

Understanding the ACCEPTABLE BIOLOGICAL CATCH (ABC) Control Rule

This document summarizes the process that will be used by the Caribbean Fishery Management Council's (Council) Scientific and Statistical Committee (SSC) to set the ABC for each Council-managed stock or stock complex (group of similar stocks) on each island group (Puerto Rico, St. Croix, St. Thomas/St. John).

There are four "tiers" in the ABC Control Rule, each tier designed to establish an ABC based on the amount of information available for a stock or stock complex. In general, the ABC represents the biological capacity of the stock/complex to sustain fishing, accounting for the uncertainty that surrounds that determination of biological capacity. Scientific uncertainty accounts for such things as limited data or a lack of information on the biology of a species.

Tier 1 requires the most information, Tier 4 the least. We will not consider Tiers 1-3 in this tutorial because they are dependent on outcomes from a quantitative assessment to drive the process of establishing reference points for the overfishing limit (OFL) and ABC. Thus, the *first decision* to be made by the SSC concerns whether (or not) outcomes from an assessment are available. If available data are not adequate to conduct an assessment, Tier 4 is the only Control Rule option that can be used to derive an ABC. Typically for Tier 4, only landings data are available.

The Tier 4 process follows one of two paths (Tier 4a or 4b), depending on the relative health of the stock/complex. If the stock/complex is unlikely to be subject to overfishing and not likely to be overfished, the Tier 4a approach is used. If the stock is likely subject to overfishing and/or overfished, the Tier 4b approach is used. Thus, the *second decision* to be made concerns whether the stock/complex is likely subject to overfishing and/or overfished. How the SSC makes that decision remains to be determined, and is expected to be a key point of discussion at the April 3-7, 2017, SSC meeting.

Tier 4a

This approach can be used when there is no accepted assessment, but the stock/complex is unlikely to be subject to overfishing and not likely to be overfished. (Note that, if SSC consensus cannot be reached on the use of Tier 4a, Tier 4b should be used).

The first step in the Tier 4a process is to set the Overfishing Level (OFL):

OFL = scalar * 75th percentile of reference period landings.

The *third decision*, which only applies to Tier 4a, then must be to choose the landings reference period. Because a true value of Maximum Sustainable Yield (MSY) is not known, this reference period of landings should reflect a sequence of years during which landings were relatively stable. The landings period may be recent or historic. The choice of landings period will strongly influence reference point outcomes, including the important Annual Catch Limit (ACL). Although the choice of landings period will be made by the SSC, constituent input will be valuable when making the year sequence decisions.

The 75th Percentile is a statistical measure and is set, so no decision is made here. The specifics of 75th percentile determination are expected to be discussed at the April SSC meeting.

The *fourth decision* regards setting a value for the scalar. The scalar reflects the health and resilience of the stock or stock complex, the value depending on perceived degree of exploitation, life history and ecological function. The scalar must be less than or equal to 2. Again, this will be an SSC determination.

Generally, for a rapidly reproducing species the scalar might be closer to 2, whereas for a longer lived and slower reproducing species the scalar may be lower.

The 75th Percentile of the average landings for the reference period, multiplied by the scalar, then results in the OFL. In practice, if the OFL is exceeded the resource is undergoing overfishing, so this is a very important number. Overfishing is NOT GOOD. NMFS has been mandated by Congress to end overfishing, and the Council must respond to instances of continuing overfishing by revising their management of the stock/complex.

To minimize the likelihood of overfishing a stock/complex, and depending on the certainty with which scientific knowledge can be applied, the ABC for each stock/complex is then determined. The ABC can be equal to the OFL but typically is set at a lower level to provide a buffer between allowable harvest level and the OFL. This lessens the chance that the OFL will be exceeded. The level of reduction from the OFL (= the buffer) is separately chosen for each stock/complex and should reflect scientific uncertainty for each stock/complex. To determine the ABC, the OFL is multiplied by the buffer. In the present rule, that buffer must be 0.9 or less, although legally it can be 1.0 or less. The *fifth decision* is the choice of buffer.

ABC = buffer * OFL, where buffer must be ≤ 0.9 (e.g., 0.9, 0.8, 0.75, 0.7...).

Tier 4B

This tier is used when no accepted assessment is available, but the stock is likely subject to overfishing and/or overfished, or the SSC is unclear as to the status.

OFL = scalar * mean of the most recent three years of available landings.
Scalar < 1.

Unlike Tier 4a, in Tier 4b the year sequence is set so no decision is required. Also, the 75th percentile is not a consideration. So the *third decision* in this path concerns the choice of scalar. As with Tier 4a, the value of the scalar depends on perceived degree of exploitation, life history and ecological function. However, because the stock/complex is likely subject to overfishing and/or overfished, or the situation is unclear, a more conservative approach is applied and the scalar cannot exceed 1.

As with Tier 4a, in Tier 4b the ABC is determined by multiplying the OFL by a buffer. The *fourth decision* concerns that buffer, which must be 0.9 or less based on the present rule although legally that buffer can be 1.0 or less.

ABC = buffer * OFL, where buffer must be ≤ 0.9 (e.g., 0.9, 0.8, 0.75, 0.7...).

FINALLY, the Council establishes an ACL, the catch that can be obtained in the fishing year (generally January 1 – December 31). The ACL is established by multiplying the ABC by a buffer that must be 1.0 or less. This buffer reduction accounts for management uncertainty, for example due to a delay between identifying a potential management problem and responding to that problem, and is chosen by the Council. The SSC will not discuss this buffer at their April 2017 meeting.

If the ACL is exceeded, Accountability Measures (AMs) must be applied. An AM reduces the fishing season by the number of days necessary to ensure the ACL is not again exceeded. It is not a penalty, but instead sets the length of the fishing season to match the rate of harvest. Using the predicted rate of harvest, the Council essentially sets the length of the fishing season so the ACL will be achieved but not exceeded.