

COASTAL PELAGIC SPECIES MANAGEMENT TEAM REPORT ON
PACIFIC SARDINE STOCK ASSESSMENT AND COASTAL PELAGIC SPECIES (CPS)
MANAGEMENT MEASURES FOR 2012

The Coastal Pelagic Species Management Team (CPSMT) received a presentation from Dr. Kevin Hill concerning the Pacific sardine stock assessment conducted in 2011. The CPSMT recommends that the Pacific Fishery Management Council (Council) adopt the full assessment (model X5) for management of the 2012 sardine fishery. Based upon the 988,385 mt age 1+ biomass estimate from this assessment, the harvest control rule produces a harvest guideline (HG) of 109,409 mt (Table 1 below). The 2011 biomass estimate represents an 84 percent increase from the update stock assessment previously adopted by the Council in November, 2010. The CPSMT notes a number of factors including new data and new sources of data that influence the increase in the biomass estimate, including a relatively large 2009 year class is now evident in the fishery and survey data, the daily egg production method exhibited an increase, and the addition of the Southwest Fisheries Science Center (SWFSC) Acoustic Survey as another index of abundance. The final model has less than half of the number of estimated parameters compared to the previous assessment.

Dr. Kevin Hill undertook a re-evaluation of F_{msy} for Pacific sardine in the absence of an environmental covariate for use in the overfishing limit (OFL) and acceptable biological catch (ABC) calculations (see Appendix 4 of Stock Assessment, Agenda Item F.2.b Supplemental Attachment 8). An updated value of F_{msy} estimated independently of temperature was presented to the Scientific and Statistical Committee (SSC). The SSC endorsed the use of the temperature-independent F_{msy} as an interim measure, and the CPSMT agrees.

The CPSMT acknowledges that the temperature relationship underlying FRACTION in the harvest control rule needs to be revised. For 2012, the CPSMT is confident that FRACTION of 15 percent adequately protects the stock and points out that it is less than the F_{msy} of 18 percent. It is clear that sardine reproductive success is related to environmental conditions. The CPSMT anticipates research relative to environmental covariates may take time to provide conclusive information.

Harvest Specifications for 2012

Table 1 (below) contains harvest formula parameters and a range of ABC values based on various P^* (probability of overfishing) values. The CPSMT recognizes that the Council will select a P^* . The CPSMT recommends that the annual catch limit (ACL) equal the ABC resulting from the Council's P^* choice, and that the HG/ACT be set equal to 109,409 mt.

The CPSMT discussed the Quinault Indian Nation request for an allocation of Pacific sardine. Acknowledging that the final allocation is yet to be determined, Table 2 incorporates the requested allocation of 9,000 mt. In addition, the CPSMT recommends that the incidental catch for CPS fisheries in each of the three allocation periods should be set to 1,000 mt (Table 2). The CPSMT recommends setting aside 3,000 mt for potential sardine Exempted Fishing Permits (EFP). Any EFP set aside not included in an EFP, as well as any EFP fish allocated but not utilized in research, should be re-allocated to the third period directed fishery. The CPSMT

recommends that the incidental landing allowance for CPS fisheries be no more than 30 percent Pacific sardine by weight.

Table 1. Pacific sardine Amendment 13 Harvest Formulas Parameters

Harvest Formula Parameters	Value			
BIOMASS (ages 1+, mt)	988,385			
Pstar (probability of overfishing)	0.45	0.40	0.30	0.20
BUFFER _{Pstar} (Sigma=0.36)	0.95577	0.91283	0.82797	0.73861
F_{MSY}	0.18			
FRACTION	0.15			
CUTOFF (mt)	150,000			
DISTRIBUTION (U.S.)	0.87			

Amendment 13 Harvest Formulas	MT
OFL = BIOMASS * F_{MSY} * DISTRIBUTION	154,781
ABC _{0.45} = BIOMASS * BUFFER _{0.45} * F_{MSY} * DISTRIBUTION	147,935
ABC _{0.40} = BIOMASS * BUFFER _{0.40} * F_{MSY} * DISTRIBUTION	141,289
ABC _{0.30} = BIOMASS * BUFFER _{0.30} * F_{MSY} * DISTRIBUTION	128,153
ABC _{0.20} = BIOMASS * BUFFER _{0.20} * F_{MSY} * DISTRIBUTION	114,323
ACL = EQUAL TO ABC	
ACT=HG=(BIOMASS-CUTOFF)*FRACTION*DISTRIBUTION	109,409

Table 2. Preliminary Allocation scheme for 2011 Pacific Sardine ACT

HG = 109,409 mt; Tribal Allocation = 9,000 mt; Potential EFP set aside = 3,000 mt Adjusted HG = 97,409 mt				
	Jan 1- Jun 30	Jul 1- Sep 14	Sep 15 – Dec 31	Total
Seasonal Allocation (mt)	34,093 (35%)	38,964 (40%)	24,352 (25%)	97,409
Incidental Set Aside (mt)	1,000	1,000	1,000	3,000
Adjusted Allocation (mt)	33,093	37,964	23,352	94,409

Finally, the CPSMT supports a methodology review of the Canadian West Coast Vancouver Island Swept Area Trawl Survey as a potential new source of abundance data to inform the next full sardine stock assessment.