Comprehensive ABC Control Rule Amendment

SSC Discussion Document

April 2021

Background

The South Atlantic Fishery Management Council (Council) Scientific and Statistical Committee (SSC) developed an acceptable biological catch (ABC) control rule (CR) in 2008, using uncertainty and risk traits to determine the acceptable risk of overfishing. The acceptable risk of overfishing is specified as the P-Star (P*) value that is applied through assessment projections to develop the yield values that provide the ABC. During consideration by the Council and development of the Comprehensive Annual Catch Limit (ACL) Amendment, the SSC added additional levels to the ABC CR to better address unassessed and data limited stocks.

The ABC CR was implemented by the Council through the Comprehensive ACL Amendment that became effective in April 2012. The Comprehensive ACL Amendment amended fishery management plans (FMP) for Snapper Grouper, Dolphin Wahoo, Golden Crab, and Sargassum. A revision to the ABC CR for species managed under the Snapper Grouper FMP occurred in July 2015 when the Only Reliable Catch Stocks (ORCS) approach was added to the CR for snapper grouper stocks, through Amendment 29.

In applying the ABC CRs, as specified in the Comprehensive ACL Amendment and Snapper Grouper Amendment 29, to different stocks and assessments from 2012-2016, the SSC began to express concerns that the rules lacked adequate resolution to distinguish differences in uncertainty levels across assessments, did not address continued developments in data poor assessment methods, and mixed uncertainty evaluation (an SSC role under the Magnuson-Stevens Fishery Conservation and Management Act (MSA)) and risk tolerance determination (a Council role under the MSA). Additionally, the existing CR does not provide a means to make use of 2016 revised guidelines for National Standard 1 (NS 1) that increased the flexibility available to regional fishery management councils for managing catch limits by allowing carry-over of unharvested portion of the ACL and phasing in of catch level changes. While the addition of the ORCS approach to the ABC CR for Snapper grouper species represented some

progress in addressing data poor assessment developments, it did not address the other ABC CR concerns or the revisions to the NS1 guidelines.

Actions in this amendment

- **Action 1.** Modify the Acceptable Biological Catch Control Rule.
- **Action 2.** Allow phase-in of acceptable biological catch changes.
- **Action 3.** Allow carry-over of unharvested portion of the annual catch limit.

Proposed timing

Process Steps	**Dates**
Scoping webinar hearings	January 2019
Council reviews scoping comments, discuss wording of actions and alternatives	March 2019
Council reviews wording of actions and alternatives	March 2021
Council reviews wording of actions and alternatives and SSC comments	September 2021
Council reviews AP comments and reviews and revises action/alternatives	December 2021
Approval for public hearings	December 2021
Public hearings	Winter 2021-22
Review public hearing comments and approve all actions/alternatives	March 2022
Final action to approve for secretarial review	June 2022

Purpose and need statement

Purpose for Actions

The purpose of this amendment is to revise the acceptable biological catch control rule; clarify incorporation of scientific uncertainty; modify the approach used to determine the acceptable risk of overfishing; and address flexibility in specifying catch levels.

Need for Actions

The need for this amendment is to ensure catch level recommendations are based on the best scientific information available, prevent overfishing while achieving optimum yield, and include flexibility in setting catch limits as allowed by the Magnuson-Stevens Fishery Conservation and Management Act and particularly in accordance with recent guidance on carry-over and phase-in provisions.

Management Plans modified by this Comprehensive Amendment

- Snapper Grouper Amendment 25
- Dolphin Wahoo Amendment 2
- Golden Crab Amendment 5

Discussion:

- The Council removed the Coral and Sargassum FMPs from consideration in this amendment due to the lack of recent harvest in these fisheries.

Proposed Actions and Alternatives

Action 1 Modify the Acceptable Biological Catch Control Rule

NOTE: The following alternatives are formatted to promote discussion and feedback at the April 2021 SSC Meeting. This formatting will be updated by the Interdisciplinary Plan Team (IPT) following the SSC meeting according to Council and NOAA Fisheries guidelines.

Each alternative includes a general description of the proposed control rule (with reference to a descriptive table[s]), associated risk tolerance policy, and application of the control rule to overfished stocks. Options may be added to alternatives and are not exclusionary.

Alternative 1 (No Action). Acceptable biological catch (ABC) for included species will continue to be specified as per the control rule specified by the Comprehensive Annual Catch Limit Amendment for the Dolphin Wahoo and Golden Crab Fishery Management Plans (FMP) (**Table 1**) and Amendment 29 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (**Table 2**).

- **Risk Tolerance:** The accepted risk of overfishing is determined by the ABC control rule criteria evaluated by the Scientific and Statistical Committee (SSC).
- **Overfished Stocks:** Standard application of the ABC Control Rule to overfished stocks undergoing rebuilding is not specified.

Alternative 2. Specify an ABC control rule for the FMPs for Dolphin Wahoo, Golden Crab, and Snapper Grouper, that categorizes stocks based on the available information and scientific uncertainty evaluation and incorporates the Council's risk tolerance (described below) through an accepted probability of overfishing (P*) value. This control rule is described in **Table 3**.

- **Risk Tolerance:** The Council will specify the risk tolerance based on the stock biomass level and a stock risk rating provided by the SSC. Default P* levels according to stock biomass levels and stock risk ratings are defined in **Table 4**.

Option 2a. Set the boundary between the high biomass and moderate biomass levels at 110% B_{MSY}, and set the boundary between moderate biomass and low biomass levels at the midpoint between 110% B_{MSY} and the minimum stock size threshold.

Option 2b. Allow the Council to deviate from the default risk tolerance (accepted probability of overfishing) by up to 10% for an individual stock, based on its expert judgment, new information, or recommendations by the SSC or other expert advisors. Risk tolerance may not exceed 50%.

Option 2c. Assign unassessed (Category 4) stocks to the moderate biomass level unless there is a recommendation from the SSC that justifies a different level.

- **Overfished Stocks:** For overfished stocks, the Council will specify a stock rebuilding plan, considering recommendations from the SSC and FMP's advisory panel (AP), that will determine the ABC while the rebuilding plan is in effect. Per requirements of the Magnuson-Stevens Act, the probability of success for rebuilding plans must be at least 50%.

Option 2d. When requested by the Council, the SSC will specify the ABC for up to 5 years as both a constant value across years and as individual annual values for the same period of years.

Alternative 3. Specify an acceptable biological catch control rule for the FMPs for Dolphin Wahoo, Golden Crab, and Snapper Grouper that is consistent with the control rule specified in Amendment 29 to the Snapper Grouper FMP, modified such that the SSC will evaluate scientific uncertainty and determine the uncertainty adjustment values for Tiers 1 and 2 of Level 1, and risk tolerance will be determined by the Council. This control rule is described in **Table 5**.

- **Risk Tolerance:** Tiers 3 and 4 of Level 1 will be deleted, and the Council will specify a risk tolerance level between 0% and 20%, considering advice from the SSC and FMP's AP. This risk tolerance level will be added to the uncertainty adjustment of the Scientific and Statistical Committee to provide an accepted probability of overfishing (P*).

- **Overfished Stocks:** For overfished stocks, the Council will specify a stock rebuilding plan, considering recommendations from the SSC and FMP's AP, that will determine the ABC while the rebuilding plan is in effect. Per requirements of the Magnuson-Stevens Act, the probability of success for rebuilding plans must be at least 50%.

Option 3a. When requested by the Council, the SSC will specify the ABC for up to 5 years as both a constant value across years and as individual annual values for the same period of years.

SSC Deviation from the ABC Control Rule (applies to all Action 1 Alternatives)

As noted in the National Standard 1 of the MSA, the SSC may provide an ABC that deviates from strict application of the approved ABC Control Rule if necessary to address scientific uncertainty, recruitment variability, declining population trends, or available information. If the SSC deviates from the ABC Control rule, it must provide a written explanation describing why the deviation was necessary, how the alternative ABC recommendation is derived, and how the alternative ABC prevents overfishing, addresses scientific uncertainty and the Council's specified risk tolerance level for the stock.

DISCUSSION:

Action 1-Alternative 1

Table 1. ABC control rule specified by the Comprehensive ACL Amendment for the Snapper Grouper and Dolphin Wahoo FMPs. Parenthetical values in Level 1 indicate (1) the maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension.

Level 1 – Assessed Stocks	
Tier	**Tier Classification and Methodology to Compute ABC**
1. 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%)
2. 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 F_{MSY} and MSY are lacking. (7.5%) 5. None. Only single point estimates; no sensitivities or uncertainty evaluations. (10%)
3. 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%)
4. Productivity and Susceptibility 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%)
Level 2 – Unassessed Stocks. Reliable landings and life history information available	
OFL derived from "Depletion-Based Stock Reduction Analysis" (DBSRA). ABC derived from applying the assessed stocks rule to determine the adjustment factor if possible, or from expert judgment if not possible.	
Level 3 – Unassessed Stocks. Inadequate data to support DBSRA	
ABC derived directly from "Depletion-Corrected Average Catch" (DCAC). Done when only a limited number of years of catch data for a fishery are available. Requires a higher level of "informed expert judgment" than Level 2.	
Level 4 – Unassessed Stocks.	
OFL and ABC derived on a case-by-case basis. Stocks with very low landings that show very high variability in catch estimates (mostly caused by the high degree of uncertainty in recreational landings estimates), or stocks that have species identification issues that may cause unreliable landings estimates. Use "decision tree": 1. Will catch affect stock? NO: Ecosystem Species (Council did this already, ACL Amend) YES: Go to 2 2. Will increase (beyond current range of variability) in catch lead to decline or stock concerns? NO: ABC = 3rd highest point in the 1999-2008 time series YES: Go to 3 3. Is stock part of directed fishery or is it primarily bycatch for other species? Directed: ABC = Median 1999-2008 Bycatch/Incidental: If yes, go to 4. 4. Bycatch. Must judge the circumstance: If bycatch in other fishery: what are trends in that fishery? What are the regulations? What is the effort outlook? If the directed fishery is increasing and bycatch of stock of concern is also increasing, the Council may need to find a means to reduce interactions or mortality. If that is not feasible, will need to impact the directed fishery. The SSC's intention is to evaluate the situation and provide guidance to the Council on possible catch levels, risk, and actions to consider for bycatch and directed components.	

Table 2. Acceptable biological catch control rule specified for Snapper Grouper by Amendment 29 to the Snapper Grouper FMP. Parenthetical values in Level 1 indicate (1) the maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension.

Level 1 – Assessed Stocks	
Tier	**Tier Classification and Methodology to Compute ABC**
1. 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%)
2. 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 F_{MSY} and MSY are lacking. (7.5%) 5. None. Only single point estimates; no sensitivities or uncertainty evaluations. (10%)
3. 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%)
4. Productivity and Susceptibility 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%)
Level 2 – Unassessed Stocks. Reliable landings and life history information available	
OFL derived from "Depletion-Based Stock Reduction Analysis" (DBSRA). ABC derived from applying the assessed stocks rule to determine the adjustment factor if possible, or from expert judgment if not possible.	
Level 3 – Unassessed Stocks. Inadequate data to support DBSRA	

ABC derived directly from "Depletion-Corrected Average Catch" (DCAC). Done when only a limited number of years of catch data for a fishery are available. Requires a higher level of "informed expert judgment" than Level 2.

Level 4 – Unassessed Stocks. Only Reliable Catch Stocks.

OFL and ABC derived on a case-by-case basis. Apply ORCS approach using a catch statistic, a scalar derived from the risk of overexploitation, and the Council's risk tolerance level.

Level 5 – Unassessed Stocks.

OFL and ABC derived on a case-by-case basis. Stocks with very low landings that show very high variability in catch estimates (mostly caused by the high degree of uncertainty in recreational landings estimates), or stocks that have species identification issues that may cause unreliable landings estimates. Use "decision tree":

5. Will catch affect stock?
   NO: Ecosystem Species (Council did this already, ACL Amend)
   YES: Go to 2

6. Will increase (beyond current range of variability) in catch lead to decline or stock concerns?
   NO: ABC = 3rd highest point in the 1999-2008 time series
   YES: Go to 3

7. Is stock part of directed fishery or is it primarily bycatch for other species?
   Directed: ABC = Median 1999-2008
   Bycatch/Incidental: If yes, go to 4.

8. Bycatch. Must judge the circumstance:
   If bycatch in other fishery: what are trends in that fishery? What are the regulations? What is the effort outlook?

   If the directed fishery is increasing and bycatch of stock of concern is also increasing, the Council may need to find a means to reduce interactions or mortality. If that is not feasible, will need to impact the directed fishery. The SSC's intention is to evaluate the situation and provide guidance to the Council on possible catch levels, risk, and actions to consider for bycatch and directed components.

Action 1-Alternative 2

Under **Action 1-Alternative 2**, the acceptable biological catch will be derived by applying the accepted probability of overfishing to a stock projection analysis for assessed stocks or an overfishing limit estimated using alternative methods for unassessed stocks, when possible. If an overfishing limit cannot be estimated, the Scientific and Statistical Committee will derive the acceptable biological catch directly.

In October 2020, the SSC formed a Working Group to revise and update the ABC Control Rule proposed in **Action 1-Alternative 2** (**Table 3**) for Category 4 (unassessed) stocks and recommend methods for determining ABC for these stocks at the April 2021 SSC Meeting.

Table 3. ABC Control rule proposed in **Action 1-Alternative 2**.

Category	Criteria	ABC Determination
Category 1.	Stock is assessed; scientific uncertainty is adequately incorporated	The P* is applied to the assessment information to derive ABC.
Category 2.	Stock is assessed; scientific uncertainty is not adequately evaluated or some assessment outputs may be lacking.	The SSC will adjust the measures of uncertainty, P* will then be applied to the assessment information.
Category 3.	The stock is assessed; scientific uncertainty is not adequately evaluated and cannot be addressed by adjusting the available uncertainty measures.	The SSC will develop uncertainty measures as necessary to apply the P* to the available assessment information. Alternatively, the SSC may apply a direct buffer to the overfishing limit (or an overfishing limit proxy) to derive the ABC.
Category 4	No acceptable stock assessment is available	The OFL and ABC will be based on the expert judgment of the SSC. The SSC will consider available information and the Council's risk tolerance when applying its expert judgment. Techniques that may be considered by the SSC in developing its judgment include, but are not limited to: Data limited assessment models: may provide OFL or ABC or proxies thereof, and varying types of uncertainty distributions. Only Reliable Catch Stocks (ORCS): applied using a catch statistic, a scalar derived from the risk of overexploitation, and the Council's risk tolerance level Council SSC Decision Tree: a structured approach to evaluating limited information. 1.Will catch affect stock? NO: Ecosystem Species (Council did this already, ACL Amend) YES: Go to 2 2.Will increase (beyond current range of variability) in catch lead to decline or stock concerns? NO: ABC = 3rd highest point in the 1999-2008 time series YES: Go to 3 3.Is stock part of directed fishery or is it primarily bycatch for other species? Directed: ABC = Median 1999-2008 Bycatch/Incidental: If yes, go to 4. 4.Bycatch. Must judge the circumstance: If bycatch in other fishery: what are trends in that fishery? What are the regulations? What is the effort outlook?

For **Action 1-Alternative 2**, the Scientific and Statistical Committee will evaluate and recommend stock risk ratings to the Council based on an analysis of attributes, and these recommendations will be revisited when new information becomes available (for example, a new stock assessment). The Council will then specify the risk rating as low, medium, or high risk of overfishing. A higher risk of overfishing would indicate that risk tolerance (the accepted probability of overfishing) should be lower. These stock risk ratings, along with relative biomass levels, will be used to determine the Council's default risk tolerance for each stock.

Table 4. Summary table of default risk tolerance levels based on stock risk ratings and biomass levels, proposed in **Action 1-Alternative 2**.

Stock Risk Rating	Council's Default Risk Tolerance: accepted risk of overfishing (P* values)		
	High Biomass Biomass exceeds B_{MSY} (or 110% B_{MSY} per Option 1)	**Moderate Biomass** Biomass is ABOVE the midpoint between B_{MSY} and MSST	**Low Biomass** Biomass is below the midpoint between B_{MSY} and MSST
low	45%	45%	40%
medium	45%	40%	30%
high	40%	30%	20%

***The SSC intends** to review preliminary stock risk ratings at the Fall 2021 meeting.

Action 1-Alternative 3

For **Action 1-Alternative 3**, the acceptable biological catch will be derived by applying the accepted probability of overfishing to a stock projection analysis for assessed stocks or an overfishing limit estimated using alternative methods for unassessed stocks, when possible. If an overfishing limit cannot be estimated, the Scientific and Statistical Committee will derive the acceptable biological catch directly.

Table 5. ABC Control Rule proposed through **Action 1-Alternative 3**. Parenthetical values in Level 1 indicate (1) the maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension.

Level 1 – Assessed Stocks	
Tier	**Tier Classification and Methodology to Compute ABC**
1. 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%)

2. 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 F_{MSY} and MSY are lacking. (7.5%) 5. None. Only single point estimates; no sensitivities or uncertainty evaluations. (10%)
3. Council's Risk Tolerance (20%)	P* adjustment of up to 20%, specified by the Council.
Level 2 – Unassessed Stocks. Reliable landings and life history information available	
OFL derived from "Depletion-Based Stock Reduction Analysis" (DBSRA). ABC derived from applying the assessed stocks rule to determine the adjustment factor if possible, or from expert judgment if not possible.	
Level 3 – Unassessed Stocks. Inadequate data to support DBSRA	
ABC derived directly from "Depletion-Corrected Average Catch" (DCAC). Done when only a limited number of years of catch data for a fishery are available. Requires a higher level of "informed expert judgment" than Level 2.	
Level 4 – Unassessed Stocks. Only Reliable Catch Stocks.	
OFL and ABC derived on a case-by-case basis. Apply ORCS approach using a catch statistic, a scalar derived from the risk of overexploitation, and the Council's risk tolerance level.	
Level 5 – Unassessed Stocks.	
OFL and ABC derived on a case-by-case basis. Stocks with very low landings that show very high variability in catch estimates (mostly caused by the high degree of uncertainty in recreational landings estimates), or stocks that have species identification issues that may cause unreliable landings estimates. Use "decision tree": 1. Will catch affect stock? NO: Ecosystem Species (Council did this already, ACL Amend) YES: Go to 2 2. Will increase (beyond current range of variability) in catch lead to decline or stock concerns? NO: ABC = 3rd highest point in the 1999-2008 time series YES: Go to 3 3. Is stock part of directed fishery or is it primarily bycatch for other species? Directed: ABC = Median 1999-2008 Bycatch/Incidental: If yes, go to 4. 4. Bycatch. Must judge the circumstance: If bycatch in other fishery: what are trends in that fishery? What are the regulations? What is the effort outlook?	

If the directed fishery is increasing and bycatch of stock of concern is also increasing, the Council may need to find a means to reduce interactions or mortality. If that is not feasible, will need to impact the directed fishery. The SSC's intention is to evaluate the situation and provide guidance to the Council on possible catch levels, risk, and actions to consider for bycatch and directed components.

SSC Recommendations:

- The SSC supported modifying the ABC CR as described in **Action 1-Alternative 2**.
- The SSC recommended not including ecosystem component stocks in the ABC CR provisions.
- The SSC did not support designing the ABC CR solely around data or assessment categories or levels, and recommended that the treatment of uncertainty was a more robust and useful categorization approach.
- The SSC supports allowing constant ABC recommendations for 3-5 years.
- The SSC recommends addressing circumstances when the Council can remand, or ask the SSC to reconsider, an ABC recommendation, and developing rules or guidelines to address ABC remands.
- The SSC supports varying risk tolerance by biomass levels and considering the PSA risk categories for assigning stock risk ratings.
- The SSC recommends including preliminary risk ratings in the draft amendment, and finalizing those ratings once the amendment is approved.
- The SSC recommends evaluating risk ratings as part of each stock assessment, and also when necessary to address new information that becomes available for a stock.
- The SSC recommends considering social and economic considerations when evaluating risk tolerance. Fishery Performance reports may be useful to identify factors.
- The SSC recommends exploring the option to scale scoring by standard deviations from the mean risk score.
- The SSC supports specifying rebuilding probabilities and considering stock risk categories.

SSC Discussion Questions:

- Should Category 4 in Action 1-Alternative 2 or Levels 2-5 in Action 1-Alternative 3 (or both) be adjusted to be consistent with the unassessed/data-limited process recommended by the SSC Work Group?
- Does the SSC want to add to, revise, or remove any of the previously provided recommendations for Action 1?

Action 2 Allow phase-in of acceptable biological catch changes

Sub-Action 2.1. Establish criteria specifying when phase-in is allowed.

Alternative 1 (No Action). No phase-in of acceptable biological catch changes is allowed.

Alternative 2. Allow phase-in when a new acceptable biological catch is less than X%. Allow phase-in of increases to acceptable biological catch, as specified by the Council.

Option 1. X=60%

Option 2. X=70%

Option 3. X=80%

Alternative 3. Allow phase-in of increases to acceptable biological catch at any stock biomass level, as specified by the Council. Allow phase-in of decreases to acceptable biological catch only:

Option 1. if stock biomass exceeds the minimum stock size threshold.

Option 2. if the stock biomass is greater than the midpoint between the biomass that provides maximum sustainable yield and the minimum stock size threshold.

Sub-Action 2.2. Specify the approach for phase-in of acceptable biological catch changes.

Alternative 1 (No Action). No phase-in of acceptable biological catch changes is allowed.

Alternative 2. Phase-in acceptable biological catch decreases over no more than 3 years, as specified in **Table 2.7.** Acceptable biological catch increases may be phased-in as specified by the Council with advice from the SSC and AP.

Alternative 3. Phase-in acceptable biological catch decreases over no more than 2 years, as specified in **Table 2.7.** Acceptable biological catch increases may be phased-in as specified by the Council with advice from the SSC and AP.

Alternative 4. Phase-in acceptable biological catch decreases over 1 year, as specified in **Table 2.7.** Acceptable biological catch increases may be phased-in as specified by the Council with advice from the SSC and AP.

Table 2.7. Annual specifications for phase-in of decreases to acceptable biological catches over 3 years (**Sub-Action 2.2-Alternative 2**), 2 years (**Sub-Action 2.2-Alternative 3**), or 1 year (**Sub-Action 2.2-Alternative 4**).

Specifications for Phase-Ins Over			
	3 Years	**2 Years**	**1 Year**
Year 1	Modified acceptable biological catch may not exceed the overfishing limit.	Modified acceptable biological catch may not exceed the overfishing limit.	Modified acceptable biological catch may not exceed the overfishing limit.
Year 2	Modified acceptable biological catch may not exceed one-half the difference between the overfishing limit and the new acceptable	Modified acceptable biological catch may not exceed one-half the difference between the overfishing limit and the new acceptable	Acceptable biological catch is based on revised projections that account for the phase-in during year 1.

	biological catch recommendation.	biological catch recommendation.	
Year 3	Modified acceptable biological catch may not exceed the original recommended year 3 acceptable biological catch (based on the projections and analyses that triggered the phase-in).	Acceptable biological catch is based on revised projections that account for the phase-in during years 1 and 2.	
Subsequent Years	Acceptable biological catch is based on revised projections that account for the phase-in during years 1-3.		

SSC Discussion:

- None needed at this time.

Action 3 Allow carry-over of unharvested portion of the annual catch limit

Sub-Action 3.1. Establish criteria specifying circumstances when unharvested portion of the ACL can be carried over from one year to increase the available harvest in the next year.

Alternative 1 (No Action). No carry-over will be allowed.

Alternative 2. Carry-over of unharvested portion of the annual catch limit will be allowed if the stock is neither overfished nor experiencing overfishing.

Alternative 3. Carry-over of unharvested portion of the annual catch limit will be allowed if the stock biomass exceeds the midpoint between the B_{MSY} and MSST biomass levels and the stock is not experiencing overfishing.

Alternative 4. Carry-over of unharvested portion of the annual catch limit will be allowed for a fishery sector if that fishery sector has experienced a regulatory closure due to catch exceeding that sector's annual catch limit at least once in the previous 3 years.

Alternative 5. Carry-over of unharvested portion of the annual catch limit will be allowed for a fishery sector if total landings of all fishery sectors over the previous 3 years are less than the landed catch component of ABC for all fishery sectors over those same years.

Alternative 6. Carry-over will not be allowed when ABC changes are phased-in.

Sub-Action 3.2. Specify limits on the amount of unharvested portion of the annual catch limit that may be carried over from one year to increase the available harvest in the next year.

Alternative 1 (No Action). There will be no carry-over of unharvested portion of the annual catch limit.

Alternative 2. Allow carry-over of unharvested portion of the annual catch limit for an individual fishery sector using the buffer between the annual catch limit and the acceptable biological catch.

Alternative 3. Allow carry-over of unharvested portion of the annual catch limit for an individual fishery sector that results in an adjusted annual catch limit that exceeds the original acceptable biological catch for the year for which the unharvested portion of the annual catch limit is carried-over.

Option 1. If the overfishing limit is unknown, the revised acceptable biological catch may not exceed 105% of the original acceptable biological catch.

Option 2. If the overfishing limit is unknown, the revised acceptable biological catch may not exceed 110% of the original acceptable biological catch.

Option 3. If the overfishing limit is unknown, the revised acceptable biological catch may not exceed 120% of the original acceptable biological catch.

Option 4. If the overfishing limit is unknown, no carry-over is allowed.

Alternative 4. Allow carry-over of unharvested portion of the annual catch limit for an individual fishery sector of up to 25% of the sector annual catch limit.

Sub-Action 3.3. Specify an approach for implementing acceptable biological catch and annual catch limit modifications to support carrying over unharvested portion of the annual catch limit from one year into the next year.

Alternative 1 (No Action). No carry-over is allowed.

Alternative 2. Use the framework approaches as provided in each fishery management plan.

Alternative 3. Implement an expedited approach to address carry-over of unharvested portion of the annual catch limit.

DISCUSSION:

This action addresses flexibility allowed under the revised National Standard 1 guidelines. Carry-over that does not exceed the original ABC can be accommodated under existing rules, using the buffer between the ACL and ABC. However, for many Council stocks, ACL=ABC, so there is no buffer available. Per the National Standard 1 guidance, an ABC CR may include provisions to increase the ABC in the next year to address an ACL underage.

Relevant National Standard 1 Guidance:

> *Carry-over ABC control rules. An ABC control rule may include provisions for the carry-over of some of the unused portion of an ACL (i.e., an ACL underage) from one year to increase the ABC for the next year, based on the increased stock abundance resulting from the fishery harvesting less than the full ACL. The resulting ABC recommended by the SSC must prevent overfishing and must consider scientific uncertainty consistent with the Council's risk policy. Carry-over provisions could also allow an ACL to be adjusted upwards as long as the revised ACL does not exceed the specified ABC. When considering whether to use a carry-over provision, Councils should consider the likely reason for the ACL underage. ACL underages that result from management uncertainty (e.g., premature fishery closure) may be appropriate circumstances for considering a carry-over provision. ACL underages that occur as a result of poor or unknown stock status may not be appropriate to consider in a carry-over provision. In addition, the Councils should evaluate the appropriateness of carry-over provisions for stocks that are overfished and/or rebuilding, as the overriding goal for such stocks is to rebuild them in as short a time as possible.*

The intent of carry-over provisions is to enable the Council to ensure a species can make use of its full ACL. Ideally, in-season adjustments would be made to allow full use of an ACL and alleviate the need for carry-over. These carry-over provisions provide additional flexibility when in-season adjustments are not possible, perhaps due to regulatory or data timelines. When considering carry-over, the Council must develop rationale that addresses scientific uncertainty and its risk tolerance, and indicates that the carry-over would not result in overfishing. The Council should also consider the impacts of the carry-over on rebuilding plans when appropriate. The Council should consult with its scientific and fishery advisors in developing a rationale for carry-over.

Any revised ABC resulting from carry-over would remain in place for one year and may not exceed the OFL, and evaluations of carry-over for future years would be based on the original ABC, not the temporary revised ABC. If the carry-over results in an ACL that exceeds the original ABC for the year for which the unharvested portion of the ACL is carried-over, the ABC for that year would be revised upwards to accommodate the temporary increase in ACL. Evaluations of possible carry-over for future years would be based on the original ABC, not the temporary revised ABC.

Under the existing ABC CR, the Council could ask the SSC to consider recommending a temporary, higher ABC to accommodate carry-over. This approach is not particularly efficient, given the timing of Council and SSC meetings. The overall purpose of this action is to develop criteria to guide when carry-over can be allowed while preventing overfishing, and develop an efficient process that would accommodate minor, temporary increases in an ABC to support carry-over. Overfishing is prevented as long as the revised ABC stays below OFL, so no increased ABC due to carry-over can exceed the annual OFL. As stated in the National Standard guidance, the Council will consider the need for, and consequences of, carry-over, in its justification and request. The Council may consult its scientific and fishery advisors as needed to define and evaluate the justification for carry-over. It is the Council's intent that carry-over would be applied on a sector-by-sector basis, and that the amount that may be carried over may not exceed the amount of unused ACL in the prior year. Unharvested portions of the ACL will be evaluated using the same units of measurement (e.g., weight or numbers) used to specify catch limits for the sector.

The Final Rule addressing carry-over allowances indicates that Councils must state in its FMP when carry-over can and cannot be used. This is addressed through the criteria in **Sub-Action 3.1**. The FMP must also state how overfishing is prevented. **Sub-Action 3.1** provides guidance on circumstances when carry-over would be allowed. The alternatives address the National Standard guidance requiring Councils to consider the reason for carry-over and the appropriateness of carry-over for different stock status conditions. **Sub-Action 3.2** addresses the amount of unused catch that could be carried over. Alternatives provide limits on the amount of carry-over, thereby addressing the level of risk and uncertainty. **Sub-Action 3.3** addresses the process by which catch limits would be modified to accommodate carry-over. Appendix I contains a hypothetical example of how carry-overs may be applied.

Alternatives considered in **Sub-Action 3.1** provide guidance on when carry-over could be applied. Multiple alternatives under this Sub-Action could be selected and combined. Under **Sub-Action 3.1-Alternative 1**, no carry-over would be allowed. **Sub-Action 3.1-Alternatives 2** and **3** address stock status conditions, with **Sub-Action 3.1-Alternative 3** allowing carry-over when biomass is higher than the overfished standard (MSST) applied in **Sub-Action 3.1-Alternative 2**. **Sub-Action 3.1-Alternative 4** addresses carry-over following catch-based regulatory closures for an individual fishery sector. A sector must have experienced a catch-based regulatory closure during the prior 3 years to be considered eligible for carry-over. **Alternative 5** considers carry-over for a fishery sector, similar to **Sub-Action 3.1-Alternative 4**, but bases the criteria for allowing carry-over on the catch history over the entire fishery during the prior 3 years. This alternative would be evaluated by comparing the sum of the landings component of ABC over the prior 3 years to the sum of landings over those 3 years, for all fishery sectors combined. If different sector ACLs are specified in different catch units (e.g., one in pounds and another in numbers), landings will be evaluated based on the units used to specify ABC and apply sector allocations to determine ACL. Note that for most Council-managed fisheries, the landings component of the ABC will equal the ACL.

Sub-Action 3.2, Alternative 1 would not allow for carry-over. For **Sub-Action 3.2, Alternative 2**, the amount of catch that could be carried over is limited by, and may not exceed, the ABC. For **Sub-Action 3.2, Alternative 3**, the original ABC for the carry-over year would be

revised upwards to accommodate the temporary increase in ACL. The revised ABC would remain in place for one year and may not exceed the OFL, and evaluations of carry-over for future years would be based on the original ABC, not the temporary revised ABC.

The expedited approach of **Sub-Action 3.3-Alternative 3** would operate as follows. The Council would consider the need for and benefits of carry-over during a scheduled Council meeting. If the Council decides carry-over would be beneficial to a species and would not result in overfishing, it would notify the Regional Administrator of the recommendation for carry-over in a letter indicating that the criteria and guidance of this amendment are met. The letter would include the Council's analysis of the relevant biological, economic, and social information necessary to meet the criteria and guidance and support the Council's request. If the Regional Administrator concurs that the Council's recommendations are consistent with the objectives of the FMP, the MSA, and all other applicable law, the Regional Administrator would be authorized to implement the Council's request through publication of appropriate notification in the *Federal Register*, providing appropriate time for additional public comment as necessary.

SSC Recommendation:

- The SSC supported this action if applied to stocks that are neither overfished nor overfishing, and have catch close to the ACL.
- The SSC commented that species' biology is a factor, and the stock consequences of carry-over will differ between short-lived and long-lived stocks.
- The SSC recommended requesting updated stock projections to evaluate carry-over and to provide a basis for ABC recommendations in years after carry-over occurs.
- The SSC recommended considering the precision of catch estimates when allowing carry-over of a percentage of the ACL (**Sub-Action 3.2-Alternative 3**).
- The SSC recommended adding a terms of reference to future assessment reviews and ABC recommendations addressing whether carry-over should be allowed for a stock. The SSC could then consider the stock's condition and trend, past management and fishery trends, and recommended whether carry-over would result in an unacceptable risk of overfishing during the period covered by the ABC recommendation.
- The SSC recommended considering the B_{MSY}-MSST midpoint as a threshold for carry-over. Carry-over would not be allowed if the stock biomass is below the midpoint (or estimated to fall below the midpoint during the period covered by the ABC recommendation).

SSC Discussion Questions:

- Does the SSC want to add to, revise, or remove any of the previously provided recommendations for Action 3?
- Are there recommendations on how precision of catch estimates should be considered with respect to carry-overs?
    - Is there a threshold of imprecision beyond which carry-over should not be allowed (e.g. no carry-over for stocks with a PSE greater than X)?

- How should uncertainty of catch estimates be considered in determining the allowable carry-over amount?
- Other considerations of catch uncertainty for carry-overs?

Appendix

Appendix I. Hypothetical Example of ABC Carry-over

Population dynamics were simulated for a hypothetical fish species. Benchmarks for the stock were determined to be F_{MSY} (OFL) = 0.33, MSY = 1068 (wgt), and SSB_{MSY} = 2668 (mature wgt). Because stock status is important in determining the constraints for carryover, we simulated the initial stock conditions in two ways.

In the first starting condition the stock in year 0 is in an overfishing and overfished state (F=0.8 and SSB = 645), with landings at 924 (wgt). In this example the stock is rebuilding to SSB_{MSY} by year 4. Using a 100 (wgt) carryover from year 1 to year 2, we compare the F and ABC values to the case where no carryover occurred. In both cases the stock reaches the same target biomass, SSB_{MSY} in year 4. Note that this scenario is similar to the phase-in example.

Table AI.1. Fishing mortality, ABC, and SSB for a hypothetical stock over 4 years with and without carryover allowed to occur in year 2.

Original ABC advice					**100 (wgt) carryover in year 2**			
Year	**Full F**	**ABC (wgt)**	**SSB**		**Year**	**Full F**	**ABC (wgt)**	**SSB**
1	0.267	558	1092		**1**	0.203	458	1164
2	0.267	707	1727		**2**	0.312	807	1748
3	0.267	822	2274		**3**	0.264	813	2272
4	0.267	905	2668		**4**	0.264	896	2668
	SUM	2993				**SUM**	2975	

In the second starting condition the stock in year 0 is at 75% SSB_{MSY} (F=0.41 and SSB = 2001), with landings at 1057 (wgt). In this example the stock is constrained by the OFL (expressed as the yield provided at MFMT (F=0.33)) in most years. Using a 100 (wgt) carryover from year 1 to year 2, we compare the F and ABC values to the case where no carryover occurred. Under this scenario the full 100 (wgt) carryover is not possible because of the OFL constraint. Instead only 33 (wgt) carryover is allowable for the ABC in year 2, fishing at the OFL level.

Table AI.2. Fishing mortality, ABC, and SSB for a hypothetical stock over 4 years with and without carryover allowed to occur in year 2.

Original ABC advice					**100 (wgt) carryover in year 2**			
Year	**Full F**	**ABC (wgt)**	**SSB**		**Year**	**Full F**	**ABC (wgt)**	**SSB**
1	0.33	940	2168		**1**	0.275	840	2290
2	0.33	985	2334		**2**	0.33	1018	2456
3	0.33	1016	2459		**3**	0.33	1039	2549
4	0.33	1037	2540		**4**	0.33	1052	2600
	SUM	3978				**SUM**	3949	