

Ocean Abundance Projections and Prospective Harvest Levels for Klamath River Fall Chinook, 2006 Season

Klamath River Technical Advisory Team
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Executive Summary

Predictor performance for 2005 and forecasts for 2006 are:

	Age	2005			2006 Forecast
		Preseason	Postseason	Pre/Post	
Ocean Abundance	3	185,700	209,500	0.89	44,100
	4	48,900	34,800	1.41	63,700
	5	5,200	7,400	0.70	2,200
Proportion Natural	3	0.54	0.51	1.06	0.67
	4	0.55	0.41	1.34	0.55
	5	0.72	0.71	1.01	0.72
Ocean Harvest Rate	4	0.08	0.24	0.33	---
Ocean Fall Harvest	3	---	0	---	---
	4	---	4,269	---	---
	5	---	1,867	---	---

The implications of the 2006 forecast ocean abundances, proportions natural, and the 2005 ocean fall harvest for fisheries management in 2006 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 2006 between Cape Falcon and Point Sur (an estimated 6,136 Klamath River fall Chinook were harvested in the ocean during the Sept–Nov 2005 period) and no Klamath River fisheries (tribal and recreational) in 2006, and (B) status quo regulations: the 2005 ocean fishery seasons and quotas, the 2005 river recreational allocation of 15% (of nontribal harvest), and a tribal allocation of 50% (of total harvest). The results are:

Sector	KOHM Forecasts	
	(A) No-fishing in 2006	(B) 2005 Regulations
Adult Spawners		
Natural Areas	29,200	18,700
Hatcheries	21,500	13,500
Adult Harvest		
Ocean Commercial	5,500	8,400
Ocean Recreational	700	1,900
River Recreational	0	1,800
Tribal	0	12,200
Age-4 Ocean Harvest Rate	0.07	0.12
Spawner Reduction Rate	0.10	0.42

Thus, even with no further fishing in 2006 on the current stock, the expected number of natural area adult spawners would be 29,200, with an expected age-4 ocean harvest rate of 7% (due to ocean harvest that already occurred in the Sept–Nov 2005 period). A repeat of 2005 fishery regulations would be expected to

result in 18,700 natural area adult spawners and an age-4 ocean harvest rate of 12.2%. These “expected” numbers were derived from contact rate per unit effort and effort per day predictors based on long term time series of these quantities. Were these predictors to be more heavily weighted toward recent year data, the forecast number of spawners and harvest rate would be even less optimistic. These forecasts are provided for informational purposes only; the Pacific Fishery Management Council (PFMC) will adopt 2006 ocean salmon fishery management regulations in April 2006.

If the postseason estimate of natural area adult spawners in 2006 is less than 35,000, it would be the third consecutive year of failing to meet the PFMC Salmon Fishery Management Plan (FMP) conservation objective for the stock. Under the terms of the Salmon FMP, this would trigger an overfishing concern and require the PFMC to undertake an overfishing review, which would likely lead to the development a rebuilding plan for the stock.

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 2006 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 2006, and (B) status quo regulations: the 2005 ocean fishery seasons and quotas, the 2005 river recreational allocation of 15% (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 2005 river run of Klamath River fall chinook salmon used in this report is from the KRTAT (2006).

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 1979–2001 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 2004 (age-three) and 2005 (age-three, age-four) are preliminary, as their respective cohorts are incomplete (Table 1).

The 2005 age-three ocean abundance forecast was 0.89 times its postseason estimate (Table 2); the age-three predictor has underestimated abundance in 12 of the 21 previous years. The 2005 age-four ocean abundance forecast was 1.40 times its postseason estimate (Table 2); the age-four predictor has underestimated abundance in 9 of the 21 previous years. The 2005 age-five ocean abundance forecast was

0.70 times its postseason estimate (Table 2); the age-five predictor has underestimated abundance in 12 of the 19 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 1997–2005 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 2005 proportion natural forecast for age-three, -four, and -five fish was 0.54, 0.55, 0.72, respectively, and the corresponding post-season estimates are 0.51, 0.41, 0.71, respectively (Table 4).

Historical Harvest Levels and Rates

Historical (1986-2005) ocean and river harvest levels and rates of age-three and age-four Klamath River fall chinook are listed in Table 5. The 2005 age-four ocean harvest rate was forecasted to be 7.7% (PFMC 2005); its (preliminary) postseason estimate of 23.9% is substantially higher than that.

2005 Ocean Fishery Fall Harvest

Klamath River fall chinook ocean harvests during the 2005 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).

2006 Forecasts

The 2006 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	44,100	0.67
4	63,700	0.55
5	2,200	0.72

For the 2005 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	2,299	188	12.23
4	43,870	25,780	1.70
5	17,513	11,482	1.53

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 2006, 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 2006 between Cape Falcon and Point Sur (an estimated 6,136

Klamath River fall Chinook were harvested in the ocean during the Sept–Nov 2005 period) and no Klamath River fisheries (tribal and recreational) in 2006, and (B) status quo regulations: the 2005 ocean fishery seasons and quotas, the 2005 river recreational allocation of 15% (of nontribal harvest), and a tribal allocation of 50% (of total harvest); are provided in Appendices A and B, respectively.

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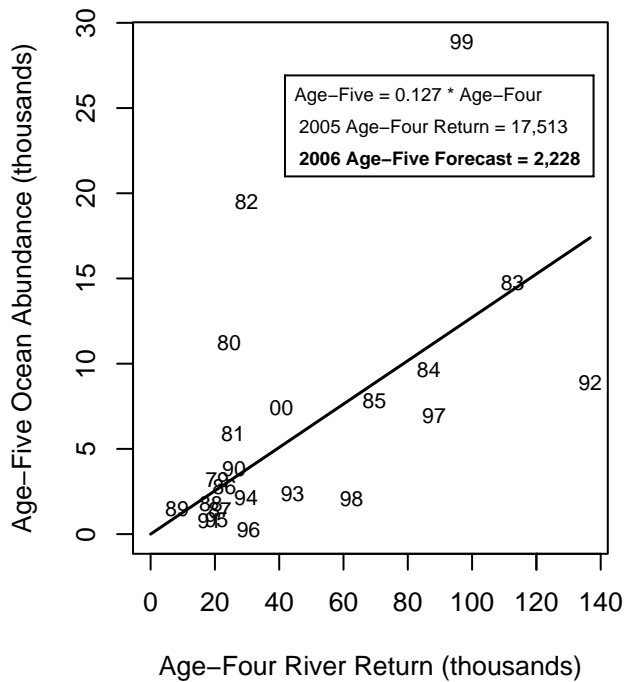
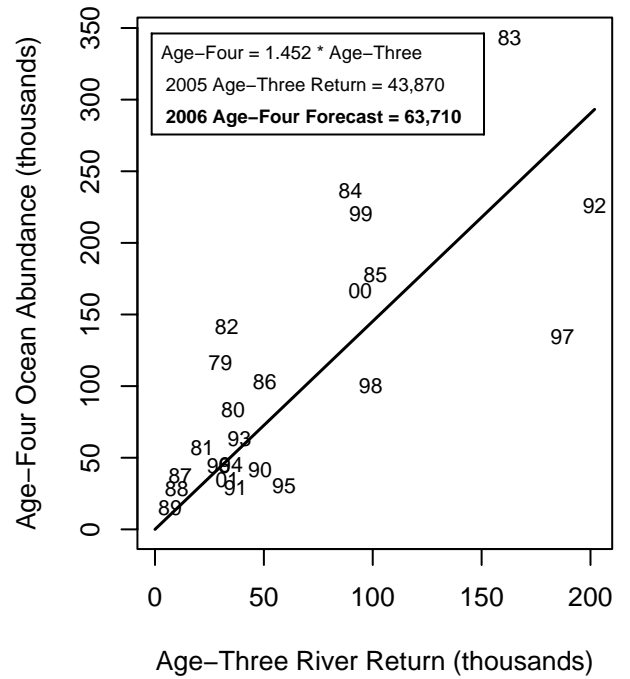
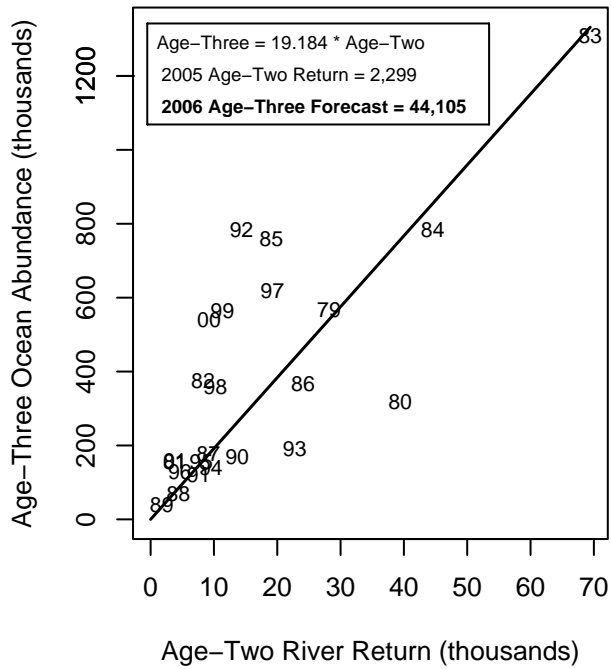
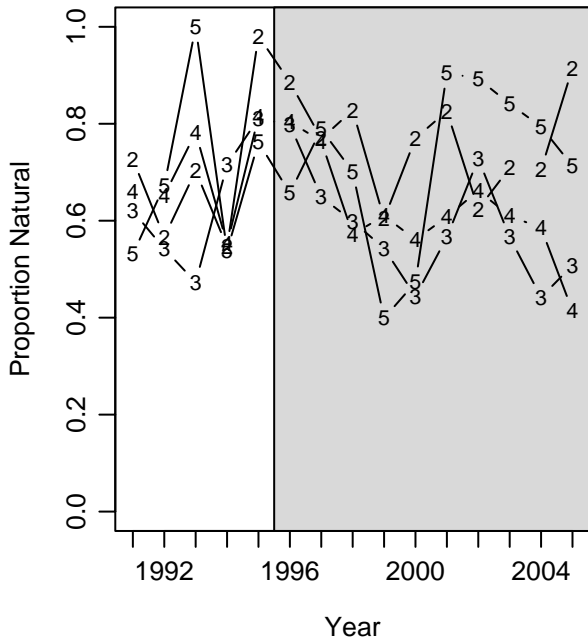
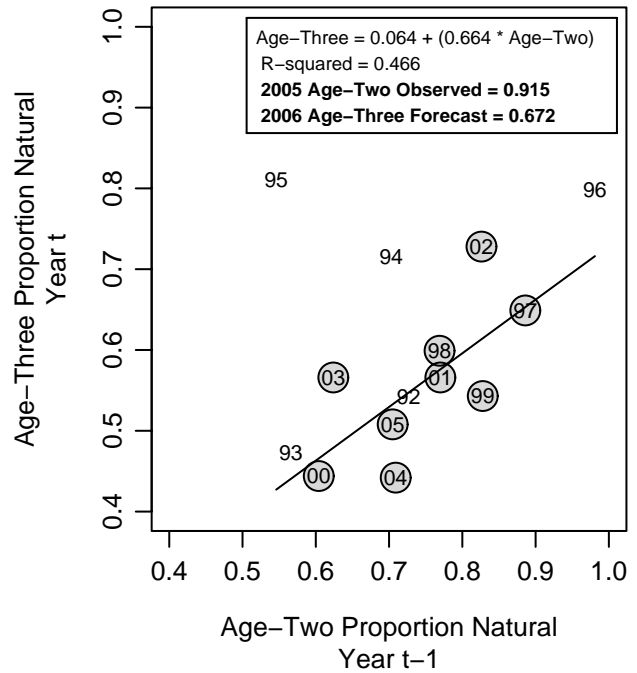


Figure 1. Regression estimators for Klamath River fall chinook ocean abundance (Sept. 1) based on that year's river return of same cohort. Numbers in plots denote brood years.

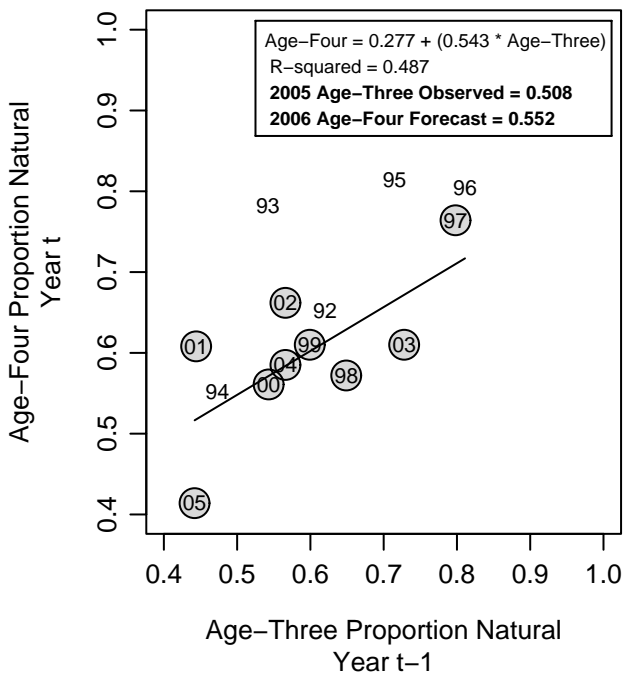
(a) Observed Time Series



(b) Age-Three Predictor



(c) Age-Four Predictor



(d) Age-Five Predictor

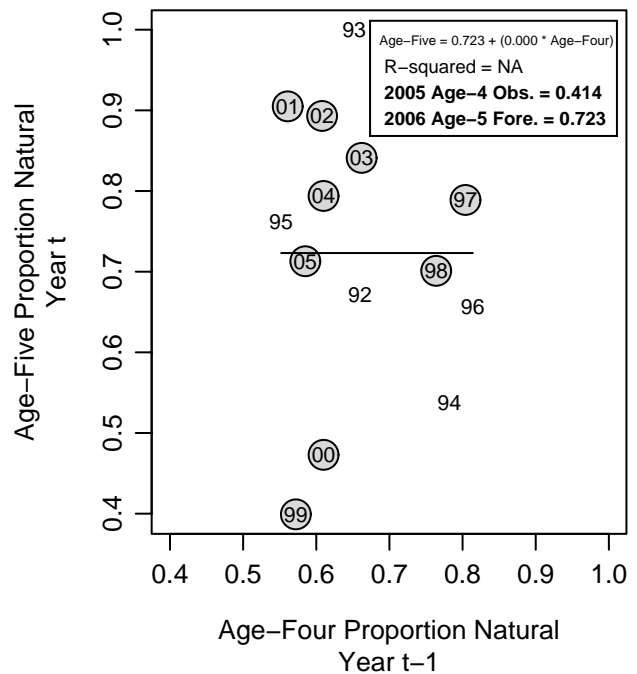


Figure 2. Age-specific proportion of natural area spawners. Panel (a): observed time-series; numbers in plot denote age; shaded area depicts data used for predictor. Panels (b)–(d): age-specific predictor based on previous-year observed proportion for same cohort; numbers in plots denote years 1992–2005; 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	566.4	133.4	699.8	0.30	0.52	39.4	30.1	33.9	2.6	66.6
1983	317.2	116.3	433.5	0.19	0.60	3.8	35.9	20.7	0.9	57.5
1984	157.1	83.7	240.8	0.08	0.38	8.3	21.7	24.4	1.1	47.2
1985	375.3	56.7	432.1	0.11	0.24	69.4	32.9	25.7	5.8	64.4
1986	1,308.7	141.2	1,449.9	0.18	0.46	44.6	162.9	29.8	2.3	195.0
1987	783.0	343.6	1,126.6	0.16	0.43	19.1	89.7	112.6	6.8	209.1
1988	758.6	236.2	994.8	0.20	0.39	24.1	101.2	86.5	3.9	191.6
1989	368.0	178.1	546.1	0.15	0.36	9.1	50.4	69.6	4.3	124.3
1990	176.8	103.3	280.1	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	168.9	15.1	183.9	0.05	0.16	7.6	48.3	8.2	0.7	57.2
1994	120.3	41.8	162.2	0.03	0.09	14.4	37.0	26.0	1.0	64.0
1995	784.2	28.8	813.0	0.04	0.14	22.8	201.9	18.3	2.6	222.8
1996	191.0	225.9	416.9	0.05	0.16	9.5	38.8	136.7	0.3	175.8
1997	140.8	63.0	203.8	0.01	0.06	8.0	35.0	44.2	4.6	83.7
1998	154.7	45.0	199.7	0.00	0.09	4.6	59.2	29.7	1.7	90.6
1999	129.7	30.3	160.0	0.01	0.09	19.2	29.2	20.5	1.3	51.0
2000	618.7	44.5	663.2	0.06	0.10	10.2	187.1	30.5	0.5	218.1
2001	358.2	134.2	492.4	0.03	0.09	11.3	99.1	88.2	0.2	187.4
2002	565.7	100.0	665.7	0.03	0.15	9.2	94.6	62.5	3.7	160.8
2003	540.7	220.2	760.9	0.09	0.23	3.8	94.3	96.8	0.9	191.9
2004	159.2 ^{a/}	166.5	325.8	0.13 ^{a/}	0.51	9.7	33.2	40.7	5.3	79.2
2005	209.5 ^{b/}	34.8 ^{a/}	244.3	---- ^{c/}	0.24 ^{a/}	2.3	43.9	17.5	3.9	65.3

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/}	1,308,678	0.33
1987	511,800	783,001	0.65
1988	370,800	758,625	0.49
1989	450,600	367,979	1.22
1990	479,000	176,803	2.71
1991	176,200	69,609	2.53
1992	50,000	39,637	1.26
1993	294,400	168,858	1.74
1994	138,000	120,329	1.15
1995	269,000	784,221	0.34
1996	479,800	190,977	2.51
1997	224,600	140,784	1.60
1998	176,000	154,679	1.14
1999	84,800	129,696	0.65
2000	349,600	618,688	0.57
2001	187,200	358,169	0.52
2002	209,000	565,734	0.37
2003	171,300	540,668	0.32
2004 ^{c/}	72,100	159,242	0.45
2005 ^{c/}	185,700	209,493	0.89
Age-Four			
1985	56,875	57,500	0.99
1986	66,250	141,173	0.47
1987	206,125	343,562	0.60
1988	186,375	236,159	0.79
1989	215,500	178,110	1.21
1990	50,125	103,324	0.49
1991	44,625	37,308	1.20
1992	44,750	28,261	1.58
1993	39,125	15,091	2.59
1994	86,125	41,821	2.06
1995	47,000	28,827	1.63
1996	268,500	225,886	1.19
1997	53,875	63,019	0.85
1998	46,000	45,039	1.02
1999	78,750	30,259	2.60
2000	38,875	44,462	0.87
2001	247,000	134,245	1.84
2002	143,800	99,993	1.44
2003	132,400	220,224	0.60
2004	134,500	166,527	0.81
2005 ^{c/}	48,900	34,791	1.41

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/}	Postseason Estimate	Pre/Postseason
	Sept 1 (t-1)	Sept 1 (t-1)	
Age-Five			
1985 ^{d/}	--	11,231	--
1986 ^{d/}	--	5,881	--
1987	5,250	19,531	0.27
1988	13,250	14,725	0.90
1989	10,125	9,658	1.05
1990	7,625	7,806	0.98
1991	1,500	2,786	0.54
1992	1,250	1,448	0.86
1993	1,125	1,767	0.64
1994	500	1,468	0.34
1995	2,000	3,817	0.52
1996	1,125	789	1.43
1997	7,875	8,891	0.89
1998	3,250	2,399	1.35
1999	2,000	2,114	0.95
2000	1,375	860	1.60
2001	1,250	259	4.83
2002	9,700	6,963	1.39
2003	6,500	2,062	3.15
2004	9,700	28,878	0.34
2005	5,200	7,433	0.70
Total Adults			
1985 ^{d/}	169,875	344,731	0.49
1986 ^{d/}	492,250	1,455,732	0.34
1987	723,175	1,146,094	0.63
1988	570,425	1,009,509	0.57
1989	676,225	555,747	1.22
1990	536,750	287,933	1.86
1991	222,325	109,703	2.03
1992	96,000	69,346	1.38
1993	334,650	185,716	1.80
1994	224,625	163,618	1.37
1995	318,000	816,865	0.39
1996	749,425	417,652	1.79
1997	286,350	212,694	1.35
1998	225,250	202,117	1.11
1999	165,550	162,069	1.02
2000	389,850	664,010	0.59
2001	435,450	492,673	0.88
2002	362,500	672,690	0.54
2003	310,200	762,954	0.41
2004 ^{c/}	216,300	354,647	0.61
2005 ^{c/}	239,800	251,717	0.95

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/}		Rage 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	1,308,678	141,173	0.28	0.50	0.46	0.67	72,000	37,700	304,887	46,154
1987	511,800	206,125	783,001	343,562	0.28	0.53	0.43	0.44	121,200	78,200	277,753	73,265
1988	370,800	186,375	758,625	236,159	0.31	0.53	0.39	0.52	114,100	65,400	255,138	73,854
1989	450,600	215,500	367,979	178,110	0.30	0.49	0.36	0.70	128,100	67,600	125,330	54,340
1990	479,000	50,125	176,803	103,324	0.30	0.49	0.55	0.36	85,100	31,200	114,697	11,459
1991	176,200	44,625	69,609	37,308	0.13	0.28	0.18	0.45	16,700	12,800	9,904	13,581
1992	50,000	44,750	39,637	28,261	0.06	0.15	0.07	0.27	4,200	4,200	3,150	6,787
1993	294,400	39,125	168,858	15,091	0.12	0.43	0.16	0.49	20,100	22,500	11,386	12,808
1994	138,000	86,125	120,329	41,821	0.07	0.20	0.09	0.29	10,400	14,300	8,916	13,524
1995	269,000	47,000	784,221	28,827	0.07	0.32	0.14	0.19	13,500	18,500	32,243	21,637
1996	479,800	268,500	190,977	225,886	0.17	0.66	0.16	0.39	88,400	129,100	45,141	69,241
1997	224,600	53,875	140,784	63,019	0.10	0.43	0.06	0.26	17,600	26,500	8,684	17,764
1998	176,000	46,000	154,679	45,039	0.07	0.29	0.09	0.30	10,200	14,800	5,025	17,897
1999	84,800	78,750	129,696	30,259	0.10	0.28	0.09	0.45	12,300	18,100	5,114	16,942
2000	349,600	38,875	618,688	44,462	0.11	0.53	0.10	0.25	24,000	32,400	42,389	35,066
2001	187,200	247,000	358,169	134,245	0.14	0.61	0.09	0.29	45,600	105,300	21,830	50,780
2002	209,000	143,800	565,734	99,993	0.13	0.57	0.15	0.26	30,000	70,900	31,639	35,069
2003	171,300	132,400	540,668	220,224	0.16	0.50	0.23	0.28	30,600	52,200	101,688	39,715
2004	72,100	134,500	159,242	166,527	0.15	0.38	0.51	0.48	26,500	35,800	124,528	29,807
2005 ^{d/}	185,700	48,900	209,493	34,791	0.08	0.16	0.24	0.19	7,100	9,600	15,181	9,552

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/}

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	1,083	19,219	5,777	2,309	27,305	0.91	0.51	0.41	0.71	0.50

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))						Ocean Total	River Fisheries (t)		
	KMZ			North of KMZ	South of KMZ	Subtotal		Net	Sport	Total
	Troll	Sport	Subtotal							
HARVEST (numbers of fish)										
Age-Three										
1986	35,726	4,888	40,614	74,098	123,256	197,354	237,968	8,100	18,100	26,200
1987	17,258	5,090	22,348	42,935	56,448	99,383	121,731	11,400	11,400	22,800
1988	16,038	5,175	21,213	24,373	108,253	132,626	153,839	12,500	15,600	28,100
1989	6,413	11,715	18,128	15,287	23,587	38,874	57,002	2,700	900	3,600
1990	81	4,374	4,455	36,725	11,050	47,775	52,230	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	824	824	835	6,438	7,273	8,097	5,426	2,917	8,343
1994	43	606	649	0	3,400	3,400	4,049	4,543	965	5,508
1995	0	999	999	12,210	14,807	27,017	28,016	11,840	5,536	17,376
1996	0	0	0	0	9,248	9,248	9,248	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	25,250	33,995	37,688	22,458	4,893	27,351
2001	113	105	218	2,769	6,097	8,866	9,084	17,885	7,294	25,179
2002	259	919	1,178	1,905	11,637	13,542	14,720	11,734	6,258	17,992
2003	288	1,117	1,405	3,328	45,574	48,902	50,307	6,996	5,061	12,057
2004 ^{a/}	457	1,084	1,541	11,285	8,392	19,677	21,218	4,679	2,051	6,730
2005 ^{a/}	0	705	705	951	3,209	4,160	4,865	4,361	1,301	5,662
Age-Four										
1986	7,764	1,116	8,880	23,462	31,994	55,456	64,336	17,000	2,900	19,900
1987	21,791	4,440	26,231	71,328	48,956	120,284	146,515	41,000	8,500	49,500
1988	11,899	3,607	15,506	27,021	50,411	77,432	92,938	38,600	6,200	44,800
1989	6,077	9,760	15,837	32,513	16,650	49,163	65,000	41,000	7,700	48,700
1990	3,971	2,894	6,865	39,451	10,527	49,978	56,843	6,000	2,200	8,200
1991	0	1,005	1,005	1,519	4,149	5,668	6,673	7,593	2,016	9,609
1992	171	55	226	1,786	12	1,798	2,024	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	1,886	1,778	3,664	3,907	2,957	480	3,437
1996	774	3,469	4,243	10,352	20,770	31,122	35,365	43,959	9,080	53,039
1997	3	173	176	464	3,004	3,468	3,644	8,734	2,586	11,320
1998	0	106	106	4,076	0	4,076	4,182	7,164	1,822	8,986
1999	15	378	393	1,656	691	2,347	2,740	8,789	494	9,283
2000	118	897	1,015	2,491	1,079	3,570	4,585	6,733	756	7,489
2001	1,316	1,608	2,924	5,845	3,937	9,782	12,706	20,759	4,819	25,578
2002	1,938	827	2,765	3,268	9,419	12,687	15,452	11,929	4,063	15,992
2003	1,057	1,157	2,214	10,355	37,530	47,885	50,099	22,754	4,592	27,346
2004	3,326	2,833	6,159	27,463	50,985	78,448	84,607	17,623	1,751	19,374
2005 ^{a/}	264	338	602	5,679	2,040	7,719	8,321	3,025	256	3,281

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	Ocean Total	Net	Sport	Total	
	Troll	Sport	Subtotal	KMZ	KMZ					Subtotal
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	0.03	0.12	0.07	0.19
2003	0.00	0.00	0.00	0.01	0.08	0.09	0.09	0.07	0.05	0.13
2004 ^{a/}	0.00	0.01	0.01	0.07	0.05	0.12	0.13	0.14	0.06	0.20
2005 ^{a/}	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.10	0.03	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	0.15	0.19	0.06	0.26
2003	0.00	0.01	0.01	0.05	0.17	0.22	0.23	0.24	0.05	0.28
2004	0.02	0.02	0.04	0.16	0.31	0.47	0.51	0.43	0.04	0.48
2005 ^{a/}	0.01	0.01	0.02	0.16	0.06	0.22	0.24	0.17	0.01	0.19

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 2005 (September - November) ocean landings of Klamath River fall chinook by fishery, age, and KOHM area.^{a/}

COMMERCIAL FISHERY										
KOHM area	Age 3			Age 4			Age 5			Total
	Sept	Oct	Nov	Sept	Oct	Nov	Sept	Oct	Nov	
NO	--	--	--	163	68	--	62	--	--	293
CO	--	--	--	2118	543	--	1163	186	--	4,010
KO	--	--	--	43	--	--	68	--	--	111
KC	--	--	--	133	--	--	144	--	--	277
FB	--	--	--	466	--	--	144	--	--	610
SF	--	--	--	158	--	--	--	--	--	158
MO	--	--	--	--	--	--	--	--	--	0
Total	0	0	0	3,081	611	0	1,581	186	0	5,459

SPORT FISHERY										
KOHM area	Age 3			Age 4			Age 5			Total
	Sept	Oct	Nov	Sept	Oct	Nov	Sept	Oct	Nov	
NO	--	--	--	142	--	--	--	--	--	142
CO	--	--	--	17	--	--	--	--	--	17
KO	--	--	--	88	--	--	43	--	--	131
KC	--	--	--	330	--	--	57	--	--	387
FB	--	--	--	--	--	--	--	--	--	0
SF	--	--	--	--	--	--	--	--	--	0
MO	--	--	--	--	--	--	--	--	--	0
Total	0	0	0	577	0	0	100	0	0	677

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. Fri Feb 10 13:27:31 2006
2006 stock projections; no 2006 fishing.

Klamath Escapement

Absent fishing:	56251	
Hatcheries:	23725	
Natural areas:	32526	
With fishing		
Mature adults:	50978	
Strays:	252	
Klamath Basin:	50726	
Spawners:	50726	
Hatcheries:	21525	
Natural areas:	29201	(objective: >= 32526)
Reduction rate:	0.102	(objective: <= 0.000)

Klamath Harvest

Total:	6136	
River:	0	
Ocean:	6136	
Tribal:	0	0.000 (objective: 0.000)
Non-tribal:	6136	
River:	0	0.000
Ocean troll:	5459	
CA / OR:	0.191 / 0.809	
Ocean sport:	677	
KMZ:	518	0.084
Age-four o.harv.rate:	0.067	(objective: <= 0.16)

Klamath Harvest: ocean troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	%CA
NO	226	68	0	0	0	0	0	0	0	0	0	0	294	NA
CO	3282	729	0	0	0	0	0	0	0	0	0	0	4010	NA
KO	111	0	0	0	0	0	0	0	0	0	0	0	111	NA
KC	276	0	0	0	0	0	0	0	0	0	0	0	276	19.3
FB	609	0	0	0	0	0	0	0	0	0	0	0	609	42.6
SF	158	0	0	0	0	0	0	0	0	0	0	0	158	11.1
MO	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Total	4662	797	0	0	0	0	0	0	0	0	0	0	5459	NA

Klamath Harvest: ocean sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	%CA	%CA.rec
NO	142	0	0	0	0	0	0	0	0	0	0	0	142	NA	NA
CO	17	0	0	0	0	0	0	0	0	0	0	0	17	NA	NA
KO	131	0	0	0	0	0	0	0	0	0	0	0	131	NA	NA
KC	387	0	0	0	0	0	0	0	0	0	0	0	387	27	100
FB	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

MO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	677	0	0	0	0	0	0	0	0	0	0	0	677	NA	NA

Chinook Harvest (All Stocks): Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	32100	7900	10	NA	NA	NA	0	0	0	0	0	0	40010
CO	49900	8800	800	300	NA	NA	0	0	0	0	0	0	59800
KO	1400	600	200	NA	NA	NA	NA	NA	0	0	0	0	2200
KC	7200	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	7200
FB	45700	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	45700
SF	27100	2100	NA	NA	NA	NA	NA	NA	0	0	0	0	29200
MO	900	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	900
Total	164300	19400	1010	300	NA	NA	0	0	0	0	0	0	185010

Chinook Harvest (All Stocks): Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	4200	300	0	NA	NA	NA	NA	NA	0	0	0	0	4500
CO	1800	10	NA	NA	NA	NA	NA	NA	0	0	0	0	1810
KO	1200	400	NA	NA	NA	NA	NA	NA	0	0	0	0	1600
KC	2700	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	2700
FB	300	10	0	NA	NA	NA	NA	0	0	0	0	0	310
SF	10500	3900	300	NA	NA	0	0	0	0	0	0	0	14700
MO	100	NA	NA	NA	NA	NA	0	0	0	0	0	0	100
Total	20800	4620	300	NA	NA	0	0	0	0	0	0	0	25720

Klamath Contribution Rates: Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	0.007	0.009	0	NA	NA	NA	0.086	0.04	0.047	0.019	0.044	0.054
CO	0.066	0.083	0	0	NA	NA	0.037	0.04	0.066	0.067	0.116	0.195
KO	0.079	0.000	0	NA	NA	NA	NA	NA	0.248	0.232	0.294	0.194
KC	0.038	NA	NA	NA	NA	NA	NA	NA	0.479	0.308	0.151	0.129
FB	0.013	NA	NA	NA	NA	NA	NA	NA	0.135	0.131	0.154	0.052
SF	0.006	0.000	NA	NA	NA	NA	NA	NA	0.042	0.035	0.028	0.012
MO	0.000	NA	NA	NA	NA	NA	NA	NA	0.008	0.011	0.033	0.001

Klamath Contribution Rates: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	0.034	0	NaN	NA	NA	NA	NA	NA	0.073	0.021	0.017	0.037
CO	0.010	0	NA	NA	NA	NA	NA	NA	0.315	0.040	0.034	0.017
KO	0.109	0	NA	NA	NA	NA	NA	NA	0.066	0.065	0.103	0.162
KC	0.143	NA	NA	NA	NA	NA	NA	NA	0.088	0.069	0.076	0.137
FB	0.000	0	NaN	NA	NA	NA	NA	0.042	0.064	0.038	0.028	0.047
SF	0.000	0	0	NA	NA	0.008	0.002	0.011	0.005	0.017	0.006	0.002
MO	0.000	NA	NA	NA	NA	NA	0.010	0.012	0.004	0.001	0.009	0.039

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
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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	10	NO 28
3		10	9	CO 28
4		10	10	CO 28
5		10	9	KO 28
6		10	9	KC 28
7		10	9	FB 27
8		10	9	SF 27
9		40	9	KO 24
10		40	9	KC 24

Allocation objective:

River Sport: 0
KMZ Sport: 0
Tribes: 0

Klamath escapement buffer: 0

Appendix B. KOHM: Summary Output. Fri Feb 10 13:37:27 2006
2006 stock projections; 2005 regulations.

Klamath Escapement

Absent fishing:	56251	
Hatcheries:	23725	
Natural areas:	32526	
With fishing		
Mature adults:	47578	
Strays:	236	
Klamath Basin:	47342	
Spawners:	32268	
Hatcheries:	13537	
Natural areas:	18732	(objective: >= 32526)
Reduction rate:	0.424	(objective: <= 0.000)

Klamath Harvest

Total:	24312	
River:	13979	
Ocean:	10333	
Tribal:	12156	0.500 (objective: 0.500)
Non-tribal:	12156	
River:	1823	0.150
Ocean troll:	8407	
CA / OR:	0.294 / 0.706	
Ocean sport:	1925	
KMZ:	1120	0.108
Age-four o.harv.rate:	0.122	(objective: <= 0.16)

Klamath Harvest: ocean troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	%CA
NO	226	68	0	0	0	0	245	69	123	115	0	0	845	NA
CO	3282	729	0	0	0	0	607	140	224	0	0	0	4981	NA
KO	111	0	0	0	0	0	0	0	0	0	0	0	111	NA
KC	276	0	0	0	0	0	0	0	0	0	0	0	276	7.3
FB	609	0	0	0	0	0	0	0	0	0	0	0	609	16.1
SF	158	0	0	0	0	0	0	0	0	0	774	151	1083	28.6
MO	0	0	0	0	0	0	0	0	265	0	233	3	501	13.2
Total	4662	797	0	0	0	0	851	209	612	115	1008	154	8407	NA

Klamath Harvest: ocean sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total	%CA	%CA.rec
NO	142	0	0	0	0	0	0	0	0	1	17	9	170	NA	NA
CO	17	0	0	0	0	0	0	0	2	21	40	9	90	NA	NA
KO	131	0	0	0	0	0	0	0	3	55	21	133	344	NA	NA
KC	387	0	0	0	0	0	0	0	48	171	38	132	776	20.5	58.7
FB	0	0	0	0	0	0	0	4	34	106	83	21	249	6.6	18.8
SF	0	0	0	0	0	0	0	44	15	75	79	3	216	5.7	16.4

MO	0	0	0	0	0	0	0	0	31	7	14	26	3	81	2.1	6.1
Total	677	0	0	0	0	0	0	0	80	110	444	303	311	1925	NA	NA

Chinook Harvest (All Stocks): Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	32100	7900	10	NA	NA	NA	2846	1714	2597	6063	0	0	53231
CO	49900	8800	800	300	NA	NA	16278	3504	3384	0	0	0	82966
KO	1400	600	200	NA	NA	NA	NA	NA	0	0	0	0	2200
KC	7200	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	7200
FB	45700	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	45700
SF	27100	2100	NA	NA	NA	NA	NA	NA	0	0	27852	12698	69750
MO	900	NA	NA	NA	NA	NA	NA	NA	32976	0	7012	2347	43236
Total	164300	19400	1010	300	NA	NA	19125	5219	38957	6063	34864	15045	304282

Chinook Harvest (All Stocks): Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	4200	300	0	NA	NA	NA	NA	NA	7	52	1007	243	5808
CO	1800	10	NA	NA	NA	NA	NA	NA	6	530	1190	526	4062
KO	1200	400	NA	NA	NA	NA	NA	NA	46	857	202	820	3525
KC	2700	NA	NA	NA	NA	NA	NA	NA	552	2476	493	968	7189
FB	300	10	0	NA	NA	NA	NA	104	527	2815	2922	450	7128
SF	10500	3900	300	NA	NA	0	0	3911	3187	4293	13029	1613	40733
MO	100	NA	NA	NA	NA	NA	0	2602	1510	9816	3010	88	17125
Total	20800	4620	300	NA	NA	0	0	6616	5835	20838	21853	4708	85570

Klamath Contribution Rates: Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	0.007	0.009	0	NA	NA	NA	0.086	0.04	0.047	0.019	0.044	0.054
CO	0.066	0.083	0	0	NA	NA	0.037	0.04	0.066	0.067	0.116	0.195
KO	0.079	0.000	0	NA	NA	NA	NA	NA	0.248	0.232	0.294	0.194
KC	0.038	NA	NA	NA	NA	NA	NA	NA	0.479	0.308	0.151	0.129
FB	0.013	NA	NA	NA	NA	NA	NA	NA	0.135	0.131	0.154	0.052
SF	0.006	0.000	NA	NA	NA	NA	NA	NA	0.042	0.035	0.028	0.012
MO	0.000	NA	NA	NA	NA	NA	NA	NA	0.008	0.011	0.033	0.001

Klamath Contribution Rates: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
NO	0.034	0	NaN	NA	NA	NA	NA	NA	0.073	0.021	0.017	0.037
CO	0.010	0	NA	NA	NA	NA	NA	NA	0.315	0.040	0.034	0.017
KO	0.109	0	NA	NA	NA	NA	NA	NA	0.066	0.065	0.103	0.162
KC	0.143	NA	NA	NA	NA	NA	NA	NA	0.088	0.069	0.076	0.137
FB	0.000	0	NaN	NA	NA	NA	NA	0.042	0.064	0.038	0.028	0.047
SF	0.000	0	0	NA	NA	0.008	0.002	0.011	0.005	0.017	0.006	0.002
MO	0.000	NA	NA	NA	NA	NA	0.010	0.012	0.004	0.001	0.009	0.039

Season Effort: Troll

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	251	275	522	1252	0	0	2299
CO	NA	NA	NA	NA	0	0	289	270	582	0	0	0	1141
KO	NA	NA	NA	NA	0	0	6	8	0	0	0	0	13
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	2599	2171	4770
MO	NA	NA	NA	NA	0	0	0	0	5885	0	1869	508	8262
Total	NA	NA	NA	NA	0	0	546	552	6989	1252	4468	2679	16485

Season Effort: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	40	86	658	5704	21932	4024	32444
CO	NA	NA	NA	NA	0	0	27	68	412	5542	15624	4568	26241
KO	NA	NA	NA	NA	0	0	0	0	1421	4617	1284	4634	11955
KC	NA	NA	NA	NA	0	0	0	0	2184	8194	2012	5059	17448
FB	NA	NA	NA	NA	0	194	477	970	2433	6670	7186	5450	23380
SF	NA	NA	NA	NA	0	0	0	8352	9227	12653	27187	16980	74398
MO	NA	NA	NA	NA	0	0	0	16621	10640	9760	12133	3215	52370
Total	NA	NA	NA	NA	0	194	543	26097	26975	53140	87358	43929	238236

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
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NO	NA	NA	NA	NA	0	0	251	275	522	1252	0	0	2299
CO	NA	NA	NA	NA	0	0	289	270	582	0	0	0	1141
KO	NA	NA	NA	NA	0	0	6	8	0	0	0	0	13
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	2599	2171	4770
MO	NA	NA	NA	NA	0	0	0	0	5885	0	1869	508	8262
Total	NA	NA	NA	NA	0	0	546	552	6989	1252	4468	2679	16485

Total Effort: Sport

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total
NO	NA	NA	NA	NA	0	0	40	86	658	5704	21932	4024	32444
CO	NA	NA	NA	NA	0	0	27	68	412	5542	15624	4568	26241
KO	NA	NA	NA	NA	0	0	0	0	1421	4617	1284	4634	11955
KC	NA	NA	NA	NA	0	0	0	0	2184	8194	2012	5059	17448
FB	NA	NA	NA	NA	0	194	477	970	2433	6670	7186	5450	23380
SF	NA	NA	NA	NA	0	0	0	8352	9227	12653	27187	16980	74398
MO	NA	NA	NA	NA	0	0	0	16621	10640	9760	12133	3215	52370
Total	NA	NA	NA	NA	0	194	543	26097	26975	53140	87358	43929	238236

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	11	15	14	30	0	0
CO	NA	NA	NA	NA	0	0	11	15	30	0	0	0
KO	NA	NA	NA	NA	0	0	11	15	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	28	29
MO	NA	NA	NA	NA	0	0	0	0	0	0	28	29

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	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	17	0	31

CO	NA	NA	NA	NA	0	0	17	30	31	17	0	31
KO	NA	NA	NA	NA	0	0	0	0	11	30	4	18
KC	NA	NA	NA	NA	0	0	0	0	11	30	4	18
FB	NA	NA	NA	NA	0	17	31	30	31	30	21	31
SF	NA	NA	NA	NA	0	0	0	29	31	30	31	31
MO	NA	NA	NA	NA	0	0	0	29	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	13	31	0
CO	NA	NA	NA	NA	0	0	0	0	0	13	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	10	NO 28
3		10	3	NO 27
4		10	4	NO 27
5		10	5	NO 28
6		10	6	NO 28
7		10	7	NO 28
8		10	8	NO 28
9		10	9	CO 28
10		10	10	CO 28
11		10	3	CO 27
12		10	4	CO 27
13		10	5	CO 28
14		10	6	CO 28

15	10	7	CO	28
16	10	8	CO	28
17	10	9	KO	28
18	10	3	KO	27
19	10	4	KO	27
20	10	5	KO	28
21	10	6	KO	28
22	10	7	KO	28
23	10	8	KO	28
24	10	9	KC	28
25	10	9	FB	27
26	10	9	SF	27
27	10	5	SF	27
28	10	6	SF	27
29	10	7	SF	28
30	10	8	SF	28
31	10	5	MO	27
32	10	6	MO	27
33	10	7	MO	28
34	10	8	MO	28
35	40	9	KO	24
36	40	5	KO	24
37	40	6	KO	24
38	40	7	KO	24
39	40	8	KO	24
40	40	9	KC	24
41	40	5	KC	24
42	40	6	KC	24
43	40	7	KC	24
44	40	8	KC	24

Allocation objective:

 River Sport: 0.15

 KMZ Sport: NA

 Tribes: 0.5

Klamath escapement buffer: 0
