

**SEDAR 61 Assessment Workshop Webinar II**  
**Gulf of Mexico Red Grouper**  
**February 13, 2019 from 10:00 AM to 12:00 PM**  
**Summary Report**

This webinar was rescheduled from January 7<sup>th</sup>, 2019 due to the partial federal government shutdown.

*Data Review*

The length-weight conversion data, size- and age-at maturity and transition, the metrics for spawning stock biomass (female-only), and natural mortality (fixed-Lorenzen) will all be maintained in the continuity model from the last assessment (SEDAR 42). Fecundity will be adjusted to convert batch fecundity-at-length to age using the growth curve, maintaining sex-specific proportions at age. An updated growth curve will also be used to account for new samples.

Commercial data will be updated through 2017, and will consider historical landings if needed. The current start year is 1993; however, 1986 may also be considered. Updated age composition data using the methodology from SEDAR 42 will be included. Discards will be revised using a new methodology for vertical line and longline gears, with commercial trap discards being unchanged. Commercial length composition data will be updated using data from the NMFS observer program.

Recreational data will be updated through 2017 for all recreational fleets using MRIP data. Historical data will also be considered, depending on model configuration. Age composition data will be updated to account for MRIP length data and other variables. Discards will be updated with data through 2017, and discard length composition data will be updated using the FWRI observer program.

Indices of abundance will not be updated with post-IFQ program data due to time constraints, and will be recommended for consideration as a research recommendation. Continuity indices will be used for the headboat, MRIP/MRFSS, NMFS Bottom Longline (BLL), and SEAMAP Summer Groundfish Survey indices. The Combined Video Survey will use an updated index with the habitat-based methodology.

The length composition data for the fishery-independent monitoring (FIM) surveys will use updated data for the NMFS BLL and SEAMAP Summer Groundfish Survey. The Combined Video Survey will feature combined video length data.

New data to be incorporated will include the FWRI repetitive time drop survey and the FWRI vertical line survey. Red tide data will consider 2014 to be “severe,” with a sensitivity of 2014 set as “not severe.” The 2015 red tide event was not determined to be “severe.” Appropriate sensitivities will be considered for this form of episodic mortality. Spatial maps of potential red tide-influenced changes in movement and abundance will also be assessed, comparing 2012 and

2014. These data show decreased abundance in the Big Bend region of Florida, without much change off central Florida. These data suggest episodic mortality, as opposed to movement, as the explanatory variable for changes in local abundance observed in response to the 2014 red tide event.

### *Modeling Issues*

Some of the primary concerns from the SEDAR 42 assessment were the start year of the model, how to treat the recreational fleets (combined or separate), steepness (estimated versus fixed), the NMFS BLL selectivity patterns, and fits to the discards and discard length composition data. In the final model for SEDAR 42, the Review Workshop determined that the start year should be 1993, changed from 1986 earlier in the modeling effort. The majority of the data began in 1993, representing a more consistent representation with respect to the discard data. Much less contrast is available in the data prior to 1993, making it more difficult to estimate the initial condition of the stock. Initially, the recreational fleets were separated in SEDAR 42; however, due to the low landings from headboats, the Review Workshop determined that the recreational fleet-specific landings should be combined. Steepness was initially set at 0.80, +/- 0.16 in the SEDAR 42 assessment process. This was later fixed at 0.99 to account for assumptions about red grouper stock productivity. The NMFS BLL selectivity pattern was originally assumed to be dome-shaped, and later changed to asymptotic. This change was intended to account for the fact that larger red grouper are equally selected and unlikely to be discarded by longline gear, and this improved fits to the discard data from NMFS BLL. Time-varying retention was originally fixed for discard data, and then ultimately estimated within the model to improve fits to the data.

### *Continuity Model Settings*

The time series used in the continuity model is 1993-2017, with the model set up as single-area with a single fishing season. The continuity model determines spawning stock biomass from females only in number of eggs. Fecundity, maturity, and protogyny are all a function of age. The von Bertalanffy growth curve and Lorenzen natural mortality are both fixed, as is steepness at 0.99. Five fishing fleets and three FIM indices of abundance are used, with red tide mortality modeled as a 100% dead discard fleet in 2005 and 2014. Age-based selectivity is estimated by fishing fleet, and length-based selectivity is used for FIM indices. Time-varying retention is used to account for changes in fishing regulations. Many inputs use SEDAR 42 methodologies, except commercial vertical line and longline discards, MRIP landings and discards, and the MRIP index of abundance.

### *Continuity Model Results*

SSB over time in the SEDAR 61 continuity model shows a marginal increase over the SEDAR 42 model through 2013 (SEDAR 42 terminal year), with a drop in 2015. Fits to the discard length composition data are improved in SEDAR 61 over SEAR 42. Estimated commercial discards are much lower in SEDAR 61 compared to SEDAR 42, and though the fits to the observed data are still not great, the predicted values are similar to SEDAR 42. Fits to recreational discards in SEDAR 61 are also similar to SEDAR 42; however, a larger number of

fish are being assumed to be discarded by the recreational sector compared to what was predicted in SEDAR 42.

Fits to the commercial, recreational, and fishery-independent indices in SEDAR 61 are similar to SEDAR 42. Generally, a decrease in SSB has been observed from 2015+, which is on par with observations by and comments from fishermen.

### *Next Steps*

Several changes will be made to the continuity model as a new base case for SEDAR 61 is developed in Stock Synthesis. Growth curves will be updated along with Lorenzen-M-at-age. Fecundity will be updated to reflect a conversion from fecundity-at-length to fecundity-at-age. Length composition data for the Combined Video Survey index will be made current. Recreational age composition data will use the revised charter for-hire and private combined length composition data, plus the observed and imputed lengths and sample weights. These will then be combined with headboat data, and weighted by landings. New data to be included will be the FWRI repetitive time drop index and length composition data from the FWRI vertical line survey.

In the model, start year and initial conditions will be tested, and efforts will be made to improve selectivity parameterization. Analysts will reweight effective sample sizes for composition data to a uniform level, which should improve fits between observed and predicted values across years. Also to be explored will be the parameterization of red tide mortality for 2014 (“severe” versus “not severe”) and 2015 (presently “not severe”).

The next Assessment Webinar will be the week of March 25 <sup>th</sup> , 2019
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### Participants:

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