

# **SEDAR 84**

Southeast Fisheries Science Center

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The SEDAR 84 St. Croix stoplight parrotfish (*Sparisoma viride*) stock assessment process consisted of four webinars between April 2024 and October 2024. The data available for the assessment included:

- An annual species-specific catch time series from a commercial logbook program
- Fishery-dependent length compositions from a commercial port sampling program
- Fishery-independent length compositions from a reef fish survey
- A fishery-independent index of abundance from a reef fish survey
- Life history information from otolith analysis and gonad histology

The assessment used Stock Synthesis, a statistical catch-at-age model (Methot et al., 2020). Stock Synthesis models were initially configured using an annual catch time series and length compositions that were aggregated across the available years for each source of length data. Model development proceeded stepwise from the simplest configuration to those of moderate complexity. Those sequential steps included the inclusion of the index of abundance and annual fishery-independent length compositions. Models were run with and without the estimation of recruitment deviations. Finally, the sensitivity of the assessment outcomes was investigated using alternative inputs for longevity-informed natural mortality, coefficient of variation on growth, and parameterization of hermaphroditism.

Model diagnostics checked for convergence, goodness-of-fit, model consistency, and prediction skill by evaluating gradients, residual plots, likelihood profiles, hindcast cross-validation, correlation, and jitter analyses. All of the configurations resulted in inconclusive results, evidenced by low gradients, high variance, and likelihood profile diagnostics indicating discrepancies among the data and modeling structure. The SEDAR 84 assumptions require further assessment as the scenarios explored are not able to reliably estimate the stock status. Thus, the overfished status of the St. Croix stoplight parrotfish stock remains unknown. However, the available data do not indicate a decline in the abundance index concurrent with a decrease in landings and show constant trends in size composition quarantines. These findings suggest that the St. Croix stoplight parrotfish was not likely to be undergoing overfishing in 2022.

Methot, R. D., Wetzel, C. R., Taylor, I. G., & Doering, K. (2020). Stock synthesis user manual: Version 3.30.15. *Northwest Fisheries Science Center (U.S.)*.  
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