

## Ocean Abundance Projections and Prospective Harvest Levels for Klamath River Fall Chinook, 2015 Season

Klamath River Technical Team  
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### Summary

Predictor performance for 2014 and forecasts for 2015 are:

	Age	2014			2015 Forecast
		Preseason	Postseason	Pre/Post	
Ocean Abundance	3	219,800	261,900	0.84	342,200
	4	67,400	178,500	0.38	71,100
	5	12,100	7,600	1.59	10,400
Proportion Natural	3	0.65	0.68	0.95	0.69
	4	0.74	0.80	0.93	0.73
	5	0.80	0.91	0.88	0.80
Ocean Harvest Rate	4	0.16	0.17	0.94	-
Ocean Fall Harvest	3	-	0	-	-
	4	-	126	-	-
	5	-	194	-	-

The implications of the 2015 forecast ocean abundances, proportions natural, and the 2014 ocean fall harvest for fisheries management in 2015 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 2015 between Cape Falcon and Point Sur (320 Klamath River fall Chinook were estimated to have been harvested in the ocean during the Sept-Dec 2014 period) and no Klamath River fisheries (tribal and recreational) in 2015, and (B) the 2014 ocean fishery seasons and quotas, the 2014 river recreational allocation of 15.1 percent (of non-tribal harvest), and a tribal allocation of 50% (of total harvest). The results are:

Sector	KOHM Forecasts	
	(A) No-fishing in 2015	(B) 2014 Regulations
Adult Spawners		
Natural Areas	98,900	57,800
Hatcheries	40,100	24,100
Adult Harvest		
Ocean Commercial	200	22,500
Ocean Recreational	100	4,700
River Recreational	0	4,900
Tribal	0	32,100
Age-4 Ocean Harvest Rate	0.002	0.135
Spawner Reduction Rate	0.002	0.417

With no further fishing in 2015 on the current stock, the expected number of natural area adult spawners would be 98,900, with an expected age-4 ocean harvest rate of 0.2% (126 age-4 KRFC were harvested in the Sept–Dec 2014 period). Applying 2014 fishery regulations resulted in 57,800 natural area adult spawners and an age-4 ocean harvest rate of 13.5%. These forecasts are provided for informational purposes only; the Pacific Fishery Management Council (PFMC) will adopt 2015 ocean salmon fishery management regulations in April 2015.

## Introduction

The PFMC's fishery management plan for Klamath River fall Chinook (PFMC 2012; Amendment 16) allows for 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 2015 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 2015, and (B) the 2014 ocean fishery seasons and quotas, the 2014 river recreational allocation of 15.1 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 2014 river run of Klamath River fall Chinook salmon used in this report is from KRTT (2015).

### 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 1979-2010 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 2013 (age-three) and 2014 (age-three, age-four) are preliminary, as their respective cohorts are incomplete (Table 1).

The 2014 age-three ocean abundance forecast was 0.84 times its postseason estimate (Table 2); the age-three predictor has overestimated abundance in 15 of the 30 previous years. The 2014 age-four ocean abundance forecast was 0.38 times its postseason estimate (Table 2); the age-four predictor has overestimated abundance in 19 of the 30 previous years. The 2014 age-five ocean abundance forecast was 1.59 times its postseason estimate (Table 2); the age-five predictor has over estimated abundance in 12 of the 28 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 1997-2014 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 2014 proportion natural forecast for age-three, -four, and -five fish was 0.65, 0.74, and 0.80, respectively, and the corresponding post-season estimates are 0.68, 0.80, and 0.91, respectively (Table 4).

#### Historical Harvest Levels and Rates

Historical (1986-2014) ocean and river harvest levels and rates of age-three and age-four Klamath River fall Chinook are listed in Table 5. The 2014 age-four ocean harvest rate (preliminary) postseason estimate of 17.0 percent is greater than the preseason forecast of 16.0 percent (PFMC 2014).

#### 2014 Ocean Fishery Fall Harvest

Klamath River fall Chinook ocean harvests during the 2014 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 2014, 320 Klamath River fall Chinook were estimated to have been harvested.

#### **2015 Forecasts**

The 2015 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	342,229	0.69
4	71,110	0.73
5	10,414	0.80

For the 2014 ocean fall fisheries, the natural production multipliers for the coded-wire tag recoveries are:

<i>Age</i> <i>(a)</i>	<i>Total</i> <i>Escapement (a-1)</i>	<i>Hatchery-origin</i> <i>Escapement (a-1)</i>	<i>Natural-production</i> <i>Multiplier (a)</i>
3	22,348	2,943	7.59
4	57,837	27,068	2.14
5	98,710	27,487	3.59

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 2015 between Cape Falcon and Point Sur (320 Klamath River fall Chinook were estimated to be harvested in the ocean during the Sept–Dec 2014 period) and no Klamath River fisheries (tribal and recreational) in 2015, and (B) the 2014 ocean fishery seasons and quotas, the 2014 river recreational allocation of 15.1% (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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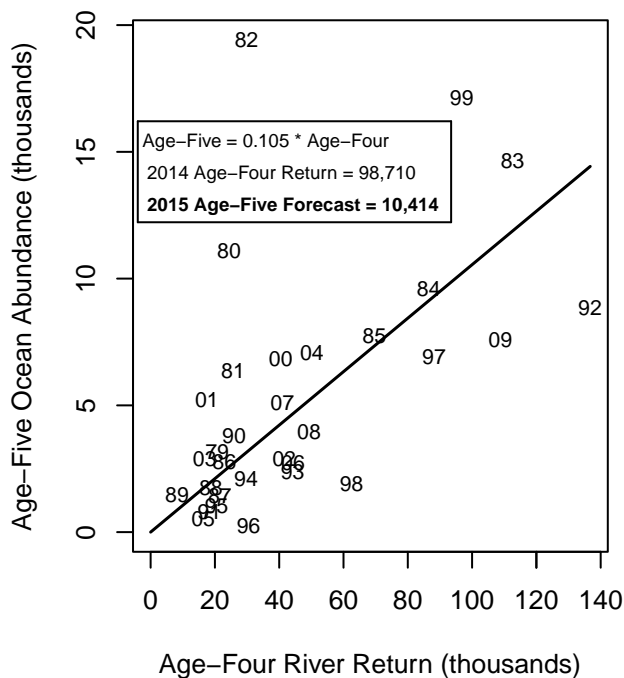
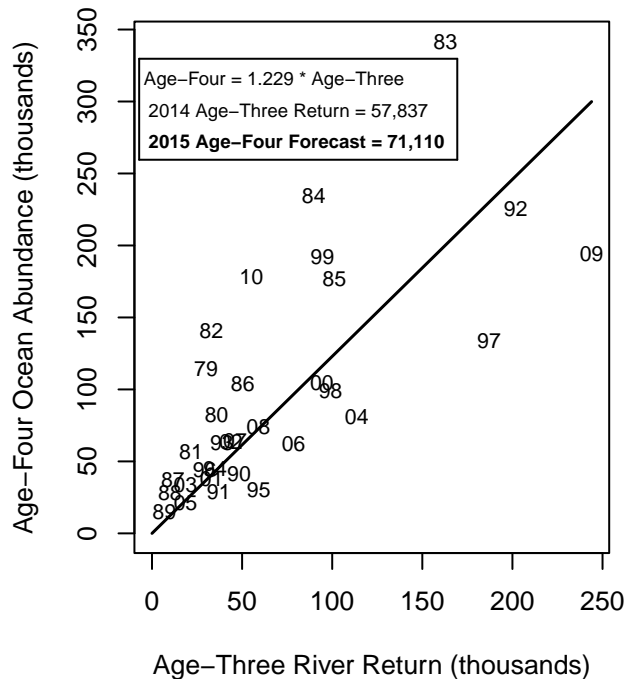
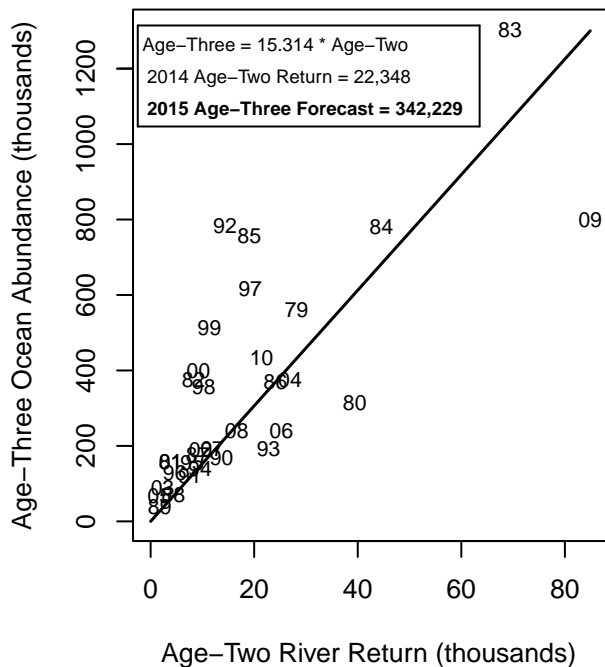


Figure 1. Regression estimators for Klamath River fall Chinook ocean abundance (Sept. 1) based on that year's river return of same cohort. Numbers in plots denote brood years.

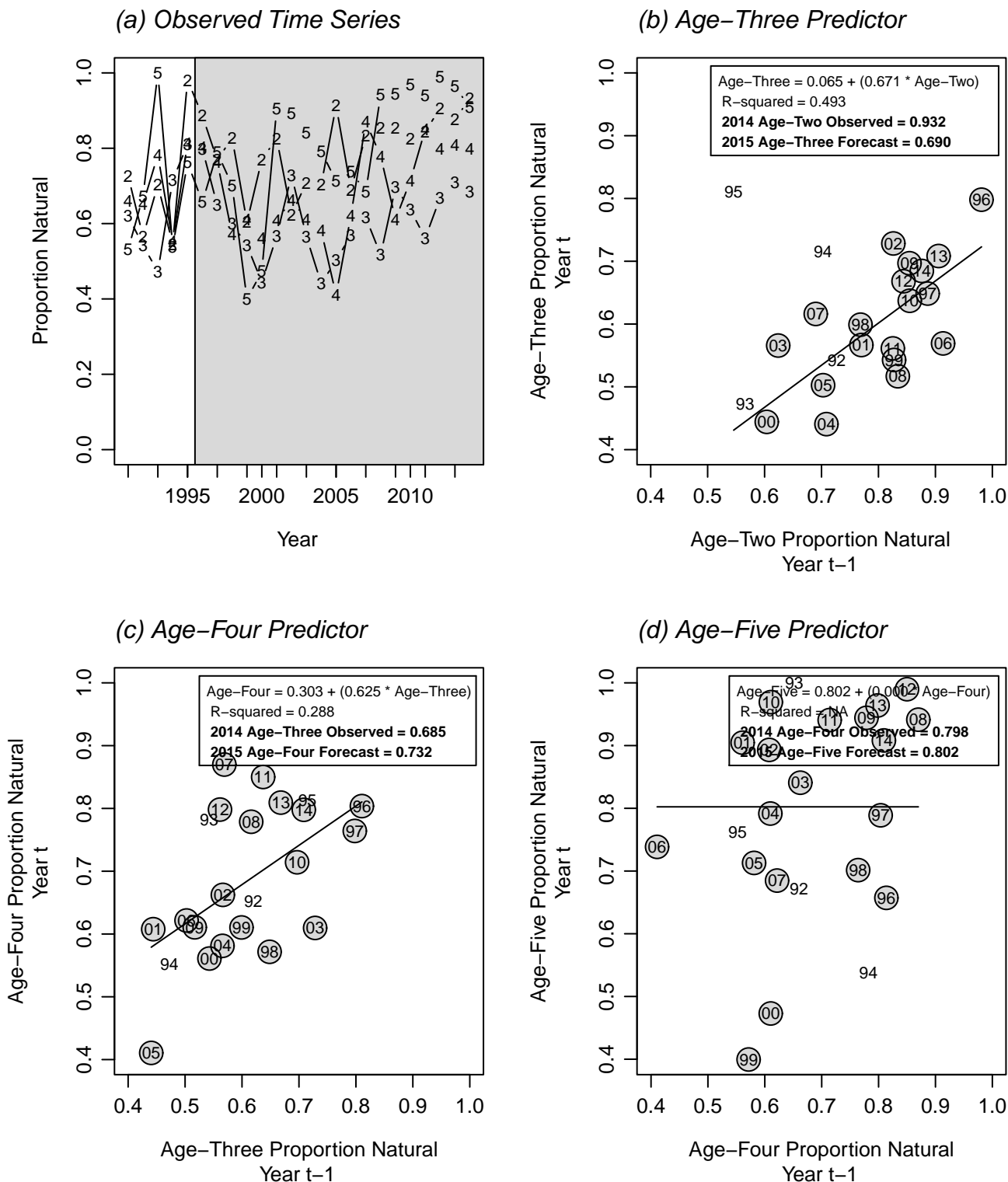


Figure 2. Age-specific proportion of natural area spawners. Panel (a): observed time-series; numbers in plot denote age; shaded area depicts data used for predictor. Panels (b)–(d): age-specific predictor based on previous-year observed proportion for same cohort; numbers in plots denote years 1992–2014; 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	781.1	341.9	1,123.0	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	513.4	98.9	612.4	0.02	0.15	9.2	94.6	62.5	3.7	160.8
2003	399.4	192.1	591.5	0.08	0.21	3.8	94.3	96.8	0.9	191.9
2004	159.4	104.6	264.1	0.12	0.34	9.6	33.1	40.5	5.3	78.9
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	261.8	0.00	0.00	11.9	78.6	16.4	5.6	100.6
2010	192.8	62.1	254.9	0.01	0.04	16.6	46.1	44.3	0.4	90.9
2011	240.2	64.6	304.8	0.03	0.08	84.9	59.0	41.0	2.0	102.0
2012	799.8	74.3	874.1	0.03	0.08	21.4	243.9	49.3	2.1	295.3
2013	434.0 <sup>a/</sup>	194.6	628.6	0.04 <sup>a/</sup>	0.20	14.4	55.2	108.8	1.1	165.0
2014	261.9 <sup>b/</sup>	178.5 <sup>a/</sup>	440.4	---- <sup>c/</sup>	0.17 <sup>a/</sup>	22.3	57.8	98.7	3.9	160.4

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 <sup>a/</sup>	Postseason Estimate	Pre/Postseason
	Sept 1 (t-1)	Sept 1 (t-1)	
<b>Age-Three</b>			
1985	113,000	276,000	0.41
1986	426,000 <sup>b/</sup>	1,304,409	0.33
1987	511,800	781,123	0.66
1988	370,800	756,261	0.49
1989	450,600	369,828	1.22
1990	479,000	176,122	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	513,435	0.41
2003	171,300	399,414	0.43
2004	72,100	159,447	0.45
2005	185,700	189,976	0.98
2006	44,100	90,606	0.49
2007	515,400	376,840	1.37
2008	31,600	68,003	0.46
2009	474,900	240,713	1.97
2010	223,400	192,764	1.16
2011	304,600	240,222	1.27
2012	1,567,600	799,815	1.96
2013	390,700	433,989	0.90
2014 <sup>c/</sup>	219,800	261,878	0.84
2015	342,200		



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 <sup>a/</sup>	Postseason Estimate	Pre/Postseason
	Sept 1 (t-1)	Sept 1 (t-1)	
<b>Age-Four</b>			
1985	56,875	57,500	0.99
1986	66,250	140,823	0.47
1987	206,125	341,875	0.60
1988	186,375	234,751	0.79
1989	215,500	177,245	1.22
1990	50,125	103,951	0.48
1991	44,625	37,171	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	192,085	0.69
2004	134,500	104,636	1.29
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	62,092	1.71
2011	61,600	64,570	0.95
2012	79,600	74,318	1.07
2013	331,200	194,575	1.70
2014 <sup>c/</sup>	67,400	178,533	0.38
2015	71,100		

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 <sup>a/</sup>	Postseason Estimate	Pre/Postseason
	Sept 1 (t-1)	Sept 1 (t-1)	
<b>Age-Five</b>			
1985 <sup>d/</sup>	--	11,113	--
1986 <sup>d/</sup>	--	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	17,128	0.57
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	517	3.48
2011	5,000	2,753	1.82
2012	4,600	5,112	0.90
2013	5,700	3,948	1.44
2014 <sup>c/</sup>	12,100	7,571	1.60
2015	10,400		

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 <sup>a/</sup>	Postseason Estimate	Pre/Postseason
	Sept 1 (t-1)	Sept 1 (t-1)	
<b>Total Adults</b>			
1985 <sup>d/</sup>	169,875	344,613	0.49
1986 <sup>d/</sup>	492,250	1,451,608	0.34
1987	723,175	1,142,412	0.63
1988	570,425	1,005,644	0.57
1989	676,225	556,685	1.21
1990	536,750	287,840	1.86
1991	222,325	109,369	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	619,295	0.59
2003	310,200	593,414	0.52
2004	216,300	281,211	0.77
2005	239,800	234,912	1.02
2006	110,000	159,225	0.69
2007	546,200	413,366	1.32
2008	190,700	152,269	1.25
2009	505,700	268,896	1.88
2010	331,500	255,373	1.30
2011	371,200	307,545	1.21
2012	1,651,800	879,245	1.88
2013	727,600	632,512	1.15
2014 <sup>c/</sup>	299,300	447,982	0.67
2015	423,700	--	--

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 <sup>a/</sup>		Postseason Ocean Abundance Estimate		Preseason Age-4 Harvest Rate Forecast <sup>b/</sup>		Postseason Age-4 Harvest Rate Estimate <sup>c/</sup>		Preseason Adult Harvest Forecast		Postseason Adult Harvest Estimate	
	Sept 1 (t-1)		Sept 1 (t-1)		Forecast <sup>b/</sup>		Rate Estimate <sup>c/</sup>		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	781,123	341,875	0.28	0.53	0.43	0.44	121,200	78,200	277,203	73,265
1988	370,800	186,375	756,261	234,751	0.31	0.53	0.39	0.52	114,100	65,400	253,888	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	176,122	103,951	0.30	0.49	0.55	0.36	85,100	31,200	114,780	11,459
1991	176,200	44,625	69,424	37,171	0.13	0.28	0.18	0.45	16,700	12,800	9,871	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	513,435	98,927	0.13	0.57	0.15	0.26	30,000	70,900	28,892	35,069
2003	171,300	132,400	399,414	192,085	0.16	0.50	0.21	0.28	30,600	52,200	70,604	39,715
2004	72,100	134,500	159,447	104,636	0.15	0.38	0.34	0.48	26,500	35,800	63,703	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	376,840	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	240,713	21,124	0.00	0.57	0.00	0.40	100	61,700	51	34,040
2010	223,400	106,300	192,764	62,092	0.12	0.49	0.04	0.40	22,600	46,600	4,497	32,920
2011	304,600	61,600	240,222	64,570	0.16	0.54	0.08	0.34	26,900	42,700	12,003	30,502
2012	1,567,600	79,600	799,815	74,318	0.16	0.77	0.08	0.51	92,400	227,600	34,991	109,263
2013	390,700	331,200	433,989	194,575	0.16	0.62	0.20	0.51	74,800	154,800	59,699	82,835
2014 <sup>d/</sup>	219,800	67,400	261,878	178,533	0.16	0.40	0.17	0.25	23,200	31,400	39,006	31,190

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.<sup>a/</sup>

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	4,685	11,421	11,380	1,030	23,831	0.70	0.44	0.58	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	15,658	103,605	17,743	197	121,545	0.91	0.67	0.80	0.99	0.68
2013	1,458	7,775	9,352	21	17,148	10,310	18,897	39,696	562	59,155	0.88	0.71	0.81	0.96	0.78
2014	1,260	16,517	14,547	211	31,275	17,269	35,836	57,403	2,091	95,330	0.93	0.68	0.80	0.91	0.75

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						
<b>HARVEST (numbers of fish)</b>											
<b>Age-Three</b>											
1986	35,632	4,876	40,508	73,777	122,913	196,690	237,198	8,100	18,100	26,200	
1987	17,237	5,082	22,319	43,432	56,368	99,800	122,119	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	36,575	11,004	47,579	52,017	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	783	1,003	1,500	9,913	11,413	12,416	11,734	6,258	17,992	
2003	172	678	850	1,881	27,249	29,130	29,980	6,996	5,061	12,057	
2004	402	970	1,372	9,710	7,324	17,034	18,406	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	1,664	1,664	1,804	13,132	1,884	15,016	
2011	334	1,121	1,455	35	4,835	4,870	6,325	13,286	2,630	15,916	
2012	1,132	11,457	12,589	935	13,213	14,148	26,737	70,409	12,104	82,513	
2013 <sup>al</sup>	385	5,497	5,882	857	11,822	12,679	18,561	18,996	7,675	26,671	
2014 <sup>al</sup>	0	584	584	4,185	1,594	5,779	6,363	3,379	1,726	5,105	
<b>Age-Four</b>											
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	11,868	3,595	15,463	26,376	50,287	76,663	92,126	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	4,134	5,647	6,648	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	7,852	29,996	37,848	39,600	22,754	4,592	27,346	
2004	1,416	1,210	2,626	11,458	21,862	33,320	35,946	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	42	112	154	886	1,482	2,368	2,522	16,630	1,134	17,764	
2011	417	176	593	1,043	3,780	4,823	5,416	12,587	1,466	14,053	
2012	337	2,093	2,430	762	2,966	3,728	6,158	23,285	1,718	25,003	
2013	4,328	6,325	10,653	4,091	24,332	28,423	39,076	43,671	12,043	55,714	
2014 <sup>al</sup>	1,254	1,389	2,643	18,995	8,658	27,653	30,296	21,257	3,353	24,610	

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					
<b>HARVEST RATE <sup>b/</sup></b>										
<b>Age-Three</b>										
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	0.00	0.00	0.01	0.00	0.02	0.02	0.03	0.23	0.04	0.27
2012	0.00	0.01	0.02	0.00	0.02	0.02	0.03	0.29	0.05	0.34
2013 <sup>a/</sup>	0.00	0.01	0.01	0.00	0.03	0.03	0.04	0.34	0.14	0.48
2014 <sup>a/</sup>	0.00	0.00	0.00	0.02	0.01	0.02	0.02	0.06	0.03	0.09
<b>Age-Four</b>										
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	0.00	0.03	0.03	0.01	0.04	0.05	0.08	0.47	0.03	0.51
2013	0.02	0.03	0.05	0.02	0.13	0.15	0.20	0.40	0.11	0.51
2014 <sup>a/</sup>	0.01	0.01	0.01	0.11	0.05	0.15	0.17	0.22	0.03	0.25

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 2014 (September - November) ocean landings of Klamath River fall Chinook by fishery, age, and KOHM area.

COMMERCIAL FISHERY										
KOHM area <sup>a/</sup>	Age 3			Age 4			Age 5			Total
	Sept	Oct	Nov	Sept	Oct	Nov	Sept	Oct	Nov	
NO	--	--	--	17	--	--	--	--	--	17
CO	--	--	--	80	--	--	97	--	--	177
KO	--	--	--	--	--	--	--	--	--	0
KC	--	--	--	--	--	--	--	--	--	0
FB	--	--	--	--	--	--	--	--	--	0
SF	--	--	--	--	--	--	--	--	--	0
MO	--	--	--	--	--	--	--	--	--	0
Total	0	0	0	97	0	0	97	0	0	194

SPORT FISHERY										
KOHM area <sup>a/</sup>	Age 3			Age 4			Age 5			Total
	Sept	Oct	Nov	Sept	Oct	Nov	Sept	Oct	Nov	
NO	--	--	--	--	--	--	--	--	--	0
CO	--	--	--	29	--	--	--	--	--	29
KO	--	--	--	--	--	--	30	67	--	97
KC	--	--	--	--	--	--	--	--	--	0
FB	--	--	--	--	--	--	--	--	--	0
SF	--	--	--	--	--	--	--	--	--	0
MO	--	--	--	--	--	--	--	--	--	0
Total	0	0	0	29	0	0	30	67	0	126

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.



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 Appendix A: KOHM: Summary Output. Thu Feb 19 14:52:39 2015  
 2015 Stock Projections; no 2015 fishing.  
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## Klamath Escapement

Absent fishing: 139218  
 Hatcheries: 40117  
 Natural areas: 99102

## With fishing

Mature adults: 139516  
 Strays: 574  
 Klamath Basin: 138942  
 Spawners: 138942  
 Hatcheries: 40054  
 Natural areas: 98888  
 Reduction rate: 0.002

## Klamath Harvest

Total: 320  
 River: 0  
 Ocean: 320

Tribal: 0 0.000 (objective: 0.000)

Non-tribal: 320  
 River: 0 0.000 (objective: 0)  
 Ocean troll: 194  
 CA / OR: 0.000 / 1.000  
 Ocean sport: 126  
 KMZ: 97 0.303  
 Age-four o.harv.rate: 0.002 (objective: <= 0.16)

## Klamath Harvest: ocean troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	%CA
NO	17	0	0	0	0	0	0	0	0	0	0	0	17	NA
CO	177	0	0	0	0	0	0	0	0	0	0	0	177	NA
KO	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
KC	0	0	0	0	0	0	0	0	0	0	0	0	0	NaN
FB	0	0	0	0	0	0	0	0	0	0	0	0	0	NaN
SF	0	0	0	0	0	0	0	0	0	0	0	0	0	NaN
MO	0	0	0	0	0	0	0	0	0	0	0	0	0	NaN
Total	194	0	0	0	0	0	0	0	0	0	0	0	194	NA

## Klamath Harvest: ocean sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	%CA	%CA.rec
NO	0	0	0	0	0	0	0	0	0	0	0	0	0	NA	NA
CO	29	0	0	0	0	0	0	0	0	0	0	0	29	NA	NA
KO	30	67	0	0	0	0	0	0	0	0	0	0	97	NA	NA
KC	0	0	0	0	0	0	0	0	0	0	0	0	0	NaN	NaN
FB	0	0	0	0	0	0	0	0	0	0	0	0	0	NaN	NaN
SF	0	0	0	0	0	0	0	0	0	0	0	0	0	NaN	NaN
MO	0	0	0	0	0	0	0	0	0	0	0	0	0	NaN	NaN
Total	59	67	0	0	0	0	0	0	0	0	0	0	126	NA	NA









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Days open: recreational, 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, 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	NA	NA	NA	NA	NA	NA
CO	24	24	24	NA	NA	NA	NA	NA	NA	NA	NA	NA
KO	24	24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
KC	24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FB	20	20	20	NA	NA	NA	NA	NA	NA	NA	NA	NA
SF	20	20	20	NA	NA	NA	NA	NA	NA	NA	NA	NA
MO	24	24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

---

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	0.00

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

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Appendix B: KOHM: Summary Output. Thu Feb 19 15:34:50 2015  
2015 Stock Projections; 2014 Regulations.  
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## Klamath Escapement

Absent fishing: 139218  
Hatcheries: 40117  
Natural areas: 99102

## With fishing

Mature adults: 122177  
Strays: 507  
Klamath Basin: 121670  
Spawners: 81843  
Hatcheries: 24050  
Natural areas: 57792  
Reduction rate: 0.417

## Klamath Harvest

Total: 64171  
River: 36938  
Ocean: 27233

Tribal: 32086 0.500 (objective: 0.500)

Non-tribal: 32086

River: 4852 0.151 (objective: 0.151)

Ocean troll: 22529

CA / OR: 0.712 / 0.288

Ocean sport: 4704

KMZ: 2907 0.107

Age-four o.harv.rate: 0.135 (objective: <= 0.16)

## Klamath Harvest: ocean troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	%CA
NO	17	0	0	0	0	0	0	138	251	97	139	494	1136	NA
CO	177	0	0	0	0	0	0	355	446	382	904	2499	4763	NA
KO	0	0	0	0	0	0	0	0	76	250	116	152	594	NA
KC	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
FB	0	0	0	0	0	0	0	0	0	2734	5153	2598	10485	53.6
SF	0	0	0	0	0	0	0	0	859	2045	1521	531	4955	25.3
MO	0	0	0	0	0	0	0	0	258	217	120	2	596	3.0
Total	194	0	0	0	0	0	0	494	1889	5726	7951	6276	22529	NA

## Klamath Harvest: ocean sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	%CA	%CA.rec
NO	0	0	0	0	0	0	0	0	0	0	40	21	62	NA	NA
CO	29	0	0	0	0	0	0	0	7	49	97	63	244	NA	NA
KO	30	67	0	0	0	0	0	0	7	91	235	430	861	NA	NA
KC	0	0	0	0	0	0	0	0	309	589	554	594	2046	10.5	57.8
FB	0	0	0	0	0	0	0	10	93	224	301	71	699	3.6	19.8
SF	0	0	0	0	0	0	0	92	61	231	232	9	625	3.2	17.7
MO	0	0	0	0	0	0	0	72	14	25	51	6	168	0.9	4.7
Total	59	67	0	0	0	0	0	175	491	1209	1508	1195	4704	NA	NA



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Chinook Harvest (All Stocks): Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	5900	900	NA	NA	NA	NA	0	6810	8748	4620	3404	5223	35605
CO	2800	1100	500	NA	NA	NA	0	4259	8606	4994	5533	10629	38421
KO	50	500	NA	NA	NA	NA	NaN	NaN	842	1500	500	500	3892
KC	600	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	600
FB	500	NA	NA	NA	NA	NA	NA	0	0	13335	30429	33164	77428
SF	11100	2900	NA	NA	NA	NA	NA	NaN	16054	29253	23251	17949	100508
MO	NA	NA	NA	NA	NA	NA	NA	NaN	20232	13311	3664	1400	38608
Total	20950	5400	500	NA	NA	NA	0	11069	54482	67012	66783	68866	295062

## Chinook Harvest (All Stocks): Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	1100	100	NA	NA	NA	NA	NaN	NaN	113	71	836	713	2934
CO	700	10	0	NA	NA	NA	NaN	NaN	204	890	1624	1621	5049
KO	20	1100	NA	NA	NA	NA	NA	NA	428	1439	1550	1672	6208
KC	300	NA	NA	NA	NA	NA	NA	NA	2083	3966	4429	3494	14273
FB	100	10	0	NA	NA	NaN	NaN	1333	3013	4711	4467	2397	16031
SF	6200	3000	100	NA	NA	0	0	5367	6617	6198	16005	3854	47339
MO	30	10	NA	NA	NA	NaN	0	17103	7104	11795	16012	3432	55486
Total	8450	4230	100	NA	NA	0	0	23803	19561	29070	44923	17183	147320

-----  
Klamath Contribution Rates: Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	0.003	0	NA	NA	NA	NA	0.114	0.020	0.029	0.021	0.041	0.095
CO	0.063	0	0	NA	NA	NA	0.079	0.083	0.052	0.077	0.163	0.235
KO	0.000	0	NA	NA	NA	NA	0.000	0.000	0.090	0.167	0.232	0.304
KC	0.000	NA	NA	NA	NA	NA	NA	NA	0.395	0.350	0.250	0.349
FB	0.000	NA	NA	NA	NA	NA	NA	0.060	0.143	0.205	0.169	0.078
SF	0.000	0	NA	NA	NA	NA	NA	0.000	0.053	0.070	0.065	0.030
MO	NA	NA	NA	NA	NA	NA	NA	0.000	0.013	0.016	0.033	0.001

## Klamath Contribution Rates: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	0.000	0.000	NA	NA	NA	NA	0.000	0.000	0.003	0.004	0.048	0.029
CO	0.041	0.000	NaN	NA	NA	NA	0.000	0.000	0.033	0.055	0.059	0.039
KO	1.500	0.061	NA	NA	NA	NA	NA	NA	0.017	0.063	0.151	0.257
KC	0.000	NA	NA	NA	NA	NA	NA	NA	0.148	0.149	0.125	0.170
FB	0.000	0.000	NaN	NA	NA	0.000	0.000	0.008	0.031	0.048	0.067	0.030
SF	0.000	0.000	0	NA	NA	0.001	0.004	0.017	0.009	0.037	0.014	0.002
MO	0.000	0.000	NA	NA	NA	0.000	0.004	0.004	0.002	0.002	0.003	0.002

-----  
Total Effort: Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	0	442	929	700	529	569	3169
CO	NA	NA	NA	NA	0	0	0	492	716	677	473	682	3041
KO	NA	NA	NA	NA	0	0	0	10	70	88	32	35	235
KC	NA	NA	NA	NA	0	0	0	0	0	0	0	0	0
FB	NA	NA	NA	NA	0	0	0	0	0	651	1331	1311	3293





## Mgt.Input.Files/ocean.dat

	fishery	area	start.date	end.date	Q	ret	sl	coho
1	10	NO	apr-01-2015	jul-31-2015	NA	1	28	0
2	10	NO	aug-06-2015	aug-29-2015	NA	1	28	0
3	10	NO	sep-03-2015	oct-31-2015	NA	1	28	0
4	10	CO	apr-01-2015	jul-31-2015	NA	1	28	0
5	10	CO	aug-06-2015	aug-29-2015	NA	1	28	0
6	10	CO	sep-03-2015	oct-31-2015	NA	1	28	0
7	10	KO	apr-01-2015	may-31-2015	NA	1	28	0
8	10	KO	jun-15-2015	jun-30-2015	1500	1	28	0
9	10	KO	jul-01-2015	jul-31-2015	500	1	28	0
10	10	KO	aug-06-2015	aug-29-2015	500	1	28	0
11	10	KO	sep-12-2015	sep-27-2015	500	1	28	0
12	10	KC	sep-12-2015	sep-30-2015	4000	1	27	0
13	10	FB	jun-19-2015	jun-30-2015	NA	1	27	0
14	10	FB	jul-15-2015	aug-29-2015	NA	1	27	0
15	10	FB	sep-01-2015	sep-30-2015	NA	1	27	0
16	10	SF	may-01-2015	jun-30-2015	NA	1	27	0
17	10	SF	jul-15-2015	aug-29-2015	NA	1	27	0
18	10	SF	sep-01-2015	sep-30-2015	NA	1	26	0
19	10	SF	oct-01-2015	oct-03-2015	NA	1	26	0
20	10	SF	oct-06-2015	oct-10-2015	NA	1	26	0
21	10	SF	oct-13-2015	oct-15-2015	NA	1	26	0
22	10	MO	may-01-2015	jun-30-2015	NA	1	27	0
23	10	MO	jul-15-2015	aug-13-2015	NA	1	27	0
24	40	NO	mar-15-2015	jun-20-2015	NA	1	24	0
25	40	NO	jun-21-2015	aug-10-2015	NA	1	24	1
26	40	NO	aug-11-2015	aug-29-2015	NA	1	24	0
27	40	NO	aug-30-2015	sep-30-2015	NA	1	24	1
28	40	NO	oct-01-2015	oct-31-2015	NA	1	24	0
29	40	CO	mar-15-2015	jun-20-2015	NA	1	24	0
30	40	CO	jun-21-2015	aug-10-2015	NA	1	24	1
31	40	CO	aug-11-2015	aug-29-2015	NA	1	24	0
32	40	CO	aug-30-2015	sep-30-2015	NA	1	24	1
33	40	CO	oct-01-2015	oct-31-2015	NA	1	24	0
34	40	KO	may-10-2015	jun-20-2015	NA	1	24	0
35	40	KO	jun-21-2015	aug-10-2015	NA	1	24	1
36	40	KO	aug-11-2015	sep-07-2015	NA	1	24	0
37	40	KC	may-10-2015	sep-07-2015	NA	1	24	0
38	40	FB	apr-05-2015	nov-09-2015	NA	1	20	0
39	40	SF	apr-05-2015	jun-30-2015	NA	1	24	0
40	40	SF	jul-01-2015	nov-09-2015	NA	1	20	0
41	40	MO	apr-05-2015	oct-05-2015	NA	1	24	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	24
CO	NA	NA	NA	NA	0	0	0	30	31	30	31	24
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	12	17	29
SF	NA	NA	NA	NA	0	0	0	0	31	30	17	29
MO	NA	NA	NA	NA	0	0	0	0	31	30	17	13

## Quotas: commercial, retention

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----



MO NA 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	24	NA	NA	NA	NA	NA	NA	NA	24	24	24	24
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	24	24	NA	NA	NA	NA	NA	24	24	24	24	24

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	0.50000
2	pi.r	0.15123
3	H.r.tot	NA
4	CR.r	0.00000
5	c.r	0.07000
6	s.r	0.10000
7	E.nat.tot	NA