SEDAR 64 Assessment Webinar II
Southeastern US Yellowtail Snapper
October 11, 2019 from 10:00 AM to 11:30 PM
Summary Report

Data Updates

Life History
Additional length-at-age data have been added into the base model. Modifying the "birth date" from July 1 to April 1 improved the model fit to virgin biomass. This slightly changed the estimate of natural mortality, which still bounds maximum age between 20 and 35 years, with the base model using a maximum age of 28 years.

Length Compositions
Additional length samples from 161 TIP interviews yielded an additional 3,000 length samples for the commercial sector.

Discards
Downweighting analyses were performed to address high discards, especially in the recreational fleets. The result is that estimated discards were reduced by 22%, with the greatest reduction in discards occurring for the charter fleet. Since this reduction did not appear to have any significant effect, the 1991 estimate of ~15 million pounds of discards (resulting from three interviews) was left as-is.

Base Model
The base model runs from 1981 – 2017, using one season and one area, with spawning beginning in January. The model combines sexes and measures SSB as females-only, with natural mortality and maturity vectored by age. Base discard mortality was set at 10%. No priors are specified in the model on any parameters. Yellowtail snapper become fully selected by the fleets by age-3. Likelihood contribution to the model is dominated by age composition data, followed by discard data, with 109 parameters estimated.

Landings are fit within the model almost exactly. Fits to commercial discards are highly uncertain, with standard deviations greater than 2. Fits to headboat discards are good, except for the 1991 data point mirrored from MRIP. Fits to MRIP discards are poor prior to 2000, with the model not fitting the high 1991 data point. Commercial CPUE observations are not fit well by the model, which may be due to fluctuations in catchability; it may be possible to use time blocks to address this, using a pre- and post-power chumming timeline. MRIP CPUE observations fit well only after 1995. Fits to Reef Visual Census indices (adults and juveniles) are marginal. The model is largely underestimating the length composition of the commercial landings at smaller sizes, and overestimating at larger sizes. Fits to commercial discard lengths are good. Length composition data for headboat landings fit well after 1995; fits to headboat discards are also good. Lengths from MRIP landings are very noisy, with multiple peaks, and are generally poorly fit by the model until 2014; fits to MRIP discards are worse than fits to MRIP landings, but are based on headboat observed discards. Fits to lengths for the Reef Visual Census landings and discards (adults and juveniles) are good.

Estimated selectivities are dome-shaped for all indices except the commercial fleet. Recruitment deviations are set to begin in 1986; beginning in 1981 results in an improbably population crash (that did not happen). Generally, the model is overestimating weight-at-age, more so for the recreational fleet, and more so for the older ages for recreational and commercial fleets.

Retrospective analyses of removing single and consecutive years of data showed model stability. Jitter analyses of up to 20% for estimated parameters showed stability except for one run out of 50. A time block was added for headboat retention (1986 – 2017) which modestly improved the fit to headboat lengths.

Potential Model Improvements

- Starting the model in 1992 may resolve some poor model fitting to length composition data (this is when MRIP CPUE estimation began).
- Varying the retention parameter by year for MRIP to better fit discards and discard lengths.
- Remove the mirroring of MRIP to the Headboat index.
- Add mean weight-at-age observations.
- Change population and maximum length bin to be a plus group.
- Using a 1992 – 2017 time block for commercial landed lengths and allow for dome-shaped selectivity, or decrease natural mortality.
- Decrease the estimate of the equilibrium population size (e.g., fixing the initial estimate of fishing mortality).

The combination of a later start date and a reduction in the estimate of virgin biomass may result in a more plausible model result. A high initial estimate of virgin biomass requires the model to presume considerable fishing mortality to reach estimates of the population size in more recent years. Further, MRIP did not begin estimating CPUE until 1992, which corresponds to when length composition data are typically better fit by the model.

Assessment Webinar III will be held on November 4, 2019 at 11:00 AM eastern time

Participants:

Julie Neer	Dustin Addis	Skyler Sagarese
Alejandro Acosta	Fred Serchuk	Shanae Allen
Anne Lange	Joe O'Hop	Steven Scyphers
Beth Babcock	Mike Larkin	Bob Muller
Bob Gill	Ryan Rindone	Mike Errigo