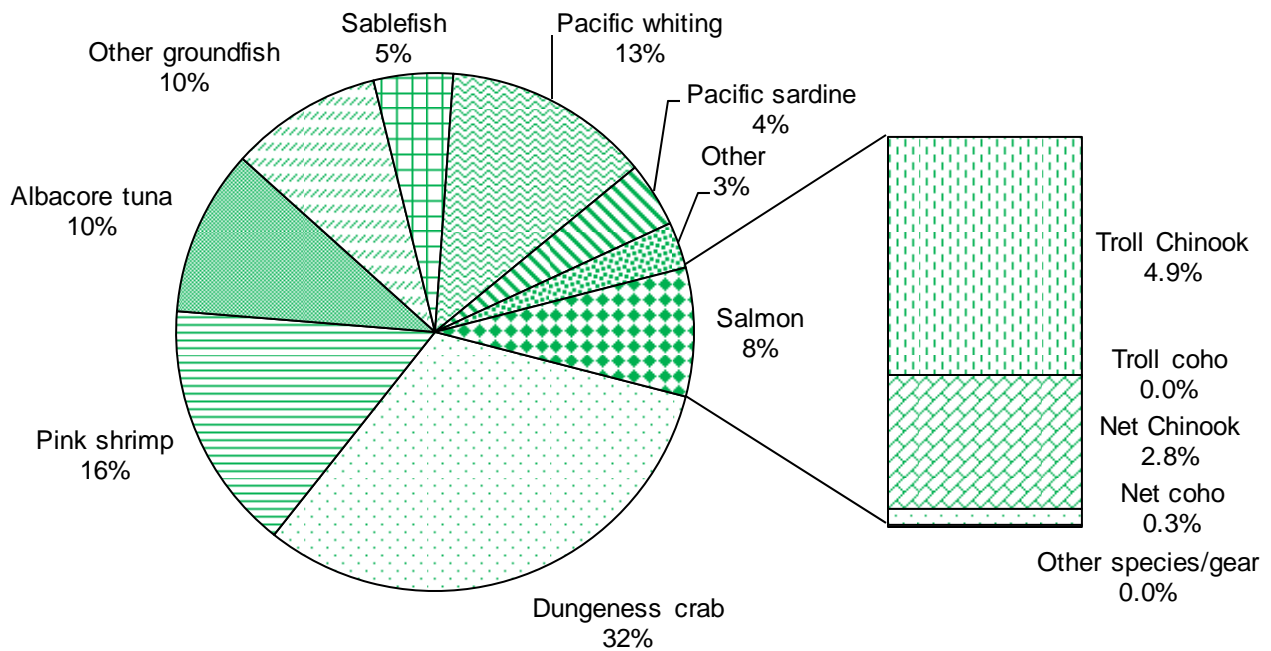


Figure 1  
Oregon Onshore Landed Value and Volume by Major Fishery in 2008 to 2013 (Preliminary)



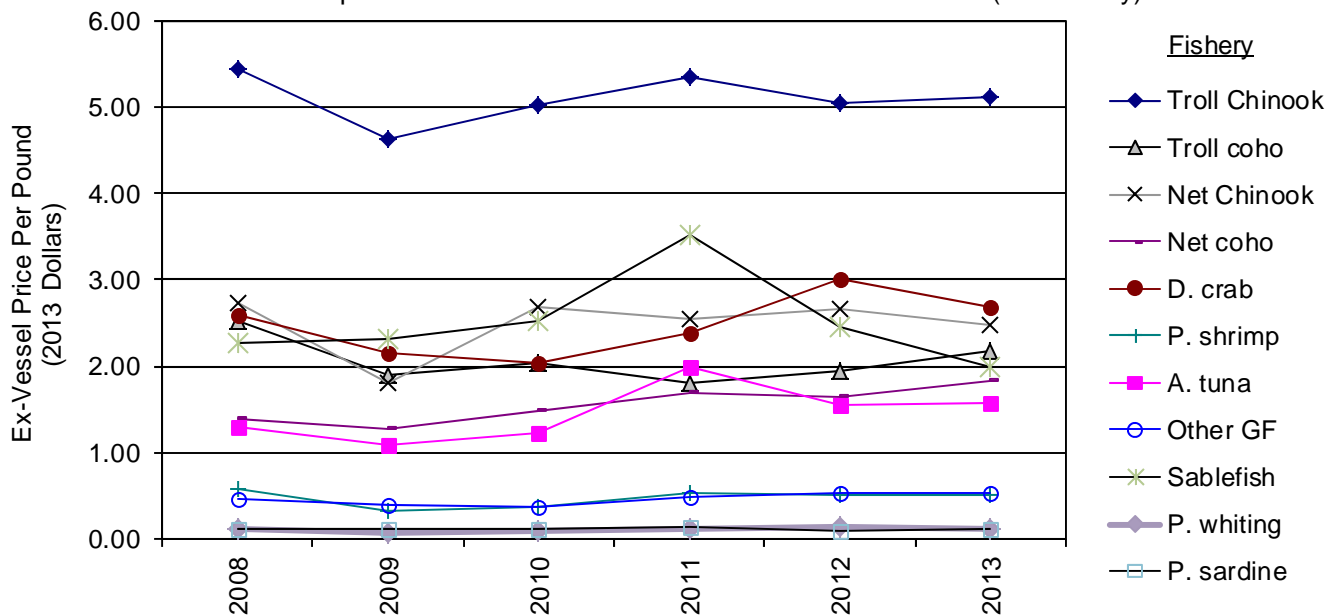
Notes: 1. Notes and sources from Table 1 also apply to this figure.

Figure 2  
Oregon Onshore Landed Harvest Value in 2013 (Preliminary)



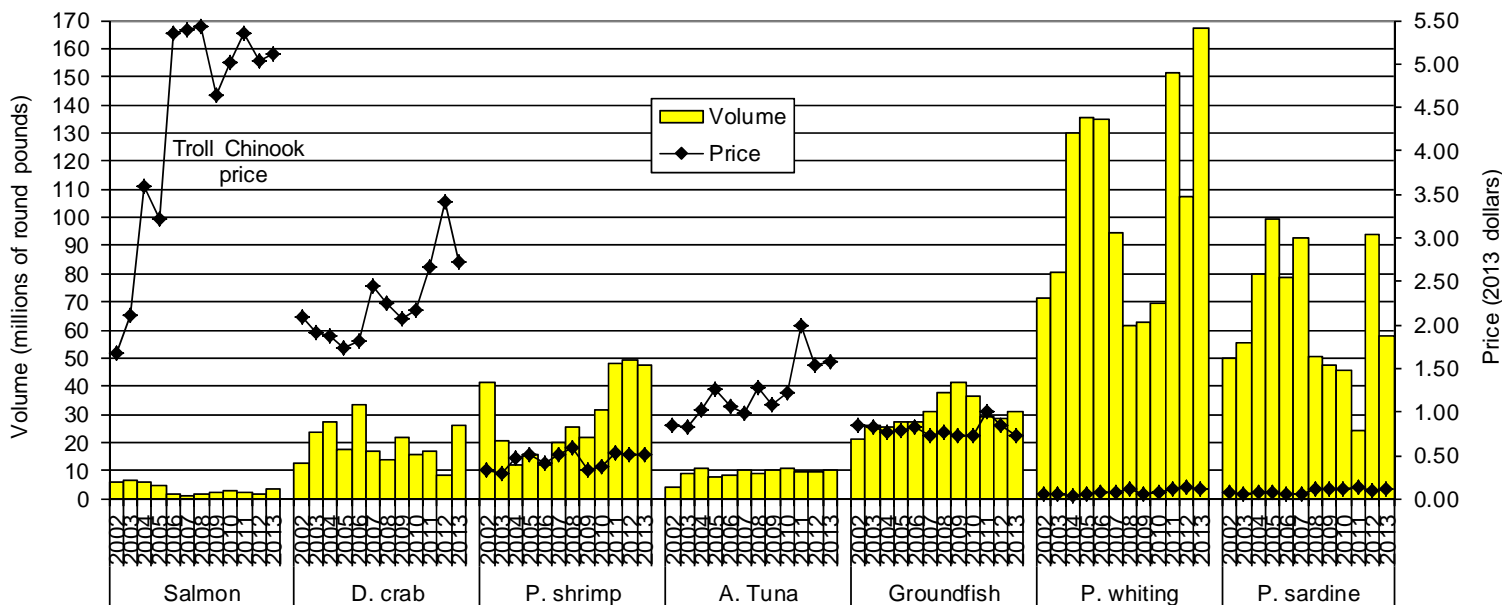
Notes: 1. Notes and sources from Table 1 also apply to this figure.

Figure 3  
Selected Species Annual Ex-Vessel Price Trends in 2008 to 2013 (Preliminary)



Notes: 1. Notes and sources from Table 1 also apply to this figure.

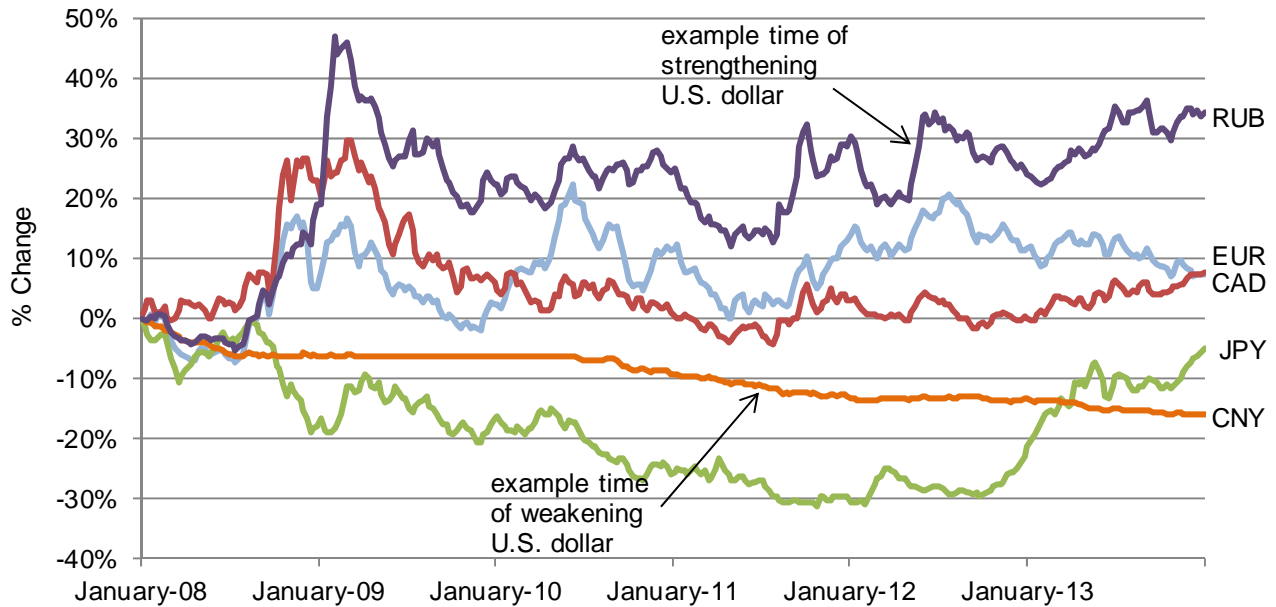
Figure 4  
Volume and Price Trends in 2002 to 2013 (Preliminary) by Species Group



Notes: 1. Salmon price is for Chinook harvested with troll gear. Groundfish price is an aggregate over many species harvested with many gear types.

Source: PacFIN annual vessel summary, March 2008, April 2009, March 2010, July 2011, April 2013, and January 2014 extractions.

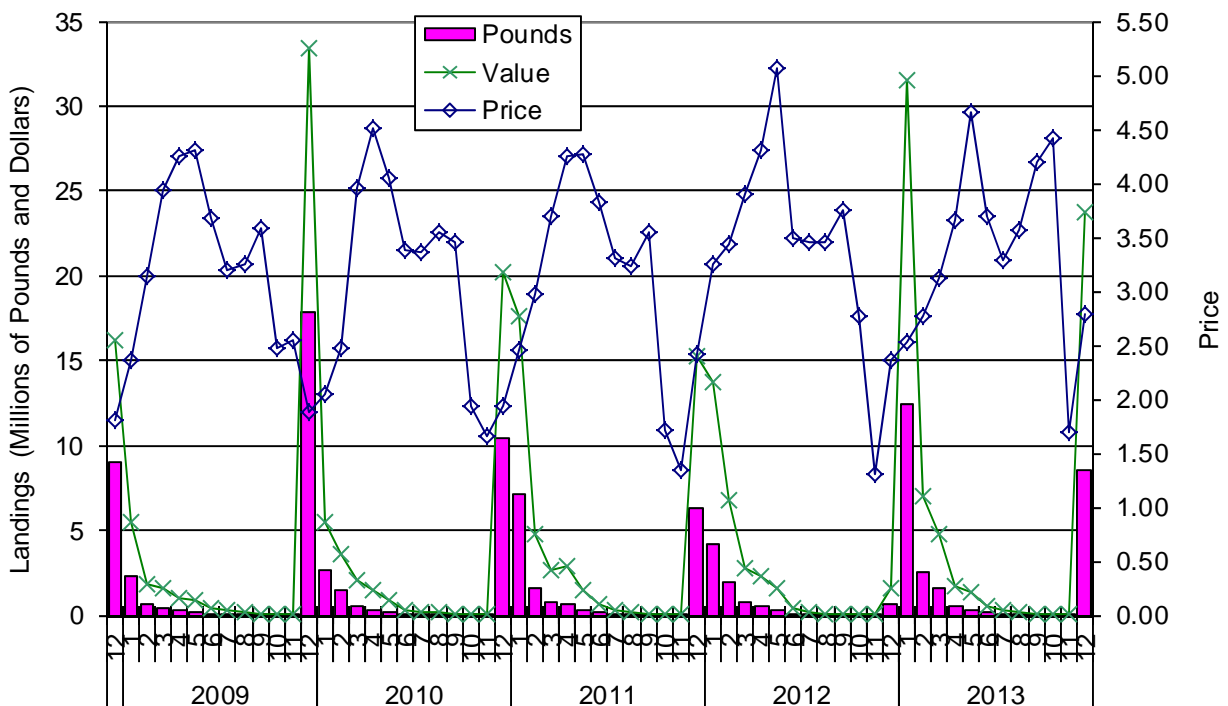
Figure 5  
 Currency Exchange Rate for U.S. Dollar and Countries That Import U.S. Seafood Production



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.

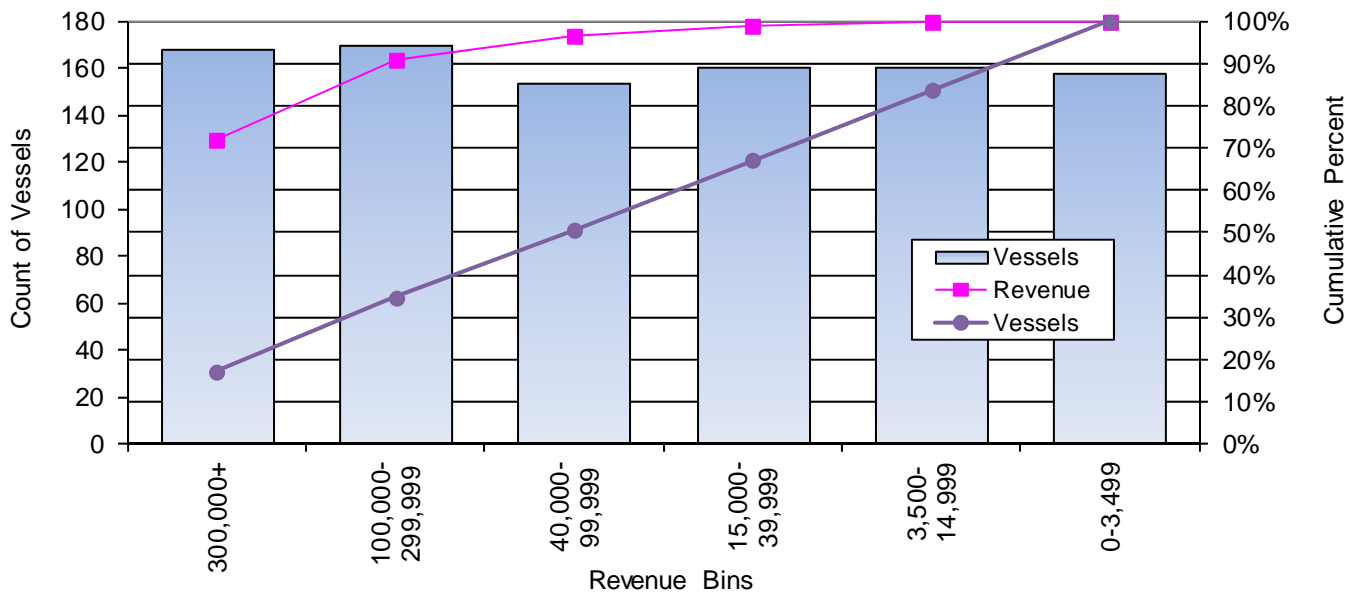
Figure 6  
 Onshore Landed Dungeness Crab by Month in December 2008 to December 2013



Notes: 1. Values and prices are in 2013 dollars adjusted using the GDP implicit price deflator developed by U.S. Bureau of Economic Analysis.

Source: PacFIN fish ticket data, April 2009, March 2010, July 2011, April 2013, and January 2014 extractions.

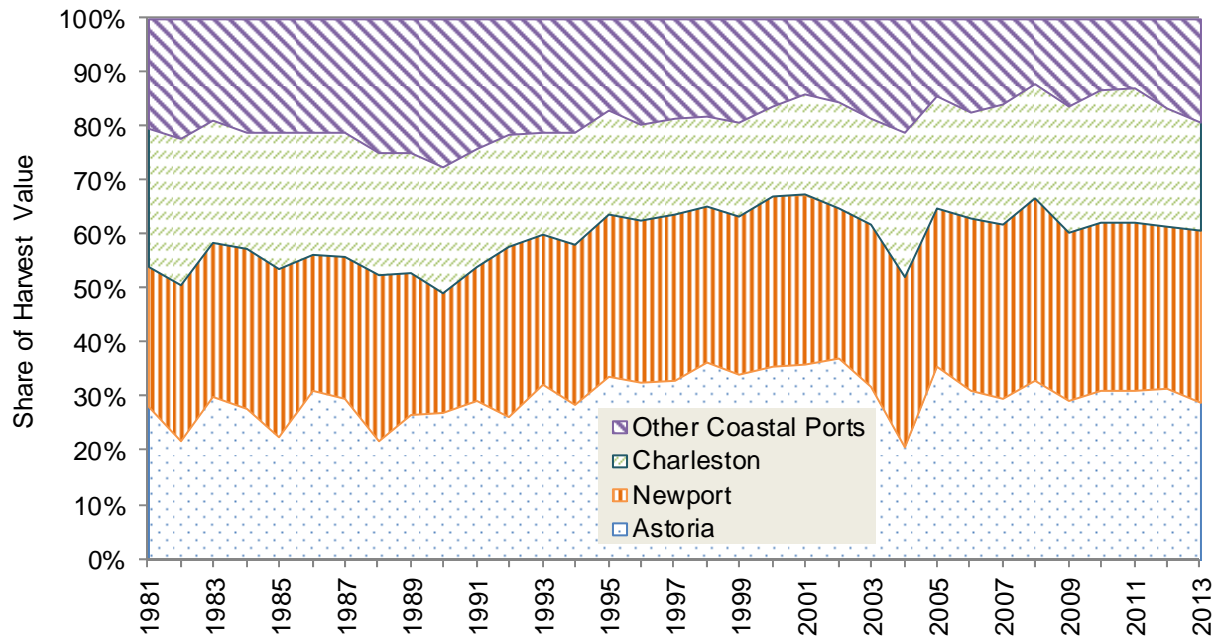
Figure 7  
Ocean Onshore Landing Revenue Bins Showing Cumulative Revenue and Vessel Counts in 2013



- 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.

Source: PacFIN annual vessel summary, January 2014 extraction.

Figure 8  
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).

Source: PacFIN annual vessel summary, March 2008, April 2009, March 2010, July 2011, April 2013, and January 2014 extractions.

## **Appendix A**

### **Calendar Year Onshore Fisheries Harvest Volume, Value, and Prices**

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Table A.1  
Onshore Landed Volume by Species Groups in 1981 to 2013

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	2,422	17,260	48,314	9,682	28,936	151,464	24,302	3,439	285,821
2012	1,927	8,666	49,144	9,886	28,475	107,652	93,957	7,008	306,716
2013	3,512	26,054	47,629	10,205	31,106	167,499	57,817	5,336	349,159
Avg08-12	2,272	15,507	35,319	9,841	34,718	90,620	52,436	4,234	244,946

- Notes:
1. Landings are reported in thousands of round pounds. Landing data is preliminary for 2013.
  2. Salmon includes landings of steelhead, which have come exclusively from the tribal 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 2013 includes (thousands of round pounds) flatfish (19,503), sablefish (3,842), thornyheads (1,876), rockfish other than thornyheads (3,085), cods other than sablefish (1,023), and other (1,777).
  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 2013 includes landings (thousands of round pounds) of hagfish (2,720), chub mackerel (968), red sea urchin (642), jack mackerel (272), Pacific halibut (205), and other species (529). Shellfish volume excludes aquaculture harvests.

Source: PacFIN annual vessel summary, March 2008, April 2009, March 2010, July 2011, April 2013, and January 2014 extractions.

Table A.2  
Onshore Landed Value by Species Groups in 1981 to 2013

Year	Price	Salmon		Dungeness Crab		Pink Shrimp		Albacore Tuna		Groundfish		Pacific Whiting		Pacific Sardine		Other		Total	
	Index	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal
1981	45.7	24,174	11,047	14,682	6,709	28,523	13,034	14,567	6,657	31,720	14,496	55	25	--	--	11,762	5,375	125,482	57,344
1982	48.5	25,484	12,356	15,537	7,533	19,117	9,269	2,538	1,230	41,382	20,064	0	0	--	--	2,577	1,249	106,634	51,702
1983	50.4	6,033	3,040	15,696	7,910	9,243	4,658	3,738	1,884	36,411	18,349	47	24	--	--	4,280	2,157	75,449	38,023
1984	52.2	9,808	5,118	14,844	7,746	4,125	2,153	1,701	888	28,708	14,981	112	59	--	--	5,915	3,087	65,213	34,031
1985	53.9	16,817	9,056	19,783	10,654	9,723	5,236	1,521	819	31,431	16,927	322	173	--	--	5,054	2,722	84,650	45,587
1986	54.9	27,630	15,181	11,988	6,587	32,998	18,131	2,411	1,325	31,583	17,353	109	60	--	--	5,885	3,234	112,604	61,871
1987	56.3	47,956	26,994	14,836	8,351	53,781	30,273	2,984	1,680	43,265	24,353	61	34	--	--	5,348	3,010	168,230	94,696
1988	58.3	66,972	39,020	19,361	11,280	29,435	17,150	5,712	3,328	41,249	24,033	71	41	--	--	4,738	2,760	167,539	97,612
1989	60.5	23,507	14,228	22,409	13,564	29,582	17,905	1,465	887	41,668	25,221	24	15	--	--	8,868	5,367	127,522	77,187
1990	62.8	15,250	9,573	23,184	14,554	24,897	15,629	2,809	1,764	36,873	23,147	350	220	--	--	10,869	6,823	114,232	71,710
1991	64.9	8,986	5,828	11,506	7,462	18,620	12,076	1,510	979	44,428	28,814	2,113	1,370	--	--	8,562	5,553	95,725	62,083
1992	66.3	5,558	3,687	20,181	13,388	25,909	17,187	5,983	3,969	40,318	26,745	7,656	5,078	--	--	6,109	4,053	111,714	74,106
1993	67.9	3,571	2,425	17,518	11,898	13,121	8,912	5,717	3,883	40,695	27,638	3,371	2,289	--	--	5,616	3,814	89,608	60,859
1994	69.4	2,104	1,459	20,851	14,462	13,879	9,626	5,406	3,750	41,478	28,769	6,197	4,298	--	--	4,754	3,297	94,669	65,662
1995	70.8	5,047	3,574	28,308	20,044	12,145	8,599	5,720	4,050	43,743	30,974	9,886	7,000	--	--	4,556	3,226	109,404	77,467
1996	72.1	4,560	3,288	36,311	26,180	12,984	9,362	10,305	7,430	41,991	30,275	5,751	4,147	--	--	2,694	1,942	114,596	82,623
1997	73.3	3,779	2,772	19,957	14,636	10,786	7,910	10,010	7,342	38,161	27,987	9,303	6,823	--	--	2,867	2,103	94,864	69,573
1998	74.1	3,494	2,590	16,887	12,519	4,302	3,189	8,822	6,540	26,291	19,491	5,067	3,756	1	1	2,587	1,918	67,451	50,005
1999	75.2	2,716	2,042	30,731	23,107	12,728	9,571	5,032	3,784	29,513	22,192	7,870	5,917	114	86	2,317	1,742	91,020	68,441
2000	76.9	5,239	4,029	30,829	23,709	13,253	10,192	9,738	7,489	31,692	24,373	7,907	6,081	1,494	1,149	3,523	2,710	103,676	79,732
2001	78.7	7,432	5,847	24,530	19,296	9,611	7,560	9,609	7,559	25,940	20,405	5,253	4,132	2,058	1,619	3,430	2,698	87,862	69,116
2002	79.9	8,680	6,933	25,992	20,761	14,213	11,353	3,695	2,952	17,790	14,210	4,031	3,219	3,530	2,819	3,634	2,902	81,565	65,149
2003	81.5	10,886	8,869	45,560	37,117	6,200	5,051	7,572	6,169	21,693	17,673	4,471	3,642	3,610	2,941	2,484	2,024	102,477	83,487
2004	83.7	15,526	12,995	51,319	42,954	5,664	4,740	10,925	9,145	19,525	16,342	5,545	4,641	5,818	4,870	2,441	2,043	116,762	97,730
2005	86.4	12,083	10,438	30,788	26,597	7,989	6,901	10,205	8,816	21,387	18,475	8,227	7,107	7,176	6,199	2,817	2,433	100,671	86,965
2006	89.0	5,548	4,940	60,430	53,807	5,048	4,494	9,060	8,067	22,386	19,933	8,955	7,974	4,204	3,743	2,215	1,973	117,847	104,931
2007	91.4	5,100	4,662	41,793	38,202	10,245	9,365	10,358	9,468	22,424	20,497	7,112	6,501	4,979	4,551	2,431	2,222	104,441	95,468
2008	93.2	4,551	4,240	31,304	29,164	14,962	13,939	11,432	10,651	28,920	26,943	7,331	6,830	6,081	5,665	3,131	2,917	107,711	100,349
2009	93.9	3,774	3,544	45,155	42,404	7,255	6,813	10,840	10,179	29,960	28,135	3,961	3,720	5,634	5,291	2,444	2,295	109,022	102,380
2010	95.0	8,099	7,698	34,452	32,746	11,555	10,982	13,069	12,422	26,964	25,629	5,696	5,414	5,526	5,252	2,999	2,851	108,360	102,996
2011	96.9	6,952	6,737	46,112	44,690	25,390	24,607	19,363	18,766	29,344	28,439	17,043	16,518	3,293	3,192	3,649	3,536	151,147	146,485
2012	98.6	7,022	6,925	29,524	29,114	25,033	24,685	15,290	15,077	24,170	23,834	14,816	14,611	9,103	8,977	3,192	3,147	128,150	126,370
2013	100.0	12,412	12,412	71,142	71,142	24,153	24,153	16,079	16,079	22,386	22,386	19,997	19,997	6,283	6,283	4,456	4,456	176,908	176,908
Avg08-12		6,079		37,309		16,839		13,999		27,872		9,769		5,927		3,083		120,878	

- Notes: 1. Nominal value is the revenue received by fishermen/harvesters in the landing year. Real value is in thousands of 2013 dollars adjusted using the GDP implicit price deflator developed by U.S. Bureau of Economic Analysis.
2. Groundfish in 2013 includes landings (real ex-vessel value in thousands) of sablefish (\$7,663), flatfish (\$9,854), thornyheads (\$977), rockfish other than thornyheads (\$2,043), cods other than sablefish (\$1,211), and other (\$639). "Other" in 2013 includes (real ex-vessel value in thousands) hagfish (\$2,282), Pacific halibut (\$982), red sea urchin (\$360), other shrimp (\$163), razor clam (\$151), white sturgeon (\$149), ghost shrimp (\$113), basket cockle (\$84), and other species (\$172). Shellfish value excludes private lands harvest.
3. Notes and sources from volume table concerning species composition also apply to this table.



Table A.3  
Annual Ex-Vessel Prices by Selected Species and Species Groups in 1971 to 2013

Species	1971	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
Troll Chinook (ocean)	2.63	4.14	3.55	6.62	6.77	4.88	3.31	4.02	4.03	3.21	3.32	2.79	2.08	1.89	2.25	2.28	1.78	1.68	2.11	3.59	3.21	5.35	5.38	5.43	4.64	5.02	5.35	5.04	5.11	
Troll coho (ocean)	1.61	3.17	2.64	4.07	5.95	3.17	1.65	2.43	2.67	1.53	1.33	1.45	-	-	1.19	1.20	0.87	0.82	0.91	1.29	1.88	2.84	1.81	2.52	1.89	2.03	1.80	1.94	2.17	
Net Chinook (below Bonneville Dam)															1.88	1.87	1.80	1.58	1.04	2.11	1.95	2.82	3.64	3.04	2.17	2.91	2.55	2.67	2.57	
Spring															3.77	3.60	3.72	4.11	3.44	4.50	4.03	4.80	6.10	6.77	5.12	5.22	5.09	6.00	6.40	
Fall															1.48	1.30	0.82	0.66	0.81	1.59	1.75	2.30	2.82	2.70	2.07	2.16	2.21	2.17	2.37	
Net Chinook (above Bonneville Dam)															0.72	0.83	0.52	0.36	0.32	0.89	0.70	1.73	2.23	2.13	1.42	2.00	2.30	2.33	2.10	
Spring															-	2.43	1.63	1.48	1.34	2.02	1.96	2.64	4.06	4.82	3.28	4.07	3.63	4.88	4.63	
Fall															0.76	0.81	0.31	0.22	0.23	0.91	0.67	1.60	2.26	1.77	1.15	1.32	1.96	1.87	1.92	
Net coho (below Bonneville Dam)															1.11	0.68	0.36	0.42	0.66	1.09	1.23	1.48	1.78	1.39	1.27	1.44	1.66	1.65	1.84	
Net steelhead (above Bonneville Dam)															0.55	0.37	0.20	0.12	0.09	0.26	0.32	0.56	0.72	0.75	0.65	0.89	1.16	1.22	1.09	
Dungeness crab	1.27	2.30	2.71	1.66	1.94	2.10	2.94	2.69	2.48	1.92	2.34	1.68	2.37	2.57	2.49	2.76	2.53	2.09	1.90	1.88	1.74	1.81	2.45	2.25	2.07	2.17	2.67	3.41	2.73	
Pink shrimp	0.54	0.89	0.46	0.70	1.00	1.10	1.42	0.66	1.21	0.60	0.86	0.49	1.00	0.55	0.62	0.52	0.34	0.34	0.30	0.46	0.51	0.41	0.51	0.59	0.33	0.37	0.53	0.51	0.51	
Albacore tuna	1.23	1.44	1.08	0.78	1.38	1.89	1.10	1.00	1.30	1.36	1.20	1.20	1.14	1.09	1.11	1.11	1.07	0.85	0.83	1.02	1.26	1.06	0.99	1.29	1.08	1.22	2.00	1.55	1.58	
Groundfish species group	0.36	0.48	0.48	0.63	0.71	0.39	0.47	0.51	0.64	0.51	0.55	0.50	0.79	0.72	0.67	0.81	0.82	0.84	0.84	0.76	0.79	0.82	0.73	0.76	0.72	0.73	1.01	0.85	0.72	
Nearshore live fishery						-	-	-	-	-	-	-	-	-	1.95	3.59	4.27	3.93	3.98	3.61	3.31	3.24	3.12	3.10	2.95	2.77	2.96	2.99	3.19	3.02
Sablefish						0.45	0.44	0.55	0.78	0.73	0.93	0.81	1.88	2.17	1.57	1.93	1.78	1.73	1.89	1.47	1.72	1.88	1.94	2.26	2.33	2.51	3.52	2.46	1.99	
Trawl gear						0.32	0.34	0.42	0.60	0.61	0.66	0.63	1.72	1.71	1.31	1.60	1.54	1.29	1.54	1.17	1.35	1.53	1.65	1.99	1.98	2.03	2.47	1.76	1.63	
Fixed gear						0.62	0.58	0.71	0.96	0.97	1.37	1.13	2.10	2.93	1.90	2.29	2.14	2.27	2.37	1.91	2.14	2.39	2.45	2.79	2.87	3.25	4.31	2.97	2.37	
Widow rockfish						-	-	0.46	0.57	0.43	0.42	0.40	0.46	0.40	0.50	0.57	0.52	0.54	0.50	0.50	0.43	0.48	0.44	0.39	0.45	0.45	0.45	0.45	0.45	
Yellowtail rockfish						-	-	0.47	0.57	0.45	0.47	0.46	0.52	0.50	0.51	0.58	0.57	0.58	0.58	0.62	0.58	0.54	0.54	0.64	0.47	0.52	0.53	0.53	0.51	
Thomyhead, longspine						-	-	-	-	-	-	-	1.35	0.98	0.94	1.11	1.12	1.06	0.79	0.61	0.67	0.68	0.49	0.42	0.28	0.32	0.38	0.42	0.38	
Thomyhead, shortspine						-	-	-	-	-	-	-	1.57	1.14	1.19	1.32	1.27	1.25	0.97	0.79	0.82	0.86	0.68	0.70	0.57	0.56	0.60	0.66	0.63	
Thomyhead, mixed						-	-	0.46	0.58	0.61	0.70	0.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Pacific Ocean perch						0.35	0.42	0.45	0.56	0.42	0.45	0.40	0.41	0.37	0.45	0.56	0.52	0.55	0.54	0.55	0.54	0.52	0.52	0.51	0.51	0.51	0.51	0.50	0.47	
Lingcod						0.49	0.49	0.48	0.67	0.56	0.51	0.54	0.60	0.63	1.01	1.45	1.47	1.44	1.31	1.20	1.16	1.12	1.21	1.33	1.34	1.36	1.10	1.05	1.08	
Arrowtooth flounder						0.20	0.20	0.19	0.26	0.16	0.18	0.14	0.16	0.13	0.13	0.15	0.15	0.16	0.15	0.14	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.12	0.11	
Dover sole						0.48	0.45	0.47	0.56	0.46	0.47	0.40	0.47	0.41	0.44	0.47	0.47	0.46	0.46	0.45	0.44	0.42	0.40	0.39	0.34	0.32	0.42	0.43	0.45	
English sole						0.63	0.64	0.62	0.72	0.61	0.51	0.44	0.50	0.43	0.42	0.47	0.45	0.44	0.42	0.42	0.37	0.34	0.33	0.32	0.30	0.30	0.30	0.33	0.30	
Petrale sole						1.15	1.38	1.36	1.46	1.38	1.27	1.13	1.37	1.26	1.27	1.31	1.25	1.13	1.24	1.21	1.06	1.11	1.04	1.03	0.93	1.17	1.48	1.53	1.25	
Cod, Pacific						0.47	0.49	0.47	0.58	0.43	0.46	0.48	0.55	0.53	0.60	0.79	0.74	0.72	0.74	0.57	0.53	0.54	0.58	0.56	0.47	0.52	0.58	0.61	0.55	
Whiting, Pacific						0.153	0.331	0.165	0.151	0.124	0.073	0.043	0.067	0.057	0.049	0.052	0.045	0.057	0.055	0.043	0.061	0.066	0.075	0.119	0.063	0.082	0.113	0.138	0.119	
Sardines						-	-	-	-	-	-	-	-	-	0.067	0.071	0.073	0.070	0.065	0.073	0.072	0.053	0.054	0.120	0.119	0.120	0.136	0.097	0.109	
Halibut, Pacific						2.33	2.16	1.82	2.76	2.35	2.89	1.92	2.45	2.52	2.63	2.74	2.42	2.40	3.09	3.03	2.90	3.42	3.80	4.00	3.06	4.18	5.43	4.96	4.79	
Sturgeon, white						2.28	2.25	2.71	2.96	3.18	3.03	2.02	2.48	1.47	1.80	2.03	2.22	2.00	2.11	2.10	2.04	2.26	2.31	2.29	2.08	2.20	2.64	2.72	3.20	
Sea urchin, red						-	-	-	0.51	0.57	1.17	1.29	1.14	0.73	0.74	0.90	0.81	0.54	0.52	0.44	0.35	0.42	0.40	0.40	0.48	0.56	0.55	0.58	0.56	

- Notes: 1. Annual prices are in 2013 dollars. Adjustment used GDP implicit price deflator developed by U.S. Bureau of Economic Analysis.  
2. Prices are for onshore landings. There will be differences for the same species, such as Pacific whiting, when delivered offshore.  
3. Prices are for round pound equivalents, except for troll Chinook and troll coho prior to 1981 which are based on dressed weight.  
4. Prices where landings are less than \$500 annually are shown with a dash.  
5. Inriver salmon prices include Oregon and Washington side landings. Washington data is estimated complete through November for 2013 for steelhead and overall net Chinook below Bonneville.  
6. The nearshore live groundfish fishery includes seven indicator species that are typically landed live in Oregon. These include cabezon, lingcod, black and blue rockfish, greenling, and other unspecified rockfish (not uniquely identified on a fish ticket).

Source: Oregon Department of Fish and Wildlife for years prior to 1981. PacFIN March 2008, April 2009, March 2010, July 2011, April 2013, and January 2014 extractions for 1981 to 2013. PFMC "Review of Ocean Salmon Fisheries," annual in February, for inriver Chinook and coho.

Table A.4  
Dungeness Crab Landings in December for 1981 Through 2013

Year	Round Pounds	Nominal Value	Real Value	Real Price
1981	3,184,544	2,844,666	6,224,850	1.95
1982	1,468,583	1,562,528	3,222,717	2.19
1983	2,473,459	3,743,129	7,427,598	3.00
1984	2,808,790	4,014,698	7,693,236	2.74
1985	5,258,744	6,928,882	12,866,163	2.45
1986	2,816,713	3,528,700	6,422,162	2.28
1987	4,065,019	5,078,231	9,021,630	2.22
1988	4,792,231	5,709,134	9,798,984	2.04
1989	5,237,156	6,351,575	10,493,525	2.00
1990	5,450,504	8,221,648	13,096,856	2.40
1991	2,040,578	2,512,536	3,874,034	1.90
1992	6,288,449	6,297,642	9,493,580	1.51
1993	5,817,981	6,733,210	9,913,986	1.70
1994	6,112,761	8,568,975	12,354,411	2.02
1995	2,975,528	3,751,354	5,297,875	1.78
1996	4,587,428	7,477,063	10,370,559	2.26
1997	5,316,372	8,762,961	11,948,492	2.25
1998	5,616,262	8,728,140	11,773,326	2.10
1999	8,819,318	15,514,668	20,633,069	2.34
2000	4,301,154	7,443,190	9,678,401	2.25
2001	6,585,185	11,047,470	14,043,859	2.13
2002	5,848,903	8,182,682	10,244,539	1.75
2003	12,500,377	19,428,832	23,848,100	1.91
2004	15,994,101	23,065,574	27,557,319	1.72
2005	3,339	4,882	5,651	1.69
2006	5,698,047	10,502,130	11,794,849	2.07
2007	7,472,442	15,417,796	16,866,947	2.26
2008	8,991,377	15,094,414	16,201,908	1.80
2009	17,807,492	31,363,825	33,398,396	1.88
2010	10,415,450	19,199,106	20,199,133	1.94
2011	6,347,026	14,845,635	15,318,035	2.41
2012	662,311	1,536,450	1,558,090	2.35
2013	8,489,511	23,697,301	23,697,301	2.79

- Notes: 1. Prices adjusted to real 2013 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. Several season openings, such as December 2005 and December 2012, were delayed due to meat quality and density standards not being met.

Source: PacFIN fish ticket data, March 2008, April 2009, March 2010, July 2011, April 2013, and January 2014 extractions.

Table A.5  
Onshore Landed Volume and Value by Species Groups by Port Groups in 2013

<u>Port Group</u>	<u>Salmon</u>	<u>D. Crab</u>	<u>P. Shrimp</u>	<u>A. Tuna</u>	<u>Groundfish</u>	<u>P. Whiting</u>	<u>P. Sardine</u>	<u>Other</u>	<u>Total</u>
<u>Volume</u>									
Other Columbia River	2,011	0	0	0	0	0	0	57	2,068
Astoria	44	5,861	7,290	2,592	17,859	71,801	57,817	1,902	165,166
Tillamook	87	1,144	33	257	38	0	0	234	1,793
Pacific City	4	5	0	4	41	0	0	0	55
Newport	274	7,166	16,034	4,929	5,009	95,698	0	1,155	130,266
Florence	2	6	0	19	1	0	0	6	33
Winchester Bay	100	665	0	199	23	0	0	6	993
Coos Bay	794	4,642	19,843	1,919	4,555	0	0	1,215	32,969
Bandon	4	0	0	11	22	0	0	0	37
Port Orford	91	1,257	0	21	466	0	0	504	2,339
Gold Beach	3	8	0	0	94	0	0	126	232
Brookings	97	5,301	4,428	253	2,998	0	0	131	13,208
<u>Value</u>									
Other Columbia River	4,800	0	0	0	0	0	0	151	4,951
Astoria	213	15,969	3,577	4,351	10,408	8,591	6,283	824	50,217
Tillamook	421	3,208	18	341	87	0	0	185	4,260
Pacific City	23	17	0	5	80	0	0	1	128
Newport	1,471	19,897	8,281	7,612	4,718	11,406	0	1,507	54,892
Florence	9	23	0	46	1	0	0	24	103
Winchester Bay	518	2,014	0	383	52	0	0	33	3,000
Coos Bay	3,991	12,691	10,088	2,939	3,575	0	0	1,236	34,519
Bandon	24	1	0	15	74	0	0	0	114
Port Orford	474	3,289	0	29	1,133	0	0	304	5,229
Gold Beach	17	28	0	0	267	0	0	76	389
Brookings	451	14,006	2,188	357	1,990	0	0	115	19,107

- Notes: 1. Landings are reported in thousands. Landing data is preliminary for 2013.  
 2. Astoria includes Astoria, Gearhart/Seaside, and Cannon Beach; Tillamook includes Tillamook/Garibaldi, Netarts Bay, and Nehalem Bay; Newport includes Newport, Depoe Bay, Siletz Bay, and Waldport.

Source: PacFIN annual vessel summary, January 2014 extraction.