

**APPENDIX B
OREGON PRODUCTION INDEX DATA**

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TABLE B-1. Millions of coho smolts^{a/} released annually into the OPI area by geographic area and rearing agency.

Year or Average	Columbia River					Oregon Coast					
	Oregon	Washington			Federal	Total	Private		California	Total OPI	
		Early	Late	Combined			ODFW ^{b/}	Yearlings			
1960-1965	5.6	-	-	6.1	4.5	16.2	2.0	-	2.0	0.4	18.6
1966-1970	6.0	10.2	4.9	15.1	6.5	27.6	2.9	0.0	2.9	1.3	31.8
1971-1975	6.8	10.7	6.8	17.5	4.5	28.8	3.9	0.0	3.9	1.2	33.9
1976-1980	8.0	7.3	10.1	17.4	4.7	30.1	3.8	1.4	5.2	0.7	36.0
1981-1985	7.1	4.3	14.4	18.7	3.2	29.0	3.9	3.3	7.2	0.7	36.9
1986-1990	7.3	3.1	15.6	18.7	4.1	30.1	5.2	1.9	7.1	1.4	38.6
1991	10.4	3.7	15.3	19.0	5.9	35.2	5.3	-	5.3	1.5	42.0
1992	11.5	4.3	14.3	18.6	2.7	32.8	6.2	-	6.2	0.7	39.7
1993	11.1	4.3	14.8	19.1	4.1	34.3	4.3	-	4.3	0.8	39.4
1994	9.1	2.5	12.0	14.5	3.0	26.6	5.2	-	5.2	0.6	32.4
1995	7.1	3.4	12.9	16.3	1.7	25.1	3.7	-	3.7	0.7	29.5
1996	8.4	3.4	12.9	16.3	3.4	28.1	3.3	-	3.3	0.3	31.7
1997	6.1	3.2	7.8	11.0	3.9	21.0	2.9	-	2.9	0.7	24.6
1998	6.1	5.8	11.4	17.2	3.6	26.8	1.7	-	1.7	0.6	29.1
1999	7.6	4.0	11.5	15.5	4.8	27.9	1.0	-	1.0	0.7	29.6
2000	7.8	6.2	10.8	17.0	5.9	30.7	0.9	-	0.9	0.6	32.2
2001	7.6	4.2	9.7	13.9	3.7	25.2	0.9	-	0.9	0.6	26.7
2002	7.5	3.3	8.6	11.9	4.3	23.7	1.0	-	1.0	0.6	25.3
2003	8.2	3.3	8.7	12.0	3.1	23.3	0.8	-	0.8	0.5	24.6
2004	6.7	3.0	8.8	11.8	3.6	22.1	0.8	-	0.8	0.6	23.5
2005	6.1	2.5	9.1	11.6	2.8	20.6	0.8	-	0.8	0.6	22.0
2006	6.1	2.8	9.0	11.7	2.6	20.4	0.8	-	0.8	0.6	21.8
2007	6.2	3.1	9.0	12.1	3.1	21.4	0.7	-	0.7	0.6	22.6
2008 ^{c/}	6.9	2.8	9.2	12.0	2.9	21.9	0.4	-	0.4	0.5	22.8

a/ Defined here as 30 fish per pound or larger and released in February or later.

b/ Beginning in 1989, does not include minor releases from STEP projects.

c/ Preliminary.

TABLE B-2. Data set used in predicting Oregon production index hatchery (OPIH) adult coho. Adults and jacks shown in thousands of fish and smolts in millions of fish.

Year (t)	Adults (t)		Jacks (t-1)			Columbia River Smolts (t-1)		
	OPIH ^{a/}	MSM ^{b/}	Total OPI ^{c/}	Columbia River ^{d/}	OR Coast/ CA ^{e/}	Delayed ^{f/}	Normal Timed ^{g/}	Adjustment Proportion ^{h/}
1970	2,765.1	.						
1971	3,365.0	.	179.4	172.8	6.6	0.0	24.0	0.0000
1972	1,924.8	.	103.7	100.8	2.9	0.0	28.3	0.0000
1973	1,817.0	.	91.4	85.7	5.7	1.8	29.9	5.1592
1974	3,071.1	.	144.1	132.0	12.1	2.9	28.5	13.4316
1975	1,652.8	.	76.2	75.1	1.1	1.8	27.8	4.8626
1976	3,885.3	.	171.5	146.2	25.3	2.0	29.0	10.0828
1977	987.5	.	53.8	46.3	7.5	0.2	28.9	0.3204
1978	1,824.1	.	103.2	99.2	4.0	0.0	31.4	0.0000
1979	1,476.7	.	72.5	64.1	8.4	5.0	32.6	9.8313
1980	1,224.0	.	57.6	51.6	6.0	6.7	28.9	11.9626
1981	1,064.5	.	48.7	40.6	8.1	5.6	28.1	8.0911
1982	1,266.8	.	61.3	55.0	6.3	6.8	32.4	11.5432
1983 ^{i/}	599.2	.	68.2	61.0	7.2	5.0	27.7	11.0108
1984	691.3	.	31.6	28.0	3.6	5.1	27.0	5.2889
1985	717.5	.	26.0	18.2	7.8	9.1	29.2	5.6719
1986	2,435.8	2,412.0	77.5	64.6	12.9	12.2	28.8	27.3653
1987	887.2	779.4	32.9	24.2	8.7	9.0	32.9	6.6201
1988	1,669.3	1,467.8	82.6	69.7	12.9	7.7	28.8	18.6351
1989	1,720.2	1,922.0	60.8	55.0	5.8	7.2	29.5	13.4237
1990	718.4	713.6	46.7	37.1	9.6	8.5	29.6	10.6537
1991	1,874.8	1,816.5	68.7	60.8	7.9	7.1	30.3	14.2469
1992	543.6	512.6	25.6	19.9	5.7	6.0	35.3	3.3824
1993	261.7	223.3	27.1	19.6	7.5	5.5	32.8	3.2866
1994	202.3	214.3	5.2	3.9	1.3	6.0	34.4	0.6802
1995	147.2	139.4	11.5	8.8	2.7	3.1	26.6	1.0256
1996	185.2	176.5	17.3	14.1	3.2	4.2	25.2	2.3500
1997	200.7	195.6	20.4	15.8	4.6	3.4	28.0	1.9186
1998	207.5	228.1	9.8	6.8	3.0	2.5	21.0	0.8095
1999	334.5	372.7	29.2	23.3	5.9	3.0	26.8	2.6082
2000	673.2	703.6	34.7	31.2	3.5	4.1	27.9	4.5849
2001	1,417.1	1,478.7	86.8	71.1	15.7	2.0	30.6	4.6471
2002	649.8	708.1	25.2	18.9	6.3	1.4	23.5	1.1260
2003	936.6	1,029.8	50.4	42.2	8.2	0.3	23.7	0.5342
2004	622.1	693.6	35.4	29.4	6.0	2.0	23.2	2.5345
2005	443.2	604.4	25.9	21.2	4.7	0.8	22.0	0.7709
2006	440.6	519.9	26.3	20.9	5.4	0.4	20.6	0.4058
2007	476.6	546.2	36.7	34.2	2.5	0.1	20.4	0.1676
2008	565.3	565.3	15.4	14.0	1.4	0.6	21.4	0.3925
2009		1073.1 ^{j/}	61.0	58.4	2.6	1.1	21.9	2.9333

a/ Adult OPIH = Harvest impacts plus escapement for public hatchery stocks originating in the Columbia River, Oregon coastal rivers, and the Klamath River, California.

b/ Adult MSM = Harvest impacts plus escapement for public hatchery stocks originating in the Columbia River, Oregon coastal rivers, and the Klamath River. Estimates derived from the MSM and used for prediction beginning in 2008.

c/ Jack OPI = Total Jack CR and Jack OC.

d/ Jack CR = Columbia River jack returns corrected for small adults.

e/ Jack OC = Oregon coastal and California hatchery jack returns corrected for small adults.

f/ Sm D = Columbia River delayed smolt releases from the previous year expected to return as adults in the year listed.

g/ Sm CR = Columbia River smolt release from the previous year expected to return as adults in the year listed.

h/ Correction term for delayed smolts released from Columbia River hatcheries (proportion).

i/ Data not used in subsequent predictions due to El Niño impacts.

j/ Preseason predicted adults.

TABLE B-3. Estimated coho salmon natural spawner abundance (SRS accounting) in Oregon coastal basins for each OCN coho management component. Estimates adjusted for visual observation bias by multiplying observed count by 1.33.

Component and Basin ^{a/}	Miles	Adjusted SRS Natural Coho Spawner Estimates															1994-2007
		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Avg.
NORTHERN																	
Nehalem	386	2,007	1,463	1,057	1,173	1,190	3,713	14,285	22,310	20,903	33,059	21,479	10,451	11,614	14,033	15,690	11,628
Tillamook	249	652	289	661	388	271	2,175	1,983	1,883	15,715	14,584	2,290	1,995	8,774	2,280	4,897	3,922
Nestucca	167	313	1,811	519	271	169	2,201	1,171	3,940	13,003	8,929	6,152	686	1,876	394	5,444	3,125
Ind. Tribs.	97	485	319	1,043	314	946	775	474	5,247	2,912	3,068	3,142	3,334	1,871	807	1,645	1,759
TOTAL	899	3,457	3,882	3,280	2,146	2,576	8,864	17,913	33,380	52,533	59,640	33,063	16,466	24,135	17,514	27,676	20,435
NORTH CENTRAL																	
Siletz	118	1,200	607	763	336	394	706	3,553	1,437	2,252	9,736	6,399	14,567	5,205	2,197	14,519	4,258
Yaquina	109	2,448	5,668	5,127	384	365	2,588	647	3,039	23,981	13,254	4,989	3,441	4,247	3,158	8,710	5,470
Alsea	221	1,279	681	1,637	680	213	2,050	2,465	3,339	6,170	8,957	6,005	13,907	1,972	2,146	11,431	4,195
Siuslaw	514	3,205	6,089	7,625	668	1,089	2,724	6,767	11,024	57,129	29,257	8,443	16,907	5,869	3,552	17,042	11,826
Ind. Tribs.	201	1,683	560	2,975	774	1,222	3,691	829	6,400	14,434	7,664	14,558	2,589	3,931	1,227	6,170	4,580
TOTAL	1,163	9,815	13,605	18,127	2,842	3,283	11,759	14,261	25,239	103,966	68,868	40,394	51,411	21,224	12,280	57,872	30,330
SOUTH CENTRAL																	
Umpqua	1,083	5,336	12,809	10,824	2,960	9,153	7,685	12,233	35,702	37,591	29,607	31,346	42,676	18,154	11,783	32,306	20,011
Coos	208	14,685	10,351	12,128	1,127	3,167	4,945	5,386	43,301	35,688	29,559	24,116	17,048	11,266	1,329	13,312	15,161
Coquille	331	5,035	2,116	16,169	5,720	2,466	3,001	6,130	13,310	8,610	23,909	22,276	11,806	28,577	13,968	9,874	11,531
Coastal Lakes	-	5,841	11,216	13,493	8,603	11,107	12,710	12,747	19,669	22,162	16,688	18,687	14,724	24,378	8,955	23,570	14,970
TOTAL	1,622	30,897	36,492	52,614	18,410	25,893	28,341	36,496	111,982	104,051	99,763	96,425	86,254	82,375	36,035	79,062	61,673
SOUTH																	
Rogue ^{b/}	-	5,439	3,761	4,622	8,282	2,316	1,438	10,966	12,213	7,800	6,754	24,481	9,953	3,937	5,179	414	7,170
COASTWIDE	-	49,608	57,740	78,643	31,680	34,068	50,402	79,636	182,814	268,350	235,025	194,363	164,084	131,671	71,008	165,024	119,608

a/ The sum of the individual basins may not equal the aggregate totals, due to the use of independent estimates at different geographic scales.

b/ Mark recapture estimate based on seining at Huntley Park in the lower Rogue River.

TABLE B-4. Data set used in predicting 2009 Oregon coastal natural river (OCNR) coho ocean recruits with Stratified Random Sampling (SRS) and Mixed Stock Model (MSM) accounting. Recruits shown in thousands of fish.

Year (t)	Recruits to Ocean				JanAnom ^{a/}	UpAnom (t-1) ^{b/}	Regime Index ^{c/}
	SRS	MSM	Ln SRS	Ln MSM			
1969	391.5	.	5.96999	.	-0.793	56.08	0
1970	183.1	.	5.21003	.	0.307	-16.92	0
1971	416.3	.	6.03141	.	-1.293	30.08	0
1972	185.5	.	5.22305	.	-1.393	10.08	0
1973	235.0	.	5.45959	.	-0.493	23.08	0
1974	196.4	.	5.28015	.	-0.693	47.08	0
1975	208.4	.	5.33946	.	-0.493	48.08	0
1976	451.7	.	6.11302	.	-0.893	65.08	0
1977	161.2	.	5.08265	.	-0.193	32.08	0
1978	111.6	.	4.71492	.	1.207	17.08	0
1979	188.8	.	5.24069	.	-1.193	-2.92	0
1980	108.3	.	4.68491	.	0.507	17.08	0
1981	174.5	.	5.16192	.	1.607	-1.92	0
1982	185.7	.	5.22413	.	-0.093	-8.92	0
1983	96.0	.	4.56435	.	1.007	14.08	0
1984	94.7	.	4.55071	.	0.607	-24.92	0
1985	124.9	.	4.82751	.	0.007	-24.92	0
1986	97.9	114.6	4.58395	4.74145	0.107	-24.92	0
1987	70.1	78.1	4.24992	4.35799	0.507	-39.92	0
1988	124.4	154.3	4.82350	5.0389	-0.093	-21.92	0
1989	103.8	115.1	4.64247	4.7458	-0.493	-43.92	0
1990	60.4	63.0	4.10099	4.14313	0.007	-21.92	1
1991	68.8	84.3	4.23120	4.43438	-0.893	-37.92	1
1992	86.9	107.5	4.46476	4.67749	0.107	43.08	1
1993	81.1	74.9	4.39568	4.31615	-0.593	7.08	1
1994	40.6	40.9	3.70377	3.71113	1.107	-50.92	1
1995	47.6	47.9	3.86283	3.86912	0.707	-3.92	1
1996	65.5	64.5	4.18205	4.16667	1.807	-1.92	1
1997	16.3	16.3	2.79117	2.79117	0.907	9.08	1
1998	21.7	22.0	3.07731	3.09104	2.407	-24.92	1
1999	37.8	38.7	3.63231	3.65584	-0.393	18.08	1
2000	58.9	58.3	4.07584	4.0656	0.107	84.08	1
2001	161.4	156.2	5.08389	5.05114	0.707	9.08	0
2002	266.5	245.7	5.58537	5.50411	0.207	65.08	0
2003	249.4	227.5	5.51906	5.42715	1.107	54.08	0
2004	175.2	163.3	5.16593	5.09559	0.407	53.08	0
2005	134.4	128.8	4.90082	4.85826	0.317	3.08	0
2006	116.4	100.4	4.75703	4.60916	1.537	-34.92	0
2007	49.6	81.7	3.90399	4.40305	-0.103	16.08	0
2008		146.5		4.98703	-0.983	24.08	0
2009		191.4 ^{d/}		.	-0.513	33.08	0

a/ JanAnom = The annual deviation from mean (1969-1996) January sea surface temperature (degrees Centigrade) at Charleston, Oregon.

b/ UpAnom = Annual deviation from mean (1946-1996) April-June Bakun upwelling index at 42° N latitude.

c/ Regiem Index flags the cold ocean regimes (1986-1989, 2001 - 2008) with a 0 and warm regimes (1990 – 2000) with a 1.

d/ Preseason adult prediction.