

Landings and Discards

Recreational landings were updated retroactively using the Fishery Effort Survey. Recreational and commercial landings and dead discards predicted by the assessment model are shown (Figure 2).

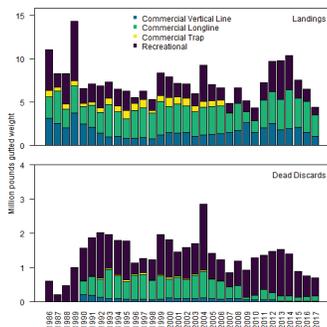


Figure 2: Final Red Grouper landings and dead discard estimates from SEDAR 61 assessment for commercial and recreational fisheries in millions of pounds, 1986-2017.

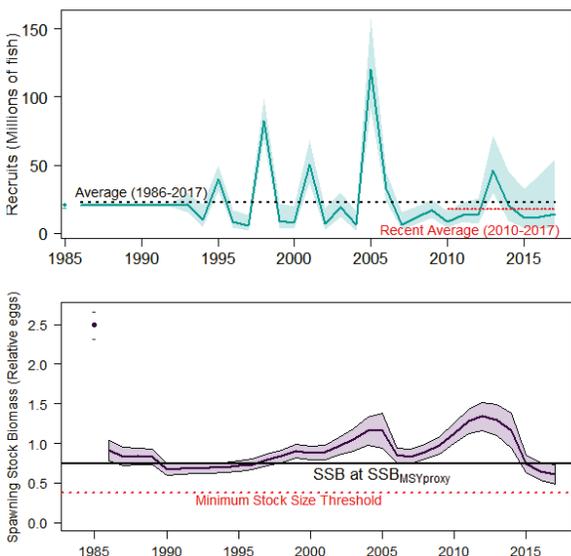


Figure 4: Recruitment (top) and stock biomass (bottom) of Red Grouper from 1986–2017.

Stock Status

The assessment found that Red Grouper in the Gulf of Mexico is not overfished nor undergoing overfishing (Figure 1), but remains below the target of 30% Spawning Potential Ratio (SPR) in 2017, where SPR_{2017} is the ratio of the 2017 Spawning Stock Biomass (SSB) to the unfished SSB (SSB_0). Benchmarks including the Maximum Fishing Mortality Threshold (MFMT) and Minimum Stock Size Threshold (MSST) are defined in Table 1.

Table 1: Benchmarks from the SEDAR 61 Red Grouper stock assessment.

Benchmarks	
Natural Mortality Rate	0.144
MFMT = $F_{MSYproxy}$	0.259
$F_{2015-2017} / MFMT$	0.77
Overfishing ($F/MFMT > 1$)?	No
$SSB_{MSYproxy}$	748,240
MSST = $0.5 * SSB_{MSYproxy}$	374,120
SSB_{2017} / SSB_0 (SPR_{2017})	0.25
$SSB_{2017} / MSST$	1.64
Overfished ($SSB/MSST < 1$)?	No

Table 2: Overfishing probabilities for average landings (lbs) 2020-2024.

Catch Scenario	p(Overfishing)
5,990,206 ($F_{MSYproxy}$)	0.500
5,570,000	0.300

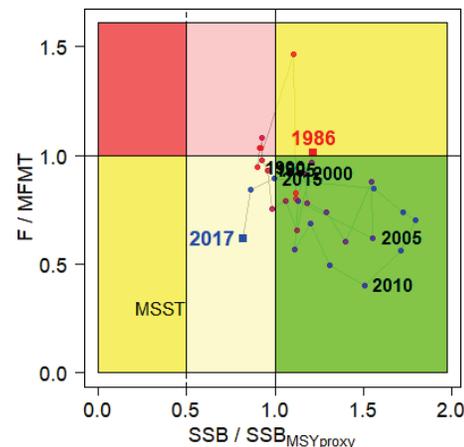


Figure 1: Kobe plot showing the progression of exploitation status from 1986 to 2017, with MSST denoted.

Socioeconomic and Ecosystem Considerations

The Gulf of Mexico Fishery Management Council’s “Something’s Fishy” tool gathered information from 114 private, charter, and commercial anglers targeting Red Grouper who reported fewer of this species ≥ 20 inches total length, in deeper waters compared to past years, and in red tide fish kills (Figure 3). Evidence presented to the Scientific and Statistical Committee led to an assumed magnitude of the 2018 red tide event similar to the 2005 mortality. Projections captured this mortality event when considering the probability of overfishing for catch limits (Table 2).

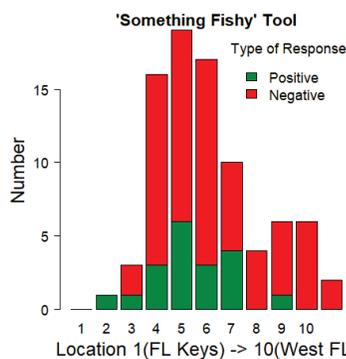


Figure 3: Angler perception of Red Grouper abundance.

Table 3: Projected yields for Red Grouper 2020-2024 assuming 2018 red tide \sim 2005 red tide, where this average represents the OverFishing Limit (OFL).

Year	Yield (lbs)
2020	6,443,770
2021	6,175,135
2022	5,876,300
2023	5,684,655
2024	5,771,170
Average (OFL)	5,990,206

Assessment and Projections

Gulf Red Grouper have low recruitment with occasional large year-classes (Figure 4), which have supported many of the fisheries catches, as evident by clear cohorts moving through the composition data used in the assessment. Red Grouper projected yields account for updated allocations (59.3% Commercial, 40.7% Recreational) and a mean weight adjustment to recreational landings projected by the SEDAR 61 assessment model (Table 3).