

**Gulf of Mexico Fishery Management Council**  
**Scientific and Statistical Committee**  
**Review of SEDAR 33 Update: Gulf of Mexico Greater Amberjack**  
**March 27-29, 2017**

*Model Configuration*

Dr. Nancy Cummings (SEFSC) presented an overview of the greater amberjack SEDAR 33 update stock the assessment. The start year of the SEDAR 33 update assessment was 1950 and the terminal year of the assessment was 2015. Preliminary landings information was also used for 2016. As in the previous SEDAR 33 benchmark assessment, a length-based, age-structured, forward projecting population model was used to assess the status of the greater amberjack stock. The model was implemented using "Stock Synthesis 3" (Methot 2010) and the continuity model configuration was identical to the SEDAR 33 benchmark assessment.

*Model Outputs*

The model output for the SEDAR 33 update assessment (continuity model) indicated that the trends in spawning stock biomass, recruits, recruit deviations, and exploitation rates are similar between the SEDAR 33 benchmark and the current update assessment (Table 1). Model performance was examined using retrospective analysis by sequentially dropping the last four years of data one at a time while keeping all other inputs unchanged.

The SSC asked for two additionally sensitivity runs to evaluate the model. The effect of APAIS re-estimates on the model was examined as the re-estimated APAIS data indicate that recreational landings were likely lower than previously thought in the early portion of the time series and higher than previously estimated in the most recent years of the time series. The sensitivity analysis indicated that the model was not particularly sensitive to these inputs and no changes in management advice given would result from this change in the input landings data. A second sensitivity run was made to examine the projection of retained yield from the benchmark the observed landings from 2013 through 2016 to the projected OFL from the previous SEDAR 33 assessment. The observed landings as compared with the OFL from the SEDAR 33 update assessment indicate that that overfishing has occurred after the SEDAR 33 benchmark assessment, most recently in 2016.

**Table 1.** Management advice from the SEDAR 33 update model and the SEDAR 33 benchmark model for Gulf of Mexico greater amberjack.

<b>Criteria</b>	<b>Definitions</b>	<b>SEDAR 33 Update</b>	<b>SEDAR 33</b>
M		0.28	0.28
Steepness		0.85	0.85
Virgin Recruitment	1,000s	2,761	2,827
SSB Unfished		18,779	17,356
<b>Mortality Rate Criteria</b>			
F <sub>MSY</sub> or proxy	F <sub>SPR30%</sub>	0.20	0.22

MFMT	$F_{SPR30\%}$	0.20	0.22
$F_{CURRENT}$	Geometric mean ( $F(nyr-3)-nyr$ )	0.33	0.26
$F_{CURRENT}/MFMT$		1.69	1.15
<b>Biomass Criteria</b>			
$SSB_{MSY}$ or proxy	$SSB_{SPR30\%}$	5,686	4,646
MSST (Mtons)	$(1-M)*SSB_{SPR30\%}$	4,094	3,345
$SSB_{CURRENT}$ (Mtons)	$SSB_{2015}$	1,640	2,188
$SSB_{CURRENT}/SSB_{SPR30\%}$	$SSB_{2015}$	0.288	0.47
$SSB_{CURRENT}/MSST$	$SSB_{2015}$	0.400	0.65

### *Stock Status*

The annual estimates of SSB and exploitation relative to the management reference points (e.g.,  $SSB_{FSPR30\%}$ , MSST,  $F_{SPR30\%}$ ) indicate that Gulf of Mexico greater amberjack is currently overfished and undergoing overfishing (Table 1). The results also indicate that Gulf of Mexico greater amberjack has been overfished in all years since 1987 and has been undergoing overfishing since 1985. These results are generally consistent with the SEDAR 33 benchmark assessment however, the update assessment produced lower estimates of  $SSB/SPR30$  and  $SSB/MSST$  (Figure 1a and b) and higher estimates of  $F/SPR30$  (Figure 2) in the most recent years.

### *OFL and ABC Projections*

Deterministic projections were carried out to evaluate stock status for a period of 10 years beginning in 2016. The SSC reviewed the SEDAR 33 update assessment including additional sensitivity runs to evaluate the model and results. Following this presentation and discussion of the model results, the SSC passed the following motion to accept the SEDAR 33 update assessment and yield stream shown below (Table 2).

**Motion: The SSC accepts that the Greater Amberjack SEDAR 33 update assessment represents the best available science and is suitable to provide management advice.**  
Motion passed with 1 opposed.

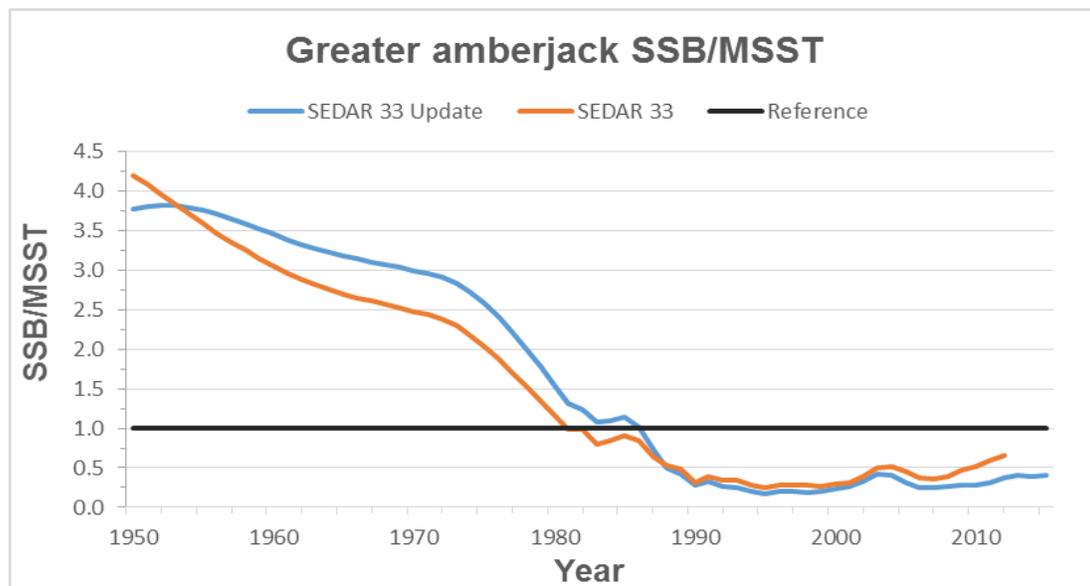
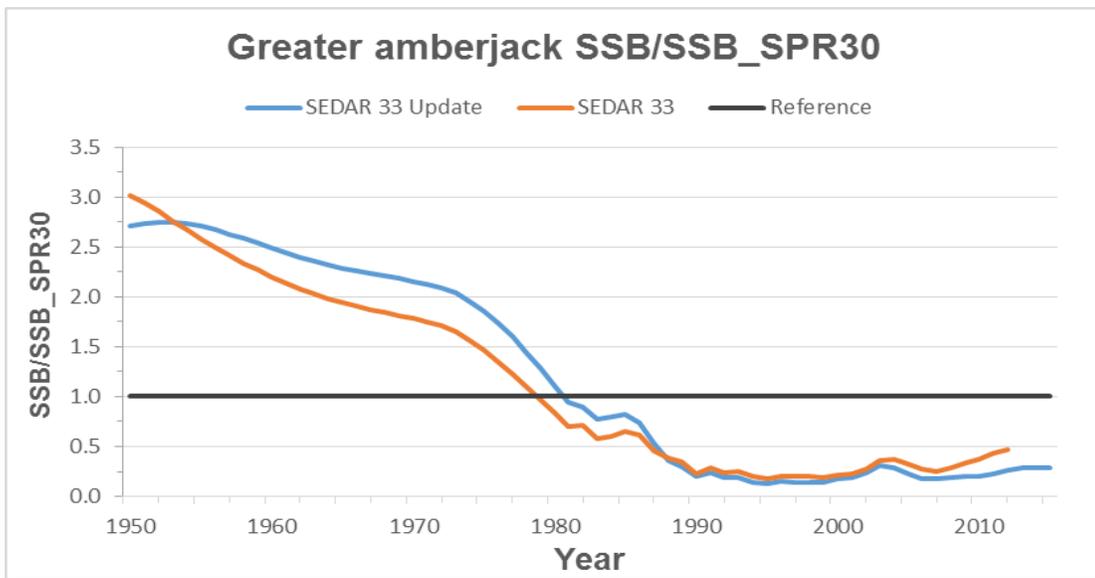
The SSC made a second motion for OFL and ABC for the years 2018-2020.

**Motion: The SSC recommends yield at  $F_{SPR30\%}$  for OFL and ABC as yield 75% of  $F_{SPR30}$  for the years 2018-2020 for GOM Greater Amberjack as reported in Table 7 of the SEDAR 33 Stock Assessment update.**  
Motion carried 17-2.

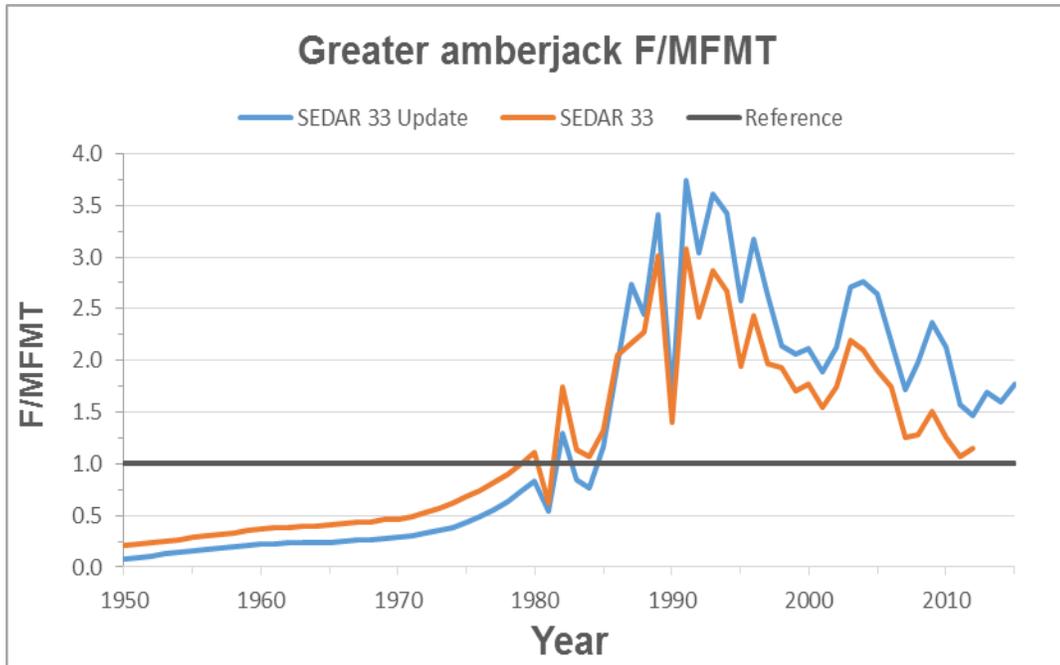
**Table 2.** Overfishing limit (OFL) and Acceptable Biological Catch (ABC) recommendations from the SSC based upon the SEDAR 33 update. The OFL corresponds to the annual yield at MFMT ( $MP,ww$ ) =  $F_{SPR30\%}$ . The ABC corresponds to the annual yield at  $F_{oy}$  ( $MP,ww$ ) =  $75\%F_{SPR30\%}$ .

Year	OFL	ABC
2018	1.500	1.182
2019	1.836	1.489
2020	2.167	1.794

For comparison, the previous recommendation for OFL yield was 2.986, 3.068, 3.170 ( $MP, ww$ ) for the years 2018-2020 based on the SEDAR 33 benchmark assessment. The previous recommendation for ABC was 2.616, 2.730, 2.852 ( $MP, ww$ ) based on the SEDAR 33 benchmark assessment. The SEDAR 33 update represents considerable reductions in both OFL and ABC as compared to the SEDAR 33 benchmark assessment.



**Figure 1a and b.** Estimated annual trajectory of  $SSB/SSB_{SPR30\%}$  (top panel) and  $SSB/MSST$  (bottom panel) that indicate that Gulf of Mexico greater amberjack are overfished.  $SSB_{2015}/MSST = 0.40$



**Figure 2.** Estimated annual trajectory of  $F/MFMT$  that indicates that Gulf of Mexico greater amberjack are undergoing overfishing.  $F_{CURRENT}/MFMT = 1.68$