

Data Inputs

Recreational and commercial landings and dead discards predicted by the assessment model are shown (Figure 1). Recreational removals were updated using the Fishing Effort Survey. Indices of relative abundance were included from multiple sources (Figure 2).

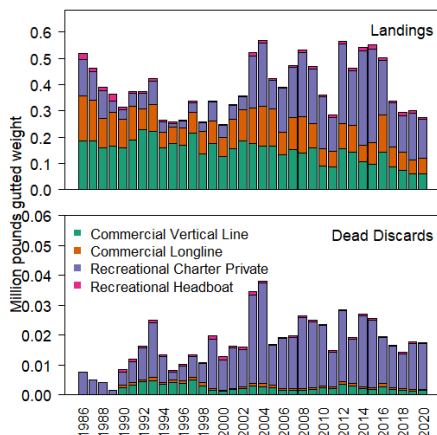


Figure 1: Final landings and dead discard estimates from the SEDAR 68 Operational Assessment model for commercial and recreational fisheries in millions of pounds, 1986-2020.

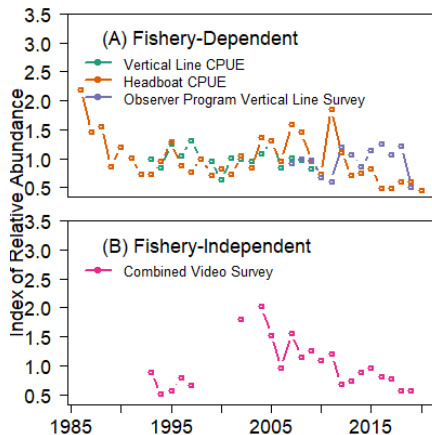


Figure 2: Fishery-dependent (A) and fishery-independent (B) indices of abundance input into the SEDAR 68 Operational Assessment model.

Stock Status

The assessment found that Scamp Grouper in the Gulf is not overfished and not undergoing overfishing as of 2020 using a Spawner Potential Ratio of 40% (Figure 3). 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 68 Operational Assessment model. Spawning Stock Biomass (SSB) = metric tons, F = harvest rate (total biomass killed / total exploitable biomass).

| Benchmarks | |
|----------------------------------|-------|
| Spawner Potential Ratio (SPR) | 40% |
| Natural Mortality Rate (M) | 0.16 |
| $MFMT = F_{MSYproxy}$ | 0.12 |
| $F_{2018-2020} / MFMT$ | 0.79 |
| Overfishing ($F/MFMT > 1$)? | No |
| $SSB_{MSYproxy}$ | 1,230 |
| $MSST = (0.75) * SSB_{MSYproxy}$ | 923 |
| $SSB_{2020} / SSB_{Unfished}$ | 0.34 |
| $SSB_{2020} / MSST$ | 1.41 |
| Overfished ($SSB/MSST < 1$)? | No |

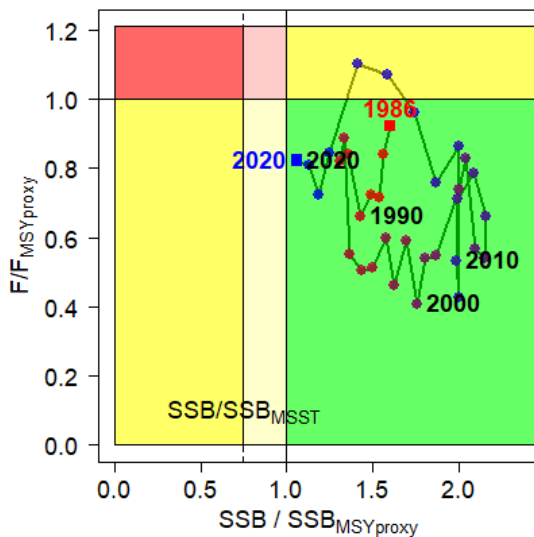


Figure 3: Kobe plot showing the progression of exploitation status of Gulf Scamp Grouper from 1986 (red) to 2020 (blue), with MSST denoted.

Assessment Outcome

The Gulf of Mexico Fishery Management Council's Scientific and Statistical Committee (SSC) accepted the SEDAR 68 Operational Assessment model as the best scientific information available, and deemed it appropriate for providing management advice (Tables 1-2).

Projections

Final projections were run using an MSYproxy of 40% SPR, the reported landings for 2021, and using the average of 2019-2021 landings as the proxy for the interim projection years of 2022 and 2023 for each fleet. For determining catch advice, the SSC supported using the mean recruitment over the last 10 years, which was below the mean of the time series where recruitment was estimated (Figure 4).

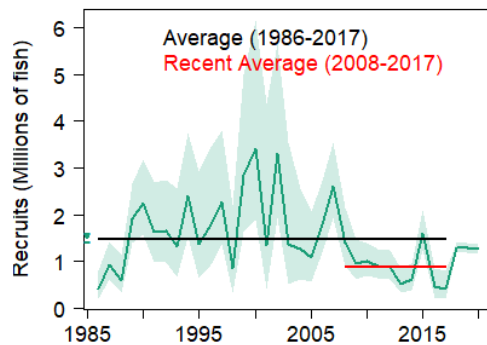


Figure 4: Annual and virgin (dot) recruitments estimated by the SEDAR 68 Operational Assessment model with uncertainty estimates (shading).

Table 2: SSC recommended catch levels for the Overfishing Limit (OFL; yield at $F_{MSYproxy}$) and the Acceptable Biological Catch (ABC; yield at 75% $F_{MSYproxy}$) for 2024-2026 (shown in Figure 5). Catch units are million pounds gutted weight (mp gw).

| Yr | OFL | ABC |
|------|-------|-------|
| 2024 | 0.271 | 0.203 |
| 2025 | 0.263 | 0.203 |
| 2026 | 0.257 | 0.203 |

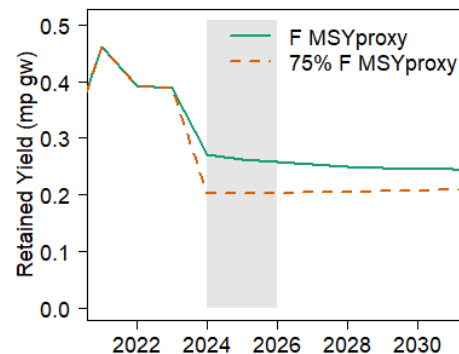


Figure 5: Retained yields from the OFL and ABC projections with the years highlighted (in gray) for catch advice.