

# Oregon Commercial Fishing Industry Year 2016 Economic Activity Summary Version 1.5, April 2017

## Abstract

The Oregon commercial fishing industry generated an estimated \$544 million household income in 2016. (Landing information and economic model results are preliminary.) The previous five-year average annual income was \$589 million with range of \$496 million in 2015 to \$670 million in 2013. (All values are expressed in 2016 dollars.) About half of this amount is generated by distant water fisheries, such as the West Coast at-sea fishery and fisheries in Alaska, whose revenue is returned to households in Oregon. The generated household income in 2016 is equivalent to about 10 thousand jobs in the statewide economy.

There are ups and downs in specific fisheries and in fishing dependent communities, but the consistency in industry activity overall has allowed related businesses (provisioning, repair, gear manufacturing, etc.) to develop. Not included in the industry estimated economic contribution estimates are the associated enforcement, management, research, and training employment; boat building businesses; and, seafood retail operations.

The Oregon commercial fishing industry onshore landings in 2016 were 225.4 million pounds worth \$144.1 million in harvest value. The harvest value was a slight increase over 2015 (\$137.7 million), but was still below the previous five-year average (\$154.4 million). (The accompanying figure shows percent change between years 2016 and 2015 for selected fisheries.) Some notable trends were salmon and pink shrimp volumes were down in 2016, while Dungeness crab landings returned to close to the previous five year average landings.

Fishery	Price	Volume
Salmon	18%	-42%
Dungeness crab	-12%	72%
Pink shrimp	-8%	-34%
Sablefish	6%	11%
Pacific whiting	1%	19%

Salmon prices were up in both the ocean troll and Columbia River gillnet fisheries in 2016. The trawl and pot gear sablefish (also called black cod) fishery comprises about half the harvest value of the overall groundfish fishery. Sablefish volume and the two-gear harvested average price increased in 2016, but did not reach a record level price received in 2011. Pacific whiting volume increased in 2016, but is still below the previous five-year average. Pacific whiting price remained about 30 percent below the previous five-year average.

Significant changes that took place in the Oregon commercial fishery were the continued closure of the Pacific sardine directed fishery, emergence of market squid and northern anchovy fishery, and absence of the Pacific mackerel fishery. It should be noted that both the squid and anchovy species were mostly harvested by out-of-State home-port vessels. Squid were harvested by California home-port vessels, while anchovy was harvested by Alaska home-port vessels.

Commercial wild harvesting activities 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.

## Summary

The Oregon commercial fishing industry harvest value in 2016 (\$144.1 million) had a slight increase over 2015 (\$137.7 million), but was still below the previous five-year average (\$154.4 million).<sup>1,2,3</sup> Different fisheries had ups and downs compared to previous years (Table 1).

- The **ocean salmon fishery** harvest volume in 2016 (595 thousand pounds) was less than one-half compared to 2015 (1.4 million pounds). Prices were up in both the ocean Chinook fishery (\$7.15 in 2016 and \$5.41 in 2015) and the **Columbia River gillnet Chinook fishery** (\$3.61 in 2016 and \$2.74 in 2015) and **gillnet coho fishery** (\$1.83 in 2016 and \$1.54 in 2015). Oregon wild capture salmon is a specialty product sensitive to price increases when supplies are low. Combining the salmon fisheries results in a harvest value of \$8.3 million (\$4.3 million for the ocean salmon fishery and \$4.1 million for the Columbia River salmon fishery). The ocean Chinook salmon fishery south of Cape Falcon (five miles south of Cannon Beach) is forecast to be continued poor in 2017 due to contributing stocks weakness: moderate returns to Oregon coastal rivers, record low returns to the Klamath River, and low returns of the ESA listed Sacramento River winter-run.
- Many ocean salmon fishery vessels also participate in the troll gear **albacore tuna fishery** (311 vessels participated in the ocean salmon fishery in 2016 and 155 vessels participated in both the ocean salmon fishery and the tuna fishery). Volume was down a bit in 2016 (7.3 million pounds) as compared to 2015 (7.6 million pounds). Prices increased in 2016 (\$1.72) as compared to 2015 (\$1.23). The harvest value of the fishery in 2016 was \$12.5 million and in 2015 was \$9.3 million.
- The **Dungeness crab fishery** (usually the highest harvest value fishery for Oregon) had a very good season at \$51.3 million harvest value despite prices (average season price \$3.60) being down 12 percent over 2015 (\$4.11). The 2016-2017 season which normally would have opened on December 1, 2016 was delayed until the middle of January 2017 due to crab health and price settlement. The fishery faced generally bad weather conditions in January.
- The **pink shrimp fishery** had a one-third drop in harvest volume (35.5 million pounds in 2016 and 53.5 million pounds in 2015). Prices continued to be high in 2016 (season and size average \$0.71) as compared to a previous five-year average (season and size average \$0.59). The fishery harvest value was \$25.1 million in 2016. The drop in landings was



Photo credit is Smithsonian Tropical Research Institute. Northern anchovies generally move offshore in winter and return nearshore, including bays and estuaries, in the spring, summer and fall. There is speculation that the populations of northern anchovies and Pacific sardine are two forage fish with an inverse relationship determined by large-scale, naturally occurring temperature variations. Anchovies frequently seem to be yawning. The mouth is opened wide to help strain tiny plant and animal plankton from the water.

due to a small Year 2 size class. Large catches of the Year 1 size class in 2016 holds promise that the 2017 season will have moderately improved harvests.

- Quotas for the **groundfish fishery** (other than sablefish and whiting) increased over recent years. This increase was partially due to some restrictions on species in overfished status being lifted. Aggregate prices for flatfish (soles, flounders, etc.) and rockfish in 2016 were about the same as 2015. With the increase in volume, the harvest value at \$16.8 million was up in 2016. The **sablefish fishery** (also called black cod) had an uptick in prices (\$2.73 in 2016 and \$2.59 in 2015 when averaged over trawl and fixed gear sub-fisheries) and generated \$15.1 million harvest value in 2016.
- The large 2014 year class in the **Pacific whiting fishery** raised quotas in 2016. Onshore landings in 2016 (113.0 million pounds) were almost 20 percent higher than in 2015 (94.9 million pounds). More surimi was produced in 2016 as compared to several years ago which means processors cannot afford to pay harvesters as much as when headed and gutted is the product form. There was demand in 2016 for a new product form frozen, whole, and boxed that is shipped to Africa markets. Prices in 2016 were \$0.077 as compared to a five-year average \$0.117. The harvest value was \$8.7 million in 2016 as compared to \$16.1 million for the previous five-year average.
- The seine gear **Pacific sardine fishery** was restricted to an incidental fishery in 2016 as resource abundances have disappeared from what they were a few years ago. There was an unusually high volume of **northern anchovy** landings made by three vessels (two of which are Alaska home-port vessels) harvesting 11.7 million pounds worth \$1.2 million in Oregon in 2016.<sup>4</sup> During the previous five years, the average was 163 thousand pounds although only three of the five years had landings. Another coastal pelagic species with significant landings in the past was **Pacific (chub) mackerel**. Landings in 2014 were 2.6 million pounds, but landings were absent in 2015 and 2016. There is a limited market as bait or human consumption for this species. It could be abundances did not make targeting viable or there was processor's reluctance to purchase harvests.
- There was an uncommon Oregon fishery for **market squid** (2.8 million pounds, \$1.1 million) that occurred in 2016.<sup>5</sup> It was mostly harvested by California home-port vessels (11 out of the 14 vessels) who usually participate in the lucrative Santa Barbara channel market squid fishery. The California fishery collapsed in 2016 which is common for the year after a West Coast El Niño event. Oregon landings were hauled back to wetfish processors in California for distribution to Asia markets for human consumption and bait, as well as to domestic markets. It is interesting that some of the boxed, frozen squid is trucked back to Oregon to be used in the Dungeness crab fishery as bait.
- The other notable Oregon fisheries in 2016 were **hagfish**, also called slime eel (1.5 million pounds, \$1.3 million harvest value), **red sea urchin** (252 thousand pounds, \$153 thousand), and **Pacific halibut** (248 thousand pounds, \$1.4 million). All three of these fisheries volume and price was about the same as in 2015.<sup>6</sup>

The central coast port groups (Tillamook, Newport, and Coos Bay) have increased harvest value in 2016 as compared to 2015 (Table 2). Astoria's share dropped from 38 percent in 2015 to 32 percent in 2016. The Brookings port group (includes Port Orford) share increased from 10 percent in 2015 to 13 percent in 2016. A new processor facility with a pink shrimp line owned

by BC Fisheries, LLC opened at the Port of Brookings Harbor in the spring 2016. Landings at ports do not always correspond with processing occurring at those ports. Buyers will transport the landings to central processing facilities that can be in Oregon or other states.

The harvest value represents revenue for 1,051 different vessels making 27,365 deliveries to Oregon ports in 2016 (Table 3). This is about the same number of deliveries, but decreased number of vessels as in 2015. The average revenue for active vessels (harvest revenue more than \$500) was \$146,719 in 2016. The active vessel median revenue was \$35,754 in 2016. The significant differences between the average and the median indicate that the industry is comprised of mostly lower revenue producing vessels and lesser numbers of high revenue producing vessels.<sup>7</sup> There were 120 processing plants, restaurants, etc. that each purchased at least \$10 thousand of Oregon landings. The top five parent processing companies purchased 70 percent measured by harvest value in 2016.<sup>8</sup>

Oregon onshore landings from harvests in the Pacific Ocean and Columbia River catch areas are processed into seafood products that are sold locally or are shipped to high volume processing and distribution centers. The seafood products enter niche or commodity markets, both domestic



*Photo credit is Pacific Seafood Group. Pink shrimp processing at Newport Shrimp Company located in Newport, Oregon. Oregon pink shrimp, also called bay or salad shrimp, was the first shrimp fishery in the world to achieve MSC certification in 2007. The fishery was re-certified in 2013.*

and global. 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 (BC). For a comparison, Oregon's harvest value in 2014 was only six percent of all U.S. West Coast, Alaska, and BC landings (Table 4). Some Oregon fisheries have a higher harvest value proportion in this northern Pacific Ocean area, such as Dungeness crab at 19 percent and pink shrimp at 56 percent in 2014.

The Oregon commercial fishing industry is an important contributor to the State's economy.

The industry's onshore fisheries (not including

distant water fisheries) generated \$260 million household income in 2016 (Table 5 and Figure 1). This compares to a 2015 economic contribution of \$208 million.<sup>9</sup>

Distant water fisheries are a significant component of the commercial fishing industry's total economic effects in Oregon. These fisheries include harvests adjacent to the three West Coast continental states and delivered by catcher-vessels to motherships or caught by catcher processors, harvests in Alaska waters, and harvests in the western Pacific. Detailed estimates are not yet available for 2016.<sup>10</sup> Distant water fisheries were 49 percent of the commercial fishing industry statewide economic contributions in 2014. They were 58 percent in the Newport area in 2014.

The estimated household income generated by the Oregon commercial fishing industry that repeats the most recent estimates for distant water fisheries is \$544 million in 2016.<sup>11</sup> Using a statewide ratio of household net earnings to full and part time jobs, the economic contribution is equivalent to about 10 thousand jobs. This job estimate is a slight increase over 2015, but about a 13 percent decrease over the previous five-year average.

The Oregon commercial fishing industry representation along Oregon Coast economies varies. The industry in 2014 represented about one-half percent of statewide net earnings and 10 percent of Oregon Coast net earnings. The commercial fishing industry share of local net earnings in 2014 ranged from over 20 percent in Lincoln County to two percent in Tillamook County.

Economic contribution due to the commercial fishing industry may also be generated from many activities other than just harvesting and seafood processing – for example, visitors attracted to food service and retail markets selling local harvests, and tourists drawn to working waterfronts. There are boat building and gear manufacturing businesses at some ports. Management, enforcement/safety, research, education, and training are related economic contributors. The commercial fishing industry is one component in a larger context maritime industry that would include these additional economic contribution activities.

Commercial wild harvesting activities 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.

While individual fisheries harvest value and economic contributions are important indicators for showing commercial fishing industry trends, the health of the industry has a social context for the well-being of harvesters, processor workers, affected communities, 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.

## References

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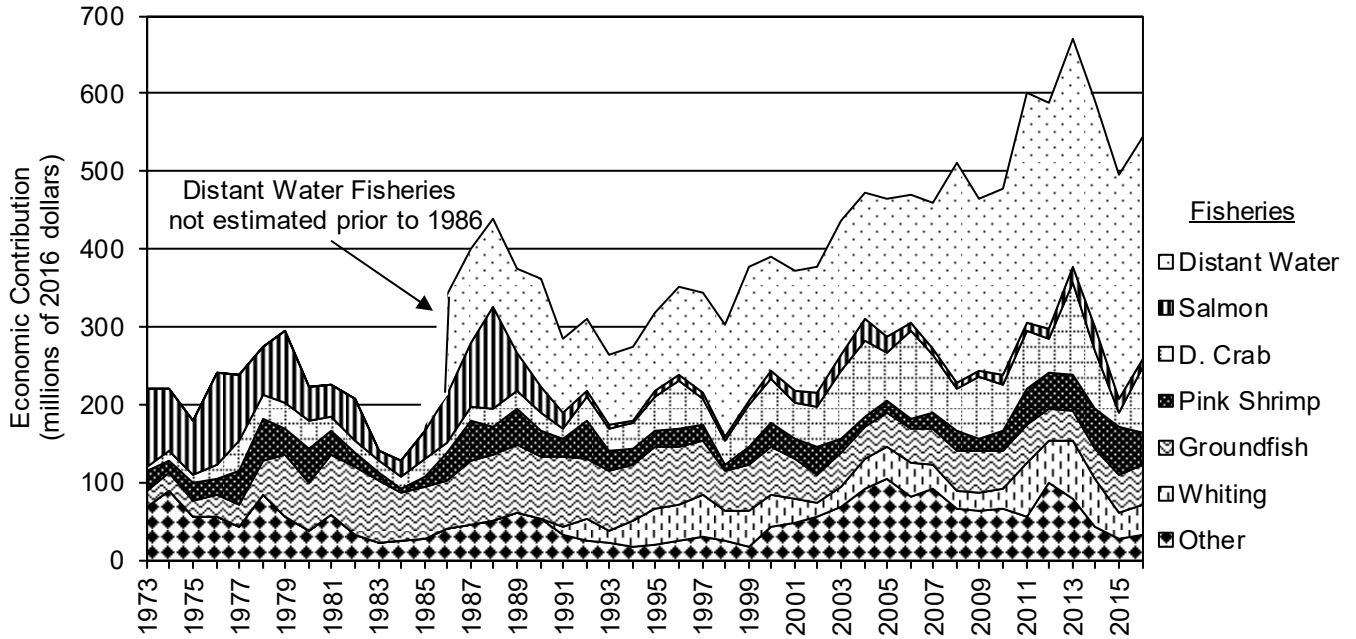
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1. The report was prepared by The Research Group, LLC, Corvallis, Oregon for the Oregon Department of Fish and Wildlife, Marine Resource Program (ODFW-MRP). The author is solely responsible for analysis methods, interpretations, and conclusions. A paraphrasing and non-attributed writing style is used for readability reasons. All consulted reports are included in the references section. ODFW-MRP fish managers need to be acknowledged for their help in generating the summary descriptions. Hans Radtke (natural resource consulting economist) and Gil Sylvia (Marine Resource Economist and OSU Coastal Oregon Marine Experiment Station Director) provided valuable guidance and insight on the status of Oregon fisheries.
  2. Volume is expressed as round pounds. Weight for species delivered dressed is converted to a round weight. All values are expressed in 2016 dollars except where noted otherwise. The GDP Implicit Price Deflator developed by the U.S. Bureau of Economic Analysis was used for the dollar adjustment. Prices are averaged across fishery seasons and across delivery size and condition.
  3. Descriptions are based on incomplete onshore delivery data and economic contribution estimates are from abridged methods. Therefore, presented material should be considered preliminary subject to changes as additional data and analysis becomes available.
  4. The northern anchovy fishery is open access in Oregon offshore waters limited to legal gear under the federal Coastal Pelagic Species Fishery Management Plan. ODFW instituted trip limits for this species in 2016.
  5. The previous year for significant market squid Oregon landings was 1.8 million pounds in 1985.
  6. Commercially harvested shellfish (such as razor clams, gaper clams, and basket cockle) is included in onshore delivery data, therefore included in economic contribution estimates. Aquaculture products such as oysters grown in estuaries are not included in the delivery database and must be treated separately for modeling economic contributions.
  7. Another statistic showing revenue heterogeneity is 79 percent of vessels had less than \$100 thousand harvest value in 2015 and their landings were 17 percent of all harvest value. Another way of saying this is 21 percent of the vessels in 2015 had 83 percent of all harvest value.
  8. The top five parent companies are: Bornstein Seafoods, California Shellfish Co., Fishhawk Fisheries, Pacific Seafood Group, and Trident Seafoods Corp.

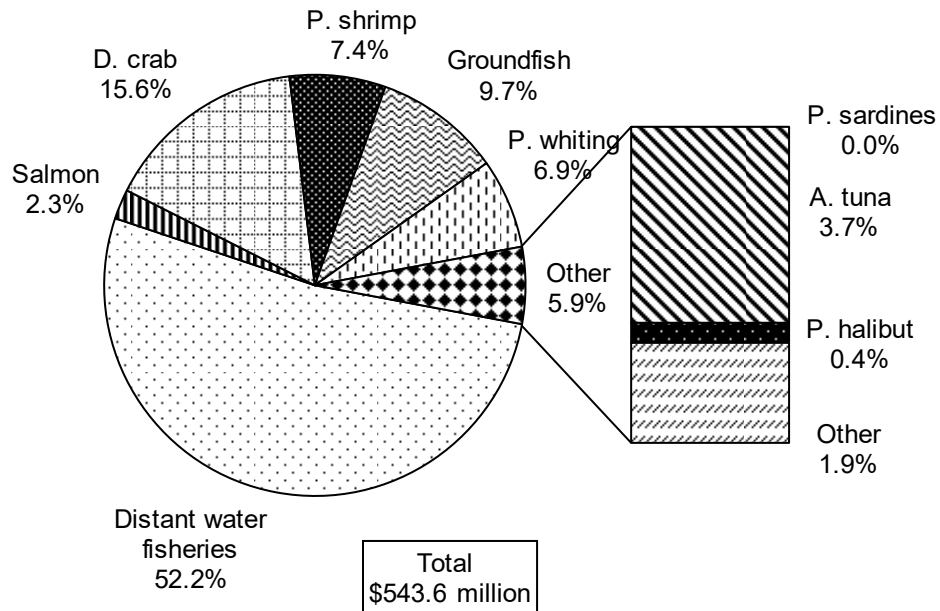
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9. The economic contribution includes income generated by the spending from harvesting and primary processing sectors. The economic contributions also include the income generated by the expenditures from supporting industries and businesses in the region as well as re-spending by households who receive earnings from the fishing and supporting industry (or the so called "multiplier" effect).
  10. The most recent year that distant water fisheries model results are available is 2014. The results show \$291 million household income was contributed to the statewide economy. This result would make the inflation adjusted estimate \$284 million in 2016.
  11. Shellfish aquaculture is not included in the economic contribution which has been estimated to be \$10 million household income in 2014.

Figure 1

Economic Contributions From Onshore Landings in 1973 to 2016 and Distant Water Fisheries in 1986 to 2016 (Preliminary)



Economic Contributions by Major Fishery in 2016 (Preliminary)



- Notes: 1. Economic contributions are expressed as household income in millions of 2016 dollars.  
 2. All notes on Table 5 apply to the economic contribution estimates made for the figure.



Table 1  
Oregon Harvested Volume and Ex-Vessel Value by Fishery for Five-Year Average, 2015, and 2016  
(Preliminary)

Fishery	2011-2016 Value	2011-2015 Five Year Average			2015			2016		
		Volume	Value	Price	Volume	Value	Price	Volume	Value	Price
Salmon		3,487	12,035	3.45	3,159	12,021	3.81	1,844	8,308	4.51
Troll Chinook		1,428	7,491	5.25	1,369	7,409	5.41	595	4,254	7.15
Troll coho		20	36	1.79	13	21	1.66	0	0	
Net Chinook		1,506	3,775	2.51	1,562	4,281	2.74	1,001	3,610	3.61
Net coho		491	699	1.42	171	264	1.54	216	396	1.83
Other species/gear		42	33	0.80	44	46	1.04	31	48	1.53
Dungeness crab		15,323	46,842	3.06	8,261	33,970	4.11	14,246	51,318	3.60
Pink shrimp		50,113	29,769	0.59	53,516	40,946	0.77	35,528	25,093	0.71
Albacore tuna		9,225	14,719	1.60	7,577	9,333	1.23	7,250	12,502	1.72
Groundfish (other than sablefish and whiting)		25,579	14,121	0.55	27,965	16,193	0.58	30,179	16,848	0.56
Trawl gear LE		24,909	12,599	0.51	27,225	14,586	0.54	29,464	15,498	0.53
Fixed gear LE		155	188	1.22	130	159	1.22	134	163	1.22
Fixed gear OA		484	1,316	2.72	561	1,414	2.52	488	1,175	2.41
Sablefish		4,395	12,018	2.73	5,010	12,976	2.59	5,538	15,140	2.73
Trawl gear LE		1,968	4,015	2.04	2,175	4,364	2.01	2,323	4,674	2.01
Fixed gear LE		2,254	7,468	3.31	2,611	7,972	3.05	2,859	9,372	3.28
Fixed gear OA		173	535	3.09	224	640	2.86	356	1,095	3.08
Pacific whiting		137,950	16,103	0.117	94,907	7,240	0.076	113,035	8,694	0.077
Pacific sardine		39,617	4,790	0.121	4,699	823	0.175	9	0	0.036
Pacific halibut		218	1,178	5.41	263	1,437	5.47	248	1,392	5.60
Other		5,410	2,860	0.53	4,502	2,745	0.61	17,572	4,823	0.27
Hagfish		2,010	1,629	0.81	1,835	1,543	0.84	1,499	1,300	0.87
Red sea urchin		551	324	0.59	446	264	0.59	252	153	0.61
Pacific (chub) mackerel		1,518	122	0.080	99	12	0.124	18	1	0.084
Total		291,318	154,435	0.53	209,860	137,684	0.66	225,448	144,119	0.64

- Notes: 1. Volume and ex-vessel value are in thousands. Values are in 2016 dollars adjusted using the GDP implicit price deflator developed by 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. 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.
3. Acronyms: LE - limited entry, OA - open access.
4. D. crab is shown seasonally by December to November for each year, for example 2015 D. crab includes December 2014 to November 2015.
5. Starting in 2011 a small amount of sablefish in the LE trawl individual transferable quota (ITQ) program is harvested with fixed gear.
6. Other includes northern anchovy (11.7 million pounds, \$1.2 million, \$0.10 per pound) and market squid (2.8 million pounds, \$1.1 million, \$0.40 per pound) in 2016.

Source: PacFIN fish ticket data, April 2013, March 2014, April 2015, November 2016, and March 2017 extractions.

Table 2  
Oregon Onshore Harvested Volume and Ex-vessel Value by Port Groups for 2015 and 2016 (Preliminary)

<u>Port Group</u>	<u>2015</u>			<u>2016</u>		
	<u>Volume</u>	<u>Value</u>	<u>Share</u>	<u>Volume</u>	<u>Value</u>	<u>Share</u>
Astoria	99,019	42,867	38%	105,247	46,922	32%
Tillamook	1,121	2,351	2%	1,392	3,413	2%
Newport	67,825	33,453	29%	84,994	48,403	33%
Coos Bay	24,729	23,686	21%	22,399	30,298	20%
Brookings	<u>11,192</u>	<u>11,917</u>	<u>10%</u>	<u>12,885</u>	<u>19,500</u>	<u>13%</u>
Total	203,886	114,275	100%	226,918	148,536	100%

- Notes: 1. Volume and ex-vessel value are in thousands. Values are nominal.
2. Astoria includes ports of Astoria, Gearhart-Seaside, and Columbia River ports; Tillamook includes Tillamook/Garibaldi, Pacific City, Nehalem, and Netarts; Newport includes Newport, Depoe Bay, Waldport, and Yachats; Coos Bay includes Coos Bay, Bandon, Florence, and Winchester Bay; and Brookings includes Brookings, Gold Beach, and Port Orford.
3. Onshore landings includes the Oregon side landings in the Columbia River non-Indian and tribal salmon fishery.

Source: PacFIN fish ticket data and annual vessel summary, November 2016 and March 2017 extractions.

Table 3  
Oregon Vessel Counts and Deliveries by Fishery in 2012 to 2016 (Preliminary)

Fishery	2012			2013			2014			2015			2016 (Preliminary)		
	Vessel Counts		Deliveries	Vessel Counts		Deliveries	Vessel Counts		Deliveries	Vessel Counts		Deliveries	Vessel Counts		Deliveries
	Total	>\$500	Total	Total	>\$500	Total	Total	>\$500	Total	Total	>\$500	Total	Total	>\$500	Total
Salmon	578	494	8,337	588	531	10,610	698	636	11,952	687	607	9,672	510	430	6,737
Troll Chinook	369	323	3,798	397	371	5,249	491	455	5,845	485	448	4,551	311	267	2,261
Troll coho	30	7	50	40	4	56	235	70	597	50	18	113	0	0	0
Net Chinook	186	168	4,141	167	158	4,917	178	169	5,368	170	154	4,584	177	157	4,002
Net coho	140	73	1,386	144	98	1,852	162	134	3,109	144	82	1,574	132	86	1,336
Dungeness crab	354	336	6,965	342	323	6,626	348	321	6,351	336	319	6,065	341	319	6,019
Pink shrimp	64	64	1,123	60	60	1,017	60	60	1,033	78	78	1,285	75	75	1,051
Albacore tuna	447	431	1,709	380	360	1,365	379	361	1,290	348	322	1,294	367	348	1,440
Groundfish (other than sablefish and whiting)	334	228	5,912	339	228	6,204	340	200	5,661	363	246	5,795	329	220	5,120
Trawl gear LE	60	58	1,219	60	60	1,497	60	59	1,410	56	56	1,134	55	55	1,192
Fixed gear LE	54	39	808	48	35	575	34	21	316	42	32	463	38	31	459
Fixed gear OA	187	127	3,634	183	132	3,827	168	119	3,553	213	150	3,891	194	132	3,295
Sablefish	175	155	1,785	143	119	1,268	130	110	1,010	140	126	1,512	157	143	1,555
Trawl gear LE	56	47	756	57	41	672	57	42	579	56	45	788	53	44	701
Fixed gear LE	56	56	693	45	45	424	42	42	303	43	43	480	40	40	487
Fixed gear OA	66	55	335	42	34	170	33	28	128	47	44	244	67	62	367
Pacific whiting	51	21	805	45	24	1,065	40	24	1,010	47	23	755	57	21	882
Pacific sardine	35	21	843	25	14	458	32	17	198	13	6	49	17	0	70
Pacific halibut	144	89	273	119	53	267	195	93	468	173	85	382	163	99	411
Other	265	134	5,118	242	120	6,570	128	49	5,173	112	42	5,304	119	46	7,333
All fisheries	1,140	1,086	27,365	1,139	1,094	32,322	1,199	1,152	30,703	1,129	1,068	27,058	1,051	991	27,365

- 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. For the "all fisheries" row, the \$500 threshold may be landed at any combination of fisheries.
3. Vessel counts and deliveries across fisheries will not sum to the "all fisheries" row 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. Dungeness crab is shown seasonally by December to November for each year, for example 2015 Dungeness crab includes December 2014 to November 2015.
5. Other includes (parentheses list 2016 vessels, active vessels, and deliveries): hagfish (16, 13, 200), red sea urchin (0, 0, 268), Pacific (chub) mackerel (28, 0, 123), northern anchovy (4, 3, 105), and market squid (17, 14, 91).

Source: PacFIN fish ticket data, April 2013, January 2014, April 2015, November 2016, and March 2017 extractions.

Table 4  
Northern Pacific Ocean U.S. and Canada Harvest Value in 2014

Region	All Fisheries		Selected Fisheries					
	Amount	Share	Salmon		Dungeness Crab		Trawl Shrimp	
	Amount	Share	Amount	Share	Amount	Share	Amount	Share
Alaska	1,712.2	63%	546.0	76%	16.0	6%	0.7	1%
British Columbia	353.7	13%	98.9	14%	42.3	17%	1.5	3%
Washington onshore	240.3	9%	38.9	5%	80.4	32%	16.5	31%
Oregon onshore	156.1	6%	20.1	3%	48.0	19%	29.3	56%
California onshore	233.3	9%	12.2	2%	65.1	26%	4.3	8%
West Coast at-sea	35.1	1%						
Total	2,730.8	100%	716.1	100%	251.8	100%	52.3	100%

- Notes:
1. Values are in millions of U.S. dollars (nominal).
  2. Alaska and Canadian at-sea fisheries harvest value are included in their respective table rows.
  3. Alaska trawl shrimp is sidestriped shrimp harvested with beam trawl gear in southeast Alaska. The Alaska table's value is for harvest in the 2014-15 season using statewide price in 2014. Canadian trawl shrimp is mostly pink shrimp and sidestriped with some coonstripe shrimp and humpback shrimp. Table's values for Washington, Oregon, and California are all pink shrimp.
  4. Aquaculture production is not shown in the table.
  5. The all fisheries and selected fisheries harvest values except for Alaska trawl shrimp are for the calendar year.

Sources: Alaska and West Coast at-sea harvest value from NOAA Fisheries, Fisheries Statistics Division, Annual Commercial Landing Statistics (NMFS 2015), except Alaska trawl shrimp from ADFG commercial fishing information by area and by fishery. British Columbia harvest value from Fisheries and Oceans Canada (DFO), Economic Analysis and Statistics, commercial fisheries landings. West Coast onshore harvest value from PacFIN fish ticket data, April 2015 extraction. British Columbia harvest value converted to U.S. dollars using Bank of Canada exchange rates.

Table 5  
Representation of the Commercial Fishing Industry in Area Economies in 2011 to 2016 (Preliminary)

	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>Prelim. 2016</u>
Oregon						
Ex-vessel value	158.0	133.9	184.9	159.9	115.8	148.5
Landed pounds	285.8	306.7	349.4	300.4	203.9	226.9
Landed fish economic contributions	306.0	296.3	375.8	300.2	207.9	259.7
Distant water economic contributions	294.9	292.6	294.1	290.7	287.6	283.8
Total economic contributions	600.9	588.9	669.9	590.9	495.5	543.6
Equivalent jobs (not millions)	12,036	11,412	13,028	11,391	9,239	9,971

- Notes:
1. Nominal dollars are adjusted to 2016 real dollars using the GDP Implicit Price Deflator developed by the U.S. Department of Commerce, Bureau of Economic Analysis (BEA). Amounts are in millions, except for equivalent jobs.
  2. Economic contribution is income accruing to households within the shown regions. Economic contributions include effects of harvesting and primary processing. New fishing vessel construction, fishery management, and fishery research and education are not included.
  3. Economic contributions are calculated with the Fisheries Economic Assessment Model (FEAM) originally developed by Hans Radtke and William Jensen for the West Coast Fisheries Development Foundation in 1988. The estimates include direct, indirect, and induced impacts, therefore include "multiplier effects." The FEAM relies on response coefficients from IMPLAN to estimate household 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. IMPLAN is a product of IMPLAN Group LLC, 16740 Birkdale Commons Parkway, Suite 212, Huntersville, NC 28078.
  4. Statewide and regional average annual earnings per job are computed by dividing the economies all industry earned income estimates by total full-time and part-time jobs estimates. Average earnings per job within industries involving more part-time work is lower than industries involving more full-time work, although there could be little difference in the underlying wage of full-time workers. Since average earnings per job are just a simple average, it does not account for variations in the distribution of earnings among high-pay vs. low pay jobs. Equivalent jobs at the statewide level include jobs within all coastal communities plus jobs in the rest of the state.
  5. The economic contribution from distant water fisheries includes the effects of business and participant revenue returned to Oregon's economy from the U.S. West Coast at-sea fishery, Washington and California fisheries, Alaska fisheries, and southern Pacific Ocean fisheries. Year 2015 and 2016 model year estimates are not available, so Year 2014 estimates are assumed the same for those years.
  6. Oregon home-port vessels (home-port is where a majority of landings measured by ex-vessel revenue occurs) will deliver to other states (such as Astoria area vessels delivering to Ilwaco processors) and other state home-port vessels deliver to Oregon processors. The accounting for these effects is included in the FEAM results.
- Sources:
1. Landing data is from PacFIN annual vessel summary data, April 2013, March 2014, April 2015, February 2016, and March 2017 extractions.
  2. Earned income and average earnings per job data is from BEA through 2015.