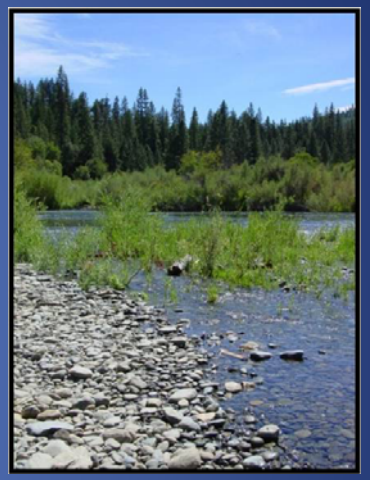
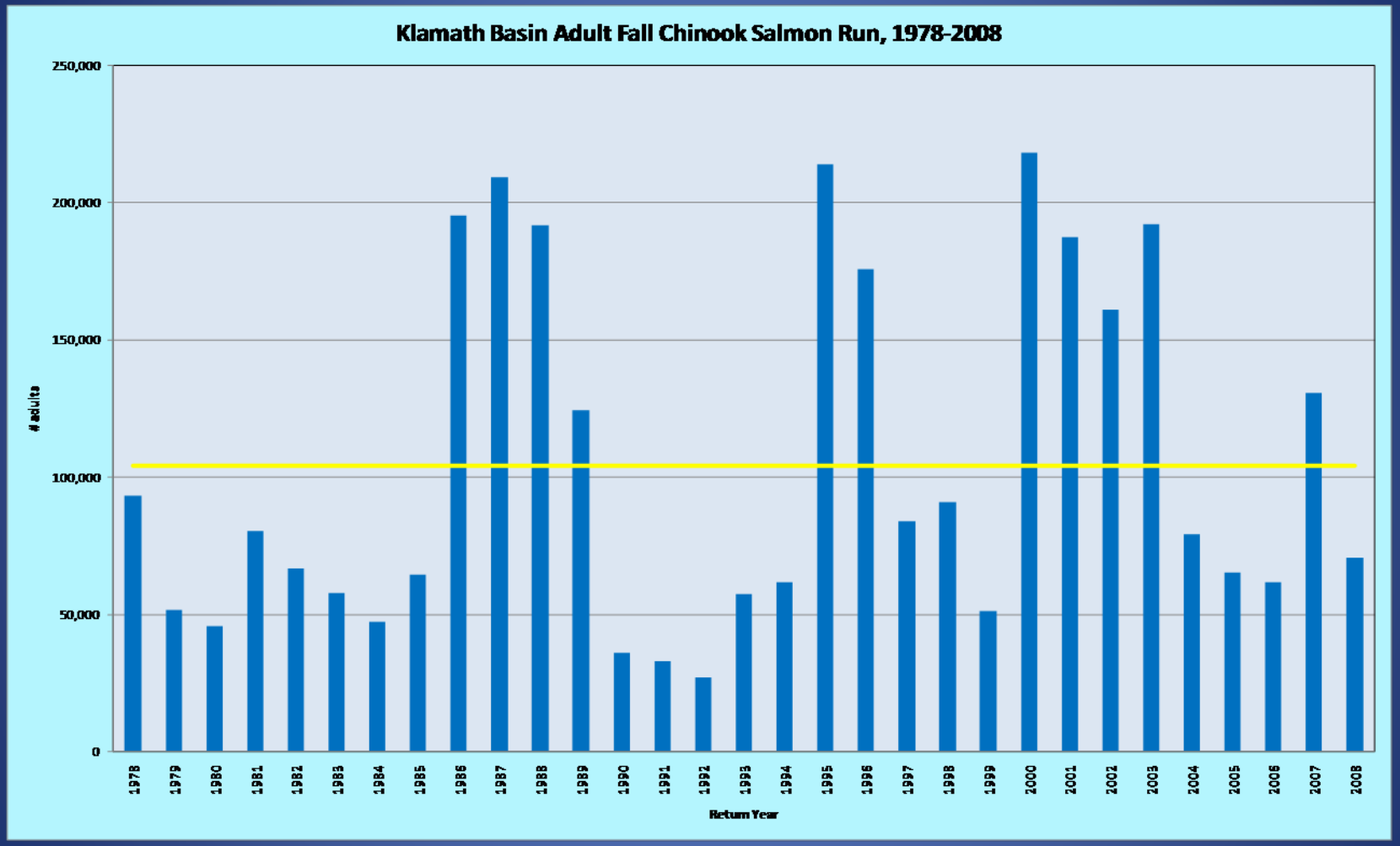
Klamath/Trinity Fall Chinook Salmon 2008 Run Size and 2009 Forecast



TAMWG Presentation

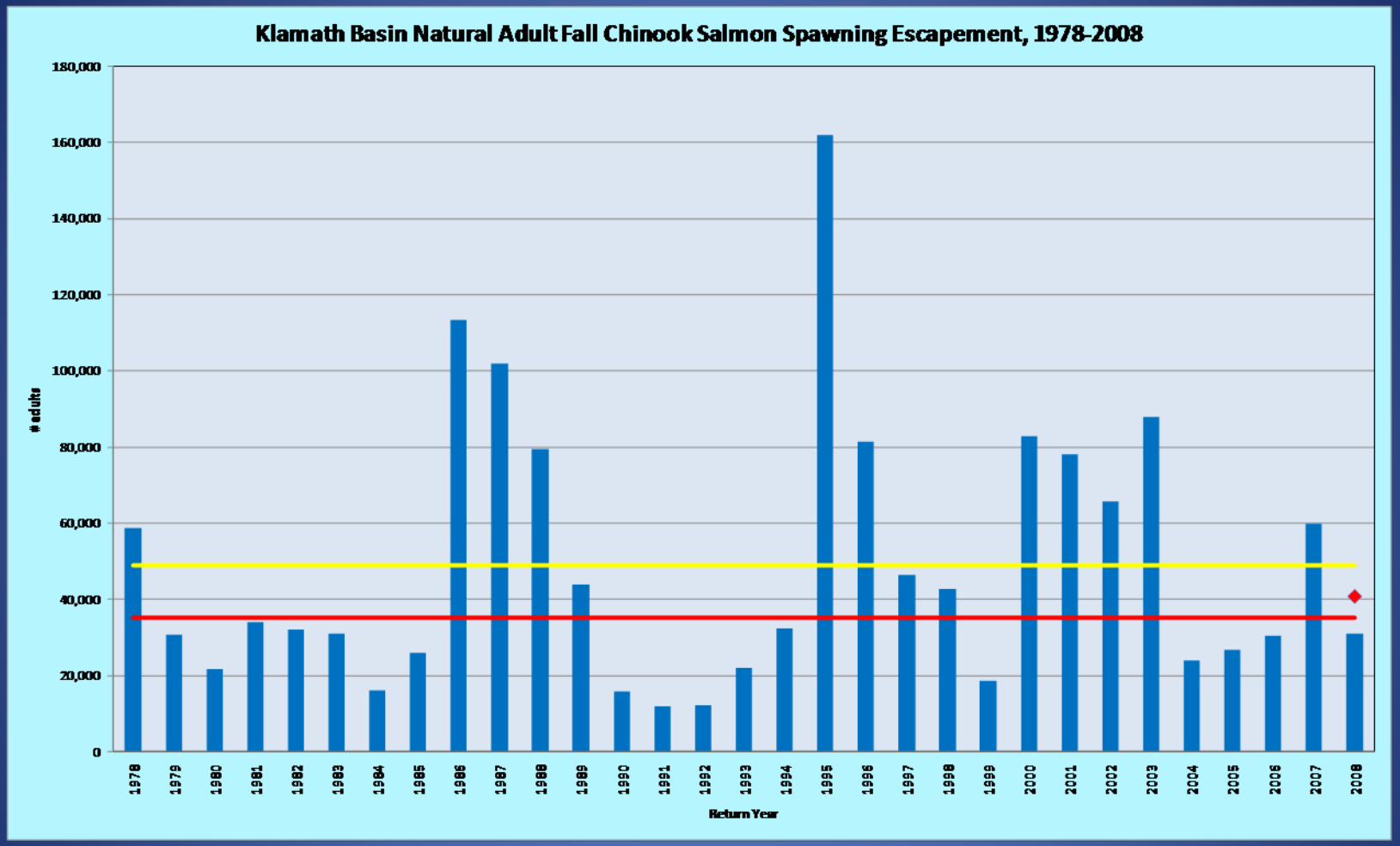
March 19, 2009

Klamath/Trinity Fall Chinook Salmon Run Size and 2009 Forecast



- These data include hatchery and natural spawning escapement and harvest impacts.
- Yellow line is average adult run.

Klamath/Trinity Fall Chinook Salmon Run Size and 2009 Forecast



•Yellow line is average adult run, red line minimum natural spawning escapement and red diamond the target for 2008 due to overfishing concern.

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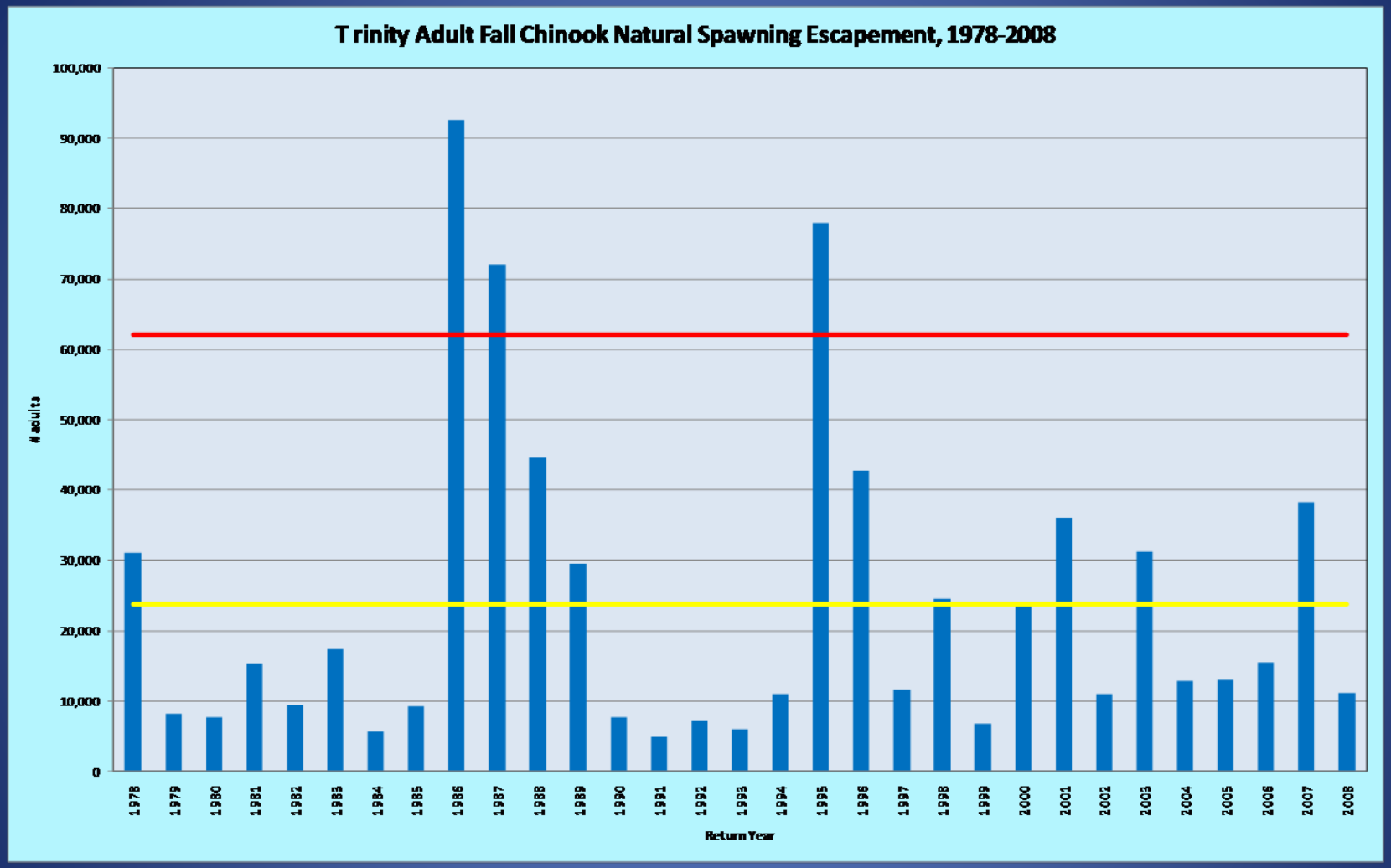
Klamath/Trinity Fall Chinook Salmon Run Size and 2009 Forecast



•Yellow line is average adult run, red line is TRRP natural spawning escapement goal.

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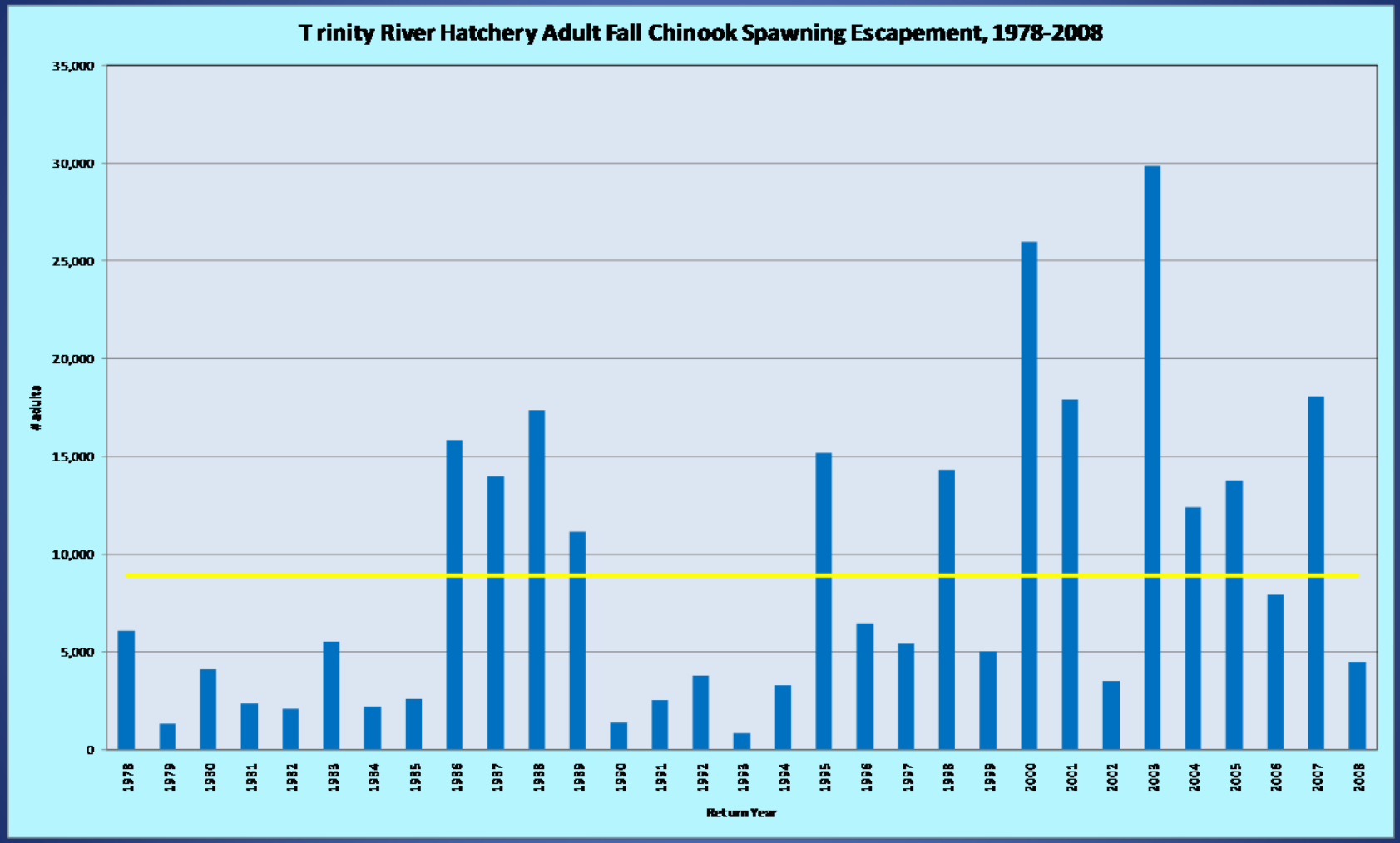
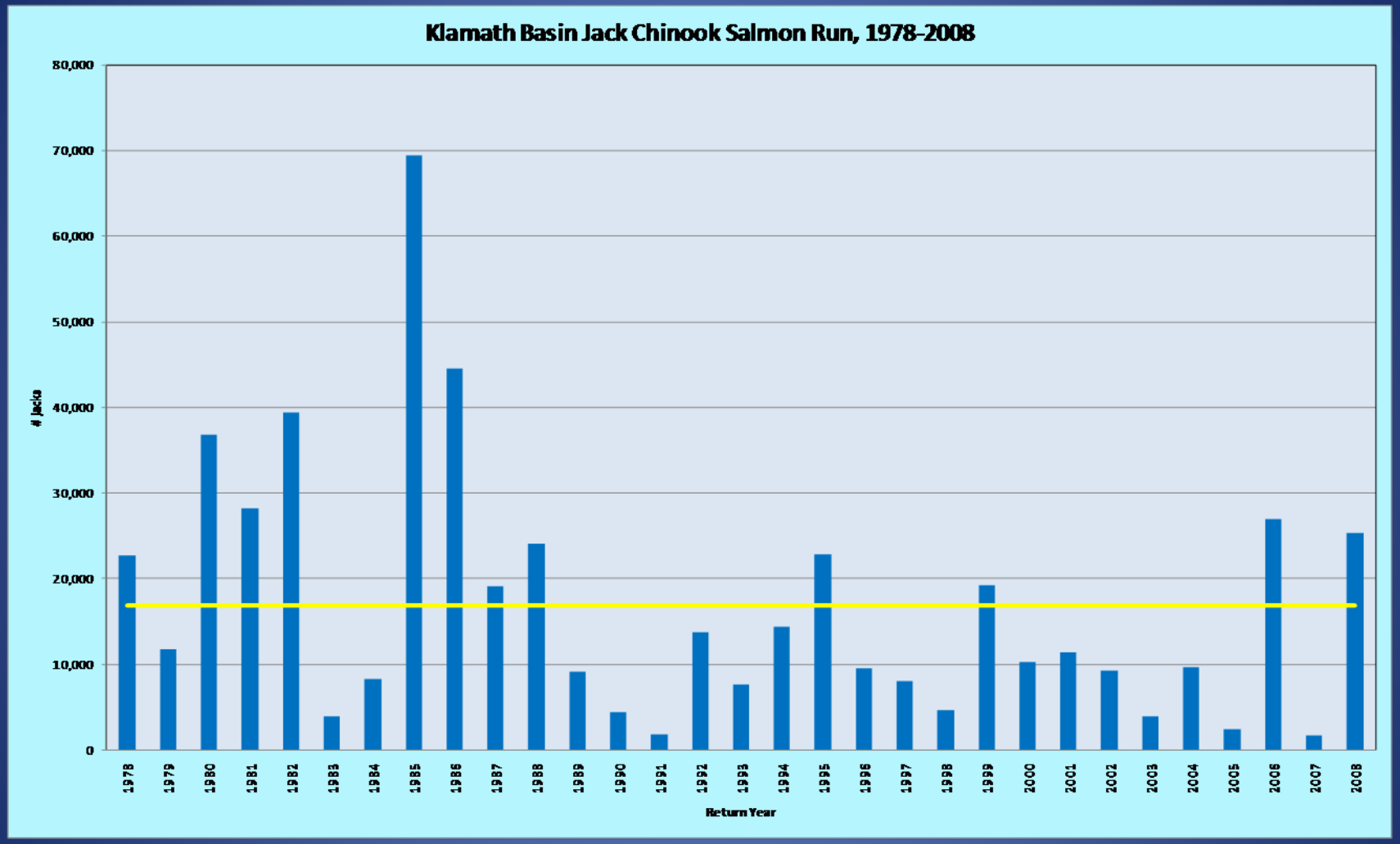
Klamath/Trinity Fall Chinook Salmon Run Size and 2009 Forecast



•Yellow line is average adult run.

Klamath/Trinity Fall Chinook Salmon Run Size and 2009 Forecast



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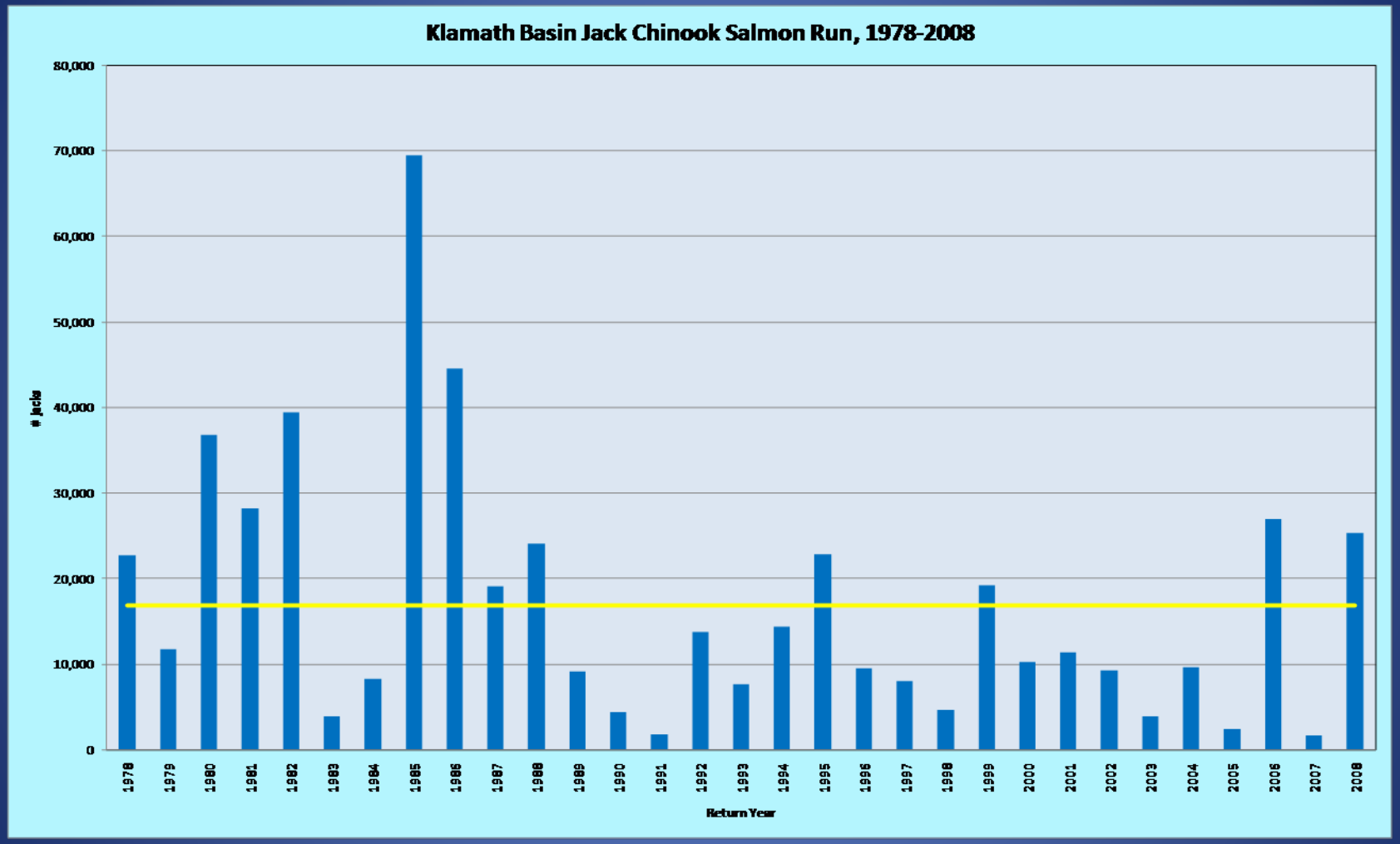
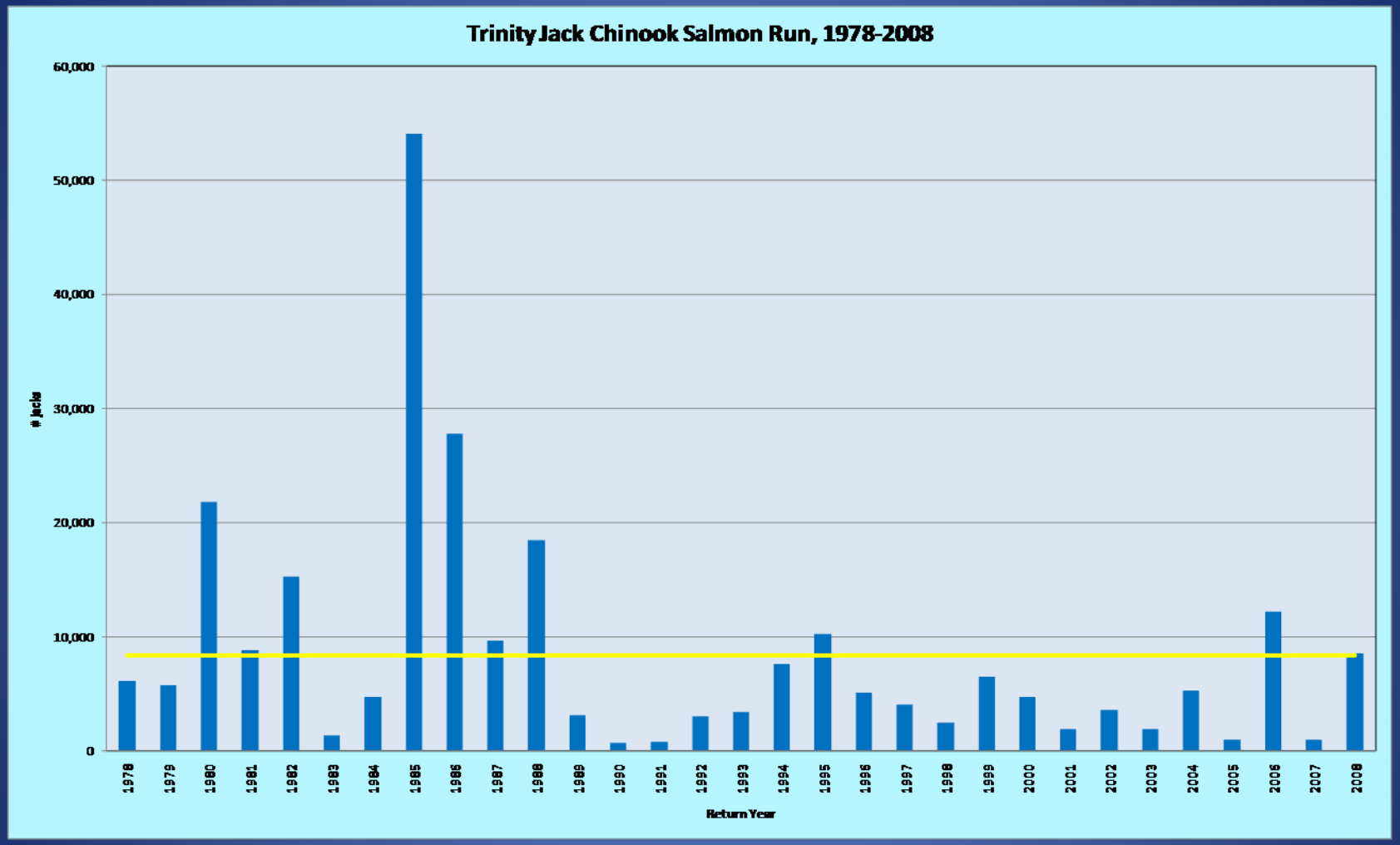
Klamath/Trinity Fall Chinook Salmon Run Size and 2009 Forecast



•Yellow line is average adult run.

Klamath/Trinity Fall Chinook Salmon Run Size and 2009 Forecast



•Yellow line is average adult run.

PFMC conducted an overfishing review for Klamath Basin Fall Chinook salmon because the minimum natural spawning escapement was not met from 2004-2006, and in 2007.

Report: www.pcouncil.org/bbl/2008/0308/D3b_KRFC.pdf

The PFMC has adopted the following rebuilding strategy :

(1) target for a natural adult spawning escapement of 40,700 until the overfishing concern is ended (the rebuilding period) and

(2) the conditions that need to be met to end the over fishing concern are:(a) the adult natural spawning escapement is at least 35,000 in 3 of 4 consecutive years or (b) the natural spawning escapement is at least 40,700 in 2 consecutive years.

More detail can be found in Appendix A of the PFMC's Pre-season Report II for 2008 ocean salmon fisheries (http://www.pcouncil.org/salmon/salpreII08/Preseason_Report_II_2008.pdf).

2008 Preseason Ocean Forecast vs Postseason Estimates

Adults Sector	*Preseason Forecast*	*Preliminary Postseason Estimate*	*Pre / Post*
Ocean Abundance			
Age-3	31,600	36,100	0.88
Age-4	**157,200**	**81,500**	**1.93**
Age-5	1,900	2,800	0.67
Proportion Natural			
Age-3	0.62	0.52	1.19
Age-4	0.65	0.78	0.81
Age-5	0.72	0.94	0.77
Ocean Harv. Rate			
Age-4	0.02	0.10	0.25

2008 Preseason Inriver Forecast vs Postseason Estimates

Adults Sector	*Preseason Forecast*	*Postseason Estimate*	*Pre / Post*
Total Run Size	***115,400***	***70,600***	*1.63*
Fishery Mortality			
Tribal Harv.	27,000	22,300	1.21
Recreational Harv.	**22,500**	**1,900**	11.84
Drop-off Mortality	2,800	2,000	1.40
Total	52,300	26,200	2.00
Spawning Escapement			
Hatchery	22,400	13,600	1.65
Natural Area	40,700	30,900	1.32
Total	63,100	44,500	1.42

2008 Preseason Ocean Forecast vs Postseason Estimates and 2009 Ocean Forecast

Adults Sector	*Preseason Forecast*	*Preliminary Postseason Estimate*	*Pre / Post*	*2009 Ocean Forecast*
Ocean Abundance				
Age-3	31,600	36,100	0.88	474,900
Age-4	157,200	81,500	1.93	25,200
Age-5	1,900	2,800	0.67	5,600
Proportion Natural				
Age-3	0.62	0.52	1.19	0.63
Age-4	0.65	0.78	0.81	0.60
Age-5	0.72	0.94	0.77	0.73
Ocean Harv. Rate				
Age-4	0.02	0.10	0.25	---

KOHM gaming forecasts for 2009 fisheries

JUST an EXAMPLE

	No *Fishing*	2008 *Regulations*	2007 *Regulations*
Adult Spawners			
Natural Areas	81,600	51,800	41,800
Hatcheries	48,800	31,100	25,200
Adult Harvest			
Ocean Comm.	0	0	19,500
Ocean Rec.	0	0	7,400
River Recreational	0	22,500	9,400
Tribal	0	22,500	36,300
Age-4 Ocean Harv. Rate	0.00	0.00	0.15
Spawner Reduction Rate	0.00	0.37	0.49

Klamath/Trinity Fall Chinook Salmon 2008 Run Size and 2009 Forecast

QUESTIONS??

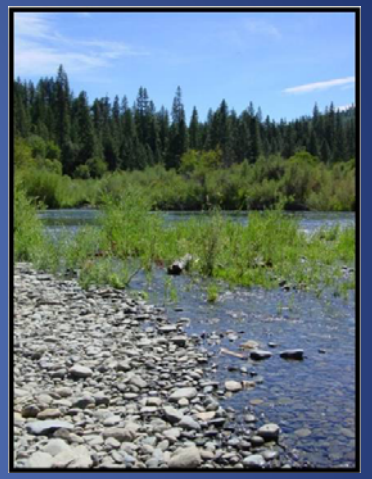
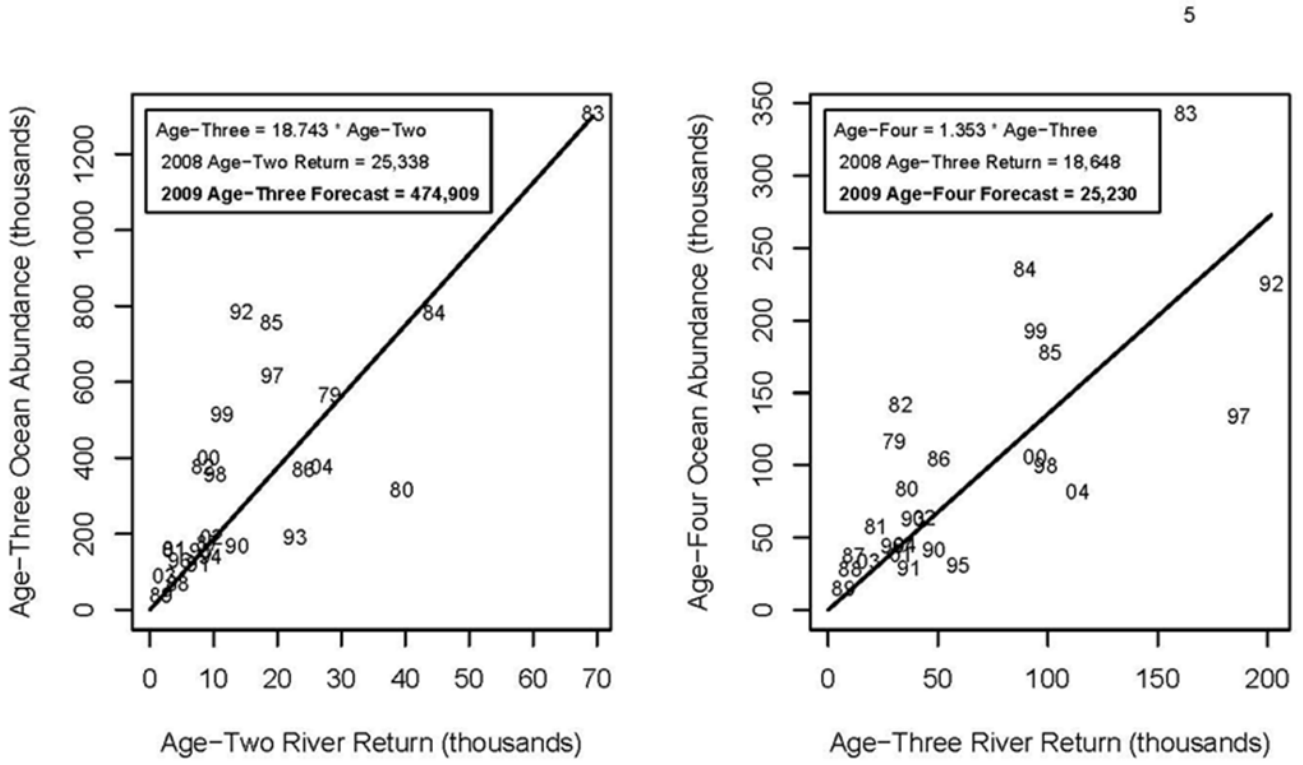


Table 2. Comparisons of preseason forecast and postseason estimates for ocean abundance of adult Klamath River fall Chinook (Page 1 of 2).

	Age-3			Age-4		
Year (t) Sept 1 (t-1)	Pre	Post	Pre/Post	Pre	Post	Pre/Post
1985	113,000	276,000	0.41	56,875	57,500	0.99
1986	426,000	1,305,782	**0.33**	66,250	141,772	**0.47**
1987	511,800	782,032	0.65	206,125	342,555	0.6
1988	370,800	756,908	0.49	186,375	235,535	0.79
1989	450,600	370,328	1.22	215,500	177,655	1.21
1990	479,000	176,133	2.72	50,125	104,131	0.48
1991	176,200	69,442	2.54	44,625	37,172	1.20
1992	50,000	39,502	1.27	44,750	28,181	1.59
1993	294,400	168,473	1.75	39,125	15,037	**2.60**
1994	138,000	119,913	1.15	86,125	41,736	2.06
1995	269,000	784,279	0.34	47,000	28,725	1.64
1996	479,800	192,290	2.50	268,500	225,526	1.19
1997	224,600	140,421	1.60	53,875	62,830	0.86
1998	176,000	154,819	1.14	46,000	44,889	1.02
1999	84,800	129,355	0.66	78,750	30,468	2.58
2000	349,600	617,573	0.57	38,875	44,346	0.88
2001	187,200	357,085	0.52	247,000	133,869	1.85
2002	209,000	514,524	0.41	143,800	99,464	1.45
2003	171,300	401,092	0.43	132,400	192,598	0.69
2004	72,100	160,243	0.45	134,500	105,346	1.28
2005	185,700	190,636	0.97	48,900	38,239	1.28
2006	44,100	90,170	0.49	63,700	63,485	1.00
2007	515,400	377,534	1.37	26,100	33,365	0.78
2008	31,600	36,058	0.88	157,200	81,595	1.93
Average			1.04			1.27
Minimum			0.33			0.47
Maximum			2.72			2.60

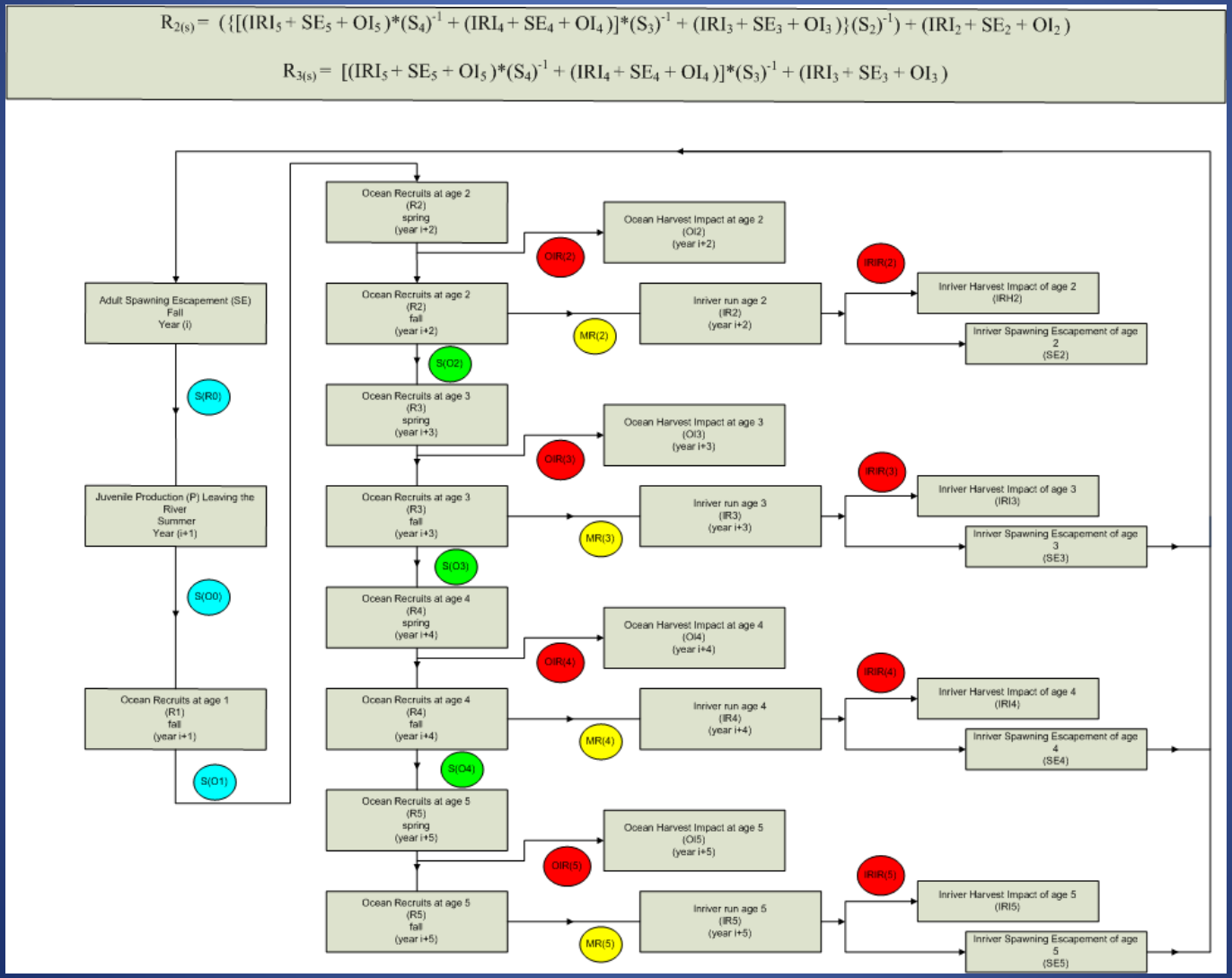
Regression estimators for Age-3 and Age-4 Klamath River fall Chinook ocean abundance (Sept 1). Numbers denote brood years.



Equation and Flow Chart for Cohort Reconstruction

$$R_{2(s)} = (\{[(IRI_5 + SE_5 + OI_5)*(S_4)^{-1} + (IRI_4 + SE_4 + OI_4)]*(S_3)^{-1} + (IRI_3 + SE_3 + OI_3)\}(S_2)^{-1}) + (IRI_2 + SE_2 + OI_2)$$

$$R_{3(s)} = [(IRI_5 + SE_5 + OI_5)*(S_4)^{-1} + (IRI_4 + SE_4 + OI_4)]*(S_3)^{-1} + (IRI_3 + SE_3 + OI_3)$$



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Harvest Management Factors

- If no fishing occurred would have met minimum escapement goals
- Ocean commercial harvest impacts higher than expected in 2004 and 2005, adjusted and adequately addressed in 2006
- Ocean Rec, Inriver Rec and Tribal harvest impacts adequately estimated
- When managing for the esc floor there is a 50/50 chance of going below, on average 1 overfishing concern every 8 years when managing for the floor every year.

Biological Factors

- I juvenile disease
- Early life history (freshwater and early marine) survival index low

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