

Sacramento River Winter Chinook:
Approach to the
2010 Biological Opinion on the
Ocean Salmon Fishery

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Current Protective Measures

- Required by the 2004 Opinion and proposed again in 2010

Fishery	Location	Shall Open No Earlier Than:	Shall Close No Later Than:	Minimum Size Limit Shall be at Least:
Recreational	Between Point Arena, California, and Pigeon Point, California	1st Saturday in April	2nd Sunday in November	20 inches total length
	Between Pigeon Point, California, and the U.S.-Mexico Border	1st Saturday in April	1st Sunday in October	
Commercial	Between Point Arena, California, and the U.S.-Mexico Border*	May 1	September 30	26 inches total length
	<i>*Exception: Between Point Reyes and Point San Pedro, there may be an October season conducted Monday to Friday, but no later than October 15.</i>			

Management Areas



Assessment of Fishery Impacts

- Analysis of recovered coded wire tags
- The fishery has a relatively consistent effect on winter-run of reducing spawning returns by about 20%.
- Most impacts occur:
 - south of Point Arena, California
 - from April to August
- Most fishery impacts are to age-3 fish, which constitute about 90% of the spawning returns.
- The recreational fishery accounts for about 80% of the total impacts.

Impact & Spawner Reduction Rates

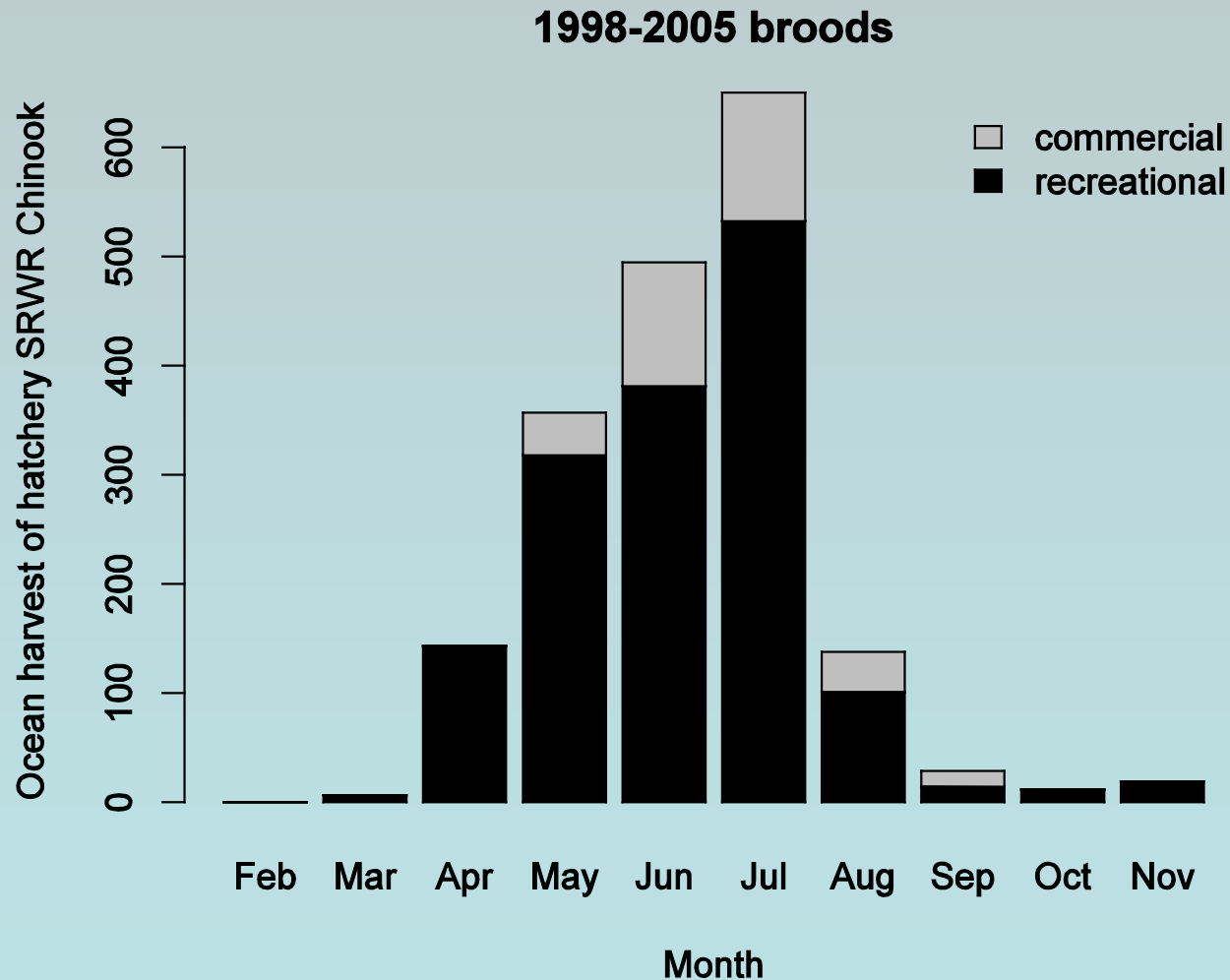
- **Results of coded wire tag recovery and cohort reconstruction analysis for brood years 1998-2005, corresponding to fishing years 2000-2007**

	Brood year							
	1998	1999	2000	2001	2002	2003	2004	2005
Impact rate								
age-3	0.214	0.191	0.201	0.103	0.214	0.152	0.151	0.168
age-4	0.125	0.717	0.547	0.672	0.383	0.231	0.000	--
Spawner Reduction Rate	0.245	0.177	0.216	0.113	0.235	0.160	--	--

- **Estimated impacts were found to be consistent with the levels anticipated in the 2004 Opinion**
 - spawner reduction rates: **.23-.26**
 - age-3 impact rate: **.20-.23**

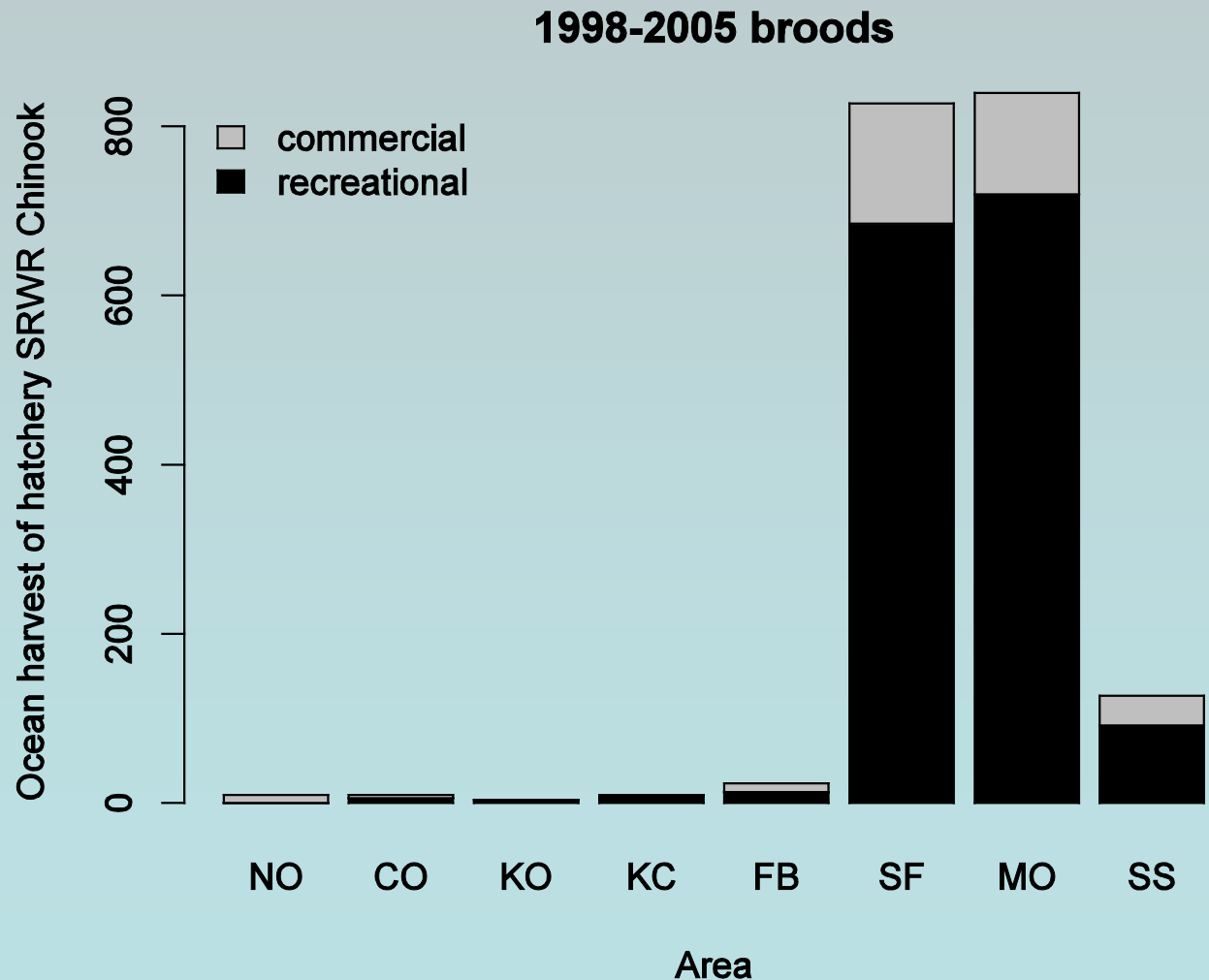
Temporal Distribution of Harvest

- Estimated harvest of hatchery-origin Winter-Run by month for the pooled 1998-2005 broods



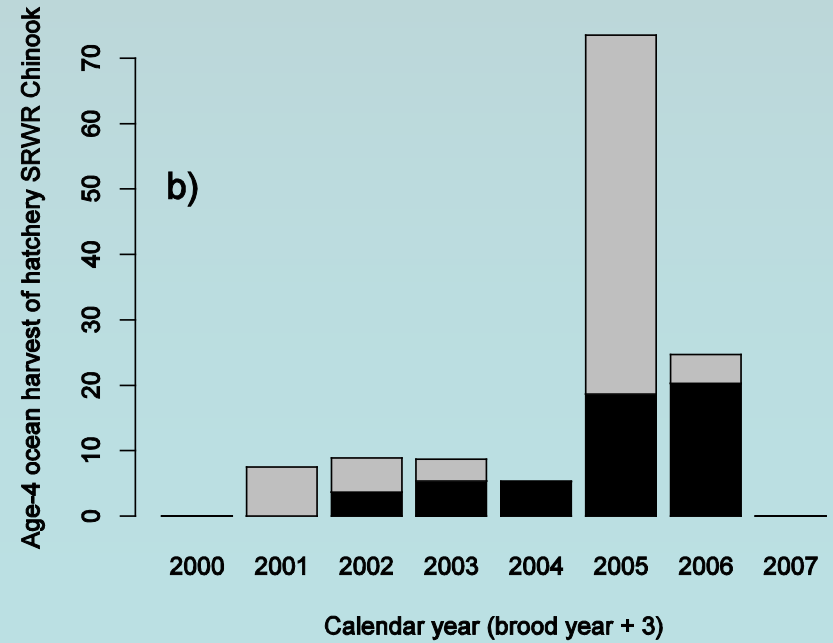
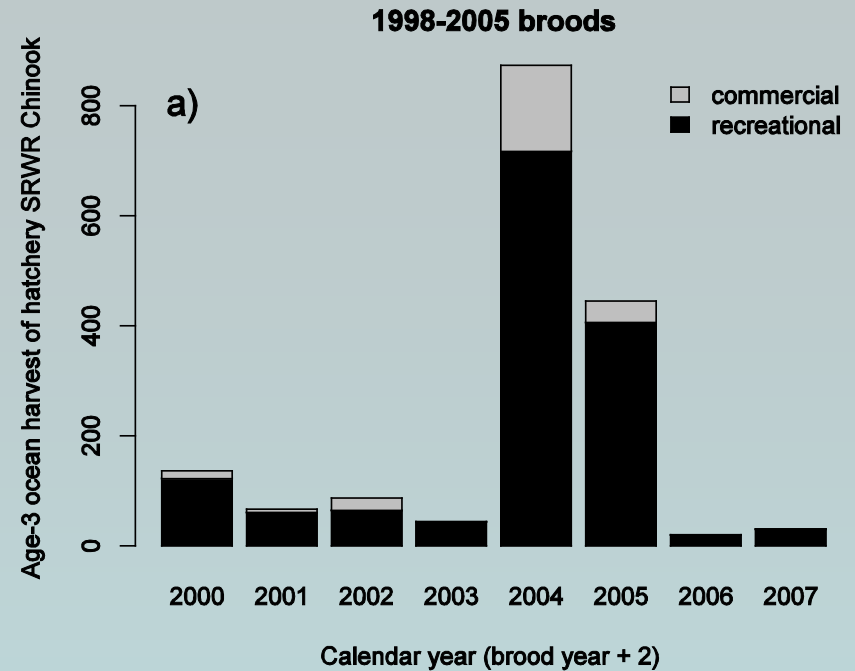
Spatial Distribution of Harvest

- Estimated harvest of hatchery-origin Winter-Run by ocean salmon fishery management area for the pooled 1998-2005 broods



Impacts by Age

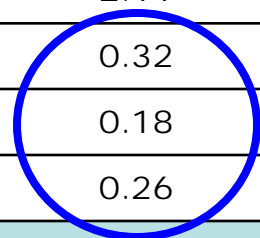
- Estimated harvest of
a) age-3 and
b) age-4 hatchery-origin
Winter-Run by calendar
year for the pooled
1998-2005 broods



Current Status of Winter-Run

- Up until 2007, winter-run returns had been increasing from the very low levels observed in the early and mid 1990's
- Since 2007, returns have reduced dramatically (3-yr cohort replacement is less than .33)
- In 2008 and 2009, virtually no impacts on winter-run can be associated with fishing given restrictions off California to protect Sacramento Fall-Run Chinook
- 2009 report concluded poor ocean conditions proximate cause of Fall-run decline (for 2007 and 2008 returns)

Year	Spawning return	Cohort Replacement Rate
1990	430	0.20
1991	211	0.07
1992	1,240	1.78
1993	387	0.90
1994	186	0.88
1995	1,297	1.05
1996	1,337	3.45
1997	880	4.73
1998	2,992	2.31
1999	3,288	2.46
2000	1,352	1.54
2001	8,224	2.75
2002	7,464	2.27
2003	8,218	6.08
2004	7,869	0.96
2005	15,875	2.13
2006	17,304	2.11
2007	2,542	0.32
2008	2,850	0.18
2009	4,537	0.26



2010 Biological Opinion

- The ocean salmon fishery has **not likely jeopardized** Winter-Run in the last decade
- ESA Section 7 requires federal agencies to ensure that their actions are not likely to jeopardize any listed species.
- The 2004 protective measures, proposed again in 2010, do not include measures that would avoid or reduce the fishery's impacts to the Winter-Run during a time when the species' status is declining or is facing increased extinction risks.

2010 Biological Opinion (cont.)

- Upcoming Opinion will provide for additional consideration of Winter-Run status.
- The following criteria are examples of primary measures used to assess the status based on available information:
 - Criteria 1: absolute spawning return estimate
 - Criteria 2: growth rate as measured by cohort replacement rate
- The overall framework of a Reasonable and Prudent Alternative (RPA) is still under development and further details will not be available until the biological opinion is completed.