SAFMC Snapper Grouper Committee

September, 2008

ISSUE

Establish an ABC Control Rule

BACKGROUND

The Reauthorized Magnuson-Stevens Act (MSRA) requires specification of additional management criteria in federal fisheries management plans. These criteria include an Overfishing Limit (OFL), an Annual Catch Limit (ACL), an Annual Catch Target (ACT), and appropriate Accountability Measures (AM). The Act also states that Council Scientific and Statistical Committees (SSC) shall specify an Acceptable Biological Catch (ABC) that is reduced from the OFL to address assessment uncertainty, thereby assigning a specific meaning to ABC, a criteria which in the past has been interpreted in various ways.

Proposed guidelines for National Standard 1 (NS1) of the MSRA suggest that the Council should establish a process for developing ABC control rules and to establish ABC control rules based on scientific advice from the SSC. ABC control rules should specify a level of separation between OFL and ABC that is based on scientific uncertainty in the estimate of OFL and the level of scientific knowledge about the stock. The SSC is charged, in the proposed rule, with recommending an ABC to the Council based on the control rule while also having a role in advising the Council on establishing the initial control rule.

The SAFMC SSC was tasked with providing OFL and ABC recommendations for Snapper Grouper Amendment 17 at their meeting in June 2008. The proposed rule addressing NS1 became available shortly before the SSC meeting, so the SSC was able to consider the proposal while developing their advice for Amendment 17. As a result, deliberations at the SSC meeting centered around methods for deriving the appropriate level of separation between OFL and ABC and on the relevant assessment parameters and outputs that should be considered when using assessment uncertainty to quantifiably define a level of separation between two required management values. SSC discussions and recommendations regarding ABC specifications and ABC control rules, including how assessment uncertainty should be incorporated, can provide a first step toward the Council developing an ABC control rule with SSC input.

It is worth noting that those ABC recommendations, provided in June 2008 by the SSC for Amendment 17, carry the important caveat that such recommendations are made without final guidance or rules regarding NS 1. The SSC clearly states that the method used to account for assessment uncertainty in recommending ABCs for Amendment 17 stocks is a preliminary approach that is not intended to establish any sort of precedent for future determinations of ABC.

Two portions of the SSC discussion provide some direction that helps develop options. First, the SSC agreed that, whenever feasible, ABC should be specified based on the probability that a given harvest level will result in overfishing (with overfishing defined by MFMT and landings exceeding OFL). Such probabilities can be calculated from typical assessment outputs

using an approach recently developed by Shertzer et al. (2008)[1] using South Atlantic Gag as an example. Although the final document was not available for detailed review by the SSC in June 2008, preliminary results reported to the SSC in December 2007 and reiterated in June 2008 indicate that evaluating the Council's typical F_{OY} definition of 75% F_{MSY} with regard to MFMT=F_{MSY} resulted in around a 30% probability of overfishing occurring at some point in the future (based on expected F>MFMT) when assessment and implementation uncertainties are taken into account.

The second source of direction comes from the SSC's deliberations regarding the maximum probability of overfishing. The SSC did not reach agreement on whether a 30% probability of overfishing is adequately conservative, with some members feeling it was and others feeling 25% was more appropriate. The Committee did agree that every harvest level carries some probability of overfishing occurring in the future, and that the specific maximum probability of overfishing that is appropriate is a policy decision that should be made by the Council as it represents the level of risk that the Council deems acceptable.

In summary, SSC comments are consistent with the proposed rule addressing NS1. The SSC indicates that ABC should be established based on a quantitative evaluation of assessment uncertainty and the probability of overfishing, which is consistent with proposed rule language stating that any ABC control rule should be a function of scientific uncertainty. The SSC also states that the Council should establish the level of risk associated with ABC, which is consistent with the proposed rule language indicating that the ABC control rule should be developed by the Council with input from the SSC.

APPROACH AND TIMELINE

This paper is intended to provide a first step in developing an ABC control rule and addressing the request from the Snapper Grouper Committee to develop control rule alternatives for consideration at the September 2008 meeting. The intent is to obtain initial feedback on control rules and the level of overfishing risk that the Council considers appropriate for various likely stock information levels. Control rule options are therefore presented in general terms rather than as specific alternatives and sub-alternatives. It is intended that ABC control rules will be included in the Comprehensive ACL Amendment addressing MSRA requirements.

The Snapper Grouper Committee will review this ABC control rule document in September 2008 and provide guidance and comments that will be used to further develop alternatives for consideration by the SSC in December 2008.

SSC comments will be provided to the Snapper Grouper Committee in December 2008. Committee and SSC comments will be incorporated and a final options paper prepared for Committee consideration in March 2009.

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[1] Shertzer, K. W., M. H. Prager, and E. W. Williams. 2008. A probability-based approach to setting annual catch limits. Fish. Bull. 106:225-232.

ABC CONTROL RULE OPTIONS

Alternative 1. Determine ABC based on a proportion of the exploitation at Fmsy.

This is similar to the approach used by the Council to develop OY alternatives. It does not address the SSCs advice that ABC should reflect assessment uncertainty.

1A. ABC is the yield at 65% Fmsy

1B. ABC is the yield at 75% Fmsy

1C. ABC is the yield at 85% Fmsy

Alternative 2. Determine ABC based on a proportion of OFL.

This is similar to Alternative 1, except the separation between OFL and ABC is based explicitly on yield rather than exploitation rate.

2A. ABC is 90% of OFL

2B. ABC is 75% OFL

3B. Others %'s?

Alternative 3. Determine ABC based on assessment uncertainty.

Because assessments vary in their complexity and available outputs, this alternative requires levels or tiers that recognize assessment differences. Levels are proposed based on assessment availability and the nature of the assessment. Data levels and associated ABC alternatives proposed here are for discussion purposes only. Considerable refinement and modification is expected following Council and SSC review.

The term 'probabilistic analysis of yield' refers to a quantitative examination of the probability that overfishing will occur at some point in the future given a particular limit (MFMT) and recommended catch level (ABC). The example analysis cited by the SSC is Shertzer et al. (2008), although other viable approaches may be available or may become available over time.

The term 'recent approved assessment' refers to a quantitative assessment that has undergone independent peer review, has been accepted by the SSC, and not more than 10 years has passed since completion of a benchmark or update. This typically means assessments developed through SEDAR since 2003.

The term 'reliable landings' refers to landings statistics that have been reviewed by the SSC and deemed useful for providing insight regarding the stock and fishery and developing ABC recommendations.

Level 1.

  Information available: Recent approved assessment, MSY-based reference points, and probabilistic analyses.

  Example: Gag

  ABC Options:

  ABC = yield that provides (20%, 25%, 30%) probability of overfishing (F>Fmsy)

Level 2.

  Information available: Approved assessment, MSY-based reference points but no probabilistic analyses.

  Examples: Black Sea Bass, Red Porgy, Golden Tilefish, Snowy Grouper

  ABC Options:

  A) ABC = yield associated with F=(65%, 75%, 85%) Fmsy

  B) ABC = yield associated with F(30%, 40%, 50%)SPR

Level 3.

  Information available: Approved assessment, MSY reference points or SPR/YPR-based MSY proxies

  Example: Mutton Snapper, Vermilion Snapper

  ABC Options:

  A) ABC = yield associated with F(65%, 75%, 85%) MFMT

  B) ABC = yield associated with F(30%, 40%, 50%)SPR

  C) ABC = yield associated with FXX%SPR, where XX%SPR= the %SPR@MFMT + 10%. (e.g., if MFMT = F30%SPR, then ABC = yield at F40%SPR (F30% + 10%))

Level 4.

  Information available: previous assessment, SPR/YPR-based MSY proxies, reliable recent landings

  Example: Red Grouper, Black Grouper, Wreckfish, Scamp

  ABC Options:

  A) ABC = yield associated with F(65%, 75%, 85%) MFMT

  B) ABC = yield associated with F(30%, 40%, 50%)SPR

  C) ABC = yield associated with FXX%SPR, where XX%SPR= the %SPR@MFMT + 10%. (e.g., if MFMT = F30%SPR, then ABC = yield at F40%SPR (F30% + 10%))

Level 5.

Information available: dated assessment, SPR/YPR-based MSY proxies

Example: Warsaw grouper, speckled hind

ABC Options:

A) ABC = average landings over a selected time period

B) ABC = XX% of average landings over a selected time period

C) ABC = 0

Level 6.

Information available: reliable landings, life history characteristics

Example: Gray Triggerfish, White Grunt

ABC Options:

A) ABC = average landings over a selected time period

B) ABC = XX% of average landings over a selected time period

C) ABC = 0

Level 7.

Information available: None. (Species rarely occurs in landings records)

Examples: Yellowmouth Grouper, Grass Porgy, Puddingwife

ABC Options:

A) ABC = average landings over a selected time period

B) ABC = XX% of average landings over a selected time period

C) ABC = 0