



NOAA
FISHERIES

SEFSC

SEDAR 70: US Gulf of Mexico Greater Amberjack

Operational Assessment

Updated Projections

GMFMC SSC Presentation

January 2021

NOAA Fisheries, Southeast Fisheries Science Center,
Sustainable Fisheries Division (SFD)

Updated Projections – Assumptions

- Proxies were calculated based on long-term 100 year projections
 - Equilibrium assumed over last 10 years
 - $MSST = SSB_{SPR30\%} * 0.5$
 - Recruitment was fixed as recent estimated mean (2009-2018)
 - Selectivity, retention, relative F as three year average (2016-2018)
 - TY of assessment was 2018 & Projections begun in 2022
 - Gap years specified as:
 - 2019- using preliminary 2019 data
 - 2020 and 2021 using 2016-2018 average landings
- Allocation ratios: 0.27(commercial): 0.73 (recreational)

Settings used for Gulf of Mexico Greater Amberjack projections.

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	27:73	commercial:recreational

MSRA Reference points

Variable	Definition	Value
Base M	Fully selected ages of Lorenzen Natural Mortality (M)	0.28
Steepness	Fixed Stock-Recruit (SR) parameter (not used in projections)	0.777
Virgin Recruitment	Estimated SR parameter (not used in projections)	3,698
Generation Time	Fecundity-weighted mean age	7.59
SSB Unfished	Estimated virgin spawning stock biomass	23,733
Mortality Rate Criteria		
FMSYproxy	Equilibrium F that achieves SPR30%	0.175
MFMT	Equilibrium F that achieves SPR30%	0.175
FRebuild	F that rebuilds the stock to SSBSPR30% by 2027	0.117
FOY	0.75 * Directed F at FSPR30%	
Fcurrent	Geometric Mean (F2016-2018)=Fcurrent	0.302
Fcurrent/FMSYproxy	Current stock status based on FMSYproxy	1.729
Fcurrent/MFMT	Current stock status based on MFMT	1.729
Biomass Criteria		
SSBMSYproxy	Equilibrium SSB at FSPR30%	7,119
MSST	0.5*SSBSPR30%	3,560
SSB at Optimum Yield	Equilibrium SSB when Directed F = 0.75 * Directed F at FSPR30%	
SSB_2018	SSB2018	2,433
SSB_2018/SSBFMSYproxy	Current stock status based on SSBSPR30% (Equil)	0.34
SSB_2018/MSST	Current stock status based on MSSTSPR30%	0.68
SSB_2018/SSBunfished	2018 SPR	0.1

Projections – Results (millions of pounds, whole weight)

Either my next two tables or sky's one- but there are a couple issues with her F/FSPR30 values

Updated OFL Projection Results (millions of pounds, whole weight)

MSST 3560
 FSPR30 0.175
 SSB_SPR30 7120

Below projection uses 2019 as final landings and uses 2016-2018 averages for 2020-2021, projection begins in 2022

Year	R	F	F/F _{SPR30}	SSB	SSB/SSB _{SPR30}	SSB/MSST	SSB/SSB ₀	OFL (mp)	Year SSB>MSST	Year SSB>SBSR30
2022	2806	0.154	0.8822	2755	0.3869	0.774	0.116	1.637	2023	2036
2023	2806	0.164	0.9396	3635	0.5106	1.021	0.153	2.223		
2024	2806	0.172	0.9830	4548	0.6388	1.278	0.192	2.781		
2025	2806	0.176	1.0074	5312	0.7461	1.492	0.224	3.207		
2026	2806	0.178	1.0181	5891	0.8274	1.655	0.248	3.497		
2027	2806	0.178	1.0214	6302	0.8852	1.770	0.266	3.683		
2028	2806	0.178	1.0214	6587	0.9252	1.850	0.278	3.800		
2029	2806	0.178	1.0199	6785	0.9530	1.906	0.286	3.874		
2030	2806	0.178	1.0188	6911	0.9707	1.941	0.291	3.919		
2031	2806	0.178	1.0181	6990	0.9817	1.963	0.295	3.947		
2032	2806	0.175	1.0023	7039	0.9886	1.977	0.297	3.818		
2033	2806	0.175	1.0020	7086	0.9952	1.990	0.299	3.833		
2034	2806	0.175	1.0014	7109	0.9985	1.997	0.300	3.838		
2035	2806	0.175	1.0008	7119	0.9999	2.000	0.300	3.838		
2036	2806	0.175	1.0004	7122	1.0003	2.001	0.300	3.837		

Updated F_Rebuild Projection Results (millions of pounds, whole weight)

MSST 3560
 FSPR30 0.175
 SSB_SPR30 7120

Below projection uses 2019 as final landings and uses 2016-2018 averages for 2020-2021, projection begins in 2022										
Year	R	F	F/F _{SPR30}	SSB	SSB/SSB _{SPR30}	SSB/MSST	SSB/SSB0	OFL (mp)	Year SSB>MSST	Year SSB>SBSPR30
2022	2806	0.117	0.667	2785	0.391	0.782	0.117	1.255	2023	2027
2023	2806	0.125	0.716	3819	0.536	1.073	0.161	1.767		
2024	2806	0.131	0.752	4921	0.691	1.382	0.207	2.270		
2025	2806	0.135	0.772	5888	0.827	1.654	0.248	2.672		
2026	2806	0.136	0.781	6662	0.936	1.871	0.281	2.961		
2027	2806	0.137	0.783	7246	1.018	2.035	0.305	3.157		
2028	2806	0.137	0.783	7677	1.078	2.156	0.323	3.287		
2029	2806	0.136	0.780	7993	1.123	2.245	0.337	3.373		
2030	2806	0.136	0.779	8206	1.153	2.305	0.346	3.430		
2031	2806	0.136	0.778	8348	1.172	2.345	0.352	3.467		
2032	2806	0.136	0.777	8440	1.185	2.371	0.356	3.491		
2033	2806	0.136	0.777	8501	1.194	2.388	0.358	3.507		
2034	2806	0.136	0.776	8541	1.200	2.399	0.360	3.517		
2035	2806	0.135	0.776	8566	1.203	2.406	0.361	3.524		
2036	2806	0.135	0.776	8583	1.206	2.411	0.362	3.528		

Projections – Results

Criteria	Definitions	Yield	Year SSB>MSST	Year SSB>SSBSPR30
OFL	Annual yield (mp ww) at MFMT=FSPR30%		2023	2036
	2022	1.637		
	2023	2.223		
	2024	2.781		
	2025	3.207		
	2026	3.497		
ABC	Annual yield (mp, ww) at Frebuild		2023	2027
	2022	1.255		
	2023	1.767		
	2024	2.270		
	2025	2.672		
	2026	2.961		

Projections – Results

