



PACIFIC SARDINE BIOMASS PROJECTION FOR U.S. MANAGEMENT DURING JAN-JUN 2014



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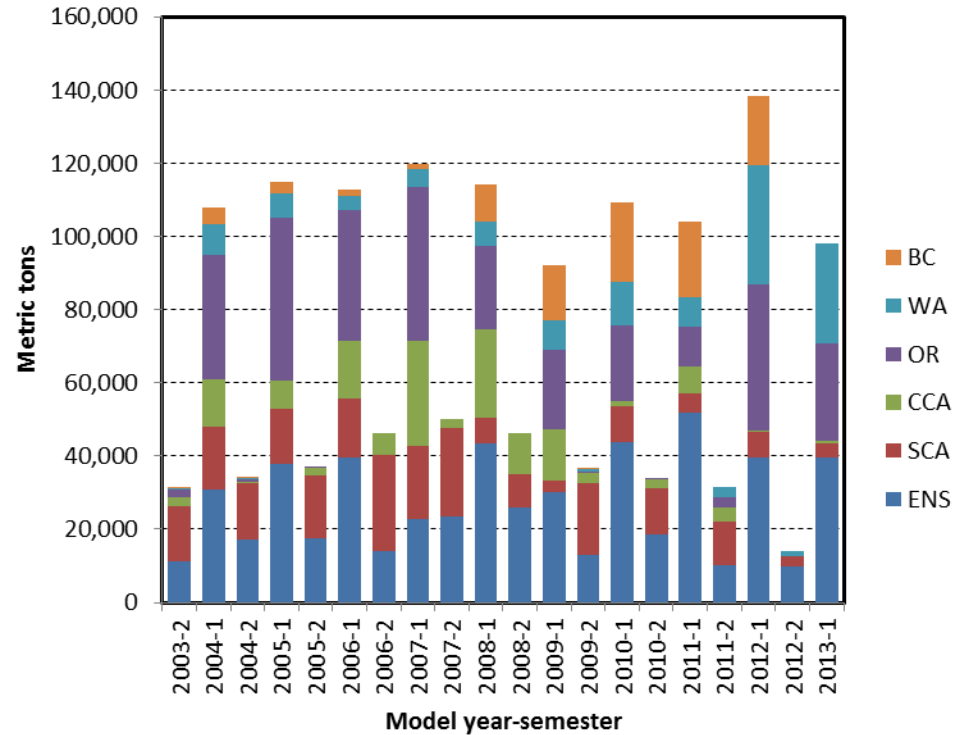
Background & Methods

- In June 2013, the Council adopted a change to the fishery start date from January 1 to July 1, effective 2014;
- New fishery and survey data collected over the past year will be incorporated in the next benchmark assessment scheduled for a STAR panel in early March 2014;
- The following catch-only projection assessment was conducted to provide a biomass estimate for setting interim harvest specifications during the first six months of 2014;
- Data and models are fully described in Hill et al. (2011 & 2012);
- The catch-only projection model included updated and projected catches from 2012 and 2013;
- No other changes to data or model parameterization.



Landings

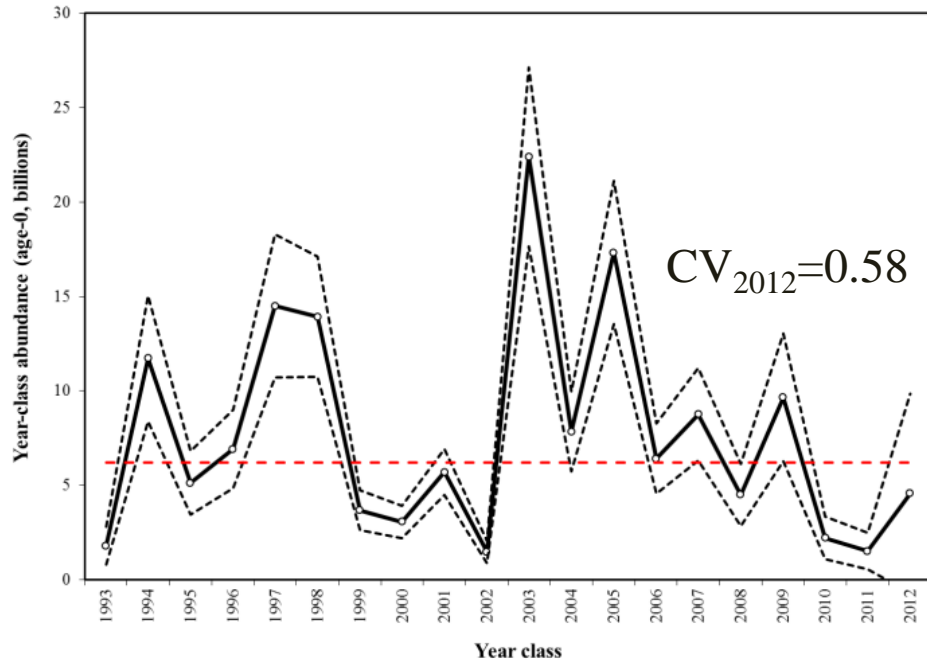
Calendar year-semester	Model year-semester	ENS	SCA	CCA	OR	WA	BC	Total
2004-1	2003-2	11,213	15,232	2,146	2,204	235	180	31,209
2004-2	2004-1	30,684	17,161	13,163	33,908	8,564	4,258	107,739
2005-1	2004-2	17,323	15,419	115	692	324	0	33,874
2005-2	2005-1	38,000	14,834	7,825	44,316	6,605	3,231	114,811
2006-1	2005-2	17,601	17,158	2,033	102	0	0	36,893
2006-2	2006-1	39,636	16,128	15,711	35,547	4,099	1,575	112,696
2007-1	2006-2	13,981	26,344	6,013	0	0	0	46,338
2007-2	2007-1	22,865	19,855	28,769	42,052	4,663	1,522	119,726
2008-1	2007-2	23,488	24,127	2,515	0	0	0	50,130
2008-2	2008-1	43,378	6,962	24,196	22,940	6,435	10,425	114,336
2009-1	2008-2	25,783	9,251	11,080	0	0	0	46,114
2009-2	2009-1	30,128	3,310	13,935	21,482	8,025	15,334	92,215
2010-1	2009-2	12,989	19,428	2,909	437	511	422	36,695
2010-2	2010-1	43,832	9,925	1,397	20,415	11,870	21,801	109,240
2011-1	2010-2	18,514	12,526	2,713	0	0	0	33,754
2011-2	2011-1	51,823	5,115	7,358	11,023	8,008	20,719	104,047
2012-1	2011-2	10,235	11,906	3,673	2,874	2,932	0	31,620
2012-2	2012-1	39,575	6,896	569	39,744	32,510	19,172	138,465
2013-1	2012-2	9,780	2,680	84	149	1,421	0	14,115
2013-2	2013-1	39,575	3,858	864	26,599	27,285	0	98,181



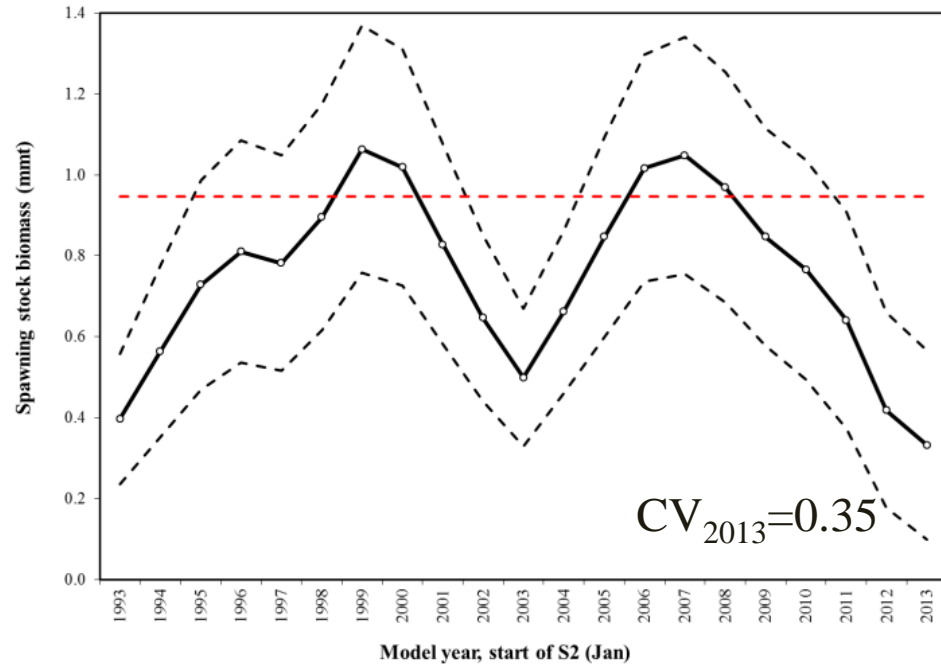


Results:

Recruit abundance

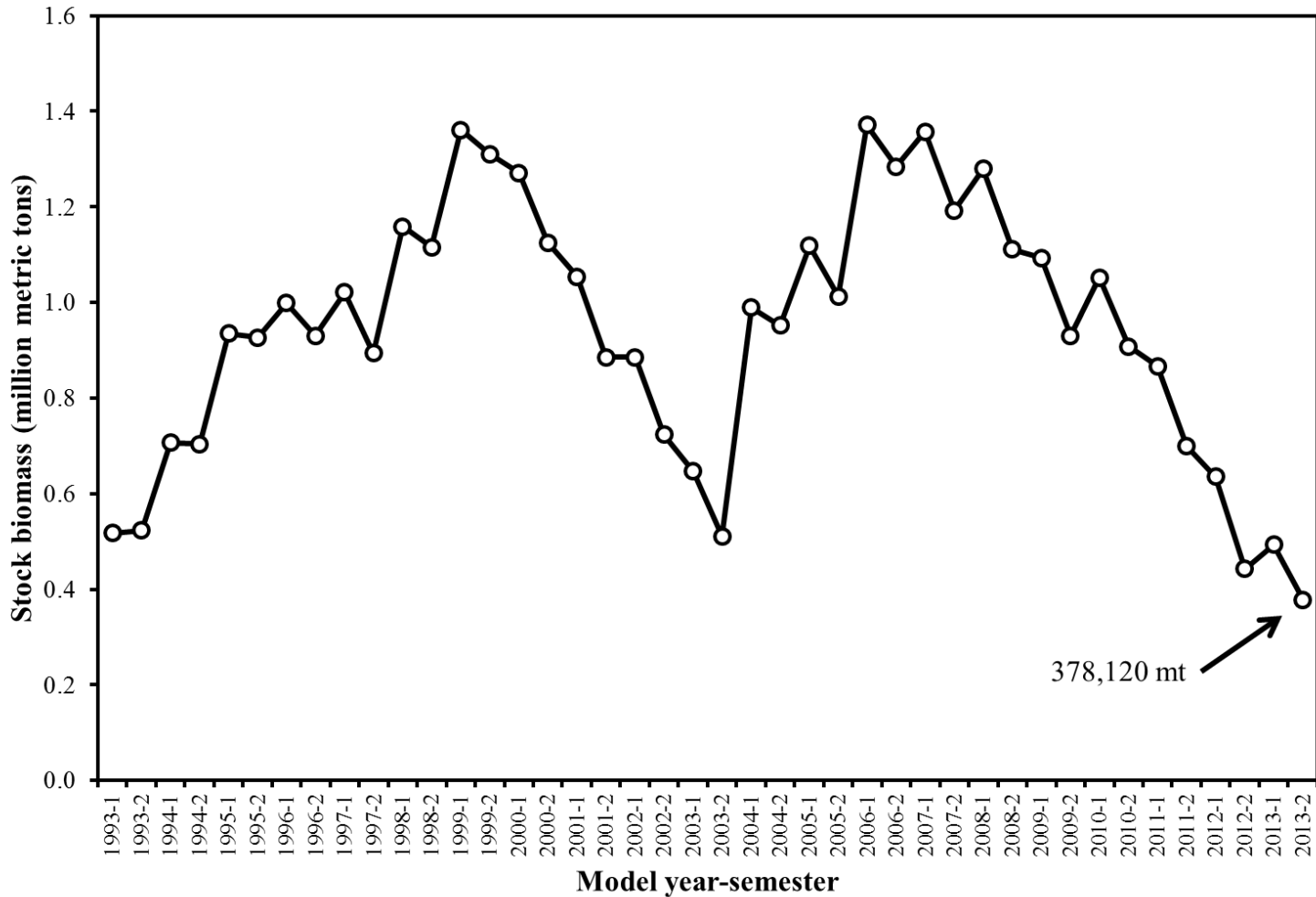


Spawning Stock Biomass





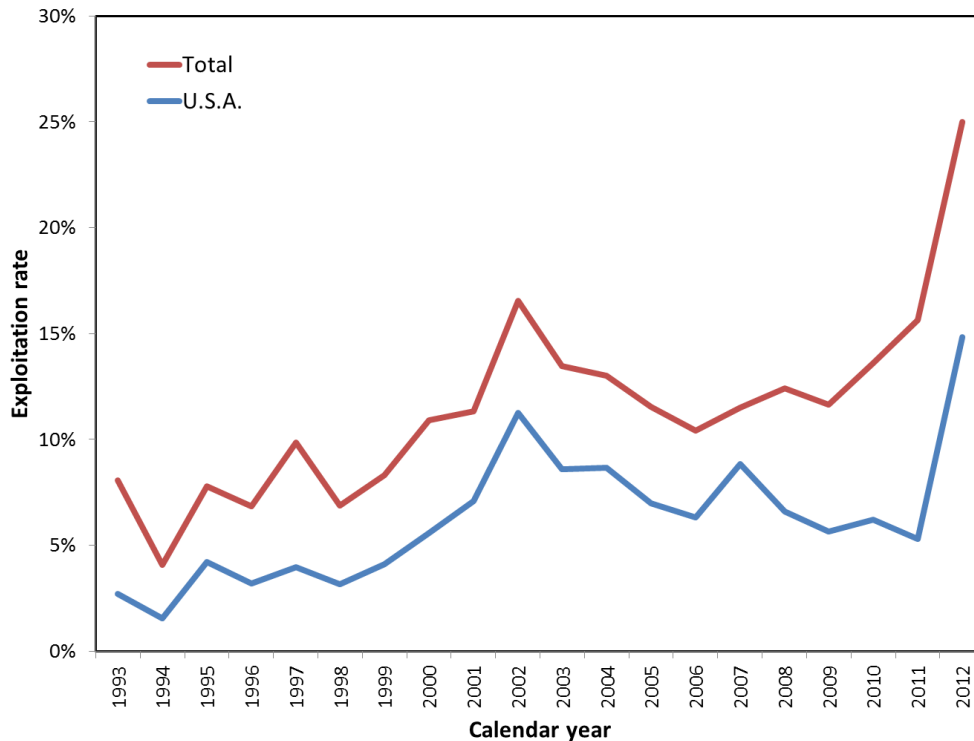
Results: Stock Biomass





Results:

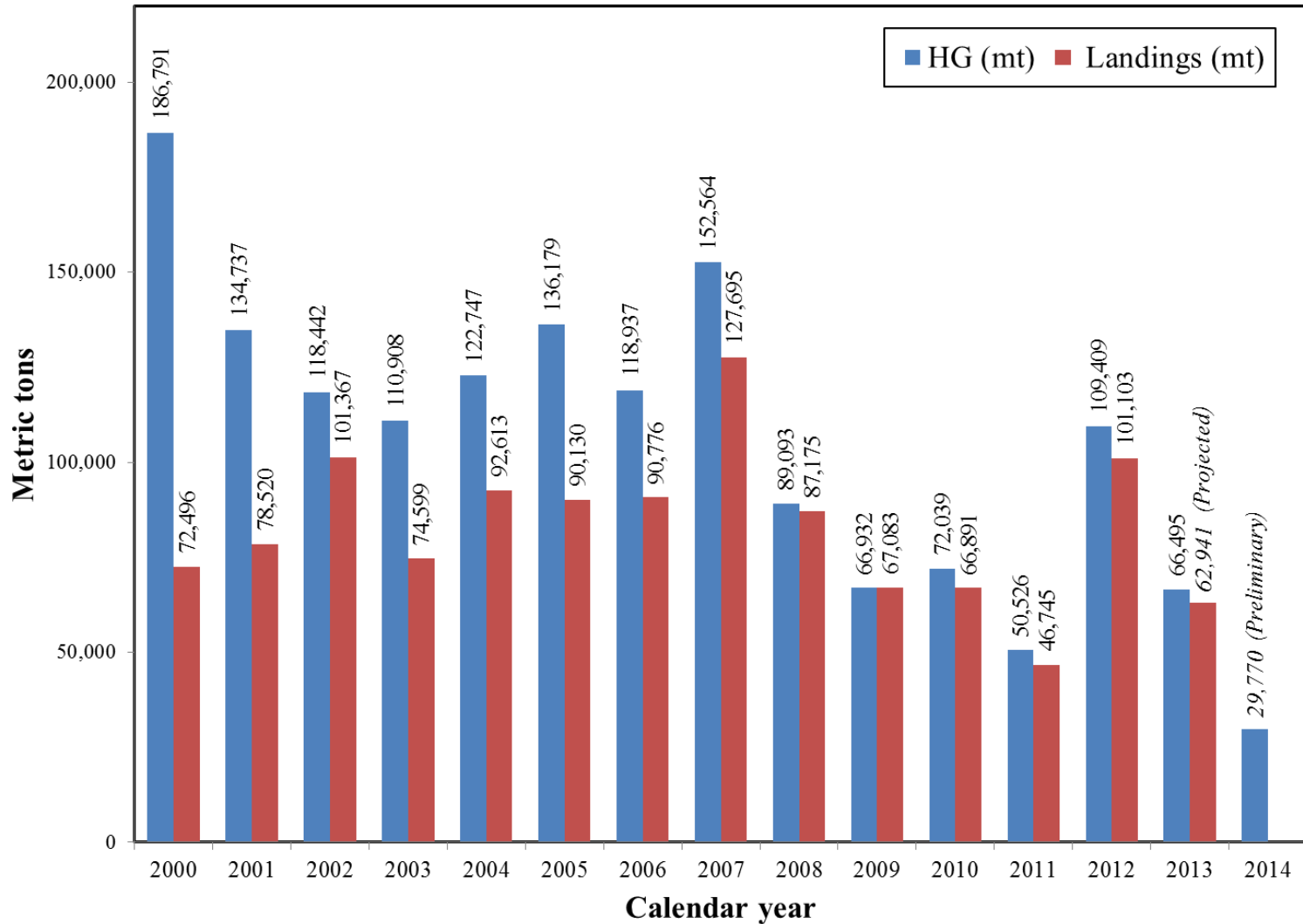
Retrospective Exploitation Rates (Ages 0+)



Calendar year	U.S.A.	Total
2000	5.57%	10.91%
2001	7.07%	11.34%
2002	11.26%	16.55%
2003	8.59%	13.46%
2004	8.68%	13.02%
2005	6.99%	11.53%
2006	6.33%	10.43%
2007	8.85%	11.50%
2008	6.59%	12.43%
2009	5.64%	11.64%
2010	6.23%	13.59%
2011	5.30%	15.63%
2012	14.85%	24.98%

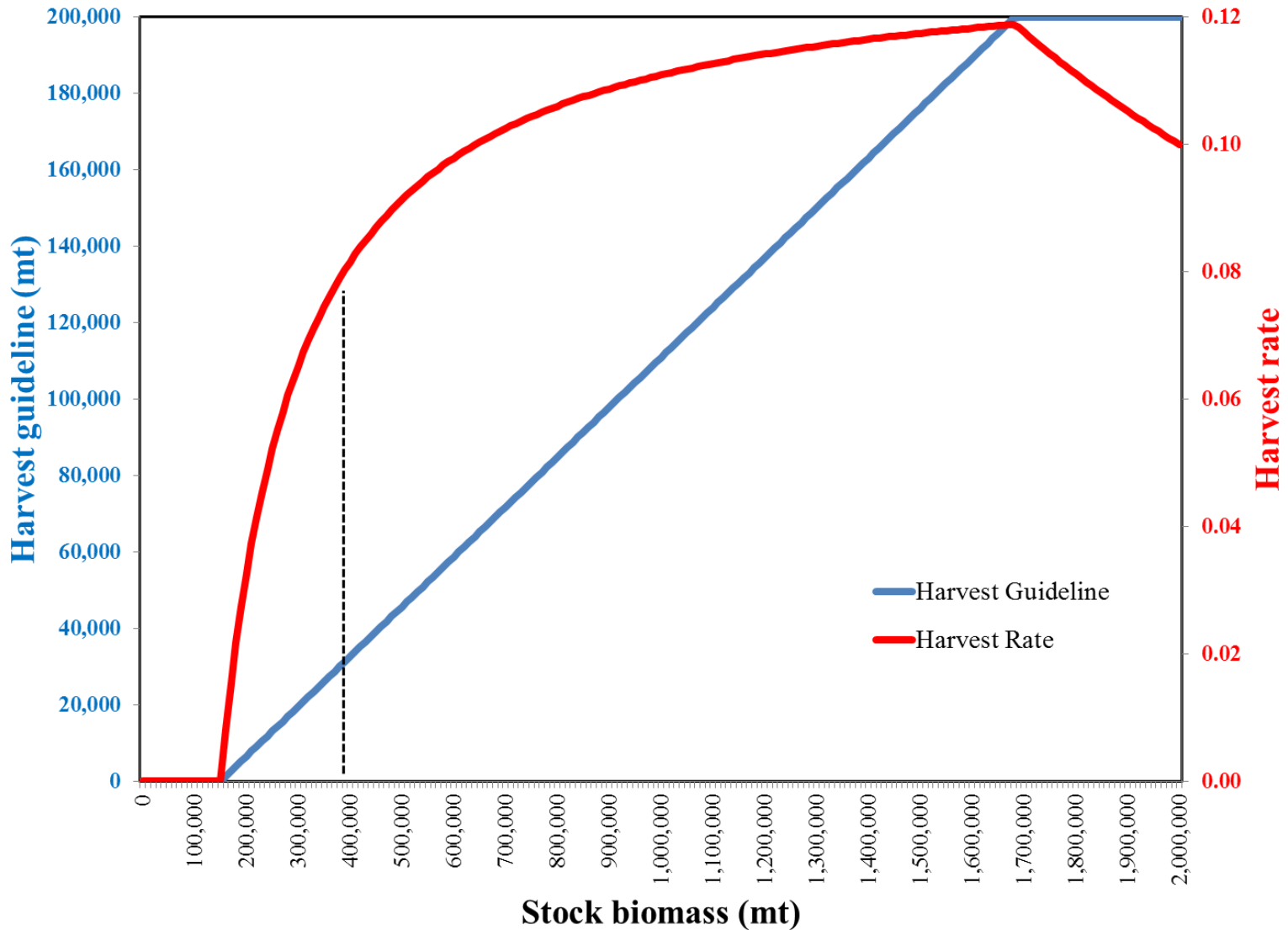


Harvest Guideline & Catch History





Harvest Rate Under the HG Control Rule





Discussion

Downward population trajectory and estimates of poor recent recruitment are consistent with recent, preliminary observations along the Pacific coast of North America:

- The British Columbia fleet captured no sardine during the Summer 2013;
- The Canada DFO trawl survey found no sardine off the coast of Vancouver Island during the Summer 2013;
- The SWFSC's Spring 2013 survey found few young sardine (no age-0, few age-1) in trawl collections off California; Most fish >20 cm.
- The Summer 2013 SaKe survey observed small volumes of sardine off California (relative to WA and OR) and no sardine off Canada; All fish >20cm.
- Preliminary acoustic-trawl survey (ATM) estimates from Spring and Summer 2013 indicate lower biomass than estimated from the two surveys conducted in 2012;
- INAPESCA conducted an ATM survey along the outer Baja California península during the Summer 2012. No sardine were observed in northern Baja California;
- Commercial catches have been lower than normal in California;
- California's live-bait fishery off San Diego has indicated some difficulty locating sardine in 2013, instead targeting anchovy.