

Comprehensive ABC Control Rule Amendment

Decision Document

March 2021 Council Meeting

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 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 (Amendment 29) when the Only Reliable Catch Stocks (ORCS) approach was added to the CR for snapper grouper stocks.

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), which 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 more recent revisions to the NS1 guidelines.

Actions in this amendment

- **Action 1.** Modify the acceptable biological catch control rule.
- **Action 2.** Specify an approach for determining the acceptable risk of overfishing.
- **Action 3.** Specify an approach for determining the probability of rebuilding success for overfished stocks.
- **Action 4.** Allow phase-in of acceptable biological catch changes.
- **Action 5.** Allow carry-over of unharvested portion of the ACL.

Proposed timing

Process Steps	Dates
Scoping webinar hearings	January 2019
Council reviews scoping comments, discuss wording of actions & alternatives	March 2019
Council reviews wording of Actions 3 and 4 and considers other edits proposed by the IPT	March 2021
Council reviews wording of Actions 1, 2, and 5, SSC & AP comments	June 2021
Review and revise 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

NOTE: The NMFS guidance on carry-overs and phase-ins was made available in July 2020, and the Council directed staff to resume development of the amendment in September 2020. The above timeline has been updated to reflect these changes.

Purpose and need statement

Proposed modifications

[What is an ABC Control Rule \(Appendix I\)?](#)

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
- Dolphin Wahoo
- Golden Crab
- Sargassum? (See comments below)
- Coral? (See comments below)

Discussion & IPT Comments/Recommendation:

- Coral Amendment 3 prohibited octocoral harvest north of Cape Canaveral, FL.
- Comprehensive Ecosystem-Based Amendment 2 (CE-BA 2) removed octocorals from the FMU off Florida, in the South Atlantic EEZ, and as such modified the FMU for octocorals under the South Atlantic Coral FMP to include octocorals in the EEZ off North Carolina, South Carolina, and Georgia only. CE-BA 2 included an ACL for octocorals in the EEZ off North Carolina, South Carolina, and Georgia of zero.
- *Sargassum* is currently managed with an ACL equal to the OY of 5,000 pounds wet weight.
 - Last removal occurred in 1997
 - SSC has previously recommended an OFL and ABC of 0 and designation as an “ecosystem component species”.
- Given the lack of allowable harvest of coral and the lack of harvest of *Sargassum* in over 20 years, **the IPT recommends that the Council re-consider whether the Coral and Sargassum FMPs should be included in this amendment.**

Council Action:

- Determine whether the Coral and *Sargassum* FMPs should be included in the amendment.

Proposed Actions and Alternatives

Proposed Modifications

NOTE: ACTIONS 1 AND 2 ARE PRESENTED AS CURRENTLY DEVELOPED FOR COUNCIL GUIDANCE ON HOW TO STRUCTURE ACTIONS ADDRESSING ABC CONTROL RULE MODIFICATION AND DETERMINING ACCEPTABLE RISK OF OVERFISHING. LANGUAGE FOR THESE ACTIONS WILL BE UPDATED FOR COUNCIL REVIEW AT THE JUNE 2021 MEETING.

Action 1 Modify the Acceptable Biological Catch Control Rules

Alternative 1 (No Action). Acceptable biological catch 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, Golden Crab, and Sargassum Fishery Management Plans ([Appendix II, Table AII.1](#)), and Amendment 29 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region ([Appendix II, Table AII.2](#)). There is no acceptable biological catch control rule for the Fishery Management Plan for Coral, Coral Reefs, and Live/Hardbottom Habitats of the South Atlantic Region.

Alternative 2. Specify an acceptable biological catch control rule **for the Fishery Management Plans for Dolphin Wahoo, Golden Crab, Sargassum, Snapper Grouper, and Coral, Coral Reefs, and Live/Hardbottom Habitats**, that establishes categories based on the type of information and the scientific uncertainty evaluation available for a stock ([Appendix II, Table AII.3](#)). The Scientific and Statistical Committee may deviate from the acceptable biological catch control rule when necessary due to data or assessment circumstances that cannot be adequately addressed by the approved acceptable biological catch control rule. In the case of overfished stocks, the acceptable biological catch will be based on the rebuilding plan chosen by the Council.

Options to consider for Alternative 2:

- **Option 1.** Define acceptable biological catch based on the yield available at 75% of the fishing mortality rate that provides maximum sustainable yield for any assessment category if an acceptable overfishing limit probability distribution cannot be derived.
- **Option 2.** When requested by the Council, the Scientific and Statistical Committee will specify the acceptable biological catch 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 the acceptable biological catch control rule **for the Fishery Management Plans for Dolphin Wahoo, Golden Crab, Sargassum, Snapper Grouper, and Coral, Coral Reefs, and Live/Hardbottom Habitats**, to be consistent with the control rule specified in Amendment 29 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region ([Appendix II, Table AII.2](#)), modified such that the Scientific and Statistical Committee will evaluate scientific uncertainty and determine the uncertainty

adjustment values for Tiers 1 and 2 of Level 1. *Tiers 3 and 4 of Level 1 will be deleted and the Council will specify a risk tolerance for overfishing that will provide a P* adjustment of 0 to 20% that will be added to the uncertainty adjustment of the SSC.* The acceptable biological catch will be based on the accepted probability of overfishing selected by the Council, as modified by the sum of the scientific uncertainty and risk tolerance adjustments applied by the Scientific and Statistical Committee and the South Atlantic Fishery Management Council and derived by applying the chosen overfishing probability to a stock projection analysis.

Action 2 Specify an approach for determining the acceptable risk of overfishing.

Alternative 1 (No Action). The acceptable risk of overfishing is determined by the acceptable biological catch control rule criteria that are evaluated by the Scientific and Statistical Committee.

Alternative 2. The South Atlantic Fishery Management Council will specify the acceptable risk of overfishing. *The existing acceptable biological catch control rule provisions addressing stock status and the productivity and susceptibility analysis (Tier 1, Dimensions 3 and 4), will be deleted, and the South Atlantic Fishery Management Council will specify a risk tolerance for overfishing that will provide a P^* adjustment of 0 to 20% that will be added to the uncertainty adjustment of the SSC, considering advice from the Scientific and Statistical Committee and the South Atlantic Fishery Management Council’s advisory panels.*

Alternative 3. The South Atlantic Fishery Management Council will specify the acceptable risk of overfishing based on three stock biomass levels and three stock risk ratings. The Scientific and Statistical Committee **will evaluate and recommend risk levels 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 for assessed stocks).**

Option 1. Allow the highest risk level when stock biomass exceeds 110% of the biomass at maximum sustained yield, and use 110% of the maximum sustained yield biomass level to evaluate the biomass midpoint for defining the boundary between the moderate and low risk levels.

Option 2. Allow the Council to deviate from the default risk levels by 10% for an individual stock, based on its expert judgment, new information, or recommendations by the Scientific and Statistical Committee or other expert advisors. Risk tolerance may not exceed 50%.

Option 3. Assign unassessed stocks to the moderate biomass level, unless there is a recommendation from the Scientific and Statistical Committee that justifies a different level.

Alternative 4. Specify risk tolerance for each stock directly, considering recommendations of the Scientific and Statistical Committee and the Council’s advisory panels. Risk tolerance may not exceed 50%.

IPT Comments/Recommendation:

- The current Alternatives considered in **Action 1** do not all correspond to the full range of Alternatives currently considered in **Action 2**. For example, the italicized language of **Action 1 – Alternative 3** is similar to the italicized language in **Action 2 – Alternative 2**. Also, **Action 1 – Alternative 2** does not use the Tiers referenced in **Action 2 –**

Alternative 2, instead establishing categories based on the type of information and the scientific uncertainty evaluation available for a stock.

- **Action 1 – Alternative 2** corresponds to **Action 2 – Alternative 3**.
- **Action 1 – Alternative 3** corresponds to **Action 2 – Alternative 2**.
- **The IPT recommends combining Actions 1 and 2 to consider corresponding alternatives addressing ABC Control Rule modifications and risk of overfishing. The IPT would re-draft combined language for review at the June 2021 Council meeting. Action 2 – Alternative 4 would no longer be considered.**

Council Action:

- Provide guidance on whether Actions 1 and 2 should be combined.

Action 3 Specify an approach for determining the minimum probability of success for rebuilding plans for overfished stocks

NOTE: ADDITIONAL IPT DISCUSSION AND RECOMMENDATION CONCERNING INCLUSION OF THIS ACTION IS BELOW. PROPOSED MODIFICATIONS WOULD ONLY BE CONSIDERED IF THIS ACTION IS KEPT IN THE AMENDMENT.

Alternative 1 (No Action). Do not specify an approach for determining the probability of rebuilding success for overfished stocks. **Rebuilding probability is at least 50%, per MSA requirements.**

Alternative 2. When developing a stock rebuilding plan, the South Atlantic Fishery Management Council will specify a **minimum** probability of rebuilding success, considering the recommendations of the appropriate fishery management plan advisory panel and the Scientific and Statistical Committee.

Alternative 3. When developing a stock rebuilding plan, the South Atlantic Fishery Management Council will specify a **minimum** probability of rebuilding success based on the stock risk rating **(same risk rating as used in Action 2-Alternative 3)**. The probability **of success for a rebuilding plan must be at least** 80% for high risk stocks, 70% for moderate risk stocks, and 60% for low risk stocks. The South Atlantic Fishery Management Council may deviate from these levels by 10% to address unforeseen or unique circumstances. Stocks will be assigned a risk rating of high, moderate, or low by the South Atlantic Fishery Management Council, considering the recommendations of the Scientific and Statistical Committee and the South Atlantic Fishery Management Council's advisory panels.

DISCUSSION:

This action addresses the need to develop a process for specifying rebuilding probability for overfished stocks. If the Council took no action (**Alternative 1**) the rebuilding probability would need to be at least 50%, per MSA requirements.

Alternative 2 provides the most flexibility, as it allows the Council to set the rebuilding probability directly. It does not provide any specific guidance or criteria and therefore could lead to difficulties in implementing consistent approaches to rebuilding that adequately address differences in stock biology and productivity.

Alternative 3 ties the rebuilding probability to stock risk levels. This provides consistency across the methods used to address overfishing (ABC specifications) and overfished conditions (rebuilding plans and rebuilding probabilities).

IPT Comments/Recommendation:

- A minimum rebuilding probability of 50% is already in place via the MSA requirements, and more conservative deviations can be made on a case-by-case basis.

The IPT recommends removing this action from this amendment.

SSC Recommendation:

The SSC supports specifying rebuilding probabilities and considering stock risk categories.

Council Action:

- Provide guidance on whether Action 3 should continue to be included in this amendment.
- If Action 3 is kept:
 - Discuss the action/alternatives and modify if needed.

Action 4 Allow phase-in of acceptable biological catch changes

Criteria and specification alternatives listed below would apply to phasing in of both increases and decreases to acceptable biological catch.

Sub-Action 4.1. 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% **or greater than Y% of the existing acceptable biological catch.**

Option 1. X=70%; Y=130%

Option 2. X=80%; Y=120%

Option 3. X=90%; Y=110%

Alternative 3. **Allow phase-in of increases to acceptable biological catch at any stock biomass level. 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 4.2. 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 X year(s), as specified in Table 4.1. Phase-in acceptable biological catch increases over no more than X year(s), as specified by the Council with advice from the SSC and AP.**

Option 1. X=3 year

Option 2. X=2 years

Option 3. X=1 years

Table 4.1. Annual specifications for phase-in of decreases to acceptable biological catches (Sub-Action 4.2-Alternative 2) over 3 years (Option 1), 2 years (Option 2), or 1 year (Option 3).

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.		

DISCUSSION:

This action addresses flexibility allowed under the revised National Standard 1 guidelines. Phase-in of the ABC is an option the Council can consider to address the social and economic impacts from management changes. Adopting this flexibility does not require the Council to phase-in all ABC changes, nor does adopting one approach prevent the Council for choosing a more restrictive schedule of ABC phase-in. When considering whether to phase-in an ABC change, the Council should compare the risk to the stock against the expected social and economic benefits of the alternative ABC. Management strategy evaluations may be used to quantify such trade-offs. The Council may consult with its scientific and fishery advisors to help develop a rationale and implementation plan for phase-in.

Relevant National Standard 1 Guidance:

Phase-in ABC control rules. Large changes in catch limits due to new scientific information about the status of the stock can have negative short-term effects on a fishing industry. To help stabilize catch levels as stock assessments are updated, a Council may choose to develop a control rule that phases in changes to ABC over a period of time, not to exceed 3 years, as long as overfishing is prevented each year (i.e., the phased-in catch level cannot exceed the OFL in any year). In addition, the Councils should evaluate the appropriateness of phase-in 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.

NMFS released additional guidance in 2020 addressing phase-ins (Holland et al. 2020; <https://spo.nmfs.noaa.gov/content/tech-memo/national-standard-1-technical-guidance-designing-evaluating-and-implementing-carry>). Alternatives were developed consistent with this guidance. The most recent NMFS guidance should also be referenced when considering stock-by-stock (or complex-by-complex) decisions allowed by selected alternatives. For example, the 2020

guidance recommends consideration of stock generation time in evaluating eligibility and implementation of an ABC phase-in. Stock generation time can vary widely among stocks managed in the South Atlantic, and is not included as a specific criterion for evaluating eligibility across FMPs included in this amendment. However, it (as well as other such factors noted in the 2020 guidance) can be considered on a case-by-case basis, with advice from the SSC and APs as appropriate.

To simplify the analysis and evaluation of alternatives under this action, sub-actions are used to address criteria and process alternatives separately. Therefore, the alternatives under each sub-action can be evaluated relative to each other.

Sub-Action 4.1 provides guidance for when phase-in would be allowed, addressing the National Standard guidance directing the Council to consider when phase-in is appropriate. Phase-ins are not required by any of the proposed sub-actions or alternatives. Multiple alternatives may be selected for **Sub-Action 4.1** to address multiple criteria for allowing phase-ins. **Sub-Action 4.1-Alternative 2** bounds the amount of change required in ABC to justify phase-in. This alternative would address the National Standard language referencing “large changes in catch limits.” Options under **Sub-Action 4.1-Alternative 2** specify different levels of ABC change. **Sub-Action 4.1-Alternative 3** would address stock biomass considerations. **Option 1** would allow phase-in of increases at any biomass level and phase-in of decreases only when a stock is not overfished (biomass exceeds MSST). **Option 2** is more conservative, allowing phase-in of increases at any biomass level and only allowing phase-in of decreases if the biomass is greater than the midpoint between MSST and B_{MSY} .

Sub-Action 4.2 provides alternatives for the duration of the phase-in and guidance on determining revised catch levels that will prevent overfishing in years following phase-in. The **Sub-Action 4.2** alternatives provide possible maximum years over which phase-in is applied and allow the Council to use a shorter period, if desired. This approach gives the Council flexibility to address the SSC recommendation that assessment schedules be considered when evaluating the timing of a phase-in approach and the updated analyses required to evaluate phase-in effects on the stock. For example, the Southeast Fisheries Science Center (SEFSC) is considering improvements in the timing for delivering stock assessment information that could result in the Council receiving annual information for select stocks. However, given that the SEFSC has not yet implemented the accelerated delivery of assessment information, the Council cannot consider applying these sub-actions on a stock-by-stock basis at this time.

The time periods specified in **Sub-Action 4.2-Alternative 2** are according to the number of years between the old ABC and the long-term ABC, which would remain in place following the phase-in period until changed by future actions. The long-term ABC would differ from the newly recommended ABC in that the newly recommended ABC would be based on projections that do not account for a phase-in period, while the long-term ABC would be based on projections that do account for a phase-in period. Implementation schedules for the newly recommended ABC, long-term ABC, and intermediate levels according to the specified phase-in time period are shown in **Table 4.1**. For example, a one-year phase-in does not indicate a within-year change to the ABC, but a single year in which (in the case of a phase-in decrease) the ABC can be less than or equal to the newly recommended OFL (which is greater than the newly recommended ABC). Revised projections accounting for this one-year phase-in would then estimate a long-term ABC, which would be implemented in the second year and beyond.

Sub-Action 4.2-Alternative 2 allows the Council greater flexibility in specifying ABC increases than ABC decreases. Increases to ABC (assuming comparable data between assessments) are generally indicative of an increase in relative biomass and an improving stock condition. This allows greater consideration of ecological, social, and economic impacts of an increased ABC and flexibility in how that change can be implemented.

Sub-Action 4.2-Alternative 2 provides for a phase in over no more than 3 years (**Option 1**), which is the maximum phase in period allowed by the MSA guidelines. The maximum allowable phase in period is shortened for **Option 2** (2 years) and **Option 3** (1 year). Considering possible timing of assessment information, and the time required to prepare updated analyses and stock projections to evaluate the impact of phase-in, the maximum phase-in and evaluation period of **Sub-Action 4.2-Alternative 2** would likely be appropriate for those stocks expected to have longer intervals between assessment updates. At the other end of the range, a phase-in period of 1 year would be appropriate for stocks expected to receive annual updates of assessment information.

As shown in [Appendix III](#), the longer phase-in of a decreased ABC results in the largest reduction of total catch over time. The cost, or reduction in total catch over the 4-year period illustrated, is lowest for the shortest phase-in period. Conversely, phasing-in increases to ABC over a longer period of time would result in a greater increase to long-term ABC, and phasing-in increases over a shorter period would result in a smaller increase to long-term ABC.

The SSC liaison and Committee chair may work with Council staff to request the projection analyses necessary for the SSC and Council to evaluate and implement phase-in a timely manner.

SSC Recommendation:

Additional recommendations from the October 2020 SSC Meeting

- The SSC supports phase-in for stocks above MSST.
- Assessment frequency should be considered when evaluating phase-in. It is important to avoid ‘chasing down’ stock reductions. Additionally, long phase-in periods may not be compatible with frequent assessments as the basis for ABC recommendations will change before the prior ABC is reached.
- Management Strategy Evaluations and biological, sociological, and economic considerations may be useful for evaluating phase-in situations and time periods.
- Length of the phase-in period should be considered in the context of the projection time period. Greater uncertainty as projections extend beyond the terminal year. Therefore, it may be necessary to phase in more or less of the change in the second year than the first due to the increase in uncertainty.
- The SSC recommends allowing the use of phase-ins for ABC increases as well as decreases.
- The SSC recommends lifespan or generation time be considered when evaluating and determining time periods for phase-ins.

Council Action:

- Discuss the action/alternatives and modify if needed.

Action 5 Allow carry-over of unharvested portion of the annual catch limit

NOTE: THIS ACTION IS NOT SCHEDULED FOR DISCUSSION AT THE MARCH 2021 COUNCIL MEETING. IT IS NEXT SCHEDULED FOR DISCUSSION AT THE JUNE 2021 COUNCIL MEETING, FOLLOWING ADDITIONAL REVIEW BY THE SSC.

Sub-Action 5.1. 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 any unharvested portion of the annual catch limit will be allowed if the stock is neither overfished nor experiencing overfishing.

Alternative 3. Carry-over of any 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 any 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 any 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 5.2. Specify limits on the amount of unharvested portion of the ACL 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 any unharvested portion of the ACL.

Alternative 2. Allow carry-over of any 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 any 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 any unharvested portion of the annual catch limit for an individual fishery sector of up to 25% of the sector annual catch limit.

Sub-Action 5.3. 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 any unharvested portion of the annual catch limit.

Council Action:

- No action required at this meeting. Scheduled for discussion in June 2021.

Appendices

Appendix I. ABC Conceptual Diagrams & Description

The following figures illustrate the relationships between reference points and how OFL and ABC are derived from the yield distribution and the chosen risk tolerance (P*).

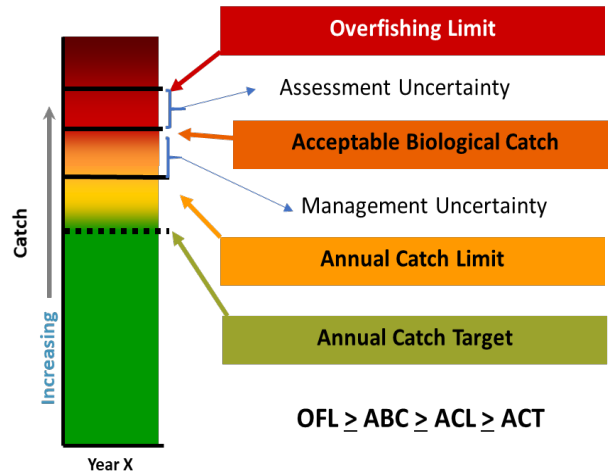


Figure AI.1. Illustrated general relationship between OFL, ABC, ACL, and ACT. The difference between OFL and ABC addresses assessment uncertainty, while the difference between ABC and ACL addresses management uncertainty.

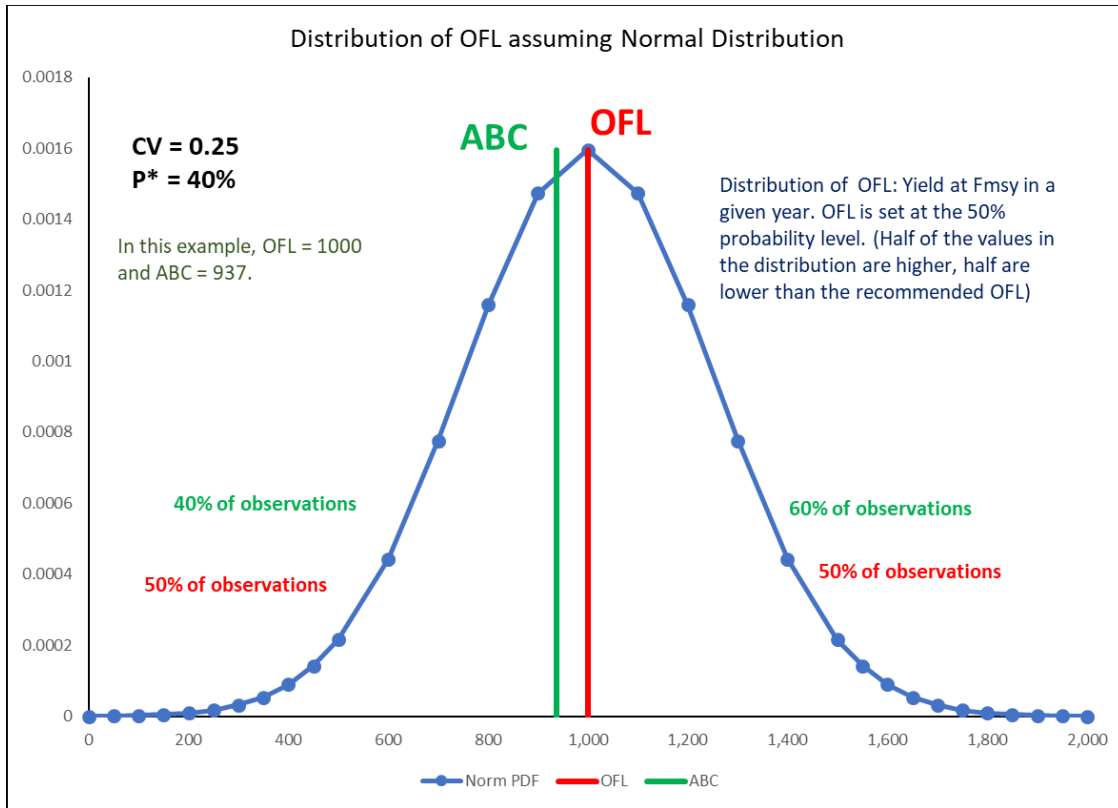


Figure AI.2. Example distribution illustrating OFL and ABC for a hypothetical stock with OFL=1000 pounds, a chosen risk tolerance or P* of 40% (40% chance that overfishing occurs), and an assessment CV of 0.25.

[Purpose and Need](#)

How is ABC derived for assessed stocks under this rule?

Three basic items are required to derive an ABC from a stock assessment:

1. Estimates of productivity (i.e. MSY and OFL) and stock assessment uncertainty.

These are products of an assessment and inputs to the ABC Control Rule. Various proxies can be used for unassessed stocks, such as SPR (spawning potential ratio) levels, or Fmax.

- a. Estimated yield (OFL) and, ideally, a distribution of its uncertainty or a PDF.
- b. Assessment CV that can be applied to the OFL distribution

2. A risk tolerance for overfishing (e.g., P*).

This is set by the Council, as guided by the ABC Control Rule. Typically, the Council will provide risk tolerance guidance for the SSC to use when applying the ABC CR.

- a. The Council will specify a risk rating for each stock (Action 2).

The SSC and relevant AP will provide guidance and recommendations for consideration by the Council.

b. The SSC will evaluate the biomass level of the stock, either through the use of assessment results or, in the case of unassessed stocks, application of its best judgement as informed by other information as may be available.

c. The risk tolerance is determined based on the combination of the stock risk rating and the stock biomass (Action 2).

3. A method for applying the risk tolerance to the assessment results.

This is addressed by the SSC, guided by the ABC Control Rule, and forms the basis of the ABC recommendation.

a. Direct approach: distribution of OFL used to derive ABC

The P^* is applied to the distribution (PDF) of the estimated overfishing level (OFL). MSY or the OFL is based on the midpoint (50th percentile) of the estimated stock yield at FMSY. ABC is based on a different percentile, determined by the P^* value. For example, if the risk of overfishing is 30%, $P^*=0.3$ and ABC is determined by the 30th percentile of the OFL yield. The difference between ABC and OFL will vary across assessments, and will depend on the observed OFL distribution.

This is the approach used most often for assessed SAFMC stocks.

(To come: some example OFL distributions)

b. Indirect approach: CV and assumed distribution of OFL used to derive ABC

If the distribution of OFL is not available, or not considered adequate for determining ABC, the ABC can be derived from a measure of assessment uncertainty (CV) and an assumed distribution of OFL. The type of distribution assumed (e.g., normal or log-normal) determines its shape. The CV determines how widely the distribution spreads. Thus, high CV distributions are broad and flat, encompassing many values; while low CV distributions are narrow and steep, encompassing fewer values with many more values centered closely around a mode or median.

Once a CV and type of distribution is decided, the buffer between ABC and OFL can be determined for any risk level. In fact, the buffer can be determined in advance for any combination of CV, distribution, and risk tolerance (P^*). To derive ABC, the buffer calculated by the CV, distribution, and P^* is applied to the OFL. For example, if a CV of 0.5 and a log-normal distribution of OFL are assumed, the ABC buffer will be 53%. If the OFL were 100,000 pounds, the ABC would be 47,000 pounds.

Appendix II. ABC Control Rule Tables

Table AII.1. ABC control rule specified by the Comprehensive ACL Amendment for the Snapper Grouper, Dolphin Wahoo, and Sargassum 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
<i>1. Assessment Information (10%)</i>	<ol style="list-style-type: none"> 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%)
<i>2. Uncertainty Characterization (10%)</i>	<ol style="list-style-type: none"> 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%)
<i>3. Stock Status (10%)</i>	<ol style="list-style-type: none"> 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%)
<i>4. Productivity and Susceptibility Analysis (10%)</i>	<ol style="list-style-type: none"> 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”:
<ol style="list-style-type: none"> 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? <p>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.</p>

Table AII.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
<i>1. Assessment Information (10%)</i>	1. Quantitative assessment provides estimates of exploitation and biomass; includes MSY-derived benchmarks. (0%)

	<ol style="list-style-type: none"> 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%)	<ol style="list-style-type: none"> 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%)	<ol style="list-style-type: none"> 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%)	<ol style="list-style-type: none"> 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.

Table AII.3. ABC Control rule proposed through 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	<p>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:</p> <p>Data limited assessment models: may provide OFL or ABC or proxies thereof, and varying types of uncertainty distributions.</p> <p>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</p> <p>Council SSC Decision Tree: a structured approach to evaluating limited information.</p> <ol style="list-style-type: none"> 1. Will catch affect stock? <ul style="list-style-type: none"> 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? <ul style="list-style-type: none"> 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? <ul style="list-style-type: none"> Directed: ABC = Median 1999-2008 Bycatch/Incidental: If yes, go to 4. 4. Bycatch. Must judge the circumstance: <ul style="list-style-type: none"> If bycatch in other fishery: what are trends in that fishery? What are the regulations? What is the effort outlook?
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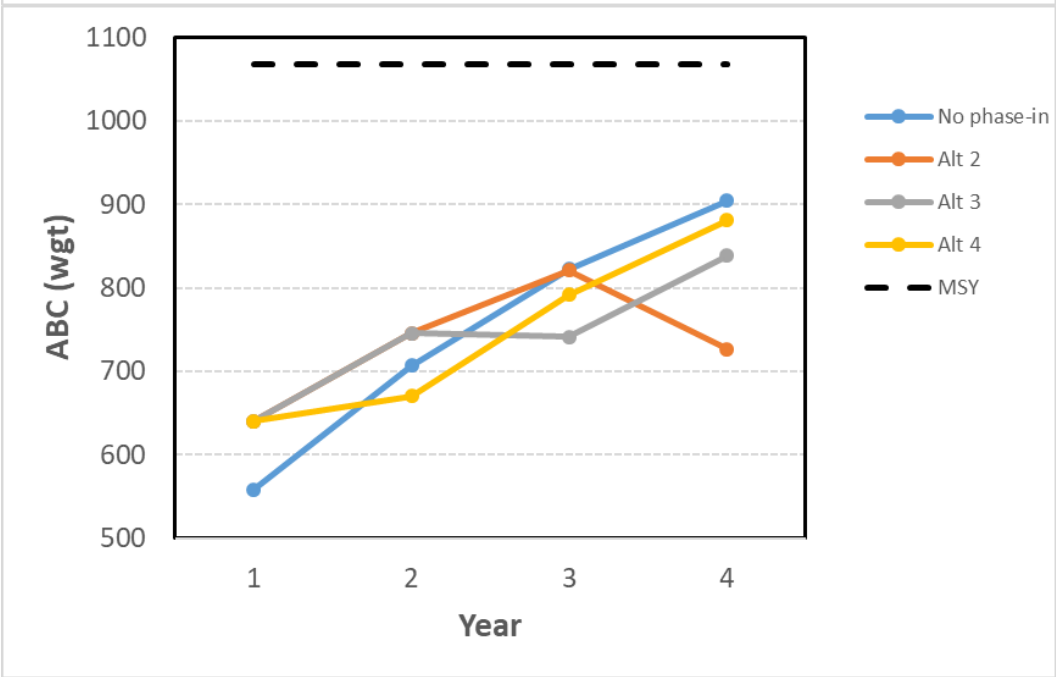
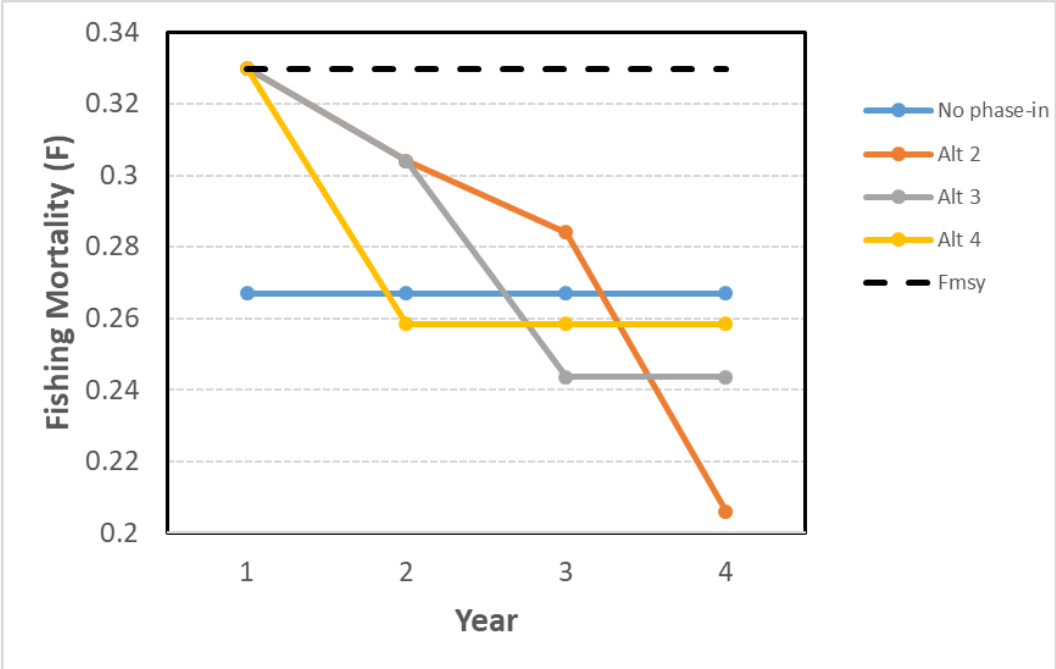
Appendix III. Hypothetical Example of ABC Phase-in

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).

Starting conditions for the stock in year 0 were 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. SSB and Yield are increasing over time in this example. The No phase-in alternative is an F-rebuild that rebuilds the stock to SSB_{MSY} in year 4. All alternatives rebuild the stock in year 4.

Table AIII.1. Fishing mortality (F), acceptable biological catch (ABC), and spawning stock biomass (SSB) for a hypothetical stock with shown levels of fishing mortality that would produce maximum sustainable yield (F_{MSY}), maximum sustainable yield (MSY), and SSB that would produce MSY (SSB_{MSY}), with changes to ABC phased in according to time frames specified in Alternatives from Sub-Action 4.2, no phase-in (Alt 1), 3 years (Alt 2-Opt 1), 2 years (Alt 2-Opt 2), and 1 year (Alt 2-Opt 3).

Fishing Mortality (F)					
Year	No phase-in	Alt 2-Opt 1	Alt 2-Opt 2	Alt 2-Opt 3	F_{MSY}
1	0.267	0.33	0.33	0.33	0.330
2	0.267	0.304	0.304	0.2584	0.330
3	0.267	0.284	0.2435	0.2584	0.330
4	0.267	0.206	0.2435	0.2584	0.330
ABC (wgt)					
Year	No phase-in	Alt 2-Opt 1	Alt 2-Opt 2	Alt 2-Opt 3	MSY
1	558	641	641	641	1068
2	707	745	745	670	1068
3	822	821	741	792	1068
4	905	727	839	881	1068
SUM	2993	2934	2966	2984	
SSB (mature wgt)					
Year	No phase-in	Alt 2-Opt 1	Alt 2-Opt 2	Alt 2-Opt 3	SSB_{MSY}
1	1092	1026	1026	1026	2668
2	1727	1574	1574	1647	2668
3	2274	2085	2171	2229	2668
4	2668	2667	2668	2668	2668



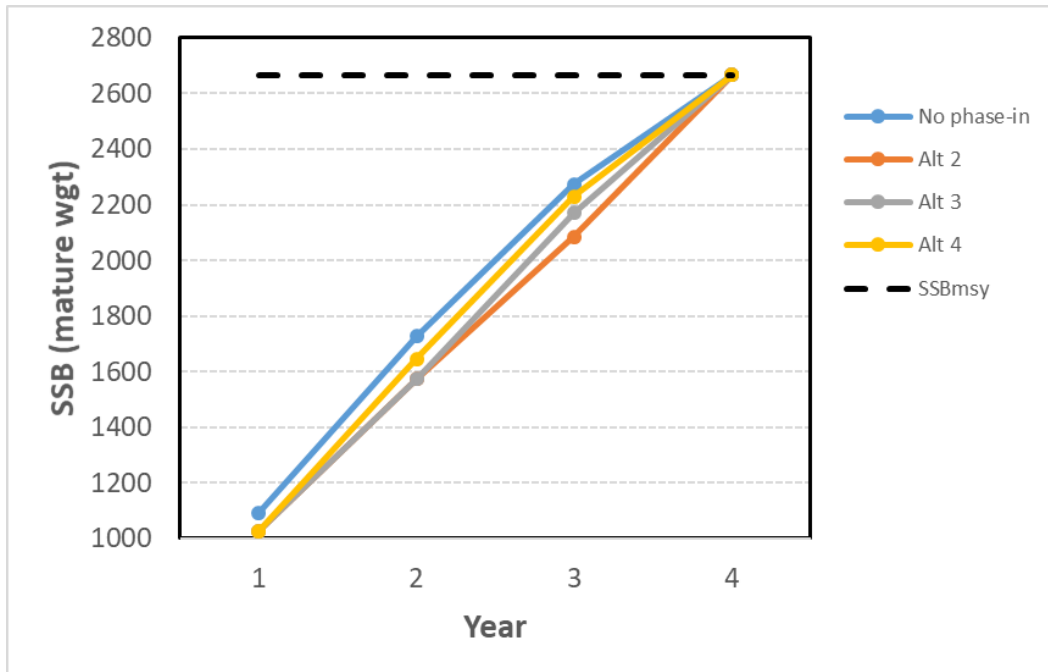


Figure AIII.1. Annual fishing mortality (F) and acceptable biological catch (ABC) relative to the fishing mortality at maximum sustainable yield (F_{MSY}) and maximum sustainable yield (MSY) for a hypothetical stock with changes to ABC phased in according to time frames specified in Alternatives from Sub-Action 4.2, no phase-in (Alt 1), 3 years (Alt 2-Opt 1), 2 years (Alt 2-Opt 2), and 1 year (Alt 2-Opt 3).