

Ocean Abundance Projections and Prospective Harvest Levels for Klamath River Fall Chinook, 2013 Season

Klamath River Technical Team
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Summary

Predictor performance for 2012 and forecasts for 2013 are:

	Age	2012			2013 Forecast
		Preseason	Postseason	Pre/Post	
Ocean Abundance	3	1,567,600	1,157,200	1.35	390,700
	4	79,600	81,100	0.98	331,200
	5	4,600	5,300	0.87	5,700
Proportion Natural	3	0.62	0.67	0.93	0.66
	4	0.64	0.80	0.80	0.71
	5	0.77	0.99	0.78	0.79
Ocean Harvest Rate	4	0.160	0.078	2.04	-
Ocean Fall Harvest	3	-	0	-	-
	4	-	3,170	-	-
	5	-	537	-	-

The implications of the 2013 forecast ocean abundances, proportions natural, and the 2012 ocean fall harvest for fisheries management in 2013 were explored with the Klamath Ocean Harvest Model (KOHM) under two hypothetical management scenarios: (A) no additional ocean fisheries (commercial and recreational) from Jan–Aug 2013 between Cape Falcon and Point Sur (3708 Klamath River fall Chinook were estimated to be harvested in the ocean during the Sept–Dec 2012 period) and no Klamath River fisheries (tribal and recreational) in 2013, and (B) the 2012 ocean fishery seasons and quotas, the 2013 river recreational allocation of 42 percent (of non-tribal harvest), and a tribal allocation of 50% (of total harvest). The results are:

Sector	KOHM Forecasts	
	(A) No-fishing in 2013	(B) 2012 Regulations
Adult Spawners		
Natural Areas	228,300	57,700
Hatcheries	99,100	26,000
Adult Harvest		
Ocean Commercial	2000	61,600
Ocean Recreational	1700	10,600
River Recreational	0	52,900
Tribal	0	125,100
Age-4 Ocean Harvest Rate	0.010	0.155
Spawner Reduction Rate	0.010	0.750

With no further fishing in 2013 on the current stock, the expected number of natural area adult spawners would be 228,300, with an expected age-4 ocean harvest rate of 1% (3170 age-4 KRFC were harvested in the Sept–Dec 2012 period). Applying 2012 fishery regulations resulted in 57,700 natural area adult spawners and an age-4 ocean harvest rate of 15.5%. These forecasts are provided for informational purposes only; the Pacific Fishery Management Council (PFMC) will adopt 2013 ocean salmon fishery management regulations in April 2013.

Introduction

The PFMC's fishery management plan for Klamath River fall Chinook (PFMC 2012; Amendment 16) allowed a natural spawner reduction rate via fisheries of no more than 0.68, with a minimum escapement of 40,700 natural area adult spawners. Natural area adult spawners are defined as age-three or older fall Chinook that spawn outside of the hatchery environment, regardless of their origin. The KOHM is used by the PFMC to forecast the impacts of ocean and river fisheries on Klamath River fall Chinook, and to evaluate whether a given management alternative is expected to meet the fishery management plan's biological goals for Klamath River fall Chinook. The KOHM requires forecasts of Klamath River fall Chinook ocean abundance and proportion of natural spawners by age, along with the estimated harvest of these fish in the previous calendar year's September through December (fall) ocean fisheries. This report presents these forecasts and estimates for the 2013 management year. For informational purposes, KOHM forecasts of harvest and spawner escapement are also presented under two hypothetical management scenarios: (A) no ocean or river fisheries in 2013, and (B) the 2012 ocean fishery seasons and quotas, the 2012 river recreational allocation of 42 percent (of non-tribal harvest), and a tribal allocation of 50 percent (of total harvest). Historical records of ocean abundance, harvest, harvest rates, river escapement, and predictor performance are also compiled. These records differ from those presented in KRTAT reports issued prior to 2002 for reasons described in KRTAT (2002) and Goldwasser et al. (2001).

Data and Analytical Methods

The age-composition of the 2012 river run of Klamath River fall Chinook salmon used in this report is from KRTT (2013).

Ocean Abundance Forecast

The age-specific ocean abundance predictors are based on the use of a sibling regression. The age *a* September 1 ocean abundance estimates for brood years 1979-2008 were regressed against the age *a-1* river run-size estimates of their respective cohorts (Table 1, Figure 1). By convention, September 1 is the date that immature Klamath River fall Chinook remaining in the ocean are incremented one year in age. The regressions were fit using least-squares with the y-intercept constrained to zero, which gives the biologically reasonable expectation that an age *a-1* river run-size of zero predicts an age *a* ocean abundance of zero. This procedure is consistent with recommendations of the PFMC's Salmon Technical Team, and Scientific and Statistical Committee.

Ocean abundance has been forecast preseason since 1985 using methods similar to those described above (Tables 2 and 3). Postseason ocean abundance estimates were calculated using cohort reconstruction methods that accommodate spatial and/or temporal variations in maturity, straying, and fishery impact rates applied separately to the hatchery and natural components of the stock. The postseason estimates for 2011 (age-three) and 2012 (age-three, age-four) are preliminary, as their respective cohorts are incomplete (Table 1).

The 2012 age-three ocean abundance forecast was 1.35 times its postseason estimate (Table 2); the age-three predictor has overestimated abundance in 14 of the 28 previous years. The 2012 age-four ocean abundance forecast was 0.98 times its postseason estimate (Table 2); the age-four predictor has overestimated abundance in 17 of the 28 previous years. The 2012 age-five ocean abundance forecast was 0.88 times its postseason estimate (Table 2); the age-five predictor has underestimated abundance in 16 of the 26 previous years.

Proportion of Natural Spawners Forecast

The age-specific proportion of natural area spawners is also forecast using sibling regression. In this case, the age a observed proportion natural for calendar years 1997-2012 were regressed against the age $a-1$ observed proportion natural of their respective cohorts (Table 4, Figure 2). Data for calendar years prior to 1996 were not used because: (1) at this time the hatcheries did not always have an open-door policy (some fish were denied entry into the hatcheries and presumably spawned in natural areas); and (2) the proportion natural time-series (Figure 2a) indicates a shift-point near 1995-1996. The regressions were fit using ordinary least-squares for age-three and age-four. For age-five, the slope of the relationship was insignificant, and the arithmetic mean was used as the predictor.

The 2012 proportion natural forecast for age-three, -four, and -five fish was 0.62, 0.64, and 0.77, respectively, and the corresponding post-season estimates are 0.67, 0.80, and 0.99, respectively (Table 4).

Historical Harvest Levels and Rates

Historical (1986-2012) ocean and river harvest levels and rates of age-three and age-four Klamath River fall Chinook are listed in Table 5. The 2012 age-four ocean harvest rate (preliminary) postseason estimate of 7.8 percent is less than the preseason forecast of 16.0 percent (PFMC 2012).

2012 Ocean Fishery Fall Harvest

Klamath River fall Chinook ocean harvests during the 2012 fall period are estimated postseason through expansion of the coded-wire tags (all release types) recovered in those fisheries. Each coded-wire tag recovery is expanded for sampling and mark-rate, and then to account for the harvest of natural-origin fish, further expanded by the estimated basin-wide escapement (hatchery- plus natural-origin) per hatchery-origin fish observed in the river run just prior to these fall fisheries (same brood and calendar year). In 2012, 3708 Klamath River fall Chinook were estimated to have been harvested.

2013 Forecasts

The 2013 forecasts of ocean stock abundance and proportion natural area spawners are (Figures 1 and 2):

<i>Age</i>	<i>Abundance</i>	<i>Proportion Natural</i>
3	390,700	0.66
4	331,200	0.71
5	5,700	0.79

For the 2012 ocean fall fisheries, the natural production multipliers for the coded-wire tag recoveries are:

<i>Age (a)</i>	<i>Total Escapement (a-1)</i>	<i>Hatchery-origin Escapement (a-1)</i>	<i>Natural-production Multiplier (a)</i>
3	21,473	3,243	6.62
4	248,532	93,765	2.65
5	51,352	13,373	3.84

The fishery-area-month-age-specific estimated harvests are presented in Table 6. Estimated fall landings are accounted for in ocean fisheries harvest allocation in the following calendar year, and the associated harvest impacts are deducted from the September 1 ocean abundance forecasts.

KOHM principal forecast results under two management scenarios: (A) no additional ocean fisheries (commercial and recreational) from Jan–Aug 2013 between Cape Falcon and Point Sur (3708 Klamath River fall Chinook were estimated to be harvested in the ocean during the Sept–Dec 2012 period) and no Klamath River fisheries (tribal and recreational) in 2013, and (B) the 2012 ocean fishery seasons and quotas, the 2012

river recreational allocation of 42% (of non-tribal harvest), and a tribal allocation of 50% (of total harvest); are provided in Appendices A and B respectively.

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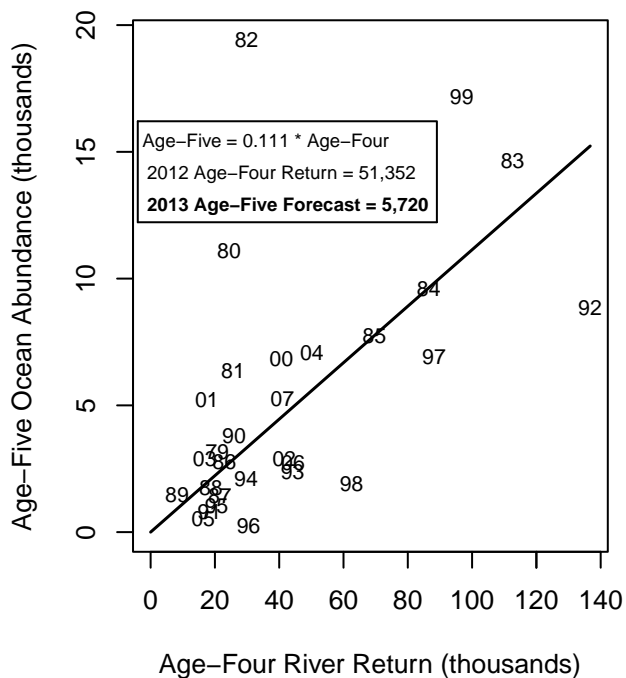
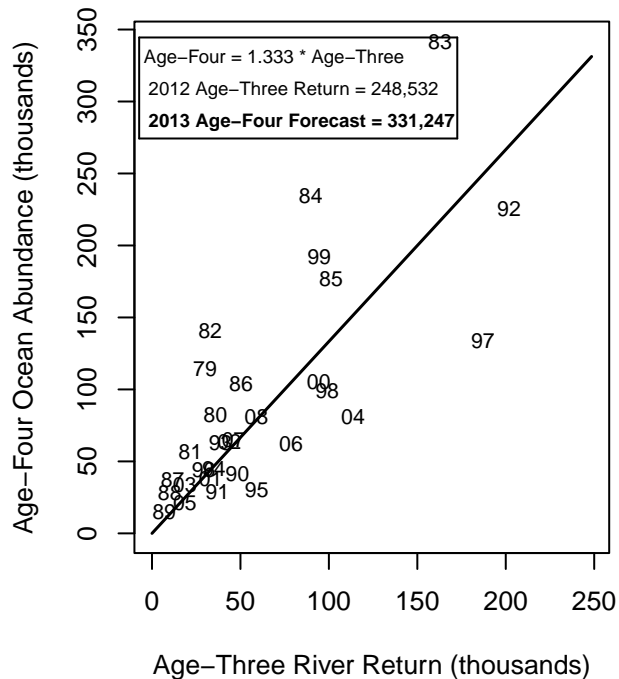
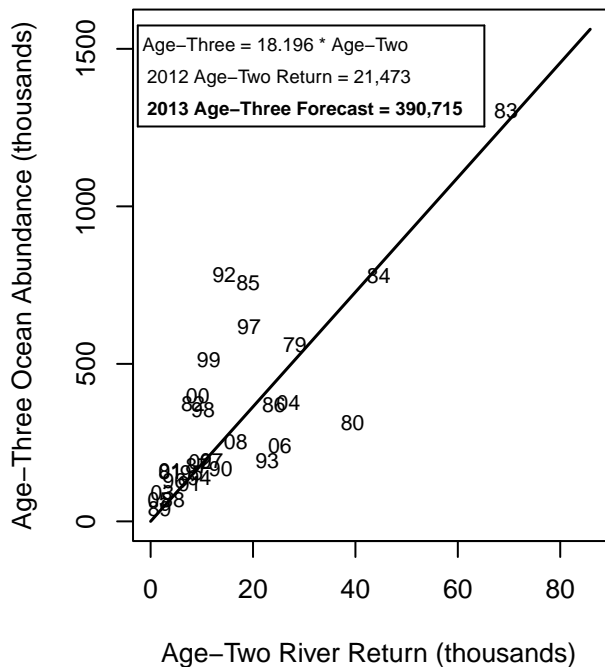


Figure 1. Regression estimators for Klamath River fall Chinook ocean abundance (Sept. 1) based on that year's river return of same cohort. Numbers in plots denote brood years.

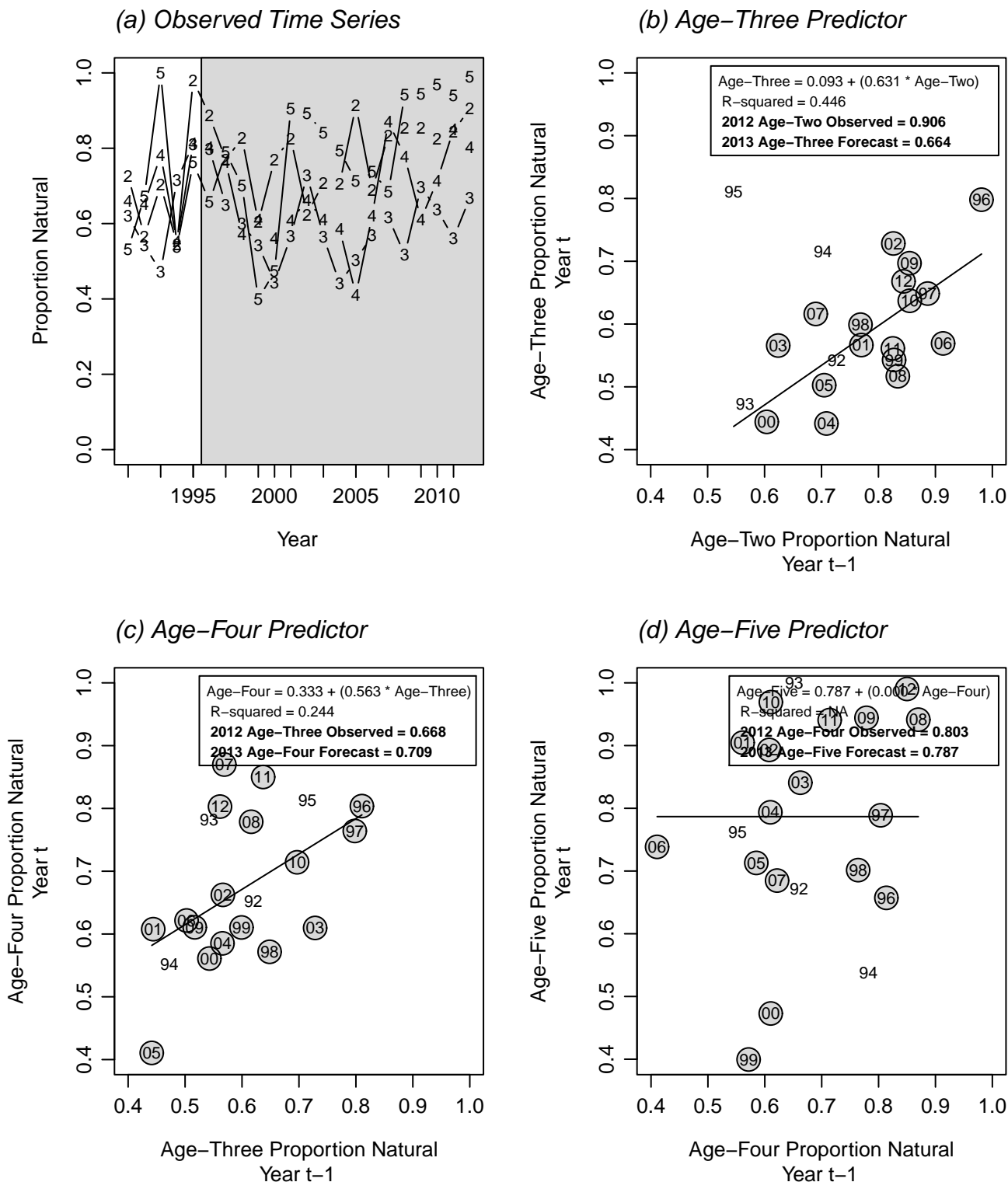


Figure 2. Age-specific proportion of natural area spawners. Panel (a): observed time-series; numbers in plot denote age; shaded area depicts data used for predictor. Panels (b)–(d): age-specific predictor based on previous-year observed proportion for same cohort; numbers in plots denote years 1992–2012; shaded circles indicate years used for predictor; age-three and age-four are regression predictors; age-five predictor is arithmetic mean.

Table 1. Klamath River fall Chinook ocean abundance (thousands), ocean harvest rate, and river-run size estimates (thousands) by age.

Calendar Year(t)	Ocean Abundance			Annual Ocean Harvest Rate		Klamath Basin River Run (t)				Total Adults
	Sept1(t-1)			Sept1(t-1) thru Aug31(t)						
	Age 3	Age 4	Total	Age 3	Age 4	Age 2	Age 3	Age 4	Age 5	
1981	493.2	57.0	550.2	0.21	0.53	28.2	64.1	14.4	1.8	80.3
1982	561.1	133.4	694.5	0.30	0.52	39.4	30.1	33.9	2.6	66.6
1983	313.3	114.2	427.5	0.19	0.60	3.8	35.9	20.7	0.9	57.5
1984	157.3	82.8	240.1	0.08	0.38	8.3	21.7	24.4	1.1	47.2
1985	374.8	56.9	431.7	0.11	0.24	69.4	32.9	25.7	5.8	64.4
1986	1,304.4	140.8	1,445.2	0.18	0.46	44.6	162.9	29.8	2.3	195.0
1987	781.2	341.9	1,123.1	0.16	0.43	19.1	89.7	112.6	6.8	209.1
1988	756.3	234.8	991.0	0.20	0.39	24.1	101.2	86.5	3.9	191.6
1989	369.8	177.2	547.1	0.15	0.36	9.1	50.4	69.6	4.3	124.3
1990	176.1	104.0	280.1	0.30	0.55	4.4	11.6	22.9	1.3	35.9
1991	69.4	37.2	106.6	0.03	0.18	1.8	10.0	21.6	1.1	32.7
1992	39.5	28.2	67.7	0.02	0.07	13.7	6.9	18.8	1.0	26.7
1993	168.5	15.0	183.5	0.05	0.16	7.6	48.3	8.2	0.7	57.2
1994	119.9	41.7	161.6	0.03	0.09	14.4	37.0	26.0	1.0	64.0
1995	784.3	28.7	813.0	0.04	0.14	22.8	201.9	18.3	2.6	222.8
1996	192.3	225.5	417.8	0.05	0.16	9.5	38.8	136.7	0.3	175.8
1997	140.2	62.8	203.0	0.01	0.06	8.0	35.0	44.2	4.6	83.7
1998	154.8	44.7	199.5	0.00	0.09	4.6	59.2	29.7	1.7	90.6
1999	129.1	30.5	159.5	0.02	0.09	19.2	29.2	20.5	1.3	51.0
2000	617.1	44.2	661.3	0.06	0.10	10.2	187.1	30.5	0.5	218.1
2001	356.1	133.8	489.9	0.03	0.09	11.3	99.1	88.2	0.2	187.4
2002	513.6	98.9	612.5	0.02	0.15	9.2	94.6	62.5	3.7	160.8
2003	400.2	192.2	592.4	0.08	0.21	3.8	94.3	96.8	0.9	191.9
2004	159.6	105.1	264.6	0.12	0.34	9.7	33.2	40.7	5.3	79.2
2005	190.0	38.1	228.1	0.02	0.20	2.3	43.8	17.5	3.9	65.2
2006	90.6	63.4	154.0	0.01	0.10	26.9	18.5	41.6	1.3	61.4
2007	376.8	33.6	410.5	0.06	0.21	1.7	113.7	16.8	1.6	132.1
2008	68.0	81.4	149.4	0.00	0.10	25.2	18.6	50.2	1.7	70.6
2009	240.7	21.1	261.9	0.00	0.00	11.9	78.6	16.4	5.6	100.6
2010	193.1	62.1	255.2	0.01	0.04	16.6	46.1	44.3	0.4	90.9
2011	252.3 ^{a/}	64.8	317.1	0.03 ^{a/}	0.08	84.9	59.0	41.0	2.0	102.0
2012	1,157.2 ^{b/}	81.1 ^{a/}	1,238.3	---- ^{c/}	0.08 ^{a/}	21.5	248.5	51.4	2.2	302.1

a/ Preliminary: incomplete cohort data (age-5 data unavailable).

b/ Preliminary: incomplete cohort data (age-4 and age-5 data unavailable).

c/ Not estimated: incomplete cohort data (age-4 and age-5 data unavailable).

Table 2. Comparisons of preseason forecast and postseason estimates for ocean abundance of adult Klamath River fall Chinook (Page 1 of 4).

Year (t)	Preseason Forecast ^{a/}	Postseason Estimate	Pre/Postseason
	Sept 1 (t-1)	Sept 1 (t-1)	
Age-Three			
1985	113,000	276,000	0.41
1986	426,000 ^{b/}	1,304,409	0.33
1987	511,800	781,198	0.66
1988	370,800	756,261	0.49
1989	450,600	369,828	1.22
1990	479,000	176,133	2.72
1991	176,200	69,424	2.54
1992	50,000	39,502	1.27
1993	294,400	168,473	1.75
1994	138,000	119,913	1.15
1995	269,000	784,260	0.34
1996	479,800	192,272	2.50
1997	224,600	140,153	1.60
1998	176,000	154,799	1.14
1999	84,800	129,066	0.66
2000	349,600	617,098	0.57
2001	187,200	356,128	0.53
2002	209,000	513,561	0.41
2003	171,300	400,242	0.43
2004	72,100	159,560	0.45
2005	185,700	189,976	0.98
2006	44,100	90,606	0.49
2007	515,400	376,841	1.37
2008	31,600	68,003	0.46
2009	474,900	240,726	1.97
2010	223,400	193,109	1.16
2011	304,600	252,308	1.21
2012 ^{c/}	1,567,600	1,157,189	1.35
2013	390,700		

Table 2. Comparisons of preseason forecast and postseason estimates for ocean abundance of adult Klamath River fall Chinook (Page 2 of 4).

Year (t)	Preseason Forecast ^{a/}	Postseason Estimate	Pre/Postseason
	Sept 1 (t-1)	Sept 1 (t-1)	
Age-Four			
1985	56,875	57,500	0.99
1986	66,250	140,823	0.47
1987	206,125	341,875	0.60
1988	186,375	234,772	0.79
1989	215,500	177,245	1.22
1990	50,125	103,951	0.48
1991	44,625	37,172	1.20
1992	44,750	28,169	1.59
1993	39,125	15,037	2.60
1994	86,125	41,736	2.06
1995	47,000	28,725	1.64
1996	268,500	225,521	1.19
1997	53,875	62,820	0.86
1998	46,000	44,733	1.03
1999	78,750	30,456	2.59
2000	38,875	44,176	0.88
2001	247,000	133,801	1.85
2002	143,800	98,927	1.45
2003	132,400	192,156	0.69
2004	134,500	105,051	1.28
2005	48,900	38,079	1.28
2006	63,700	63,383	1.01
2007	26,100	33,615	0.78
2008	157,200	81,366	1.93
2009	25,200	21,124	1.19
2010	106,300	62,099	1.71
2011	61,600	64,768	0.95
2012 ^{c/}	79,600	81,123	0.98
2013	331,200		

Table 2. Comparisons of preseason forecast and postseason estimates for ocean abundance of adult Klamath River fall Chinook (Page 3 of 4).

Year (t)	Preseason Forecast ^{a/}	Postseason Estimate	Pre/Postseason
	Sept 1 (t-1)	Sept 1 (t-1)	
Age-Five			
1985 ^{d/}	--	11,113	--
1986 ^{d/}	--	6,376	--
1987	5,250	19,414	0.27
1988	13,250	14,632	0.91
1989	10,125	9,612	1.05
1990	7,625	7,767	0.98
1991	1,500	2,774	0.54
1992	1,250	1,444	0.87
1993	1,125	1,759	0.64
1994	500	1,468	0.34
1995	2,000	3,805	0.53
1996	1,125	787	1.43
1997	7,875	8,859	0.89
1998	3,250	2,382	1.36
1999	2,000	2,106	0.95
2000	1,375	1,051	1.31
2001	1,250	258	4.84
2002	9,700	6,933	1.40
2003	6,500	1,915	3.39
2004	9,700	17,170	0.56
2005	5,200	6,857	0.76
2006	2,200	5,236	0.42
2007	4,700	2,911	1.61
2008	1,900	2,900	0.66
2009	5,600	7,059	0.79
2010	1,800	518	3.47
2011	5,000	2,753	1.82
2012 ^{c/}	4,600	5,254	0.88
2013	5,700		

Table 2. Comparisons of preseason forecast and postseason estimates for ocean abundance of adult Klamath River fall Chinook (Page 4 of 4).

Year (t)	Preseason Forecast ^{a/}	Postseason Estimate	Pre/Postseason
	Sept 1 (t-1)	Sept 1 (t-1)	
Total Adults			
1985 ^{d/}	169,875	344,613	0.49
1986 ^{d/}	492,250	1,451,608	0.34
1987	723,175	1,142,487	0.63
1988	570,425	1,005,665	0.57
1989	676,225	556,685	1.21
1990	536,750	287,851	1.86
1991	222,325	109,370	2.03
1992	96,000	69,115	1.39
1993	334,650	185,269	1.81
1994	224,625	163,117	1.38
1995	318,000	816,790	0.39
1996	749,425	418,580	1.79
1997	286,350	211,832	1.35
1998	225,250	201,914	1.12
1999	165,550	161,628	1.02
2000	389,850	662,325	0.59
2001	435,450	490,187	0.89
2002	362,500	619,421	0.59
2003	310,200	594,313	0.52
2004	216,300	281,781	0.77
2005	239,800	234,912	1.02
2006	110,000	159,225	0.69
2007	546,200	413,367	1.32
2008	190,700	152,269	1.25
2009	505,700	268,909	1.88
2010	331,500	255,726	1.30
2011	371,200	319,829	1.16
2012 ^{c/}	1,651,800	1,243,566	1.33
2013	727,600	--	--

a/ Original preseason forecasts for years 1985-2001 were for May 1(t); converted to Sept 1(t-1) forecasts by dividing the May 1(t) number by the Sept 1(t-1) through May 1(t) survival rate presumed by modelers in those years: 0.5 age-three, 0.8 age-four, 0.8 age-5.

b/ A scalar of 0.75 was applied to the jack count because 1) most jacks returned to the Trinity River and 2) the jack count was outside the database range.

c/ Preliminary.

d/ Age-5 preseason ocean abundance forecast unavailable.

Table 3. Summary of management objectives and predictor performance for Klamath River fall Chinook.

Year (t)	Preseason Ocean Abundance Forecast ^{a/}		Postseason Ocean Abundance Estimate		Preseason Age-4 Harvest Rate Forecast ^{b/}		Postseason Age-4 Harvest Rate Estimate ^{c/}		Preseason Adult Harvest Forecast		Postseason Adult Harvest Estimate	
	Sept 1 (t-1)		Sept 1 (t-1)		Forecast ^{b/}		Rate Estimate ^{c/}		Harvest Forecast		Harvest Estimate	
	Age-3	Age-4	Age-3	Age-4	Ocean	River	Ocean	River	Ocean	River	Ocean	River
1986	426,000	66,250	1,304,409	140,823	0.28	0.50	0.46	0.67	72,000	37,700	301,999	46,154
1987	511,800	206,125	781,198	341,875	0.28	0.53	0.43	0.44	121,200	78,200	277,224	73,265
1988	370,800	186,375	756,261	234,772	0.31	0.53	0.39	0.52	114,100	65,400	253,905	73,854
1989	450,600	215,500	369,828	177,245	0.30	0.49	0.36	0.70	128,100	67,600	125,117	54,340
1990	479,000	50,125	176,133	103,951	0.30	0.49	0.55	0.36	85,100	31,200	114,786	11,459
1991	176,200	44,625	69,424	37,172	0.13	0.28	0.18	0.45	16,700	12,800	9,872	13,581
1992	50,000	44,750	39,502	28,169	0.06	0.15	0.07	0.27	4,200	4,200	3,142	6,787
1993	294,400	39,125	168,473	15,037	0.12	0.43	0.16	0.49	20,100	22,500	11,355	12,808
1994	138,000	86,125	119,913	41,736	0.07	0.20	0.09	0.29	10,400	14,300	7,961	13,524
1995	269,000	47,000	784,260	28,725	0.07	0.32	0.14	0.19	13,500	18,500	32,233	21,637
1996	479,800	268,500	192,272	225,521	0.17	0.66	0.16	0.39	88,400	129,100	45,155	69,241
1997	224,600	53,875	140,153	62,820	0.10	0.43	0.06	0.26	17,600	26,500	8,656	17,764
1998	176,000	46,000	154,799	44,733	0.07	0.29	0.09	0.30	10,200	14,800	4,891	17,897
1999	84,800	78,750	129,066	30,456	0.10	0.28	0.09	0.45	12,300	18,100	5,116	16,942
2000	349,600	38,875	617,098	44,176	0.11	0.53	0.10	0.25	24,000	32,400	42,050	35,066
2001	187,200	247,000	356,128	133,801	0.14	0.61	0.09	0.29	45,600	105,300	21,747	50,780
2002	209,000	143,800	513,561	98,927	0.13	0.57	0.15	0.26	30,000	70,900	28,895	35,069
2003	171,300	132,400	400,242	192,156	0.16	0.50	0.21	0.28	30,600	52,200	70,684	39,715
2004	72,100	134,500	159,560	105,051	0.15	0.38	0.34	0.48	26,500	35,800	63,885	29,807
2005	185,700	48,900	189,976	38,079	0.08	0.16	0.20	0.19	7,100	9,600	12,826	10,001
2006	44,100	63,700	90,606	63,383	0.11	0.23	0.10	0.18	10,000	10,000	10,401	10,345
2007	515,400	26,100	376,841	33,615	0.16	0.63	0.21	0.56	30,200	51,400	30,244	33,884
2008	31,600	157,200	68,003	81,366	0.02	0.43	0.10	0.38	4,500	49,500	8,679	24,180
2009	474,900	25,200	240,726	21,124	0.00	0.57	0.00	0.40	100	61,700	51	34,040
2010	223,400	106,300	193,109	62,099	0.12	0.49	0.04	0.40	22,600	46,600	4,506	32,920
2011	304,600	61,600	252,308	64,768	0.16	0.54	0.08	0.34	26,900	42,700	12,270	30,502
2012 ^{d/}	1,567,600	79,600	1,157,189	81,123	0.16	0.65	0.08	0.51	92,400	227,600	42,410	115,051

a/ Original preseason forecast for years 1986-2001 were for May 1(t); converted to Sept 1 (t-1) forecasts by dividing the May 1(t) number by the Sept 1(t-1) through May 1(t) survival rate presumed by modelers in those years: 0.5 age-three, 0.8 age-four, 0.8 age-five.

b/ Ocean harvest rate forecast is the fraction of the predicted ocean abundance expected to be harvested Sept 1 (t-1) through Aug 31 (t). River harvest rate forecast is the fraction of the predicted river run expected to be harvested in river fisheries. Original ocean harvest rate forecasts for year(t), 1986-2001, were based on a May 1(t) ocean abundance denominator; converted to Sept 1(t-1) abundance denominator by multiplying former values by 0.8 (the age-four survival rate between Sept 1 (t-1) and May (t) presumed by modelers in those years).

c/ Ocean harvest rate is the fraction of the postseason ocean abundance harvested Sept 1(t-1) through Aug 31(t). River harvest rate is the fraction of the river run harvested by river fisheries.

d/ Preliminary.

Table 4. Numbers of hatchery and natural-area adult fall Chinook spawners in the Klamath Basin by age. ^{a/}

Year	Hatchery Spawners					Natural Area Spawners					Proportion Natural				
	Age 2	Age 3	Age 4	Age 5	Adults	Age 2	Age 3	Age 4	Age 5	Adults	Age 2	Age 3	Age 4	Age 5	Adults
1985					22,500					25,700					0.53
1986					32,900					113,400					0.78
1987					29,100					101,700					0.78
1988					33,500					79,400					0.70
1989					22,000					43,900					0.67
1990					8,100					15,600					0.66
1991	270	2,426	3,827	232	6,485	718	3,956	7,430	263	11,649	0.73	0.62	0.66	0.53	0.64
1992	3,948	2,576	4,627	157	7,360	5,143	3,051	8,657	321	12,029	0.57	0.54	0.65	0.67	0.62
1993	1,619	20,797	846	0	21,643	3,825	18,629	3,039	190	21,858	0.70	0.47	0.78	1.00	0.50
1994	5,200	8,864	8,016	192	17,072	6,245	22,230	9,879	224	32,333	0.55	0.71	0.55	0.54	0.65
1995	335	34,737	2,716	406	37,859	17,324	148,639	11,856	1,298	161,793	0.98	0.81	0.81	0.76	0.81
1996	792	4,360	15,649	24	20,033	6,174	17,232	64,048	46	81,326	0.89	0.80	0.80	0.66	0.80
1997	1,272	10,484	7,560	618	18,662	4,225	19,343	24,493	2,308	46,144	0.77	0.65	0.76	0.79	0.71
1998	595	20,411	8,588	220	29,219	2,855	30,509	11,462	517	42,488	0.83	0.60	0.57	0.70	0.59
1999	6,857	10,046	4,081	200	14,327	10,447	11,927	6,396	133	18,456	0.60	0.54	0.61	0.40	0.56
2000	1,909	87,643	9,833	136	97,612	6,394	70,042	12,565	122	82,729	0.77	0.44	0.56	0.47	0.46
2001	1,631	31,306	23,802	4	55,112	7,747	40,908	36,889	38	77,835	0.83	0.57	0.61	0.90	0.59
2002	2,331	15,867	11,177	137	27,181	3,867	42,557	21,932	1,146	65,635	0.62	0.73	0.66	0.89	0.71
2003	864	35,403	26,295	84	61,782	2,102	46,116	41,084	444	87,644	0.71	0.57	0.61	0.84	0.59
2004	1,981	14,505	8,205	271	22,981	4,730	11,469	11,567	1,043	24,079	0.70	0.44	0.59	0.79	0.51
2005	101	18,583	8,187	929	27,699	1,068	18,778	5,705	2,307	26,790	0.91	0.50	0.41	0.71	0.49
2006	6,462	6,791	12,495	235	19,521	14,382	8,969	20,528	664	30,161	0.69	0.57	0.62	0.74	0.61
2007	213	34,073	854	122	35,049	1,071	54,693	5,712	265	60,670	0.83	0.62	0.87	0.68	0.63
2008	2,931	7,015	6,512	26	13,553	17,223	7,504	22,928	417	30,849	0.85	0.52	0.78	0.94	0.69
2009	1,372	15,849	3,628	136	19,613	8,090	36,417	5,691	2,303	44,411	0.85	0.70	0.61	0.94	0.69
2010	2,501	10,866	7,179	7	18,052	11,806	19,067	17,937	221	37,225	0.83	0.64	0.71	0.97	0.67
2011	11,424	18,381	3,874	82	22,337	61,849	23,517	21,945	1,303	46,765	0.84	0.56	0.85	0.94	0.68
2012	1,629	51,450	4,486	2	55,938	15,705	103,548	18,270	204	122,022	0.91	0.67	0.80	0.99	0.69

a/ Age structure of hatchery and natural area spawners not available prior to 1991.

Table 5. Harvest levels and rates of age-three and age-four Klamath River fall Chinook (Page 1 of 2).

Year(t)	Ocean Fisheries (Sept 1(t-1) through Aug 31(t))							River Fisheries (t)			
	KMZ			North of	South of	Subtotal	Ocean	Total	Net	Sport	Total
	Troll	Sport	Subtotal	KMZ	KMZ						
HARVEST (numbers of fish)											
Age-Three											
1986	35,632	4,876	40,508	73,777	122,913	196,690	237,198	8,100	18,100	26,200	
1987	17,240	5,083	22,323	43,439	56,378	99,817	122,140	11,400	11,400	22,800	
1988	15,999	5,165	21,164	24,317	107,971	132,288	153,452	12,500	15,600	28,100	
1989	6,456	11,783	18,239	15,315	23,729	39,044	57,283	2,700	900	3,600	
1990	81	4,357	4,438	36,579	11,006	47,585	52,023	1,300	1,400	2,700	
1991	0	1,022	1,022	344	810	1,154	2,176	2,123	1,277	3,400	
1992	0	0	0	972	0	972	972	970	251	1,221	
1993	0	822	822	833	6,424	7,257	8,079	5,426	2,917	8,343	
1994	42	604	646	0	3,387	3,387	4,033	4,543	965	5,508	
1995	0	999	999	12,213	14,810	27,023	28,022	11,840	5,536	17,376	
1996	0	0	0	0	9,314	9,314	9,314	12,363	3,661	16,024	
1997	0	232	232	620	1,215	1,835	2,067	2,166	2,736	4,902	
1998	0	6	6	298	466	764	770	2,231	5,781	8,012	
1999	63	180	243	1,262	433	1,695	1,938	4,981	1,748	6,729	
2000	404	3,282	3,686	8,604	25,203	33,807	37,493	22,458	4,893	27,351	
2001	113	105	218	2,749	6,082	8,831	9,049	17,885	7,294	25,179	
2002	220	784	1,004	1,501	9,915	11,416	12,420	11,734	6,258	17,992	
2003	173	679	852	1,885	27,309	29,194	30,046	6,996	5,061	12,057	
2004	402	971	1,373	9,719	7,331	17,050	18,423	4,679	2,051	6,730	
2005	0	568	568	619	2,381	3,000	3,568	4,394	1,641	6,035	
2006	0	477	477	32	341	373	850	2,388	13	2,401	
2007	770	8,099	8,869	4,193	9,365	13,558	22,427	17,543	5,734	23,277	
2008	0	0	0	0	0	0	0	3,225	608	3,833	
2009	0	51	51	0	0	0	51	19,820	4,715	24,535	
2010	112	28	140	0	1,667	1,667	1,807	13,132	1,884	15,016	
2011 ^{al}	345	1,176	1,521	36	5,019	5,055	6,576	13,286	2,630	15,916	
2012 ^{al}	1,428	14,581	16,009	1,231	16,737	17,968	33,977	74,905	11,874	86,779	
Age-Four											
1986	7,745	1,113	8,858	23,486	31,913	55,399	64,257	17,000	2,900	19,900	
1987	21,736	4,427	26,163	70,645	48,832	119,477	145,640	41,000	8,500	49,500	
1988	11,870	3,596	15,466	26,381	50,296	76,677	92,143	38,600	6,200	44,800	
1989	6,064	9,735	15,799	32,116	16,608	48,724	64,523	41,000	7,700	48,700	
1990	3,997	2,919	6,916	39,627	10,624	50,251	57,167	6,000	2,200	8,200	
1991	0	1,001	1,001	1,513	4,135	5,648	6,649	7,593	2,016	9,609	
1992	171	55	226	1,783	12	1,795	2,021	4,360	723	5,083	
1993	0	0	0	849	1,616	2,465	2,465	3,786	243	4,029	
1994	0	1,124	1,124	1,168	1,499	2,667	3,791	6,666	818	7,484	
1995	0	242	242	1,879	1,771	3,650	3,892	2,957	480	3,437	
1996	773	3,464	4,237	10,337	20,741	31,078	35,315	43,959	9,080	53,039	
1997	3	172	175	463	2,994	3,457	3,632	8,734	2,586	11,320	
1998	0	105	105	3,942	0	3,942	4,047	7,164	1,822	8,986	
1999	15	381	396	1,657	696	2,353	2,749	8,789	494	9,283	
2000	117	895	1,012	2,327	1,076	3,403	4,415	6,733	756	7,489	
2001	1,312	1,604	2,916	5,819	3,926	9,745	12,661	20,759	4,819	25,578	
2002	1,938	827	2,765	2,811	9,416	12,227	14,992	11,929	4,063	15,992	
2003	834	918	1,752	7,855	30,007	37,862	39,614	22,754	4,592	27,346	
2004	1,421	1,215	2,636	11,504	21,949	33,453	36,089	17,623	1,751	19,374	
2005	247	317	564	5,243	1,909	7,152	7,716	3,048	304	3,352	
2006	196	725	921	4,192	985	5,177	6,098	7,569	42	7,611	
2007	270	2,336	2,606	1,991	2,472	4,463	7,069	8,987	502	9,489	
2008	6,376	1,105	7,481	546	113	659	8,140	17,891	1,260	19,151	
2009	0	0	0	0	0	0	0	5,831	706	6,537	
2010	43	112	155	889	1,485	2,374	2,529	16,630	1,134	17,764	
2011	418	176	594	1,046	3,791	4,837	5,431	12,587	1,466	14,053	
2012 ^{al}	348	2,158	2,506	787	3,065	3,852	6,358	24,763	1,646	26,409	

Table 5. Harvest levels and rates of age-three and age-four Klamath River fall Chinook (Page 2 of 2).

Year(t)	Ocean Fisheries (Sept 1(t-1) through Aug 31(t))							River Fisheries (t)		
	KMZ			North of	South of	Subtotal	Ocean Total	Net	Sport	Total
	Troll	Sport	Subtotal	KMZ	KMZ					
HARVEST RATE^{b/}										
Age-Three										
1986	0.03	0.00	0.03	0.06	0.09	0.15	0.18	0.05	0.11	0.16
1987	0.02	0.01	0.03	0.06	0.07	0.13	0.16	0.13	0.13	0.25
1988	0.02	0.01	0.03	0.03	0.14	0.17	0.20	0.12	0.15	0.28
1989	0.02	0.03	0.05	0.04	0.06	0.11	0.15	0.05	0.02	0.07
1990	0.00	0.02	0.03	0.21	0.06	0.27	0.30	0.11	0.12	0.23
1991	0.00	0.01	0.01	0.00	0.01	0.02	0.03	0.21	0.13	0.34
1992	0.00	0.00	0.00	0.02	0.00	0.02	0.02	0.14	0.04	0.18
1993	0.00	0.00	0.00	0.00	0.04	0.04	0.05	0.11	0.06	0.17
1994	0.00	0.01	0.01	0.00	0.03	0.03	0.03	0.12	0.03	0.15
1995	0.00	0.00	0.00	0.02	0.02	0.03	0.04	0.06	0.03	0.09
1996	0.00	0.00	0.00	0.00	0.05	0.05	0.05	0.32	0.09	0.41
1997	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.06	0.08	0.14
1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.10	0.14
1999	0.00	0.00	0.00	0.01	0.00	0.01	0.02	0.17	0.06	0.23
2000	0.00	0.01	0.01	0.01	0.04	0.05	0.06	0.12	0.03	0.15
2001	0.00	0.00	0.00	0.01	0.02	0.02	0.03	0.18	0.07	0.25
2002	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.12	0.07	0.19
2003	0.00	0.00	0.00	0.00	0.07	0.07	0.08	0.07	0.05	0.13
2004	0.00	0.01	0.01	0.06	0.05	0.11	0.12	0.14	0.06	0.20
2005	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.10	0.04	0.14
2006	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.13	0.00	0.13
2007	0.00	0.02	0.02	0.01	0.02	0.04	0.06	0.15	0.05	0.20
2008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.03	0.21
2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.06	0.31
2010	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.28	0.04	0.33
2011 ^{a/}	0.00	0.00	0.01	0.00	0.02	0.02	0.03	0.23	0.04	0.27
2012 ^{a/}	0.00	0.01	0.01	0.00	0.01	0.02	0.03	0.30	0.05	0.35
Age-Four										
1986	0.05	0.01	0.06	0.17	0.23	0.39	0.46	0.57	0.10	0.67
1987	0.06	0.01	0.08	0.21	0.14	0.35	0.43	0.36	0.08	0.44
1988	0.05	0.02	0.07	0.11	0.21	0.33	0.39	0.45	0.07	0.52
1989	0.03	0.05	0.09	0.18	0.09	0.27	0.36	0.59	0.11	0.70
1990	0.04	0.03	0.07	0.38	0.10	0.48	0.55	0.26	0.10	0.36
1991	0.00	0.03	0.03	0.04	0.11	0.15	0.18	0.35	0.09	0.45
1992	0.01	0.00	0.01	0.06	0.00	0.06	0.07	0.23	0.04	0.27
1993	0.00	0.00	0.00	0.06	0.11	0.16	0.16	0.46	0.03	0.49
1994	0.00	0.03	0.03	0.03	0.04	0.06	0.09	0.26	0.03	0.29
1995	0.00	0.01	0.01	0.07	0.06	0.13	0.14	0.16	0.03	0.19
1996	0.00	0.02	0.02	0.05	0.09	0.14	0.16	0.32	0.07	0.39
1997	0.00	0.00	0.00	0.01	0.05	0.06	0.06	0.20	0.06	0.26
1998	0.00	0.00	0.00	0.09	0.00	0.09	0.09	0.24	0.06	0.30
1999	0.00	0.01	0.01	0.05	0.02	0.08	0.09	0.43	0.02	0.45
2000	0.00	0.02	0.02	0.05	0.02	0.08	0.10	0.22	0.02	0.25
2001	0.01	0.01	0.02	0.04	0.03	0.07	0.09	0.24	0.05	0.29
2002	0.02	0.01	0.03	0.03	0.10	0.12	0.15	0.19	0.06	0.26
2003	0.00	0.00	0.01	0.04	0.16	0.20	0.21	0.24	0.05	0.28
2004	0.01	0.01	0.03	0.11	0.21	0.32	0.34	0.43	0.04	0.48
2005	0.01	0.01	0.01	0.14	0.05	0.19	0.20	0.17	0.02	0.19
2006	0.00	0.01	0.01	0.07	0.02	0.08	0.10	0.18	0.00	0.18
2007	0.01	0.07	0.08	0.06	0.07	0.13	0.21	0.53	0.03	0.56
2008	0.08	0.01	0.09	0.01	0.00	0.01	0.10	0.36	0.03	0.38
2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.04	0.40
2010	0.00	0.00	0.00	0.01	0.02	0.04	0.04	0.37	0.03	0.40
2011	0.01	0.00	0.01	0.02	0.06	0.07	0.08	0.31	0.04	0.34
2012 ^{a/}	0.00	0.03	0.03	0.01	0.04	0.05	0.08	0.48	0.03	0.51

a/ Preliminary data (incomplete cohort).

b/ Ocean harvest rates are the fraction of Sept 1(t-1) ocean abundance harvested in these fisheries. River harvest rates are the fraction of the river run (t) harvested in these fisheries.

Table 6. Fall 2012 (September - November) ocean landings of Klamath River fall Chinook by fishery, age, and KOHM area.

COMMERCIAL FISHERY										
KOHM area ^{a/}	Age 3			Age 4			Age 5			Total
	Sept	Oct	Nov	Sept	Oct	Nov	Sept	Oct	Nov	
NO	--	--	--	395	132	--	--	--	--	527
CO	--	--	--	396	--	--	55	--	--	451
KO	--	--	--	159	--	--	113	--	--	272
KC	--	--	--	739	--	--	32	--	--	771
FB	--	--	--	--	--	--	--	--	--	0
SF	--	--	--	--	--	--	--	--	--	0
MO	--	--	--	--	--	--	--	--	--	0
Total	0	0	0	1,689	132	0	200	0	0	2,021

SPORT FISHERY										
KOHM area ^{a/}	Age 3			Age 4			Age 5			Total
	Sept	Oct	Nov	Sept	Oct	Nov	Sept	Oct	Nov	
NO	--	--	--	109	--	--	--	--	--	109
CO	--	--	--	14	--	--	--	--	--	14
KO	--	--	--	547	45	--	270	--	--	862
KC	--	--	--	634	--	--	68	--	--	702
FB	--	--	--	--	--	--	--	--	--	0
SF	--	--	--	--	--	--	--	--	--	0
MO	--	--	--	--	--	--	--	--	--	0
Total	0	0	0	1,304	45	0	337	0	0	1,687

a/ KOHM areas are as follows: NO=Newport & Tillamook; CO=Coos Bay; KO=Klamath Management Zone in Oregon; KC=Klamath Management Zone in California; FB=Fort Bragg; SF=San Francisco; and MO=Monterey.

MO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
Total	1642	45	0	0	0	0	0	0	0	0	0	0	0	1687	NA	NA

Chinook Harvest (All Stocks): Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	9700	6800	NA	NA	NA	NA	0	0	0	0	0	0	16500
CO	4000	2000	600	NA	NA	NA	0	0	0	0	0	0	6600
KO	900	100	NA	NA	NA	NA	NaN	NaN	0	0	0	0	1000
KC	5200	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	5200
FB	1700	NA	NA	NA	NA	NA	NA	0	0	0	0	0	1700
SF	5000	3900	NA	NA	NA	NA	NaN	0	0	0	0	0	8900
MO	200	NA	NA	NA	NA	NA	NaN	0	0	0	0	0	200
Total	26700	12800	600	NA	NA	NA	0	0	0	0	0	0	40100

Chinook Harvest (All Stocks): Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	2000	400	NA	NA	NA	NA	NA	NaN	0	0	0	0	2400
CO	700	60	10	NA	NA	NA	NA	NaN	0	0	0	0	770
KO	1200	500	NA	NA	NA	NA	NA	NA	0	0	0	0	1700
KC	2700	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	2700
FB	400	80	60	NA	NA	NaN	NaN	0	0	0	0	0	540
SF	3900	1800	80	NA	NA	0	0	0	0	0	0	0	5780
MO	100	100	NA	NA	NA	NaN	0	0	0	0	0	0	200
Total	11000	2940	150	NA	NA	0	0	0	0	0	0	0	14090

Klamath Contribution Rates: Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	0.041	0.019	NA	NA	NA	NA	0.181	0.033	0.072	0.041	0.080	0.128
CO	0.113	0.000	0	NA	NA	NA	0.154	0.131	0.113	0.134	0.228	0.291
KO	0.302	0.000	NA	NA	NA	NA	0.000	0.000	0.188	0.273	0.366	0.391
KC	0.148	NA	NA	NA	NA	NA	NA	NA	0.718	0.518	0.389	0.475
FB	0.000	NA	NA	NA	NA	NA	NA	0.101	0.282	0.358	0.281	0.127
SF	0.000	0.000	NA	NA	NA	NA	NA	0.000	0.086	0.122	0.106	0.042
MO	0.000	NA	NA	NA	NA	NA	NA	0.000	0.024	0.031	0.060	0.003

Klamath Contribution Rates: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	0.054	0.000	NA	NA	NA	NA	NA	0.000	0.008	0.004	0.063	0.034
CO	0.020	0.000	0	NA	NA	NA	NA	0.000	0.065	0.067	0.076	0.060
KO	0.680	0.091	NA	NA	NA	NA	NA	NA	0.030	0.090	0.195	0.394
KC	0.260	NA	NA	NA	NA	NA	NA	NA	0.182	0.200	0.174	0.244
FB	0.000	0.000	0	NA	NA	0.000	0.000	0.025	0.065	0.079	0.093	0.045
SF	0.000	0.000	0	NA	NA	0.003	0.004	0.024	0.012	0.045	0.017	0.002
MO	0.000	0.000	NA	NA	NA	0.000	0.003	0.008	0.003	0.003	0.007	0.006

Total Effort: Troll

SF	NA	NA	NA	NA	0	0	0	0	0	0	0	0
MO	NA	NA	NA	NA	0	0	0	0	0	0	0	0

Quotas: recreational, non-retention

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
KO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
KC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Mgt.Input.Files/river.dat

	parameter	value
1	pi.t	0.00
2	pi.r	NA
3	H.r.tot	0.00
4	CR.r	0.00
5	c.r	0.07
6	s.r	0.10
7	E.nat.tot	NA

Appendix B. KOHM: Summary Output. Thu Feb 21 15:15:03 2013
2013 Stock Projections; 2012 Regulations.

Klamath Escapement

Absent fishing: 330397
Hatcheries: 99923
Natural areas: 230473

With fishing

Mature adults: 274476
Strays: 840
Klamath Basin: 273636
Spawners: 83651
Hatcheries: 25982
Natural areas: 57669
Reduction rate: 0.750

Klamath Harvest

Total: 250213
River: 178027
Ocean: 72187

Tribal: 125107 0.500 (objective: 0.500)

Non-tribal: 125107
River: 52920 0.423 (objective: 0.423)
Ocean troll: 61597
CA / OR: 0.699 / 0.301
Ocean sport: 10589
KMZ: 7251 0.100
Age-four o.harv.rate: 0.155 (objective: <= 0.16)

Klamath Harvest: ocean troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	%CA
NO	395	132	0	0	0	0	0	535	1034	364	431	1464	4354	NA
CO	451	0	0	0	0	0	0	1334	1634	1263	2401	5329	12413	NA
KO	272	0	0	0	0	0	0	0	133	562	506	320	1794	NA
KC	771	0	0	0	0	0	0	0	0	0	0	0	771	1.5
FB	0	0	0	0	0	0	0	0	0	0	15062	6464	21526	42.5
SF	0	0	0	0	0	0	0	0	3477	3526	9341	911	17254	34.1
MO	0	0	0	0	0	0	0	0	1379	778	1297	31	3485	6.9
Total	1889	132	0	0	0	0	0	1869	7657	6493	29039	14519	61597	NA

Klamath Harvest: ocean sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	%CA	%CA.rec
NO	109	0	0	0	0	0	0	0	1	0	77	14	201	NA	NA
CO	14	0	0	0	0	0	0	0	14	34	199	68	329	NA	NA
KO	817	45	0	0	0	0	0	0	23	177	389	1024	2475	NA	NA
KC	702	0	0	0	0	0	0	0	807	1025	957	1286	4776	9.4	63.0
FB	0	0	0	0	0	0	0	19	187	437	583	139	1365	2.7	18.0
SF	0	0	0	0	0	0	0	165	104	422	418	17	1126	2.2	14.8

MO	0	0	0	0	0	0	0	123	28	50	104	11	317	0.6	4.2
Total	1642	45	0	0	0	0	0	307	1163	2146	2727	2559	10589	NA	NA

Chinook Harvest (All Stocks): Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	9700	6800	NA	NA	NA	NA	0	16121	14380	8874	5374	11410	72659
CO	4000	2000	600	NA	NA	NA	0	10153	14466	9445	10552	18292	69509
KO	900	100	NA	NA	NA	NA	NaN	NaN	710	2000	1500	1000	6210
KC	5200	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	5200
FB	1700	NA	NA	NA	NA	NA	NA	0	0	0	53618	50764	106082
SF	5000	3900	NA	NA	NA	NA	NA	NaN	40209	29001	88145	21803	188058
MO	200	NA	NA	NA	NA	NA	NA	NaN	56540	25197	21642	12224	115802
Total	26700	12800	600	NA	NA	NA	0	26274	126305	74517	180832	115493	563520

Chinook Harvest (All Stocks): Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	2000	400	NA	NA	NA	NA	NaN	NaN	81	26	1223	407	4137
CO	700	60	10	NA	NA	NA	NaN	NaN	216	517	2639	1124	5265
KO	1200	500	NA	NA	NA	NA	NA	NA	763	1958	1996	2603	9019
KC	2700	NA	NA	NA	NA	NA	NA	NA	4431	5134	5488	5275	23028
FB	400	80	60	NA	NA	NaN	NaN	762	2896	5551	6250	3098	19098
SF	3900	1800	80	NA	NA	0	0	6784	8798	9436	24673	7406	62878
MO	100	100	NA	NA	NA	NaN	0	15368	8930	14787	14914	1818	56017
Total	11000	2940	150	NA	NA	0	0	22914	26115	37409	57182	21731	179441

Klamath Contribution Rates: Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	0.041	0.019	NA	NA	NA	NA	0.181	0.033	0.072	0.041	0.080	0.128
CO	0.113	0.000	0	NA	NA	NA	0.154	0.131	0.113	0.134	0.228	0.291
KO	0.302	0.000	NA	NA	NA	NA	0.000	0.000	0.188	0.281	0.337	0.320
KC	0.148	NA	NA	NA	NA	NA	NA	NA	0.718	0.518	0.389	0.475
FB	0.000	NA	NA	NA	NA	NA	NA	0.101	0.282	0.358	0.281	0.127
SF	0.000	0.000	NA	NA	NA	NA	NA	0.000	0.086	0.122	0.106	0.042
MO	0.000	NA	NA	NA	NA	NA	NA	0.000	0.024	0.031	0.060	0.003

Klamath Contribution Rates: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	0.054	0.000	NA	NA	NA	NA	0.000	0.000	0.008	0.004	0.063	0.034
CO	0.020	0.000	0	NA	NA	NA	0.000	0.000	0.065	0.067	0.076	0.060
KO	0.680	0.091	NA	NA	NA	NA	NA	NA	0.030	0.090	0.195	0.394
KC	0.260	NA	NA	NA	NA	NA	NA	NA	0.182	0.200	0.174	0.244
FB	0.000	0.000	0	NA	NA	0.000	0.000	0.025	0.065	0.079	0.093	0.045
SF	0.000	0.000	0	NA	NA	0.003	0.004	0.024	0.012	0.045	0.017	0.002
MO	0.000	0.000	NA	NA	NA	0.000	0.003	0.008	0.003	0.003	0.007	0.006

Total Effort: Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	0	429	926	736	584	663	3338
CO	NA	NA	NA	NA	0	0	0	491	710	655	480	696	3031
KO	NA	NA	NA	NA	0	0	0	11	35	87	73	60	266
KC	NA	NA	NA	NA	0	0	0	0	37	31	56	43	167
FB	NA	NA	NA	NA	0	0	0	0	37	21	1338	1460	2856
SF	NA	NA	NA	NA	0	0	0	0	1785	567	1947	1048	5347
MO	NA	NA	NA	NA	0	0	0	0	2139	754	887	256	4036
Total	NA	NA	NA	NA	0	0	0	930	5668	2851	5366	4225	19040

Total Effort: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	34	102	661	858	15662	3139	20457
CO	NA	NA	NA	NA	0	0	16	55	500	1422	11279	4676	17948
KO	NA	NA	NA	NA	0	0	0	0	1979	2218	3592	5566	13355
KC	NA	NA	NA	NA	0	0	0	0	4914	5005	6799	6755	23473
FB	NA	NA	NA	NA	0	0	0	850	2246	4853	7800	4385	20135
SF	NA	NA	NA	NA	0	0	0	5470	7997	10857	20588	13305	58217
MO	NA	NA	NA	NA	0	0	0	13523	8099	6955	7322	1786	37685
Total	NA	NA	NA	NA	0	0	50	20001	26397	32169	73042	39612	191271

Season Effort: Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	0	429	926	736	584	663	3338
CO	NA	NA	NA	NA	0	0	0	491	710	655	480	696	3031
KO	NA	NA	NA	NA	0	0	0	11	35	0	0	0	46
KC	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
FB	NA	NA	NA	NA	0	0	0	0	0	0	1329	1460	2789
SF	NA	NA	NA	NA	0	0	0	0	1785	547	1947	1048	5327
MO	NA	NA	NA	NA	0	0	0	0	2139	744	887	256	4026
Total	NA	NA	NA	NA	0	0	0	930	5595	2682	5227	4122	18557

Season Effort: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	34	102	661	858	15662	3139	20457
CO	NA	NA	NA	NA	0	0	16	55	500	1422	11279	4676	17948
KO	NA	NA	NA	NA	0	0	0	0	1979	2218	3592	5566	13355
KC	NA	NA	NA	NA	0	0	0	0	4914	5005	6799	6755	23473
FB	NA	NA	NA	NA	0	0	0	850	2246	4853	7800	4385	20135
SF	NA	NA	NA	NA	0	0	0	5470	7997	10857	20588	13305	58217
MO	NA	NA	NA	NA	0	0	0	13523	8099	6955	7322	1786	37685
Total	NA	NA	NA	NA	0	0	50	20001	26397	32169	73042	39612	191271

Quota Effort: Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
CO	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
KO	NA	NA	NA	NA	0	0	0	0	0	87	73	60	220
KC	NA	NA	NA	NA	0	0	0	0	37	31	56	43	167

FB	NA	NA	NA	NA	0	0	0	0	37	21	9	0	67
SF	NA	NA	NA	NA	0	0	0	0	0	20	0	0	20
MO	NA	NA	NA	NA	0	0	0	0	0	10	0	0	10
Total	NA	NA	NA	NA	0	0	0	0	74	168	138	103	483

Quota Effort: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
CO	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
KO	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
KC	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
FB	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
SF	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
MO	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
Total	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0

Retention Effort: Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	0	429	926	736	584	663	3338
CO	NA	NA	NA	NA	0	0	0	491	710	655	480	696	3031
KO	NA	NA	NA	NA	0	0	0	11	35	67	50	33	196
KC	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
FB	NA	NA	NA	NA	0	0	0	0	0	0	1329	1460	2789
SF	NA	NA	NA	NA	0	0	0	0	1785	547	1947	1048	5327
MO	NA	NA	NA	NA	0	0	0	0	2139	744	887	256	4026
Total	NA	NA	NA	NA	0	0	0	930	5595	2749	5277	4155	18707

Retention Effort: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	34	102	661	858	15662	3139	20457
CO	NA	NA	NA	NA	0	0	16	55	500	1422	11279	4676	17948
KO	NA	NA	NA	NA	0	0	0	0	1979	2218	3592	5566	13355
KC	NA	NA	NA	NA	0	0	0	0	4914	5005	6799	6755	23473
FB	NA	NA	NA	NA	0	0	0	850	2246	4853	7800	4385	20135
SF	NA	NA	NA	NA	0	0	0	5470	7997	10857	20588	13305	58217
MO	NA	NA	NA	NA	0	0	0	13523	8099	6955	7322	1786	37685
Total	NA	NA	NA	NA	0	0	50	20001	26397	32169	73042	39612	191271

Non-retention Effort: Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
CO	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
KO	NA	NA	NA	NA	0	0	0	0	0	20	23	27	70
KC	NA	NA	NA	NA	0	0	0	0	37	31	56	43	167
FB	NA	NA	NA	NA	0	0	0	0	37	21	9	0	67
SF	NA	NA	NA	NA	0	0	0	0	0	20	0	0	20
MO	NA	NA	NA	NA	0	0	0	0	0	10	0	0	10
Total	NA	NA	NA	NA	0	0	0	0	74	102	88	70	333

Non-retention Effort: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
CO	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
KO	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
KC	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
FB	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
SF	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
MO	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
Total	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0

Mgt.Input.Files/ocean.dat

	fishery	area	start.date	end.date	Q	ret	sl	coho
1	10	NO	apr-01-2013	aug-29-2013	NA	1	28	0
2	10	NO	sep-05-2013	oct-31-2013	NA	1	28	0
3	10	CO	apr-01-2013	aug-29-2013	NA	1	28	0
4	10	CO	sep-05-2013	oct-31-2013	NA	1	28	0
5	10	KO	apr-01-2013	may-31-2013	NA	1	28	0
6	10	KO	jun-01-2013	jun-15-2013	2000	1	28	0
7	10	KO	jun-16-2013	jun-30-2013	800	0	NA	0
8	10	KO	jul-01-2013	jul-15-2013	1500	1	28	0
9	10	KO	jul-16-2013	jul-31-2013	800	0	NA	0
10	10	KO	aug-01-2013	aug-15-2013	1000	1	28	0
11	10	KO	aug-16-2013	aug-29-2013	800	0	NA	0
12	10	KO	sep-05-2013	sep-15-2013	1000	1	28	0
13	10	KO	sep-16-2013	sep-30-2013	800	0	NA	0
14	10	KO	oct-01-2013	oct-31-2013	800	0	NA	0
15	10	KC	may-01-2013	may-31-2013	800	0	NA	0
16	10	KC	jun-01-2013	jun-30-2013	800	0	NA	0
17	10	KC	jul-01-2013	jul-31-2013	800	0	NA	0
18	10	KC	aug-01-2013	aug-29-2013	800	0	NA	0
19	10	KC	sep-01-2013	sep-14-2013	800	0	NA	0
20	10	KC	sep-15-2013	sep-30-2013	6000	1	27	0
21	10	FB	may-01-2013	may-31-2013	800	0	NA	0
22	10	FB	jun-01-2013	jun-30-2013	800	0	NA	0
23	10	FB	jul-01-2013	jul-10-2013	400	0	NA	0
24	10	FB	jul-11-2013	aug-29-2013	NA	1	27	0
25	10	FB	sep-01-2013	sep-30-2013	NA	1	27	0
26	10	SF	may-01-2013	jun-04-2013	NA	1	27	0
27	10	SF	jun-05-2013	jun-26-2013	1200	0	NA	0
28	10	SF	jun-27-2013	aug-29-2013	NA	1	27	0
29	10	SF	sep-01-2013	sep-30-2013	NA	1	26	0
30	10	SF	oct-01-2013	oct-05-2013	NA	1	26	0
31	10	SF	oct-08-2013	oct-12-2013	NA	1	26	0
32	10	MO	may-01-2013	jun-04-2013	NA	1	27	0
33	10	MO	jun-05-2013	jun-26-2013	600	0	NA	0
34	10	MO	jun-27-2013	aug-29-2013	NA	1	27	0
35	10	MO	sep-01-2013	sep-30-2013	NA	1	26	0
36	40	NO	mar-15-2013	jun-30-2013	NA	1	24	0
37	40	NO	jul-01-2013	jul-31-2013	NA	1	24	1
38	40	NO	aug-01-2013	aug-31-2013	NA	1	24	0
39	40	NO	sep-01-2013	sep-03-2013	NA	1	24	1
40	40	NO	sep-04-2013	sep-05-2013	NA	1	24	0
41	40	NO	sep-06-2013	sep-08-2013	NA	1	24	1

42	40	NO	sep-09-2013	sep-12-2013	NA	1	24	0
43	40	NO	sep-13-2013	sep-15-2013	NA	1	24	1
44	40	NO	sep-16-2013	sep-19-2013	NA	1	24	0
45	40	NO	sep-20-2013	sep-22-2013	NA	1	24	1
46	40	NO	sep-23-2013	oct-31-2013	NA	1	24	0
47	40	CO	mar-15-2013	jun-30-2013	NA	1	24	0
48	40	CO	jul-01-2013	jul-31-2013	NA	1	24	1
49	40	CO	aug-01-2013	aug-31-2013	NA	1	24	0
50	40	CO	sep-01-2013	sep-03-2013	NA	1	24	1
51	40	CO	sep-04-2013	sep-05-2013	NA	1	24	0
52	40	CO	sep-06-2013	sep-08-2013	NA	1	24	1
53	40	CO	sep-09-2013	sep-12-2013	NA	1	24	0
54	40	CO	sep-13-2013	sep-15-2013	NA	1	24	1
55	40	CO	sep-16-2013	sep-19-2013	NA	1	24	0
56	40	CO	sep-20-2013	sep-22-2013	NA	1	24	1
57	40	CO	sep-23-2013	oct-31-2013	NA	1	24	0
58	40	KO	may-01-2013	jun-30-2013	NA	1	24	0
59	40	KO	jul-01-2013	jul-31-2013	NA	1	24	1
60	40	KO	aug-01-2013	sep-09-2013	NA	1	24	0
61	40	KC	may-01-2013	sep-09-2013	NA	1	20	0
62	40	FB	apr-07-2013	nov-11-2013	NA	1	20	0
63	40	SF	apr-07-2013	jul-05-2013	NA	1	24	0
64	40	SF	jul-06-2013	nov-11-2013	NA	1	20	0
65	40	MO	apr-07-2013	jul-05-2013	NA	1	24	0
66	40	MO	jul-06-2013	oct-07-2013	NA	1	20	0

Days open: commercial, retention

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	NA	NA	NA	NA	0	0	0	30	31	30	31	29
CO	NA	NA	NA	NA	0	0	0	30	31	30	31	29
KO	NA	NA	NA	NA	0	0	0	30	31	0	0	0
KC	NA	NA	NA	NA	0	0	0	0	0	0	0	0
FB	NA	NA	NA	NA	0	0	0	0	0	0	21	29
SF	NA	NA	NA	NA	0	0	0	0	31	8	31	29
MO	NA	NA	NA	NA	0	0	0	0	31	8	31	29

Quotas: commercial, retention

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
KO	1000	NA	NA	NA	NA	NA	NA	NA	NA	2000	1500	1000
KC	6000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Size-limits: commercial, retention

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	28	28	NA	NA	NA	NA	NA	28	28	28	28	28
CO	28	28	26	NA	NA	NA	NA	28	28	28	28	28
KO	28	28	NA	NA	NA	NA	NA	28	28	28	28	28
KC	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FB	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	27	27
SF	26	26	NA	NA	NA	NA	NA	NA	27	27	27	27
MO	26	NA	NA	NA	NA	NA	NA	NA	27	27	27	27

 Days open: commercial, non-retention

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	NA	NA	NA	NA	0	0	0	0	0	0	0	0
CO	NA	NA	NA	NA	0	0	0	0	0	0	0	0
KO	NA	NA	NA	NA	0	0	0	0	0	0	0	0
KC	NA	NA	NA	NA	0	0	0	0	0	0	0	0
FB	NA	NA	NA	NA	0	0	0	0	0	0	0	0
SF	NA	NA	NA	NA	0	0	0	0	0	0	0	0
MO	NA	NA	NA	NA	0	0	0	0	0	0	0	0

Quotas: commercial, non-retention

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
KO	800	800	NA	NA	NA	NA	NA	NA	NA	800	800	800
KC	800	NA	NA	NA	NA	NA	NA	NA	800	800	800	800
FB	NA	NA	NA	NA	NA	NA	NA	NA	800	800	400	NA
SF	NA	NA	NA	NA	NA	NA	NA	NA	NA	1200	NA	NA
MO	NA	NA	NA	NA	NA	NA	NA	NA	NA	600	NA	NA

 Days open: recreational, retention

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	NA	NA	NA	NA	0	0	17	30	31	30	31	31
CO	NA	NA	NA	NA	0	0	17	30	31	30	31	31
KO	NA	NA	NA	NA	0	0	0	0	31	30	31	31
KC	NA	NA	NA	NA	0	0	0	0	31	30	31	31
FB	NA	NA	NA	NA	0	0	0	24	31	30	31	31
SF	NA	NA	NA	NA	0	0	0	24	31	30	31	31
MO	NA	NA	NA	NA	0	0	0	24	31	30	31	31

Quotas: recreational, retention

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
KO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
KC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Size-limits: recreational, retention

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	24	24	NA	NA	NA	NA	24	24	24	24	24	24
CO	24	24	24	NA	NA	NA	24	24	24	24	24	24
KO	24	24	NA	NA	NA	NA	NA	NA	24	24	24	24
KC	20	NA	NA	NA	NA	NA	NA	NA	20	20	20	20
FB	20	20	20	NA	NA	NA	NA	20	20	20	20	20
SF	20	20	20	NA	NA	NA	NA	24	24	24	20	20
MO	20	20	NA	NA	NA	NA	NA	24	24	24	20	20

Days open: recreational, non-retention

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	NA	NA	NA	NA	0	0	0	0	0	0	0	0
CO	NA	NA	NA	NA	0	0	0	0	0	0	0	0
KO	NA	NA	NA	NA	0	0	0	0	0	0	0	0
KC	NA	NA	NA	NA	0	0	0	0	0	0	0	0
FB	NA	NA	NA	NA	0	0	0	0	0	0	0	0
SF	NA	NA	NA	NA	0	0	0	0	0	0	0	0
MO	NA	NA	NA	NA	0	0	0	0	0	0	0	0

Quotas: recreational, non-retention

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
KO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
KC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Mgt.Input.Files/river.dat

	parameter	value
1	pi.t	0.500
2	pi.r	0.423
3	H.r.tot	NA
4	CR.r	0.000
5	c.r	0.070
6	s.r	0.100
7	E.nat.tot	NA