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**FISHERIES**

SEFSC

# SEDAR 70: US Gulf of Mexico Greater Amberjack

## Operational Assessment

Updated Projections

August 10th, 2021

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# Background & Purpose

Responding to GMFMC Draft Amendment 54 Information needs relating to impacts on catch limits and sector allocations resulting from updated recreational catches (reference 8 July 2021 letter to L. Massey (NMFS, SEFSC, staff from J. Froeschke (GMFMC staff) requesting updated projections according to following allocation scenario:

- Using the years 1981-2004; 84% recreational: 16% commercial;
  - Using the years 1993-2019; 80% recreational: 20% commercial;
  - Using the years 1993-2007; 78% recreational: 22% commercial; and,
  - Keeping the commercial annual catch limit fixed at 484,380 lb whole weight, and calculate OFL, ABC, and sector allocation percentages thereafter.
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- For continuity SEDAR 70 Projections (January SSC); 73% recreational: 27% commercial are provided.

# Projection Settings SEDAR 70 Review

Parameter	Value	Comment
Relative F	Average from 2016 – 2018	Average relative fishing mortality over terminal three years (2016-2018) of model
Selectivity	Average from 2016 – 2018	Average fleet specific selectivity estimated over terminal three years (2016-2018) of model
Retention	Average from 2016 – 2018	Average fleet specific retention estimated over terminal three years (2016-2018) of model
Recruitment	Average from 2009 – 2018	Average recruitment over last 10 years
2019 Landings	156.907 mt (Commercial Vertical Line), 14.51 mt (Commercial Longline), 22.979 thousands of fish (Charter/Private), 0.99 thousands of fish (Headboat)	2019 landings
2020 and 2021 Landings	184.01 mt (Commercial Vertical Line), 11.891 mt (Commercial Longline), 66.1150 thousands of fish (Charter/Private), 1.377 thousands of fish (Headboat)	Average landings between 2016-2018
Allocation Ratio Base Model	27:73	commercial:recreational



# Software Used and Notations on Updated methods

## SEDAR 70 Base assessment model

- Results for OFL achieved through two part process:
  - a) Iterative search (using R script) for  $F$  to attain  $F_{\text{SPR30\%}}$  over 100 years while maintaining sector allocations (COM:REC)
  - b) Running base model in forecast mode applying fixed  $F$ 's (from step a) for forecast years of interest (e.g., first 10 years, 2022-2031)
- Results for  $F_{\text{Rebuild}}$  achieved by iterating annual  $F$  that will rebuild stock to  $\text{SSB}_{\text{SPR30\%}}$  (7,119 mt ww) by 2027.

## Updated Projections for SEDAR 70 Base assessment model (July 2021)

- All results for OFL, ABC, and  $F_{\text{Rebuild}}$  were achieved using a new R script (Vaughan pers. Comm.) to achieve MSY proxy, annual  $F$ , and sector allocation targets according to specified allocation scenario simultaneously.
- Results for OFL obtained by achieving SPR30% at equilibrium ( $n=100$  years), constant  $F_{\text{SPR30\%}}$  in all years, and fixed sector allocations (COM:REC).
- Results for ABC obtained by simultaneously achieving constant  $F=0.75 \cdot F_{\text{SPR30\%}}$  and fixed sector allocations in all years.
- Results for  $F_{\text{Rebuild}}$  achieved by iterating to identify the annual  $F$  value that will rebuild stock to  $\text{SSB}_{\text{SPR30\%}}$  (7,119 mt ww) by 2027 while simultaneously maintaining sector allocations (COM:REC)

# Summary: Updated projections

Scenario	Sector Allocation %	Projected Yields (millions pounds (ww))				
OFL = $F_{SPR30\%}$	COM:REC	2022	2023	2024	2025	2026
1981-2004 (CURRENT, SSC January 2021)	27:73	1.637	2.223	2.781	3.207	3.497
1981-2004 (SSC-new projection code, July 2021)	27:73	2.102	2.235	2.342	2.418	2.471
1981-2004	16:84	1.996	2.130	2.234	2.305	2.354
1993-2007	22:78	2.052	2.186	2.291	2.365	2.417
1993-2019	20:80	2.033	2.167	2.272	2.345	2.395
1981-2004 COM FIXED ACL=484,380 lbs, ww	variable	2.053	2.181	2.282	2.352	2.400
ABC = $0.75F_{SPR30\%}$		2022	2023	2024	2025	2026
1981-2004 (CURRENT, SSC January 2021)	27:73	1.214	1.706	2.193	2.584	2.867
1981-2004 (SSC-new projection code, July 2021)	27:73	1.582	1.778	1.945	2.072	2.166
1981-2004	16:84	1.503	1.695	1.857	1.979	2.069
1993-2007	22:78	1.545	1.739	1.904	2.029	2.121
1993-2019	20:80	1.531	1.724	1.887	2.012	2.103
1981-2004 COM FIXED ACL=484,380 lbs, ww	variable	1.580	1.762	1.919	2.039	2.127
ABC = $F_{REBUILD}$		2022	2023	2024	2025	2026
1981-2004 (CURRENT, SSC January 2021)	27:73	1.255	1.767	2.270	2.672	2.961
1981-2004 (SSC-new projection code, July 2021)	27:73	2.021	2.168	2.288	2.373	2.434
1981-2004	16:84	1.928	2.074	2.188	2.268	2.324
1993-2007	22:78	1.979	2.125	2.242	2.325	2.383
1993-2019	20:80	1.961	2.107	2.223	2.305	2.362
1981-2004_COM FIXED ACL=484,380 lbs, ww	variable	1.998	2.135	2.245	2.322	2.376



# Thank you - questions please

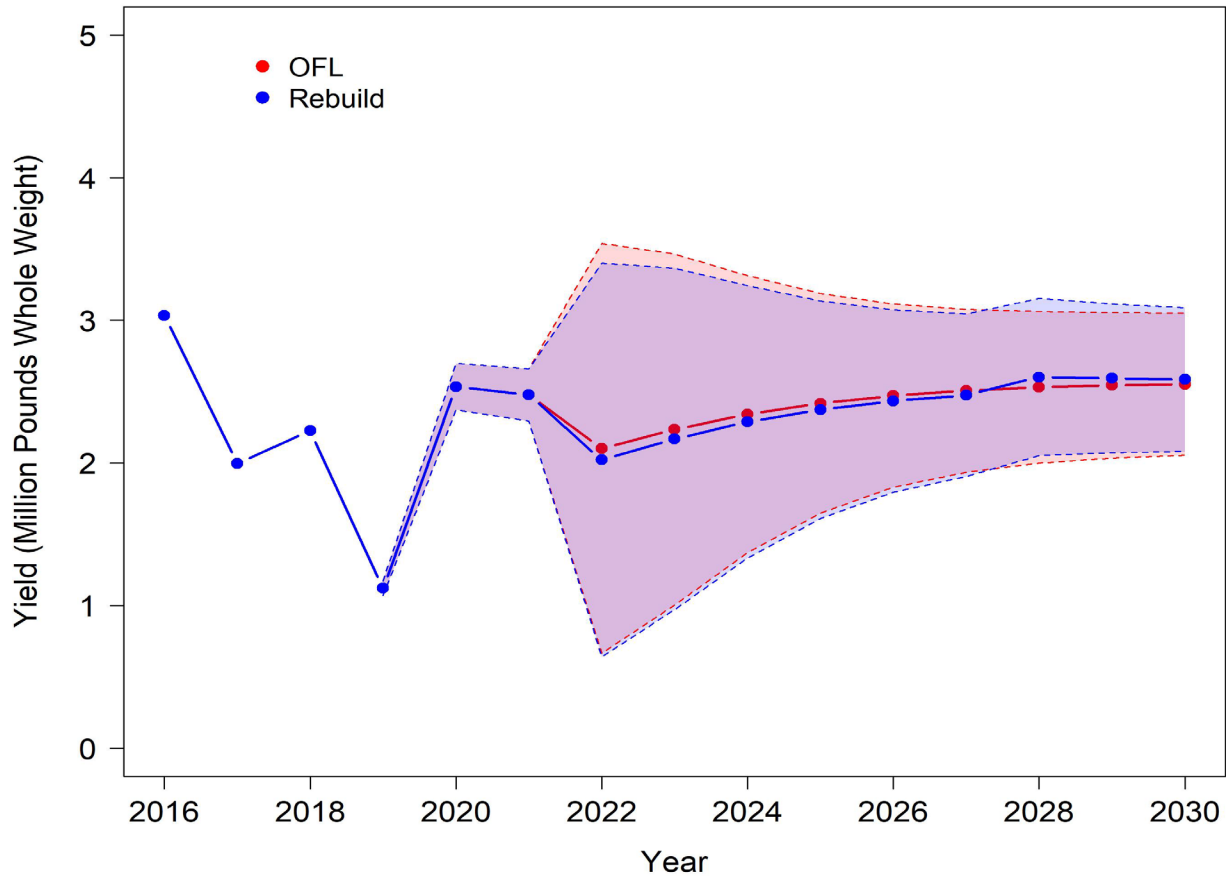
# Summary: Updated projections with 3 & 5 year averages

Scenario	Sector Allocation %	Projected Yields (millions pounds (ww))					Projected Yields (mp, ww)	
OFL = F <sub>SPR30%</sub>	COM:REC	2022	2023	2024	2025	2026	5-year average	3-year average
1981-2004 (CURRENT, SSC January 2021)	27:73	1.637	2.223	2.781	3.207	3.497	2.669	2.214
1981-2004 (SSC-new projection code, July 2021)	27:73	2.102	2.235	2.342	2.418	2.471	2.314	2.226
1981-2004	16:84	1.996	2.130	2.234	2.305	2.354	2.204	2.120
1993-2007	22:78	2.052	2.186	2.291	2.365	2.417	2.262	2.176
1993-2019	20:80	2.033	2.167	2.272	2.345	2.395	2.242	2.157
1981-2004_COM FIXED ACL=484,380 lbs, ww	variable	2.053	2.181	2.282	2.352	2.400	2.254	2.172
ABC = 0.75F <sub>SPR30%</sub>		2022	2023	2024	2025	2026	5-year average	3-year average
1981-2004 (CURRENT), SSC run	27:73	1.214	1.706	2.193	2.584	2.867	2.113	1.704
1981-2004 (SSC-new projection code, July 2021)	27:73	1.582	1.778	1.945	2.072	2.166	1.909	1.768
1981-2004	16:84	1.503	1.695	1.857	1.979	2.069	1.821	1.685
1993-2007	22:78	1.545	1.739	1.904	2.029	2.121	1.867	1.729
1993-2019	20:80	1.531	1.724	1.887	2.012	2.103	1.851	1.714
1981-2004_COM FIXED ACL=484,380 lbs, ww	variable	1.580	1.762	1.919	2.039	2.127	1.886	1.754
ABC = F <sub>REBUILD</sub>		2022	2023	2024	2025	2026	5-year average	3-year average
1981-2004 (CURRENT), SSC January 2021	27:73	1.255	1.767	2.270	2.672	2.961	2.185	1.764
1981-2004 (SSC-new projection code, July 2021)	27:73	2.021	2.168	2.288	2.373	2.434	2.257	2.159
1981-2004	16:84	1.928	2.074	2.188	2.268	2.324	2.156	2.063
1993-2007	22:78	1.979	2.125	2.242	2.325	2.383	2.211	2.116
1993-2019	20:80	1.961	2.107	2.223	2.305	2.362	2.192	2.097
1981-2004_COM FIXED ACL=484,380 lbs, ww	variable	1.998	2.135	2.245	2.322	2.376	2.215	2.126



# SEDAR 70 Projections: OFL and FRebuild

July 2021 Updated



January 2021 SSC

