

**Washington State Commercial Fishing Industry
Total Economic Contribution**

prepared for

Seattle Marine Business Coalition

prepared by

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Introduction

The Washington Department of Fish and Wildlife (WDFW) published a report titled "Economic Analysis of the Non-Treaty Commercial and Recreational Fisheries in Washington State" in December 2008.¹ The economic analysis for commercial fisheries in the study report was for a small segment of Washington's overall commercial fishing industry. The segment was referenced in the report as *Washington commercial fisheries*. The segment represented about 28 percent for the sum of Washington harvest value from onshore landings and the harvest value of Washington based vessel participation in other West Coast fisheries (see attached Figure 1). The segment's term implies comprehensiveness, but the study definition for the term inexplicitly leaves out large economic effects from other commercial fishery related activities.

The first omission is the tribal fisheries. The ocean, Puget Sound, and river tribal fisheries are major contributors to Washington's economy. Tribal commercial fisheries' activities are tracked in the commercial fish ticket system. The data available for such tribal fisheries include: ocean non-salmon and salmon treaty allocations, inland shellfish, river salmon and steelhead, and others. Tribal harvesters depend on the same gear and other supply businesses; and, harvests enter the same processing and distribution chains as non-Indian fisheries. Tribal fishers also participate in non-tribal commercial fisheries which are included in the study's definition for Washington commercial fisheries. There are additional tribal harvests for ceremonial and subsistence (C&S) fisheries. No fish of any stock are sold for commercial purposes until C&S needs are met. While it can be argued that subsistence harvests may be a substitute for a foodstuff and be equivalent to a market price for the fish, their actual economic effects are purely speculative. Ceremonial harvests should not be valued because that would be tantamount to determining a value for tribal spiritual beliefs.

The second omission was the economic effects from distant water fisheries. Distant water fisheries are mostly in Alaska waters and at-sea deliveries off the West Coast. This segment would also include onshore deliveries made in other West Coast states by vessels based at Washington ports. There are many fishing industry economic effects to Washington's economy for these fisheries. The effects are from: skippers and crew that have residency and spend their earnings in Washington; catcher-processor products entering seafood distribution channels in Washington; provisioning and repairs purchased from Washington businesses; secondary and analog seafood processing; and cold storage occurring in Washington. There are legal, financial, and administrative companies that provide services for the direct participants.

The third omission was aquaculture (shellfish, fish farms, etc.). This is an important fishing industry segment because economic activity in the included Washington fisheries relies upon many of the same support businesses as does aquaculture.

Measurements

This report provides economic value estimates for the above mentioned omitted fisheries by relying on other studies' investigations. The economic value estimates are either harvest value

1. The publication is hereafter cited as TCW (2008). See the bibliography section for the full citation for this publication and the other referenced studies.

(sometimes called ex-vessel value) or regional economic impacts (REI). Revenue received by harvesters from first sale of catch (sometimes called dockside value) is not necessarily a good indicator of the economic value of the fishery. The first sale amount does not include any consideration of production costs required to generate the harvester's sale amount, where the spending occurred for those costs, or the net income realized by vessel investors. It also does not reflect the added value generated from processing and distributing the harvests (sometimes called wholesale value) which has its own set of production costs and spending considerations. REI economic analysis attempts to sort out the spending and economic effects caused by the spending in regional economies. The REI measurement unit is personal income accruing to households in the State, or job counts when available. REI includes multiplier effects from downstream spending after direct earnings are re-spent within the State. We adopt a practice typically associated with a natural resource industry economic analysis for included direct earnings being at the harvest and primary processing levels.

An economic analysis measurement sometimes used is "sales" units. These units may be referred to as business cash register receipts. Economists typically do not use these units for evaluative or comparative purposes. An example shows why. A gas station's sales can be a very high dollar amount, but very little of that money goes to pay wages or accrues as proprietorship income. On the other hand, a manufacturing process can be labor intensive such as seafood processing that has fillet lines. In this case, a high share of the sales amount will be for wages and owner income. There is more confusion when sales units are converted to a measurement of "output" where only the markup portion is reported. A casual reader of an economic report should not have to interpret esoteric measurement methods in order to appreciate the economic description of an industry.

The TCW (2008) report includes another measurement called "net economic value" (NEV). NEV measures are an estimate of only the benefits that are realized from fish resources. Policy makers would necessarily use a benefit cost analysis (BCA) where the costs of a given policy are subtracted from the changes in expected NEV benefits. The TCW (2008) report does not include the cost side of a BCA equation. An example is the use of salmon hatcheries to sustain salmon fisheries. In this case, the cost to administer and operate a hatchery program would be subtracted from the incremental NEV benefit from the harvested fish that originated from the hatchery. BCA is an assessment of efficiency at the national economy level. Sometimes other society level benefits and costs are included in a BCA such as fish resource existence values.

For management and policy making, REI and BCA are often accompanied by discussions about regional distributional effects (e.g., jobs created in one area and diminished in another), other social and cultural impacts, and impacts to government (i.e., effects on public services like enforcement and monitoring). Ultimately, management and policy making about use of fish resources is a political determination after weighing societal values about tradeoffs and impacts.

The economic value contributions are expressed for the year quoted in the various studies. A stringent comparison between different years should use adjusted dollar years based on an appropriate inflation index such as the Gross Domestic Product Implicit Price Deflator developed by the U.S. Bureau of Economic Analysis.

Other Studies' Economic Analysis Estimates

The WDFW study's quoted economic contribution for included non-tribal commercial fisheries was \$148.3 million personal income and 3,520 jobs in 2006. Other studies that address an economic analysis for the omitted segments of Washington's commercial fishing industry have found:

- 1) The local and distant water fishing fleet based at the Port of Seattle's Fishermen's Terminal and Maritime Industrial Center, and the catcher processor vessels home-ported at the Port of Seattle's Terminal 91 spent \$814.4 million in 2007 (Martin Associates 2009). The economic contribution was \$1.84 billion personal income and 14,972 jobs. The economic contribution does not include the effects from the Washington based fishing fleet using other terminals and moorings throughout the Seattle and Puget Sound areas.
- 2) Spending arising from Alaska fisheries was \$1.62 billion in the Pacific Northwest in 2004 (TRG 2007). The Oregon share was about five percent according to TRG (2007). This spending amount is consistent with findings in the NRC (1986) study when the status of Alaska fisheries between the years is considered. Accounting for the Washington share of the Alaska fisheries spending and using the Martin Associates multiplier, the total economic contribution in 2004 would be \$3.48 billion.
- 3) TCW (2008) shows tribal commercial onshore landings were \$48.9 million in 2006. Two other studies that discuss the economic dimensions of tribal fisheries are in Tiller Research and Chase Economics (1998) and TRG (2003). Non-Indian onshore landings harvest value is \$65.5 million for the defined Washington commercial fisheries and \$37.7 million for the other non-Indian fisheries in 2006.
- 4) Table 1 shows harvest value for both commercial tribal and non-Indian onshore landings in Washington was \$114.3 million in 2004 (TRG 2006). The regional economic contribution from the landings was \$255.1 million in personal income (Figure 2).
- 5) There are three other omitted fisheries in the WDFW published report:
 - a) West Coast offshore Pacific whiting fishery prosecuted by catcher vessels delivering to motherships, and catcher-processor vessels.¹ Many of the catcher-vessels and all of the motherships and catcher-processors home-port in Puget Sound localities. The offshore catch areas for this fishery extends from the U.S.–Canada border to north of San Francisco. The estimated harvest value by the 11 catcher vessels that hail from Washington ports (out of the 24 total catcher vessels that participated in the fishery), and the estimated harvest value by the nine catcher-processors that hail from Washington ports is \$15.6 million. There were six motherships in this fishery and all

1. The West Coast Pacific whiting fishery is a federally managed fishery. Depending on stock abundance estimates, there are U.S. and Canada allocation quotas of certain size. The U.S. allocations are further specified for tribal, offshore, and onshore harvest quotas. The offshore allocations are split between the mothership and catcher-processor sectors. After the set aside for the tribal fishery, the shoreside, mothership, and catcher-processor sectors are 42, 24, and 34 percent, respectively. The tribal fishery has only been prosecuted in recent years by the Makah tribe. There are expectations that the Quileute Tribe will participate in the whiting fishery beginning in 2009 and the Quinault Tribe will enter the whiting fishery in 2010. This will require larger tribal set asides in the future.

are owned by businesses with corporate headquarters in the Puget Sound area. There is a separate tribal allocation in the Pacific whiting fishery that has been delivered each year to a mothership rather than made an onshore landing.

- b) Oregon Coast catch area harvests that are southerly of the Washington–Oregon land boundary extension but delivered to Washington ports are excluded from the definition of Washington commercial fisheries. Fisheries include albacore tuna (\$11.4 million), Dungeness crab (\$2.5 million), sablefish (\$1.2 million) and Pacific whiting (\$1.0 million), pink shrimp (\$0.5 million), and others. Harvests in catch areas north of the boundary but delivered to Oregon and other West Coast ports are also excluded.
- c) Alaska and other West Coast waters' catch are excluded in the Washington commercial fishery accounting. These waters are outside the Exclusive Economic Zone (EEZ) and/or the fisheries' management jurisdiction is not covered by the Pacific Fishery Management Council (PFMC).¹ An example fishery is Pacific halibut whose catch is from Alaska.

The three other omitted fisheries harvest value sums to \$37.7 million in 2006. Using TRG (2006) multiplier, the economic contribution from the omitted fisheries is \$84.1 million personal income in 2006.

- 6) NOAA Fisheries (2011) reports economic contribution related to commercial and recreational fisheries by state. The harvester economic contributions in 2008 were \$165.0 million personal income and the primary processor sector economic contributions from State landings were \$76.9 million. The combined job creation was 7,052. The NOAA Fisheries' model also generates economic contribution from local and imported seafood at the retail sale level. However, economists generally do not utilize economic analysis from that level. Except for niche markets, seafood supplies are readily available from worldwide markets. Changes to the management of Washington fish resources will not have appreciative overall economic impacts on retail sales.
- 7) Aquaculture (mostly oysters and manila clams) in Washington had a harvest value in the range of \$40-\$80 million in the 2000's. The estimated regional economic impact was about \$60 million personal income in 2006 (TRG 2006). Washington also has aquaculture for steelhead trout which is an agricultural statistic and was not included in TRG (2006) estimates. There are several trade organizations representing private aquaculture that have more information available to characterize this industry segment (see Bibliography).

The WDFW study also discusses the economic contribution from recreational fishing, but does not itemize effects for saltwater and freshwater fishing. The WDFW study offers that \$355 million recreational fishing trip spending in 2006 generates \$392.9 million in personal income when equipment expenditures are included.² The angler economic impacts supported 12,850

1. The EEZ was established by the United Nations Convention on the Law of the Sea. It provides for special marine exploration and use rights over a sea zone that extends 200 nautical miles seaward of coasts.

2. These and other spending and economic contribution estimates in this paragraph include both resident and non-resident participation in recreational fisheries. Economists sometimes argue there may be substitute recreational

jobs in 2006 for both water types. The most recent USFWS survey for saltwater recreational fishing and crabbing shows \$120.2 million spending in 2006 (USFWS 2008). According to Southwick (2007), this trip spending plus other equipment spending contributed \$164.3 million personal income and 4,649 jobs to the State economy. A study by Gentner and Steinbeck (2008) using their own angler survey found marine (coastal area only) fishing trip spending in 2006 to be \$44.2 million which contributed \$19.2 million personal income and 586 jobs.

Summary

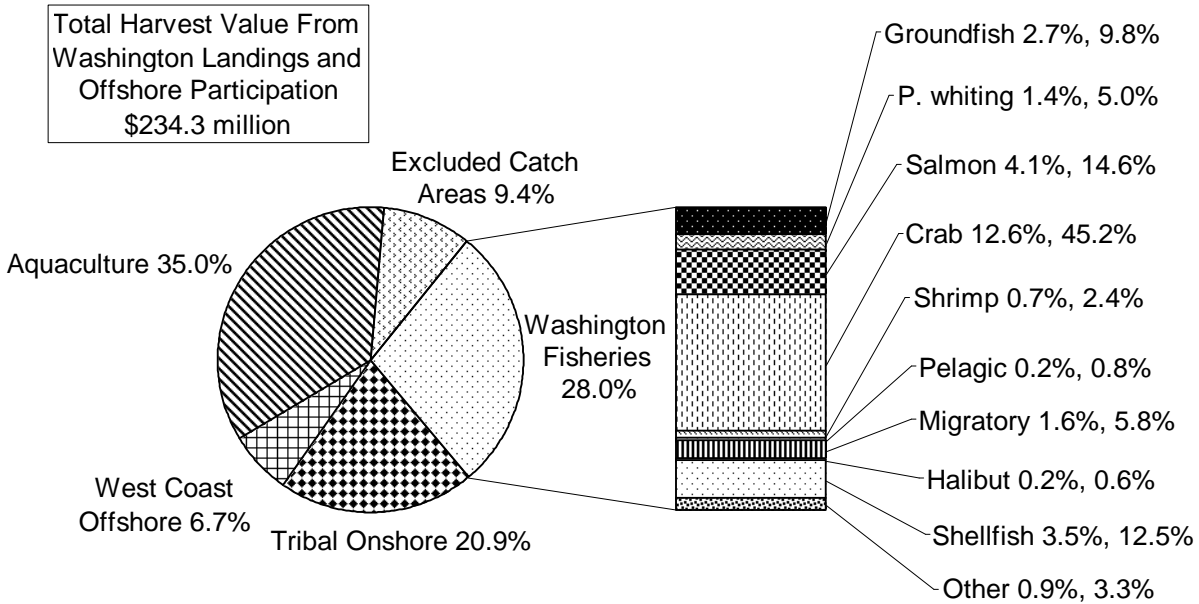
Table 2 shows a summary of the economic value measurements for the above mentioned studies. The total \$3.9 billion Washington commercial fisheries personal income is 2.1 percent of Washington's overall net earnings in 2007 (BEA 2010).

activity spending by residents if fishing did not occur, so a more conservative estimate should only use non-resident spending.

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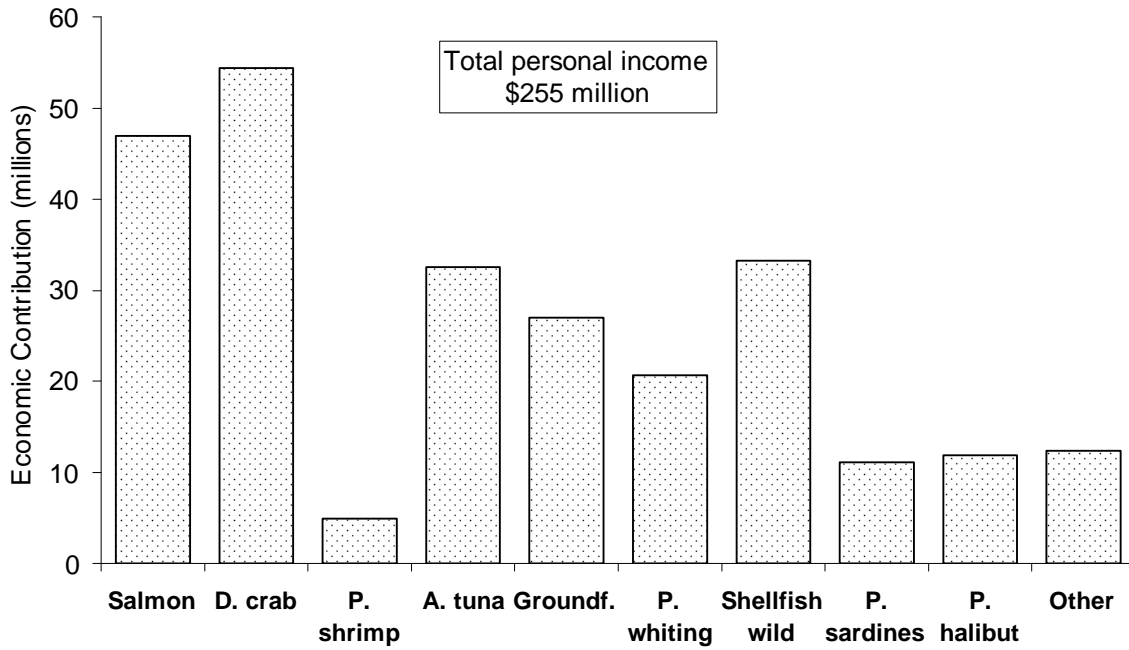
Figure 1
Harvest Value Shares of Washington's West Coast Fishing Participation in 2006



- Notes:
1. The harvest value does not include revenue from landings made in Alaska, other distant water fisheries' ports, or other West Coast states by Washington's home-port vessels.
 2. The shares (xx%, xx%) on the vertical bar are percent of total harvest value, and percent of Washington commercial fisheries harvest value, respectively.
 3. Tribal harvest value is from the commercial fisheries' allocations for treaty and trust set asides landed onshore. The West Coast offshore includes an approximately \$0.6 million tribal harvest in 2006. The harvest values do not include an estimate for C&S harvests.
 4. Excluded catch areas are fishing grounds in two defined regions. The first region is outside the West Coast EEZ. Landings in Washington are sometimes from non-EEZ fishing grounds located close to Alaska or from the high seas outside of the jurisdiction of the PFMC. The second region is southerly of an extension of the Washington-Oregon land border. Any species in the Oregon Coast catch area is excluded from the definition of Washington commercial fisheries. The harvest value from catch in waters off the Washington Coast or in Puget Sound landed in Oregon or elsewhere are not included in the accounting of Washington commercial fisheries.
 5. Aquaculture is from the raising and harvesting of shellfish, salmon, trout, and other species. Catch of wild shellfish is included in the definition of Washington commercial fisheries.
 6. West Coast offshore catch is often referred to as the offshore Pacific whiting fishery. It is caught by catcher-processors and catcher-vessels that deliver to motherships. The harvest value is the estimated catch from these two vessel types that home-port in Washington. The estimated value uses a proxy price of similar species onshore deliveries price less 15 percent.
 7. The harvest value for "other" Washington fisheries includes \$729 thousand for sea cucumbers, \$471 thousand for other shrimp, \$228 thousand for other sea urchins, \$184 thousand for white sturgeon, \$150 thousand for hagfish, and other species.

Source: TCW (2008).

Figure 2
 Washington Economic Contributions by Species Group for
 Onshore Landings and Shellfish Aquaculture in 2004



Aquaculture economic contributions by species (millions of dollars):	
Pacific oysters	26.6
Manila clams	18.1
Geoduck	5.7
Blue or bay mussel	4.2
Other oysters, clams, mussels	<u>2.6</u>
Total	57.1

- Notes:
1. Economic contributions are expressed as personal income in millions of 2004 dollars.
 2. Salmon, steelhead, and trout aquaculture is not included.
 3. Distant water fisheries economic contribution for Washington is not included.
 4. Dungeness crab and groundfish species groups' economic contribution includes ocean and Puget Sound fisheries.
 5. Onshore landings include tribal and non-Indian participation groups.

Source: TRG (2006).

Table 1
Washington Onshore Landed Value by Species Groups in 1981 to 2009

Year	Price Index	Salmon		Dungeness Crab				Pink Shrimp		Albacore Tuna		Groundfish		Pacific Whiting		Shellfish				Other		Total	
		Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal
1981	47.6	95,648	45,523	2,639	1,256	4,657	2,217	10,564	5,028	3,509	1,670	30,997	14,753	427	203	12,632	6,012			14,465	6,885	175,539	83,546
1982	50.5	104,068	52,550	2,153	1,087	5,803	2,930	5,249	2,650	721	364	36,056	18,207	665	336	12,630	6,378			14,146	7,143	181,491	91,646
1983	52.5	36,975	19,405	3,349	1,758	14,024	7,360	8,125	4,264	1,208	634	33,806	17,742	824	432	12,076	6,338			8,818	4,628	119,205	62,561
1984	54.5	58,142	31,663	3,642	1,984	10,256	5,585	2,944	1,603	167	91	38,034	20,713	518	282	16,660	9,073			10,036	5,465	140,399	76,459
1985	56.1	90,217	50,620	4,019	2,255	8,950	5,022	5,752	3,227	355	199	34,168	19,171	1,337	750	15,650	8,781			13,541	7,598	173,988	97,623
1986	57.4	95,019	54,495	3,297	1,891	8,855	5,079	16,169	9,273	1,599	917	33,916	19,451	1,315	754	2,014	1,155			23,296	13,361	185,479	106,375
1987	59.0	136,250	80,405	4,200	2,479	12,967	7,652	18,059	10,657	1,420	838	42,747	25,226	2,131	1,258	3,810	2,248			23,872	14,087	245,456	144,850
1988	61.0	120,589	73,606	4,209	2,569	28,430	17,354	12,039	7,349	5,723	3,493	35,160	21,461	1,152	703	2,439	1,489			23,683	14,456	233,425	142,480
1989	63.3	88,480	56,050	4,250	2,692	29,467	18,666	9,297	5,889	1,952	1,236	30,395	19,254	1,286	815	4,482	2,840			26,672	16,896	196,281	124,339
1990	65.8	79,970	52,618	5,642	3,712	22,537	14,829	10,296	6,774	3,281	2,159	28,508	18,757	294	193	5,089	3,349			20,911	13,759	176,528	116,149
1991	68.1	47,865	32,608	3,277	2,233	10,540	7,181	8,205	5,590	1,016	692	33,556	22,860	586	399	5,505	3,751			23,074	15,719	133,625	91,032
1992	69.7	32,285	22,515	4,033	2,812	21,185	14,774	5,774	4,026	6,252	4,360	32,129	22,406	605	422	6,433	4,486			21,695	15,130	130,390	90,932
1993	71.3	35,943	25,620	4,378	3,121	24,458	17,433	7,261	5,176	5,763	4,108	27,266	19,435	356	254	9,731	6,936			26,252	18,713	141,409	100,797
1994	72.8	35,582	25,897	8,120	5,910	26,879	19,563	4,756	3,461	13,320	9,694	26,237	19,096	354	258	13,403	9,755	37,938	27,612	18,800	13,683	185,390	134,930
1995	74.3	15,336	11,395	10,124	7,522	38,600	28,680	8,326	6,186	8,090	6,011	28,452	21,140	667	495	9,049	6,724	40,675	30,222	16,931	12,580	176,251	130,955
1996	75.7	11,894	9,005	10,228	7,744	40,891	30,960	5,078	3,845	11,970	9,063	25,595	19,379	1,377	1,043	15,737	11,915	41,328	31,291	16,766	12,694	180,864	136,938
1997	77.1	17,910	13,800	17,214	13,263	23,891	18,408	2,974	2,291	8,814	6,791	25,021	19,279	1,291	995	20,746	15,985	38,514	29,675	18,049	13,907	174,424	134,395
1998	77.9	12,792	9,968	14,219	11,079	17,762	13,840	1,816	1,415	11,282	8,791	16,423	12,797	1,020	795	21,085	16,430	36,995	28,827	13,465	10,492	146,858	114,433
1999	79.1	6,446	5,097	15,894	12,567	34,128	26,984	2,035	1,609	4,613	3,647	17,119	13,535	1,145	905	22,721	17,965	38,373	30,340	14,193	11,222	156,666	123,871
2000	80.8	12,725	10,279	17,428	14,078	29,965	24,206	2,420	1,955	7,285	5,885	16,486	13,317	1,385	1,119	17,704	14,301	47,387	38,278	14,207	11,476	166,993	134,894
2001	82.6	16,378	13,529	17,839	14,736	27,855	23,010	2,229	1,842	9,643	7,966	13,643	11,270	1,781	1,472	22,869	18,892	49,658	41,021	13,817	11,414	175,713	145,152
2002	83.9	15,922	13,365	16,144	13,552	28,252	23,716	3,441	2,889	8,863	7,440	11,683	9,807	1,280	1,074	22,911	19,232	50,541	42,426	15,532	13,038	174,568	146,539
2003	85.7	13,515	11,589	15,460	13,256	50,344	43,169	2,408	2,065	18,307	15,697	14,437	12,379	1,993	1,709	22,743	19,501	52,978	45,427	13,348	11,445	205,532	176,237
2004	88.2	20,456	18,038	13,925	12,279	19,052	16,800	2,490	2,195	18,019	15,889	14,273	12,586	2,792	2,462	25,056	22,095	61,972	54,647	14,106	12,438	192,141	169,429
2005	91.1	15,940	14,525	14,337	13,064	41,583	37,892	3,100	2,825	12,097	11,023	12,917	11,771	5,846	5,327	26,542	24,186	67,954	61,922	13,508	12,309	213,824	194,843
2006	94.1	26,556	24,988	14,233	13,392	32,044	30,152	2,237	2,105	16,182	15,226	12,020	11,310	8,522	8,019	19,747	18,581	87,247	82,095	13,612	12,808	232,400	218,677
2007	96.8	22,737	22,006	16,915	16,372	39,373	38,108	1,828	1,769	10,829	10,481	9,571	9,264	7,724	7,476	19,585	18,956	72,304	69,980	14,219	13,762	215,085	208,174
2008	98.9	23,259	22,995	17,178	16,983	37,310	36,886	3,552	3,511	17,381	17,183	10,047	9,933	7,970	7,879	20,325	20,094	56,307	55,666	14,152	13,991	207,480	205,121
2009	100.0	21,920	21,920	19,210	19,210	26,785	26,785	2,199	2,199	16,291	16,291	11,833	11,833	2,334	2,334	15,934	15,934	73,481	73,481	10,934	10,934	200,921	200,921

- Notes: 1. Nominal value is the revenue received by fishermen/harvesters in the landing year. Real value is in thousands of 2009 dollars adjusted using the GDP implicit price deflator developed by U.S. Bureau of Economic Analysis.
2. Wild shellfish in the most recent year includes landings (thousands) of geoduck (\$13,261), Pacific oyster (\$1,281), Manila clam (\$984), and other species (\$408).
3. Salmon aquaculture is not included.
4. Other in the most recent year includes (thousands) Pacific halibut (\$4,457), other shrimp such as spots, sand or ghost, coon stripe, and side stripe (\$1,900), Pacific sardine (\$1,665), sea cucumbers (\$993), hagfish (\$923), white sturgeon (\$319), and other species (\$677).
5. Groundfish includes ocean and Puget Sound landings.
6. Onshore landings include tribal and non-Indian participation groups.

Source: TRG (2006) for years 1981-2004 and NOAA Fisheries (2011) for years 2005-2009.

Table 2
Economic Value Estimates Used for Calculating Total Commercial Fishing Industry Economic Contributions

<u>Item</u>	<u>Study</u>	<u>Region/Fishery</u>	<u>Year</u>	<u>Harvest Value/ Spending</u>	<u>Economic Contribution</u>	
					<u>Personal Income</u>	<u>Jobs</u>
1)	Martin Associates (2009)	Port of Seattle terminals	2007	\$814.4 million	\$1.84 billion	14,972
2)	TRG (2007); NRC (1986)	Alaska distant water fisheries spending in Washington	2004	\$1.54 billion	\$3.48 billion	
3)	TCW (2008)	Tribal and other onshore	2006	\$86.6 million	\$255.1 million	
4)	TRG (2006)	Tribal and non-tribal onshore	2004	\$114.3 million		
5a)	TCW (2008); TRG (2006)	West Coast offshore Pacific whiting	2006	\$15.6 million		
5b)	TCW (2008); TRG (2006)	Oregon Coast catch area	2006	\$16.6 million		
5c)	TCW (2008); TRG (2006)	Non-EEZ West Coast	2006	\$5.5 million	\$37.7 million	\$84.1 million
6)	NOAA Fisheries (2011)	Harvester and primary processor	2008			
7)	TRG (2006)	Aquaculture	2004	\$40-\$80 million		
	TCW (2008)	Washington commercial fisheries	2006	\$65.5 million	\$241.9 million	7,052
	Southwick (2007)	Saltwater fishing and crabbing	2006	\$120.2 million	\$60 million	
					\$148.3 million	3,520
					\$164.3 million	4,649

- Notes: 1. This table's entries and study sources are discussed in the text.
 2. Non-EEZ West Coast are deliveries to Washington from harvests outside of the West Coast Exclusive Economic Zone. The deliveries are principally halibut caught in Alaska.

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Seattle Marine Business Coalition

January 2011

Workscope

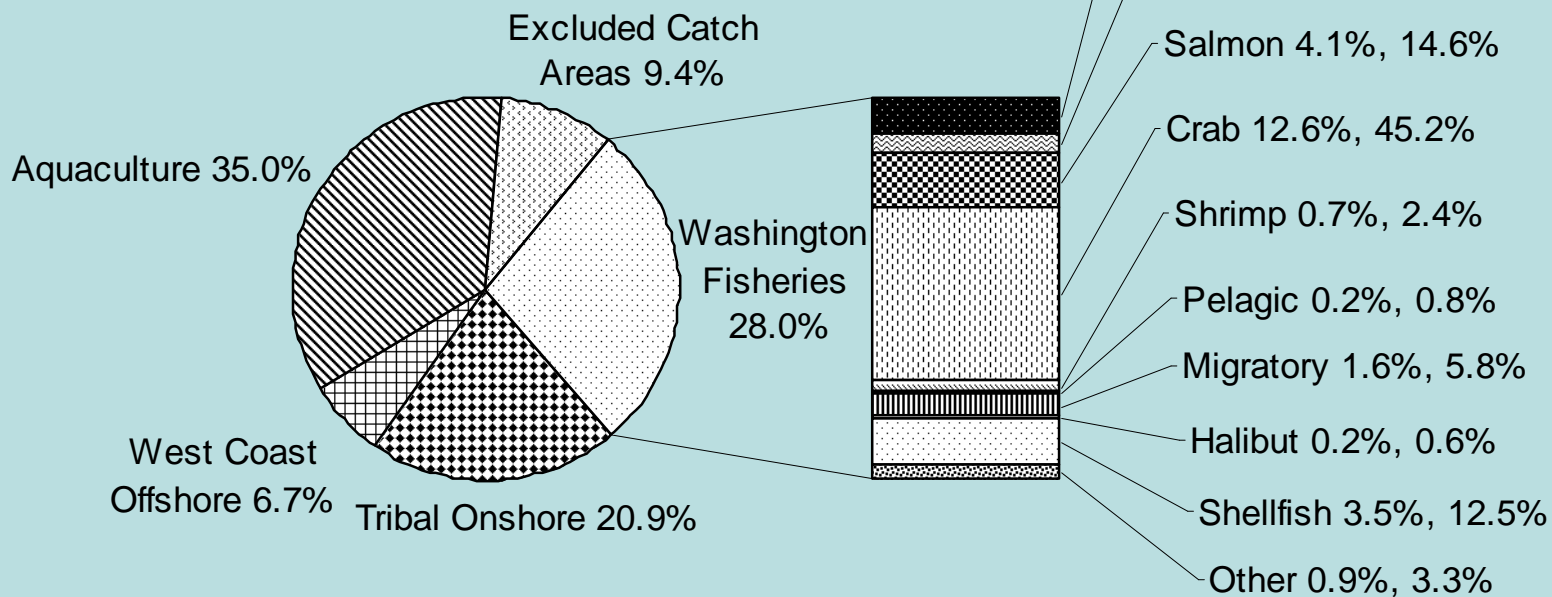
- Use existing studies to show Washington commercial fishing total economic contribution estimates, including distant water fisheries and tribal commercial fisheries.
- Use regional economic impact measurements (REI) for personal income and jobs generated at the state-level.
- Explain REI economic value measurements to alleviate misunderstanding in the use of other measurements such as harvest value, net economic value (NEV), added value, etc.
- Compare offered estimates of fishing industry REI measurements with total net earnings in Washington.
- Provide conclusions about how economic contribution estimates can be used to support industry management and policy considerations.

Commercial Fishing Industry Fishery Omissions in a WDFW 2008 Published Report

- Alaska distant water fishery.
- West Coast offshore Pacific whiting fishery prosecuted by catcher vessels delivering to motherships, and catcher-processor vessels.
- Oregon Coast catch area harvests that are southerly of the Washington–Oregon land boundary extension but delivered to Washington ports are excluded from the definition of Washington commercial fisheries.
- Alaska and other West Coast waters' catch delivered to Washington ports.

Harvest Value Shares of Washington's West Coast Fishing Participation in 2006

Total Harvest Value From Washington Landings and Offshore Participation
\$234.3 million



Economic Value Estimates Used for Calculating Total Commercial Fishing Industry Economic Contributions

<u>Item</u>	<u>Study</u>	<u>Region/Fishery</u>	<u>Year</u>	<u>Harvest Value/ Spending</u>	<u>Economic Contribution</u>	
					<u>Personal Income</u>	<u>Jobs</u>
1)	Martin Associates (2009)	Port of Seattle terminals	2007	\$814.4 million	\$1.84 billion	14,972
2)	TRG (2007); NRC (1986)	Alaska distant water fisheries spending in Washington	2004	\$1.54 billion	\$3.48 billion	
3)	TCW (2008)	Tribal and other onshore	2006	\$86.6 million	\$37.7 million	\$84.1 million
4)	TRG (2006)	Tribal and non-tribal onshore	2004	\$114.3 million		
5a)	TCW (2008); TRG (2006)	West Coast offshore Pacific whiting	2006	\$15.6 million		
5b)	TCW (2008); TRG (2006)	Oregon Coast catch area	2006	\$16.6 million		
5c)	TCW (2008); TRG (2006)	Non-EEZ West Coast	2006	\$5.5 million		
6)	NOAA Fisheries (2011)	Harvester and primary processor	2008		\$241.9 million	7,052
7)	TRG (2006)	Aquaculture	2004	\$40-\$80 million	\$60 million	
	TCW (2008)	Washington commercial fisheries	2006	\$65.5 million	\$148.3 million	3,520
	Southwick (2007)	Saltwater fishing and crabbing	2006	\$120.2 million	\$164.3 million	4,649

Washington Commercial Fishing Industry Economic Contribution Summary

- The total \$3.9 billion Washington commercial fisheries personal income is 2.1 percent of Washington's overall net earnings in 2007.
- WDFW study's omitted economic effects are important statistics to consider in government policy directed towards sustaining commercial fisheries and enhancing economic development.

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RESUME

Hans Radtke is a freelance economist specializing in the relationship between resource-based industries of the Pacific Northwest and regional, state, and national economies. He is involved in a variety of economic analyses, from health production capacities to international economic development. As a freelance economist, he has worked on a variety of projects, including:

- Impact analyses of management alternatives for Oregon Department of Fish and Wildlife since 1975;
- Policy analyses of management alternatives for the Pacific Fishery Management Council, 1985 to 1996;
- Economic Assessment Model for the West Coast and Alaska Fisheries since 1984;
- Impact analyses for the Bureau of Land Management on a variety of issues from 1981 to 1984;
- Economic information on coastal fisheries and tourism for President Clinton's Forest Summit Interagency Team in 1993;
- Economic evaluation of biological control of tansy ragwort, a noxious weed, for the Oregon Department of Agriculture;
- Volunteer advisor in Kaliningrad, Russia, for the transition to privatization of agriculture, 1994;
- "Initiative for Appropriate Economic Development in a Threatened World Heritage Site." Project for World Wildlife Fund, Mexico, 1997;
- Economic evaluation of potential economic impacts of Lower Snake and John Day dam removal, 1998 to 2000;
- Economic evaluation of hatchery programs in the Pacific Northwest, including Far East Russia, 2006 to present.

He has also served on advisory and policy positions, including:

- Oregon Governor's Council of Economic Advisors since 1993;
- Pacific Fishery Management Council (PFMC), Oregon obligatory seat, 1997 to 2003, Chairman in 2002 to 2003;
- Independent Economic Analysis Board (IEAB), an advisory board to the Pacific Northwest Power and Conservation Council, October 2001 to 2010;
- PFMC Scientific and Statistical Committee (SSC), 2003 to 2006;
- Technical Dispute Settlement Board, as established by the Pacific Salmon Commission for the Pacific Salmon Treaty, since 2004;
- Oregon Wolf Conservation and Management Plan Development Committee, 2003 to 2004;
- Marine Protected Areas Federal Advisory Committee, 2010 to 2014.

Education

1960 - 1964	B.S. Economics, Portland State University
1967 - 1969	M.S. Agricultural Economics, Montana State University
1969 - 1972	Ph.D. Agricultural Economics, Oregon State University

Professional Experience

1997 - 2003	Member of the Pacific Fishery Management Council
1987 - Present	Adjunct Professor, Oregon State University
1979 - Present	Freelance Economist
1978 - 1979	Extension Marine Resources Specialist, Columbia River, Washington State University
1977 - 1978	Associate Professor (tenured), University of Nevada, Reno
1972 - 1977	Assistant Professor, University of Nevada, Reno
1964 - 1966	Peace Corps Volunteer, Colombia, South America Development of Agricultural Cooperatives