

South Atlantic Management Council (SAFMC)

SAFMC first developed its ABC control rules in 2009 for the assessed stocks using a framework of four dimensions composed of multiple tiers. Dimensions reflect the critical characteristics to evaluate, including availability of assessment information, uncertainty characterization, stock status and productivity and susceptibility (Table 1). Each dimension contains multiple tiers that can be evaluated for each stock to determine a numerical score for the dimension. Each stock evaluated receives a single “adjustment factor”, which is the sum of tier scores across dimensions. The scoring of tiers within dimensions is designed to provide a maximum P* adjustment of 40% and a minimum of 0% (Table 1). ABC control rule is based on the probability density distribution or a “P*” analysis using the adjustment factor for each stock. The critical value for P is obtained by subtracting the adjustment factors from the probability of overfishing, P* (at 50% level) to determine the amount of buffer or separation between OFL and ABC (Table 3).

Table 1. Assessed Stocks: Hierarchy of dimensions and tiers

I. Assessment Information (10%)	
1. Quantitative assessment provides estimates of exploitation and biomass; includes MSY-derived benchmarks. (0%)	
2. Reliable measures of exploitation or biomass; no MSY benchmarks, proxy reference points. (2.5%)	
3. Relative measures of exploitation or biomass, absolute measures of status unavailable. Proxy reference points. (5%)	
4. Reliable catch history. (7.5%)	
5. Scarce or unreliable catch records. (10%)	
II. Uncertainty Characterization (10%)	
1. Complete. Key Determinant – uncertainty in both assessment inputs and environmental conditions are included. (0%)	
2. High. Key Determinant – reflects more than just uncertainty in future recruitment. (2.5%)	
3. Medium. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections. (5%)	
4. Low. Distributions of Fmsy and MSY are lacking. (7.5%)	
5. None. Only single point estimates; no sensitivities or uncertainty evaluations. (10%)	
III. Stock Status (10%)	
1. Neither overfished nor overfishing. Stock is at high biomass and low exploitation relative to benchmark values. (0%)	
2. Neither overfished nor overfishing. Stock may be in close proximity to benchmark values. (2.5%)	
3. Stock is either overfished or overfishing. (5%)	
4. Stock is both overfished and overfishing. (7.5%)	
5. Either status criterion is unknown. (10%)	
IV. Productivity and Susceptibility – Risk Analysis (10%)	
1. Low risk. High productivity, low vulnerability, low susceptibility. (0%)	
2. Medium risk. Moderate productivity, moderate vulnerability, moderate susceptibility. (5%)	
3. High risk. Low productivity, high vulnerability, high susceptibility. (10%)	

Note: Parenthetical values indicate (1) the maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension. For example, if adjustment factor adds up to 25% (7.5% for dimension 1, 5% for dimension 2, 7.5% for dimension 3, and 5% for dimension 4), then the critical value of $P^* = 0.50 - 0.25 = 0.25$.

The ABC control rules were revisited in 2010 and also later in 2011 to incorporate ABC control rules for the unassessed stocks. The stocks managed by SAFMC were grouped into four levels with the top level including only the assessed stocks (Table 2). ABC control rules for the snapper grouper species were adopted in the Comprehensive Annual Catch Limit (ACL) Amendment in 2011.

Table 2. South Atlantic Management Council (SAFMC)

LEVELS	Criteria
LEVEL 1	Assessed stocks. Each stock is evaluated by 1. assessment info 2. uncertainty characterization 3. stock status 4. productivity and susceptibility according to the system in Table 1.
LEVEL 2	Unassessed stocks. Reliable landings and life history information is available.
LEVEL 3	Unassessed, inadequate data to support DBSRA.
LEVEL 4	Unassessed, inadequate data to support DCAC or DBSRA.

Table 3. South Atlantic Management Council (SAFMC) ABC determination

LEVELS	ABC determination
LEVEL 1	Each dimension in Table 1 is scored a maximum 10% and then total score is deducted from a P* of 0.50.
LEVEL 2	OFL derived from "Depletion-Based Stock Reduction Analysis" (DBSRA). ABC derived from applying the assessed stocks rule to determine adjustment factor if possible, or from expert judgment if not possible.
LEVEL 3	ABC derived from Depletion-Corrected Average Catch (DCAC). Requires a higher level of "informed expert judgment" than Level 2.
LEVEL 4	ABC and OFL derived on a case-by-case basis (becomes LEVEL 5 after Amend.19 is approved).

The ABC determination for each group of stocks were specified according to the system presented in Table 3. Starting in June 2013, however, SAFMC has developed Amendment 29 to recommend changes to the ABC Control Rule and to include ABC recommendations for "Only Reliable Catch Stocks" (ORCS). The Amendment 29 was approved by the Council at its June 2014 meeting and submitted to the Secretary of Commerce for final approval. Once approved, the ORCS approach will become Level 4 of the ABC Control Rule and the existing Level 4 will be renumbered as Level 5.

The ORCS methodology uses an adjustment to the maximum catch over the period 1997-2007 based on a risk of exploitation category as follows:

1. Assign stocks to one of three exploitation categories (i.e. Lightly, Moderately, Heavily Exploited) using an evidence-based scoring procedure;

2. Obtain an OFL by multiplying a statistical measure of historical catch by a scalar that depends upon the exploitation category; and
3. Obtain an ABC as a proportion (<1) of the OFL to reflect a policy decision on acceptable risk, which may depend on productivity of the stock. The risk tolerance levels, a range of numbers that reflects the South Atlantic Council's risk tolerance level range from 0.50 - 0.90 or 50% - 90%.

Table 4 provides examples for the ORCS method for determining ABCs.

Table 4. Example - ABC determination for the ORCS stocks

Stock	Catch statistics	Risk of overexploitation scalar	Risk tolerance scalar	ABC (lbs.)
A	34,583	2	0.90	62,250 (=34,583*2*0.90)
B	20,000	1.5	0.50	30,000=(20,000*1.5*0.50)