

COASTAL PELAGIC SPECIES MANAGEMENT TEAM REPORT ON PACIFIC MACKEREL ASSESSMENT AND MANAGEMENT MEASURES

The Coastal Pelagic Species Management Team (CPSMT) met concurrently with the Coastal Pelagic Species Advisory Subpanel on June 15, 2015 and received a presentation from Dr. Kevin Hill on the latest stock assessment model of Pacific mackerel being put forth for use in management. In April 2015, a full stock assessment for Pacific mackerel was reviewed by a Stock Assessment Review (STAR) Panel in La Jolla, CA. The CPSMT commends the Stock Assessment Team (STAT) on their efforts to develop a sound population model, and supports the approval of Model H3 as put forward by the STAT and recommended by the Scientific and Statistical Committee (SSC).

The Council decided in June 2013 that full stock assessments will be conducted for Pacific mackerel every four years, starting now in 2015 with the next scheduled for 2019. Catch-only projection estimates are scheduled to be conducted every four years starting in 2017. The Council also directed that annual harvest measures be implemented on a biennial basis beginning with the 2015-2016 fishing year. Accordingly, 2016-2017 management measures will also be set at the June 2015 meeting.

Harvest and Management Specifications

The SSC endorsed the biomass estimate presented in agenda item G.2.a Attachment 1 (Stock Assessment Report) of 120,435 mt (Table 1) for use in the 2015-2016 fishing year, and a biomass estimate of 118,968 mt (Table 2) for the 2016-2017 fishing year. Tables 1 and 2 contain the applicable overfishing limits (OFL) and acceptable biological catches (ABC) based on associated P* values for each fishing year.

The CPSMT has the following management recommendations:

- (1) Establish harvest specifications for 2015-2016 as presented in Table 3.
- (2) Establish harvest specifications for 2016-2017 as presented in Table 4.
- (3) For each separate fishing year, should the directed fishery realize the ACT, the Council should recommend that the National Marine Fisheries Service (NMFS) close the directed fishery and shift to an incidental-only fishery for the remainder of the fishing season, with a 45 percent incidental landing allowance when Pacific mackerel are landed with other coastal pelagic species (CPS), with the exception that up to 3 mt of Pacific mackerel per landing could be landed in non-CPS fisheries.

Table 1. 2015-2016 Harvest control rule formulas with P* values.

Harvest Control Rule Formulas										
OFL = BIOMASS * E_{MSY} * DISTRIBUTION										
ABC _{P-star} = BIOMASS * BUFFER _{P-star} * E_{MSY} * DISTRIBUTION										
HG = (BIOMASS - CUTOFF) * E_{MSY} * DISTRIBUTION										
Harvest Formula Parameters										
BIOMASS (ages 1+, mt)	120,435									
P-star	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	
ABC Buffer _{Tier 1}	0.9558	0.9128	0.8705	0.8280	0.7844	0.7386	0.6886	0.6304	0.5531	
ABC Buffer _{Tier 2}	0.9135	0.8333	0.7577	0.6855	0.6153	0.5455	0.4741	0.3974	0.3060	
E_{MSY}	0.30									
CUTOFF (mt)	18,200									
DISTRIBUTION (U.S.)	0.70									
Harvest Control Rule Values (mt)										
OFL =	25,291									
ABC _{Tier 1} =	24,173	23,087	22,016	20,940	19,839	18,681	17,415	15,944	13,990	
ABC _{Tier 2} =	23,104	21,074	19,164	17,338	15,562	13,798	11,992	10,052	7,738	
HG =	21,469									

Table 2. 2016-2017 Harvest control rule formulas with P* values.

Harvest Control Rule Formulas										
OFL = BIOMASS * E_{MSY} * DISTRIBUTION										
ABC _{P-star} = BIOMASS * BUFFER _{P-star} * E_{MSY} * DISTRIBUTION										
HG = (BIOMASS - CUTOFF) * E_{MSY} * DISTRIBUTION										
Harvest Formula Parameters										
BIOMASS (ages 1+, mt)	118,968									
P-star	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.10	0.05	
ABC Buffer _{Tier 1}	0.9558	0.9128	0.8705	0.8280	0.7844	0.7386	0.6886	0.6304	0.5531	
ABC Buffer _{Tier 2}	0.9135	0.8333	0.7577	0.6855	0.6153	0.5455	0.4741	0.3974	0.3060	
E_{MSY}	0.30									
CUTOFF (mt)	18,200									
DISTRIBUTION (U.S.)	0.70									
Harvest Control Rule Values (mt)										
OFL =	24,983									
ABC _{Tier 1} =	23,878	22,805	21,747	20,685	19,597	18,453	17,203	15,750	13,819	
ABC _{Tier 2} =	22,822	20,817	18,930	17,127	15,372	13,629	11,846	9,929	7,644	
HG =	21,161									

Table 3. 2015-2016 Pacific Mackerel Harvest Formulas	MT
Biomass	120,435
OFL=Biomass*Fmsy*Distribution	25,291
ABC _{0.45} = Biomass*Buffer _{0.45} *Fmsy*Distribution	23,104
ACL	23,104
HG = (Biomass - Cutoff) * Fraction * Distribution	21,469
ACT = HG - Incidental	20,469
Incidental set-aside	1,000

Table 4. 2016-2017 Pacific Mackerel Harvest Formulas	MT
Biomass	118,968
OFL=Biomass*Fmsy*Distribution	24,983
ABC _{0.45} = Biomass*Buffer _{0.45} *Fmsy*Distribution	22,822
ACL	22,822
HG = (Biomass - Cutoff) * Fraction * Distribution	21,161
ACT = HG - Incidental	20,161
Incidental set-aside	1,000

Pacific mackerel research and sampling data needs

The CPMST strongly supports research recommendations made in the 2015 STAR Panel and stock assessment reports for improving the quality of both fishery-dependent and fishery-independent data on Pacific mackerel. In particular, the CPSMT highlights the need for continuing support of the Acoustic Trawl (AT) spring and summer surveys conducted annually by the Southwest Fisheries Science Center (SWFSC). The spatial coverage of the mackerel population by the AT surveys is currently limited, yet these surveys have the potential to produce the most useful scientific data upon which a reliable index of abundance can be developed for tuning future mackerel stock assessments.

Size and age data from the Pacific Northwest can improve parameterization of selectivity curves (asymptotic versus dome-shaped) in future assessments. To address this, the NMFS aging and growth program's ability to process CPS samples collected from survey cruises in Oregon and Washington should be expanded, and sampling efforts should be initiated to systematically include size and age determination of mackerel samples from Pacific Northwest fisheries.

Finally, the CPSMT recognizes the importance of improving relations with Mexico's Federal fisheries institute (INAPESCA) and marine science institutions for expanding the present coverage of survey operations over the range of Pacific mackerel, and for sharing biological

samples collected from fishery landings and surveys conducted off Baja California, Mexico. The CPSMT encourages the Council, NMFS, and the State Department to continue working on implementing collaborative surveys with Mexico and on acquiring timely receipt of biological research data from Mexico.

PFMC
06/16/15