

# Catch Level Projections Workgroup Report to the SSC October 2021

## Scope of Work

**Analysis Type:** Development of Recommendations for Recruitment Assumptions Used in Catch Level Projections

**Justification:** The SSC has recently recommended different approaches to making recruitment assumptions in catch level projections for different stocks. To date, these recommendations have been made on a case-by-case basis in response to trends or new patterns in recruitment relative to the historical productivity of the stock. The SSC requested an opportunity to comprehensively review recent SSC decisions and available literature on the topic, and to develop recommendations for how recruitment assumptions be made in projections used to provide catch level recommendations. Ideally, recommendations should be informed by the SEFSC's working group on this topic.

**Goal:** Develop a set of recommendations for SSC consideration when making projection requests used to set catch levels.

**Analyst:** Assistance of an SEFSC analyst may be required. Council staff will be needed to assist in gathering information for the workgroup (Judd Curtis and Chip Collier).

**Members:** SSC – Amy Schueller (chair), Fred Scharf, Jie Cao, Scott Crosson, Chris Dumas; Other – Representative from SEFSC's working group on incorporating recruitment in projections (Erik Williams)

**Tasks:**

1. Review recent literature on recruitment assumptions and summarize key findings for the SSC
2. Summarize recent SSC decisions regarding recruitment assumptions in projections used to set catch level recommendations. Case studies should include, but not be limited to, red grouper, red snapper, red porgy, golden tilefish, and black sea bass.
3. With the assistance of the SEFSC, explore the performance alternative recruitment assumptions and summarize the impact on catch level advice for key example stocks.
4. Draft recommendations for SSC consideration.

**Timeline:**

Initial Meeting or Scoping – Aug/Sept 2021

Meetings – Sept and Oct 2021

Progress Report to SSC – Oct 2021

Meetings – Nov and Dec 2021

Status Report to Council (in SSC Overview) – Dec 2021

Meetings – Jan and Feb 2022

Final Report – 2 weeks prior to Spring (typically April) 2022 Meeting

## Progress on Scope of Work

The working group has met on two separate occasions: 1) Wednesday, September 1, 2021 and 2) Tuesday, October 5, 2021.

During the first meeting, the working group broadly discussed tasks and created action items. The group would like to provide a decision-making framework, rather than a guide for best practices. Given the state of the science, best practices would be difficult to provide, but guidance on the science that needs to be completed in order to provide best practices would be worthwhile. The group added Gag grouper to the species of interest. Discussions centered on considering correlations between different species, across multiple data streams for a given species, across geographic locations for a given species, and between species and environmental variables; the effects of time lags; and autocorrelation across time. Action items from the first meeting included compiling literature, compiling information on how recruitment is being projected in other regions or Science Centers, and compiling figures and information on the species of interest and how recruitment was projected.

During the second meeting, the working group was provided the opportunity to hear a presentation by Dr. Brendan Runde on his explorations of recruitment and index time series data related to environmental factors for several species of interest to the SAFMC SSC. The group appreciated the presentation and asked that Dr. Runde return to the group as progress is being made on the project. The group then went through a presentation summarizing data and decisions regarding recruitment projection for the species of interest. The group added yellowtail snapper to the species of interest. Discussion centered on the consideration of the S-R curve, spawning stock biomass, recruitment deviations, uncertainty, life history, time frame, significance level of deviations, data quality, and correlation within the SA data and parameters. In addition, the group noted that layered on all these details is the topic of non-stationarity of reference points. Some possible draft recommendations from the discussion include requesting that the following items be added to stock assessment reports: 1) MCBE recruitment time series with the base run recruitment overlaid, 2) MCBE recruitment deviations time series with the base run deviations overlaid, 3) a sensitivity run removing the S-R curve and comparing the results to the base run to see impact on recruitment estimates (which will possibly help to resolve questions when steepness is fixed), and 4) fully describing the R variance assumptions within the model. These draft options are still being discussed as well as additional options and questions (e.g., rebuilding plans). Action items from the second meeting included compiling and reviewing literature, continuing discussion on requested data and figures for future stock assessments, continued compiling of information on recruitment in projections from other regions and Science Centers, and consideration of additional tasks and analyses to be completed to explore the question of how recruitment should be treated in projections for determining short-term catch advice.