Ocean Abundance Projections and Prospective Harvest Levels for Klamath River Fall Chinook, 2007 Season[1]

Klamath River Technical Advisory Team
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Executive Summary

Predictor performance for 2006 and forecasts for 2007 are:

		2006			
	Age	*Preseason*	*Postseason*	*Pre/Post*	*2007 Forecast*
Ocean Abundance	3	44,100	87,700	0.50	515,400
	4	63,700	68,900	0.92	26,100
	5	2,200	5,300	0.41	4,700
Proportion Natural	3	0.67	0.57	1.18	0.52
	4	0.55	0.62	0.89	0.60
	5	0.72	0.74	0.97	0.72
Ocean Harvest Rate	4	0.11	0.11	1.00	---
Ocean Fall Harvest	3	---	195	---	---
	4	---	317	---	---
	5	---	408	---	---

The implications of the 2007 forecast ocean abundances, proportions natural, and the 2006 ocean fall harvest for fisheries management in 2007 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 2007 between Cape Falcon and Point Sur (an estimated 919 Klamath River fall Chinook were harvested in the ocean during the Sept–Nov 2006 period) and no Klamath River fisheries (tribal and recreational) in 2007, and (B) status quo regulations: the 2006 ocean fishery seasons and quotas, the 2006 river recreational allocation of 0% (of nontribal harvest), and a tribal allocation of 50% (of total harvest). The results are:

	KOHM Forecasts	
Sector	*(A) No-fishing in 2007*	*(B) 2006 Regulations*
Adult Spawners		
Natural Areas	73,400	65,300
Hatcheries	63,700	57,000
Adult Harvest		
Ocean Commercial	300	4,200
Ocean Recreational	600	4,800
River Recreational	0	0
Tribal	0	9,000
Age-4 Ocean Harvest Rate	0.01	0.05
Spawner Reduction Rate	0.01	0.11

[1] An earlier version of this report was issued 14 February 2007.

With no further fishing in 2007 on the current stock, the expected number of natural area adult spawners would be 73,400, with an expected age-4 ocean harvest rate of 1% (due to ocean harvest that already occurred in the Sept–Nov 2006 period). A repeat of 2006 fishery regulations would be expected to result in 65,300 natural area adult spawners and an age-4 ocean harvest rate of 4.7%. These forecasts are provided for informational purposes only; the Pacific Fishery Management Council (PFMC) will adopt 2007 ocean salmon fishery management regulations in April 2007.

Introduction

The PFMC's (1988) fishery management plan for Klamath River fall chinook (Amendment 9) permits a natural spawner reduction rate via fisheries of no more than 2/3, with a minimum escapement of 35,000 natural area adult spawners (Prager and Mohr 2001). 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 option 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 2007 management year. For informational purposes, KOHM forecasts of harvest and spawner escapement also are presented under two hypothetical management scenarios: (A) no ocean or river fisheries in 2007, and (B) status quo regulations: the 2006 ocean fishery seasons and quotas, the 2006 river recreational allocation of 0% (of nontribal harvest), and a tribal allocation of 50% (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 2006 river run of Klamath River fall chinook salmon used in this report is from the KRTAT (2007).

Ocean Abundance Forecast

The age-specific ocean abundance predictors are based on the use of "sibling regression". The age *a* September 1 ocean abundance estimates for brood years 1979–2002 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 2005 (age-three) and 2006 (age-three, age-four) are preliminary, as their respective cohorts are incomplete (Table 1).

The 2006 age-three ocean abundance forecast was 0.50 times its postseason estimate (Table 2); the age-three predictor has underestimated abundance in 13 of the 22 previous years. The 2006 age-four ocean abundance forecast was 0.92 times its postseason estimate (Table 2); the age-four predictor has underestimated abundance in 10 of the 22 previous years. The 2006 age-five ocean abundance forecast was 0.41 times its postseason estimate (Table 2); the age-five predictor has underestimated abundance in 13 of the 20 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 1997–2006 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 2006 proportion natural forecast for age-three, -four, and -five fish was 0.67, 0.55, 0.72, respectively, and the corresponding post-season estimates are 0.57, 0.62, 0.74, respectively (Table 4).

Historical Harvest Levels and Rates

Historical (1986-2006) ocean and river harvest levels and rates of age-three and age-four Klamath River fall chinook are listed in Table 5. The 2006 age-four ocean harvest rate (preliminary) postseason estimate of 11.1% is remarkably close to the preseason forecast of 11.5% (PFMC 2006).

2006 Ocean Fishery Fall Harvest

Klamath River fall chinook ocean harvests during the 2006 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).

2007 Forecasts

The 2007 forecasts of ocean stock abundance and proportion natural area spawners are (Figures 1 and 2):

Age	*Abundance*	*Proportion Natural*
3	515,400	0.52
4	26,100	0.60
5	4,700	0.72

For the 2006 ocean fall fisheries, the natural production multipliers for the coded-wire tag recoveries are:

Age (a)	*Total Escapement (a-1)*	*Hatchery-origin Escapement (a-1)*	*Natural-production Multiplier (a)*
3	27,073	11,837	2.29
4	18,560	7,054	2.63
5	41,793	20,420	2.05

The fishery-area-month-age-specific estimated harvests are presented in Table 6. These estimated fall landings will be accounted for in ocean fisheries harvest allocation in 2007, and the associated harvest impacts will be 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 2007 between Cape Falcon and Point Sur (an estimated 919 Klamath River fall Chinook were harvested in the ocean during the Sept–Nov 2006 period) and no Klamath River fisheries (tribal and recreational) in 2007, and (B) status quo regulations: the 2006 ocean fishery

seasons and quotas, the 2006 river recreational allocation of 0% (of nontribal harvest), and a tribal allocation of 50% (of total harvest); are provided in Appendices A and B, respectively.

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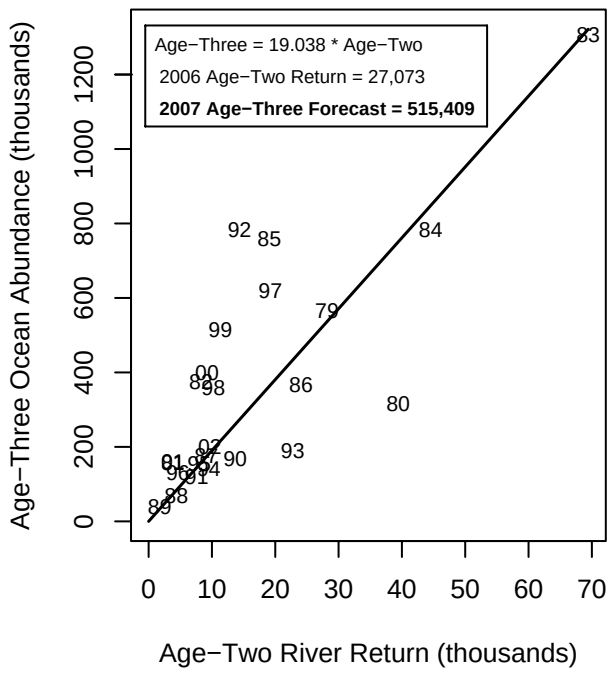

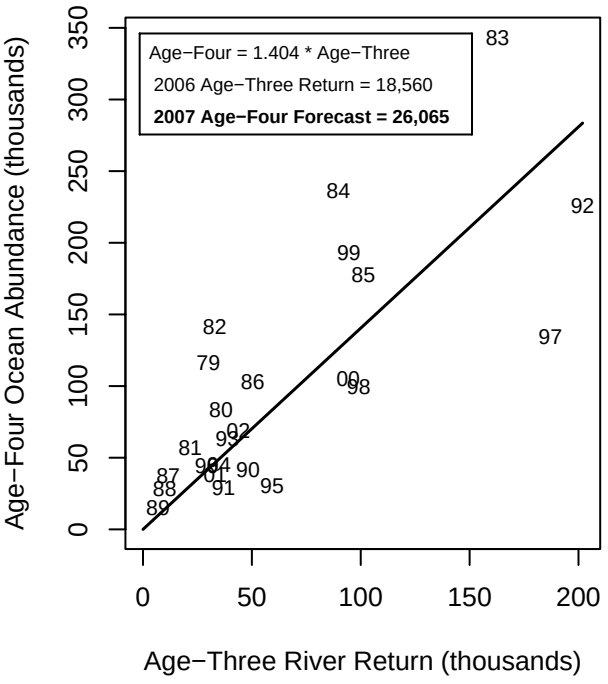

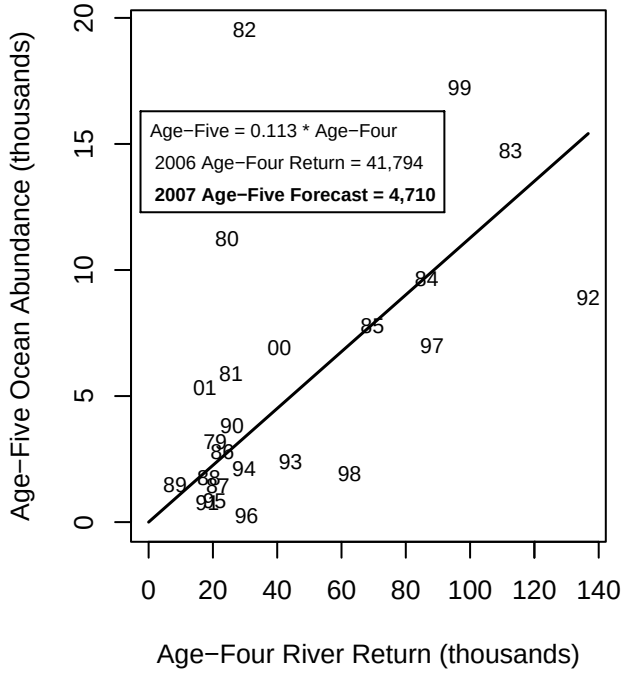

Figure 1. Regression estimators for Klamath River fall chinook ocean abundance (Sept. 1) based on that year's river return of same cohort. Numbers in plots denote brood years.

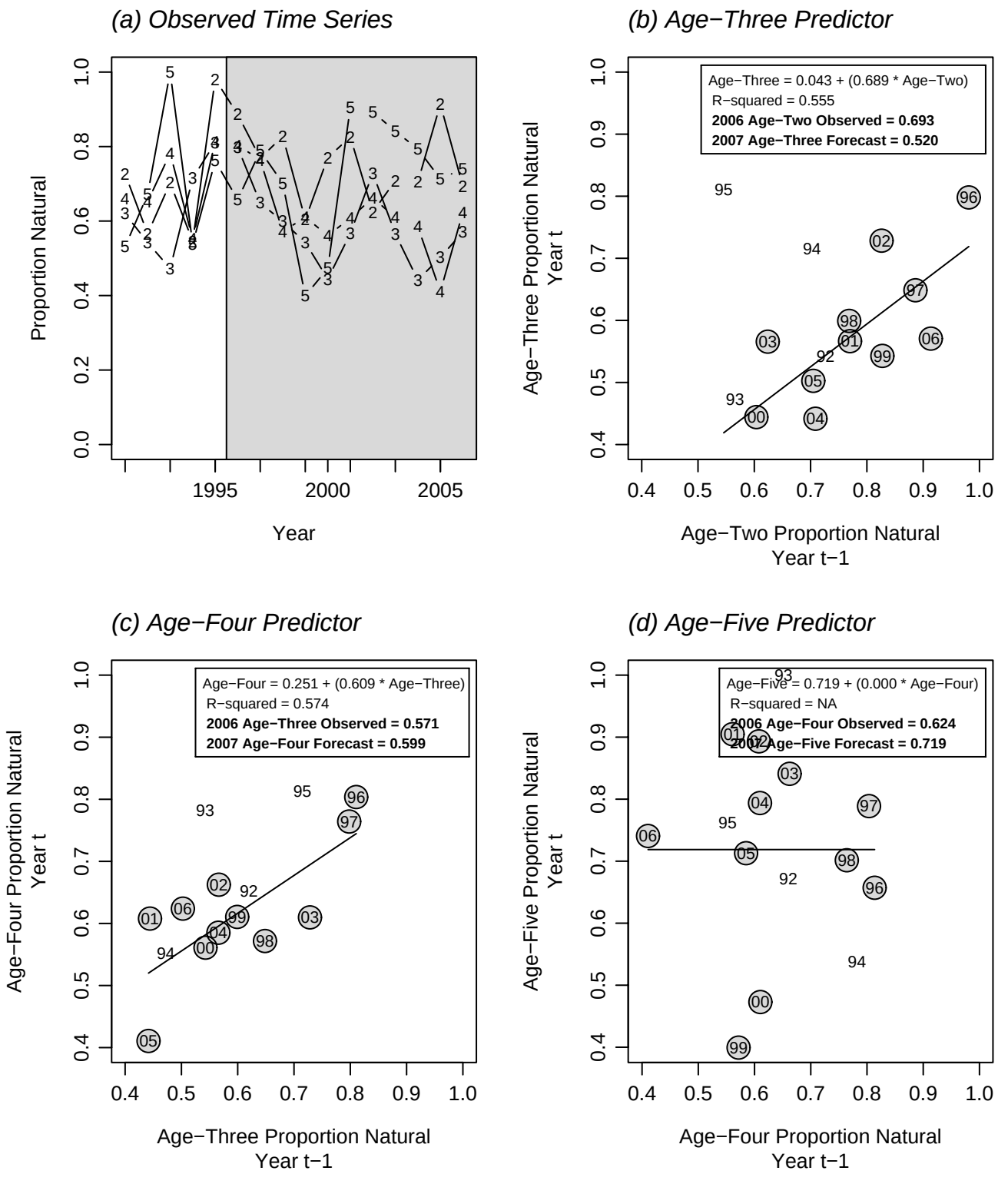

Figure 2. Age−specific proportion of natural area spawners. Panel (a): observed time−series; numbers in plot denote age; shaded area depicts data used for predictor. Panels (b)−(d): age−specific predictor based on previous−year observed proportion for same cohort; numbers in plots denote years 1992−2006; 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 Sept1(t-1) Age 3	Ocean Abundance Sept1(t-1) Age 4	Ocean Abundance Sept1(t-1) Total	Annual Ocean Harvest Rate Sept1(t-1) thru Aug31(t) Age 3	Annual Ocean Harvest Rate Sept1(t-1) thru Aug31(t) Age 4	Klamath Basin River Run (t) Age 2	Klamath Basin River Run (t) Age 3	Klamath Basin River Run (t) Age 4	Klamath Basin River Run (t) Age 5	Total Adults
1981	493.2	57.0	550.2	0.21	0.53	28.2	64.1	14.4	1.8	80.3
1982	566.2	133.4	699.6	0.30	0.52	39.4	30.1	33.9	2.6	66.6
1983	317.1	116.3	433.4	0.19	0.60	3.8	35.9	20.7	0.9	57.5
1984	157.0	83.7	240.7	0.08	0.38	8.3	21.7	24.4	1.1	47.2
1985	375.2	56.7	431.9	0.11	0.24	69.4	32.9	25.7	5.8	64.4
1986	1,308.3	141.1	1,449.4	0.18	0.46	44.6	162.9	29.8	2.3	195.0
1987	782.8	343.5	1,126.2	0.16	0.43	19.1	89.7	112.6	6.8	209.1
1988	758.4	236.1	994.5	0.20	0.39	24.1	101.2	86.5	3.9	191.6
1989	367.9	178.1	545.9	0.15	0.36	9.1	50.4	69.6	4.3	124.3
1990	176.7	103.3	280.0	0.30	0.55	4.4	11.6	22.9	1.3	35.9
1991	69.6	37.3	106.9	0.03	0.18	1.8	10.0	21.6	1.1	32.7
1992	39.6	28.3	67.9	0.02	0.07	13.7	6.9	18.8	1.0	26.7
1993	168.8	15.1	183.9	0.05	0.16	7.6	48.3	8.2	0.7	57.2
1994	120.3	41.8	162.1	0.03	0.09	14.4	37.0	26.0	1.0	64.0
1995	784.0	28.8	812.8	0.04	0.14	22.8	201.9	18.3	2.6	222.8
1996	190.9	225.8	416.7	0.05	0.16	9.5	38.8	136.7	0.3	175.8
1997	140.7	63.0	203.7	0.01	0.06	8.0	35.0	44.2	4.6	83.7
1998	154.6	45.0	199.7	0.00	0.09	4.6	59.2	29.7	1.7	90.6
1999	129.7	30.3	159.9	0.01	0.09	19.2	29.2	20.5	1.3	51.0
2000	618.6	44.4	663.1	0.06	0.10	10.2	187.1	30.5	0.5	218.1
2001	357.9	134.3	492.1	0.03	0.09	11.3	99.1	88.2	0.2	187.4
2002	515.2	99.8	615.1	0.02	0.16	9.2	94.6	62.5	3.7	160.8
2003	398.8	193.0	591.8	0.08	0.21	3.8	94.3	96.8	0.9	191.9
2004	160.6	105.2	265.9	0.12	0.34	9.7	33.2	40.7	5.3	79.2
2005	201.5 a/	38.4	239.9	0.02 a/	0.20	2.3	43.8	17.5	3.9	65.2
2006	87.7 b/	68.9 a/	156.6	---- c/	0.11 a/	27.1	18.6	41.8	1.3	61.6

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 2).

Year (t)	Preseason Forecast [a/] Sept 1 (t-1)	Postseason Estimate Sept 1 (t-1)	Pre/Postseason
	Age-Three		
1985	113,000	276,000	0.41
1986	426,000 [b/]	1,308,302	0.33
1987	511,800	782,756	0.65
1988	370,800	758,432	0.49
1989	450,600	367,855	1.22
1990	479,000	176,732	2.71
1991	176,200	69,591	2.53
1992	50,000	39,620	1.26
1993	294,400	168,817	1.74
1994	138,000	120,284	1.15
1995	269,000	783,966	0.34
1996	479,800	190,892	2.51
1997	224,600	140,736	1.60
1998	176,000	154,644	1.14
1999	84,800	129,659	0.65
2000	349,600	618,648	0.57
2001	187,200	357,878	0.52
2002	209,000	515,219	0.41
2003	171,300	398,810	0.43
2004	72,100	160,628	0.45
2005	185,700	201,518	0.92
2006 [c/]	44,100	87,677	0.50
	Age-Four		
1985	56,875	57,500	0.99
1986	66,250	141,116	0.47
1987	206,125	343,452	0.60
1988	186,375	236,079	0.79
1989	215,500	178,061	1.21
1990	50,125	103,282	0.49
1991	44,625	37,294	1.20
1992	44,750	28,253	1.58
1993	39,125	15,084	2.59
1994	86,125	41,812	2.06
1995	47,000	28,816	1.63
1996	268,500	225,805	1.19
1997	53,875	62,991	0.86
1998	46,000	45,023	1.02
1999	78,750	30,253	2.60
2000	38,875	44,450	0.87
2001	247,000	134,259	1.84
2002	143,800	99,846	1.44
2003	132,400	193,010	0.69
2004	134,500	105,227	1.28
2005	48,900	38,424	1.27
2006 [c/]	63,700	68,913	0.92

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

Year (t)	Preseason Forecast [a/] Sept 1 (t-1)	Postseason Estimate Sept 1 (t-1)	Pre/Postseason
	Age-Five		
1985 [d/]	--	11,227	--
1986 [d/]	--	5,878	--
1987	5,250	19,521	0.27
1988	13,250	14,719	0.90
1989	10,125	9,655	1.05
1990	7,625	7,803	0.98
1991	1,500	2,785	0.54
1992	1,250	1,448	0.86
1993	1,125	1,766	0.64
1994	500	1,467	0.34
1995	2,000	3,815	0.52
1996	1,125	789	1.43
1997	7,875	8,888	0.89
1998	3,250	2,398	1.36
1999	2,000	2,113	0.95
2000	1,375	860	1.60
2001	1,250	258	4.84
2002	9,700	7,000	1.39
2003	6,500	1,923	3.38
2004	9,700	17,247	0.56
2005	5,200	6,915	0.75
2006	2,200	5,321	0.41
	Total Adults		
1985 [d/]	169,875	344,727	0.49
1986 [d/]	492,250	1,455,296	0.34
1987	723,175	1,145,729	0.63
1988	570,425	1,009,230	0.57
1989	676,225	555,571	1.22
1990	536,750	287,817	1.86
1991	222,325	109,670	2.03
1992	96,000	69,321	1.38
1993	334,650	185,667	1.80
1994	224,625	163,563	1.37
1995	318,000	816,597	0.39
1996	749,425	417,486	1.80
1997	286,350	212,615	1.35
1998	225,250	202,065	1.11
1999	165,550	162,025	1.02
2000	389,850	663,958	0.59
2001	435,450	492,395	0.88
2002	362,500	622,065	0.58
2003	310,200	593,743	0.52
2004	216,300	283,102	0.76
2005	239,800	246,857	0.97
2006 [c/]	110,000	161,911	0.68

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.

	Preseason Ocean Abundance Forecast [a/] Sept 1 (t-1)		Postseason Ocean Abundance Estimate Sept 1 (t-1)		Preseason Age-4 Harvest Rate Forecast[b/]		Postseason Age-4 Harvest Rate Estimate[c/]		Preseason Adult Harvest Forecast		Postseason Adult Harvest Estimate	
Year (t)	Age-3	Age-4	Age-3	Age-4	Ocean	River	Ocean	River	Ocean	River	Ocean	River
1986	426,000	66,250	1,308,302	141,116	0.28	0.50	0.46	0.67	72,000	37,700	304,778	46,154
1987	511,800	206,125	782,756	343,452	0.28	0.53	0.43	0.44	121,200	78,200	277,656	73,265
1988	370,800	186,375	758,432	236,079	0.31	0.53	0.39	0.52	114,100	65,400	255,056	73,854
1989	450,600	215,500	367,855	178,061	0.30	0.49	0.36	0.70	128,100	67,600	125,291	54,340
1990	479,000	50,125	176,732	103,282	0.30	0.49	0.55	0.36	85,100	31,200	114,650	11,459
1991	176,200	44,625	69,591	37,294	0.13	0.28	0.18	0.45	16,700	12,800	9,901	13,581
1992	50,000	44,750	39,620	28,253	0.06	0.15	0.07	0.27	4,200	4,200	3,149	6,787
1993	294,400	39,125	168,817	15,084	0.12	0.43	0.16	0.49	20,100	22,500	11,382	12,808
1994	138,000	86,125	120,284	41,812	0.07	0.20	0.09	0.29	10,400	14,300	8,913	13,524
1995	269,000	47,000	783,966	28,816	0.07	0.32	0.14	0.19	13,500	18,500	32,232	21,637
1996	479,800	268,500	190,892	225,805	0.17	0.66	0.16	0.39	88,400	129,100	45,124	69,241
1997	224,600	53,875	140,736	62,991	0.10	0.43	0.06	0.26	17,600	26,500	8,680	17,764
1998	176,000	46,000	154,644	45,023	0.07	0.29	0.09	0.30	10,200	14,800	5,023	17,897
1999	84,800	78,750	129,659	30,253	0.10	0.28	0.09	0.45	12,300	18,100	5,113	16,942
2000	349,600	38,875	618,648	44,450	0.11	0.53	0.10	0.25	24,000	32,400	42,387	35,066
2001	187,200	247,000	357,878	134,259	0.14	0.61	0.09	0.29	45,600	105,300	21,840	50,780
2002	209,000	143,800	515,219	99,846	0.13	0.57	0.16	0.26	30,000	70,900	29,552	35,069
2003	171,300	132,400	398,810	193,010	0.16	0.50	0.21	0.28	30,600	52,200	71,025	39,715
2004	72,100	134,500	160,628	105,227	0.15	0.38	0.34	0.48	26,500	35,800	64,291	29,807
2005	185,700	48,900	201,518	38,424	0.08	0.16	0.20	0.19	7,100	9,600	13,878	10,001
2006[d/]	44,100	63,700	87,677	68,913	0.11	0.23	0.11	0.19	10,000	10,000	11,749	10,348

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 adult fall chinook spawners in the Klamath Basin by age. [a/]

	Hatchery Spawners					Natural Area Spawners					Proportion Natural				
Year	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	14,580	9,025	20,725	671	30,421	0.69	0.57	0.62	0.74	0.61

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)

	Ocean Fisheries (Sept 1(t-1) through Aug 31(t))							River Fisheries (t)		
	KMZ			North of	South of		Ocean			
Year(t)	Troll	Sport	Subtotal	KMZ	KMZ	Subtotal	Total	Net	Sport	Total
					HARVEST (numbers of fish)					
Age-Three										
1986	35,713	4,887	40,600	74,074	123,211	197,285	237,885	8,100	18,100	26,200
1987	17,251	5,088	22,339	42,920	56,426	99,346	121,685	11,400	11,400	22,800
1988	16,033	5,173	21,206	24,367	108,219	132,586	153,792	12,500	15,600	28,100
1989	6,411	11,711	18,122	15,283	23,578	38,861	56,983	2,700	900	3,600
1990	81	4,372	4,453	36,709	11,046	47,755	52,208	1,300	1,400	2,700
1991	0	1,024	1,024	344	811	1,155	2,179	2,123	1,277	3,400
1992	0	0	0	975	0	975	975	970	251	1,221
1993	0	823	823	835	6,437	7,272	8,095	5,426	2,917	8,343
1994	43	606	649	0	3,398	3,398	4,047	4,543	965	5,508
1995	0	999	999	12,206	14,802	27,008	28,007	11,840	5,536	17,376
1996	0	0	0	0	9,244	9,244	9,244	12,363	3,661	16,024
1997	0	233	233	622	1,218	1,840	2,073	2,166	2,736	4,902
1998	0	6	6	297	466	763	769	2,231	5,781	8,012
1999	63	180	243	1,266	434	1,700	1,943	4,981	1,748	6,729
2000	405	3,288	3,693	8,745	25,249	33,994	37,687	22,458	4,893	27,351
2001	113	105	218	2,771	6,100	8,871	9,089	17,885	7,294	25,179
2002	220	785	1,005	1,625	9,925	11,550	12,555	11,734	6,258	17,992
2003	171	675	846	2,014	27,142	29,156	30,002	6,996	5,061	12,057
2004	404	974	1,378	9,935	7,361	17,296	18,674	4,679	2,051	6,730
2005 [a/]	0	633	633	955	2,849	3,804	4,437	4,394	1,641	6,035
2006 [a/]	0	429	429	31	154	185	614	2,389	13	2,402
Age-Four										
1986	7,761	1,115	8,876	23,453	31,981	55,434	64,310	17,000	2,900	19,900
1987	21,784	4,439	26,223	71,305	48,940	120,245	146,468	41,000	8,500	49,500
1988	11,895	3,605	15,500	27,012	50,394	77,406	92,906	38,600	6,200	44,800
1989	6,075	9,758	15,833	32,504	16,646	49,150	64,983	41,000	7,700	48,700
1990	3,970	2,892	6,862	39,435	10,522	49,957	56,819	6,000	2,200	8,200
1991	0	1,004	1,004	1,518	4,148	5,666	6,670	7,593	2,016	9,609
1992	171	55	226	1,785	12	1,797	2,023	4,360	723	5,083
1993	0	0	0	852	1,621	2,473	2,473	3,786	243	4,029
1994	0	1,126	1,126	1,170	1,502	2,672	3,798	6,666	818	7,484
1995	0	243	243	1,885	1,777	3,662	3,905	2,957	480	3,437
1996	774	3,468	4,242	10,349	20,763	31,112	35,354	43,959	9,080	53,039
1997	3	173	176	464	3,002	3,466	3,642	8,734	2,586	11,320
1998	0	105	105	4,075	0	4,075	4,180	7,164	1,822	8,986
1999	15	378	393	1,655	691	2,346	2,739	8,789	494	9,283
2000	118	897	1,015	2,490	1,079	3,569	4,584	6,733	756	7,489
2001	1,316	1,609	2,925	5,847	3,939	9,786	12,711	20,759	4,819	25,578
2002	1,944	830	2,774	3,278	9,447	12,725	15,499	11,929	4,063	15,992
2003	836	920	1,756	8,172	30,066	38,238	39,994	22,754	4,592	27,346
2004	1,420	1,213	2,633	11,647	21,924	33,571	36,204	17,623	1,751	19,374
2005	248	319	567	5,387	1,920	7,307	7,874	3,048	304	3,352
2006 [a/]	271	812	1,083	5,444	1,104	6,548	7,631	7,571	42	7,613

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

	Ocean Fisheries (Sept 1(t-1) through Aug 31(t))							River Fisheries (t)		
	KMZ			North of	South of		Ocean			
Year(t)	Troll	Sport	Subtotal	KMZ	KMZ	Subtotal	Total	Net	Sport	Total
					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	0.05	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	0.01	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	0.01	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 [a/]	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.10	0.04	0.14
2006 [a/]	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.13	0.00	0.13
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	0.28	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	0.06	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	0.09	0.13	0.16	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 [a/]	0.00	0.01	0.02	0.08	0.02	0.10	0.11	0.18	0.00	0.18

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 2006 (September - November) ocean landings of Klamath River fall chinook by fishery, age, and KOHM area.[a/]

COMMERCIAL FISHERY

KOHM	Age 3			Age 4			Age 5			
area	Sept	Oct	Nov	Sept	Oct	Nov	Sept	Oct	Nov	Total
NO	--	--	--	18	--	--	141	--	--	159
CO	--	--	--	--	--	--	--	--	--	0
KO	--	--	--	--	--	--	--	--	--	0
KC	--	--	--	--	--	--	--	--	--	0
FB	--	--	--	48	--	--	115	--	--	162
SF	--	--	--	--	--	--	--	--	--	0
MO	--	--	--	--	--	--	--	--	--	0
Total	0	0	0	66	0	0	256	0	0	322

SPORT FISHERY

KOHM	Age 3			Age 4			Age 5			
area	Sept	Oct	Nov	Sept	Oct	Nov	Sept	Oct	Nov	Total
NO	20	--	--	--	--	--	--	--	--	20
CO	175	--	--	203	--	--	--	--	--	378
KO	--	--	--	--	--	--	40	--	--	40
KC	--	--	--	47	--	--	111	--	--	159
FB	--	--	--	--	--	--	--	--	--	0
SF	--	--	--	--	--	--	--	--	--	0
MO	--	--	--	--	--	--	--	--	--	0
Total	195	0	0	251	0	0	152	0	0	598

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.

Appendix A. KOHM: Summary Output. Wed Feb 14 13:54:53 2007
2007 stock projections; no 2007 fishing.

Klamath Escapement

Absent fishing:	137662		
Hatcheries:	63891		
Natural areas:	73771		
With fishing			
Mature adults:	137817		
Strays:	789		
Klamath Basin:	137028		
Spawners:	137028		
Hatcheries:	63675		
Natural areas:	73354		
Reduction rate:	0.006		

Klamath Harvest

Total:	919		
River:	0		
Ocean:	919		
Tribal:	0	0.000	(objective: 0.000)
Non-tribal:	919		
River:	0	0.000	(objective: 0)
Ocean troll:	322		
CA / OR:	0.505 / 0.495		
Ocean sport:	598		
KMZ:	199	0.217	
Age-four o.harv.rate:	0.012		(objective: <= 0.16)

Klamath Harvest: ocean troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	%CA
NO	159	0	0	0	0	0	0	0	0	0	0	0	159	NA
CO	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0.0
FB	162	0	0	0	0	0	0	0	0	0	0	0	162	50.6
SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
MO	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Total	322	0	0	0	0	0	0	0	0	0	0	0	322	NA

Klamath Harvest: ocean sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	%CA	%CA.rec
NO	20	0	0	0	0	0	0	0	0	0	0	0	20	NA	NA
CO	378	0	0	0	0	0	0	0	0	0	0	0	378	NA	NA
KO	40	0	0	0	0	0	0	0	0	0	0	0	40	NA	NA
KC	159	0	0	0	0	0	0	0	0	0	0	0	159	49.4	100
FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
MO	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
Total	598	0	0	0	0	0	0	0	0	0	0	0	598	NA	NA

Chinook Harvest (All Stocks): Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	4300	2500	700	NA	NA	NA	0	0	0	0	0	0	7500
CO	100	1000	800	100	NA	NA	0	0	0	0	0	0	2000
KO	10	600	100	NA	NA	NA	NaN	NaN	0	0	0	0	710
KC	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	0
FB	10800	NA	NA	NA	NA	NA	0	0	0	0	0	0	10800
SF	11700	1000	NA	NA	NA	NA	NA	NA	0	0	0	0	12700
MO	300	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	300
Total	27210	5100	1600	100	NA	NA	0	0	0	0	0	0	34010

Chinook Harvest (All Stocks): Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	1300	2000	50	NA	NA	NA	NaN	NaN	0	0	0	0	3350
CO	700	0	NA	NA	NA	NA	NaN	NaN	0	0	0	0	700
KO	600	400	NA	NA	NA	NA	NA	NA	0	0	0	0	1000
KC	3800	NA	NA	NA	NA	NA	NA	NaN	0	0	0	0	3800
FB	100	0	0	NA	NA	NaN	NaN	0	0	0	0	0	100
SF	900	200	100	NA	NA	0	0	0	0	0	0	0	1200
MO	10	NA	NA	NA	NA	NaN	0	0	0	0	0	0	10
Total	7410	2600	150	NA	NA	0	0	0	0	0	0	0	10160

Klamath Contribution Rates: Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	0.037	0	0	NA	NA	NA	0.113	0.033	0.027	0.022	0.063	0.127
CO	0.000	0	0	0	NA	NA	0.068	0.032	0.032	0.053	0.177	0.287
KO	0.000	0	0	NA	NA	NA	0.000	0.000	0.090	0.244	0.348	0.339
KC	NA	NA	NA	NA	NA	NA	NA	NA	0.426	0.466	0.356	0.470
FB	0.015	NA	NA	NA	NA	NA	0.142	0.142	0.142	0.274	0.267	0.122
SF	0.000	0	NA	NA	NA	NA	NA	NA	0.056	0.084	0.085	0.045
MO	0.000	NA	NA	NA	NA	NA	NA	NA	0.014	0.017	0.044	0.002

Klamath Contribution Rates: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	0.016	0	0	NA	NA	NA	0.000	0.000	0.024	0.001	0.066	0.071
CO	0.540	NaN	NA	NA	NA	NA	0.000	0.000	0.108	0.078	0.089	0.059
KO	0.067	0	NA	NA	NA	NA	NA	NA	0.023	0.084	0.200	0.306
KC	0.042	NA	NA	NA	NA	NA	NA	0.000	0.147	0.173	0.150	0.232
FB	0.000	NaN	NaN	NA	NA	0	0.000	0.005	0.024	0.060	0.107	0.044
SF	0.000	0	0	NA	NA	0	0.007	0.024	0.012	0.034	0.021	0.005
MO	0.000	NA	NA	NA	NA	0	0.006	0.005	0.003	0.004	0.007	0.001

Season 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	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

Season 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

Quota Effort: Troll

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

Quota Effort: Sport

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

Total 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	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

Total 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

Days open: ocean troll, type 0

	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

Days open: ocean troll, type 1

	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

Days open: ocean troll, type 2

	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

Days open: ocean sport, type 0

	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

Days open: ocean sport, type 1

	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

Chinook Quotas (All Stocks): ocean troll

	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

Chinook Quotas (All Stocks): ocean sport

	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: ocean

	fishery	month	area	limit
1	10	9	NO	28
2	10	6	NO	28
3	10	7	NO	28
4	10	8	NO	28
5	10	9	FB	27
6	10	7	SF	28
7	10	8	SF	28
8	10	5	MO	27
9	10	7	MO	28
10	10	8	MO	28
11	40	4	KO	24
12	40	5	KO	24
13	40	6	KO	24
14	40	7	KO	24
15	40	9	KC	24
16	40	4	KC	24
17	40	5	KC	24
18	40	6	KC	24
19	40	7	KC	24

Allocation objective:

Tribes: 0

River Recreational: 0

Appendix B. KOHM: Summary Output. Wed Feb 14 14:01:31 2007
2007 stock projections; 2006 regulations.

Klamath Escapement

Absent fishing:	137662		
Hatcheries:	63891		
Natural areas:	73771		
With fishing			
Mature adults:	133878		
Strays:	767		
Klamath Basin:	133111		
Spawners:	122214		
Hatcheries:	56962		
Natural areas:	65251		
Reduction rate:	0.115		

Klamath Harvest

Total:	17986		
River:	8993		
Ocean:	8993		
Tribal:	8993	0.500	(objective: 0.500)
Non-tribal:	8993		
River:	0	0.000	(objective: 0)
Ocean troll:	4165		
CA / OR:	0.841 / 0.159		
Ocean sport:	4828		
KMZ:	1817	0.202	
Age-four o.harv.rate:	0.047		(objective: <= 0.16)

Klamath Harvest: ocean troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	%CA
NO	159	0	0	0	0	0	0	0	0	95	214	195	664	NA
CO	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0.0
FB	162	0	0	0	0	0	0	0	0	0	0	0	162	2.3
SF	0	0	0	0	0	0	0	0	0	0	1145	1674	2820	39.8
MO	0	0	0	0	0	0	0	0	269	0	241	9	519	7.3
Total	322	0	0	0	0	0	0	0	269	95	1600	1879	4165	NA

Klamath Harvest: ocean sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	%CA	%CA.rec
NO	20	0	0	0	0	0	0	0	2	5	77	47	151	NA	NA
CO	378	0	0	0	0	0	0	0	9	88	185	45	705	NA	NA
KO	40	0	0	0	0	0	0	0	15	237	92	0	385	NA	NA
KC	159	0	0	0	0	0	0	0	336	767	170	0	1432	20.2	39.9
FB	0	0	0	0	0	0	0	19	146	302	336	115	918	12.9	25.6
SF	0	0	0	0	0	0	0	189	76	307	322	16	911	12.9	25.4
MO	0	0	0	0	0	0	0	124	26	51	112	15	327	4.6	9.1
Total	598	0	0	0	0	0	0	332	611	1756	1294	239	4828	NA	NA

Chinook Harvest (All Stocks): Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	4300	2500	700	NA	NA	NA	0	0	0	4270	3391	1535	16696
CO	100	1000	800	100	NA	NA	0	0	0	0	0	0	2000
KO	10	600	100	NA	NA	NA	NaN	NaN	0	0	0	0	710
KC	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	0
FB	10800	NA	NA	NA	NA	NA	0	0	0	0	0	0	10800
SF	11700	1000	NA	NA	NA	NA	NA	NA	0	0	13546	36916	63162
MO	300	NA	NA	NA	NA	NA	NA	NA	18689	0	5472	5287	29748
Total	27210	5100	1600	100	NA	NA	0	0	18689	4270	22408	43739	123116

Chinook Harvest (All Stocks): Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	1300	2000	50	NA	NA	NA	NaN	NaN	86	7616	1155	664	12871
CO	700	0	NA	NA	NA	NA	NaN	NaN	80	1124	2080	753	4737
KO	600	400	NA	NA	NA	NA	NA	NA	661	2831	463	0	4955
KC	3800	NA	NA	NA	NA	NA	NA	NaN	2292	4443	1132	0	11667
FB	100	0	0	NA	NA	NaN	NaN	3545	6115	5020	3133	2610	20522
SF	900	200	100	NA	NA	0	0	7763	6248	8904	15504	3500	43119
MO	10	NA	NA	NA	NA	NaN	0	24552	7658	14092	16528	15173	78013
Total	7410	2600	150	NA	NA	0	0	35860	23139	44029	39994	22701	175884

Klamath Contribution Rates: Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	0.037	0	0	NA	NA	NA	0.113	0.033	0.027	0.022	0.063	0.127
CO	0.000	0	0	0	NA	NA	0.068	0.032	0.032	0.053	0.177	0.287
KO	0.000	0	0	NA	NA	NA	0.000	0.000	0.090	0.244	0.348	0.339
KC	NA	NA	NA	NA	NA	NA	NA	NA	0.426	0.466	0.356	0.470
FB	0.015	NA	NA	NA	NA	NA	0.142	0.142	0.142	0.274	0.267	0.122
SF	0.000	0	NA	NA	NA	NA	NA	NA	0.056	0.084	0.085	0.045
MO	0.000	NA	NA	NA	NA	NA	NA	NA	0.014	0.017	0.044	0.002

Klamath Contribution Rates: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	0.016	0	0	NA	NA	NA	0.000	0.000	0.024	0.001	0.066	0.071
CO	0.540	NaN	NA	NA	NA	NA	0.000	0.000	0.108	0.078	0.089	0.059
KO	0.067	0	NA	NA	NA	NA	NA	NA	0.023	0.084	0.200	0.306
KC	0.042	NA	NA	NA	NA	NA	NA	0.000	0.147	0.173	0.150	0.232
FB	0.000	NaN	NaN	NA	NA	0	0.000	0.005	0.024	0.060	0.107	0.044
SF	0.000	0	0	NA	NA	0	0.007	0.024	0.012	0.034	0.021	0.005
MO	0.000	NA	NA	NA	NA	0	0.006	0.005	0.003	0.004	0.007	0.001

Season 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	1172	708	205	2085
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	557	2342	2900
MO	NA	NA	NA	NA	0	0	0	0	3928	0	398	500	4826
Total	NA	NA	NA	NA	0	0	0	0	3928	1172	1663	3048	9811

Season Effort: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	32	87	646	5518	20479	4347	31110
CO	NA	NA	NA	NA	0	0	23	64	403	5179	14775	4358	24803
KO	NA	NA	NA	NA	0	0	0	0	2070	4469	1272	0	7811
KC	NA	NA	NA	NA	0	0	0	0	3423	8023	2025	0	13471
FB	NA	NA	NA	NA	0	134	466	959	2419	4916	6460	5380	20734
SF	NA	NA	NA	NA	0	0	0	8288	9325	11938	24979	16244	70774
MO	NA	NA	NA	NA	0	0	0	16975	10169	9494	11619	3024	51280
Total	NA	NA	NA	NA	0	134	521	26373	28455	49538	81608	33353	219982

Quota Effort: Troll

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

Quota Effort: Sport

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

Total 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	1172	708	205	2085
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	557	2342	2900
MO	NA	NA	NA	NA	0	0	0	0	3928	0	398	500	4826
Total	NA	NA	NA	NA	0	0	0	0	3928	1172	1663	3048	9811

Total Effort: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	32	87	646	5518	20479	4347	31110
CO	NA	NA	NA	NA	0	0	23	64	403	5179	14775	4358	24803
KO	NA	NA	NA	NA	0	0	0	0	2070	4469	1272	0	7811
KC	NA	NA	NA	NA	0	0	0	0	3423	8023	2025	0	13471
FB	NA	NA	NA	NA	0	134	466	959	2419	4916	6460	5380	20734
SF	NA	NA	NA	NA	0	0	0	8288	9325	11938	24979	16244	70774
MO	NA	NA	NA	NA	0	0	0	16975	10169	9494	11619	3024	51280
Total	NA	NA	NA	NA	0	134	521	26373	28455	49538	81608	33353	219982

Days open: ocean troll, type 0

	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	6	31
MO	NA	NA	NA	NA	0	0	0	0	0	0	6	31

Days open: ocean troll, type 1

	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

Days open: ocean troll, type 2

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	NA	NA	NA	NA	0	0	0	0	0	16	9	3
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	31	0	0	0

Days open: ocean sport, type 0

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	NA	NA	NA	NA	0	0	17	30	31	16	0	31
CO	NA	NA	NA	NA	0	0	17	30	31	16	0	31
KO	NA	NA	NA	NA	0	0	0	0	17	30	4	0
KC	NA	NA	NA	NA	0	0	0	0	17	30	4	0
FB	NA	NA	NA	NA	0	11	31	30	31	22	19	31
SF	NA	NA	NA	NA	0	0	0	30	31	28	29	31
MO	NA	NA	NA	NA	0	0	0	30	31	30	31	31

Days open: ocean sport, type 1

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	NA	NA	NA	NA	0	0	0	0	0	14	31	0
CO	NA	NA	NA	NA	0	0	0	0	0	14	31	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

Chinook Quotas (All Stocks): ocean troll

	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

Chinook Quotas (All Stocks): ocean sport

	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: ocean

	fishery	month	area	limit
1	10	9	NO	28
2	10	6	NO	28
3	10	7	NO	28
4	10	8	NO	28
5	10	9	FB	27
6	10	7	SF	28
7	10	8	SF	28
8	10	5	MO	27
9	10	7	MO	28
10	10	8	MO	28
11	40	4	KO	24
12	40	5	KO	24
13	40	6	KO	24
14	40	7	KO	24
15	40	9	KC	24
16	40	4	KC	24
17	40	5	KC	24
18	40	6	KC	24
19	40	7	KC	24

Allocation objective:

Tribes: 0.5

River Recreational: 0