

# **Economic Impacts of Pacific Salmon Fisheries**

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## **Progress Report**

### **Prepared for:**

Pacific Salmon Commission  
Vancouver BC

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## **I.0 Introduction**

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This Project Report outlines work to date on our project to analyze the economic impacts of commercial and recreational fisheries from SE Alaska down to Oregon. The work addresses the five species of salmon in total - sockeye, coho, pink, chum and Chinook - and each of the years 2012 to 2015.

Our investigations to date have included interviews with over 40 individuals and with review of a variety of reports, both government and private sector consultant studies.

Our report focuses on number of salmon caught for each sector, for each year, for each jurisdiction. However, we provide commentary on investigations as to valuation of fishing activity e.g., ex-vessel & wholesale values for salmon, angler expenditures for recreational.

The importance of the subsistence sector is addressed in a separate draft report. Discussion of subsistence will be included in our Final Report.

## 2.0 Commercial Sector

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The key information pieces for the commercial sector in each region for each species are:

- no. fish caught
- av. weight per fish
- ex-vessel value per lb round (whole) fish
- wholesale value per lb (whole) fish

Separate fleets or fishing segments are identified in each region for catch data.

<b>Fishing Fleets/Fleet Segments</b>			
<b>SE Alaska</b>	<b>BC</b>	<b>Washington</b>	<b>Oregon</b>
Purse Seine	Seine	Columbia R	Columbia R
Drift Net	Gillnet	Other	Ocean Troll
Troll	Troll		
Hatchery Cost Recovery	Transboundary*		
Other	FN Commercial		

\* *Stikine & Taku (no commercial harvests in Alek)*

The catch data is summarized in Exhibit I (catch data by individual fleet is given in Appendix A).

### 2.1 SE Alaska

The Alaska Department of Fish & Game (ADF&G) has catch numbers by species in their annual publication “Overview of the Southeast Alaska & Yukatat Commercial, Personal Use, and Subsistence Salmon Fisheries” Table 10. The publication also has average weight per fish - but the average weights refer to landed weight, based on fish tickets, and not round weight. Troll fish is usually landed dressed head on and therefore troll weight needs to be adjusted (this has not been done yet).

The same ADF&G publication and division has published average ex-vessel prices for salmon (but these prices may not necessarily be final prices).

Each processor in Alaska must complete a Commercial Operator Annual Report (COAR) detailing processed seafood quantities & sales values by species and product form. We have accessed COAR data and can calculate an overall wholesale (processed) price by species for each year.

### 2.2 British Columbia

DFO Policy & Economics personnel provided unpublished data on commercial salmon catch, including test fisheries catch, for the traditional outside fisheries of seine, gillnet & troll. DFO also provided information on First Nation commercial catch, a combination of Economic Opportunity (EO), Excess Surplus to Spawning Requirements (ESSR), Treaty, and Demonstration and Other.

**Exhibit 1: Salmon Catch by Region - Commercial**

	2012						2013						2014						2015						
	Sockeye	Coho	Pink	Chum	Chinook	All	Sockeye	Coho	Pink	Chum	Chinook	All	Sockeye	Coho	Pink	Chum	Chinook	All	Sockeye	Coho	Pink	Chum	Chinook	All	
<b>Number Caught '000 Fish</b>																									
SE Alaska	947	2,087	21,300	12,365	280	36,978	975	3,864	94,787	12,574	241	112,440	1,670	3,790	37,194	6,680	428	49,761	1,528	2,146	35,064	11,523	351	50,612	
BC	1,478	290	829	1,264	196	4,057	365	543	13,627	1,702	179	16,416	10,913	321	4,572	881	371	17,059	1,971	326	1,692	2,507	249	6,744	
Washington	157	391	1	871	427	1,846	28	334	6,044	1,240	513	8,160	773	698	2	960	492	2,925	77	88	724	830	557	2,276	
Oregon	1	14	<1	<1	136	152	<1	37	<1	<1	228	265	1	215	<1	<1	331	548	2	27	<1	<1	208	237	
Total	2,583	2,782	22,130	14,500	1,039	43,033	1,367	4,779	114,458	15,516	1,161	137,281	13,357	5,023	41,768	8,521	1,623	70,292	3,578	2,587	37,479	14,861	1,364	59,869	
<b>RD Weight Landed '000 lbs</b>																									
SE Alaska	5,928	13,334	76,040	112,399	3,650	211,352	5,877	22,025	333,650	102,600	3,137	467,288	9,686	25,769	130,178	60,785	5,183	231,601	6,663	12,620	134,645	97,486	3,526	254,940	
BC	8,223	2,173	2,709	13,962	2,794	29,860	2,012	4,046	46,219	19,497	2,422	74,196	62,044	1,917	14,828	9,814	5,190	93,793	9,799	1,883	5,841	25,043	3,398	45,965	
Washington	862	3,604	4	10,451	4,614	19,535	152	3,226	24,176	14,885	6,281	48,720	4,251	4,734	6	11,525	7,353	27,869	424	587	2,896	9,965	7,334	21,205	
Oregon	3	108	<1	1	1,802	1,914	<1	276	<1	<1	3,216	3,493	5	1,611	<1	<1	4,802	6,417	7	197	<1	<1	2,926	3,130	
Total	15,015	19,219	78,753	136,813	12,860	262,660	8,041	29,573	404,045	136,982	15,055	59,3697	75,985	34,032	145,012	82,123	22,527	359,680	16,894	15,287	143,382	132,494	17,184	325,240	

Commercial catch data for the Stikine and Taku transboundary rivers was taken from the Transboundary Technical Committee for the Pacific Salmon Commission, “Preliminary Estimates of Transboundary River Salmon Production, Harvest & Escapement and a Review of Joint Enforcement Activities in 2015”. The biologist also provided some piece count and weight data. We used this data to estimate average weights for years 2012 to 2015 (some weights were on a dressed weight basis so we had to convert to round weight in the calculations).

Average weights from DFO data for the traditional outside fisheries was used to estimate average weights for the FN commercial fisheries.

Ex-vessel price and wholesale price data are available from the provincial “Seafood Industry Seafood Year in Review” (SYIR) report.

### **2.3 Washington**

The Columbia River Inter-Tribal Fisheries Commission has data on commercial catch - numbers of fish and average weights on the Columbia River - but does not separate such catch between Washington and Oregon interests. The Pacific Fishery Management Council (PFMC) reports data on Columbia River commercial catch separately by Washington State and Oregon but only in weight units in their “Review of Ocean Salmon Fisheries” document. The Council also reports catch for ocean troll fisheries in Washington State and Oregon - but Washington has substantial commercial fisheries other than Columbia River and ocean troll. NOAA gives data on all commercial catch for Washington State but only in weight units and not in piece units.

As a result, we benchmarked Washington State commercial fishery catch to the NOAA catch weight units and backcalculated number of fish caught, using some average weight data from the Columbia River Inter-Tribal Fisheries Commission and professional judgement. We need to conduct further investigation of this.

The NOAA data also has ex-vessel price data for the commercial fishery overall.

Our interview with an individual from NOAA in charge of the IO-PAC model indicated that NOAA uses a common processor markup for all species of salmon for Washington State and Oregon in each year, namely 46% in 2012, 30% in 2013, and 38% in 2014. We estimate the 2015 markups as 40% (the markups are based on a limited EDC survey of groundfish processors who also process salmon).

### **2.4 Oregon**

In Oregon there are essentially only two major types of commercial fisheries, the Columbia River (a variety of gear types) and ocean troll.

We took the PFMC data for the Oregon component of the Columbia River fishery and the Oregon ocean troll fishery. The former had catch in weight units whereas the latter had catch in both weight and numbers of fish. We then estimated an average weight to convert the Columbia River catch to pieces. Again we need to reassess the piece count calculations but the procedure does produce a total catch weight consistent with NOAA figures.

The NOAA data set provides ex-vessel prices and values.

Similar to the Washington State case, we will use the IO-PAC processor markups in our analysis.

## 3.0 Recreational Sector

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The key information pieces for the recreational sector in each region are:

- no. fish caught
- no. of salmon angling days
- angler expenditures per day

We tried to identify four (4) separate recreational fishing segments in each region - freshwater charter (for hire) and private anglers plus saltwater charter (for hire) and private anglers.

The data challenges for the recreational sector are more daunting than for the commercial sector. One issue is identifying the share of angling activity, and hence expenditures, that is targeted at salmon rather than halibut, other bottom fish etc. In some cases we will have to use professional judgement on this matter.

The harvest data for the recreational sector is summarized in Exhibit 2 (separate region profiles are given in Appendix B).

### 3.1 SE Alaska

ADF&G has recreational catch numbers and angler day figures, separately for freshwater and saltwater, based on an annual household survey in Alaska - but this survey does not ask for directed angling effort at salmon.

Charter operators must complete an annual catch report and this report has some information on directed effort for salmon which we have accessed. We also have contacted ADF&G as to their informed opinion on the share of freshwater days attributable to salmon fishing. We will follow up with them.

No recent information on angler expenditure per day exists. The detailed 2007 Southwick study has not been replicated. NOAA did conduct a nationwide analysis, with information by state, as to economic impacts from marine angling in 2011 (“The Economic Contribution of Marine Angler Expenditures in the United States 2011”).

We will estimate recent angler expenditure data based on the Southwick and NOAA reports. There is also a 2011-13 Alaskan charter operator survey that is useful.

### 3.2 British Columbia

In mid 2012 DFO launched a pilot e-survey called “iREC” in which a sample of tidal recreational licence holders each month are asked to complete an Internet Survey as to their fishing activity in the past month. The survey results, although still preliminary and subject to further review, look promising. We have accessed them for this survey.

**Exhibit 2: Salmon Catch by Region - Recreational**

	2012					2013					2014					2015					
	SEAK	BC	WA	OR	Total	SEAK	BC	WA	OR	Total	SEAK	BC	WA	OR	Total	SEAK	BC	WA	OR	Total	
<b>FW Harvest '000 Fish</b>																					
Sockeye	9	85	61	0	155	11	85	24	0	120	13	172	56	0	241	12	85	65	0	163	
Coho	28	90	75	36	229	29	90	125	41	286	33	90	146	228	497	32	90	60	115	296	
Pink	7	0	0	0	7	12	0	380	0	392	4	0	0	0	4	7	0	208	0	215	
Chum	1	0	10	0	11	1	0	19	0	20	1	0	9	0	9	1	0	11	0	12	
Chinook	1	50	143	149	343	1	50	193	173	417	1	50	143	180	373	1	50	189	333	574	
<b>SW Harvest '000 Fish</b>																					
Sockeye	6	2	<1	<1	8	10	16	<1	<1	26	6	146	<1	<1	152	8	78	4	<1	90	
Coho	180	309	209	16	714	311	368	165	15	857	260	345	266	100	969	271	278	225	28	802	
Pink	50	48	<1	<1	98	87	226	135	<1	447	47	71	<1	<1	118	82	260	199	<1	541	
Chum	9	13	3	<1	25	22	18	3	<1	43	9	13	3	<1	25	10	18	3	<1	31	
Chinook	46	256	82	19	403	55	288	74	30	448	86	394	76	18	575	79	407	79	9	574	
<b>All Harvests '000 Fish</b>																					
Sockeye	15	87	61	<1	163	21	101	24	<1	146	19	318	56	<1	393	20	163	69	<1	252	
Coho	208	399	284	52	943	340	458	290	56	1,143	293	435	412	327	1,466	303	368	284	143	1,098	
Pink	57	48	<1	<1	105	99	226	515	<1	840	51	71	<1	<1	122	90	260	407	<1	756	
Chum	9	13	14	<1	36	23	18	22	<1	63	9	13	12	<1	34	11	18	15	<1	43	
Chinook	46	306	225	168	745	56	338	267	203	864	87	444	219	198	948	80	457	268	342	1,147	

Legend: SEAK - SE Alaska      WA - Washington      FW - Freshwater  
 BC - British Columbia      OR - Oregon      SW - Saltwater

Source: Appendix B

We used the iREC catch numbers for kept salmon. However, the angler days figures, not segmented by directed species, are lower than suggested by the DFO quinquennial (every 5 years) mail survey of anglers. For this report we made an estimate of marine angler days but we need to investigate this further.

We will update the angler expenditure information in the DFO quinquennial survey for this exercise. The last survey results presently available relate to the year 2010. But the 2015 results may be available for use in this study in the next 2 months.

### **3.3 Washington**

Washington Department of Fish & Wildlife has recreational salmon catch on freshwater and saltwater available in their annual "Sport Fish Report". The report also gives marine angler trips but not freshwater angler trips.

The PFMC Report which we used to profile the commercial salmon fishery in Washington and Oregon also has some information on recreational salmon angling in marine waters, segmented by charter and non-charter (private) components.

We will update the 2011 NOAA economic profile information for this project.

### **3.4 Oregon**

The Oregon Department of Fish & Wildlife has recreational salmon catch data on freshwater and saltwater. The database also gives marine angler days but not freshwater angler days.

The PFMC Report has data on marine angling segmented by charter and non-charter components for Oregon.

We will update the 2011 NOAA economic profile information for the project.

## 4.0 Next Steps

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Gordon Gislason will be in Anchorage AK the week of February 6 to interview ADF&G individuals and to work with ISER. The following week he will be in Portland OR at which time he can address some of the data questions that have arisen.

We will be analyzing other reports, such as TRG reports, on the economic dimensions of commercial and recreational fisheries in Washington State and Oregon.

# Appendix A

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## Commercial Data by Region

**Exhibit A.1: Commercial Catch of Salmon - Region SE Alaska**

	2012					2013					2014					2015					
	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum	Chinook	
<b>Number Caught</b>																					
Purse Seine	170,345	275,426	19,172,555	4,826,746	21,713	282,350	545,667	88,764,579	5,797,941	24,516	900,955	388,692	33,471,883	2,384,335	28,290	908,426	283,973	32,157,211	4,817,171	30,058	
Drift Net	498,100	265,327	938,892	3,517,702	26,243	456,008	441,552	1,664,045	3,422,488	34,525	497,968	554,301	1,417,432	2,381,367	27,877	389,752	251,020	1,372,627	3,287,124	29,266	
Troll	3,229	1,201,520	168,539	476,520	209,023	5,019	2,392,155	684,532	1,054,735	149,472	7,289	2,243,782	75,278	199,707	355,426	6,975	1,240,163	259,409	424,230	269,750	
Hatchery Cost Recovery	125,664	201,028	148,506	3,055,726	18,809	49,609	272,288	968,095	2,099,940	29,770	123,029	387,988	236,214	1,575,630	13,148	111,390	203,764	304,645	2,277,464	17,321	
Other	149,661	143,404	871,210	488,439	4,147	181,667	212,297	2,705,666	198,398	2,998	140,691	214,856	1,992,939	138,608	3,588	111,762	167,302	969,818	717,184	4,134	
All	946,999	2,086,705	21,299,702	12,365,133	279,935	974,653	3,863,959	94,786,917	12,573,502	241,281	1,669,932	3,789,619	37,193,746	6,679,647	428,329	1,528,305	2,146,222	35,063,710	11,523,173	350,529	
<b>RD Weight per Fish lbs</b>																					
Purse Seine	6.260	6.390	3.570	9.090	13.040	6.030	5.700	3.520	8.160	13.000	5.800	6.800	3.500	9.100	12.100	4.360	5.880	3.840	8.460	10.060	
Drift Net	6.260	6.390	3.570	9.090	13.040	6.030	5.700	3.520	8.160	13.000	5.800	6.800	3.500	9.100	12.100	4.360	5.880	3.840	8.460	10.060	
Troll	6.260	6.390	3.570	9.090	13.040	6.030	5.700	3.520	8.160	13.000	5.800	6.800	3.500	9.100	12.100	4.360	5.880	3.840	8.460	10.060	
Hatchery Cost Recovery	6.260	6.390	3.570	9.090	13.040	6.030	5.700	3.520	8.160	13.000	5.800	6.800	3.500	9.100	12.100	4.360	5.880	3.840	8.460	10.060	
Other	6.260	6.390	3.570	9.090	13.040	6.030	5.700	3.520	8.160	13.000	5.800	6.800	3.500	9.100	12.100	4.360	5.880	3.840	8.460	10.060	
<b>RD Weight Landed '000 lbs</b>																					
Purse Seine	1,066	1,760	68,446	43,875	283	1,703	3,110	312,451	4,7311	319	5,226	2,643	117,152	21,697	342	3,961	1,670	123,484	40,753	302	
Drift Net	3,118	1,695	3,352	31,976	342	2,750	2,517	5,857	27,928	449	2,888	3,769	4,961	21,670	337	1,699	1,476	5,271	27,809	294	
Troll	20	7,678	602	4,332	2,726	30	13,635	2,410	8,607	1,943	42	15,258	263	1,817	4,301	30	7,292	996	3,589	2,714	
Hatchery Cost Recovery	787	1,285	530	27,777	245	299	1,552	3,408	17,136	387	714	2,638	827	14,338	159	486	1,198	1,170	19,267	174	
Other	937	916	3,110	4,440	54	1,095	1,210	9,524	1,619	39	816	1,461	6,975	1,261	43	487	984	3,724	6,067	42	
All	5,928	13,334	76,040	112,399	3,650	5,877	22,025	333,650	102,600	3,137	9,686	25,769	130,178	60,785	5,183	6,663	12,620	134,645	97,486	3,526	

**Exhibit A.2: Commercial Catch of Salmon - Region BC**

	2012					2013					2014					2015					
	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum	Chinook	
<b>Number Caught</b>																					
Seine (Areas A, B)	209,680	362	609,541	540,328	0	24,061	42,936	11,559,036	751,524	110	5,228,142	29,244	3,597,103	421,786	331	599,616	9,721	1,195,732	1,304,128	5	
Gillnet (Areas C, D, E)	629,837	487	85,320	462,424	14,826	151,776	6,332	345,391	664,555	16,298	3,450,559	11,774	540,138	248,811	30,469	539,546	13,089	194,827	938,894	23,627	
Troll (Areas F, H)	2,158	217,558	65,370	27,755	139,693	21	405,434	110,918	42,809	103,234	387,652	212,416	37,575	2,859	279,879	2,697	261,861	46,909	49,650	160,971	
Transboundary	60,571	20,372	0	363	9,187	53,761	18,364	161	461	4,877	51,358	22,211	27	24	5,842	73,523	15,536	0	0	7,175	
First Nation Commercial	575,905	51,431	68,615	232,748	32,550	135,175	70,255	1,611,332	242,748	54,258	1,795,589	45,033	397,497	207,476	54,842	755,314	25,988	254,207	214,460	56,806	
All	1,478,151	290,210	828,846	1,263,618	196,256	364,794	543,321	13,626,838	1,702,097	178,777	10,913,300	320,678	4,572,340	880,956	371,363	1,970,696	326,195	1,691,675	2,507,132	248,584	
<b>RD Weight per Fish lbs</b>																					
Seine (Areas A, B)	4.472	6.007	3.113	10.850	12.000	4.500	6.000	3.357	10.851	12.000	5.767	6.000	3.115	11.519	12.000	4.642	6.000	3.356	10.181	12.000	
Gillnet (Areas C, D, E)	5.987	8.012	3.778	11.588	18.254	5.698	6.074	3.897	12.733	17.039	5.606	6.481	3.901	11.048	16.378	4.523	6.717	3.983	9.676	14.642	
Troll (Areas F, H)	6.226	7.390	3.815	10.593	13.667	6.000	7.565	3.865	7.671	12.402	6.169	5.363	3.315	9.664	13.581	6.161	5.385	3.459	8.649	13.152	
Transboundary	5.500	8.500	3.800	7.200	15.500	5.500	8.500	3.800	7.200	15.500	5.500	8.500	3.800	7.200	15.500	5.500	8.500	3.800	7.200	15.500	
First Nation Commercial	5.500	7.500	3.500	10.500	14.500	5.500	7.500	3.500	10.500	14.500	5.500	7.500	3.500	10.500	14.500	5.500	7.500	3.500	10.500	14.500	
<b>RD Weight Landed '000 lbs</b>																					
Seine (Areas A, B)	938	2	1,898	5,863	0	108	258	38,804	8,155	1	30,151	175	11,205	4,859	4	2,783	58	4,013	13,277	0	
Gillnet (Areas C, D, E)	3,771	4	322	5,359	271	865	38	1,346	8,462	278	19,344	76	2,107	2,749	499	2,440	88	776	9,085	346	
Troll (Areas F, H)	13	1,608	249	294	1,909	0	3,067	429	328	1,280	2,391	1,139	125	28	3,801	17	1,410	162	429	2,117	
Transboundary	333	173	0	3	142	296	156	1	3	76	282	189	0	0	91	404	132	0	0	111	
First Nation Commercial	3,167	386	240	2,444	472	743	527	5,640	2,549	787	9,876	338	1,391	2,178	795	4,154	195	890	2,252	824	
All	8,223	2,173	2,709	13,962	2,794	2,012	4,046	46,219	19,497	2,422	62,044	1,917	14,828	9,814	5,190	9,799	1,883	5,841	25,043	3,398	

**Exhibit A.3: Commercial Catch of Salmon - Region Washington**

	2012					2013					2014					2015				
	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum	Chinook
<b>Number Caught</b>																				
Columbia River	0	8,800	0	0	105,500	0	28,300	0	0	206,500	0	119,100	0	0	323,500	0	9,300	0	0	316,600
Other	156,700	381,700	1,000	870,900	321,100	27,600	306,000	6,044,000	1,240,400	306,700	772,900	578,500	1,500	960,400	168,600	77,100	78,800	724,000	830,400	240,000
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All	156,700	390,500	1,000	870,900	426,600	27,600	334,300	6,044,000	1,240,400	513,200	772,900	697,600	1,500	960,400	492,100	77,100	88,100	724,000	830,400	556,600
<b>RD Weight per Fish lbs</b>																				
Columbia River	5.500	7.500	4.000	12.000	15.000	5.500	7.500	4.000	12.000	15.000	5.500	7.500	4.000	12.000	15.000	5.500	7.500	4.000	12.000	15.000
Other	5.500	9.270	4.000	12.000	9.440	5.500	9.850	4.000	12.000	10.380	5.500	6.640	4.000	12.000	14.830	5.500	6.560	4.000	12.000	10.770
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>RD Weight Landed '000 lbs</b>																				
Columbia River	0	66	0	0	1,583	0	212	0	0	3,098	0	893	0	0	4,853	0	70	0	0	4,749
Other	862	3538	4	10,451	3,031	152	3,014	24,176	14,885	3,184	4,251	3,841	6	11,525	2,500	424	517	2,896	9,965	2,585
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All	862	3,604	4	10,451	4,614	152	3,226	24,176	14,885	6,281	4,251	4,734	6	11,525	7,353	424	587	2,896	9,965	7,334

**Exhibit A.4: Commercial Catch of Salmon - Region Oregon**

	2012					2013					2014					2015				
	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum	Chinook
<b>Number Caught</b>																				
Columbia River	800	13,700	0	100	63,300	0	36,500	100	0	115,400	1,300	204,500	0	0	123,000	2,100	24,500	0	0	104,000
Ocean Troll	0	624	0	0	73,101	200	452	0	0	112,757	0	10,998	0	0	208,096	0	2,187	0	0	104,031
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All	800	14,324	0	100	136,401	200	36,952	100	0	228,157	1,300	215,498	0	0	331,096	2,100	26,687	0	0	208,031
<b>RD Weight per Fish lbs</b>																				
Columbia River	3.500	7.500	0.000	12.000	15.000	3.500	7.500	4.000	0.000	15.000	3.500	7.500	0.000	0.000	15.000	3.500	7.500	0.000	0.000	15.000
Ocean Troll	0.000	8.000	0.000	0.000	11.660	0.000	5.500	0.000	0.000	13.170	0.000	7.000	0.000	0.000	14.210	0.000	6.000	0.000	0.000	13.130
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>RD Weight Landed ('000 lbs</b>																				
Columbia River	3	103	0	1	950	0	274	0	0	1,731	5	1,534	0	0	1,845	7	184	0	0	1,560
Ocean Troll	0	5	0	0	852	0	2	0	0	1,485	0	77	0	0	2,957	0	13	0	0	1,366
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All	3	108	0	1	1,802	0	276	0	0	3,216	5	1,611	0	0	4,802	7	197	0	0	2,926

# Appendix B

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## Recreational Data by Region

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**Exhibit B.1: Recreational Catch of Salmon - SE Alaska \$US**


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	2012	2013	2014	2015
<b>Freshwater Salmon Catch (pieces)</b>				
Sockeye	8,883	11,026	13,152	12,350
Coho	27,652	29,050	32,685	32,021
Pink	6,601	12,275	3,882	7,469
Chum	570	978	517	723
Chinook	741	919	837	873
<b>Saltwater Salmon Catch (pieces)</b>				
Sockeye	6,142	10,120	5,861	7,626
Coho	179,874	310,535	259,887	270,532
Pink	49,900	87,127	46,861	82,210
Chum	8,514	21,759	8,933	10,207
Chinook	45,754	55,473	86,105	78,886
<b>Total Salmon Catch (pieces)</b>				
Sockeye	15,025	21,146	19,013	19,976
Coho	207,526	339,585	292,572	302,553
Pink	56,501	99,402	50,743	89,679
Chum	9,084	22,737	9,450	10,930
Chinook	46,495	56,392	86,942	79,759
<b>All Angler Days</b>				
Freshwater for Hire	9,924	9,978	10,257	10,520
Freshwater Private	81,085	73,893	84,811	82,825
Saltwater for Hire	112,603	119,212	131,966	137,546
Saltwater Private	275,395	342,967	337,276	363,599
<b>Salmon % of All Angler Days</b>				
Freshwater for Hire	100%	100%	100%	100%
Freshwater Private	50%	60%	55%	55%
Saltwater for Hire	56%	57%	56%	56%
Saltwater Private	60%	70%	65%	65%
<b>Salmon Activity (Angler Days)</b>				
For Hire	72,982	77,929	84,158	87,546
Private	205,780	284,413	265,875	281,893
All	278,761	362,342	350,033	369,439

**Exhibit B.2: Recreational Catch of Salmon - British Columbia \$CA**

	2012	2013	2014	2015
<b>Freshwater Salmon Catch (pieces)</b>				
Sockeye	85,000	85,000	172,000	85,000
Coho	90,000	90,000	90,000	90,000
Pink	0	0	0	0
Chum	0	0	0	0
Chinook	50,000	50,000	50,000	50,000
<b>Saltwater Salmon Catch (pieces)</b>				
Sockeye	2,000	16,100	145,900	78,200
Coho	309,000	367,600	344,500	278,200
Pink	48,000	225,600	71,000	260,200
Chum	13,000	18,200	12,900	17,800
Chinook	256,000	288,400	394,200	407,000
<b>Total Salmon Catch (pieces)</b>				
Sockeye	87,000	101,100	317,900	163,200
Coho	399,000	457,600	434,500	368,200
Pink	48,000	225,600	71,000	260,200
Chum	13,000	18,200	12,900	17,800
Chinook	306,000	338,400	444,200	457,000
<b>All Angler Days</b>				
Freshwater for Hire	75,000	75,000	75,000	75,000
Freshwater Private	3,725,000	3,725,000	3,725,000	3,725,000
Saltwater for Hire	180,000	180,000	180,000	180,000
Saltwater Private	1,600,000	1,600,000	1,600,000	1,600,000
<b>Salmon % of All Angler Days</b>				
Freshwater for Hire	25%	25%	25%	25%
Freshwater Private	18%	18%	18%	18%
Saltwater for Hire	55%	55%	55%	55%
Saltwater Private	65%	65%	65%	65%
<b>Salmon Activity (Angler Days)</b>				
For Hire	117,750	117,750	117,750	117,750
Private	1,710,500	1,710,500	1,710,500	1,710,500
All	1,828,250	1,828,250	1,828,250	1,828,250

**Exhibit B.3: Recreational Catch of Salmon - Washington \$US**

	2012	2013	2014	2015
<b>Freshwater Salmon Catch (pieces)</b>				
Sockeye	61,395	23,744	55,591	65,336
Coho	74,973	125,261	146,164	59,517
Pink	0	380,142	0	207,582
Chum	10,332	18,932	8,807	11,351
Chinook	143,171	193,328	142,656	189,376
<b>Saltwater Salmon Catch (pieces)</b>				
Sockeye	58	146	355	4,090
Coho	208,792	164,656	265,532	224,878
Pink	163	134,539	52	198,931
Chum	3,492	3,487	3,073	3,288
Chinook	82,318	73,886	75,972	78,602
<b>Total Salmon Catch (pieces)</b>				
Sockeye	61,453	23,890	55,946	69,426
Coho	283,765	289,917	411,696	284,395
Pink	163	514,681	52	406,513
Chum	13,824	22,419	11,880	14,639
Chinook	225,489	267,214	218,628	267,978
<b>All Angler Days</b>				
Freshwater for Hire				
Freshwater Private				
Saltwater for Hire				
Saltwater Private	77,659	80,014	119,617	97,114
<b>Salmon % of All Angler Days</b>				
Freshwater for Hire				
Freshwater Private				
Saltwater for Hire				
Saltwater Private	100%	100%	100%	100%
<b>Salmon Activity (Angler Days)</b>				
For Hire	0	0	0	0
Private	77,659	80,014	119,617	97,114
All	77,659	80,014	119,617	97,114

**Exhibit B.4: Recreational Catch of Salmon - Oregon \$US**

	2012	2013	2014	2015
<b>Freshwater Salmon Catch (pieces)</b>				
Sockeye	0	0	0	0
Coho	36,205	41,390	227,777	114,617
Pink	0	0	0	0
Chum	0	0	0	0
Chinook	148,721	172,586	179,682	333,303
<b>Saltwater Salmon Catch (pieces)</b>				
Sockeye	0	0	0	0
Coho	16,079	14,536	99,507	28,282
Pink	0	0	0	0
Chum	0	0	0	0
Chinook	18,794	30,234	18,480	9,442
<b>Total Salmon Catch (pieces)</b>				
Sockeye	148,721	172,586	179,682	333,303
Coho	52,284	55,926	327,284	142,899
Pink	0	0	0	0
Chum	0	0	0	0
Chinook	18,794	30,234	18,480	9,442
<b>All Angler Days</b>				
Freshwater for Hire				
Freshwater Private				
Saltwater for Hire				
Saltwater Private	67,308	85,535	121,506	66,076
<b>Salmon % of All Angler Days</b>				
Freshwater for Hire				
Freshwater Private				
Saltwater for Hire				
Saltwater Private	100%	100%	100%	100%
<b>Salmon Activity (Angler Days)</b>				
For Hire	0	0	0	0
Private	67,308	85,535	121,506	66,076
All	67,308	85,535	121,506	66,076