DRAFT

Comprehensive Acceptable Biological Catch Control Rule Amendment

Revisions to the Acceptable Biological Catch Control Rule and Specifications for Carry-Overs and Phase-Ins

Amendment 11 to the Fishery Management Plan for the Dolphin Wahoo Fishery of the Atlantic
Amendment 11 to the Fishery Management Plan for the Golden Crab Fishery of the South Atlantic Region
Amendment 45 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Environmental Assessment, Regulatory Flexibility Act Analysis, and Regulatory Impact Review

June 2022 DRAFT

South Atlantic Fishery Management Council
4055 Faber Place Drive; Suite 201
North Charleston, SC 29405

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Comprehensive Acceptable Biological Catch Control Rule Amendment

Amendment 11 to the Fishery Management Plan for the Dolphin Wahoo Fishery of the Atlantic
Amendment 11 to the Fishery Management Plan for the Golden Crab Fishery of the South Atlantic Region
Amendment 45 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Proposed action(s): Modify the Acceptable Biological Catch Control Rule, allow phase-in of acceptable biological catch changes, allow carry-over of unharvested portion of the annual catch limit, modify framework procedures to implement carry-overs when allowed.

Responsible Agencies and Contact Persons

South Atlantic Fishery Management Council
4055 Faber Place, Suite 201
North Charleston, South Carolina 29405
IPT lead: Mike Schmidtke
Mike.Schmidtke@safmc.net

843-571-4366
843-769-4520 (fax)
www.safmc.net

National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701
IPT lead: Nikhil Mehta
Nikhil.Mehta@noaa.gov

727-824-5305
727-824-5308 (fax)
NMFS SERO

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Summary

Why is the South Atlantic Fishery Management Council considering action?

The South Atlantic Fishery Management Council (Council) uses acceptable biological catch (ABC) levels to manage fisheries in US South Atlantic federal waters. Per the Magnuson Stevens Fishery and Conservation Management Act (MSA), ABCs are set using the best scientific information available and the Council's risk tolerance policy through the ABC control rule. As the Council has worked under its current ABC control rule, areas that could be clarified or improved have been identified and are considered for revision in this amendment. Additionally, recent guidance from the National Marine Fisheries Service (NMFS) has clarified how regional management councils can increase management flexibility by incorporating ABC phase-ins and carry-overs into fishery management plans (FMP). This amendment considers establishment of criteria and implementation methods for phase-ins and carry-overs in South Atlantic FMPs.

Purpose for Action

The *purpose* of this amendment is to revise the acceptable biological catch control rule by clarifying the incorporation of scientific uncertainty and management risk, modifying the approach used to determine the acceptable risk of overfishing, and prioritizing the use of stock rebuilding plans for overfished stocks. Additionally, this amendment will specify conditions and procedures for using carry-overs and phase-ins in setting catch limits, including modification of framework procedures to accommodate implementation of carry-overs when applicable.

Need for Action

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 2020 NMFS guidance on carry-over and phase-in provisions.

What actions are being proposed in this amendment?

The Comprehensive Acceptable Biological Catch Control Rule Amendment proposes the following changes to the Fishery Management Plans (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP), Dolphin and Wahoo Fishery of the Atlantic (Dolphin and Wahoo FMP), and the Golden Crab Fishery of the South Atlantic Region (Golden Crab FMP):

Action 1. Modify the acceptable biological catch control rule

Purpose of Action: Changes to the ABC control rule are being considered to clarify responsibilities of the Council and SSC in developing risk and uncertainty components, revise methods for evaluating risk and uncertainty to develop ABCs (including the process used for

unassessed stock ABCs), and clarify the use of rebuilding plans to develop ABCs for overfished stocks.

Preferred Alternative. None selected

Action 2. Allow phase-in of acceptable biological catch changes under the acceptable biological catch control rule

Purpose of Action: In accordance with National Standard 1 Technical Guidance for Designing, Evaluating, and Implementing Carry-over and Phase-in Provisions (2020), eligibility criteria and allowable implementation methods for phasing in changes to ABC are being considered to increase management flexibility and reduce negative economic and social effects from large, immediate changes to the ABC.

Preferred Alternative. None selected.

Action 3. Allow carry-over of unharvested portion of the annual catch limit under the acceptable biological catch control rule

Purpose of Action: In accordance with National Standard 1 Technical Guidance for Designing, Evaluating, and Implementing Carry-over and Phase-in Provisions (2020), eligibility criteria and allowable amounts of unharvested ACL that can be carried over from one year to the next are being considered to increase management flexibility and provide greater opportunity to achieve optimum yield while preventing overfishing.

Preferred Alternative. None selected.

Action 4. Modify framework procedures for the Snapper Grouper, Dolphin and Wahoo, and Golden Crab Fishery Management Plans

Purpose of Action: Revisions to framework procedures for the Snapper Grouper, Dolphin and Wahoo, and Golden Crab FMPs are being considered to include a mechanism for implementing carry-overs for eligible stocks.

Preferred Alternative. None selected.

Chapter 1. Introduction

1.1 What actions are being proposed in this plan amendment?

The proposed actions in this plan amendment would revise the acceptable biological catch (ABC) control rule and framework procedures for the Fishery Management Plans (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP), Dolphin and Wahoo Fishery of the Atlantic (Dolphin and Wahoo FMP), and Golden Crab Fishery of the South Atlantic Region (Golden Crab FMP). The ABC control rule would be revised to better distinguish roles of the South Atlantic Fishery Management Council (Council) and its Scientific and Statistical Committee (SSC) in determining risk and uncertainty components, include provisions for phasing in ABC changes, and include provisions for carrying over unharvest portions of annual catch limits (ACL). Framework procedures would be revised to include a procedure for implementing carry-overs when allowance of carry-over is specified in the FMP and the sector meets annual eligibility requirements.

South Atlantic Fishery Management Council

- Responsible for conservation and management of fish stocks in the South Atlantic Region.
- Consists of 13 voting members who are appointed by the Secretary of Commerce, 1 representative from each of the 4 South Atlantic states, the Southeast Regional Administrator of NMFS, and 4 non-voting members.
- Responsible for developing fishery management plans and amendments under the Magnuson-Stevens Act; recommends actions to NMFS for implementation.
- Management area is from 3 to 200 nautical miles off the coasts of North Carolina, South Carolina, Georgia, and east Florida through Key West, except for mackerel which is from New York to Florida, and dolphin and wahoo, which is from Maine to Florida.

1.2 Who is proposing the amendment?

The Council is responsible for managing fish stocks in the South Atlantic Region for the Snapper Grouper and Golden Crab FMPS, and in the Atlantic for the Dolphin and Wahoo FMP. The Council develops the amendment and sends it to the National Marine Fisheries Service (NMFS), who publishes a rule to implement the amendment on behalf of the Secretary of Commerce. NMFS is an agency of the National Oceanic and Atmospheric Administration within the Department of Commerce. Guided by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), the Council works with NMFS, other partners, and stakeholders to assess the status of fish stocks, specify ACLs, reduce bycatch, and ensure compliance with fisheries regulations.

The Council and NMFS are also responsible for making this amendment available for public comment. The draft environmental assessment (EA) is combined with the amendment and will

be made available to the public during the scoping process, public hearings, and in Council meeting briefing books. The final EA and amendment will be made available for public comment during the proposed rule stage of the rulemaking process. The final EA and amendment will be found on the Council's website at http://www.safmc.net.

1.3 Where is the project located?

Management of the federal dolphin wahoo fishery, located off the eastern United States (Atlantic) from Florida to Maine in the 3-200 nautical miles U.S. exclusive economic zone (EEZ), is conducted under the Dolphin and Wahoo FMP (SAFMC 2003) (**Figure 1.3.1.1**).

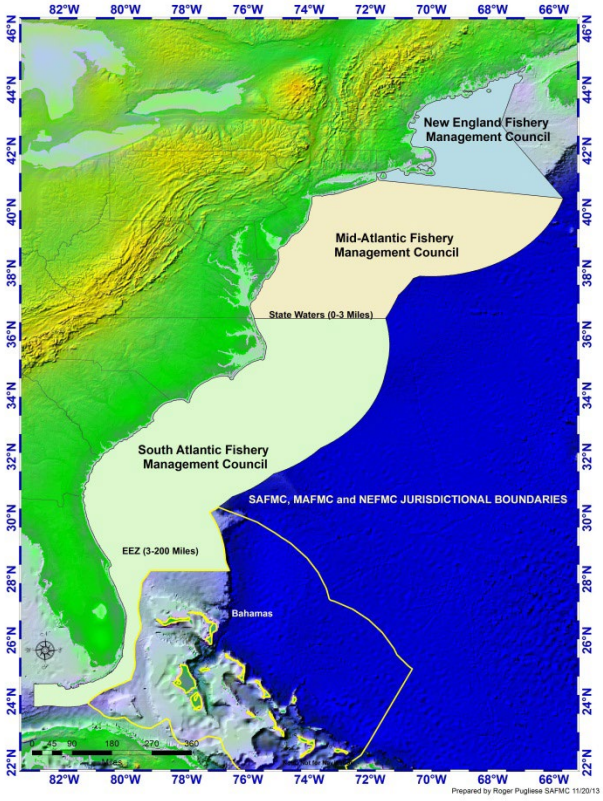

Figure 1.3.1.1. Jurisdictional boundaries of the Dolphin and Wahoo FMP for the Atlantic as managed by the South Atlantic Council.

Management of the federal golden crab fishery located off the southeastern United States (South Atlantic) in the 3-200 nautical miles U.S. exclusive economic zone (EEZ) is conducted under the Golden Crab FMP (SAFMC 1995) (Figure 1.3.1).

Management of the federal snapper grouper fishery located off the southeastern United States (South Atlantic) in the 3-200 nautical miles U.S. exclusive economic zone (EEZ) is conducted under the Snapper Grouper FMP (SAFMC 1983) (Figure 1.3.1). There are fifty-five species managed by the Council under the Snapper Grouper FMP.

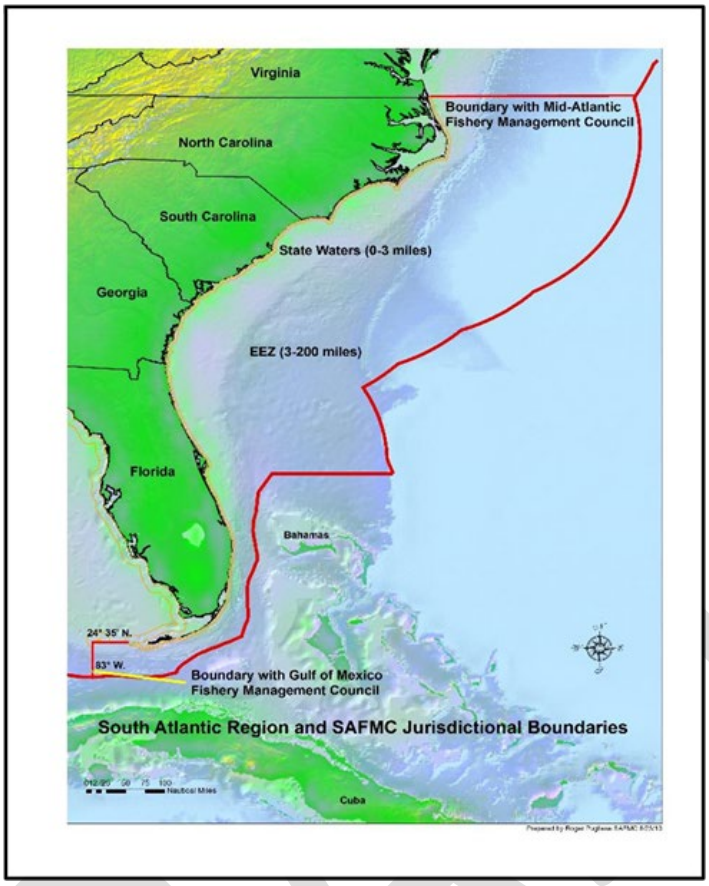

Figure 1.3.1.2. Jurisdictional boundaries of the Snapper Grouper and Golden Crab FMPs as managed by the South Atlantic Council.

1.4 Why is the Council considering action (Purpose and Need statements)?

Purpose: The *purpose* of this amendment is to revise the acceptable biological catch control rule by clarifying the incorporation of scientific uncertainty and management risk, modifying the approach used to determine the acceptable risk of overfishing, and prioritizing the use of stock rebuilding plans for overfished stocks. Additionally, this amendment will specify conditions and procedures for using carry-overs and phase-ins in setting catch limits, including modification of framework procedures to accommodate implementation of carry-overs when applicable.

Need: 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 2020 NMFS guidance on carry-over and phase-in provisions.

Background

In applying the current 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 2020 guidance for National Standard 1 (NS 1) that increased the flexibility available to regional fishery management councils for managing catch limits by allowing phasing in of ABC changes and carry-over of unharvested portions of the ACL.

The Council is considering action to address the SSC's concerns about the ABC CR and to specify whether and how carry-overs and phase-ins can be used for stocks managed under the Snapper Grouper, Dolphin Wahoo, and Golden Crab FMPs.

1.5 Are these actions within the bounds of scientific recommendations?

Actions in this amendment have been developed with consideration of input from the SSC. The SSC has provided input on each of the actions, which is further detailed in Chapter 5. This input includes feedback from an SSC work group that investigated current data-limited methods and developed a recommended approach for specifying ABCs for unassessed stocks. Phase-in and carry-over actions were developed in accordance with guidance from the National Marine Fisheries Service (2020) and reviewed by the SSC.

1.6 How were the alternatives determined?

Alternatives for ABC CR revisions (Action 1) were developed based on SSC input with varying levels of overlap with the current ABC CR. Clarifications of the SSC's and Council's roles within these alternatives were developed based on the Magnuson Stevens Act (50 C.F.R. § 600.310). Revisions to ABC-setting processes for unassessed stocks were developed based on the process recommended by the SSC's Category 4 Stocks Workgroup.

Alternatives for establishing phase-in (Action 2) and carry-over (Actions 3 and 4) provisions were developed based on the National Standard 1 Technical Guidance for Designing, Evaluating, and Implementing Carry-over and Phase-in Provisions (2020).

1.7 What is the history of the acceptable biological catch control rule for the Snapper Grouper, Dolphin Wahoo, and Golden Crab FMPs?

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 ABC CR is the method by which ABCs are set, ideally based on an overfishing limit (OFL) from a stock assessment but sometimes using more data-limited methodology. The acceptable risk of

overfishing is denoted as P-Star (P*) and is applied through assessment projections to develop the SSC's ABC recommendation. 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.

Chapter 2. Proposed Actions and Alternatives

2.1 Action 1. Modify the Acceptable Biological Catch Control Rule

2.1.1 Alternatives

NOTE: Each alternative includes a general description of the proposed acceptable biological catch (ABC) control rule (with reference to a descriptive table[s]), associated risk tolerance policy, and application of the control rule to overfished stocks. Sub-alternatives may be added to alternatives and are not mutually exclusive. Current ABC values will not change for any species through this action and its alternatives within this amendment. Rather, the new control rule will be prospectively applied through future management actions related to setting catch limits.

Alternative 1 (No Action). For assessed species, the acceptable biological catch control rule for the Dolphin Wahoo, Golden Crab, and Snapper Grouper Fishery Management Plans classifies assessments according to tiers. Tier classifications are used to determine the accepted probability of overfishing (P*) by reducing from an initial value of 50% according to uncertainty of assessment results and stock vulnerability. Acceptable biological catch is determined through projections of assessment information using the accepted probability of overfishing.

For unassessed species, acceptable biological catch is determined by applying one of the following data-limited methods, as data allow (listed from highest to lowest priority): Depletion-Based Stock Reduction Analysis, Depletion-Corrected Average Catch, Only Reliable Catch Stocks (only included in the Snapper Grouper Fishery Management Plan), and a decision tree based on species catch history.

Determination of acceptable biological catch for overfished stocks undergoing rebuilding is not specified.

Control rule tiers and classifications are described in **Table 2.1.1.1**.

Preferred Alternative 2. Specify an acceptable biological catch control rule for the Dolphin Wahoo, Golden Crab, and Snapper Grouper Fishery Management Plans that categorizes stocks based on the available information and scientific uncertainty evaluation and incorporates the Council's risk tolerance policy through an accepted probability of overfishing (P*). The Council will specify the P* based on relative stock biomass and a stock risk rating.

When possible, the Scientific and Statistical Committee will determine the overfishing limit and characterize its uncertainty based on, primarily, the stock assessment or, secondarily, the Scientific and Statistical Committee's expert opinion. The overfishing limit and its uncertainty would then be used to derive and recommend the acceptable biological catch, based on the risk tolerance specified by the Council.

Acceptable biological catch for unassessed stocks will be recommended by the Scientific and Statistical Committee based on applicable data-limited methods. Unassessed stocks will be assigned the moderate biomass level unless there is a recommendation from the Scientific and Statistical Committee that justifies a different level.

For overfished stocks, the Council will specify a stock rebuilding plan, considering recommendations from the Scientific and Statistical Committee and fishery management plan advisory panel, which will determine the acceptable biological catch while the rebuilding plan is in effect. Per requirements of the Magnuson-Stevens Act, the probability of success for rebuilding plans (1-P*) must be at least 50%.

Control rule categories for assessments are described in **Table 2.1.1.2**. Default P* values based on relative biomass and stock risk rating are shown in **Table 2.1.1.3**.

> **Sub-Alternative 2a.** For relative biomass used to determine the default accepted probability of overfishing, 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.
>
> **Sub-Alternative 2b.** Allow the Council to deviate from the default accepted probability of overfishing by up to 10% for an individual stock, based on its expert judgment, new information, or recommendations by the Scientific and Statistical Committee or other expert advisors. Accepted probability of overfishing may not exceed 50%.
>
> **Sub-Alternative 2c.** 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 an acceptable biological catch control rule for the fishery management plans for Dolphin Wahoo, Golden Crab, and Snapper Grouper that classifies assessments based on the type of information provided and how uncertainty of information is characterized. The Council will set an initial accepted probability of overfishing (P*) between 30% and 50%, considering advice from the Scientific and Statistical Committee and fishery management plan's advisory panel. The Scientific and Statistical Committee will adjust this value as defined based on assessment information and uncertainty characterization. The adjusted P* will then be applied to derive acceptable biological catch.

Acceptable biological catch for unassessed stocks will be recommended by the Scientific and Statistical Committee based on applicable data-limited methods.

For overfished stocks, the Council will specify a stock rebuilding plan, considering recommendations from the Scientific and Statistical Committee and fishery management plan advisory panel, which will determine the acceptable biological catch while the rebuilding plan is in effect. Per requirements of the Magnuson-Stevens Act, the probability of success for rebuilding plans (1-P*) must be at least 50%.

Sub-Alternative 3a. 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.

Discussion

Stock assessments often include projections of future removals, which are used to derive the overfishing limit (OFL) and ABC. These projections are run many times, such that the results of each projection include robust estimates of variables like landings or population size, as well as measures of uncertainty. To derive the OFL, projections are run with a 50% probability of overfishing occurring (i.e., P*=50%). To derive the ABC, projections are run with P* set at 50% or less (based on adjustments to the P* from the ABC Control Rule). To derive ABC for a rebuilding plan, the probability of rebuilding (1-P*) must be 50% or greater. For additional detail on the process of deriving ABC from OFL, see Appendix H.

All Action 1 alternatives would maintain these methods for deriving ABC using P* and OFL. Alternatives consider different approaches and responsibilities for characterizing scientific (assessment or OFL) uncertainty in various scenarios and deriving P* (accepted management risk). Additionally, each of the Action 1 alternatives would include the following guidance concerning reconsideration of ABC recommendations and SSC deviation from the control rule.

Reconsideration of ABC Recommendations

Situations may arise for which the Council decides it is necessary and appropriate to remand an ABC recommendation to the SSC for reconsideration or clarification, due to new information or changing circumstances. In such instances, the Council will provide a written statement to the SSC requesting clarification or reconsideration of the ABC recommendation that includes the Council's justification for the remand, guidance on timing of the SSC's consideration of the request, and any documentation that led the Council to request the remand. Circumstances which could lead to the Council remanding an ABC recommendation include, but are not limited to:

- New information becomes available after the SSC makes a recommendation (e.g. through an Advisory Panel (AP), Fishery Performance Reports, new analysis/research, management change, updated or revised catch info).
- A mistake is found in the analysis or inputs that were used to support the ABC.
- The Council changes its risk determination.
- The SSC did not address the Council's request or TORs related to the ABC recommendation and supporting information.
- The SSC did not have a majority present when making the recommendation.
- The SSC's justification for the ABC is not clearly stated (particularly when based on expert judgement, modified uncertainty levels (e.g. Categories 2-4 under **Alternative 2**), or ABC Control Rule deviations).

SSC Deviation from the ABC Control Rule

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.

As part of the SSC's guidance on deviating from the ABC control rule, a recurring situation when this would be used is in developing ABC for an inter-regionally assessed stock (e.g. yellowtail snapper). For such stocks, the SSCs of all managing regions will cooperatively decide which control rule would be applied to develop ABC. The ABC recommendation to the South Atlantic Council would be the result of the cooperatively agreed upon control rule, including regional allocations as applicable.

Alternative 1 (No Action)

Alternative 1 (No Action) maintains the current control rules set in place for the Dolphin Wahoo FMP and Golden Crab FMP through the Comprehensive Annual Catch Limit Amendment (SAFMC 2011) and Amendment 29 to the Snapper Grouper FMP.

These control rules are described below:

Level 1 – Assessed Stocks

Accepted probability of overfishing (P*) initially set at 50%. Adjustments shown in **Table 2.1.1.1** are subtracted from this initial value.

Table 2.1.1.1. Level 1 (Assessed Stocks) and Levels 1 through 4 (Unassessed stocks of the acceptable biological catch control rule specified by the Comprehensive Annual Catch Limit Amendment for the Fishery Management Plans (FMP) for the Snapper Grouper, Dolphin Wahoo and Golden Crab . Level 5 (Unassessed stocks) of the acceptable biological catch control rule specified by Amendment 29 to the FMP for Snapper Grouper. Parenthetical values indicate (1) the maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension.

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 $FR_{MSY}R$ 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 (Snapper Grouper FMP Only) – 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 4 (Dolphin Wahoo and Golden Crab FMPs)/Level 5 (Snapper Grouper FMP) – 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.

Preferred Alternative 2

Under **Preferred Alternative 2**, the ABC will be derived by applying P* to a stock projection analysis for assessed stocks or an OFL estimated using alternative methods for unassessed stocks, when possible (**Table 2.1.1.2**). If an OFL cannot be estimated, the SSC will derive the ABC directly.

Table 2.1.1.2. Acceptable biological catch 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 formal stock assessment accepted to provide OFL and ABC recommendations (reviewed through SEDAR or SSC).	OFL and ABC will be developed according to the strategy proposed by the SSC's Data-Limited Working Group (Append WG Report). The SSC will attempt to estimate OFL and its uncertainty using available data, applicable methods, and expert judgement. If an OFL and its uncertainty are defined, the SSC will apply P* to derive ABC. If an OFL is unable to be defined, the SSC will directly recommend an ABC. The process of updating OFLs and ABCs for unassessed stocks will occur over time as directed by the Council.

		The current OFL and ABC for unassessed species and species complexes will be maintained until updated levels are recommended by the SSC and approved by the Council.

For **Preferred Alternative 2**, the Council, with advice from the SSC and AP, will evaluate management risk for each stock through a stock risk rating. Stock risk ratings include information currently used in the Productivity and Susceptibility Analysis (PSA), but also incorporate socio-economic and environmental attributes. 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.

The SSC has developed a proposed evaluation method for these ratings based on information currently used in the Productivity and Susceptibility Analysis, but also incorporating socio-economic and environmental attributes. Stock risk ratings would be evaluated with respect to three types of attributes: Biological, Human Dimension, and Environmental. Within each type, are specific attributes that can inform risk of overfishing:

- Biological:
  - Estimated natural mortality
  - Age at maturity
- Human Dimension:
  - Ability to regulate fishery
  - Potential for discard losses
  - Annual commercial value
  - Recreational desirability
  - Social concerns
- Environmental:
  - Ecosystem importance
  - Climate change
  - Other environmental variables

For time-varying or qualitative attributes, risk ratings were designed to address long-term effects. While short-term effects may influence managers' use of flexibility within the ABC Control Rule, ratings are intended to inform the long-term sustainability of the stock and fishery. Short-term effects that diverge from long-term effects can be noted for Council consideration on a case-by-case basis as P* is determined. Short-term effects are also evaluated for each amendment as part of the National Environmental Policy Act (NEPA) analyses.

After attributes are evaluated on a scale of high (1), medium (2), or low (3) risk, ratings will be averaged by type, and ratings for each type will be averaged for an overall stock risk rating. Attribute ratings will be averaged without weighting, with no penalty for unknown attributes, and with a default type rating of moderate. The scoring system would rank all overall risk scores

and divide them into equal thirds (to the nearest 0.1) to categorize stocks as high, medium, or low risk.

The stock risk rating and stock biomass would be used together to derive P*, according to **Table 2.1.1.3**. For example, a stock with high biomass and medium stock risk rating would have a P* of 45%. This would be lower than the OFL, in accordance with MSA. The SSC can recommend the Council reconsider the stock risk rating. This could happen, for example, with the emergence of new scientific studies or new information discovered through a stock assessment.

Table 2.1.1.3. Summary table of default risk tolerance levels based on stock risk ratings and relative biomass levels, proposed in Action 1-Alternative 2.

Stock Risk Rating	**High Biomass** Biomass exceeds B_{MSY} (or 110% B_{MSY} per Sub-Alternative 2a)	**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%

Acceptable biological catch includes both components of scientific uncertainty and management risk tolerance. Under **Preferred Alternative 2**, the ABC can be increased via greater risk tolerance from the Council (higher P*) OR less uncertainty in the projection results (i.e., a narrower distribution about OFL) determined by the SSC. The ABC can be decreased via lower risk tolerance from the Council (lower P*) OR more uncertainty in the projections results (i.e., a wider distribution about OFL) determined by the SSC.

Steps for Stock Risk Rating Use for Assessed Stocks under **Preferred Alternative 2**

Before an Operational Assessment:

- SSC and AP recommend risk levels for attributes that contribute to the stock risk rating to the Council. The most current attribute ratings and overall stock risk rating will be shown and feedback will be requested on whether any changes are necessary to depict the current state of the stock and fishery.
    - Preliminary stock risk ratings are in Appendix G. Preliminary recommendations will be used to inform future risk determinations but will not impact ABCs that are already in place.
    - Estimates for biological attributes, including natural mortality and age at maturity, should be available from the most recent research track assessment. These values typically would not change prior to the operational assessment, but additional Council review of changes to these values and effects on the overall risk rating can be accommodated on a case-by-case basis.
    - AP input can be gathered as part of Fishery Performance Reports conducted before each assessment.
- The Council reviews SSC and AP recommendations and determines the stock risk rating.

During an Operational Assessment:

- P* will be derived using an estimate of relative biomass and the Council's stock risk rating, according to **Table 2.1.1.3**.

- Projection analyses will be run using P*=50% and the P* value defined by **Table 2.1.1.3** to derive estimates of OFL and ABC.

Stock Risk Ratings and ABC Recommendations for Unassessed Stocks

- If **Preferred Alternative 2** is implemented, the SSC will work through groups of unassessed stocks to determine ABC recommendations.
- Prior to the SSC developing an ABC recommendation for a group of unassessed stocks, the SSC and AP will provide input on stock risk rating attributes and the Council will determine stock risk rating, similar to the process described for assessed stocks.
- When possible, OFL will be defined and the ABC control rule will applied to the OFL and its distribution, similar to the process described for assessed stocks. However, in cases where OFL cannot be defined and the SSC recommends ABC directly, the SSC will describe in their report how they considered the Council's stock risk rating in developing their recommendations.

Alternative 3

For **Alternative 3**, the ABC will be derived by applying P* to a stock projection analysis for assessed stocks or an OFL estimated using alternative methods for unassessed stocks, when possible. If an OFL cannot be estimated, the SSC will derive the ABC directly.

This control rule is described below:

Level 1 – Assessed Stocks

Accepted probability of overfishing (P*) initially set by the Council between 30% and 50%. Adjustments below are subtracted from this initial value.

Table 2.1.1.4. Level 1 (Assessed Stocks) of the acceptable biological catch control rule specified by the Comprehensive Annual Catch Limit Amendment for the Dolphin Wahoo, Golden Crab, and Snapper Grouper Fishery Management Plans. Parenthetical values indicate (1) the maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension.

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. (5%) 3. Relative measures of exploitation or biomass, absolute measures of status unavailable. Proxy reference points. (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 $FR_{MSY}R$ and MSY are lacking. (7.5%)

	5. None. Only single point estimates; no sensitivities or uncertainty evaluations. (10%)

Level 2 – Unassessed Stocks

OFL and ABC will be developed according to the strategy proposed by the SSC's Data-Limited Working Group (Append WG Report). The SSC will attempt to estimate OFL and its uncertainty using available data, applicable methods, and expert judgement. If an OFL and its uncertainty are defined, the SSC will apply P* to derive ABC. If an OFL is unable to be defined, the SSC will directly recommend an ABC. The process of updating OFLs and ABCs for unassessed stocks will occur over time as directed by the Council. The current OFL and ABC for unassessed species and species complexes will be maintained until updated levels are recommended by the SSC and approved by the Council.

2.1.1 Comparison of Alternatives

Current ABC levels for all the species under the FMPs considered in this amendment would not be changed upon its implementation. Therefore, no immediate and direct biological effects (positive or negative) are expected for the stocks managed under these FMPs from **Preferred Alternative 2** (including **Sub-Alternatives 2a-2c**) and **Alternative 3** (including **Sub-Alternative 3a**), when compared with **Alternative 1 (No Action)**.

Preferred Alternative 2 would give the SSC the ability to adjust or derive uncertainty of assessment results (ultimately impacting projections of future catch) if they determine uncertainty is not adequately estimated through information used in the assessment. **Preferred Alternative 2** would also improve the evaluation of risk tolerance by considering factors beyond the current productivity and susceptibility analysis (PSA) and expanding the range of reference points used to describe and incorporate relative biomass. **Alternatives 1 (No Action)** and **3** do not give the SSC this ability; these alternatives instead derive P* according to evaluations of uncertainty by the SSC.

Biological effects of **Alternative 3** would be strongly impacted by the Council's risk tolerance, depicted through their initial P* level. **Alternative 3** gives the Council flexibility in how this initial P* level is determined. Adjustments to P* based on assessment information (Tier 1) are greater under **Alternative 3** than **Alternative 1 (No Action)** for similar classifications, thus **Alternative 3** is expected to be more biologically beneficial for stocks with adjustments based on assessment information. Assessment uncertainty is characterized in **Alternative 3** similar to **Alternative 1 (No Action)**, and (as described above) would be less biologically beneficial than **Preferred Alternative 2** for stocks with high levels of uncertainty in their assessments.

For unassessed stocks, **Alternatives 2** and **3** would expand the number of considerable methods for estimating OFL and ABC, providing expected biological benefits relative to **Alternative 1 (No Action)**. This would make use of SSC expertise in determining the most appropriate data-limited method for estimating these levels for each stock or complex.

Selection of sub-alternatives under **Preferred Alternative 2** or **Alternative 3** could have neutral or more positive biological effects than selection of the respective alternative without sub-

alternatives. Under **Sub-Alternative 2a**, biomass thresholds used to determine P* would be greater (more conservative). Therefore, selection of **Sub-Alternative 2a** would be expected to be more biologically beneficial. **Sub-Alternative 2b** provides the Council with additional flexibility in setting P*. This flexibility could be used to increase (less biologically beneficial) or decrease (more biologically beneficial) P* depending on information available. Thus, **Sub-Alternative 2b** is overall biologically neutral. **Sub-Alternative 2c** or **Sub-Alternative 3a** would provide the Council with multiple projections used to depict ABC under different harvest scenarios. Having ABC recommendations for different harvest strategies can provide added flexibility and potential biological benefits from deciding the most appropriate harvest strategy based on the Council's and advisory panel's knowledge of the stock and fishery. Projecting and considering ABC under multiple harvest strategies is allowed under the current control, but constant catch projections typically are not included in terms of reference provided at the beginning of assessments.

Comparatively, the reduced flexibility under **Alternative 1 (No Action)** would potentially result in reduced long-term economic benefits due to decreased ability to incorporate risk and uncertainty into catch level recommendations which could result in reduced long-term harvest levels and associated economic benefits. **Preferred Alternative 2** (including **Sub-Alternatives 2a-2c**) provides more flexibility to consider management risk and scientific uncertainty. Additionally, **Preferred Alternative 2** allows incorporation of economic information when determining the P* value for a given species. The addition of economic factors would allow the Council to better consider the long-term economic implications when examining management risk which could lead to better economic outcomes and increase net economic benefits in a fishery for a given species. **Alternative 3** would potentially provide positive biologic and thus associated economic effects. These economic effects would likely be similar to those described for **Preferred Alternative 2**, but potentially to a lesser degree since economic factors would not specifically be incorporated. The greatest economic benefits would be expected from **Preferred Alternative 2** (including its sub-alternatives), followed by **Alternative 3** (including its sub-alternative), and **Alternative 1 (No Action)**.

The inclusion of social factors will allow the Council to directly consider the importance of a given species to fishing communities and businesses when determining risk tolerance. Incorporation of the social factors would have long-term social benefits in the form of a more appropriate ABC. Additionally, formally considering human dimensions in the scientific process may help to improve stakeholder perceptions of the science going into management decisions. Overall, should modifications to the ABC Control Rule contribute to long-term sustainability of Snapper Grouper, Dolphin Wahoo, and Golden Crab species as envisioned, greater indirect and direct positive social effects would be expected under **Preferred Alternative 2** and its sub-alternatives, followed by **Alternative 3** and its sub-alternatives, and **Alternative 1 (No Action)**.

Sub-Alternative 2a would be expected to have reduced economic and social benefits immediately following an assessment, as it decreases the likelihood of a stock that is not overfished being in the moderate or high biomass categories, leading to lower P* values and lower ABCs. Lower ABCs limit potential for economic profit and increase the possibility of seasonal closures. Concern about potential long-term negative economic and social effects from higher limits and unsustainable harvest is mitigated by the fact that any stock that would have a

P* derived using the stock risk rating must not be overfished. ABCs for overfished stocks would be derived through a rebuilding plan, which is a separate process.
Sub-Alternatives 2b, 2c, and **3a** provide the Council additional flexibility in determining P* (**Sub-Alternative 2b**) or considering ABC recommendations for multiple harvest strategies (**Sub-Alternatives 2c** or **3a**). This added flexibility could produce positive or negative economic or social effects on a case-by-case basis, but overall, greater flexibility provides greater opportunity for consideration of actions that would be expected have more positive economic or social effects.

Administrative effects would be expected to be greater under **Preferred Alternative 2**, followed by **Alternative 3**, and **Alternative 1 (No Action)**. Administrative burdens would be related to SSC and Council involvement and discussions in addition to the status quo in the ABC and ACL determinations. Additional administrative effects would be related to educational activities by staff in informing all the constituents. Administrative burdens would be further increased with the inclusion of **Sub-Alternatives 2c** or **3a** as additional projections that are not typically included in current assessments would become standard practice. **Sub-Alternatives 2a** or **2b** would not be expected to increase or decrease administrative burden.

2.2 Action 2. Allow phase-in of acceptable biological catch changes

2.2.1 Alternatives

Note: Current ABC values will not be changed for any species within this amendment. Rather, these phase-in elements related to the new control rule will be prospectively applied through future management actions related to setting catch limits.

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

Alternative 1 (No Action). Do not establish provisions to allow the phase-in of acceptable biological catch changes.

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

Sub-Alternative 2a. 60% of the existing acceptable biological catch.

Sub-Alternative 2b. 70% of the existing acceptable biological catch.

Sub-Alternative 2c. 80% of the existing acceptable biological catch.

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:

Sub-Alternative 3a. if stock biomass exceeds the minimum stock size threshold.

Sub-Alternative 3b. 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 2.2.1.1**. 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 2.2.1.1**. 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 2.2.1.1**. Acceptable biological catch increases may be phased-in as specified by the Council with advice from the SSC and AP.

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 and contrast 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.*

Alternatives were developed consistent with NMFS guidance from 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). This 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.

Sub-Action 2.1 specifies 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 under Sub-Action 2.1 to address multiple criteria for allowing phase-ins. Phase-ins of ABC increases are allowed under all considered alternatives, as initial ABCs for those phase-ins would be less than the new recommended ABC levels. Sub-Action 2.1-**Alternative 2** states that the difference between existing and new ABCs must exceed a minimum level (**Sub-Alternative 2a**. 40% difference; **Sub-Alternative 2b**. 30%; **Sub-Alternative 2c**. 20%) to justify phase-in of an ABC decrease. This alternative would specify and limit application of phase-ins for decreasing ABCs to "large changes". Sub-Action 2.1-**Alternative 3** specifies stock conditions that must be met to justify phase-in of an ABC decrease. **Sub-Alternative 3a** would require that a stock must not be overfished (biomass greater than the minimum stock size threshold (MSST)) to allow consideration of phasing in an ABC decrease. **Sub-Alternative 3b** sets a more conservative threshold, requiring stock biomass to be greater than the midpoint between MSST and B_{MSY} for that stock to be eligible for phasing in a decrease to its ABC.

Sub-Action 2.2 specifies the maximum duration for phase-ins of ABC decreases and maximum levels of ABC that can be implemented during the phase-in period for ABC decreases. A longer phase-in period allows a more gradual change from the existing ABC to the new ABC, greater ABCs during the phase-in period, but a lower long-term new ABC after revised projections account for the higher levels used during the phase-in period. A shorter phase-in period results in a more immediate change from the existing ABC to the new ABC, lower ABCs during the phase-in period, and a higher long-term ABC after revised projections account for the levels used during the phase-in period. The Council may use a shorter phase-in period than the maximum specified by this sub-action, 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.

Sub-Action 2.2-**Alternative 2** allows phase-in decreases over no more than 3 years, which is the maximum phase in period allowed by the NS1 guidelines. The maximum allowable phase in period is shortened for **Alternative 3** (2 years) and **Alternative 4** (1 year). The time periods specified in Sub-Action 2.2-**Alternatives 2-4** are according to the number of years between the existing ABC and the long-term new ABC, which would remain in place following the phase-in period until changed by future actions. The long-term new ABC would differ from the SSC's initial recommended ABC in that the SSC's initial 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. ABC requirements for different phase-in time periods are shown in **Table 2.2.1.1**. 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 may be less than or equal to the newly recommended OFL (which is greater than the SSC's initially 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 2.2-**Alternatives 2-4** 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 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. Because ABCs during an increasing phase-in would be less than those initially recommended by the SSC, the phase-in time period is not limited (it can exceed the maximum timeframe specified for phase-in decreases by Sub-Action 2.2). Phasing in increases to ABC over a longer time period 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. Per standard requirements of the MSA, during a phase-in increase, ABC may not exceed the SSC's recommended level.

Table 2.2.1.1. Annual requirements for phase-in of decreases to acceptable biological catches over a 3-year schedule (Sub-Action 2.2-Alternative 2), 2-year schedule (Sub-Action 2.2-Alternative 3), or 1-year schedule (Sub-Action 2.2-Alternative 4).

	3-Year Schedule (Alternative 2)	2-Year Schedule (Alternative 3)	1-Year Schedule (Alternative 4)

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 biological catch recommendation.	Modified acceptable biological catch may not exceed one-half the difference between the overfishing limit and the new acceptable biological catch recommendation.	NA
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).	NA	NA
Subsequent Years	Acceptable biological catch is based on revised projections that account for the phase-in during years 1-3.	Acceptable biological catch is based on revised projections that account for the phase-in during years 1 and 2.	Acceptable biological catch is based on revised projections that account for the phase-in during year 1.

2.2.2 Comparison of Alternatives

Positive biological effects would be greatest under the alternative with the lowest amount of harvest. Under **Alternative 1 (No Action)** the Council can accomplish similar biological effects as phasing in ABC increases by setting ABC less than the SSC's recommended level and increasing to the recommended level over time. **Alternatives 2** and **3** (including their sub-alternatives) under **Sub-Action 2.1** would allow phase-in of decrease in the ABC, which would allow harvest above ABC levels that would be recommended if phase-ins were not allowed. Therefore, positive biological effects would be greatest under **Alternative 1 (No Action)**, followed by **Alternatives 2** and **3** (including their respective actions). **Alternatives 2** and **3** could both be selected to increase positive biological effects and reduce the probability that a stock would qualify for phase-in of an ABC decrease, but selection of both **Alternatives 2** and **3** would still have negative biological effects compared to **Alternative 1 (No Action)**. **Alternatives 2** and **3** (including their options) under **Sub-Action 2.1** would allow phase-in of decrease in the ABC, which would allow harvest above ABC levels that would be recommended if phase-ins were not allowed. Therefore, positive biological effects would be greatest under **Alternative 1 (No Action)**, followed by **Alternatives 2** and **3** (including their respective actions). **Sub-Alternative 2a** is most likely to reduce overall harvest compared with **Sub-Alternatives 2b** and **2c** because it would require the largest change in ABC to allow phase-in of a decrease in the ABC. Therefore, **Sub-Alternative 2a** could have the greatest positive biological effects, followed by **Sub-Alternative 2b**, and **Sub-Alternative 2c**, respectively, under **Alternative 2** in **Sub-Action 2.1**. **Sub-Alternative 3b** is more conservative, requiring a higher biomass to qualify for phase-in, and therefore would be expected to have greater positive

biological effects when compared with **Sub-Alternative 3a** under **Alternative 3** in **Sub-Action 2.1.**

Under **Sub-Action 2.2**, minimizing the time of phase-in for ABC decreases reduces the number of years when ABC is above the level that would be recommended if phase-ins were not allowed. Therefore, positive biological effects would be greatest under **Alternative 1 (No Action)**, followed by **Alternative 4** (phase-in over no more than 1 year), **Alternative 3** (phase-in over no more than 2 years), and **Alternative 2** (phase-in over no more than 3 years)

Phasing-in an increase in the ABC **Alternatives 2** and **3** under **Sub-Action 2.**1 would result in potential foregone economic benefits if the phase-in process results in restrictions to landings, along with the associated economic benefits of those landings, that otherwise could have been realized if the phase-in had not occurred and the full ABC, along with the resulting ACL, had been implemented immediately. Phasing-in reductions to the ABC could also allow for economic stability and thus increased economic benefits in a fishery by allowing commercial and for-hire business to taper down their dependence on a specific species. **Sub-Alternative 2a** has the highest threshold for allowing the phase-in of a new ABC, thus the lowest probability of the three sub-alternatives within this alternative to be allowed, along with the previously described potential economic benefits of allowing phase-in. **Sub-Alternatives 2b** and **2c** would have lower thresholds for allowing the phase-in of a new ABC and higher likelihood of incurring the economic benefits of allowing such a phase-in. Comparison of **Alternatives 2** and **3** will vary on a case by case scenario, but overall, **Alternative 3** would create the same types of economic effects as those described for **Alternative 2**. In **Sub-Action 2.2, Alternative 2** has the longest phase-in period. This alternative would allow for the greatest short-term economic benefits from relatively higher harvest levels and a longer period to adjust to decreasing harvest levels but also allow for the lowest longer-term economic benefits. **Alternatives 3** and **4** in **Sub-Action 2.2** would respectively have comparatively lower short-term economic benefits but higher potential long-term economic benefits.

Phasing in an increase in ABC under **Alternatives 3** and **4** in **Sub-Action 2.1** may result in foregone social benefits if the phase-in process resulted in resources users meeting or exceeding their respective ACLs. Regarding decreases in ABC, while the stock ABC would ultimately result in the same ABC as **Alternative 1 (No Action)**, under **Alternatives 2** and **3**, commercial and for-hire business would have additional time to adjust their business plans to account for the full decrease in the ABC level, and associated management restrictions. It would also ensure that fishing opportunities remained available to private recreational fishermen in the interim. Therefore, **Sub-Alternative 2c** would have the great positive social effects followed by **Sub-Alternative 2b**, and **Sub-Alternative 2a**. **Alternative 3** would add additional restrictions with **Sub-alternative 3a** being less restrictive than **Sub-alternative 3b**. Similarly, under **Sub-Action 2.2** the approach that maximizes the phase-in time period would provide the greatest benefit to fishing communities. Thus, the greatest social benefits could be realized under **Alternative 2**, followed by **Alternative 3**, **Alternative 4**, and **Alternative 1 (No Action)**.

In **Sub-Action 2.1**, administrative effects would be expected to be greatest under **Alternatives 2** and **3** (including their respective sub-alternatives), when compared with **Alternative 1 (No Action)**. In **Sub-Action 2.2**, administrative effects would be expected to be greatest under

Alternative 4, followed by **Alternatives 3**, **2**, and **Alternative 1 (No Action)**. Administrative burdens would include SSC, AP, and Council discussions to determine whether a phase-in should be used for a stock.

2.3 Action 3. Allow carry-over of unharvested portions of the annual catch limit

2.3.1 Alternatives

Note: Current ABC values will not be changed for any species within this amendment. Rather, these carry-over elements related to the new control rule will be prospectively applied through future management actions related to setting catch limits.

Sub-Action 3.1. Establish criteria specifying circumstances when an unharvested portion of the originally specified sector ACL can be carried over from one year to increase the available harvest in the immediate next year. Carry-overs may not be delayed, and only amounts from the originally specified sector ACL may be carried over. Multiple sub-alternatives may be selected under Alternative 2.

Alternative 1 (No Action). Do not establish provisions to allow the carry-over of annual catch limits.

Alternative 2. Allow carry-over of the unharvested portion of a sector's annual catch limit if the stock status is known, the stock is neither overfished nor experiencing overfishing, an overfishing limit for the stock is defined, and

Sub-Alternative 2a. the stock biomass exceeds the midpoint between the B_{MSY} and MSST biomass levels (or proxies of these levels).

Sub-Alternative 2b. that fishery sector has experienced a regulatory closure due to landings being projected to exceed that sector's annual catch limit at least once in the previous 3 years.

Sub-Alternative 2c. the sum of total landings for all sectors over the previous 3 years is less than the sum of the total annual catch limits over those same years.

Sub-Alternative 2d. ABC decreases are not being phased-in.

Sub-Alternative 2e. there are both in-season accountability measures that restrict annual landings to the annual catch limit and post-season accountability measures that reduce the annual catch limit in the following year according to any landings overages in place for that stock and sector.

Sub-Action 3.2. Specify limits on how much of the unharvested portion of a sector annual catch limit may be carried over from one year to increase the sector annual catch limit in the next year.

Alternative 1 (No Action). No carry-over provisions are currently in place for the Snapper Grouper, Dolphin Wahoo, or Golden Crab Fishery Management Plans.

Alternative 2. Allow carry-over of the unharvested portion of a sector's annual catch limit. The acceptable biological catch and the total annual catch limit may be temporarily increased to allow this carry-over. The temporary acceptable biological catch may not exceed the overfishing limit. The revised total annual catch limit may not exceed the temporary acceptable biological catch or the total annual catch limit plus the carried over amount, whichever is less.

Multiple eligible sectors may use carry-over in the same year. Sector-specific amounts being carried over will be allocated entirely to the sector from which they came unless the sum of the specified total annual catch limit and all sector-specific amounts that could be carried over exceeds the overfishing limit. If the sum of the specified total annual catch limit and all sector-specific amounts that could be carried over exceeds the overfishing limit, the temporary acceptable biological catch will be set equal to the overfishing limit and the difference between the temporary acceptable biological catch and the specified total annual catch limit will be allocated according to sector allocation percentages defined in the fishery management plan.

Alternative 3. Allow carry-over of the unharvested portion of a stock's annual catch limit. The acceptable biological catch may be temporarily increased to allow this carry-over but may not exceed the overfishing limit, the total annual catch limit plus the carried over amount, **or the total annual catch limit plus 25% of the carrying-over sector's annual catch limit**, whichever is least.

Multiple eligible sectors may use carry-over in the same year. Sector-specific amounts being carried over will be allocated entirely to the sector from which they came unless the sum of the specified total annual catch limit and all sector-specific amounts that could be carried over exceeds the overfishing limit or 125% of the total annual catch limit, whichever is least. If the sum of the specified total annual catch limit and all sector-specific amounts that could be carried over exceeds the overfishing limit or 125% of the total annual catch limit, whichever is least, the difference between the temporary acceptable biological catch and the specified total annual catch limit will be allocated according to sector allocation percentages defined in the fishery management plan.

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.*

Alternatives were developed consistent with NMFS guidance from 2020 addressing carry-overs (Holland et al. 2020). This 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 natural mortality rate and proportion of the stock caught each year in evaluating eligibility and implementation of carry-overs. Short-lived stocks with high natural mortality rates and high proportions of annual catch can be particularly sensitive to environmental fluctuations, making them susceptible to overfishing if catch is increased via carry-over and adverse conditions lead to low recruitment in the following year. Natural mortality rate and annual catch proportions can vary widely among stocks managed in the South Atlantic and are not included as a specific criteria for evaluating eligibility across FMPs included in this amendment. However, these (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.

The National Standard 1 guidance addressing carry-overs indicates that Councils must state in their FMP when carry-over can and cannot be used. Sub-Action 3.1 specifies circumstances when carry-over would be allowed (though not required). Under Sub-Action 3.1-**Alternative 1**, no carry-over would be allowed. Sub-Action 3.1-**Alternative 2** addresses criteria defining eligibility for carry-over. Eligibility would be evaluated for an individual stock and individual sector that has a specified ACL. Base criteria for carry-over eligibility are that the stock is not overfished (B>MSST), overfishing is not occurring (F<MFMT), and the stock's OFL is defined. Additional criteria are considered through sub-alternatives. Multiple sub-alternatives under Sub-Action 3.1-**Alternative 2** could be selected and combined.

Sub-Action 3.1-**Sub-Alternative 2a** requires that the stock's biomass be above a more conservative threshold than MSST, the midpoint between MSST and B_{MSY}.

Sub-Action 3.1-**Sub-Alternative 2b** addresses carry-over following catch-based regulatory closures for a fishery sector. A sector must have experienced a catch-based regulatory closure during the prior 3 years to be considered eligible for carry-over. The amount that may be carried over would still be determined from the unused ACL in the immediately preceding year, as specified by Sub-Action 3.2.

Sub-Action 3.1-**Sub-Alternative 2c** bases eligibility on landings history for the entire fishery (all sectors) during the prior 3 years. The sum of all landings during the prior 3 years must be less than the sum of the total ACLs in effect during the same time period. If sector ACLs are specified in different catch units (e.g., one in pounds and another in numbers), landings will be converted and evaluated using the units used to specify ABC.

Sub-Action 3.1-**Alternative 2d**, would require that carry-overs only be applied for ABCs that are not undergoing a phase-in for an ABC decrease.

Sub-Action 3.1-**Alternative 2e**, would require that carry-overs only be applied to stocks and sectors that have both in-season accountability measures to limit harvest to the ACL and post-season accountability measures that would pay back ACL overages. The 2020 NS1 guidance recommends against applying carry-overs of underharvests to stocks that do not also have paybacks of overharvest, as this could lead to the long-term average harvest being greater than the ACL.

Sub-Action 3.2 addresses the amount of unused ACL that can be carried over. Carry-over would be applied on a sector-by-sector basis, and the amount that may be carried over may not exceed the amount of unused sector ACL in the prior year. Unharvested portions of the sector ACL will be evaluated using the same units of measurement (e.g., weight or numbers) used to specify catch limits for the sector. If necessary, carried over amounts will be converted to the same unit as the ABC to calculate the temporary revised ABC and compare to the OFL. Sub-Action 3.2-**Alternative 1** would not allow carry-over. Sub-Action 3.2-**Alternatives 2** and **3** specify the amount of unused ACL that can by carried over.

Both **Alternatives 2** and **3** would allow an ABC to be temporarily revised to allow a sector ACL increase that would accommodate the carried over amount. The sum of the sector ACLs (total ACL) may not exceed the revised ABC. Carry-overs are sector-specific, thus if only one sector is carrying over unused ACL, the carried-over amount is allocated completely to that sector, subject to limitations defined in **Alternatives 2** and **3**. If more than one sector is carrying over unused ACL in the same year, each sector's carry-over amount will be completely allocated to the sector from which it was derived, unless the sum of all carry-over amounts plus the specified total ACL is greater than the OFL. In this case, the difference between the temporary revised ABC and the specified total ACL will be allocated using sector allocation percentages specified by the FMP. A revised sector ACL and revised ABC would remain in place for a single fishing year. Following a year that included carry-over, evaluations of carry-over amounts for future years would be based on the ABC and sector ACLs specified by the FMP, not the temporarily revised values.

Under Sub-Action 3.2-**Alternative 2**, a temporarily revised ABC may not exceed the OFL. The OFL places an upper limit on the amount of unused ACL that may be carried over. The carried over amount cannot exceed the difference between the OFL and the specified total ACL.

Under Sub-Action 3.2-**Alternative 3**, a temporarily revised ABC may not exceed the OFL. A temporarily revised ABC also may not exceed the total ACL plus 25% of the sector ACL for the sector carrying over. This sub-alternative includes an additional limitation on the amount that may be carried over, making it more conservative than **Alternative 2** for ACL underages that are greater than 25% of the sector ACL or 25% of the total ACL (if both sectors are carrying over).

An example of carry-overs and how they would be applied to different scenarios is included in Appendix I.

THE COUNCIL WILL PROVIDE ADDITIONAL CARRY-OVER GUIDANCE IN SEPTEMBER 2022 ON WHETHER FISHERIES WITH SPLIT SEASONS AND SUB-SECTOR ALLOCATIONS (SUCH AS GEAR ALLOCATIONS) SHOULD BE ELIGIBLE FOR INTERANNUAL CARRY-OVER.

2.3.2 Comparison of Alternatives

Positive biological effects would be expected from alternatives that allow the lowest amount of harvest. In the context of carry-over eligibility, the greatest positive biological effects would be expected from measures that most limit the occurrence of carry-overs. Therefore, **Alternative 1 (No Action)** would be expected to have greater positive biological effects (by not allowing carry-overs at all) when compared with **Alternative 2** (including its sub-alternatives). **Sub-Alternative 2a** would increase the probability that the stock has enough biomass to sustain temporary harvest beyond the specified ABC. **Sub-Alternative 2b** would limit carry-overs to those fisheries that could have harvested more of the ACL (indicated by underharvest) in the absence of an early closure of the fishery. **Sub-Alternative 2c** would limit the probability of average annual harvest exceeding average ACL over a longer time period. **Sub-Alternative 2d** would reduce negative biological effects by not allowing negative effects of carry-over and phase-in of an ABC decrease to be combined. **Sub-Alternative 2e** would limit carry-overs only to those stocks that are able to be closed when the temporary revised ACL is met, reducing the probability of overfishing occurring. The greatest positive biological effects under **Sub-Action 3.1** would be expected from **Alternative 1 (No Action)**, followed by **Alternative 2**. Within **Alternative 2**, the greatest positive biological effects would be expected with the addition of all of **Sub-Alternatives 2a-2e**.

In **Sub-Action 3.2**, the greatest positive biological effects would be expected from measures that most limit the amount of ACL that may be carried over. **Alternative 2** would allow carry-over of a sector's unharvested ACL. **Alternative 3** includes all of the limitations for carry-over amounts contained in **Alternative 2**, but also adds that the temporary revised ABC may not exceed the stock's total ACL plus 25% of the sector ACL. Therefore, **Alternative 1 (No Action)** would be expected to have the greatest positive biological effects (by not allowing carry-overs at all), followed by **Alternative 3**, and **Alternative 2**, respectively.

Alternative 1 (No Action) for both **Sub-Action 3.1** and **Sub-Action 3.2** would not allow carry-over of unharvested ACL. As such this would result in comparatively lower economic benefits from foregoing such harvest. **Alternative 2** and its sub-alternatives (**Sub-Alternatives 2a** through **2e**) would specify criteria for when carry-over of unharvested ACL would be allowed, thus creating the opportunity for increased harvest and associated economic benefits in some circumstances. In **Sub-Action 3.2**, both **Alternatives 2** and **3** would be expected in increase potential short-term economic benefits, with **Alternative 2** providing slightly higher potential benefits than **Alternative 3** due to fewer restrictions on how much the ABC and resulting ACL could be temporarily increased. While difficult to compare the economic effects of each alternative and sub-alternative across sub-actions due to the wide range of applicable circumstance and species, economic benefits are expected to be greater under **Alternative 2** in **Sub-Action 3.1** and **Alternatives 2** and **3** in **Sub-Action 3.2** compared to **Alternative 1 (No Action)** in each sub-action respectively.

Additional social effects would not be expected from **Sub-Action 3.1** - **Alternative 1 (No Action)**, and any unused quota would continue to be unavailable for harvest the following year. Generally, positive effects would be expected for fishermen from a carryover of uncaught quota

under **Alternative 2** if the quota provides additional opportunities to retain fish that would otherwise be unavailable the following year. However, there would be no effects from providing a quota carryover for a given fish stock if the additional quota goes unused. In general, the higher the ACL, the greater the short-term social benefits that would be expected to accrue, assuming long-term recovery and rebuilding goals are met. The highest potential ACL would be expected to result in the most benefits to participants. **Alternative 2** would allow carry-over of a sector's unharvested ACL as long as it does not exceed the OFL or the total ACL plus the carried over amount. **Alternative 3** adds an additional limit, restricting the ABC to the stock's total ACL plus 25% of the sector ACL. Under the alternatives proposed in **Sub-Action 3.2**, the greatest benefits to fishery participants, communities, and associated fishing businesses would be expected under **Alternative 2**, followed by **Alternative 3**, and **Alternative 1 (No Action)**.

In **Sub-Action 3.1**, administrative effects would be expected to be greatest under **Alternative 2** (including its sub-alternatives), when compared with **Alternative 1 (No Action)**. Within **Alternative 2**, administrative burdens would be expected to be greater under **Sub-alternatives 2a**, **2b**, and **2c**, when compared with **Sub-alternatives 2d** and **2e**, because of the complexity of calculations in establishing the criteria when carry-over could be allowed. In **Sub-Action 3.2**, administrative effects would be expected to be greater under **Alternatives 2** and **3,** compared to **Alternative 1 (No Action)**. Administrative burdens would include SSC, AP, and Council discussions determining whether a stock can carry over unharvested ACL in years when it meets the conditions defined in **Sub-Action 3.1**, as well as staff work to incorporate the Council's decision on carry-overs into an amendment or regulatory amendment to the FMP. Additional administrative effects would be related to educational activities by staff in informing all the constituents and enforcement of any changes to the ACLs.

2.4 Action 4. Modify framework procedures for the Snapper Grouper, Dolphin Wahoo, and Golden Crab Fishery Management Plans

2.4.1 Alternatives

NOTE: Action 4 was added to this amendment to address implementation of carry-overs. This approach was taken to more specifically define the process of carry-over implementation within the FMPs' framework procedures. Current ABC values will not be changed for any species within this amendment.

Sub-Action 4.1. Modify Section I of the Snapper Grouper Framework Procedure to include a framework process to approve carry-overs.

Alternative 1 (No Action). Do not modify the Snapper Grouper Fishery Management Plan framework procedure (available in Snapper Grouper Amendment 42).

Alternative 2. Modify the Snapper Grouper Fishery Management Plan framework procedure by adding the following language to Section I:

Single season adjustments to ABCs and ACLs that would allow carry-over of unused amounts of a sector ACL, according to the existing ABC Control Rule(s) and ACLs that have been approved by the Council and implemented pursuant to the FMP, may be made through this framework procedure. This process is authorized as follows:

a. When specifying an ABC and ACL for a stock, or through specific action on an existing ABC and ACL, the Council will determine whether carry-over will be authorized, if annual conditions cause a stock ACL or sector ACL to qualify for carry-over. In doing so, the Council will consider potential need for, and benefits of, carry-over for stocks that could become eligible according to criteria specified in the ABC control rule. The Council will also determine the duration of time when the specified ABC and ACL are effective. An amendment or framework that specifies carry-over for a stock will include analysis of the relevant biological, economic, and social information necessary to meet the criteria and guidance of the existing ABC Control Rule.
    i. To support potential carry-over justification, a Term of Reference will be added for stock assessments to project the maximum amount of landings beyond the ABC that could be carried over in one year while not resulting in overfishing nor the stock becoming overfished within the projection period.
b. Following the conclusion of each fishing year, staff will notify the Council if any stocks and sectors for which carry-over is approved qualify based on the previous year's landings, potentially using preliminary landings estimates.
c. If a sector qualifies for carry-over according to specifications of the ABC and annual landings meeting criteria specified in the ABC control rule, NOAA Fisheries will enact carry-over of eligible landings from the previous year.

d. If the Council chooses to deviate from the criteria and guidance of the effective ABC control rule, this abbreviated process would not apply.

Sub-Action 4.2. Modify the Dolphin Wahoo Fishery Management Plan framework procedure to include a framework process to approve carry-overs.

Alternative 1 (No Action). Do not modify the Dolphin Wahoo Fishery Management Plan framework procedure (available in Dolphin Wahoo Amendment 5).

Alternative 2. Modify the Dolphin Wahoo Fishery Management Plan framework procedure by adding the following language:

Single season adjustments to ABCs and ACLs that would allow carry-over of unused amounts of a sector ACL, according to the existing ABC Control Rule(s) and ACLs that have been approved by the Council and implemented pursuant to the FMP, may be made through this framework procedure. This process is authorized as follows:

a. When specifying an ABC and ACL for a stock, or through specific action on an existing ABC and ACL, the Council will determine whether carry-over will be authorized, if annual conditions cause a stock ACL or sector ACL to qualify for carry-over. In doing so, the Council will consider potential need for, and benefits of, carry-over for stocks that could become eligible according to criteria specified in the ABC control rule. The Council will also determine the duration of time when the specified ABC and ACL are effective. An amendment or framework that specifies carry-over for a stock will include analysis of the relevant biological, economic, and social information necessary to meet the criteria and guidance of the existing ABC Control Rule.
    i. To support potential carry-over justification, a Term of Reference will be added for stock assessments to project the maximum amount of landings beyond the ABC that could be carried over in one year while not resulting in overfishing nor the stock becoming overfished within the projection period.
b. Following the conclusion of each fishing year, staff will notify the Council if any stocks and sectors for which carry-over is approved qualify based on the previous year's landings, potentially using preliminary landings estimates.
c. If a sector qualifies for carry-over according to specifications of the ABC and annual landings meeting criteria specified in the ABC control rule, NOAA Fisheries will enact carry-over of eligible landings from the previous year.
d. If the Council chooses to deviate from the criteria and guidance of the effective ABC control rule, this abbreviated process would not apply.

Sub-Action 4.3. Modify the Golden Crab Fishery Management Plan framework procedure to include a framework process to approve carry-overs.

Alternative 1 (No Action). Do not modify the Golden Crab Fishery Management Plan framework procedure (available in the Golden Crab Fishery Management Plan).

Alternative 2. Modify the Golden Crab Fishery Management Plan framework procedure by adding the following language:

Single season adjustments to ABCs and ACLs that would allow carry-over of unused amounts of a sector ACL, according to the existing ABC Control Rule(s) and ACLs that have been approved by the Council and implemented pursuant to the FMP, may be made through this framework procedure. This process is authorized as follows:

a. When specifying an ABC and ACL for a stock, or through specific action on an existing ABC and ACL, the Council will determine whether carry-over will be authorized, if annual conditions cause a stock ACL or sector ACL to qualify for carry-over. In doing so, the Council will consider potential need for, and benefits of, carry-over for stocks that could become eligible according to criteria specified in the ABC control rule. The Council will also determine the duration of time when the specified ABC and ACL are effective. An amendment or framework that specifies carry-over for a stock will include analysis of the relevant biological, economic, and social information necessary to meet the criteria and guidance of the existing ABC Control Rule.
    i. To support potential carry-over justification, a Term of Reference will be added for stock assessments to project the maximum amount of landings beyond the ABC that could be carried over in one year while not resulting in overfishing nor the stock becoming overfished within the projection period.
b. Following the conclusion of each fishing year, staff will notify the Council if any stocks and sectors for which carry-over is approved qualify based on the previous year's landings, potentially using preliminary landings estimates.
c. If a sector qualifies for carry-over according to specifications of the ABC and annual landings meeting criteria specified in the ABC control rule, NOAA Fisheries will enact carry-over of eligible landings from the previous year.
d. If the Council chooses to deviate from the criteria and guidance of the effective ABC control rule, this abbreviated process would not apply.

Discussion

Action 4 addresses the process by which catch limits would be temporarily adjusted to accommodate carry-over. This process would be incorporated into the framework procedures for each of the Snapper Grouper, Dolphin Wahoo, and Golden Crab FMPs.

Under existing procedures, 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 and the need to implement carry-overs within a fishing year based on landings from the previous year.

Under **Alternative 2** in **Sub-Actions 4.1-4.3**, single season adjustments to ABCs and ACLs to accommodate carry-overs would occur automatically for stocks for which: 1) the SSC has recommended be eligible for potential carry-over when recommending the ABC, 2) the Council has decided be eligible for potential carry-over when specifying the ABC and ACL, and 3) annual conditions have fulfilled criteria specified in Action 3.

This procedure would not require additional public, SSC, or advisory panel comment, as comments relevant to the ABC being approved with potential for carry-over would be part of the development process for the amendment or framework in which the ABC and ACL are specified.

2.4.2 Comparison of Alternatives

No biological effects on any species under the Snapper Grouper, Dolphin and Wahoo, and Golden Crab FMPs would be expected under **Alternative 2** in **Sub-Actions 4.1**, **4.2**, and **4.3**, when compared with **Alternative 1 (No Action)**, because this action (and sub-actions) does not impact the harvest levels of any species in any manner.

Under **Alternative 1 (No Action)** for each sub-action respectively, carry-over measures could still be implemented but these measures would need to go into place via a plan amendment rather than a framework amendment. Plan amendments typically take longer to put into place, thus increasing the time that the initial potential economic benefits from carry-over could occur. Additionally, there are often higher administrative costs from developing a framework amendment compared to a plan amendment. Therefore, **Alternative 2** for each sub-action, which would allow carry-over to be implemented via framework, would likely result in more timely economic benefits and fewer costs than **Alternative 1 (No Action)**.

Modification of the framework procedure of for the Snapper Grouper (**Sub Action 4.1**), Dolphin Wahoo (**Sub-Action 4.2**) and Golden Crab (**Sub-Action 4.3**) FMPs would not be expected to result in any direct social impacts. Rather, indirect social effects would be expected and would result in broad, long-term social benefits, and minimal negative social effects. The relative speed at which beneficial regulatory changes can be implemented can play a role in determining the magnitude of the anticipated indirect social effects. **Alternative 2** would reduce the required time to modify the ACLs if a carryover occurs by allowing the Council to propose changes through the framework procedure. Although **Alternative 2** reduces the opportunity for public comment of proposed measures, the expedited process is expected to benefit fishery participants through more timely management changes that respond to new information and may result in greater fishing opportunities. Standard public participation and review opportunities remain available as part of the framework procedure under all alternatives.

Alternative 2 under each of **Sub-Actions 4.1**, **4.2**, and **4.3**, would be expected to have greater administrative effects compared to **Alternative 1 (No Action)** of those respective sub-actions. Administrative burdens would include SSC, AP, and Council work to develop framework amendments implementing ABCs with carry-over in eligible years. Administrative burdens would also include single season adjustments to ABCs and ACLs for applicable stocks. Additional administrative effects would be related to educational activities by staff in informing all the constituents and enforcement of any changes to the ACLs. In the long-term, the abbreviated process outlined under **Alternative 2** in **Sub-Actions 4.1**, **4.2**, and **4.3 (Section 2.4.1)**, would be expected to have beneficial administrative effects in reducing staff time and workload, especially during the rulemaking process.

Chapter 3. Affected Environment

This section describes the affected environment in the proposed project area. The affected environment is divided into six major components:

- **Habitat Environment** (Section 3.1)
- **Biological and Ecological Environment** (Section 3.2)
- **Economic Environment** (Sections 3.3)
- **Social Environment** (Section 3.4)
- **Environmental Justice** (Section 3.5)
- **Administrative Environment** (Section 3.6)

3.1 Habitat Environment

Information on the habitat utilized by species in the snapper grouper, dolphin and wahoo, and golden crab grouper fishery management units (Snapper Grouper FMU) and managed through the Fishery Management Plans (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP), Dolphin and Wahoo Fishery of the Atlantic, and Golden Crab Fishery of the South Atlantic Region is included in Volume II of the Fishery Ecosystem Plan[1] (FEP; SAFMC 2009) and the FEP II Dashboard which are incorporated here by reference. South Atlantic Fishery Management Council (Council) designated essential fish habitat (EFH) and EFH-Habitat Areas of Particular Concern (HAPC) are presented in the SAFMC User Guide and spatial representations of EFH and other habitat related layers are in the Council's online map services provided by the SAFMC Digital Dashboard Habitat and Ecosystem Web Services.[2]

3.1.1 Essential Fish Habitat

EFH is defined in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S. C. 1802(10)). EFH for species in the Snapper Grouper FMU includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs and medium to high profile outcroppings on and around the shelf break zone from shore to at least 600 ft (but to at least 2000 ft for wreckfish) where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical complex. EFH includes the spawning area in the water column above the adult habitat and the

[1] The FEP can be found at: http://safmc.net/ecosystem-management/fishery-ecosystem-plan/.
[2] https://ocean.floridamarine.org/safmc_dashboard/map-services.html.

additional pelagic environment, including *Sargassum*, required for larval survival and growth up to and including settlement. In addition, the Gulf Stream is an EFH because it provides a mechanism to disperse snapper grouper larvae.

For specific life stages of estuarine dependent and nearshore snapper grouper species, EFH includes areas inshore of the 100-foot contour, such as attached macroalgae; submerged rooted vascular plants (seagrasses); estuarine emergent vegetated wetlands (saltmarshes, brackish marsh); tidal creeks; estuarine scrub/shrub (mangrove fringe); oyster reefs and shell banks; unconsolidated bottom (soft sediments); artificial reefs; and coral reefs and live/hard bottom.

EFH for dolphin and wahoo is the Gulf Stream, Charleston Gyre, Florida Current, and pelagic *Sargassum.*[3]

EFH for golden crab includes the U.S. Continental Shelf from Chesapeake Bay south through the Florida Straits (and into the Gulf of Mexico). In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse golden crab larvae. The detailed description of seven essential fish habitat types (a flat foraminferan ooze habitat; distinct mounds, primarily of dead coral; ripple habitat; dunes; black pebble habitat; low outcrop; and soft-bioturbated habitat) for golden crab is provided in Volume II of the Fishery Ecosystem Plan[4].

3.1.2 Habitat Areas of Particular Concern

EFH-habitat of particular concern (HAPC) for species in the Snapper Grouper FMU in the Atlantic include medium to high profile offshore hard bottoms where spawning normally occurs; localities of known or likely periodic spawning aggregations; near shore hard bottom areas; The Point, The Ten Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump (South Carolina); mangrove habitat; seagrass habitat; oyster/shell habitat; all coastal inlets; all state-designated nursery habitats of particular importance to snapper grouper (e.g., primary and secondary nursery areas designated in North Carolina); pelagic and benthic *Sargassum*; Hoyt Hills for wreckfish; the Oculina Bank HAPC; all hermatypic coral habitats and reefs; manganese outcroppings on the Blake Plateau; Council-designated artificial reef special management zones; and deep-water marine protected areas. Areas that meet the criteria for EFH-HAPCs include habitats required during each life stage (including egg, larval, post-larval, juvenile, and adult stages).

The Council established the special management zone (SMZ) designation process in 1983 in the Snapper Grouper FMP, and SMZs have been designated in federal waters off North Carolina, South Carolina, Georgia, and Florida since that time. The purpose of the original SMZ designation process, and the subsequent specification of SMZs, was to protect snapper grouper populations at the relatively small, permitted artificial reef sites and "create fishing opportunities that would not otherwise exist." Thus, the SMZ designation process was centered around

[3] Note: This EFH-HAPC definition for dolphin was approved by the Secretary of Commerce on June 3, 1999 as a part of the SAFMC Comprehensive Habitat Amendment (SAFMC 1998)(dolphin was included within the Coastal Migratory Pelagics FMP), the Fishery Management Plan for Dolphin and Wahoo (2003) and Amendment 2 in Comprehensive Ecosystem Based Amendment 1 (SAFMC 2009) for dolphin and wahoo and presented in the EFH User Guide https://safmc.net/download/SAFMCEFHUsersGuideNov20.pdf .

[4] The FEP can be found at: http://safmc.net/ecosystem-management/fishery-ecosystem-plan/.

protecting the relatively small habitats, which are known to attract desirable snapper grouper species.

Similarly, in the Comprehensive Ecosystem-Based Amendment 1 (CE-BA 1; SAFMC 2010), the Council designated EFH areas and EFH-HAPCs under the Snapper Grouper FMP. Under the Magnuson-Stevens Act, FMPs are required to describe and identify EFH and to minimize the adverse effects of fishing on such habitat to the extent practicable. An EFH-HAPC designation adds an additional layer to the EFH designation. Under the Snapper Grouper FMP, EFH-HAPCs are designated based upon ecological importance, susceptibility to human-induced environmental degradation, susceptibility to stress from development, or rarity of habitat type. The Council determined in CE-BA 1 that the Council-designated SMZs met the criteria to be EFH-HAPCs for species included in the Snapper Grouper FMP. Since CE-BA 1, the Council has designated additional SMZs in the Snapper Grouper FMP. The SMZ and EFH-HAPC designations serve similar purposes in pursuit of identifying and protecting valuable and unique habitat for the benefit of fish populations, which are important to both fish and fishers. Therefore, the Council determined that a designated SMZ meets the criteria for an EFH-HAPC designation, and the Council intends that all SMZs designated under the Snapper Grouper FMP also be designated as EFH-HAPCs under the Snapper Grouper FMP.

EFH-HAPC for dolphin and wahoo in the Atlantic include The Point, The Ten-Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and The Georgetown Hole (South Carolina); The Point off Jupiter Inlet (Florida); The Hump off Islamorada, Florida; The Marathon Hump off Marathon, Florida; The "Wall" off of the Florida Keys; and Pelagic *Sargassum*.[5]

Areas that meet the criteria for EFH-HAPCs include habitats required during each life stage (including egg, larval, post larval, juvenile, and adult stages). In addition to protecting habitat from fishing related degradation though fishery management plan regulations, the Council, in cooperation with National Marine Fisheries Service (NMFS), actively comments on non-fishing projects or policies that may impact EFH. With guidance from the Habitat Advisory Panel, the Council has developed and approved policies on: energy exploration, development, transportation and hydropower re-licensing; beach dredging and filling and large-scale coastal engineering; protection and enhancement of submerged aquatic vegetation; alterations to riverine, estuarine and near shore flows; offshore aquaculture; and marine invasive species and estuarine invasive species.

There is insufficient knowledge of the biology of golden crabs to identify spawning and nursery areas and to identify EFH-HAPCs at this time. As information becomes available, the Council

[5] Note: This EFH-HAPC definition for dolphin was approved by the Secretary of Commerce on June 3, 1999 as a part of the SAFMC Comprehensive Habitat Amendment (SAFMC 1998) (dolphin was included within the Coastal Migratory Pelagics FMP), the Fishery Management Plan for Dolphin and Wahoo (2003) and Amendment 2 in Comprehensive Ecosystem Based Amendment 1 (SAFMC 2009) for dolphin and wahoo and presented in the EFH User Guide https://safmc.net/download/SAFMCEFHUsersGuideNov20.pdf .

will evaluate such data and identify HAPCs as appropriate. Refer to **Appendix D** for detailed information on EFH and EFH-HAPCs for all Council managed species.

3.2 Biological and Ecological Environment

Details regarding the biological and ecological environment for the species in the Snapper Grouper FMU are found in the Comprehensive ACL Amendment (SAFMC 2011) and amendments to the Snapper Grouper FMP since then, and are incorporated by reference, herein. Similarly, the reader is referred to Amendment 10 to the Dolphin and Wahoo FMP (SAFMC 2022) and Amendment 9 to the Golden Crab FMP (SAFMC 2015).

In summary, the waters off the South Atlantic coast are home to a diverse population of fish. The Snapper Grouper FMU contains 55 species of fish, many of them neither "snappers" nor "groupers." These species live in depths from a few feet (typically as juveniles) to hundreds of feet. As far as north/south distribution, the more temperate species tend to live in the upper reaches of the South Atlantic management area (e.g., black sea bass, red porgy) while the tropical variety's core residence is in the waters off south Florida, Caribbean Islands, and northern South America (e.g., black grouper, mutton snapper). These are reef-dwelling species that live amongst each other. These species rely on the reef environment for protection and food. There are several reef tracts that follow the southeastern coast. The fact that these fish populations congregate dictates the nature of the fishery (multi-species) and further forms the type of management regulations proposed in this amendment.

Dolphin and wahoo are highly migratory pelagic species occurring in tropical and subtropical waters worldwide. In the western Atlantic, dolphin and wahoo are distributed from Nova Scotia to Brazil, including Bermuda and the greater Caribbean region, and the Gulf of Mexico. They are found near the surface around natural and artificial floating objects, including *Sargassum* (in the Atlantic).

Golden crabs inhabit the continental slope of Bermuda and the southeastern U.S. from off Chesapeake Bay south through the Straits of Florida and into the eastern Gulf of Mexico.

Additional information regarding life-history of the species in the Snapper Grouper, Dolphin and Wahoo, and Golden Crab FMUs can be found in the amendments mentioned above and in Volume II of the Fishery Ecosystem Plan[6].

3.2.1 Stock Status

The Southeast Data, Assessment, and Review (SEDAR) process is a cooperative Fishery Management Council initiative to improve the quality and reliability of fishery stock assessments in the South Atlantic, Gulf of Mexico, and U.S. Caribbean. SEDAR seeks improvements in the scientific quality of stock assessments, constituent and stakeholder participation in assessment development, transparency in the assessment process, and a rigorous and independent scientific review of completed stock assessments.

[6] The FEP can be found at: http://safmc.net/ecosystem-management/fishery-ecosystem-plan/.

SEDAR is organized around three public workshops. First is the Data Workshop, during which fisheries monitoring and life history data are reviewed and compiled. Second is the Assessment Workshop, which may be conducted via a workshop and several webinars, during which assessment models are developed and population parameters are estimated using the information provided from the Data Workshop. Third and final is the Review Workshop, during which independent experts review the input data, assessment methods, and assessment products. The completed assessment, including the reports of all three workshops and all supporting documentation, are then forwarded to the Council's Scientific and Statistical Committee (SSC). The SSC considers whether the assessment represents the best available science and develops fishing level recommendations for Council consideration.

Detailed information on species in the Snapper Grouper FMU assessed by the SEDAR process can be found at http://sedarweb.org/, and is hereby incorporated by reference. The Report to Congress on the Status of U.S. Stocks indicates dolphin is not overfished, and is not undergoing overfishing; while the overfishing and overfished status of wahoo and golden crab is unknown.[7]

3.2.2 Protected Species

NMFS manages marine protected species in the Southeast region under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). ESA-listed species under our purview in the Atlantic include species and Distinct Population Segments (DPS) of species of marine mammals (whales), sea turtles, fish, and corals. These species and their critical habitat are listed in **Table 3.2.2.1**.

Table 3.2.2.1. Status of listed species that may be affected in the action area (E= endangered, T=threatened).

Species		**Scientific Name**	**Status**
Marine Mammals	Sei whale	*Balaenoptera borealis*	E
	Blue whale	*Balaenoptera musculus*	E
	Fin whale	*Balaenoptera physalus*	E
	North Atlantic right whale	*Eubalaena glacialis*	E
	Sperm whale	*Physeter macrocephalus*	E
Sea Turtles	Loggerhead sea turtle, Northwest Atlantic (NWA) Distinct Population Segment (DPS)	*Caretta caretta*	T
	Green sea turtle, North Atlantic	*Chelonia mydas*	T
	Green sea turtle, South Atlantic DPS	*Chelonia mydas*	T
	Leatherback sea turtle	*Dermochelys coriacea*	E

[7] https://media.fisheries.noaa.gov/2022-04/Q1%202022%20FSSI%20and%20non%20FSSI%20Stock%20Status%20Tables.pdf

Species		Scientific Name	Status
	Hawksbill sea turtle	*Eretmochelys imbricata*	E
	Kemp's ridley sea turtle	*Lepidochelys kempii*	E
	Olive ridley sea turtle	*Lepidochelys olivacea*	T
Fish	Atlantic sturgeon, South Atlantic DPS	*Acipenser oxyrinchus*	E
	Atlantic sturgeon, Carolina DPS	*Acipenser oxyrinchus*	E
	Atlantic sturgeon, Chesapeake Bay DPS	*Acipenser oxyrinchus*	E
	Atlantic sturgeon, New York Bight DPS	*Acipenser oxyrinchus*	E
	Atlantic sturgeon, Gulf of Maine DPS	*Acipenser oxyrinchus*	T
	Atlantic salmon, Gulf of Maine DPS	*Salmo salar*	E
	Giant manta ray	*Mobula birostris*	T
	Scalloped hammerhead shark, Central and Southwest Atlantic DPS	*Sphyrna lewini*	T
	Smalltooth sawfish, U.S. DPS	*Pristis pectinata*	E
	Oceanic whitetip shark	*Carcharhinus longimanus*	T
	Nassau grouper	*Epinephelus striatus*	T
Corals	Elkhorn coral	*Acropora palmata*	T
	Staghorn coral	*Acropora cervornis*	T
	Lobed star coral	*Orbicella annularis*	T
	Rough cactus coral	*Orbicella annularis*	T
	Pillar coral	*Dendrogyra cylindrus*	T
	Mountainous coral	*Dendrogyra cylindrus*	T
	Boulder star coral	*Dendrogyra cylindrus*	T
Critical Habitat	North Atlantic right whale		
	Loggerhead sea turtle: NWA DPS		
	Acropora corals		

NMFS completed a formal consultation and resulting biological opinion (Bi-Op) on the conservation regulations under the ESA and the authorization of the South Atlantic snapper grouper fishery in federal waters under the Magnuson-Stevens Act, including the fishery managed by the Snapper Grouper FMP, on threatened and endangered species and designated critical habitat dated December 1, 2016. NMFS concluded that the activities addressed in the consultation are not likely to jeopardize the continued existence of any threatened or endangered species.

Since completing the December 2016 Bi-Op, NMFS published several final rules that listed additional species and designated critical habitat. NMFS has reinitiated formal consultation to address these listings and concluded the authorization of the South Atlantic snapper grouper fishery in federal waters during the re-initiation period will not violate ESA Sections 7(a)(2) or 7(d). For summary information on the protected species that may be adversely affected by the snapper grouper fishery and how they are affected refer to Section 3.2.5 in Vision Blueprint Regulatory Amendment 27 to the Snapper Grouper FMP (SAFMC 2019a).

Species descriptions and distributions of species in **Table 3.2.2.1** above are available in the BiOps for the Pelagic Longline Fishery for Atlantic Highly Migratory Species (HMS) (PLL BiOp; NMFS 2020b) and the operation of the HMS fisheries (excluding pelagic longline) under the Consolidated Atlantic HMS Fishery Management Plan (Non-PLL BiOp; NMFS 2020a), and are hereby incorporated by reference. Of these species and DPSs, the sea turtles, giant manta ray, Central and Southwest Atlantic DPS scalloped hammerhead shark, and oceanic whitetip shark may be adversely affected by the proposed action through incidental capture in dolphin and wahoo fishing gear. Sea turtle and giant manta rays may also be adversely affected if struck by a vessel in the fishery transiting to or from fishing grounds. All of the other listed species and critical habitat in **Table 3.2.2.1** are not likely to be adversely affected because of little overlap with where dolphin and wahoo fishing actually occurs. NMFS has reinitiated formal consultation to address these listings and concluded the authorization of the dolphin and wahoo fishery in federal waters during the re-initiation period will not violate ESA Sections 7(a)(2) or 7(d). For summary information on the protected species that may be adversely affected by the dolphin and wahoo fishery and how they are affected, refer to Section 3.2.5 in Amendment 10 to the Dolphin and Wahoo FMP (SAFMC 2022).

The golden crab fishery operates in deep water (800 ft or more) and does not use buoys or trap lines. These characteristics mean sea turtles and marine mammals are the only ESA-listed species that may be affected by the fishery. A trap could theoretically, hit these species as it is deployed. However, because these species are highly mobile the likelihood of injury occurring is extremely low. To date, no interactions between this fishery and ESA-listed sea turtles or marine mammals have ever been documented.

3.3 Description of the Economic Environment

A description of the dolphin and wahoo, reef fish, and golden crab stocks affected by the actions considered in this amendment is provided in Section 3.2. Additional details on the economic environment of the recreational and commercial sectors of these fishery are provided in Comprehensive ACL Amendment (SAFMC 2011). Details of the South Atlantic dolphin-wahoo, golden crab, and snapper grouper fisheries in general, can be found in Dolphin-Wahoo Amendment 10 (SAMFC 2022), Golden Crab Amendment 9 (SAFMC 2015), and Snapper Grouper Amendment 50 (SAFMC 2022) respectively.

3.3.1 Commercial Sector

Permits

Any fishing vessel that harvests and sells dolphin or wahoo from the Atlantic EEZ must have a valid Atlantic dolphin wahoo commercial permit. Commercial Atlantic dolphin wahoo (ADW)

permits are open access permits (i.e., access is not restricted). As shown in Table 3.3.1.1, the number of permits that were valid at any point in a given year increased slightly from 2015-2019. The number of permits decreased slightly in 2019 but was still higher than in 2015.

Table 3.3.1.1. Number of valid ADW permits, 2015-2019.

Year	Number of Permits
2015	2,660
2016	2,716
2017	2,785
2018	2,807
2019	2,722

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database.

Any fishing vessel that harvests and sells any of the golden crab species from the South Atlantic Exclusive Economic Zone (EEZ) must have a valid South Atlantic commercial golden crab permit (GC), which is a limited access permit. After a permit expires, it can be renewed or transferred up to one year after the date of expiration. As shown in Table 3.3.1.2, the number of valid or renewable GC crab permits has remained consistent from 2015 through 2019.

Table 3.3.1.2. Number of valid or renewable GC permits, 2015-2019.

Year	Number of Permits
2015	11
2016	11
2017	11
2018	11
2019	11

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database.

Any fishing vessel that harvests and sells any of the snapper grouper species from the South Atlantic Exclusive Economic Zone (EEZ) must have a valid South Atlantic commercial snapper grouper permit (SG), which is a limited access permit. After a permit expires, it can be renewed or transferred up to one year after the date of expiration. The number of valid or renewable SG permits declined steadily from 2015-2019, with about 6% less vessels participating in 2019 relative to 2015 (Table 3.3.1.3).

Table 3.3.1.3. Number of valid or renewable South Atlantic commercial SG permits, 2015-2019.

Year	Unlimited Permits	225-lb Trip-limited	Total Permits
2015	571	121	692
2016	565	116	681

2017	554	114	668
2018	549	110	659
2019	543	108	651

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database.

Landings, Revenue, and Effort

The information in Table 3.3.1.4 describes the landings and revenue for vessels that harvested Atlantic dolphin in each year from 2015 through 2019, as well as their revenue from Atlantic wahoo and other species. Vessel participation has been highly variable from 2015-2019, peaking at 695 vessels in 2016 and generally decreasing thereafter. Similarly, total annual revenue from dolphin landings steadily decreased after 2015, declining by about 37% from 2015 through 2019.

Table 3.3.1.4. Landings and revenue for vessels harvesting Atlantic dolphin by year, 2015-2019 (2019$).

Year	Number of Vessels	Dolphin Landings (ww)	Dolphin Revenue	Wahoo Revenue	Other Revenue	Total Revenue
2015	618	1,101,476	$3,236,562	$210,267	$44,788,222	$48,235,051
2016	695	940,696	$3,135,004	$239,148	$45,904,753	$49,278,905
2017	665	645,792	$2,200,895	$233,330	$51,887,899	$54,322,124
2018	638	511,419	$1,599,455	$173,842	$39,901,133	$41,674,430
2019	646	687,559	$1,984,127	$233,283	$51,919,314	$54,136,723

Source: ACCSP, pers. comm., data accessed July 23, 2020.

The information in **Table 3.3.1.5** describes the landings and revenue for vessels that harvested Atlantic wahoo in each year from 2015 through 2019, as well as their revenue from Atlantic dolphin and other species. Vessel participation has been steadily declining from 2015-2019, with the number of active vessels being about 21% less in 2019 relative to 2015. Total annual revenue from wahoo landings was also highly variable during this time, but generally increased from 2015 through 2019 in part due to the decline in the number of active vessels.

Table 3.3.1.5. Landings and revenue for vessels harvesting Atlantic wahoo by year, 2015-2019 (2019$).

Year	Number of Vessels	Wahoo Landings (ww)	Wahoo Revenue	Dolphin Revenue	Other Revenue	Total Revenue
2015	370	64,455	$250,845	$2,899,149	$30,255,573	$33,405,567
2016	349	66,868	$272,502	$2,658,451	$27,292,518	$30,223,471
2017	288	67,995	$275,965	$1,794,383	$31,499,567	$33,569,915

2018	273	50,364	$200,338	$1,281,028	$20,774,530	$22,255,896
2019	292	68,139	$262,896	$1,720,873	$28,404,351	$30,388,120

Source: ACCSP, pers. comm., data accessed July 23, 2020.

As illustrated in **Table 3.3.1.6** and **Table 3.3.1.7**, although most vessels (about 86%) that have been active in the commercial sector of the Atlantic dolphin fishery possess ADW permits, some vessels (about 14%) do not. Further, vessels with ADW permits are responsible for about 92% of the revenue from dolphin landings, with non-permitted vessels accounting for the other 8%. Active permitted vessels generally have higher average annual dolphin revenue as well as total revenue relative to active vessels that do not possess ADW permits. This result is to be expected since only vessels that harvest dolphin north of 39° N. latitude and have another federal commercial permits are allowed to do so without an ADW permit and those vessels are limited to 200 lbs (ww) per trip. An important difference between permitted and non-permitted vessels that harvest Atlantic dolphin is that the former earn much higher revenue from other fisheries and thus total revenue as well. Specifically, average total revenue for active permitted vessels was almost $82,400 per year while active non-permitted vessels only earned $35,350 on average per year from 2015-2019.

Table 3.3.1.6. Landings and revenue for permitted vessels harvesting Atlantic dolphin by year, 2015-2019 (2019$).

Year	Number of Vessels	Dolphin Landings (ww)	Dolphin Revenue	Wahoo Revenue	Other Revenue	Total Revenue
2015	545	1,043,298	$3,056,399	$183,379	$42,539,819	$45,779,597
2016	592	861,468	$2,852,750	$216,760	$43,060,535	$46,130,044
2017	582	603,551	$2,057,978	$216,472	$49,861,460	$52,135,910
2018	546	467,592	$1,452,769	$158,560	$36,706,455	$38,317,785
2019	544	623,070	$1,776,769	$201,485	$47,087,123	$49,065,377

Source: ACCSP, pers. comm., data accessed July 23, 2020.

Table 3.3.1.7. Landings and revenue for non-permitted and unknown vessels harvesting Atlantic dolphin by year, 2015-2019 (2019$).*

Year	Number of Vessels	Dolphin Landings (ww)	Dolphin Revenue	Wahoo Revenue	Other Revenue	Total Revenue
2015	73	58,178	$180,163	$26,888	$2,248,403	$2,455,454
2016	103	79,227	$282,254	$22,388	$2,844,219	$3,148,861
2017	83	42,241	$142,917	$16,858	$2,026,438	$2,186,213
2018	92	43,827	$146,685	$15,282	$3,194,678	$3,356,646
2019	102	64,489	$207,358	$31,798	$4,832,191	$5,071,346

Source: ACCSP, pers. comm., data accessed July 23, 2020.
*Landings by unknown vessels were consolidated and treated as being landed by a single vessel.

Similarly, as illustrated in **Table 3.3.1.8** and **Table 3.3.1.9**, although most vessels (about 89%) that have been active in the commercial sector of the Atlantic wahoo fishery possess ADW permits, some vessels (about 11%) do not. Further, vessels with ADW permits are responsible for about 89% of the revenue from wahoo landings, with non-permitted vessels accounting for the other 11%. Average annual revenue from wahoo landings are nearly identical for active permitted vessels and active vessels that do not possess ADW permits. Given the aforementioned regulations, this finding suggests that wahoo landings represent incidental catch regardless of whether they are harvested by permitted or non-permitted vessels. The main difference between permitted and non-permitted vessels that harvest Atlantic wahoo is that the former earn much higher revenue from other fisheries and thus total revenue as well. Specifically, average total revenue for active permitted vessels was about $103,000 per year while active non-permitted vessels only earned about $41,300 on average per year from 2015-2019.

Table 3.3.1.8. Landings and revenue for permitted vessels harvesting Atlantic wahoo by year, 2015-2019 (2019$).

Year	Number of Vessels	Wahoo Landings (ww)	Wahoo Revenue	Dolphin Revenue	Other Revenue	Total Revenue
2015	323	56,004	$217,656	$2,740,423	$28,579,814	$31,537,893
2016	305	60,163	$245,133	$2,453,131	$26,571,225	$29,269,489
2017	260	61,944	$249,806	$1,678,364	$30,314,428	$32,242,598
2018	248	45,528	$181,716	$1,165,814	$19,617,131	$20,964,662
2019	252	57,555	$223,837	$1,561,600	$26,763,923	$28,549,360

Source: ACCSP, pers. comm., data accessed July 23, 2020.

Table 3.3.1.9. Landings and revenue for non-permitted and unknown vessels harvesting Atlantic wahoo by year, 2015-2019 (2019$).*

Year	Number of Vessels	Wahoo Landings (ww)	Wahoo Revenue	Dolphin Revenue	Other Revenue	Total Revenue
2015	47	8,451	$33,189	$158,726	$1,675,759	$1,867,674
2016	44	6,705	$27,369	$205,320	$721,293	$953,982
2017	28	6,050	$26,159	$116,019	$1,185,139	$1,327,317
2018	25	4,837	$18,622	$115,215	$1,157,398	$1,291,235
2019	40	10,584	$39,059	$159,273	$1,640,428	$1,838,759

Source: ACCSP, pers. comm., data accessed July 23, 2020.
*Landings by unknown vessels were consolidated and treated as being landed by a single vessel

The information in **Table 3.3.1.10** describes the landings and revenue for vessels that harvested Atlantic golden crab in each year from 2015 through 2019, as well as their revenue from other species. Vessel participation has been steadily decreasing from 2015-2019, with the number of active vessels being about 56% less in 2019 relative to 2015. Total landings and revenue from golden crab in turn declined 62% and 64% respectively in 2019 relative to 2015. No reported other landings from other fisheries were associated with golden crab vessels from 2018-2019, likely due to the specialized gear utilized by golden crab fishers and vessels exiting the fishery overall.

Table 3.3.1.10. Landings and revenue for vessels harvesting Atlantic golden crab by year, 2015-2019 (2019$).

Year	Number of Vessels	Golden Crab Landings (ww)	Golden Crab Revenue	Other Revenue	Total Revenue
2015	9	760,501	$2,772,016	$328,062	$3,100,078
2016	7	684,801	$2,708,934	$157,774	$2,866,708
2017	7	609,533	$2,280,313	$811,970	$3,092,283
2018	5	343,909	$1,219,557	0	$1,219,557
2019	4	285,742	$1,219,557	0	$1,219,557

Source: ACCSP, pers. comm., data accessed Jan 24, 2022.
No reported other landings for 2018-2019.

The information in **Table 3.3.1.11** describes the landings and revenue for vessels that harvested Atlantic snapper-grouper in each year from 2015 through 2019, as well as their revenue from snapper-grouper and other species. Vessel participation has fluctuated slightly from 2015-2019 with a 3% decline in 2016 relative to 2015, but a 4% increase in participation in 2017 relative to 2016. Annual total revenue from snapper grouper declined by 7% in 2019 relative to 2015. Other landings only made up between 7-11% of the total revenue for snapper grouper vessels, and were variable across the time period.

Table 3.3.1.11. Landings and revenue for vessels harvesting Atlantic snapper grouper by year, 2015-2019 (2019$).

Year	Number of Vessels	Snapper Grouper Landings (ww)	Snapper Grouper Revenue	Other Revenue	Total Revenue
2015	367	3,529,070	$12,793,506	$970,928	$13,764,434
2016	357	3,263,890	$12,317,349	$1,205,561	$13,522,910
2017	373	3,211,642	$12,495,068	$1,471,798	$13,966,866
2018	369	2,950,776	$11,360,225	$1,052,455	$12,412,680
2019	373	3,085,758	$11,878,719	$977,827	$12,856,546

Source: SEFSC-SSRG Socioeconomic Panel (Jan 2022 version)

Foreign Trade

Imports of seafood products compete in the domestic seafood market and have in fact dominated many segments of the seafood market. Imports aid in determining the price for domestic seafood products and tend to set the price in the market segments in which they dominate. Seafood imports can have downstream effects on the local fish market. At the harvest level, imports can affect the returns to fishermen through the ex-vessel prices they receive for their landings. As substitutes to domestic production, imports tend to cushion the adverse economic effects on consumers resulting from a reduction in domestic landings.

Dolphin-Wahoo

According to NMFS' foreign trade data,[8] dolphin are not exported from the U.S. to other countries. Also, imports and exports of wahoo are not tracked at the individual species level, though it is highly unlikely that any domestic landings of wahoo are exported. Thus, the following describes the imports of dolphin products which directly compete with domestic harvest of dolphin. All monetary estimates are in 2019 dollars.

As shown in **Table 3.3.1.12**, total imports of dolphin in volume were highly unstable from 2015 through 2019. Total imports were approximately 57.6 million pounds (mp) product weight (pw) in 2015 and at a similar level in 2018, but fell significantly (by almost 30% relative to 2018) in 2019 to only 40.4 mp pw in 2019. Revenue from dolphin imports followed a somewhat different pattern. Specifically, revenue from dolphin imports was $223.8 million in 2015, but increased to over $255 million in 2017 and almost $270 million (an all-time record) in 2018. However, as with volume, dolphin import revenue fell significantly in 2019 to only around $147 million, a decrease of more than 45% compared to 2018.

With respect to these imports country of origin, Peru has been the primary source of dolphin imports to the U.S., representing about 31% of the import market from 2015-2019. Ecuador and Taiwan have also controlled significant shares in the dolphin import market during this time, accounting for 25% and 18% of the market, respectively. Together, these countries controlled almost 75% of the dolphin import market from 2015-2019. However, their share of the market did decline during this time, falling from almost 82% in 2016 to only around 70% from 2017 through 2019, as other countries such as Vietnam, Panama, and Costa Rica, increased their imports and share of the import market to the U.S. Also, the decline in Peru's market share in combination with the increase in Ecuador's market share also largely led to the shift in product form from frozen fillets to fresh whole product.

Table 3.3.1.12. Annual pounds and value of dolphin imports and share of imports by country, 2015-2019.

	2015	2016	2017	2018	2019
Pounds of dolphin imports (product weight, million pounds)	57.6	47.2	50.4	57.1	40.4
Value of dolphin imports (millions $, 2019$)	$223.8	$211.7	$255.3	$269.8	$147.1

[8] https://www.fisheries.noaa.gov/foss/f?p=215:2:5377675931692::NO:::

	2015	2016	2017	2018	2019
Average price per lb (2019$)	$3.89	$4.49	$5.07	$4.72	$3.64
Share of Imports by Country					
Peru	33.4	35.3	27.2	34.8	24.4
Ecuador	29.5	21.3	17.4	25.2	31.5
Taiwan	17.6	25.2	26.0	8.9	13.6
All others	19.5	18.2	29.4	31.1	30.5

Source: Pounds of Dolphin Imports (GOM Data Management, pers. comm., Nov. 3, 2020). Values and market share by country (Office of Science and Technology, pers. comm., Nov. 3, 2020).

Golden Crab

According to NMFS' foreign trade data,[9] golden crab are not exported from the U.S. to other countries. Also, imports of golden crab do not exist, as this is a regional species native to the U.S. Gulf of Mexico and South Atlantic territorial waters.

Snappers

According to NMFS' foreign trade data,[10] snapper are not exported from the U.S. to other countries. Thus, the following describes the imports of snapper products which directly compete with domestic harvest of snapper species. All monetary estimates are in 2019 dollars. As show in **Table 3.3.1.13,** imports of fresh snapper were 17.4 million lbs product weight (pw) in 2015. They peaked at 20.4 million lbs pw in 2016 and have increased by 15% in 2019, relative to 2015. Total revenue from fresh snapper imports increased from $79 million (2019 dollars) in 2015 to a five-year high of $109.3million in 2019. Imports of fresh snapper primarily originated in Mexico or Central America and entered the U.S. through the port of Miami.

Imports of frozen snapper were substantially less than imports of fresh snapper from 2015 through 2019. The annual value of frozen snapper imports ranged from $33 million (2019 dollars) to $37 million during the time period, with a peak in 2016. Imports of frozen snapper primarily originated in South America (especially Brazil), Indonesia, Mexico, and Central America. The majority of frozen snapper imports entered the U.S. through the ports of Miami, New York, and San Juan.

Table 3.3.1.13. Annual pounds and value of snapper imports and share of imports by country, 2015-2019.

	2015	2016	2017	2018	2019
Pounds of Snapper imports (product weight, million pounds)	17.4	20.4	20.0	19.4	20.0
Value of snapper imports (millions $, 2019$)	$120.20	$136.06	$129.97	$133.68	$144.08
Average price per lb (2019$)	$6.89	$6.67	$6.51	$6.89	$7.19

[9] https://www.fisheries.noaa.gov/foss/f?p=215:2:5377675931692::NO:::
[10] https://www.fisheries.noaa.gov/foss/f?p=215:2:5377675931692::NO:::

Share of Imports by Country					
Mexico	22.3	24.4	27.7	24.6	27.6
Panama	20.7	23.9	20.0	21.4	20.0
Brazil	15.7	11.4	11.8	13.0	11.1
All others	41.3	40.3	40.4	41.0	41.4

Source: NOAA Foreign Trade Query Tool, accessed 01/14/22

Groupers

According to NMFS' foreign trade data,[11] grouper are not exported from the U.S. to other countries. Imports of fresh grouper were 4.8 million lbs pw in 2015. They increased to 5.6 million lbs pw in 2018. Total revenue from fresh grouper imports increased from $44.4 million (2019 dollars) in 2015 to a five-year high of $53.3 million in 2018. Imports of fresh grouper primarily originated in Mexico or Central America and entered the U.S. through the ports of Tampa and Miami.

Imports of frozen grouper were substantially less than imports of fresh grouper from 2015 through 2019. Imports of frozen grouper were 571,000 lbs pw in 2015. They increased to 2.1 million lbs pw in 2018 before dropping to 1.5 million lbs pw in 2019. The annual value of frozen grouper imports ranged from $1.8 million (2019 dollars) to $5.7 million (2019 dollars) during the time period, with the peak in 2018. Imports of frozen grouper primarily originated in Mexico, India, and China. The majority of frozen grouper imports entered the U.S. through the ports of Tampa, Miami, and New York.

Table 3.3.1.14. Annual pounds and value of grouper imports and share of imports by country, 2015-2019.

	2015	2016	2017	2018	2019
Pounds of Grouper imports (product weight, million pounds)	5.4	5.6	6.2	7.7	6.7
Value of dolphin imports (millions $, 2019$)	$50.99	$51.77	$54.74	$60.07	$54.81
Average price per lb (2019$)	$9.42	$9.30	$8.81	$7.79	$8.16
Share of Imports by Country					
Mexico	63.2	63.2	57.6	63.7	63.0
Panama	15.1	11.9	10.9	6.6	6.2
Brazil	2.4	4.9	9.3	12.0	13.3

[11] https://www.fisheries.noaa.gov/foss/f?p=215:2:5377675931692::NO:::

` All others	19.2	20.1	22.2	17.8	17.5

Source: NOAA Foreign Trade Query Tool, accessed 01/14/22

Economic Impacts

The commercial harvest and subsequent sales and consumption of fish generates business activity as fishermen expend funds to harvest the fish and consumers spend money on goods and services, such as red grouper purchased at a local fish market and served during restaurant visits. These expenditures spur additional business activity in the region(s) where the harvest and purchases are made, such as jobs in local fish markets, grocers, restaurants, and fishing supply establishments. In the absence of the availability of a given species for purchase, consumers would spend their money on substitute goods and services. As a result, the analysis presented below represents a distributional analysis only; that is, it only shows how economic impacts may be distributed through regional markets and should not be interpreted to represent the impacts if these species are not available for harvest or purchase.

In addition to these types of impacts, economic impact models can be used to determine the sources of the impacts. Each impact can be broken down into direct, indirect, and induced economic impacts. "Direct" economic impacts are the results of the money initially spent in the study area (e.g., country, region, state, or community) by the fishery or industry being studied. This includes money spent to pay for labor, supplies, raw materials, and operating expenses. The direct economic impacts from the initial spending create additional activity in the local economy, i.e., "indirect" economic impacts. Indirect economic impacts are the results of business-to-business transactions indirectly caused by the direct impacts. For example, businesses initially benefiting from the direct impacts will subsequently increase spending at other local businesses. The indirect economic impact is a measure of this increase in business-to-business activity, excluding the initial round of spending which is included in the estimate of direct impacts. "Induced" economic impacts are the results of increased personal income caused by the direct and indirect economic impacts. For example, businesses experiencing increased revenue from the direct and indirect impacts will subsequently increase spending on labor by hiring more employees, increasing work hours, raising salaries/wage rates, etc. In turn, households will increase spending at local businesses. The induced impact is a measure of this increase in household-to-business activity.

Estimates of the U.S. average annual business activity associated with the commercial harvest of Atlantic dolphin-wahoo, golden crab, and snapper grouper were derived using the model developed for and applied in NMFS (2018)[12] and are provided in **Tables 3.3.1.15- 3.3.1.18** respectively. Specifically, these impact estimates reflect the expected impacts from average annual gross revenues generated by landings of Atlantic dolphin-wahoo, golden crab, and snapper grouper from 2015 through 2019. This business activity is characterized as jobs (full time equivalents), income impacts (wages, salaries, and self-employed income), value-added impacts (the difference between the value of goods and the cost of materials or supplies), and output impacts (gross business sales). Income impacts should not be added to output (sales) impacts because this would result in double counting.

[12] A detailed description of the input/output model is provided in NMFS (2018).

The results provided should be interpreted with caution and demonstrate the limitations of these types of assessments. These results are based on average relationships developed through the analysis of many fishing operations that harvest many different species. Separate models specific to individual species such as dolphin and wahoo are not available. For e.g., economic impacts for dolphin and wahoo were estimated using the model for HMS as they are most often co-harvested with those species.

Between 2015 and 2019, landings of Atlantic dolphin resulted in approximately $2.43 million (2019$) in gross revenue on average. In turn, this revenue generated employment, income, value-added, and output impacts of 304 jobs, $8.8 million, $12.5 million, and $24.2 million per year, respectively, on average. Between 2015 and 2019, landings of Atlantic wahoo resulted in approximately $252,500 (2019$) in gross revenue on average. In turn, this revenue generated employment, income, value-added, and output impacts of 32 jobs, $.9 million, $1.3 million, and $2.5 million per year, respectively, on average. Between 2015 and 2019, landings of Atlantic golden crab resulted in approximately $2.09 million (2019$) in gross revenue on average. In turn, this revenue generated employment, income, value-added, and output impacts of 270 jobs, $.8 million, $1.1 million, and $20.9 million per year, respectively, on average. Between 2015 and 2019, landings of Atlantic snapper grouper resulted in approximately $2.09 million (2019$) in gross revenue on average. In turn, this revenue generated employment, income, value-added, and output impacts of 1511 jobs, $43.7 million, $61.8 million, and $119.1 million per year, respectively, on average (**Tables 3.3.1.15 – 3.3.1.18**).

Table 3.3.1.15. Average annual economic impacts in the commercial sector of the Atlantic dolphin fishery. All monetary estimates are in thousands of 2019 dollars and employment is measured in full-time equivalent jobs.

Harvesters	Direct	Indirect	Induced	Total
Employment impacts	51	9	11	71
Income impacts	1,256	260	587	2,104
Total value-added impacts	1,339	927	1,007	3,273
Output Impacts	2,431	2,051	1,951	6,433
Primary dealers/processors	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	11	4	8	23
Income impacts	428	395	373	1,196
Total value-added impacts	457	504	703	1,663
Output impacts	1,378	1,038	1,374	3,791
Secondary wholesalers/distributors	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	5	1	5	11
Income impacts	255	76	268	599
Total value-added impacts	272	127	458	858
Output impacts	683	249	891	1,824
Grocers	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	22	3	5	29
Income impacts	525	174	263	963
Total value-added impacts	559	281	446	1,286
Output impacts	897	456	876	2,229
Restaurants	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	138	9	22	169
Income impacts	2,105	639	1,206	3,950
Total value-added impacts	2,244	1,141	2,032	5,418
Output impacts	4,104	1,786	4,010	9,899
Harvesters and seafood industry	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	227	26	51	304
Income impacts	4,570	1,544	2,699	8,813
Total value-added impacts	4,872	2,981	4,646	12,498
Output impacts	9,494	5,581	9,102	24,176

Table 3.3.1.16. Average annual economic impacts in the commercial sector of the Atlantic wahoo fishery. All monetary estimates are in thousands of 2019 dollars and employment is measured in full-time equivalent jobs.

Harvesters	Direct	Indirect	Induced	Total
Employment impacts	5	1	1	7
Income impacts	130	27	61	218
Total value-added impacts	139	96	104	340
Output Impacts	252	213	202	667
Primary dealers/processors	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	1	0	1	2
Income impacts	44	41	39	124
Total value-added impacts	47	52	73	173
Output impacts	143	108	143	393
Secondary wholesalers/distributors	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	1	0	1	1
Income impacts	26	8	28	62
Total value-added impacts	28	13	48	89
Output impacts	71	26	92	189
Grocers	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	2	0	1	3
Income impacts	54	18	27	100
Total value-added impacts	58	29	46	133
Output impacts	93	47	91	231
Restaurants	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	14	1	2	18
Income impacts	218	66	125	410
Total value-added impacts	233	118	211	562
Output impacts	426	185	416	1,027
Harvesters and seafood industry	**Direct**	**Indirect**	**Induced**	**Total**
Employment impacts	24	3	5	32
Income impacts	474	160	280	914
Total value-added impacts	505	309	482	1,297
Output impacts	985	579	944	2,508

Table 3.3.1.17. Average annual economic impacts in the commercial sector of the Atlantic Golden Crab fishery. All monetary estimates are in thousands of 2019 dollars and employment is measured in full-time equivalent jobs.

Harvesters	Direct	Indirect	Induced	Total
Employment impacts	51	8	10	69
Income impacts	1,249	192	564	2,005
Total value-added impacts	1,332	811	962	3,104
Output Impacts	2,096	1,623	1,873	5,591
Primary dealers/processors	Direct	Indirect	Induced	Total
Employment impacts	10	4	7	20
Income impacts	369	340	322	1,031
Total value-added impacts	394	434	606	1,433
Output impacts	1,188	895	1,184	3,267
Secondary wholesalers/distributors	Direct	Indirect	Induced	Total
Employment impacts	5	1	5	11
Income impacts	255	76	268	599
Total value-added impacts	272	127	458	858
Output impacts	683	249	891	1,824
Grocers	Direct	Indirect	Induced	Total
Employment impacts	4	1	4	10
Income impacts	220	65	231	516
Total value-added impacts	234	110	395	739
Output impacts	589	215	768	1,571
Restaurants	Direct	Indirect	Induced	Total
Employment impacts	119	8	19	146
Income impacts	1,815	550	1,040	3,405
Total value-added impacts	1,934	984	1,751	4,670
Output impacts	3,537	1,540	3,456	8,533
Harvesters and seafood industry	Direct	Indirect	Induced	Total
Employment impacts	202	22	45	270
Income impacts	4,106	1,298	2,383	7,787
Total value-added impacts	4,376	2,581	4,098	11,055
Output impacts	8,183	4,666	8,036	20,884

Table 3.3.1.18. Average annual economic impacts in the commercial sector of the Atlantic Snapper-Grouper fishery. All monetary estimates are in thousands of 2019 dollars and employment is measured in full-time equivalent jobs.

Harvesters	Direct	Indirect	Induced	Total
Employment impacts	264	41	54	359
Income impacts	6,486	1,204	2,912	10,602
Total value-added impacts	6,914	4,335	4,982	16,231
Output Impacts	12,013	9,773	9,672	31,458
Primary dealers/processors	Direct	Indirect	Induced	Total
Employment impacts	55	22	38	115
Income impacts	2,116	1,950	1,845	5,911
Total value-added impacts	2,256	2,488	3,473	8,217
Output impacts	6,811	5,130	6,788	18,730
Secondary wholesalers/distributors	Direct	Indirect	Induced	Total
Employment impacts	25	6	25	56
Income impacts	1,261	375	1,326	2,962
Total value-added impacts	1,344	629	2,265	4,238
Output impacts	3,377	1,231	4,405	9,013
Grocers	Direct	Indirect	Induced	Total
Employment impacts	109	12	24	146
Income impacts	2,593	862	1,302	4,757
Total value-added impacts	2,764	1,389	2,204	6,357
Output impacts	4,432	2,255	4,326	11,014
Restaurants	Direct	Indirect	Induced	Total
Employment impacts	680	45	111	836
Income impacts	10,403	3,155	5,959	19,517
Total value-added impacts	11,089	5,640	10,040	26,769
Output impacts	20,277	8,825	19,812	48,914
Harvesters and seafood industry	Direct	Indirect	Induced	Total
Employment impacts	1,133	126	252	1,511
Income impacts	22,859	7,546	13,343	43,748
Total value-added impacts	24,367	14,481	22,964	61,811
Output impacts	46,910	27,216	45,003	119,129

3.3.2 Recreational Sector

Landings

Recreational dolphin landings peaked in 2015 and declined in subsequent years (**Table 3.3.2.1**). Landings after 2015 were somewhat variable with no discernible trend through 2019. The distribution of landings between modes was relatively stable during this time. Private vessels accounted for the majority of dolphin landings on average from 2015 through 2019, followed by charter vessels. Headboats were responsible for a very small percentage of the landings with no recorded landings from shore.

Table 3.3.2.1. Recreational landings (lbs ww) and percent distribution of dolphin across all states by mode for 2015-2019.

	Landings (pounds ww)				Percent Distribution		
Year	Charter vessel	Headboat	Private	Total	Charter vessel	Headboat	Private
2015	3,554,584	28,018	21,793,379	25,375,982	14.0	0.1	85.9
2016	2,688,390	37,653	13,271,300	15,997,343	16.8	0.2	83.0
2017	2,234,758	16,256	10,398,839	12,649,853	17.7	0.1	82.2
2018	2,025,282	19,048	14,760,669	16,805,000	12.1	0.1	87.8
2019	2,593,634	10,652	9,325,011	11,929,298	21.7	0.1	78.2
AVG	**2,619,330**	**22,325**	**13,909,840**	**16,551,495**	**15.8**	**0.1**	**84.0**

Source: Southeast Fisheries Science Center MRIP FES recreational ACL dataset (1/2/2020) and LA Creel.

Recreational wahoo landings were very unstable from 2015 through 2019 (**Table 3.3.2.2**). Landings were at their highest in 2016, but declined significantly in 2017 and particularly 2018, with a slight rebound in 2019. Private vessels accounted for the majority of wahoo landings on average from 2015 through 2019, followed by charter vessels. Headboats were responsible for a very small percentage of the landings with no recorded landings from shore. Although landings declined in all modes in 2017 and 2018, most of the decline was due to lower landings by private vessels, particularly in 2018. As a result, charter vessels made up a greater percentage of the landings in 2018 and, to a lesser degree, in 2019.

Table 3.3.2.2. Recreational landings (lbs ww) and percent distribution of wahoo across all states by mode for 2015-2019.

	Landings (pounds ww)				Percent Distribution		
Year	Charter vessel	Headboat	Private	Total	Charter vessel	Headboat	Private
2015	460,621	5,297	2,477,091	2,943,009	15.7	0.2	84.2
2016	513,786	5,502	4,484,157	5,003,444	10.3	0.1	89.6
2017	317,505	2,748	3,265,538	3,585,791	8.9	0.1	91.1
2018	265,529	913	614,518	880,960	30.1	0.1	69.8
2019	369,450	3,131	1,638,234	2,010,815	18.4	0.2	81.5
AVG	**385,378**	**3,518**	**2,495,908**	**2,884,804**	**13.4**	**0.1**	**86.5**

Source: Southeast Fisheries Science Center MRIP FES recreational ACL dataset (1/2/2020) and LA Creel.

Recreational snapper grouper landings peaked in 2017 and declined in subsequent years (**Table 3.3.2.3**). Landings after 2015 do not appear to have a discernable trend, other than there was a significant reduction in private mode landings in 2017 compared to other years in the series. The distribution of landings between modes was relatively stable during this time. Shore mode accounted for the majority of snapper grouper landings on average from 2015 through 2019, followed by private vessels. Headboats and charter boats only comprised 4% and 5% of the total average snapper grouper landings from 2015-2019.

Table 3.3.2.3. Recreational landings (lbs ww) and percent distribution of snapper-grouper across all states by mode for 2015-2019.

	Landings (pounds ww)					Percent Distribution			
Year	Charter vessel	Headboat	Private	Shore	Total	Charter vessel	Headboat	Private	Shore
2015	1,403,104	1,210,908	9,841,883	11,780,771	24,236,665	0.06	0.05	0.41	0.49
2016	995,317	1,201,081	13,107,266	14,752,396	30,056,059	0.03	0.04	0.44	0.49
2017	1,562,589	965,389	9,760,052	20,954,046	33,242,075	0.05	0.03	0.29	0.63
2018	990,464	885,043	16,432,161	12,277,129	30,584,796	0.03	0.03	0.54	0.40
2019	1,534,216	841,272	11,071,267	7,916,530	21,363,285	0.07	0.04	0.52	0.37
AVG	**1,297,138**	**1,020,738**	**12,042,526**	**13,536,174**	**27,896,576**	**0.05**	**0.04**	**0.44**	**0.48**

Source: Southeast Fisheries Science Center MRIP FES recreational ACL dataset (Jan 2022).

Permits

For-hire Permits

There are no specific federal permitting requirements for recreational anglers to fish for or harvest dolphin or wahoo. The same is true of private recreational vessel owners. Instead, private anglers are required to possess either a state recreational fishing permit that authorizes saltwater fishing in general, or be registered in the federal National Saltwater Angler Registry system, subject to appropriate exemptions. As a result, it is not possible to identify with available data how many individual anglers or private recreational vessels would be expected to be affected by the actions in this amendment.

A federal charter/headboat (for-hire) vessel permit is required for fishing in federal waters for Atlantic dolphin and wahoo. For-hire Atlantic dolphin and wahoo permits (CDW) are open access permits (i.e., access is not restricted). From 2015-2019, the number of CDW permits that were valid in a given year has continually increased, increasing by more than 21% over this time, as illustrated in **Table 3.1.2.4**.

A federal charter/headboat (for-hire) vessel permit is also required for fishing in federal waters for Atlantic snapper grouper. For-hire Atlantic Snapper Grouper permits (SG) are open access permits (i.e., access is not restricted). From 2015-2019, the number of SG permits that were valid in a given year has continually increased, increasing by more than 18% over this time, as illustrated in **Table 3.1.2.5**.

Table 3.3.2.4. Number of valid CDW permits, 2015-2019.

Year	Number of Permits
2015	1,943
2016	2,029
2017	2,150
2018	2,300
2019	2,360

Source: NMFS SERO SF Access Permits Database.

Table 3.3.2.5. Number of valid SG permits, 2015-2019.

Year	Number of Permits
2015	1,779
2016	1,867
2017	1,982
2018	2,126
2019	2,183

Source: NMFS SERO SF Access Permits Database.

Although the permit application collects information on the primary method of operation, the permit itself does not identify the permitted vessel as either a headboat or a charter vessel and vessels may operate in both capacities. However, if a vessel meets the selection criteria used by the SRHS and is selected to report by the Science Research Director of the SEFSC, it is determined to operate primarily as a headboat and is required to submit harvest and effort information to the SRHS.

Souza and Liese (2019) estimate that approximately 10% of all permitted Southeast (Gulf of Mexico and South Atlantic) for-hire vessels determined to be headboats were not actively fishing in 2017.[13] Further, of those that were active, 14% were not active in offshore waters. Thus, approximately 23% of the permitted Southeast headboats were likely not active in the EEZ.

Based on the information in **Table 3.3.2.6**, the number of federally permitted South Atlantic headboats in the SRHS that harvested dolphin varied somewhat from 2015-2019 (K. Fitzpatrick, NMFS SEFSC, pers. comm.), ranging from a high of 60 in 2016 to a low of 36 in 2019 and averaging 50 during this time. The trend in the number of active headboats is consistent with the trend in headboat landings of dolphin as illustrated in **Table 3.3.2.6**.

The number of federally permitted South Atlantic headboats in the SRHS that harvested wahoo also varied somewhat from 2015-2019 (K. Fitzpatrick, NMFS SEFSC, pers. comm.) and generally declined during this time, ranging from a high of 26 in 2015 to a low of 13 in 2018 and averaging 19 during this time. The trend in the number of active headboats is generally consistent with the trend in headboat landings of wahoo as illustrated in **Table 3.3.2.6**.

[13] Sample sizes were too small to generate reliable estimates for Gulf and South Atlantic headboats separately. Also, Souza and Liese's estimates were not specific to particular fisheries such as dolphin wahoo.

Table 3.3.2.6. Number of South Atlantic headboats harvesting dolphin and wahoo, 2015-2019.

Year	Number of Dolphin Headboats	Number of Wahoo Headboats
2015	55	26
2016	60	22
2017	48	17
2018	50	13
2019	36	16
Average	50	19

Source: K. Fitzpatrick, NMFS SEFSC, pers. comm.

Although the for-hire permit application collects information on the primary method of operation, the permit itself does not identify the permitted vessel as either a headboat or a charter vessel and vessels may operate in both capacities. However, only federally permitted headboats are required to submit harvest and effort information to the National Marine Fisheries Service (NMFS) Southeast Region Headboat Survey (SRHS).[14] Participation in the SRHS is based on determination by the SEFSC that the vessel primarily operates as a headboat. As of March 9, 2021, 64 South Atlantic headboats were registered in the SRHS. The majority of these headboats were located in Florida (37 east coast), followed by North Carolina (14), South Carolina (11), and Georgia (2).

Angler Effort

Recreational effort derived from the MRIP database can be characterized in terms of the number of trips as follows:

- Target effort - The number of individual angler trips, regardless of duration, where the intercepted angler indicated that the species or a species in the species group was targeted as either the first or the second primary target for the trip. The species did not have to be caught.
- Catch effort - The number of individual angler trips, regardless of duration and target intent, where the individual species or a species in the species group was caught. The fish did not have to be kept.
- Total recreational trips - The total estimated number of recreational trips in the Gulf, regardless of target intent or catch success.

Private vessels represent more than 98% of target effort in the recreational sector. The vast majority of target effort by charter vessels occurs in North Carolina and Florida, while most

[14] All federal charter/headboat permit holders, including charter vessel owners or operators, are required to comply with the new Southeast For-Hire Electronic Reporting Program as of January 5, 2021. Under this program, all such permit holders must declare trips prior to departure and submit electronic fishing reports prior to offloading fish, or within 30 minutes after the end of a trip, if no fish are landed. Those vessels selected to report to the SRHS (i.e., federally permitted headboats) will continue to submit their reports under the new requirements directly to the SRHS program. For more information, see: https://www.fisheries.noaa.gov/southeast/recreational-fishing-data/southeast-hire-electronic-reporting-program?utm_medium=email&utm_source=govdelivery

target effort by private vessels occurs in Florida. Private vessels in Florida are responsible for more than 78% of total target effort for dolphin.

The trends in target effort for dolphin from 2015-2019 differ somewhat from the trend in recreational landings. As with charter landings, target effort by charter vessels was also relatively stable during this time, though it did peak in 2015 and dropped off slightly thereafter. The trend in private vessel effort differs from the trend in private vessel landings. For example, there was not a noticeable peak in target effort by private vessels in 2015 as with landings, nor was there a noticeable decline in target effort in 2016. Target effort was relatively stable from 2015-2018 and peaked in 2018. However, as with landings, a significant decline occurred in target effort by private vessels in 2019, and this decline was seen across all states/regions, with the exception of South Carolina.

Although private vessels are also responsible for the vast majority of catch effort for dolphin (90%), catch effort by charter vessels represents about 10% of the total catch effort. Similarly, private vessels in Florida account for the majority of catch effort for dolphin (59%). However, relatively significant amounts of catch effort also occur in North Carolina and the Mid-Atlantic region. As expected, the trends in catch effort mimic the trends in landings, with a noticeable peak occurring in 2015, declines thereafter, and a significant decline in 2019. The significant decline in 2019 was most noticeable for private vessels in Florida.

Table 3.3.2.7. Dolphin recreational target trips, by mode and state/region, 2015-2019.

Mode	Year	EFL	GA	MA*	NE**	NC	SC	Total
Shore	2015	0	0	0	0	1,672	0	1,672
	2016	0	0	0	0	0	0	0
	2017	0	0	0	0	0	0	0
	2018	0	0	0	0	0	0	0
	2019	0	0	0	0	2,399	0	2,399
	Average	0	0	0	0	814	0	814
Charter	2015	15,711	44	5,167	0	11,502	7,080	39,504
	2016	9,773	0	1,696	0	21,092	2,718	35,279
	2017	20,915	0	82	0	8,826	1,465	31,288
	2018	12,414	0	789	0	18,282	108	31,593
	2019	9,432	0	2,997	0	20,501	0	32,930
	Average	13,649	9	2,146	0	16,041	2,274	34,119
Private	2015	1,372,503	0	150,821	9,884	193,319	10,211	1,736,738
	2016	1,191,263	0	172,271	1,387	165,699	15,155	1,545,775
	2017	1,458,030	0	46,009	2,166	114,547	116,061	1,736,813
	2018	1,494,387	0	117,625	3,291	165,782	73,207	1,854,292
	2019	899,456	0	77,288	0	98,753	70,876	1,146,373
	Average	1,283,128	0	112,803	3,346	147,620	57,102	1,603,998
All	2015	1,388,214	44	155,988	9,884	206,493	17,291	1,777,913
	2016	1,201,036	0	174,007	1,387	186,790	17,874	1,581,094
	2017	1,478,945	0	46,091	2,166	123,373	117,526	1,768,101
	2018	1,506,801	0	118,414	3,291	184,064	73,315	1,885,884
	2019	908,888	0	80,285	9,884	121,653	70,876	1,181,702
	Average	1,296,777	9	114,957	4,182	164,475	59,376	1,638,939

Source: MRIP Survey Data available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads.

*MA represents the Mid-Atlantic states of Virginia, Maryland, Delaware, New Jersey, and New York. Total target trips for the MA in 2016 include 40 trips by party boats.

**NE represents the New England states of Connecticut, Rhode Island, and Massachusetts.

Table 3.3.2.8. Dolphin recreational catch trips, by mode and state/region, 2015-2019.

Mode	Year	EFL	GA	MA*	NE**	NC	SC	Total
Charter	2015	41,874	268	8,141	0	46,496	12,535	109,314
	2016	26,236	66	9,505	0	41,853	2,718	80,378
	2017	22,654	47	1,024	0	38,937	0	62,662
	2018	23,096	0	10,161	0	43,752	108	77,117
	2019	22,688	33	6,974	0	44,560	0	74,255
	Average	27,310	83	7,161	0	43,120	3,072	80,745
Private	2015	648,152	0	127,021	8,666	157,014	2,016	942,869
	2016	478,229	0	131,599	1,612	130,932	26,861	769,233
	2017	494,391	1,308	91,852	3,264	67,975	65,287	724,077
	2018	490,081	0	100,526	3,751	78,437	60,376	733,171
	2019	255,001	0	74,423	0	65,220	43,771	438,415
	Average	473,171	262	105,084	3,459	99,916	39,662	721,553
All	2015	690,026	268	135,162	8,666	203,510	14,551	1,052,183
	2016	504,465	66	141,295	1,612	172,785	29,579	849,802
	2017	517,045	1,355	92,878	3,264	106,912	65,287	786,741
	2018	513,177	0	110,687	3,751	122,189	60,484	810,288
	2019	277,689	33	81,401	0	109,780	43,771	512,674
	Average	500,480	344.4	112,285	3,459	143,035	42,734	802,338

Source: MRIP Survey Data available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads.

*MA represents the Mid-Atlantic states of Virginia, Maryland, Delaware, New Jersey, and New York. Total catch trips includes 191 trips, 2 trips, and 4 trips by party boats in 2016, 2017, and 2019, respectively.

**NE represents the New England states of Connecticut, Rhode Island, and Massachusetts.

Similar to dolphin, private vessels represent the vast majority of target effort for wahoo (97%). Further, private vessels in Florida account for more than 71% of total target effort for wahoo. As with dolphin, the trends in target effort for wahoo do not mimic the trends in landings from 2015-2019. Unlike landings, which peaked in 2016, declined significantly in 2018, and then increased somewhat in 2019, target effort for wahoo was at its highest level in 2018, and then declined significantly in 2019.

As with dolphin, the charter component accounts for a larger percentage of catch effort for wahoo (18%) compared to target effort. Still, private vessels are responsible for the majority of catch effort for wahoo (82%). Private vessels in Florida represent half of the total catch effort for wahoo, while the combination of charter and private vessels in North Carolina represent about 28% of the total catch effort. The trends in catch effort for wahoo necessarily reflect the trends in landings, at least to some extent, peaking in 2016, declining significantly in 2017 and particularly 2018, and then increasing somewhat in 2019. However, the declines in catch effort in 2017 and 2018 were significantly greater than the declines in landings in those years. For e.g., while landings decreased by about 30% from 2016 to 2017, catch effort decreased by almost 64%.

Table 3.3.2.9. Wahoo recreational target trips, by mode and state/region, 2015-2019.

Mode	Year	EFL	GA	MA*	NC	SC	Total
Charter	2015	2,877	224	0	6,700	0	9,801
	2016	1,435	0	0	5,744	617	7,796
	2017	3,457	0	0	5,182	0	8,639
	2018	0	0	0	2,892	0	2,892
	2019	925	0	225	6,399	0	7,549
	Average	1,739	45	45	5,383	123	7,335
Private	2015	167,739	0	854	55,377	8,744	232,714
	2016	247,741	0	16,608	43,545	14,127	322,021
	2017	201,943	0	1,043	51,675	39,190	293,851
	2018	272,907	0	5,780	33,900	22,306	334,893
	2019	150,033	8,298	11,394	25,172	45,459	240,356
	Average	208,073	1,660	7,136	41,934	25,965	284,767
All	2015	170,616	224	854	62,077	8,744	242,515
	2016	249,176	0	16,608	49,289	14,744	329,817
	2017	205,400	0	1,043	56,857	39,190	302,490
	2018	272,907	0	5,780	36,792	22,306	337,785
	2019	150,958	8,298	11,619	31,571	45,459	247,905
	Average	209,811	1,704	7,181	47,317	26,089	292,102

Source: MRIP Survey Data available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads.

Table 3.3.2.10. Wahoo recreational catch trips, by mode and state/region, 2015-2019.

Mode	Year	EFL	MA*	NC	SC	Total
Charter	2015	10,118	812	18,468	0	29,398
	2016	8,339	56	13,169	2,873	24,437
	2017	1,832	0	15,090	0	16,922
	2018	4,576	112	9,067	0	13,755
	2019	2,390	75	12,766	0	15,231
	Average	5,451	211	13,712	575	19,949
Private	2015	35,580	22,412	29,665	1,815	89,472
	2016	189,762	8,916	36,950	0	235,628
	2017	25,430	38,115	13,564	0	77,109
	2018	11,040	859	4,535	6,811	23,245
	2019	22,631	5,531	4,953	8,206	41,321
	Average	56,889	15,167	17,933	3,366	93,355
All	2015	45,698	23,224	48,133	1,815	118,870
	2016	198,101	8,972	50,119	2,873	260,065
	2017	27,262	38,115	28,654	0	94,031
	2018	15,616	971	13,602	6,811	37,000
	2019	25,021	5,606	17,719	8,206	56,552
	Average	62,340	15,378	31,645	3,941	113,304

Source: MRIP Survey Data available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads.
*MA represents the Mid-Atlantic states of Virginia, Maryland, Delaware, New Jersey, and New York.

As shown in **Tables 3.3.1.11** and **3.3.1.12**, across all modes, target effort for dolphin was the highest in the 4th wave (July-August) followed by the 3rd wave (May-June). Target effort by charter vessels was the highest in the 3rd wave. Similarly, catch effort for dolphin was the highest in the 3rd wave followed by the 4th wave across all modes as well as within the charter and private vessel modes. Target and catch effort were the lowest in the 1st wave (January-February) and the 6th wave (November-December) across all modes.

Table 3.3.2.11. Dolphin target trips by wave and mode, 2015–2019.*

	1 (Jan-Feb)	2 (Mar-Apr)	3 (May-Jun)	4 (Jul-Aug)	5 (Sep-Oct)	6 (Nov Dec)	Total
	Shore						
2015	0	0	0	0	1,672	0	1,672
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0
2019	0	0	2,399	0	0	0	2,399
Average	0	0	480	0	334	0	814
	Charter						
2015	765	4,053	17,844	7,233	4,995	4,615	39,505
2016	1,967	4,168	16,259	8,684	3,774	428	35,280
2017	390	11,508	8,986	6,689	937	2,778	31,288
2018	691	4,230	17,515	5,342	3,147	666	31,591
2019	1,020	3,758	16,862	8,140	2,862	289	32,931
Average	967	5,543	15,493	7,218	3,143	1,755	34,119
	Private/Rental						
2015	14,200	202,747	605,924	587,489	229,958	96,422	1,736,740
2016	81,532	106,763	617,810	538,926	90,763	109,983	1,545,777
2017	79,394	179,826	614,135	645,010	96,929	121,519	1,736,813
2018	92,025	249,648	495,371	616,274	315,576	85,400	1,854,294
2019	57,875	87,400	376,360	512,208	68,288	44,241	1,146,372
Average	65,005	165,277	541,920	579,981	160,303	91,513	1,603,999
	All						
2015	14,965	206,800	623,768	594,722	236,625	101,037	1,777,917
2016	83,499	110,931	634,069	547,610	94,577	110,411	1,581,097
2017	79,784	191,334	623,121	651,699	97,866	124,297	1,768,101
2018	92,716	253,878	512,886	621,616	318,723	86,066	1,885,885
2019	58,895	91,158	395,621	520,348	71,150	44,530	1,181,702
Average	65,972	170,820	557,893	587,199	163,788	93,268	1,638,940

Source: MRIP Survey Data available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads

* Total target trips in 2016 include 40 trips by party boats.

Table 3.3.2.12. Dolphin catch trips by wave an.d mode, 2015– 2019.*

	1 (Jan-Feb)	2 (Mar-Apr)	3 (May-Jun)	4 (Jul-Aug)	5 (Sep-Oct)	6 (Nov Dec)	Total
	Charter						
2015	2,117	12,424	35,899	28,979	19,290	10,605	109,314
2016	5,278	15,801	27,595	22,328	8,281	1,096	80,379
2017	878	7,753	27,534	16,339	8,090	2,068	62,662
2018	2,045	3,804	37,202	22,206	10,276	1,583	77,116
2019	950	5,948	36,144	21,945	7,416	1,851	74,254
Average	2,254	9,146	32,875	22,359	10,671	3,441	80,745
	Private/Rental						
2015	4,673	98,084	340,995	321,988	148,732	28,397	942,869
2016	30,532	63,299	326,145	277,737	60,695	10,826	769,234
2017	15,543	45,278	276,680	291,599	64,627	30,349	724,076
2018	28,786	75,802	242,570	211,435	152,391	22,188	733,172
2019	9,989	45,996	144,041	196,869	37,364	4,155	438,414
Average	17,905	65,692	266,086	259,926	92,762	19,183	721,553
	All						
2015	6,790	110,508	376,894	350,967	168,022	39,002	1,052,183
2016	35,810	79,100	353,740	300,256	68,976	11,922	849,804
2017	16,421	53,031	304,214	307,938	72,719	32,417	786,740
2018	30,831	79,606	279,772	233,641	162,667	23,771	810,288
2019	10,939	51,944	180,185	218,818	44,780	6,006	512,672
Average	20,158	74,838	298,961	282,324	103,433	22,624	802,337

Source: MRIP Survey Data available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads

* Total catch trips includes 191 trips, 2 trips, and 4 trips by party boats in 2016, 2017, and 2019, respectively.

As shown in **Tables 3.3.1.13** and **3.3.1.14**, across all modes and within the private and charter vessel modes, target and catch effort for wahoo was the highest in the 4th wave (July-August), with effort being considerably lower in all other waves. Target effort for wahoo was the lowest in the 6th wave (November-December) while catch effort was lowest in the 1st wave (January-February).

Table 3.3.1.13. Wahoo target trips by wave and mode, 2015–2019.*

Table 3.3.2.13. Wahoo target trips by wave and mode, 2015–2019.*

	1 (Jan-Feb)	2 (Mar-Apr)	3 (May-Jun)	4 (Jul-Aug)	5 (Sep-Oct)	6 (Nov Dec)	Total
	Charter						
2015	279	667	1,677	3,068	3,858	253	9,802
2016	0	522	3,051	2,299	1,706	216	7,794
2017	0	3,426	284	2,753	1,686	490	8,639
2018	0	17	381	1,337	1,098	58	2,891
2019	0	718	1,339	3,901	1,366	225	7,549
Average	56	1,070	1,346	2,672	1,943	248	7,335
	Private/Rental						
2015	18,171	9,112	54,487	109,241	40,152	1,551	232,714
2016	41,997	48,454	40,637	80,115	43,040	67,778	322,021
2017	36,678	59,957	96,777	63,590	14,499	22,349	293,850
2018	75,769	39,272	32,929	87,662	72,351	26,911	334,894
2019	77,267	29,477	20,346	68,551	29,822	14,891	240,354
Average	49,976	37,254	49,035	81,832	39,973	26,696	284,767
	All						
2015	18,450	9,779	56,164	112,309	44,010	1,804	242,516
2016	41,997	48,976	43,688	82,414	44,746	67,994	329,815
2017	36,678	63,383	97,061	66,343	16,185	22,839	302,489
2018	75,769	39,289	33,310	88,999	73,449	26,969	337,785
2019	77,267	30,195	21,685	72,452	31,188	15,116	247,903
Average	50,032	38,324	50,382	84,503	41,916	26,944	292,102

Source: MRIP Survey Data available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads

Table 3.3.2.14. Wahoo catch trips by wave and mode, 2015– 2019.*

	1 (Jan-Feb)	2 (Mar-Apr)	3 (May-Jun)	4 (Jul-Aug)	5 (Sep-Oct)	6 (Nov Dec)	Total
	Charter						
2015	0	2,569	7,243	12,930	4,568	2,088	29,398
2016	2,832	8,875	3,285	4,308	4,694	444	24,438
2017	0	2,385	596	6,352	6,855	735	16,923
2018	0	891	5,327	3,927	3,453	157	13,755
2019	0	2,026	2,556	5,450	3,932	1,267	15,231
Average	566	3,349	3,801	6,593	4,700	938	19,949
	Private/Rental						
2015	5,354	672	23,199	48,583	11,164	500	89,472
2016	14,070	30,803	17,482	106,481	19,561	47,231	235,628
2017	5,203	3,433	2,228	57,322	3,154	5,770	77,110
2018	5,808	5,886	4,056	2,038	888	4,570	23,246
2019	12,868	8,335	527	3,565	9,554	6,471	41,320
Average	8,661	9,826	9,498	43,598	8,864	12,908	93,355
	All						
2015	5,354	3,241	30,442	61,513	15,732	2,588	118,870
2016	16,902	39,678	20,767	110,789	24,255	47,675	260,066
2017	5,203	5,818	2,824	63,674	10,009	6,505	94,033
2018	5,808	6,777	9,383	5,965	4,341	4,727	37,001
2019	12,868	10,361	3,083	9,015	13,486	7,738	56,551
Average	9,227	13,175	13,300	50,191	13,565	13,847	113,304

Source: MRIP Survey Data available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads

As shown in **Tables 3.3.1.15, i**n the snapper grouper recreational fishery, the private/rental component accounts for a larger percentage (63%) of target effort for snappers and groupers on average from 2015-2019. Shore mode fishing accounted for 36% of angler effort, and charter fishing only 1%. Private vessels in Florida represent 54% of the total target effort for snapper grouper on average from 2015-2019. Florida's private/rental effort had a dramatic spike in effort in 2018, increasing by 181% relative to the average effort from 2015-2017. This spike in effort occurred after the

Total angler target effort for snapper grouper increase by 23% in 2019, relative to 2015. All modes of fishing saw increases in overall in target effort in 2019 relative to 2015 but each mode experience high variability in effort over the timeframe.

Table 3.3.2.15. Snapper grouper recreational target trips, by mode and state/region, 2015-2019.

Mode	Year	FL	GA	NC	SC	Total
Shore	2015	465,013	5,822	8,489	692	480,016
	2016	789,850	5,497	14,618	0	809,965
	2017	526,436	2,195	19,308	1,822	549,761
	2018	362,073	1,235	13,757	534	377,599
	2019	648,635	9,560	40,269	855	699,319
Charter	2015	9,255	0	1,591	3,885	14,731
	2016	6,772	774	1,318	1,538	10,402
	2017	7,023	1,561	1,320	8,348	18,252
	2018	10,086	238	2,276	1,432	14,032
	2019	29,985	652	3,755	3,125	37,517
Private	2015	697,803	8,563	53,370	30,843	790,579
	2016	563,428	4,618	52,856	40,104	661,006
	2017	713,322	31,807	109,039	76,500	930,668
	2018	1,850,842	52,472	24,964	16,728	1,945,006
	2019	675,967	26,558	36,214	110,780	849,518
All	2015	1,172,072	14,385	63,450	35,419	1,285,326
	2016	1,360,050	10,889	68,793	41,642	1,481,374
	2017	1,246,781	35,563	129,666	86,670	1,498,681
	2018	2,223,001	53,944	40,997	18,695	2,336,637
	2019	1,354,587	36,770	80,237	114,761	1,586,355

Source: MRIP Survey Data available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads.

Similar analysis of recreational effort is not possible for the headboat mode in the South Atlantic because headboat data are not collected at the angler level. Estimates of effort by the headboat mode are provided in terms of angler days, or the number of standardized 12-hour fishing days that account for the different half-, three-quarter-, and full-day fishing trips by headboats. The stationary "fishing for demersal (bottom-dwelling) species" nature of headboat fishing, as opposed to trolling, suggests that most, if not all, headboat trips and, hence, angler days, are demersal or snapper grouper trips by intent.

Headboat angler days were highly variable across the South Atlantic states from 2015 through 2019 (**Table 3.3.2.16**). Florida and Georgia were responsible for the vast majority of headboat effort during this time, accounting for about 72% of the total headboat effort. However, headboat effort in Florida and Georgia declined considerably in 2017 (about 36%) and remained

at a much lower level through 2019. Headboat effort in North Carolina also declined considerably (about 22%), but a year later in 2018. Headboat effort in South Carolina vacillated slightly during this time, but was relatively stable comparatively.

Table 3.3.2.16. South Atlantic headboat angler days and percent distribution by state (2015-2019).

	Angler Days			Percent Distribution		
	EFL/GA*	NC	SC	EFL/GA	NC	SC
2015	194,979	22,716	39,702	75.8%	8.8%	15.4%
2016	196,660	21,565	42,207	75.5%	8.3%	16.2%
2017	126,126	20,170	36,914	68.8%	11.0%	20.1%
2018	120,560	16,813	37,611	68.9%	9.6%	21.5%
2019	119,712	15,546	41,470	67.7%	8.8%	23.5%
Average	151,607	19,362	39,581	71.3%	9.3%	19.3%

*East Florida and Georgia are combined for confidentiality purposes.
Source: NMFS Southeast Region Headboat Survey (SRHS).

Economic Value

Participation, effort, and harvest are indicators of the value of saltwater recreational fishing. However, a more specific indicator of value is the satisfaction that anglers experience over and above their costs of fishing. The economic value of this satisfaction is referred to as consumer surplus (CS). The value or benefit derived from the recreational experience is dependent on several quality determinants, which include fish size, catch success rate, and the number of fish kept. These variables help determine the value of a fishing trip and influence total demand for recreational fishing trips. For example, the estimated value of the CS for catching and keeping a second dolphin[15] on an angler trip is approximately $16.07 (2019$), and decreases thereafter (approximately $10.71 for a third dolphin, $7.89 for a fourth dolphin, $6.22 for a fifth dolphin, and $5.13 for a 6th dolphin) (Carter and Liese 2012). Carter and Liese (2012) did not produce estimates specific to wahoo and their estimates for dolphin are probably not good proxies for wahoo. Instead, their estimates for king mackerel are likely the best available proxies for wahoo for various reasons. First, wahoo are caught more rarely than dolphin, as they are more of a solitary fish as opposed to a schooling fish like dolphin, and thus are likely more valuable. Further, they are considered a "prize" catch by anglers on trips when they are caught, which suggests they are highly valued in a relative sense. Wahoo are also in the same family (Scombridae) as king mackerel and the bag limit for wahoo is much more similar to the bag limit for king mackerel than for dolphin. According to Carter and Liese (2012), the estimated values of the CS per fish for a second, third, fourth, and fifth king mackerel kept on a trip are approximately $105, $71, $52, and $41 in 2019$. Grouper CS estimates are far more significant for additional fish kept, as their overall bag limits are smaller than that of dolphin or Wahoo. Grouper are also a highly desirable as a food source and are also considered a "prize" catch by anglers. According to Carter and Liese (2012), the estimated values of the CS per fish for a second, third, fourth, and fifth grouper kept on a trip are approximately $90, $71, $60, and $44 in

[15] The study only considered trips with at least one fish caught and kept in its experimental design; thus, an estimate for the first caught and kept fish is not available.

2019$. Carter and Liese (2012) estimates for snapper are for red snapper. Red snapper has a unique status amongst recreational snapper anglers because of recent management measure decreasing the recreational season to a few days with a small bag limit per angler. According to Carter and Liese (2012), the estimated values of the CS per fish for a second, third, fourth, and fifth red snapper kept on a trip are approximately $70, $47, $44, and $35 in 2019$, but these CS estimates should be consider on the high side and not used as a proxy for all snapper species.

Estimates of average annual gross revenue for charter vessels are only available from Holland (2012). After adjusting for inflation, the best available estimate of average annual charter vessel revenue is $125,352 (2019$). Holland (2012) also provided an estimate of average annual gross revenue for South Atlantic headboats, which is $221,617 in 2019$. However, a more recent estimate of average annual gross revenue for South Atlantic headboats is available from D. Carter (pers. comm., March 15, 2018). Carter (2018) recently estimated that average annual gross revenue for South Atlantic headboats were approximately $304,103 (2019$) in 2017. This estimate is likely the best current estimate of annual gross revenue for South Atlantic headboats as it is based on a relatively large sample and is more recent. The difference in the Holland (2012) and Carter (2018) estimate for headboats suggests that the estimate for charter vessels based on Holland (2012) is likely an underestimate of current average annual revenue for charter vessels.

However, gross revenues overstate the annual economic value and profits generated by for-hire vessels. Economic value for for-hire vessels can be measured by annual PS. In general, PS is the amount of money a vessel owner earns in excess of variable (trip) costs. Economic profit is the amount of money a vessel owner earns in excess of variable and fixed costs, inclusive of all implicit costs, such as the value of a vessel owner's time as captain and as entrepreneur, and the cost of using physical capital (i.e., depreciation of the vessel and gear). Estimates of PS and economic profit for headboats is not available from Carter (2018) as that study did not collect cost data. Although Holland (2012) did collect cost data, concerns have been raised about the accuracy of their cost estimates, and thus estimates of average annual vessel PS and profit have not been generated using those estimates.

With regard to for-hire trips, economic value can be measured by PS per angler trip, which represents the amount of money that a vessel owner earns in excess of the cost of providing the trip. Estimates of trip revenue, trip costs, and trip net revenue trips taken by headboats and charter vessels in 2017 are available from Souza and Liese (2019). They also provide estimates of net cash flow per angler trip, which approximate PS per angler trip. As shown in **Table 3.3.2.17**, after accounting for transactions fees, supply costs, and labor costs, net revenue per trip was 42% of revenue for South Atlantic charter vessels and 54% of revenue for Southeast headboats, or $553 and $1,812 (2019$), respectively. Given the respective average number of anglers per trip for each fleet, PS per angler trip is estimated to be $118 for charter vessels and $64 for headboats.

Table 3.3.2.17. Trip economics for offshore trips by South Atlantic charter vessels and Southeast headboats in 2017 (2019$).

	South Atlantic Charter Vessels	Southeast Headboats
Revenue	100%	100%
Transaction Fees (% of revenue)	3%	6%
Supply Costs (% of revenue)	29%	19%
Labor Costs (% of revenue)	28%	22%
Net Revenue per trip including Labor costs (% of revenue)	40%	54%
Net Revenue per Trip	$553	$1,812
Average # of Anglers per Trip	4.7	28.2
Trip Net Cash Flow per Angler Trip	$118	$64

Economic Impacts

The desire for recreational fishing generates economic activity as consumers spend their income on various goods and services needed for recreational fishing. This spurs economic activity in the region where recreational fishing occurs. In the absence of the opportunity to fish, the income would likely be spent on other goods and services and these expenditures would similarly generate economic activity in the region where the expenditure occurs. As such, the analysis below represents a distributional analysis only.

Estimates of the economic impacts resulting from headboat target effort for dolphin wahoo are not available. Headboat vessels are not covered in MRIP so, in addition to the absence of estimates of target effort, estimates of the appropriate business activity coefficients for headboat effort have not been generated.

Estimates of the economic impacts (business activity) associated with recreational angling for Atlantic dolphin wahoo were calculated using average trip-level impact coefficients derived from the 2016 Fisheries Economics of the U.S. report (NMFS 2018b) and underlying data provided by the NOAA Office of Science and Technology. Economic impact estimates were adjusted to 2019 dollars using the annual, not seasonally adjusted gross domestic product implicit price deflator provided by the U.S. Bureau of Economic Analysis.

Recreational fishing generates economic impacts (business activity). Business activity for the recreational sector is characterized in the form of jobs (full- and part-time), income impacts (wages, salaries, and self-employed income), value-added impacts (the difference between the value of goods and the cost of materials or supplies), and output impacts (gross business sales).

Addition of the state-level estimates to produce a regional (or national) total may underestimate the actual amount of total business activity because state-level impact multipliers do not account for interstate and interregional trading. National-level multipliers must be used to account for interstate and interregional trading. Estimates of economic impacts from target trips for dolphin, wahoo, and snapper grouper in the South Atlantic using national-level multipliers are provided in **Table 3.3.2.18, 3.3.2.20, and 3.3.2.22**.

Estimates of average target effort for dolphin, wahoo, and snapper grouper by mode and state (2015 through 2019) in the South Atlantic and the associated business activity are provided in **Tables 3.3.2.18. - 3.3.2.23.** The estimates provided in **Tables 3.3.2.19, 3.3.2.21., and 3.3.2.23-** use state-level multipliers and thus only apply at the state-level. For example, estimates of business activity in Florida represent business activity in Florida only and not to other states (for e.g., a good purchased in Florida may have been manufactured in a neighboring state) or the nation as a whole. The same holds true for each of the other states. Income impacts should not be added to output (sales) impacts because this would result in double counting. The results provided should be interpreted with caution and demonstrate the limitations of these types of assessments. These results are based on average relationships developed through the analysis of many fishing operations that harvest many different species.

Economic impact estimates for dolphin target effort using national multipliers and state multipliers for the South Atlantic states are provided in **Table 3.3.2.18** and **Table 3.3.2.19** and. Between 2015 and 2019, across all regions and using national-level multipliers, dolphin target effort generated employment, income, value-added, and output (sales) impacts of 1,409 jobs, $71.7 million, $128.5 million, and $226.2 million per year, respectively, on average.

Table 3.3.2.18. Estimated economic impacts from South Atlantic dolphin recreational target trips to U.S., using national multipliers. All monetary estimates are in 2019 dollars.

Mode	Total # of Trips	Value Added Impacts ($ thousands)	Sales Impacts ($ thousands)	Income Impacts ($ thousands)	Employment Impacts (Jobs)
Charter	52,443	$20,779	$36,487	$12,153	288
Private/Rental	1,808,720	$99,265	$174,863	$54,868	1,032
Shore	814	$82	$141	$47	1

Table 3.3.2.19. Estimated economic impacts from average annual South Atlantic dolphin recreational target trips by state and mode (2015-2019), using state-level multipliers. All monetary estimates are in thousands of 2019$ and employment is in full-time equivalent jobs.

	NC	SC	GA	FL
	Charter Mode			
Target Trips	16,041	2,274	9	34,119
Value Added Impacts	$6,759	$554	$2	$7,999
Sales Impacts	$11,741	$963	$3	$13,425
Income Impacts	$3,977	$320	$1	$4,730
Employment (Jobs)	120	11	0	127
	Private/Rental Mode			
Target Trips	147,620	57,102	0	1,603,998
Value Added Impacts	$4,602	$1,331	$0	$44,185
Sales Impacts	$7,609	$2,044	$0	$65,924
Income Impacts	$2,655	$627	$0	$21,829
Employment (Jobs)	73	26	0	637
	Shore			
Target Trips	814	0	0	0
Value Added Impacts	$51	$0	$0	$0
Sales Impacts	$84	$0	$0	$0
Income Impacts	$30	$0	$0	$0
Employment (Jobs)	1	0	0	0
	All Modes			
Target Trips	164,475	59,376	9	1,638,117
Value Added Impacts	$11,412	$1,886	$2	$52,185
Sales Impacts	$19,434	$3,007	$3	$79,349
Income Impacts	$6,661	$947	$1	$26,559
Employment (Jobs)	194	36	0	764

Source: MRIP Survey Data available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads.

Economic impact estimates for wahoo target effort using national multipliers and state multipliers for the South Atlantic states are provided in **Tables 3.3.2.20** and **3.3.3.21**. Between 2015 and 2019, across all regions and using national-level multipliers, wahoo target effort generated employment, income, value-added, and output (sales) impacts of 132 jobs, $7 million, $12.7 million, and $22.4 million per year, respectively, on average.

Table 3.3.2.20. Estimated economic impacts from South Atlantic wahoo recreational target trips to U.S., using national multipliers. All monetary estimates are in 2019 dollars.

Mode	Total # of Trips	Value Added Impacts ($ thousands)	Sales Impacts ($ thousands)	Income Impacts ($ thousands)	Employment Impacts (Jobs)
Charter	7,290	$3,807	$6,685	$2,227	53
Private/Rental	219,322	$12,171	$21,441	$6,728	127

Table 3.3.2.21. Estimated economic impacts from average annual South Atlantic wahoo recreational target trips by state and mode (2015-2019), using state-level multipliers. All monetary estimates are in thousands of 2019$ and employment is in full-time equivalent jobs.

	NC	SC	GA	FL
	Charter Mode			
Target Trips	5,383	123	45	1,739
Value Added Impacts	$2,268	$30	$8	$408
Sales Impacts	$3,940	$52	$14	$684
Income Impacts	$1,334	$17	$5	$241
Employment (Jobs)	40	1	0	6
	Private/Rental Mode			
Target Trips	41,934	25,695	1,660	150,033
Value Added Impacts	$1,307	$599	$41	$4,133
Sales Impacts	$2,161	$920	$63	$6,166
Income Impacts	$754	$282	$20	$2,042
Employment (Jobs)	21	12	1	60
	Shore			
Target Trips	0	0	0	0
Value Added Impacts	$0	$0	$0	$0
Sales Impacts	$0	$0	$0	$0
Income Impacts	$0	$0	$0	$0
Employment (Jobs)	0	0	0	0
	All Modes			
Target Trips	47,317	25,818	1,705	151,772
Value Added Impacts	$3,575	$629	$50	$4,541
Sales Impacts	$6,102	$972	$77	$6,851
Income Impacts	$2,089	$299	$25	$2,283
Employment (Jobs)	61	12	1	66

Source: MRIP Survey Data available at https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads.

Economic impact estimates for snapper grouper target effort using national multipliers and state multipliers for the South Atlantic states are provided in **Tables 3.3.2.22** and **3.3.3.23.** Between 2015 and 2019, using national-level multipliers, snapper grouper target effort generated employment, income, value-added, and output (sales) impacts of 931 jobs, $47.4 million, $84.7 million, and $148.3 million per year, respectively, on average.

Table 3.3.2.22. Estimated economic impacts from South Atlantic snapper grouper recreational target trips to U.S., using national multipliers. All monetary estimates are in 2019 dollars.

Mode	Total # of Trips	Value Added Impacts ($ thousands)	Sales Impacts ($ thousands)	Income Impacts ($ thousands)	Employment Impacts (Jobs)
Charter	18,987	$6,565	$11,527	$3,839	91
Private/Rental	1,035,356	$56,375	$99,309	$31,161	586
Shore	583,332	$21,761	$37,481	$12,443	254

Table 3.3.2.23. Estimated economic impacts from average annual South Atlantic snapper grouper recreational target trips by state and mode (2015-2019), using state-level multipliers. All monetary estimates are in thousands of 2019$ and employment is in full-time equivalent jobs.

	NC	SC	GA	FL
	Charter Mode			
Target Trips	2,052	3,666	645	12,624
Value Added Impacts	$865	$894	$121	$2,960
Sales Impacts	$1,502	$1,553	$205	$4,967
Income Impacts	$509	$516	$69	$1,750
Employment (Jobs)	15	17	2	47
	Private/Rental Mode			
Target Trips	55,289	54,991	24,804	900,272
Value Added Impacts	$1,724	$1,282	$616	$24,800
Sales Impacts	$2,850	$1,968	$934	$37,001
Income Impacts	$994	$603	$299	$12,252
Employment (Jobs)	27	25	12	357
	Shore			
Target Trips	19,288	781	4,862	558,401
Value Added Impacts	$1,215	$38	$171	$12,131
Sales Impacts	$1,998	$60	$277	$17,907
Income Impacts	$703	$20	$91	$6,140
Employment (Jobs)	20	1	3	174
	All Modes			
Target Trips	76,629	59,437	30,310	1,471,298

	NC	SC	GA	FL
Value Added Impacts	$3,803	$2,213	$908	$39,890
Sales Impacts	$6,350	$3,581	$1,416	$59,876
Income Impacts	$2,206	$1,139	$460	$20,143
Employment (Jobs)	62	43	17	579

3.4 Social Environment

The Comprehensive ABC Control Rule Amendment addresses multiple fisheries of importance to communities in the South Atlantic region and elsewhere along the Eastern Seaboard. This section describes select social, demographic, and geographic aspects of the fisheries addressed by the amendment, providing essential background for social effects analysis in Chapter 4. The section is organized around the sectors potentially affected by the prospective actions: (a) the snapper grouper commercial and recreational sectors, (b) the dolphin (mahi-mahi) and wahoo commercial and recreational sectors, and (c) the exclusively commercial golden crab sector. Quantitative description is limited to the five-year time-series preceding the COVID-19 pandemic in the U.S. (2015 through 2019), with emphasis on data years 2018 and 2019. Confidentiality concerns limit social description of the South Florida Golden crab fishery. Given the many species in the snapper grouper complex, and the extensive scope of the dolphin wahoo fisheries, related descriptive data are expressed in aggregate. Description of the social environment associated with dolphin and wahoo resources managed under the South Atlantic Dolphin and Wahoo Fishery Management Plan (FMP) is expressed at the county and community levels for the Mid-Atlantic and New England fishery management regions, and in greater depth at the community level for the South Atlantic region.[16]

3.4.1 Snapper Grouper Commercial and Recreational Fisheries

3.4.1.1 Snapper Grouper Commercial Sector

As allowable by location and species pursued in the South Atlantic, participants in the limited entry commercial snapper grouper fisheries typically use manual hook-and-line gear, hydraulic (bandit) and electric reels, bottom longlines, and spearfishing gear. Use of bandit and electric reels is prevalent between Florida and Cape Hatteras, and use of spearfishing gear typically occurs in diving-suitable areas south of Hatteras. Longline gear for certain deep-water species is used at depths greater than 50 fathoms, principally north of Hatteras. Pots are used in the South Atlantic region mainly for black sea bass. Knowledge of habitat, species behavior, current flow, and other ecological factors over wrecks, reefs, and other bathymetric features is critical to success in the snapper grouper fisheries. Use of fish-finding and positioning technology is now almost universal across the fleets. Commercial trip lengths vary in relation to type of gear deployed, with most trips lasting between two and three days, and some considerably longer (North Carolina Division of Marine Fisheries 2022).

[16] Select human aspects of Atlantic dolphin wahoo operations are incorporated by reference in this section, as available in the recently implemented Amendment 10 to the FMP for the Dolphin and Wahoo Fishery of the Atlantic (South Atlantic Fishery Management Council 2021).

MacLauchlin-Buck (2018:12) describes seasonal snapper grouper trips based on principal target species. The author asserts that trips initiated from ports between North Carolina and Georgia during Season 1 (January through April) tend to focus especially on black sea bass, or on vermilion snapper, gray triggerfish, and/or various jacks. Season 2 trips (May through August) are said to focus on black sea bass, gag grouper, and red porgy, with trips during Season 3 (September through December) driven largely by pursuit of gray triggerfish and/or red porgy, and also by black sea bass and/or gag grouper. Certain trips during the cooler months involve harvest of snowy grouper and/or blueline and golden tilefish in relatively deep waters of the region (ibid., p. 12). South Atlantic commercial snapper grouper trips departing from Florida are more diversified than from ports further north, with Season 1 trips involving focused pursuit of: (a) vermilion snapper, gray triggerfish, mutton snapper, gray snapper, greater amberjack, and/or hogfish; (b) yellowtail snapper; (c) golden tilefish (typically involving use of longline gear); (d) various jacks; and (e) king mackerel (MacLauchlin-Buck 2018:13). Season 2 trips reportedly involve extensive pursuit of greater amberjack, yellowtail snapper, mutton snapper, and king mackerel; with Season 3 trips dominated by pursuit of various shallow-water snapper grouper species, yellowtail snapper, golden tilefish, and Spanish mackerel (ibid, p. 13). Finally, Florida Keys-based trips typically involve pursuit of yellowtail snapper during all seasons, with Season 1 trips also involving harvest of mutton snapper, gray snapper, gray triggerfish, and greater amberjack. Season 2 trips in the Keys reportedly involve focused pursuit of yellowtail snapper, greater amberjack, gray snapper, mutton snapper, and various shallow-water groupers, while trips during Season 3 tend to be focused on the various shallow-water snapper grouper species. Deepwater trips for yellowedge, snowy grouper, and blueline and golden tilefish reportedly occur at times throughout the course of a given year (MacLauchlin-Buck 2018:13).

South Atlantic Commercial Snapper Grouper Landings by State

Based on 2019 data, over 61.2% of the snapper grouper resource in the South Atlantic region was landed at ports in Florida that year, followed by 25.2% at ports in North Carolina, and 13.4% at ports in South Carolina. Less than 1% of landings were received at ports along the Georgia coast during 2019 (SEFSC Community ALS File).

South Atlantic Commercial Snapper Grouper Permits by State and Community

A total of 543 South Atlantic unlimited snapper grouper permits were held during 2019. At 67.2%, most unlimited permits were issued to residents or persons with mailing addresses in Florida, followed by 20.9% in North Carolina, 8.8% in South Carolina, and 1.4% in Georgia. Two or fewer unlimited permits were issued to persons in Delaware, New Jersey, New York, and Virginia. Most trip-limited permits were also held for use by persons operating from Florida communities during 2019 and, as can be noted in Table 3.4.1.1, a large proportion of both permit types are held by fishery participants active in the Florida Keys. Indicative of operational diversity over the course of a given fishing year, MacLauchlin-Buck (2018:11) states that most snapper grouper permit holders also hold permits for various pelagic species managed in the federal jurisdiction waters of the South Atlantic. Of note, a total of 32 black sea bass pot endorsements were issued for use in the South Atlantic during the 2015 through 2019 time-

series[17]— in keeping with the fleet size parameters established for this limited entry fishery. No more than 35 pots may be deployed from any participating vessel, and captains must also possess a South Atlantic Unlimited Snapper-Grouper Permit (SAFMC 2017). The communities with the greatest number of black sea bass pot endorsements during 2019 were: Little River, South Carolina (four endorsements), Sneads Ferry, North Carolina (also four endorsements), and Ponce Inlet, Florida (three endorsements).

Table 3.4.1.1. Distribution of commercial snapper grouper unlimited and 225-lb trip-limited permits among the top permit-holding communities in the South Atlantic during 2019.

Leading Communities: Unlimited Permits	Permits	Leading Communities: 225-lb Trip-Limited Permits	Permits
Key West, Florida	95	Key West, Florida	12
Key Largo, Florida	28	Marathon, Florida	10
Miami, Florida	23	Miami, Florida	9
Marathon, Florida	21	Jupiter, Florida	6
Murrells Inlet, South Carolina	16	Big Pine Key, Florida	5
Southport, North Carolina	14	Key Largo, Florida	4
Little River, South Carolina	14	Hatteras, North Carolina	3
Jacksonville, Florida	14	Wilmington, North Carolina	3
Port Canaveral, Florida	13	West Palm Beach, Florida	3
Jupiter, Florida	13	Middle Torch Key, Florida	2
Beaufort/Morehead City, North Carolina	12	Fort Pierce, Florida	2
Sebastian, Florida	12	St. Augustine, Florida	2
Sneads Ferry, North Carolina	11	Boca Raton, Florida	2
Fort Pierce, Florida	10	Cudjoe Key, Florida	2
Ponce Inlet, Florida	10	Summerland Key, Florida	2
Mayport, Florida	10	Little Torch Key, Florida	2
Fort Pierce, Florida	10	Fort Lauderdale, Florida	2
Holden Beach, North Carolina	9	Sebastian, Florida	2
Islamadora. Florida	9	--	--
Big Pine Key, Florida	9	--	--

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database.

Regional Quotient of South Atlantic Commercial Snapper Grouper Landings

Figure 3.4.1.1 depicts the distribution of commercial landings among the top fifteen snapper grouper landings communities in the South Atlantic for the period 2015 through 2019. The distribution is expressed as a regional quotient, or the share of community landings divided by total landings for the overall region. As can be discerned from the graph, commercial participants based in Key West collectively account for the greatest proportion of community-specific snapper grouper landings during 2019 and throughout the time-series.

[17] The black sea bass resource is jointly managed north of Hatteras by NMFS, the Mid-Atlantic Fishery Management Council, and the Atlantic State Marine Fisheries Commission. South of Hatteras, the resource is managed by NMFS and the South Atlantic Fishery Management Council (SAFMC).

As depicted in Figure 3.4.1.2, the Florida communities of Key West, Marathon, and Miami, along with the North Carolina communities of Beaufort, Morehead City, and Wanchese, score highly in terms of relative extent of engagement in South Atlantic commercial fisheries. The measure of engagement provided here is a generalizable composite indicator based on pounds of fish landed by the local fleets, ex-vessel value of landings, and the number of commercial fishery participants and seafood dealers present in a given community (see Jacob et al. 2013; Jepson and Colburn 2013; Hospital and Leong 2021). Measures of reliance incorporate the same variables used to address engagement, divided by the total local population figure. The measures are useful means for indicating where any prospective effects of management actions are likely to be experienced. Notably, the North Carolina community of Wanchese scores well above the one standard deviation threshold for reliance on the region's commercial fisheries, suggesting limited local economic alternatives to the fishing and seafood industry in this remote waterfront town of some 1,522 residents (U.S. Census Bureau 2020a). A total of five unlimited commercial snapper grouper permits were held by Wanchese residents during 2019.

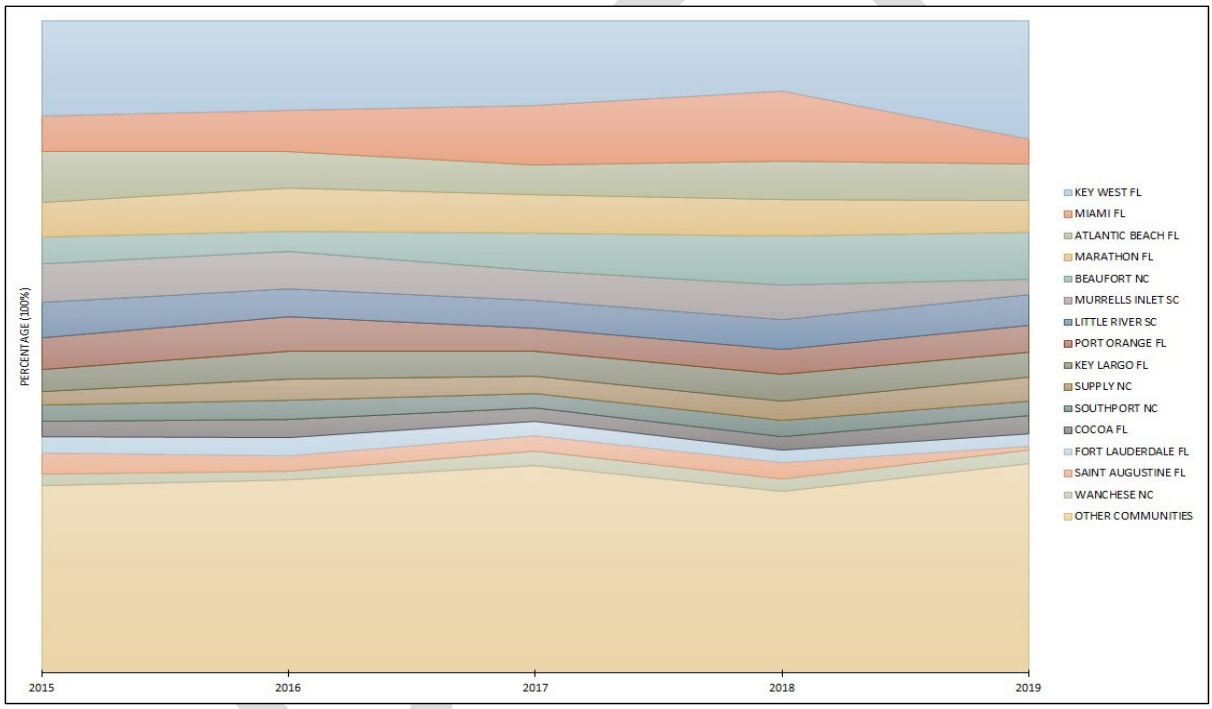

Figure 3.4.1.1. Distribution of regional landings among the top South Atlantic commercial snapper grouper landings communities: 2015 through 2019.
Source: SEFSC, Community ALS 2019.

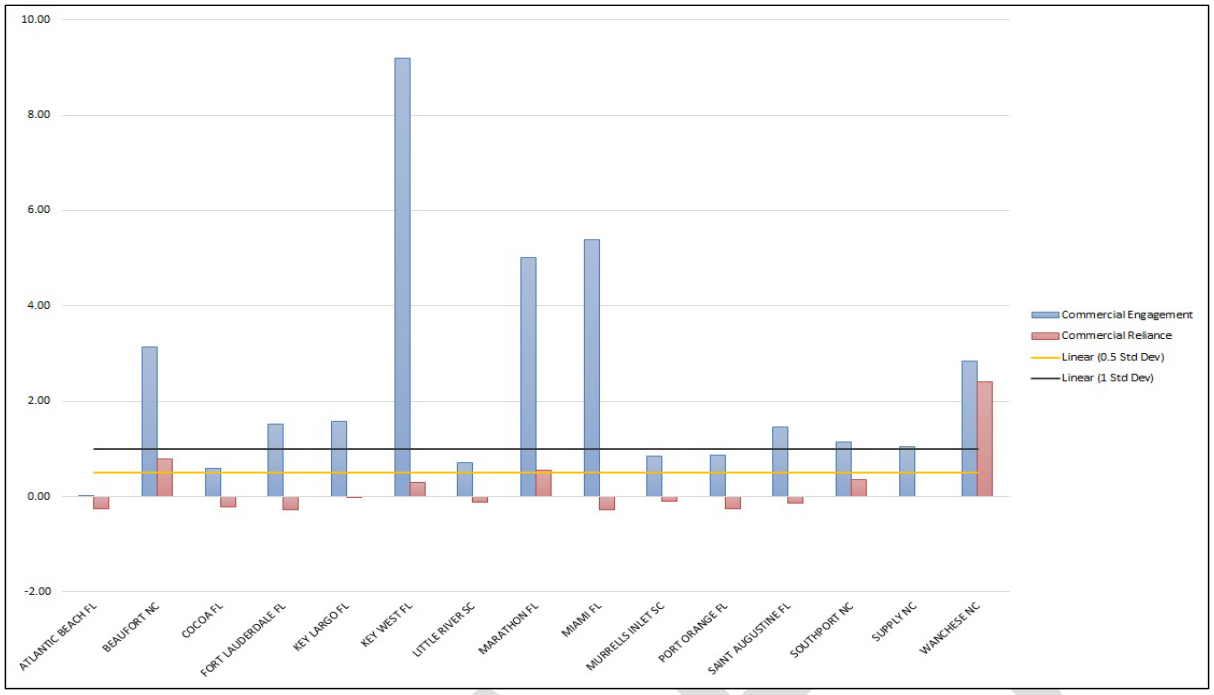

Figure 3.4.1.2. Measures of engagement and reliance among the leading commercial snapper grouper landings communities in the South Atlantic during 2019.
Source: SERO, Community Social Vulnerability Indicators Database.

3.4.1.2 Snapper Grouper Recreational Sector

Participants in the South Atlantic snapper grouper recreational fisheries generally use manual hook-and-line gear and/or electric and hydraulic reels to pursue species of interest during relatively short-duration trips offshore. Size and capability of vessel vis-à-vis local ocean conditions determines how far offshore a species of interest can be sought in a given benthic habitat on any given day. Environmental knowledge and positioning technology are core elements of fishing success and safety-at-sea, with most captains also striving to provide an enjoyable patron experience irrespective of landings.

A total of 2,181 South Atlantic snapper grouper charter/headboat permits were issued in 2019. This represents a steady regional increase during the 2015 through 2019 time-series, with 1,779 permits issued in 2015, 1,867 in 2016, 1,982 in 2017, and 2,126 in 2018. The community distribution of for-hire permits in 2019 is depicted in Table 3.4.1.2. Of note in the table, the greatest proportion of for-hire/headboat permits were held by residents or persons with postal addresses in Key West, with 198 such permits held in the community in 2019, down from a high of 206 in 2018. This figure is similar to the number of dolphin wahoo for-hire permits issued to persons in the community during 2019, as indicated later in this section.

Table 3.4.1.2. Distribution of South Atlantic for-hire/headboat snapper grouper permits among the top permit-holding communities in the region during 2019.

State	Leading Communities	Number of Permits in 2019
Florida	Key West	198
Florida	Islamorada	97
Florida	Marathon	82

State	Leading Communities	Number of Permits in 2019
Florida	Port Canaveral	76
South Carolina	Charleston	60
Florida	Miami	45
North Carolina	Hatteras	44
Florida	St. Augustine	40
Florida	Ponce Inlet	36
North Carolina	Beaufort/Morehead City	36
South Carolina	Murrells Inlet	33
Florida	Key Largo	32
Florida	Jupiter	32
Florida	Jacksonville	30
Florida	Cape Canaveral	29
North Carolina	Manteo	26
Florida	Port Orange	25

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database.

Measures of Engagement and Reliance: Snapper Grouper Recreational Sector

The communities depicted in Figure 3.4.1.2 are those in the South Atlantic region where residents are most clearly engaged in the recreational fishing industry, of which the snapper grouper fisheries are important components. The measure of engagement depicted in the figure derives from the number of recreational permits and vessels actively used by residents in a given community, while the measure of reliance derives from the same variables divided by the total local population figure. All communities depicted in the figure demonstrate extensive involvement in recreational fishing, with particularly high levels noted of Jacksonville, Key West, Melbourne Beach, and Islamadora in Florida, and of Hatteras and Nags Head, small communities situated along the Outer Banks of North Carolina. Notably, Nags Head is the only community that meets the one standard deviation threshold for reliance on the recreational fishing industry, indicating the importance of for-hire and private recreational fishing and related services and opportunities in the community. Inasmuch as the graphic depicts relative extent of community engagement and reliance on recreational fishing in the South Atlantic region in general, it is also a useful point of reference for understanding localized involvement in the South Atlantic portion of the Atlantic dolphin wahoo recreational fisheries described in the following subsection.

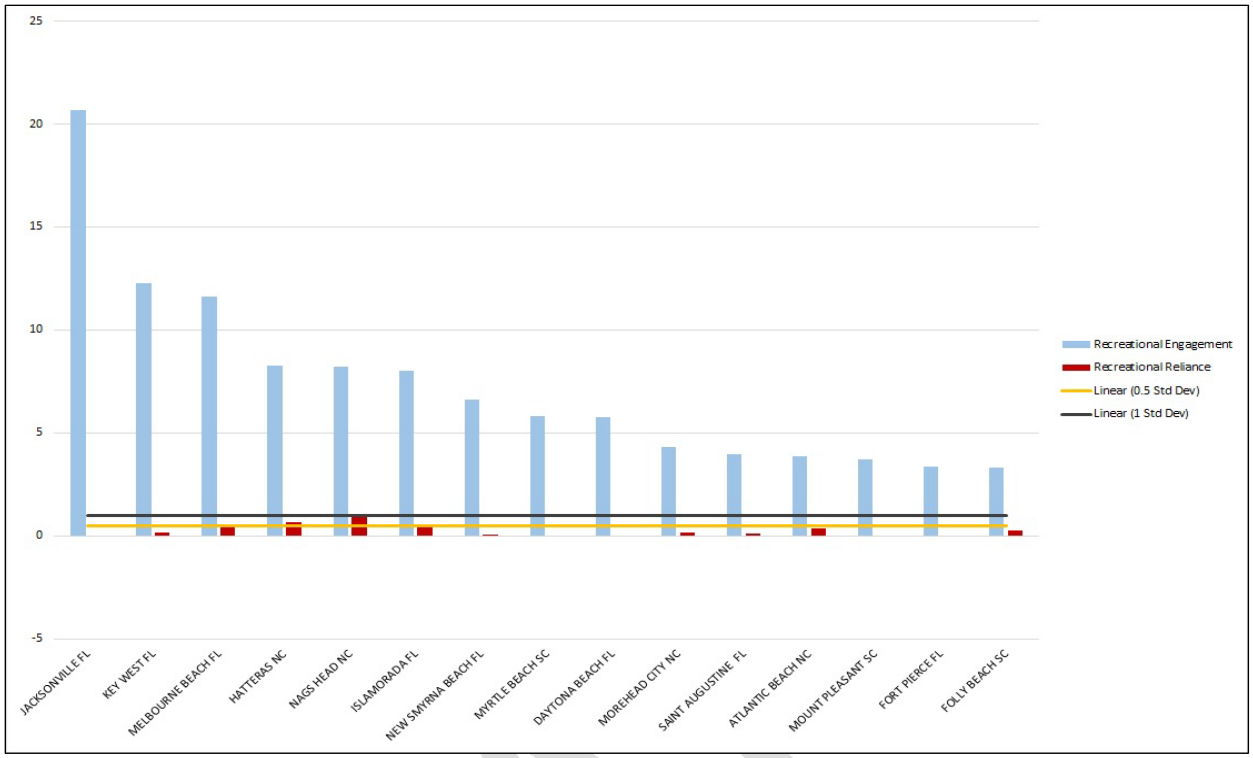

Figure 3.4.1.3. Measures of community involvement in the South Atlantic recreational fishing industry during 2019.
Source: SERO, Community Social Vulnerability Indicators Database.

3.4.2 Dolphin Wahoo Commercial and Recreational Fisheries

3.4.2.1 Dolphin Wahoo Commercial Sector

This subsection emphasizes aggregated social description of the open access Atlantic commercial dolphin and wahoo fisheries since: 1) this is compatible with the aggregated overview of social involvement in the multi-species snapper grouper fisheries described above; 2) participants in the commercial harvest sector operate under a combined dolphin wahoo permit; and 3) typical modes of pursuit and operational strategies are similar for both pelagic species. Commercial captains and crew working to harvest migratory dolphin and/or wahoo resources along the Eastern Seaboard typically use hook-and-line troll gear or pelagic longline gear, often fishing near sargassum, other floating materials or objects, convergence zones, surface slicks, visible bait, preying birds, and/or other features indicative of feeding pelagic species. In the event of a surface rush, jigging with handlines in such areas is another viable strategy. Troll speeds tend to be rapid relative to those used during pursuit of other pelagic species, and especially so for wahoo. Baits or lures are typically deployed near or at the surface and/or somewhat deeper at times. Automatic reels and bandit gear are allowable. Effective coordination between captain and crew is critical to success, particularly during challenging sea conditions and when multiple fish are hooked simultaneously. A limited amount dolphin is captured using spearfishing methods in certain areas, again as conditions allow (SAFMC 2021). Dolphin is landed across the fishery regions of interest much more frequently than wahoo. A total of 2,722 Atlantic commercial dolphin wahoo permits were held by persons around the

nation during 2019, with most participants residing in or utilizing postal addresses in the South Atlantic region.

Commercial Dolphin and Wahoo Landings: New England and Mid-Atlantic Communities
The SAFMC manages migratory dolphin and wahoo resources across the South Atlantic and into the Mid-Atlantic and New England fishery management regions. As such, pertinent human aspects of these cross-regional fisheries are included in the following subsections, with a focus on select geographic and demographic data useful for understanding county- and community-level linkages to dolphin and wahoo fishing operations. The New England coastal states include Maine, New Hampshire, Massachusetts, Connecticut, and Rhode Island. The Mid-Atlantic states include New York, New Jersey, Pennsylvania, Delaware, Maryland, and Virginia.

As discussed in SAFMC (2021:86-87), the historic volume of dolphin and wahoo landings in the New England and Mid-Atlantic regions is minimal when compared to landings accrued in communities around the South Atlantic. The authors note that the New England City of New Bedford, Massachusetts led New England ports during 2011 in terms of commercial dolphin landings, with Ocean City, Maryland a distant second in the Mid-Atlantic region. The volume of commercial wahoo landings during 2011 reportedly was far less than for dolphin. Only dealers in New Bedford, Massachusetts and Cape May, New Jersey received any landings of wahoo during 2011 (SAFMC 2013). A useful point of reference for the volume of recent commercial dolphin and wahoo landings in the New England and Mid-Atlantic regions is provided by NOAA Fisheries (2022). The agency reports that 16,918 lbs. of dolphin and 1,557 lbs. of wahoo were landed in the New England states during 2019, and that 47,981 lbs. of dolphin and 1,138 lbs. of wahoo were landed in the Mid-Atlantic states that year.

Commercial Dolphin and Wahoo Landings by State in the South Atlantic Region
During 2019, 40.7% of the overall dolphin wahoo resource was landed at ports in North Carolina, followed by 32.9% at ports in Florida, and 26.2% at ports in South Carolina. Landings of both dolphin and wahoo were negligible at Georgia ports during the 2015-2019 time-series. As regards commercial landings of wahoo, nearly 49% of the wahoo resource was landed at ports in North Carolina during 2019, followed by 38.4% at ports in Florida, and 12.6% at ports in South Carolina (SEFSC Community ALS File).

Commercial Dolphin and Wahoo Permits: New England and Mid-Atlantic Communities
As of 2019, a total of 50 Atlantic commercial dolphin wahoo permits were held by residents or persons with mailing addresses in the coastal New England states. This is down from a 2015-2019 time-series high of 60 permits in 2017. As can be noted in Table 3.4.2.1, the greatest percentage of permits were held in Rhode Island during 2019 and the remainder of the time-series, with most being held by residents or persons with mailing addresses in Point Judith.

Table 3.4.2.1. Distribution of permits among the top commercial dolphin wahoo permit-holding communities in the New England region during 2019.

State	Leading Communities	Number of Permits in 2019
Rhode Island	Point Judith	7
Massachusetts	Nantucket	4
Connecticut	Stonington	3

State	Leading Communities	Number of Permits in 2019
Massachusetts	New Bedford	3
Massachusetts	Scituate	2
Maine	Portland	2
Rhode Island	Tiverton	2
Rhode Island	Portsmouth	2
Massachusetts	Gloucester	2
Rhode Island	Wakefield	1

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database.

A total of 169 Atlantic commercial dolphin wahoo permits were held by residents or persons with mailing addresses in the coastal Mid-Atlantic region during 2019. This is down from a 2015 through 2019 time-series high of 198 permits in 2017. As depicted in Table 3.4.2.2, the greatest number of permits were held in New Jersey during 2019, with the greatest percentage held in the community of Barnegat Light, as was the case during the entire time-series.

Table 3.4.2.2. Distribution of permits among the top commercial dolphin wahoo permit-holding communities in the Mid-Atlantic region during 2019.

State	Leading Communities	Number of Permits in 2019
New Jersey	Barnegat Light	30
New York	Montauk	15
Maryland	Ocean City	15
New Jersey	Cape May	11
Virginia	Virginia Beach	8
New York	New York	5
Delaware	Indian River	5
New Jersey	Sea Isle City	4
Delaware	Wilmington	3
New Jersey	Point Pleasant Beach	3

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database.

Commercial Atlantic Dolphin Wahoo Permits by South Atlantic State and Community

As of 2019, a total of 2,427 Atlantic commercial dolphin wahoo permits were held by residents or persons with mailing addresses in the South Atlantic states. A total of 1,777 permits were issued to persons in Florida during 2019, followed by 524 in North Carolina, 108 in South Carolina, and 18 in Georgia. As can be noted in Table 3.4.2.3, most commercial dolphin wahoo permits were held in Florida communities during 2019; this is the case despite the relatively higher percentage of dolphin wahoo landings in North Carolina that year.

Table 3.4.2.3. Distribution of permits among the top commercial dolphin wahoo permit-holding communities in the South Atlantic region during 2019.

State	Leading Communities	Number of Permits in 2019
Florida	Key West	222
Florida	Miami	111
Florida	Marathon	99

State	Leading Communities	Number of Permits in 2019
Florida	Port Canaveral	86
Florida	Fort Pierce	81
Florida	Jupiter	78
Florida	Sebastian	57
North Carolina	Morehead City	56
North Carolina	Southport	49
Florida	Key Largo	46
North Carolina	Hatteras	44
North Carolina	Wanchese	42
Florida	Islamadora	42
North Carolina	Beaufort	38
Florida	Port Salerno	38

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database.

Regional Quotient of Commercial Atlantic Dolphin and Wahoo Landings: Top Counties

The following figures depict the distribution of commercial dolphin and wahoo landings among the 15 East Coast counties with the greatest proportion of landings for the species of interest. Again, the distribution is expressed as a regional quotient—in this case, the share of county landings divided by total landings for the overall region. As discussed in SAFMC (2021:82-83), while the majority of the top-ranking counties for commercial dolphin landings were in Florida during the 2015 through 2019 time-series (St. Lucie, Duval, Monroe, Manatee, and Palm Beach Counties), most of the regional quotient can be attributed to Charleston County in South Carolina and Dare County, North Carolina (Figure 3.4.2.1). Meanwhile, a relatively small proportion of commercial dolphin landings can be attributed to specific counties in the New England region (Bristol and Washington Counties) and the Mid-Atlantic region (Worcester, Suffolk, and Cape May Counties). Readers should note that the y axis value is hidden in certain cases so as to ensure confidentiality where less than three dealers are present in a given county. Of note in Figure 3.4.4.2**,** numerous Florida counties are represented in the distribution of region-wide wahoo landings, but with the greatest proportion of landings attributable to counties in North Carolina.

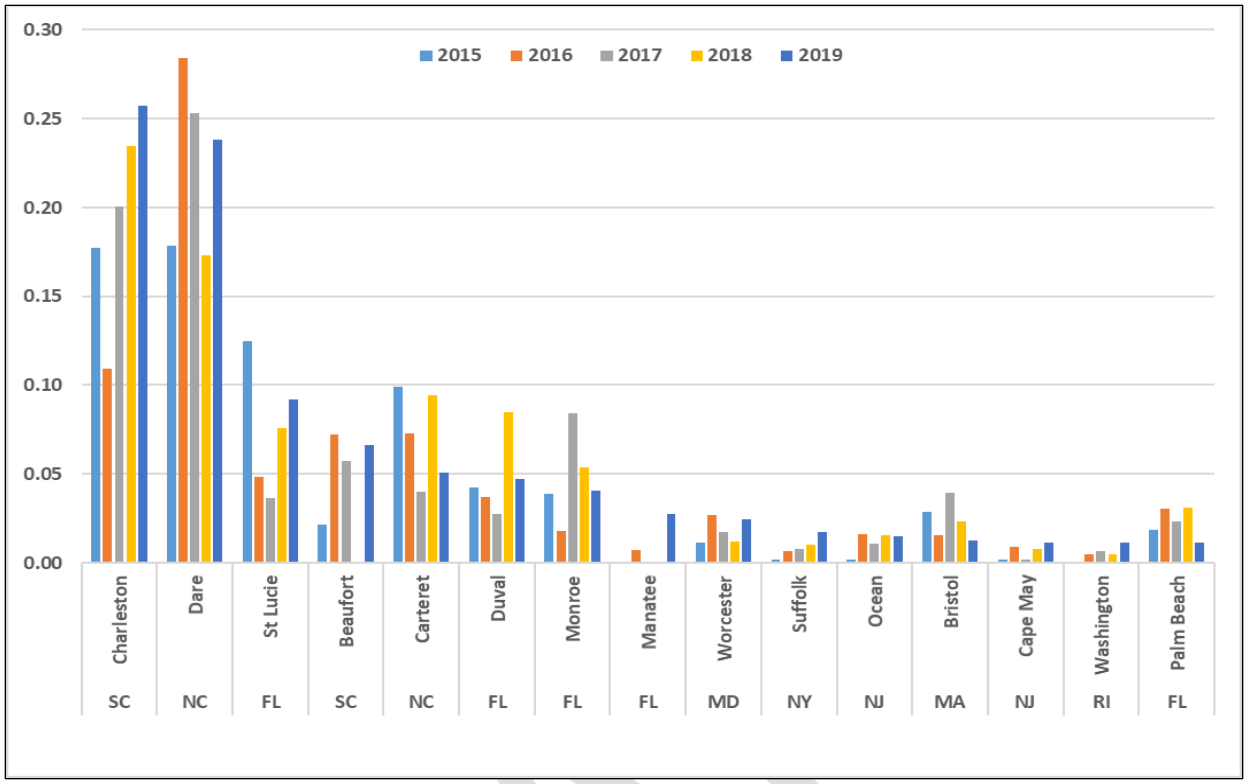

Figure 3.4.2.1. Distribution of regional landings among the leading commercial dolphin landings counties along the Eastern Seaboard: 2015 through 2019.
Source: Atlantic Coastal Cooperative Statistics Program (ACCSP) database (2020).

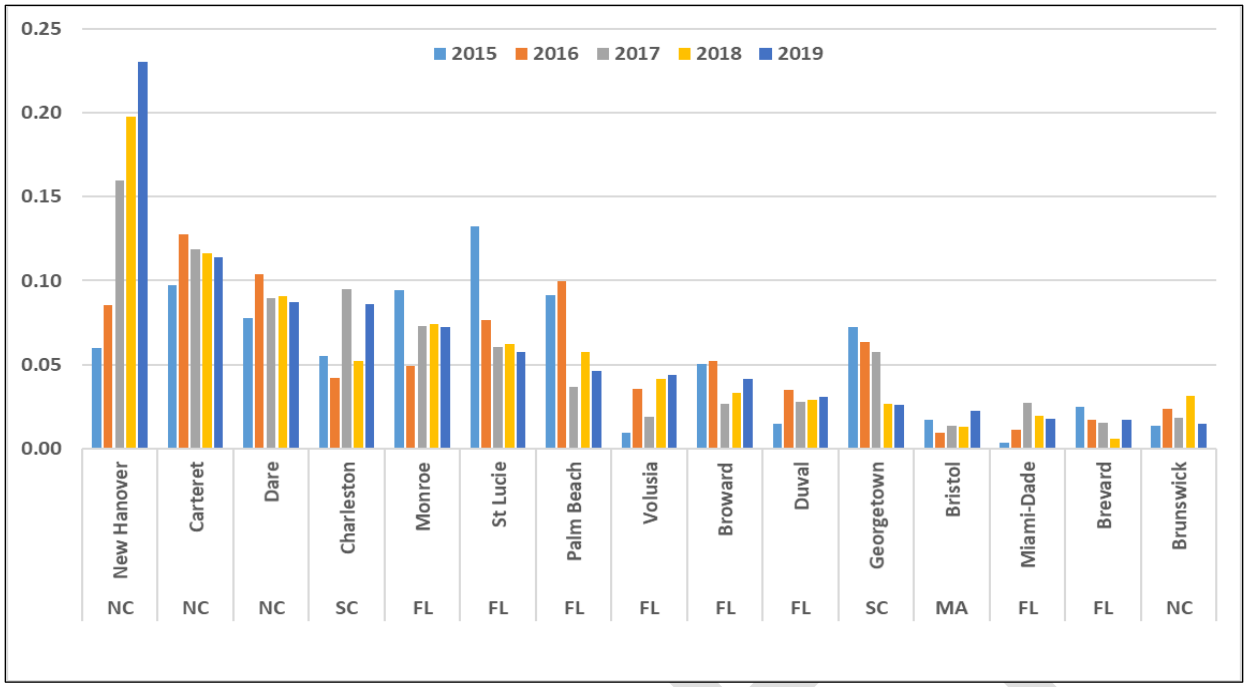

Figure 3.4.2.2. Distribution of regional landings among the leading commercial wahoo landings counties along the Eastern Seaboard: 2015 through 2019.
Source: Atlantic Coastal Cooperative Statistics Program (ACCSP) database (2020).

Authors of SAFMC (2021) report that numerous communities in New England and the Mid-Atlantic exceed the one standard deviation threshold for measured engagement in and reliance on the commercial and recreational fishing industries (p. 87). These communities include: Boston and New Bedford in Massachusetts; Montauk and Point Lookout in New York; Point Pleasant, Barnegat Light, Belmar, and Cape May in New Jersey; Ocean City in Maryland; and Wachapreague and Virginia Beach in Virginia.

Regional Quotient of Combined Commercial Dolphin Wahoo Landings: South Atlantic Communities

Figure 3.4.2.3 depicts the distribution of combined commercial dolphin and wahoo landings among the 15 South Atlantic communities with the greatest proportion of such landings during the 2015 through 2019 time-series. Commercial participants in the northern North Carolina community of Wanchese collectively account for the greatest proportion of community-specific dolphin wahoo landings during 2019 and throughout the remainder of the time-series.

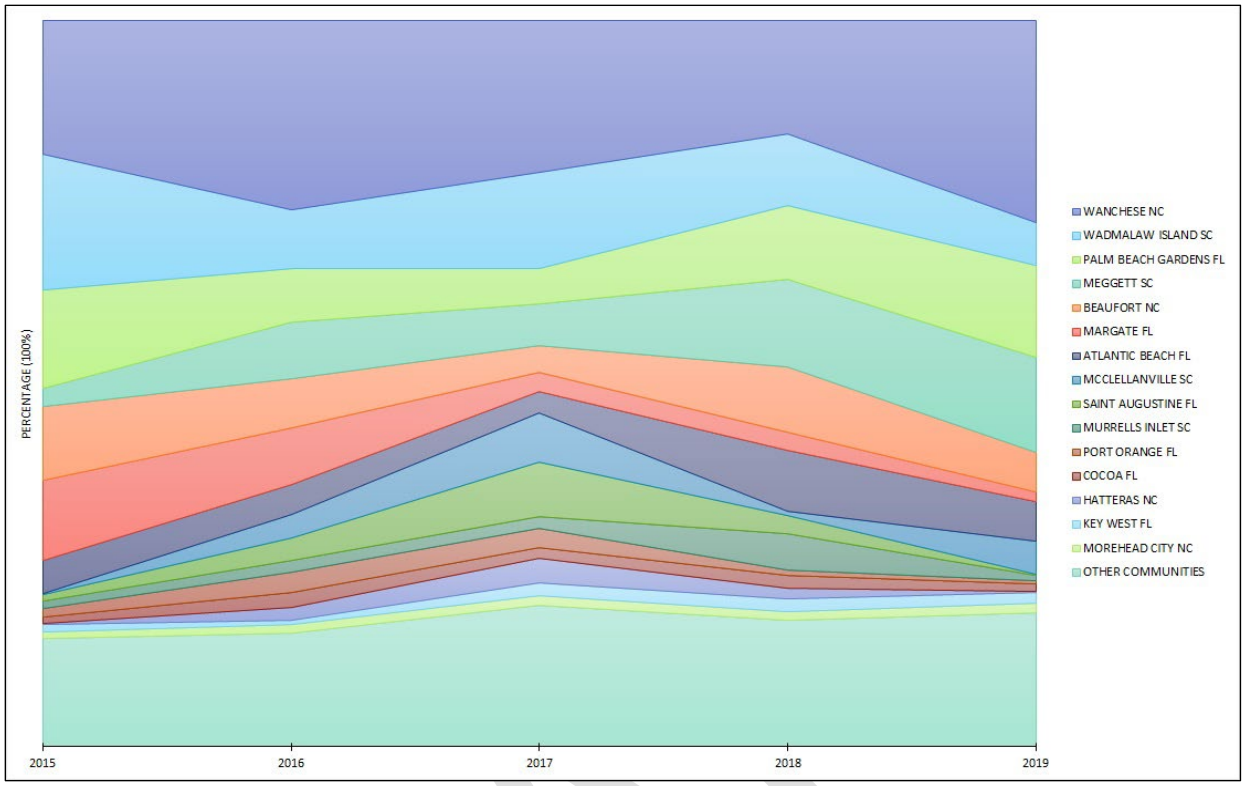

Figure 3.4.2.3. Distribution of regional landings among the top dolphin wahoo landings communities in the South Atlantic: 2015 through 2019.
(Source: SERO, Community ALS 2019).

As depicted in Figure 3.4.2.4, seven of the top commercial dolphin wahoo landings communities exceed the one standard deviation threshold in terms of relative extent of engagement in South Atlantic commercial fisheries as a whole. These include: the Florida communities of Key West, Key Largo, and St. Augustine; the North Carolina communities of Beaufort, Morehead City, and Wanchese; and the South Carolina community of McClellanville. As for the snapper grouper fisheries discussed above, the indicator of engagement used here is a generalizable composite based on pounds landed, ex-vessel revenue, and the number of local commercial fishery participants and seafood dealers. Again, measures of reliance incorporate the same variables divided by the local population figure, with both measures indicating where prospective management actions may potentially lead to community-level effects.

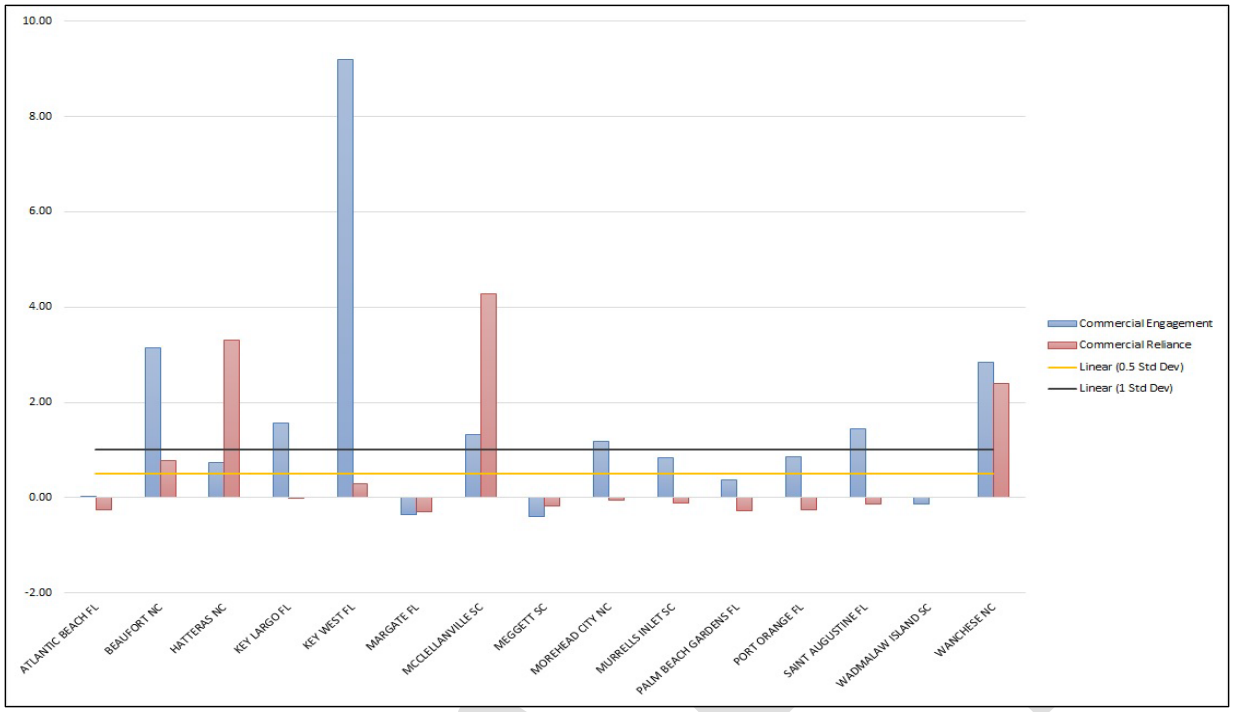

Figure 3.4.2.4. Measures of engagement and reliance among the top 15 commercial dolphin wahoo landings communities in the South Atlantic: 2019.
Source: SERO, Community Social Vulnerability Indicators Database.

3.4.2.2 Dolphin Wahoo Recreational Sector

Captains and crew who provide a recreational dolphin and/or wahoo fishing experience to their patrons along the Eastern Seaboard typically use heavy-leadered hook-and-line troll gear, often fishing above wrecks or near floating objects, preying birds, visible bait, convergence zones, and/or surface slicks. Strategies vary, but troll speeds tend to be relatively rapid, and often faster for wahoo, with natural baits (such as ballyhoo) and/or artificial high-speed plugs and lures often deployed at or near the surface and sometimes deeper, with depth of set often varying across the spread of trolled lines. For-hire vessels capable of handling offshore conditions typically are well-equipped with fish-finding, geo-positioning, and communications technologies. Captain's knowledge of dynamic environmental factors and how these relate to the presence of dolphin and wahoo is an important human dimension of for-hire operations across this broad region.

A total of 2,360 Atlantic dolphin wahoo charter/headboat permits were held by individuals in various states around the nation during 2019. Most were held by residents or persons with postal addresses in the South Atlantic region, as discussed below.

Distribution of Dolphin Wahoo Charter Permits in the New England Region

A total of 34 Atlantic dolphin wahoo charter/headboat permits were issued to residents or individuals with mailing addresses in the New England region during 2019. This is down slightly from a 2015 through 2019 time-series high of 36 permits during 2017 and 2018. Only 20 such permits were held in the region during 2015. Four permits were held in Narragansett, Rhode Island during 2019, with three held in Snug Harbor, Rhode Island, and two held in

Plymouth, Massachusetts and in Portsmouth, Rhode Island. A single permit was held in 21 additional New England communities during 2019.

Distribution of Dolphin Wahoo Charter Permits in the Mid-Atlantic Region

A total of 271 Atlantic dolphin wahoo charter/headboat permits were issued to operators who were resident or who held mailing addresses in the Mid-Atlantic region during 2019. This the largest number of permit holders in the region during the 2015 through 2019 time-series, up from a low of 262 permits in 2017. The greatest number of permit holders were based in or operating from Ocean City, Maryland during 2019, with 57 active permits held by residents or persons with mailing addresses in the community that year (Table 3.4.2.4).

Table 3.4.2.4. Distribution of permits among the leading for-hire/headboat dolphin wahoo permit-holding communities in the Mid-Atlantic region: 2019.

State	Leading Communities	Number of Permits in 2019
Maryland	Ocean City	57
Virginia	Virginia Beach	21
Delaware	Indian River	15
New Jersey	Cape May	13
Delaware	Lewes	12
New York	Montauk	9
New Jersey	Barnegat Light	7
Delaware	Wilmington	5
Virginia	Chincoteague	4

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database.

Distribution of Dolphin Wahoo Charter Permits in the South Atlantic Region

A total of 1,997 Atlantic dolphin wahoo charter/headboat permits were issued to residents or individuals with mailing addresses in the South Atlantic region during 2019. This represents a steady regional increase during the 2015 through 2019 time-series, with 1,580 permits issued in 2015, 1,656 in 2016, 1,932 in 2017, and 1,932 in 2018. The greatest proportion of permits were held during the time-series by residents or persons with postal addresses in Key West, with 192 such permits held in the community in 2019, down from a high of 200 in 2018 (Table 3.4.2.5).

Table 3.4.2.5. Distribution of permits among the leading for-hire/headboat dolphin wahoo permit-holding communities in the South Atlantic: 2019.

State	Leading Communities	Number of Permits in 2019
Florida	Key West	192
Florida	Islamorada	96
Florida	Marathon	81
Florida	Port Canaveral	78
South Carolina	Charleston	54
North Carolina	Hatteras	46
Florida	Miami	43
Florida	St. Augustine	39
North Carolina	Manteo	37
Florida	Ponce Inlet	36
Florida	Jupiter	34
Florida	Key Largo	31

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database.

As indicated in Table 3.4.2.5 and in Figure 3.4.1.2 above, the predominate involvement of Key West-based commercial and for-hire captains and crew in the South Atlantic dolphin wahoo and snapper grouper fisheries warrants additional social description of place. As of April 1, 2020, Key West was home to 24,649 permanent residents (U.S. Census Bureau 2020b), but with a characteristically large expansion of the population as seasonal residents and tourists arrive during the winter months. Key West is the southernmost city in the mainland U.S., with a consistently mild, tropical-maritime climate (NOAA 2021). The combination of favorable winter climate, close proximity to pelagic fishing grounds, and increasing rates of seasonal residence and visitation following a period of gentrification initiated in decades past (Shivlani 2014), help explain the disproportionate extent of for-hire fishing opportunities and services available in the community.

3.4.3 Golden Crab Commercial Fishery

The origins of the exclusively commercial Florida-based golden crab fishery are discussed in a variety of sources (e.g., Varkonyi 1985; Sherman 1985; South Atlantic Fishery Management Council 1995; Crosson et al. 2013; Clark 2014). In sum, the golden crab resource was first successfully harvested during the mid-1980s following a period of experimentation in deepwater demersal habitats along both the Gulf and Atlantic sides of the South Florida coastline (see Otwell et al. 1984). Attention quickly shifted to the Atlantic side where suitable bottom habitat was relatively close to land and where large urban areas were more likely to enable viable marketing potential. Early efforts were staged from Fort Lauderdale, but as technological, marketing, and food preparation challenges were gradually addressed, commercial harvest began to be undertaken from other ports in the region.

As discussed by Crosson et al. (2013:530-531), participation and effort in the golden crab fishery expanded considerably subsequent to passage of Snapper Grouper Fishery Management Plan (FMP) Amendment 4, which banned the use of fish traps in federal jurisdiction waters beginning in 1991. Following the ban, most Fort Lauderdale-based crabbers were no longer able to use their preferred method for harvesting various snapper grouper species as they had formerly done

during parts of the year in order to complement annual income derived from crabbing. The ban also encouraged reef fish harvesters based in other Florida communities to seek opportunity in the golden crab fishery. This situation occurred at roughly the same time that a downturn in Alaska crab stocks led the operators of a large Pacific Northwest-based crab vessel to make the voyage to Florida, also seeking to profit through harvest of the golden crab resource. As noted by Crosson et al. (2013:530), 38 vessels were engaged in the fishery by late 1995.

Human-technical challenges abound in the golden crab fishery, including the need for safe and effective deployment and retrieval of traps far below the highly dynamic Gulf Stream (Reed et al. 2017:6-10). As discussed by Crosson et al. (2013:529), early operators learned to set as many as 50 longline-linked traps in waters as deep as 2,000 feet, retrieving them some days later by locating and grappling the main line with a large hook. As for all offshore fisheries, and perhaps more so given the unwieldy nature of the traps and the need for the crabs to be landed undamaged by retrieval, the interactive challenges of weather, wind, current, ground swell, and wind waves cannot be overstated. When these and the challenges associated with properly caring for and effectively marketing the resource are overcome through trial and error, a base of ecological and fishery-specific knowledge is developed by captain and others involved in the operation. Given its economic significance, such knowledge includes proprietary operational strategies, including means for ensuring sustainability of the resource and its availability for ongoing generation of profit. Such knowledge is typically closely guarded, often becoming a kind of commodity with economic and social value. Equipped with such knowledge and years of experience, the rapid expansion in overall effort ultimately led certain well-established South Florida crabbers to approach the South Atlantic Fishery Management Council (SAFMC) with a proposal for establishing a management plan that would "restrict participation in the fishery and formalize many of the informal [community-based] standards that the Florida crabbers had already developed to preserve the existing stock" (Crosson et al. 2013:531).

Based in large part on negotiated input by the crabbers, a formalized Golden Crab FMP was authorized in 1995, with provisions for: participation by a limited number of operators in each of three offshore management zones, various gear restrictions, and specific reporting requirements—all intended to balance effective use and conservation of the resource (SAFMC 1995). A series of amendments have followed to address: vessel size limits upon permit transfer; various gear and gear deployment issues; and management of the resource as it relates to essential fish habitat and ecosystems, national standards, and annual catch limits (NOAA Fisheries, Southeast Regional Office 2016). Of note, and as discussed in depth by Crosson et al. (2013), efforts to establish an Individual Transferable Quota (ITQ) system for the fishery failed due to differing perspectives among fishery participants representing the three designated management zones along the Florida coastline.

Recent Landings Trends

Given confidentiality concerns, the small number of harvesters and first receivers/dealers involved in the golden crab fishery precludes discussion of landings by individual community.

Recent Distribution of Permits

As indicated in Table 3.4.3.1 below, the golden crab fishery remains exclusive to east Florida, where the resource is most readily accessed from deep offshore habitats along the Continental Shelf. The fishery remains limited in terms of participation, with the extant program providing for 11 permits in total. The distribution of permits between communities has evolved over time in that permits are no longer held in Fort Lauderdale, Cape Canaveral, or Tiverton. Permitted harvest operations are new to Cape Canaveral. Although two or fewer permits were held by persons in other states prior to 2015, including Massachusetts, Rhode Island, Virginia, and New Jersey, all permits are presently held by persons with Florida addresses. There are no legal provisions for recreational pursuit of the resource.

Table 3.4.3.1. Distribution of golden crab limited entry permits by community: 2015-2019.

Community	Number of Permits by Year				
	2015	2016	2017	2018	2019
Fort Lauderdale	1	4	4	3	3
Marathon	2	2	2	2	2
West Palm Beach	2	2	2	2	3
Stuart	1	1	1	1	1
Miami	1	1	--	--	1
Jupiter	1	1	--	--	--
Fort Lauderdale	2	--	1	1	--
Cape Canaveral	1	--	1	1	--
Key West	--	--	--	1	--
Port Canaveral	--	--	--	--	1

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database.

3.4.4 Environmental Justice

Established in 1994, Executive Order 12898 (the order) requires federal agencies to examine the human health and socioeconomic implications of federal actions among low-income and minority groups and populations around the nation. The order requires that such agencies conduct programs, policies, and activities in a manner that ensures no individuals or populations are excluded, denied the benefits of, or subjected to discrimination due to race, color, or nation of origin. Of particular relevance in the context of marine fisheries, federal agencies are further required to collect, maintain, and analyze data regarding patterns of consumption of fish and wildlife among persons who rely on such foods for purposes of subsistence. In sum, the principal intent of the order is to require assessment and due consideration of any "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories."

Many forms of data are available to indicate the presence of environmental justice issues among minority and low-income populations and/or indigenous communities potentially affected by federal regulatory and other actions. With the intent of enhancing capacity to determine whether environmental justice issues may be affecting communities around the U.S. where fishing-related industry is an important aspect of the local economy, NMFS social scientists undertook an extensive series of deliberations and review of pertinent data and literature, ultimately selecting key social, economic, and demographic variables that could function to identify social

vulnerabilities at the community level of analysis (see Jacob et al. 2013; Jepson and Colburn 2013). Census data such as community-specific rates of poverty, number of households maintained by single females, number of households with children under the age of five, rates of crime, and rates of unemployment, exemplify the types of information chosen to aid in community analysis. Pertinent variables were subsequently used to develop composite indices that could be applied to assess vulnerability to environmental, regulatory, and other sources of change among the nation's fishing- and/or seafood-oriented communities.

As provided in the following figures, three composite indices—termed here as poverty, population composition, and personal disruption—are applied to indicate relative degrees of social vulnerability among communities most thoroughly engaged in the South Atlantic commercial snapper grouper fisheries and the Atlantic dolphin and wahoo commercial fisheries. Mean scores for each community are provided along the y-axis, with means for the vulnerability measures and threshold standard deviations depicted along the x-axis. Scores exceeding the .5 standard deviation level indicate local vulnerability to regulatory and other sources of change. The small number of harvesters and dealers involved in the golden crab fishery impedes the utility of community-level vulnerability analysis for the fishery and thus it is not represented here. However, one participant in the golden crab harvest sector resides in Miami, where indices for local poverty, population, and personal disruption suggest vulnerability to change. The remainder reside in Fort Lauderdale, Marathon, West Palm Beach, and Stuart, where little or no social vulnerability is indicated using the present data.

As can be discerned from Figure 3.4.3.1 below, four of the top snapper grouper landings communities—Cocoa Beach and Miami in Florida, and Beaufort and Morehead City in North Carolina—notably exceed the designated vulnerability threshold for one or more indices. As depicted in Figure 3.4.3.2, the communities of Beaufort, North Carolina and Margate, Florida—both extensively involved in the Atlantic dolphin and wahoo commercial fisheries—respectively exceed the threshold for poverty and population composition. Finally, Figure 3.4.3.3 depicts social vulnerability measures for South Atlantic communities most extensively involved in the recreational fishing industry. The data presented here indicate social vulnerability especially in the Florida communities of Daytona Beach and Fort Pierce. All figures derive from data available in the SERO Community Social Vulnerability Indicators (CSVI) Database.

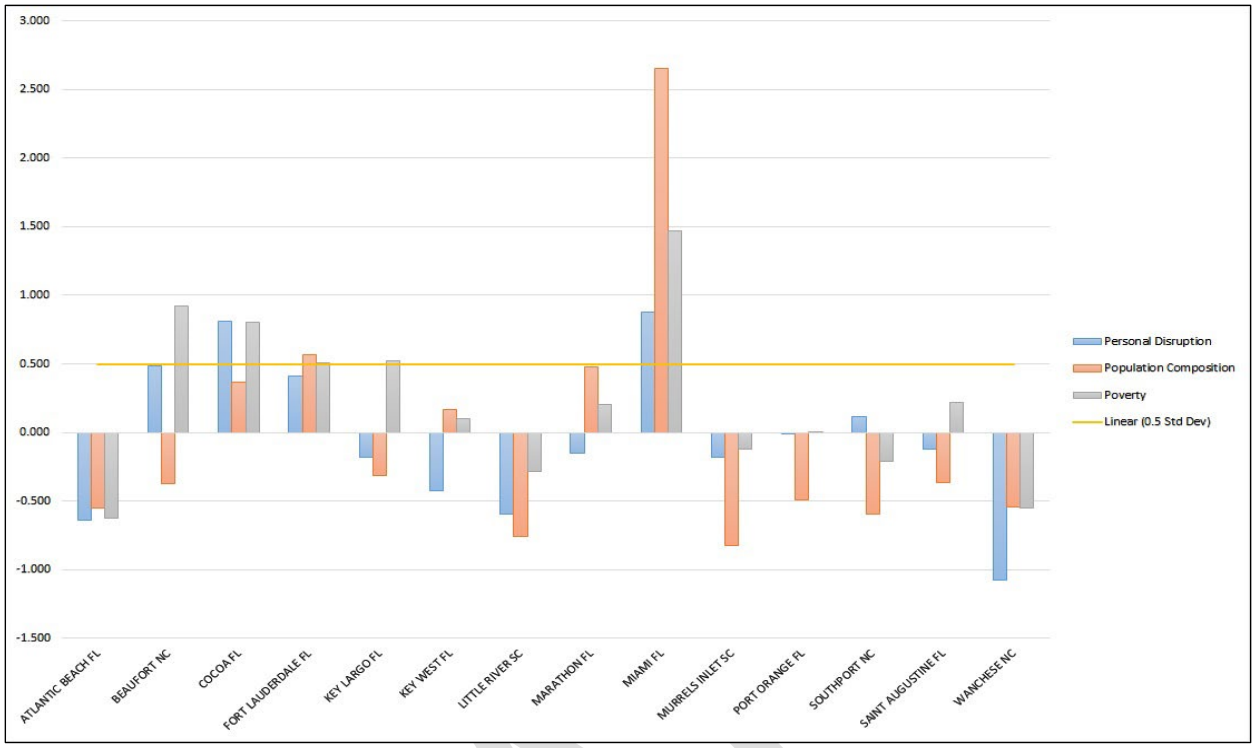

Figure 3.4.3.1. Social vulnerability measures for communities extensively involved in South Atlantic commercial snapper grouper fishing operations.
Source: SERO CSVI Database.

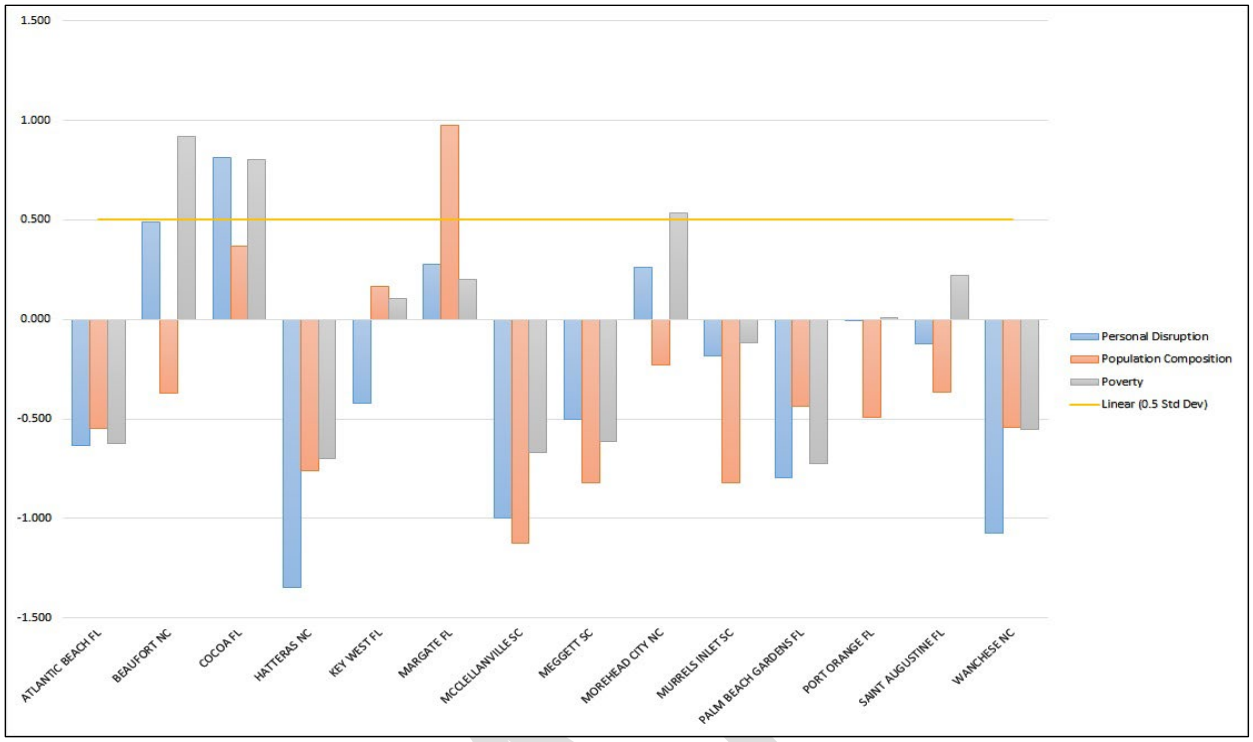

Figure 3.4.3.2. Social vulnerability measures for East Coast communities most extensively involved in Atlantic commercial dolphin and wahoo fishing operations.
Source: SERO CSVI Database.

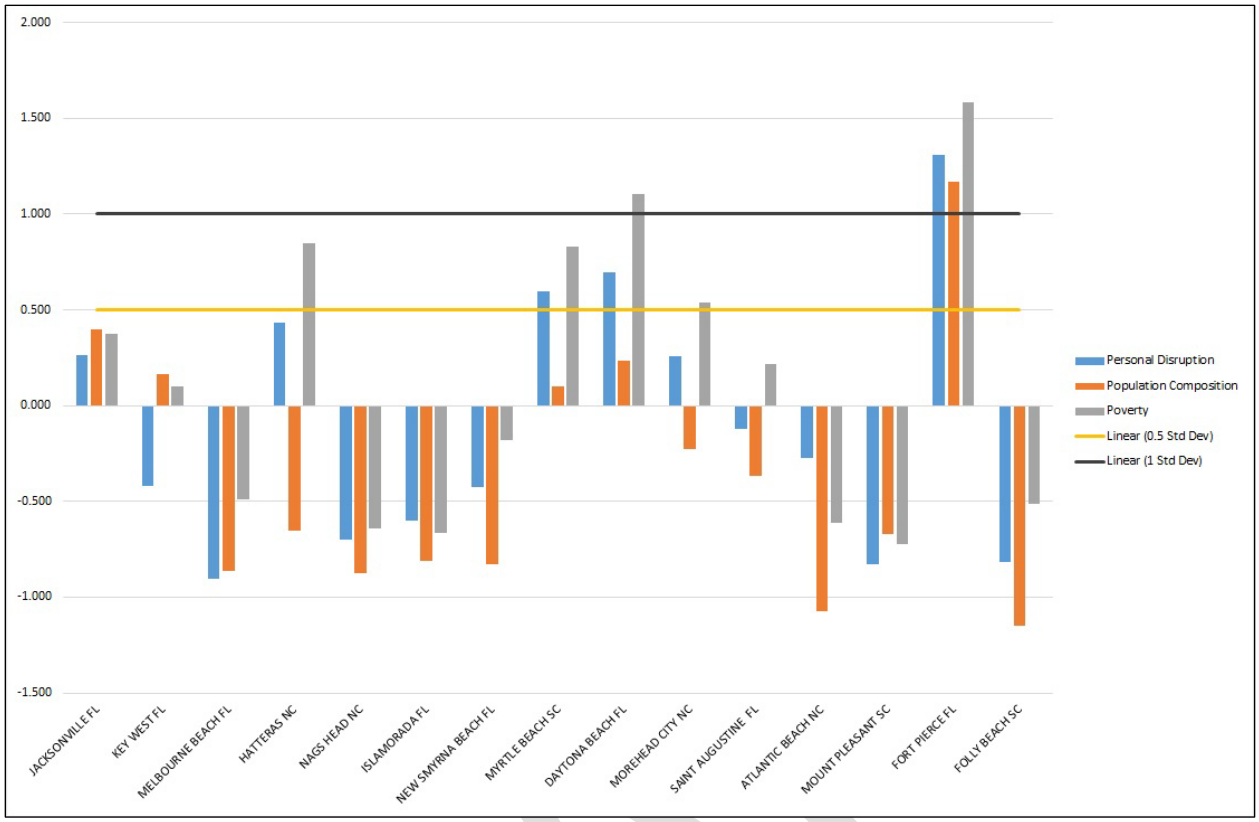

Figure 3.4.3.3. Social vulnerability measures for South Atlantic communities most extensively involved in the recreational fishing sectors.
Source: SERO CSVI Database.

3.5 Environmental Justice

3.6 Administrative Environment

3.6.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.), originally enacted in 1976 as the Fishery Conservation and Management Act. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the EEZ, an area extending 200 nm from the seaward boundary of each of the coastal states, and authority over U.S. anadromous species and continental shelf resources that occur beyond the U.S. EEZ.

Responsibility for federal fishery management decision-making is divided between the U.S. Secretary of Commerce (Secretary) and eight regional fishery management councils that represent the expertise and interests of constituent states. Regional councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary is responsible for collecting and providing the data necessary for the councils to prepare fishery management plans and for promulgating regulations to implement proposed plans and amendments after ensuring that management measures are

consistent with the Magnuson-Stevens Act and with other applicable laws. In most cases, the Secretary has delegated this authority to NMFS.

The Council is responsible for conservation and management of fishery resources in federal waters of the U.S. South Atlantic. For the Snapper Grouper and Golden Crab FMPs, these waters extend from 3 to 200 mi offshore from the seaward boundary of North Carolina, South Carolina, Georgia, and east Florida to Key West. For the Dolphin and Wahoo FMP, the Council, in cooperation with the Mid-Atlantic Fishery Management Council and the New England Fishery Management Council, is responsible for conservation and management of dolphin and wahoo in federal waters off the Atlantic states. These waters extend from 3 to 200 mi offshore from the seaward boundary of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and east Florida to Key West.The Council has thirteen voting members: one from NMFS; one each from the state fishery agencies of North Carolina, South Carolina, Georgia, and Florida; and eight public members appointed by the Secretary. On the Council, there are two public members from each of the four South Atlantic States. Non-voting members include representatives of the U.S. Fish and Wildlife Service, U.S. Coast Guard (USCG), State Department, and Atlantic States Marine Fisheries Commission (ASMFC). The Council has adopted procedures whereby the non-voting members serving on the Council Committees have full voting rights at the Committee level but not at the full Council level. The Council also established two voting seats for the Mid-Atlantic Council on the South Atlantic Mackerel Committee. Council members serve three-year terms and are recommended by state governors and appointed by the Secretary from lists of nominees submitted by state governors. Appointed members may serve a maximum of three consecutive terms.

Public interests also are involved in the fishery management process through participation on Advisory Panels and through council meetings, which, with few exceptions for discussing personnel and legal matters, are open to the public. The Council uses its Scientific and Statistical Committee (SSC) to review the data and science being used in assessments and fishery management plans/amendments. In addition, the regulatory process is in accordance with the Administrative Procedure Act, in the form of "notice and comment" rulemaking.

3.6.2 State Fishery Management

For the Snapper Grouper and Golden Crab FMPs, the state governments of North Carolina, South Carolina, Georgia, and Florida have the authority to manage fisheries that occur in waters extending three nautical miles from their respective shorelines. North Carolina's marine fisheries are managed by the Marine Fisheries Division of the North Carolina Department of Environmental Quality. The Marine Resources Division of the South Carolina Department of Natural Resources manages South Carolina's marine fisheries. Georgia's marine fisheries are managed by the Coastal Resources Division of the Department of Natural Resources. The Division of Marine Fisheries Management of the Florida Fish and Wildlife Conservation Commission is responsible for managing Florida's marine fisheries. Each state fishery management agency has a designated seat on the South Atlantic Council. The purpose of state representation at the Council level is to ensure state participation in federal fishery management decision-making and to promote the development of compatible regulations in state and federal waters. For the Dolphin and Wahoo FMP, in addition to the states mentioned above, the state

governments of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, and Virginia have the authority to manage fisheries that occur in waters extending three nautical miles from their respective shorelines. The Department of Marine Fisheries is responsible for marine fisheries in Maine's state waters. In New Hampshire, marine fisheries are managed by the Marine Fisheries Division of the New Hampshire Fish and Game Department. Massachusetts's marine fisheries are managed by the Division of Marine Fisheries of the Massachusetts Department of Fish and Game. Rhode Island's marine fisheries are managed by the Division of Fish and Wildlife of Rhode Island's Department of Environmental Management. Connecticut manages its marine fisheries through the Department of Energy and Environmental Protection. New York's marine fisheries are managed by the Division of Fish, Wildlife and Marine Resources of the Department of Environmental Conservation. New Jersey manages its marine fisheries through the Division of Fish and Wildlife of the Department of Environmental Protection. Pennsylvania manages its fisheries through the Pennsylvania Fish and Boat Commission. Marine fisheries in Delaware are managed by the Fisheries Section of the Division of Fish and Wildlife. Maryland's Department of Natural Resources manages its marine fisheries. Marine fisheries in Virginia are managed by the Virginia Marine Resources Commission.

The states mentioned above are also involved through ASMFC in management of marine fisheries. This commission was created to coordinate state regulations and develop management plans for interstate fisheries. It has significant authority, through the Atlantic Striped Bass Conservation Act and the Atlantic Coastal Fisheries Cooperative Management Act, to compel adoption of complementary state regulations to conserve coastal species. The ASFMC is also represented at the Council but does not have voting authority at the Council level.

NMFS's State-Federal Fisheries Division is responsible for building cooperative partnerships to strengthen marine fisheries management and conservation at the state, inter-regional, and national levels. This division implements and oversees the distribution of grants for two national (Inter-jurisdictional Fisheries Act and Anadromous Fish Conservation Act) and two regional (Atlantic Coastal Fisheries Cooperative Management Act and Atlantic Striped Bass Conservation Act) programs. Additionally, it works with the ASMFC to develop and implement cooperative State-Federal fisheries regulations.

3.6.3 Enforcement

Both the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries (NMFS) Office for Law Enforcement (NOAA/OLE) and the United States Coast Guard (USCG) have the authority and the responsibility to enforce Council regulations. NOAA/OLE agents, who specialize in living marine resource violations, provide fisheries expertise and investigative support for the overall fisheries mission. The USCG is a multi-mission agency, which provides at sea patrol services for the fisheries mission.

Neither NOAA/OLE nor the USCG can provide a continuous law enforcement presence in all areas due to the limited resources of NOAA/OLE and the priority tasking of the USCG. To supplement at sea and dockside inspections of fishing vessels, NOAA entered into Cooperative Enforcement Agreements with all but one of the states in the Southeast Region (North Carolina), which granted authority to state officers to enforce the laws for which NOAA/OLE has

jurisdiction. In recent years, the level of involvement by the states has increased through Joint Enforcement Agreements, whereby states conduct patrols that focus on federal priorities and, in some circumstances, prosecute resultant violators through the state when a state violation has occurred.

The NOAA Office of General Counsel Penalty Policy and Penalty Schedules can be found at www.gc.noaa.gov/enforce-office3.html.

Chapter 4. Environmental Consequences

4.1 Action 1. Modify the Acceptable Biological Catch Control Rule

4.1.1 Biological Effects

Alternatives

1 (No Action). Control Rule: Table 2.1.1 for Dolphin Wahoo and Golden Crab; for Snapper Grouper
Risk Tolerance: Included in SSC's ABC criteria
Overfished Stocks: Unspecified

2. Control Rule: Table 2.1.2
Risk Tolerance: Council specifies using Table 2.1.3
Overfished Stocks: ABC from Council's specified rebuilding plan

3. Control Rule: Table 2.1.4
Risk Tolerance: Council specifies initial P* between 30% and 50%, which is then adjusted by the SSC using Table 2.1.4
Overfished Stocks: ABC from Council's specified rebuilding plan

*See Chapter 2 for detailed language of alternatives.

Expected effects to stocks
In general, stocks are expected to experience positive biological effects when catch is reduced and negative biological effects when catch is increased. This is typically evaluated and compared through projections of future catch under various management measures. However, current acceptable biological catch (ABC) levels for all the species under the Fishery Management Plans (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP), Dolphin and Wahoo Fishery of the Atlantic (Dolphin and Wahoo FMP), and Golden Crab Fishery of the South Atlantic Region (Golden Crab FMP) would not be changed through this amendment. Therefore, no immediate and direct biological effects (positive or negative) are expected for the stocks managed under these FMPs from **Alternatives 2** (including **Sub-Alternatives 2a-2c**) and **Alternative 3** (including **Sub-Alternative 3a**), when compared with **Alternative 1 (No Action)**.

Quantitative effects of Action 1 alternatives on future ABC-setting processes for individual stocks will vary based on assessment information and management decisions made at that time. Therefore, biological effects of Action 1 alternatives are better compared through general principles. One aspect for comparison is how each of the proposed alternatives allows accurate depiction and use of scientific information (including uncertainty) in management decisions. Biological effects among alternatives are also comparable based on how the alternatives differentially evaluate P* (the accepted risk of overfishing), particularly for stocks with low biomass or characteristics that make them highly susceptible to overfishing. In the long-term, greater indirect and direct positive biological effects could be expected under **Alternative 2** (including **Sub-Alternatives 2a-2c**), followed by **Alternative 3** (including **Sub-Alternative 3a**), and **Alternative 1 (No Action)**.

Alternative 2 (including **Sub-Alternatives 2a-2c**) provides more flexibility to both the South Atlantic Fishery Management Council (Council) and its Scientific and Statistical Committee (SSC) to consider management risk and scientific uncertainty, respectively (**Table 2.1.1.2**). The

Council would specify the risk tolerance based on the stock biomass level and a stock risk rating provided by the SSC (**Table 2.1.1.3**). The ABC would be derived considering four categories, and by applying P* to a stock projection analysis for assessed stocks or an overfishing limit (OFL) estimated using alternative methods for unassessed stocks, when possible. If an OFL cannot be estimated, the SSC will derive the ABC directly (**Table 2.1.1.2**). The Council, with advice from the SSC and the respective advisory panels (AP), would evaluate management risk for each stock through a stock risk rating. Stock risk ratings include information currently used in the Productivity and Susceptibility Analysis (PSA), but also incorporate socio-economic and environmental attributes (see Appendix G). The ABC could be increased via greater risk tolerance from the Council (higher P*) or less uncertainty in the projection results (i.e., a narrower distribution about OFL) determined by the SSC. The ABC could be decreased via lower risk tolerance from the Council (lower P*) or more uncertainty in the projections results (i.e., a wider distribution about OFL) determined by the SSC.

Alternative 2 (including its sub-alternatives) would have biological benefits in standard application of the ABC control for assessed stocks that are not overfished. **Alternative 2** would give the SSC the ability to adjust or derive uncertainty of assessment results (ultimately impacting projections of future catch) if they determine it is not adequately estimated through information used in the assessment. **Alternatives 1 (No Action)** and **3** do not give the SSC this ability; these alternatives instead reduce P* according to evaluations of uncertainty by the SSC. For assessments with a high degree of uncertainty due to factors such as aging difficulty, a short time series of catch, limited observed size or age range, or limited catch reports, adjusting the uncertainty of results (as in **Alternative 2**) can use the SSC's expertise to better depict the information available (and not available) and the probability that overfishing occurs at a given catch level. Given that at a set P*, the more uncertain the overfishing limit is (i.e. a wider probability distribution about OFL), the lower the ABC will be, **Alternative 2** could provide biological benefits to stocks with highly uncertain assessment results in the form of lower ABCs.

Alternative 2 would also improve the evaluation of risk tolerance by considering factors beyond the current productivity and susceptibility analysis (PSA) and expanding the range of reference points used to describe and incorporate relative biomass. Under **Alternative 1 (No Action)**, P* is adjusted depending on whether biomass exceeds the minimum stock size threshold (MSST; i.e. the stock is not overfished) or is considered in "close proximity" to the MSST. **Alternative 2** more objectively defines relative biomass categories, considering stocks with biomass below the midpoint between B_{MSY} and MSST to be "Low Biomass" and those with biomass above B_{MSY} to be "High Biomass". Therefore, **Alternative 2** provides biological benefits by requiring higher biomass thresholds to allow higher P* levels (higher P* means higher ABC and greater risk of overfishing occurring) to be used in specifying ABC. Within this structure, there is also clearer distinction among stocks that are not overfished, direct connection of relative biomass categories to P* levels, and interaction between stock risk ratings and relative biomass to derive P*.

Additionally, **Alternative 2** provides biological benefits depicted numerically through P*. In considering the following comparisons, greater P* means greater risk of overfishing and greater ABC. The maximum allowable P* under **Alternatives 1 (No Action)** and **3** is 50% (although recommendation of this P* level is highly unlikely). Under **Alternative 2** without any additional sub-alternatives selected, the maximum allowable P* would be 45%. **Sub-Alternative 2b** would

allow deviation from the default P* value of up to 10% and not to exceed 50%. For stocks that are not overfished but have biomass less than the midpoint between MSST and B_{MSY}, **Alternative 2** would be more biologically beneficial than **Alternatives 1 (No Action)**. Under **Alternative 2**, the resultant reduction in P* for one of these stocks from the value at a high biomass level would range from 5% for a low risk stock to 20% for a high risk stock. Under **Alternative 1 (No Action)**, P* would only be reduced by 2.5% if overfishing is not occurring, by 5% if overfishing is occurring, or by 10% if overfishing status is unknown.

Under **Alternative 2**, **Sub-Alternatives 2a-2c** can be added to potentially increase positive biological effects. Addition of **Sub-Alternative 2a** would increase positive biological effects by increasing threshold biomass levels necessary to allow higher levels of P* (and higher ABC). Addition of **Sub-Alternative 2b** would be expected to have a net neutral biological effect across stocks but varying impacts for specific stocks, as this sub-alternative allows the Council to adjust P* to be higher or lower than the default value from **Table 2.1.1.3** by up to 10%, as long as P* does not exceed 50%. If the Council increases P* for a given stock, this would have negative biological effects, but if the Council decreases P*, this would have positive biological effects.

Addition of **Sub-Alternative 2c** would be expected to have a long-term net neutral biological effect for specific stocks and across stocks. This sub-alternative would allow the Council to request ABC recommendations as a constant value across years and as individual annual values for the same period of years. For stocks that are not overfished (overfished stocks would have a rebuilding plan developed separate from the standard ABC control rule), the cumulative harvest for the projected time period should be similar regardless of whether constant or annually variable harvest is used. Short-term biological effects of each harvest method would vary, and benefits could be maximized by the addition of **Sub-Alternative 2c** and Council selection of biologically beneficial harvest strategies, depending on relative biomass. Biological benefits would be greater under annually variable harvest in initial years for stocks with biomass below B_{MSY}, because harvest would start lower than constant harvest levels and increase in later years as biomass increases and approaches B_{MSY}. Biological benefits would be greater under constant harvest in initial years for stocks with biomass above B_{MSY}, because annually variable harvest would start higher than constant harvest levels and decrease in later years as biomass declines and approaches B_{MSY}.

Alternative 3 would specify an acceptable biological catch control rule for the FMPs in this amendment that classifies assessments based on the type of information provided and how uncertainty of information is characterized (**Table 2.1.1.4**). The Council would set an initial accepted P* between 30% and 50%, considering advice from the SSC and the respective APs. The SSC would adjust this value as defined based on assessment information and uncertainty characterization. The adjusted P* would then be applied to derive the ABC. ABC for unassessed stocks would be recommended by the SSC based on applicable data-limited methods. For overfished stocks, the Council would specify a stock rebuilding plan, considering recommendations from the SSC and the respective APs, which would determine the ABC while the rebuilding plan is in effect. An OFL would be estimated using alternative methods for unassessed stocks, when possible. If an OFL cannot be estimated, the SSC would derive the ABC directly (**Table 2.1.1.4**).

Biological effects of **Alternative 3** would be strongly impacted by the Council's risk tolerance, depicted through their initial P* level. **Alternative 3** gives the Council flexibility in how this initial P* level is determined. Adjustments to P* based on assessment information (Tier 1) are greater under **Alternative 3** than **Alternative 1 (No Action)** for similar classifications, thus **Alternative 3** is expected to be more biologically beneficial for stocks with adjustments based on assessment information. Assessment uncertainty is characterized in **Alternative 3** similar to **Alternative 1 (No Action)**, and (as described above) would be less biologically beneficial than **Alternative 2** for stocks with high levels of uncertainty in their assessments.

Under **Alternative 3**, **Sub-Alternatives 3a** can be added to potentially increase positive biological effects. **Sub-Alternative 3a** is the same as **Sub-Alternative 2c**, described above, and addition of this to **Alternative 3** would be expected to have the same biological effects.

For unassessed stocks, **Alternatives 2** and **3** would expand the number of considerable methods for estimating OFL and ABC, providing expected biological benefits relative to **Alternative 1 (No Action)**. This would make use of SSC expertise in determining the most appropriate data-limited method for estimating these levels for each stock or complex. Additionally, the method proposed by these alternatives would reduce the probability that catch levels for unassessed stocks would be based solely on historical catch. Instead, the SSC would explore the vast and growing number of data-limited methods available to make use of available data in some capacity, even if the available data are not enough to support a data-intensive (e.g. age- or length-based) assessment model.

Expected Effects to Bycatch and Discards

Current ABC for all the species under the FMPs for Snapper Grouper, Dolphin and Wahoo, and Golden Crab are not going to change from the actions in this amendment. Therefore, no immediate and direct effects (positive or negative) are expected to bycatch and discards for all the stocks. Any changes to bycatch and discards would be stock-specific and depend on any revisions made to the ABCs and resulting annual catch limits (ACL) after the implementation of this amendment.

Expected Effects to Protected Species and Essential Fish Habitat

Current ABC for all the species under the FMPs for Snapper Grouper, Dolphin and Wahoo, and Golden Crab will not change from the actions in this amendment. No change in fishing effort is expected, and there are no changes proposed for gear types used to harvest any species under the FMPs considered in this amendment. Therefore, there are likely to be no additional effects, positive or negative, to protected species from the action alternatives. Previous ESA consultations have assessed the impacts of potential interactions and determined the dolphin and wahoo fishery was not likely to adversely affect marine mammals, Atlantic sturgeon, or *Acropora* species, and was not likely to jeopardize the continued existence or recovery of sea turtles or smalltooth sawfish (**Section 3.2.5**). These predicted effects on ESA listed species and designated critical habitats are applicable to all actions in this amendment.

Non-longline hook-and-line gear is predominantly used to harvest species in the FMPs addressed by this amendment by the recreational sector. This gear type is the Sustainable Seafood Guide's recommended gear in the U.S. as a "best choice" since this gear has minimal bycatch issues, and

does little damage to physical or biogenic habitats (Blue Ocean 2010; Seafood Watch 2016). Pelagic longline gear is used in the commercial fishery for some of the species in the Snapper Grouper FMP and for dolphin and wahoo, and traps are used to harvest golden crab in deep water. Therefore, no adverse effects on essential fish habitat (EFH), EFH - habitat areas of particular concern (HAPC), or Coral HAPCs are anticipated. These predicted effects on EFH, EFH HAPCs, and Coral HAPCs are applicable to all actions in this amendment.

4.1.2 Economic Effects

Given the wide-ranging applicability of the ABC on a species and scenario basis, the economic effects of **Action 1** will vary considerably. Since existing ABCs for species within the Snapper Grouper fishery management plan (FMP), Dolphin Wahoo FMP, and Golden Crab FMP would not change as a result of this action, there would be no immediate economic effects and any such effects are not likely to occur for several years after the action is implemented as new ACLs are implemented.

Alternative 1 (No Action) would maintain the current ABC Control Rule which provides less flexibility to the Council and the SSC to incorporate management risk and scientific uncertainty, as well as economic factors, when compared to **Alternative 2 (**including **Sub-Alternatives 2a-2c**) and **Alternative 3** (including **Sub-Alternative 3a**). Comparatively, the reduced flexibility under **Alternative 1 (No Action)** would potentially result in reduced long-term economic benefits due to decreased ability to incorporate risk and uncertainty into catch level recommendations which could result in reduced long-term harvest levels and associated economic benefits.

Alternative 2 (including **Sub-Alternatives 2a-2c**) provides more flexibility to consider management risk and scientific uncertainty. Additionally, **Alternative 2** allows incorporation of economic information when determining the P* value for a given species. The addition of economic factors would allow the Council to better consider the long-term economic implications when examining management risk which could lead to better economic outcomes and increase net economic benefits in a fishery for a given species. Additionally, there are anticipated biological benefits from this alternative, which can lead to elevated economic benefits if higher stock levels lead to elevated ABCs and allowable harvest. For the recreational sector, these increased economic benefits may be characterized by improved consumer surplus (CS) for anglers from elevated harvest levels and increased producer surplus (PS) for for-hire businesses if higher ABCs result in increased demand for recreational trips onboard charter vessels or headboats. For the commercial sector these increased economic benefits may be characterized by improved net operating revenue and thus PS for commercial fishing vessels and dealers. There also may be increases to CS for seafood consumers, depending on the applicable species.

Alternative 3 would potentially provide positive biologic and thus associated economic effects. These economic effects would likely be similar to those described for **Alternative 2**, but potentially to a lesser degree since economic factors would not specifically be incorporated. Under this assumption, the greatest economic benefits would be expected from **Alternative 2**

(including its sub-alternatives), followed by **Alternative 3** (including its sub-alternative), and **Alternative 1 (No Action)**.

4.1.3 Social Effects

Setting of the biological parameters for harvest thresholds have few direct social effects as the effects are more indirect from the implementation of the ABC and any subsequent reduction through other alternatives setting ACLs and ACTs/AMs. Certainly, the more risk averse a control rule or threshold is, the more chances of negative social effects accruing in the short term if harvest is reduced. However, current ABC levels for all species under the Snapper Grouper FMP, Dolphin and Wahoo FMP, and Golden Crab FMP would not be changed through this action. Therefore, no immediate and direct social effects (positive or negative) are expected.

Alternative 1 (No Action) would not modify the current ABC Control Rule and would provide less flexibility to the Council and the SSC to consider management risk and scientific uncertainty when compared to **Alternative 2** and its sub-alternatives and **Alternative 3** and its sub-alternatives. Under **Alternative 2** the Council, with input from the SSC, APs, and public, would evaluate management risk for each stock through a stock risk rating. The proposed changes to the stock risk ratings include biological information currently used in the ABC Control Rule under **Alternative 1 (No Action)**, but also incorporate social and economic factors for consideration in the decision-making process. The inclusion of social factors will allow the Council to directly consider the importance of a given species to fishing communities and businesses when determining risk tolerance. Incorporation of the social factors would have long-term social benefits in the form of a more accurate ABC. Additionally, formally considering human dimensions in the scientific process may help to improve stakeholder perceptions of the science going into management decisions.

Additionally, and as discussed in **Section 4.1**, **Alternative 2** and **Alternative 3** would expand the number of methods available to estimate OFL and ABC, allowing the SSC to explore a variety of methods and levels of data. If these additional methods allow the SSC and Council to set more appropriate OFL and ABC level and ensure the sustainability of fish stocks as envisioned, long-term positive social effects would be realized.

One of the difficulties in understanding what the specific social effects would be is that the cumulative effect of reduced harvest from the combination of all these different species is difficult to ascertain. If a restrictive ABC level is chosen and harvests for all species are reduced, how those reductions will affect fishing behavior will depend upon individual fishing behaviors and sector makeup. These effects can differ dramatically from one region to another or from state to state depending upon the species that are predominant in that area and the composition of the respective fishing sector. The communities identified within each state in **Section 3.4** that have a high regional quotient for their respective species would likely be the communities affected the most by any harvest reductions. Overall, should modifications to the ABC Control Rule ensure long-term sustainability of Snapper Grouper, Dolphin Wahoo, and Golden Crab species as envisioned, greater indirect and direct positive social effects would be expected under **Alternative 2** and its sub-alternatives, followed by **Alternative 3** and its sub-alternatives, and **Alternative 1 (No Action)**.

4.1.4 Administrative Effects

Administrative effects would be expected to be greater under **Alternative 2**, followed by **Alternative 3**, and **Alternative 1 (No Action)**. Administrative burdens would be related to SSC and Council involvement and discussions in addition to the status quo in the ABC and ACL determinations. Additional administrative effects would be related to educational activities by staff in informing all the constituents. The higher administrative burdens under **Alternatives 2** and **3** would be beneficial compared with **Alternative 1 (No Action)**, because, as described in Section 4.1.1, both **Alternatives 2** and **3** (including their respective sub-alternatives) would more clearly define the Council's role in specifying risk tolerance and the SSC's role for describing scientific uncertainty when applying the control rule, making best use of the respective bodies' different areas of expertise. Additionally, both **Alternatives 2** and **3** would provide additional biological benefits to unassessed stocks through a more flexible process for determining ABC that expands the range of usable methods for these stocks. Finally, both **Alternatives 2** and **3** specify a method for determining ABC for overfished stocks from Council-specified rebuilding plans rather than standard application of the ABC control rule. **Alternative 1 (No Action)** does not specify a method for determining ABC for overfished stocks which has led to some confusion and prolonged discussions of how ABC should be specified for these stocks.

4.2 Action 2. Allow phase-in of acceptable biological catch changes

4.2.1 Biological Effects

Sub-Action 2.1 establishes criteria that would specify when phase-in would be allowed. Positive biological effects would be greatest under the alternative with the lowest amount of harvest. Under **Alternative 1 (No Action)** the Council can accomplish similar biological effects as phasing in ABC increases by setting ABC less than the SSC's recommended level and increasing to the recommended level over time. Therefore, comparisons of the biological effects focus on the criteria and allowable time periods for phasing in decreases to the ABC.

Alternatives

Sub-Action 2.1. Establish criteria specifying when phase-in is allowed.
1 (No Action). Do not establish phase-in provisions.
2. Allow phase-in of decreases in ABC that are less than a 60% (Sub-Alt 2a), 70% (Sub-Alt 2b), or 80% (Sub-Alt 2c) of the existing ABC.
3. Allow phase-in of decreases in ABC if stock biomass exceeds the MSST (Sub-Alt 3a) or B_{MSY}-MSST midpoint (Sub-Alt 3b).

Sub-Action 2.2. Specify the approach for phase-in of acceptable biological catch changes.
1 (No Action). No phase-ins allowed.
2. ABC decreases may be phased in over no more than 3 years.
3. ABC decreases may be phased in over no more than 2 years.
4. ABC decreases may be phased in over 1 year.
*Annual specifications for Alternatives 2-4 are shown in Table A

*See Chapter 2 for detailed language of

Alternatives 2 and **3** (including their options) would allow phase-in of decrease in the ABC which would allow harvest above ABC levels that would be recommended if phase-ins were not allowed. Therefore, positive biological effects for Sub-Action 2.1 would be greatest under **Alternative 1 (No Action)**, followed by **Alternatives 2** and **3** (including their respective actions). **Alternatives 2** and **3** could both be selected to increase positive biological effects and reduce the probability that a stock would qualify for phase-in of an ABC decrease, but selection of both **Alternatives 2** and **3** would still have negative biological effects compared to **Alternative 1 (No Action)**.

Under **Alternative 2**, phase-in of increases to the ABC would be allowed as specified by the Council. For phase-in of a decrease in the ABC, **Sub-Alternative 2a** is most likely to reduce overall harvest compared with **Sub-Alternatives 2b** and **2c** because it would require a the largest change in ABC to allow phase-in of a decrease in the ABC. Therefore, **Sub-Alternative 2a** could have the greatest positive biological effects, followed by **Sub-Alternative 2b**, and **Sub-Alternative 2c**, respectively, under **Alternative 2** in **Sub-Action 2.1**.

Under **Alternative 3**, phase-in of increases to the ABC would be allowed as specified by the Council. For phase-in of a decrease in the ABC, **Sub-Alternatives 3a** and **3b** require information about a stock's biomass, minimum stock size threshold (MSST), and maximum sustainable yield (MSY). **Sub-Alternative 3a** would occur if a stock is not overfished. **Sub-Alternative 3b** would occur if the stock biomass is greater than the midpoint between B_{MSY} and MSST. **Sub-Alternative 3b** is more conservative, requiring a higher biomass to qualify for

phase-in, and therefore would be expected to have greater positive biological effects when compared with **Sub-Alternative 3a** under **Alternative 3** in **Sub-Action 2.1**.

Sub-Action 2.2 specifies the approach taken to accommodate phase-in of changes to the ABC. Under **Alternatives 2**, **3**, and **4**, phase-in of increases in ABC would be specified by the Council with advice from its SSC and respective APs. Minimizing the time of phase-in for ABC decreases reduces the number of years when ABC is above the level that would be recommended if phase-ins were not allowed. Therefore, positive biological effects would be greatest under **Alternative 1 (No Action)**, followed by **Alternative 4** (phase-in over no more than 1 year), **Alternative 3** (phase-in over no more than 2 years), and **Alternative 2** (phase-in over no more than 3 years) (**Table 2.2.2.1**), under **Sub-Action 2.2**.

4.2.2 Economic Effects

The ABC for a species along with corresponding annual catch limits (ACLs) that allow for more fish to be landed can result in increased economic benefits if harvest increases without notable effects on the stock of a species. The opposite is applicable to ABCs that allow for lower landings. The ABC and corresponding ACL does not directly impact the fishery for a species unless harvest changes, fishing behavior changes, or the ACL is exceeded, thereby potentially triggering accountability measures (AMs) such as harvest closures or other restrictive measures. As such, ABC and corresponding ACLs that are set above observed landings in a fishery for a species and do not change harvest or fishing behavior may not have realized economic effects. If catch levels are set below observed landings in a fishery, thereby leading to measures that restrict harvest, or conversely are set above observed landings and allow harvest to increase then there would be anticipated in-direct economic effects.

Phasing in changes to the ABC under **Action 2** would only apply to situations where the catch level is being reduced, thus it is expected that realized or potential short-term economic benefits would be decreasing. Under **Alternative 1 (No Action)** for both **Sub-Action 2.1** and **Sub-Action 2.2**, a phase-in of the ABC would continue to not be allowed. This would lead to more immediate short-term reductions in harvest and associated economic benefits, but presumably would allow for the faster rebuilding of a stock and increases in future economic benefits associated with higher catch levels. Conversely, allowing for phase-in of reductions in an ABC could comparatively increase short-term economic benefits through greater levels of harvest in the short-term but would allow for a slower rebuilding of a stock and decreases in future economic benefits associated with lower catch levels. Phasing-in reductions to the ABC could also allow for economic stability and thus increased economic benefits in a fishery by allowing commercial and for-hire business to taper down their dependance on a specific species.

Under **Sub-Action 2.1**, **Alternative 2** would specify the criteria for allowing phase-in of reductions in the ABC as a percentage of the existing ABC. **Sub-Alternative 2a** has the highest threshold for allowing the phase-in of a new ABC, thus the lowest probability of the three sub-alternatives within this alternative to be allowed, along with the previously described potential economic benefits of allowing phase-in. **Sub-alternatives 2b** and **2c** would have lower thresholds for allowing the phase-in of a new ABC and higher likelihood of incurring the economic benefits of allowing such a phase-in. **Alternative 3** would establish criteria for

allowing phase-in of a new ABC based on the MSST (**Sub-Alternative 3a**) or B_{MSY}-MSST midpoint (**Sub-Alternative 3b**). Since these sub-alternatives are based on metrics from a stock assessment and not on the existing ABC, comparison of **Alternative 2** and **3** will vary on a case by case scenario, but overall **Alternative 3** would create similar economic effects as those described for **Alternative 2**.

Sub-Action 2.2 would establish the approach for phasing-in changes to the ABC, with **Alternative 2** have the longest phase-in period. This alternative would allow for the greatest short-term economic benefits from relatively higher harvest levels and a longer period to adjust to decreasing harvest levels but also allow for the lowest longer-term economic benefits. **Alternatives 3** and **4** would respectively have comparatively lower short-term economic benefits but higher potential long-term economic benefits.

4.2.3 Social Effects

Management measures that reduce the number of fish an angler can land typically result in foregone social benefits. However, the ABC and corresponding ACL for any stock do not directly affect resource users unless the ACL is met or exceeded, in which case AMs that restrict, or close harvest could negatively impact commercial, for-hire, and private anglers by restricting harvest during the current season and following seasons. Generally, the higher the ABC and ACL the greater the short-term social benefits that would be expected to accrue if harvest is sustainable. **Sub-Action 2.1** and **Sub-Action 2.2** establish the criteria that would specify when phase-in of a new ABC would be allowed and the approach for that phase in respectively. **Alternatives 2** and **3** under **Sub-Action 2.1** and their sub-alternatives would allow phase-in of decreases in a stock ABC and would provide additional social benefits when compared to **Alternative 1 (No Action)**. While the stock ABC would ultimately result in the same ABC as **Alternative 1 (No Action)**, under **Alternatives 2** and **3** commercial and for-hire business would have additional time to adjust their business plans to account for the full decrease in the ABC level, and associated management restrictions. It would also ensure that fishing opportunities remained available to private recreational fishermen in the interim. Thus, **Sub-Alternative 2c** would have the great positive social effects followed by **Sub-Alternative 2b**, and **Sub-Alternative 2c**. **Alternative 3** would add additional restrictions with **Sub-alternative 3a** being the less restrictive than **Sub-alternative 3b**. Similarly, under **Sub-Action 2.2** the approach to phase in that maximizes the time-period of which the new ABC is phased is would provide the greatest benefit to fishing communities. Thus, the greatest social benefits could be realized under **Alternative 2**, followed by **Alternative 3**, **Alternative 4**, and **Alternative 1 (No Action)**.

4.2.4 Administrative Effects

In **Sub-Action 2.1**, administrative effects would be expected to be greatest under **Alternatives 2** and **3** (including their respective sub-alternatives), when compared with **Alternative 1 (No Action)**. In **Sub-Action 2.2**, administrative effects would be expected to be greatest under **Alternative 4,** followed by **Alternatives 3, 2,** and **Alternative 1 (No Action)**. Administrative burdens would include SSC, AP, and Council discussions to determine whether a phase-in should be used for a stock. Additionally, if the Council does decide to phase in an ABC change, additional projections of the ABC that include the phase-in may need to be requested by the Council and developed by the Southeast Fisheries Science Center. Additional administrative

effects would be related to educational activities by staff in informing constituents and enforcement of any changes to the ACLs.

4.3 Action 3. Allow carry-over of unharvested portion of the annual catch limit under the control rule adopted from Action 1

4.3.1 Biological Effects

Sub-Action 3.1 would establish criteria and specify circumstances when an unharvested portion of the originally specified sector ACL can be carried over from one year to increase the available harvest in the immediate next year. Positive biological effects would be expected from alternatives that allow the lowest amount of harvest. In the context of carry-over eligibility, the greatest positive biological effects would be expected from measures that most limit the occurrence of carry-overs. Therefore, **Alternative 1 (No Action)** would be expected to have greater positive biological effects (by not allowing carry-overs at all) when compared with **Alternative 2** (including its sub-alternatives).

Alternatives

Sub-Action 3.1. Establish annual criteria specifying when carry-over is allowed.
1 (No Action). Do not establish carry-over provisions.
2. Allow carry-over if stock has known status, is not overfished or experiencing overfishing, and has a defined OFL. Additionally, allow carry-over if biomass exceeds the B_{MSY}-MSST midpoint (Sub-Alt 2a), the sector has experience a regulatory closure in the last 3 years (Sub-Alt 2b), or the sum of total landings for the 3 previous years is less than the sum of the total ACLs over those years (Sub-Alt 2c). Do not allow carry-over if ABC decreases are being phased in (Sub-Alt 2d) or there is no in-season accountability measure for that stock and sector (Sub-Alt 2e).

Sub-Action 3.2. Specify limits on how much unharvested ACL may be carried over.
1 (No Action). No carry-overs allowed.
2. Allow carry-over of a sector's unharvested ACL. The ABC may be temporarily increased to include the carried over amount, not to exceed the OFL or the total ACL plus the carried over amount, whichever is less.
3. Allow carry-over of a sector's unharvested ACL. The ABC may be temporarily increased to include the carried over amount, not to exceed the OFL the total ACL plus the carried over amount, or the total ACL plus 25% of the sector ACL, whichever is least.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

Alternative 2 would allow carry-over of the unharvested portion of a sector's annual catch limit if the stock status is known, the stock is neither overfished nor experiencing overfishing, and an overfishing limit for the stock is defined. **Sub-Alternatives 2a-2e** are potential additional requirements or limitations that each would be expected to reduce negative biological effects from allowing carry-overs by restricting carry-overs to very specific situations. **Sub-Alternative 2a** would additionally require that stock biomass is greater than the midpoint between B_{MSY} and MSST. Addition of this requirement is expected to increase the probability that the stock has enough biomass to sustain temporary harvest beyond the specified ABC. **Sub-Alternative 2b** would additionally require that a fishery sector experienced a recent regulatory closure. Addition of this requirement would limit carry-overs to those fisheries that could have harvested more of the ACL (indicated by underharvest) in the absence of an early closure of the fishery. **Sub-Alternative 2c** would additionally require that the sum of recent total landings do not exceed the sum of the total ACLs in the same time period. Addition of this requirement would limit the probability of average annual harvest exceeding average ACL over a longer time period. **Sub-Alternative 2d** would additionally require that carry-overs could not be applied to underharvest of temporary ACLs that are part of a phase-in of

an ABC decrease for that stock. Addition of this requirement would reduce negative biological effects by not allowing negative effects of carry-over and phase-in of an ABC decrease to be combined. **Sub-Alternative 2e** would additionally require that a fishery (sector-specific within a stock) being considered for carry-over must have an in-season accountability measure to be eligible. Addition of this requirement would limit carry-overs only to those fisheries that are able to be closed when the temporary revised ACL is met, reducing the probability of overfishing occurring.

In summary, the greatest positive biological effects under Sub-Action 3.1 would be expected from **Alternative 1 (No Action)**, followed by **Alternative 2**. Within **Alternative 2**, the greatest positive biological effects would be expected with the addition of all of **Sub-Alternatives 2a-2e**.

Sub-Action 3.2 would determine how much of a sector's unharvested ACL may be carried over to increase the available harvest in the next year. Similar to Sub-Action 3.1, positive biological effects would be expected from alternatives that allow the lowest amount of harvest. In the context of carry-over amount, the greatest positive biological effects would be expected from measures that most limit the amount of ACL that may be carried over. Therefore, **Alternative 1 (No Action)** would be expected to have the greatest positive biological effects (by not allowing carry-overs at all), followed by **Alternative 3**, and **Alternative 2**, respectively.

Alternative 2 would allow carry-over of a sector's unharvested ACL. The ABC may be temporarily increased to include the carried over amount, not to exceed the OFL or the total ACL plus the carried over amount, whichever is less. **Alternative 3** includes all of the limitations for carry-over amounts contained in **Alternative 2**, but also adds that the temporary revised ABC may not exceed the stock's total ACL plus 25% of the sector ACL. Since **Alternative 3** includes an additional limitation of the carry-over amount, it would be expected to have more positive biological effects than **Alternative 2**.

Both **Alternatives 2** and **3** under Sub-Action 3.2 allow multiple eligible sectors to use carry-over in the same year. Sector-specific amounts being carried over will be allocated entirely to the sector from which they came unless the sum of the specified total ACL and all sector-specific amounts that could be carried over exceeds the OFL. If that is the case, the temporary ABC would equal the OFL and the difference between the temporary ABC and the specified total ACL would be allocated according to sector allocation percentages defined in the fishery management plan.

4.3.2 Economic Effects

ACLs that allow for more fish to be landed can result in increased positive economic effects if harvest increases without notable effects on the stock of a species. The opposite is applicable to ACLs that allow for fewer fish to be landed. The ACL does not directly impact the fishery for a species unless harvest changes, fishing behavior changes, or the ACL is exceeded, thereby potentially triggering AMs such as harvest closures or other restrictive measures. As such, ACLs that are set above observed landings in a fishery for a species and do not change harvest or fishing behavior may not have realized economic effects. If catch levels are set below observed landings in a fishery, thereby leading to measures that restrict harvest, or conversely are set

above observed landings and allow harvest to increase then there would be anticipated in-direct economic effects.

Allowing carry-over of unused ACL would allow a sector to utilize that portion of the ACL in a subsequent year. This would allow for increased harvest which would increase associated economic benefits. For the recreational sector, these increased economic benefits may be characterized by improved CS for anglers from elevated harvest levels and increased PS for for-hire businesses if higher ACLs result in increases in demand for trips onboard charter vessels or headboats. For the commercial sector these increased economic benefits may be characterized by improved net operating revenue and thus PS for commercial fishing vessels and dealers. There also may be increases to CS for seafood consumers.

Alternative 1 (No Action) for both **Sub-Action 3.1** and **Sub-Action 3.2** would not allow carry-over of unharvested ACL. As such this would result in comparatively lower economic benefits from foregoing such harvest. For **Sub-Action 3.1**, **Alternative 2** and its sub-alternatives (**Sub-Alternatives 2a** through **2e**) would specify criteria for when carry-over of unharvested ACL would be allowed, thus creating the opportunity for increased harvest and associated economic benefits in some circumstances.

Sub-Action 3.2 would specify the limits on how much unharvested ACL could be carried over to subsequent years through a temporary expansion of the ABC. **Alternative 2** would cap the amount of carry over at the OFL or the total ACL plus the carried over amount, whichever is less. **Alternative 3** would provide the same conditions with the additional restriction that the carry-over could not exceed the total ACL plus 25% of the sector ACL. In comparison, both alternatives would be expected in increase potential short-term economic benefits, with **Alternative 2** providing slightly higher potential benefits than **Alternative 3** due to fewer restrictions on how much the ABC and resulting ACL could be temporarily increased.

While difficult to compare the economic effects of each alternative and sub-alternative across sub-actions due to the wide range of applicable circumstance and species, short-term economic benefits are expected to be greater under **Alternative 2** in **Sub-Action 3.1** and **Alternatives 2** and **3** in **Sub-Action 3.2** compared to **Alternative 1 (No Action)** in each sub-action respectively.

4.3.3 Social Effects

Additional social effects would not be expected from **Action 3.1** - **Alternative 1 (No Action)**, and any unused quota would continue to be unavailable for harvest the following year. Generally, positive effects would be expected for fishermen from a carryover of uncaught quota under **Alternative 2** if the quota provides additional opportunities to retain a fish that would otherwise be unavailable the following year. However, there would be no effects from providing a quota carryover for a given fish stock if the additional quota goes unused. If fishing regulations were not a factor in restricting opportunities to retain additional fish, then carrying over additional quota would not provide additional fishing opportunities. However, broad social benefits would be expected from having a carryover provision in place, particularly in the event that regulations become more restrictive and the given stock's ACL is not met in the future due to fishing regulations.

Sub-alternatives 2b through **2e** propose additional requirements to implement a carry-over and would be to reduce social benefits by only allowing carry-overs in specific situations. The social benefits expected from **Action 3.1 - Alternative 2** and its sub-alternatives would relate to specific fish stock characteristics, desirability, and any changes in fishing opportunities for participants. Section 3.4 describes communities that could be affected by changes to Snapper Grouper, Dolphin Wahoo, or Golden Crab management.

The ACL for any stock does not directly affect resource users unless the ACL is met or exceeded, in which case accountability measures that restrict, or close harvest could negatively impact the commercial fleet, for-hire fleet, and private anglers. In general, the higher the ACL, the greater the short-term social benefits that would be expected to accrue, assuming long-term recovery and rebuilding goals are met. The highest potential ACL would be expected to result in the most benefits to participants. **Alternative 2** would allow carry-over of a sector's unharvested ACL so long as it does not exceed the OFL or the total ACL plus the carried over amount. **Alternative 3** adds an addition limit, restricting the ABC to the stock's total ACL plus 25% of the sector ACL. Under the alternatives proposed in **Sub-Action 3.2**, the greatest benefits to fishery participants, communities, and associated fishing businesses would be expected under **Alternative 2**, followed by **Alternative 3**, and **Alternative 1 (No Action)**.

4.3.4 Administrative Effects

In **Sub-Action 3.1**, administrative effects would be expected to be greatest under **Alternative 2** (including its sub-alternatives), when compared with **Alternative 1 (No Action)**. Within **Alternative 2**, administrative burdens would be expected to be greater under **Sub-alternatives 2a**, **2b**, and **2c**, when compared with **Sub-alternatives 2d** and **2e**, because of the complexity of calculations in establishing the criteria when carry-over could be allowed. In **Sub-Action 3.2**, administrative effects would be expected to be greater under **Alternatives 2** and **3,** compared to **Alternative 1 (No Action)**. Administrative burdens would include SSC, AP, and Council discussions determining whether a stock can carry over unharvested ACL in years when it meets the conditions defined in Sub-Action 3.1, as well as staff work to incorporate the Council's decision on carry-overs into an amendment or regulatory amendment to the FMP. Additional administrative effects would be related to educational activities by staff in informing all the constituents and enforcement of any changes to the ACLs.

4.4 Action 4. Modify framework procedures for the Snapper Grouper, Dolphin Wahoo, and Golden Crab FMPs

4.4.1 Biological Effects

No biological effects on any species under the Snapper Grouper, Dolphin and Wahoo, and Golden Crab FMPs would be expected under **Alternative 2** in **Sub-Actions 4.1**, **4.2**, and **4.3**, when compared with **Alternative 1 (No Action)**, because this action (and sub-actions) does not impact the harvest levels of any species in any manner. **Alternative 2** in **Sub-Actions 4.1**, **4.2**, and **4.3** would modify the current framework procedures in the Snapper Grouper, Dolphin and Wahoo, and Golden Crab FMPs to include carry-overs. When an ABC is specified through an amendment, the Council would specify whether carry-over is authorized. If carry-over is authorized and annual conditions are met, carry-over would occur.

This action deals purely with framework procedures and is not expected to affect fishing activities in any way, and therefore, would not impact bycatch/discards in the fisheries considered in this amendment.

Alternatives

Sub-Action 4.1. Modify the Snapper Grouper FMP framework procedures to include carry-overs.

1 (No Action). Do not modify the Snapper Grouper FMP framework procedures.

2. Modify the Snapper Grouper FMP framework procedures to include carry-overs. When an ABC is specified through an amendment, the Council will specify whether carry-over is authorized. If carry-over is authorized and annual conditions are met, carry-over will occur.

Sub-Action 4.2. Modify the Dolphin Wahoo FMP framework procedures to include carry-overs.

1 (No Action). Do not modify the Dolphin Wahoo FMP framework procedures.

2. Modify the Dolphin Wahoo FMP framework procedures to include carry-overs. When an ABC is specified through an amendment, the Council will specify whether carry-over is authorized. If carry-over is authorized and annual conditions are met, carry-over will occur.

Sub-Action 4.3. Modify the Golden Crab FMP framework procedures to include carry-overs.

1 (No Action). Do not modify the Golden Crab FMP framework procedures.

2. Modify the Golden Crab FMP framework procedures to include carry-overs. When an ABC is specified through an amendment, the Council will specify whether carry-over is authorized. If carry-over is authorized and annual conditions are met, carry-over will occur.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

4.4.2 Economic Effects

Modifying the framework procedure for the Snapper Grouper (**Sub-Action 4.1**), Dolphin Wahoo (**Sub-Action 4.2**), and Golden Crab (**Sub-Action 4.3**) FMPs would help implement the ability to carry-over unharvested ACL in a timelier manner. Under **Alternative 1 (No Action)** for each sub-action respectively, carry-over measures could still be implemented but these measures would need to go into place via a plan amendment rather than a framework amendment. Plan amendments typically take longer to put into place, thus increasing the time that the initial potential economic benefits from carry-over could occur. Additionally, there are often higher administrative costs from developing a framework amendment compared to a plan amendment. As such, **Alternative 2** for each sub-action, which would allow carry-over to be

implemented via framework, would likely result in more timely economic benefits and fewer costs than **Alternative 1 (No Action)**.

4.4.3 Social Effects

Modification of the framework procedure of for the Snapper Grouper (**Sub Action 4.1**), Dolphin Wahoo (**Sub-Action 4.2**) and Golden Crab (**Sub-Action 4.3**) FMPs would not be expected to result in any direct social impacts. Rather, indirect social effects would be expected and would result in broad, long-term social benefits, and minimal negative social effects. Although a framework procedure is currently in place for each FMP (**Alternative 1**), the proposed modifications to improve timeliness and incorporate regulatory updates (**Alternative 2**) would be expected to contribute to improved management of the stocks and would allow the Council to respond to management needs. The relative speed at which beneficial regulatory changes can be implemented can play a role in determining the magnitude of the anticipated indirect social effects.

Alternative 2 would reduce the required time to modify the ACLs if a carryover occurs by allowing the Council to propose changes through the framework procedure. Although **Alternative 2** reduces the opportunity for public comment of proposed measures, the expedited process is expected to benefit fishery participants through more timely management changes that respond to new information and may result in greater fishing opportunities. Although public involvement is more limited under the framework procedure, standard public participation and review opportunities remain available as part of the framework procedure under all alternatives.

4.4.4 Administrative Effects

Alternative 2 under each of **Sub-Actions 4.1**, **4.2**, and **4.3**, would be expected to have greater administrative effects compared to **Alternative 1 (No Action)** of those respective sub-actions. Administrative burdens would include SSC, AP, and Council work to develop framework amendments implementing ABCs with carry-over in eligible years. Administrative burdens would also include single season adjustments to ABCs and ACLs for applicable stocks. Additional administrative effects would be related to educational activities by staff in informing all the constituents and enforcement of any changes to the ACLs. In the long-term, the abbreviated process outlined under **Alternative 2** in **Sub-Actions 4.1**, **4.2**, and **4.3 (Section 2.4.1)**, would be expected to have beneficial administrative effects in reducing staff time and workload, especially during the rulemaking process.

Chapter 5. DRAFT Council's Choice for the Preferred Alternative

5.1 Action 1. Modify the Acceptable Biological Catch Control Rule

5.1.1 Snapper Grouper, Dolphin Wahoo, and Golden Crab Advisory Panels Comments and Recommendations

5.1.2 Law Enforcement Advisory Panel Comments and Recommendations

5.1.3 Scientific and Statistical Committee (SSC) Comments and Recommendations

Alternatives

1 (No Action). Control Rule: Table A for Dolphin Wahoo and Golden Crab; Table B for Snapper Grouper
Risk Tolerance: Included in SSC's ABC criteria
Overfished Stocks: Unspecified

2. Control Rule: Table C
Risk Tolerance: Council specifies using Table D
Overfished Stocks: ABC from Council's specified rebuilding plan

3. Control Rule: Table E
Risk Tolerance: Council specifies initial P* between 30% and 50%, which is then adjusted by the SSC using Table F
Overfished Stocks: ABC from Council's specified rebuilding plan

*See Chapter 2 for detailed language of alternatives.

- The SSC supported modifying the ABC CR as described in Action 1-**Alternative 2** because biomass and stock risk rating are included in the Council's setting of P*, whereas Alternative 3 provides less clear guidelines to justify selection of P*. In addition, the SSC recommends categorizing stock risk ratings as low, medium, or high risk based on whether overall scores are in the highest, middle, or lowest third of scores for all evaluated stocks.
- The SSC recommended not including ecosystem component stocks in the ABC control rule provisions.
- The SSC did not support designing the ABC control rule solely around data or assessment categories or levels, and recommended that the treatment of uncertainty was a more robust and useful categorization approach. (consistent with **Alternative 2**)
- The SSC supports allowing constant ABC recommendations for 3-5 years. (consistent with **Sub-Alternatives 2c** and **3a**)
- 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. (consistent with **Alternative 2**)

- 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. (consistent with **Alternative 2**)
- The SSC recommends considering social and economic considerations when evaluating risk tolerance. Fishery Performance reports may be useful to identify factors. (consistent with **Alternative 2**)
- 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.
- Scientific uncertainty encompasses both assessment uncertainty and biological uncertainty in our understanding of the stock (i.e., our ability to quantify a stock's life history, fisheries, etc.). Both assessment uncertainty and biological uncertainty need to be considered in establishing the P*.
- Category 4/Unassessed Stocks – The SSC supports the establishment of a Working Group to address Category 4 or unassessed stocks with the addition of a standard Statement of Work as described in the recommendation below. (consistent with **Alternatives 2** and **3**)
    - Be careful to distinguish between catch and landings given the growing importance of discards in the US South Atlantic.
    - Identify stocks with large discard components that are either characterized with data or described in other sources of information.
    - Schedule regular review of data-limited literature every 3 to 5 years that would be conducted by the Workgroup and reviewed by the SSC and Council.
    - Develop a standard Statement of Work for the Working Group that would include the following:
        - Provide research recommendations on improving ABC setting or SEDAR process
        - Attention should be paid to the directed vs non-directed nature of each fishery for unassessed/data-limited stocks given that some data-limited approaches may not be applicable for species caught as bycatch.
        - Species identification is an issue for several of these stocks (e.g., black grouper and gag grouper). ABC-setting for complexes rather than individual stocks may address this issue.
- The SSC recommends that the SSC continue to work in collaboration with Council and Advisory Panel members to make any necessary updates to the risk rating scores. This process has great value in its transparency, but the logistics of how changes would be made should be described more explicitly in the document.
- The SSC recommends that language be included in the amendment to clarify how the risk tolerance P* translates to a probability of rebuilding for overfished stocks (1-P*).
- The SSC commends Council staff for providing clear examples of how scientific uncertainty and management risk would be separated and how this would be used in setting a P*.

- Regarding Alternative 3: Table 5, Level 1 needs to be adjusted. The SSC suggests that 4 and 5 be removed as those would fall under the unassessed stock categories. Once removed, the percentages would be redistributed among remaining 3 Tiers.

5.1.4 South Atlantic Council Rationale

5.2 5.2 Action 2. Allow phase-in of acceptable biological catch changes

5.2.1 Snapper Grouper, Dolphin Wahoo, and Golden Crab Advisory Panels Comments and Recommendations

5.2.2 Law Enforcement Advisory Panel Comments and Recommendations

5.2.3 Scientific and Statistical Committee (SSC) Comments and Recommendations

Alternatives

Sub-Action 2.1. Establish criteria specifying when phase-in is allowed.
1 (No Action). Do not establish phase-in provisions.
2. Allow phase-in of decreases in ABC that are less than a 60% (Opt 1), 70% (Opt 2), or 80% (Opt 3) of the existing ABC.
3. Allow phase-in of decreases in ABC if stock biomass exceeds the MSST (Opt 1) or B_{MSY}-MSST midpoint (Opt 2).

Sub-Action 2.2. Specify the approach for phase-in of acceptable biological catch changes.
1 (No Action). No phase-ins allowed.
2. ABC decreases may be phased in over no more than 3 years.
3. ABC decreases may be phased in over no more than 2 years.
4. ABC decreases may be phased in over 1 year.
*Annual specifications for Alternatives 2-4 are shown in Table A

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

- 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.

5.2.4 South Atlantic Council Rationale

5.3 5.3 Action 3. Allow carry-over of unharvested portion of the annual catch limit

5.3.1 Snapper Grouper, Dolphin Wahoo, and Golden Crab Advisory Panels Comments and Recommendations

5.3.2 Law Enforcement Advisory Panel Comments and Recommendations

5.3.3 Scientific and Statistical Committee (SSC) Comments and Recommendations

- The SSC supported the use of carry-overs 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.
- The SSC recommended adding 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).

Alternatives

Sub-Action 3.1. Establish annual criteria specifying when carry-over is allowed.

1 (No Action). Do not establish carry-over provisions.

2. Allow carry-over if stock has known status, is not overfished or experiencing overfishing, and has a defined OFL. Additionally, allow carry-over if biomass exceeds the B_{MSY}-MSST midpoint (Sub-Alt 2a), the sector has experience a regulatory closure in the last 3 years (Sub-Alt 2b), or the sum of total landings for the 3 previous years is less than the sum of the total ACLs over those years (Sub-Alt 2c).

3. Do not allow carry-over if ABC decreases are being phased in (Sub-Alt 3a) or there is no in-season accountability measure for that stock and sector (Sub-Alt 3b).

Sub-Action 3.2. Specify limits on how much unharvested ACL may be carried over.

1 (No Action). No carry-overs allowed.

2. Allow carry-over of a sector's unharvested ACL. The ABC may be temporarily increased to include the carried over amount, not to exceed the OFL or the total ACL plus the carried over amount, whichever is less.

3. Allow carry-over of a sector's unharvested ACL. The ABC may be temporarily increased to include the carried over amount, not to exceed the OFL the total ACL plus the carried over amount, or the total ACL plus 25% of the sector ACL, whichever is least.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

- A simpler process than interannual carry-over would be to have a buffer between the ABC and the ACL. This would enable the Council to act without requiring the SSC to meet and consider a temporary ABC revision. The SSC recognizes, though, that adding or expanding a buffer may be problematic because it will increase the likelihood of exceeding the ACL.
- The SSC is concerned that the proposed process will take too long to be effective. Consider that data indicating an underage in Year 1 would not be available until partway through Year 2. At that point, for a species without a buffer, the Council would have to request the SSC consider a temporary increase in the ABC. The SSC would have to then meet, review new projections provided by the SEFSC, and approve the new ABC. That new ABC would then need to be reviewed and acted upon by the Council in order to increase the ACL. At this point in the process, Year 2 may be mostly over.
- Timeliness of stock assessment advice might not be adequate for this new process.
- The SSC agreed with NMFS Guidance on Carry-Overs (pdf page 33).
- If carry-overs are allowed in situations for which species distribution changes have occurred, this may lead to localized depletion.
- Changing the ACL/ABC may increase the uncertainty in stock projections. For complexes where bycatch is an issue, this may create greater uncertainty in other species and their projections and assessments.
- Council should look to the Southeast Fisheries Science Center (SEFSC) for more information on how best to include the PSE into projections provided to the SSC for any carry-over request given this may vary from stock to stock due to differences among stocks with regards to productivity, generation time, stock assessment frequency, etc.
- If catch PSE is high, it may be difficult to determine whether an underage has actually occurred. To be confident that an underage occurred, estimated catch should be more than two standard deviations below the ACL. To thoroughly address this question, though, a formal analysis of projection methodologies and their associated assumptions used to set ABC/ACLs would need to be conducted that involved the SEFSC.

5.3.4 South Atlantic Council Rationale

5.4 Action 4. Modify framework procedures for the Snapper Grouper, Dolphin Wahoo, and Golden Crab Fishery Management Plans

5.4.1 Snapper Grouper, Dolphin Wahoo, and Golden Crab Advisory Panels Comments and Recommendations

5.4.2 Law Enforcement Advisory Panel Comments and Recommendations

5.4.3 Scientific and Statistical Committee (SSC) Comments and Recommendations

The SSC did not directly comment on this action as it is oriented toward the process of implementing carry-overs. The SSC's comments and recommendations on carry-overs are in section 5.3.3.

5.4.4 South Atlantic Council Rationale

Alternatives

Sub-Action 4.1. Modify the Snapper Grouper FMP framework procedures to include carry-overs.

1 (No Action). Do not modify the Snapper Grouper FMP framework procedures.

2. Modify the Snapper Grouper FMP framework procedures to include carry-overs. When an ABC is specified through an amendment, the Council will specify whether carry-over is authorized. If carry-over is authorized and annual conditions are met, carry-over will occur.

Sub-Action 4.2. Modify the Dolphin Wahoo FMP framework procedures to include carry-overs.

1 (No Action). Do not modify the Dolphin Wahoo FMP framework procedures.

2. Modify the Dolphin Wahoo FMP framework procedures to include carry-overs. When an ABC is specified through an amendment, the Council will specify whether carry-over is authorized. If carry-over is authorized and annual conditions are met, carry-over will occur.

Sub-Action 4.3. Modify the Golden Crab FMP framework procedures to include carry-overs.

1 (No Action). Do not modify the Golden Crab FMP framework procedures.

2. Modify the Golden Crab FMP framework procedures to include carry-overs. When an ABC is specified through an amendment, the Council will specify whether carry-over is authorized. If carry-over is authorized and annual conditions are met, carry-over will occur.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

Chapter 6. Cumulative Effects

6.1 Affected Area

The South Atlantic Fishery Management Council (Council), in cooperation with the Mid-Atlantic Fishery Management Council, and the New England Fishery Management Council, is responsible for conservation and management of dolphin and wahoo in federal waters off the Atlantic states under the Fishery Management Plan (FMP) for the Dolphin and Wahoo Fishery of the Atlantic (Dolphin and Wahoo FMP). The immediate impact area would be the federal waters from 3-200-miles off the coasts of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and east Florida to Key West. The Council manages species in the FMPs for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) and the Golden Crab Fishery of the South Atlantic Region (Golden Crab FMP) in federal waters 3-200-miles off the coasts of North Carolina, South Carolina, Georgia, and east Florida to Key West. Considering the available information, the extent of the boundaries for the affected area would depend upon the degree of fish immigration/emigration and larval transport, whichever has the greatest geographical range. The ranges of affected species are described in Volume II of the Fishery Ecosystem Plan.[18] For the proposed actions found in the Comprehensive Acceptable Biological Catch Control Rule Amendment, the cumulative effects analysis includes an analysis of data from 2015 through the present.

6.2 Past, Present, and Reasonably Foreseeable Actions Impacting the Affected Area

Fishery managers implemented the first significant regulations pertaining to: dolphin and wahoo in 2004 through the Dolphin and Wahoo FMP (SAFMC 2003), snapper grouper species in 1983 through the Snapper Grouper FMP (SAFMC 1983), and golden crab in 1995 through the Golden Crab FMP (SAFMC 1995). Listed below are other past, present, and reasonably foreseeable actions occurring in the Atlantic, which, when added to the proposed management measures in the Comprehensive Acceptable Biological Catch Control Rule Amendment, may result in cumulative effects on the biophysical and social and economic environment. The complete history of management of: the dolphin and wahoo fishery can be found in Appendix D (History of Management) of Amendment 7 to the Dolphin and Wahoo FMP (SAFMC 2016b), the snapper grouper fishery in Appendix I of Amendment 50 to the Snapper Grouper FMP (SAFMC 2022), and the golden crab fishery in Appendix B of Amendment 9 to the Golden Crab FMP (SAFMC 2015), and are hereby incorporated by reference.

Actions Affecting the Dolphin Wahoo Fishery

Past Actions

Amendment 2 to the Dolphin and Wahoo FMP (Comprehensive Annual Catch Limit (ACL) Amendment), effective on April 16, 2012, established the acceptable biological catch (ABC),

[18] http://safmc.net/ecosystem-management/fishery-ecosystem-plan/

ACL, recreational annual catch target (ACT), accountability measures (AM), and sector allocations for dolphin and wahoo. Recreational landings did not include Monroe County, Florida, and were based on recreational data from the Marine Recreational Fisheries Statistics Survey (MRFSS).

Amendment 5 to the Dolphin and Wahoo FMP, effective on July 9, 2014, revised the ABCs, ACLs (including sector ACLs), recreational ACT, and AMs. Recreational landings did not include Monroe County, Florida, and were based on recreational data from the Marine Recreational Information Program's (MRIP) Coastal Household Telephone Survey (CHTS) method.

Amendment 7 to the Dolphin and Wahoo FMP, effective on January 27, 2016, allowed dolphin and wahoo fillets to enter the U.S. exclusive economic zone (EEZ) after lawful harvest in The Bahamas, under certain conditions.

Amendment 8 to the Dolphin and Wahoo FMP, effective on February 22, 2016, revised the sector allocations for dolphin.

Regulatory Amendment 1 to the Dolphin and Wahoo FMP, effective on March 21, 2017, established a commercial trip limit of 4000 pounds whole weight once 75 percent of the commercial ACL is reached.

Amendment 9 to the Dolphin and Wahoo FMP (electronic reporting for federally permitted charter vessels and headboats), effective on January 4, 2021, established new, and revised existing, electronic reporting requirements for dolphin and wahoo for-hire vessels to increase and improve fisheries information.

Amendment 12 to the Dolphin and Wahoo FMP, effective on June 9, 2021, added bullet mackerel and frigate mackerel as ecosystem component species to acknowledge their ecological role as forage fish and achieve ecosystem management objectives (50 C.F.R §600.305(d)(13)).

Amendment 10 to the Dolphin and Wahoo FMP (Dolphin Wahoo Amendment 10), effective on May 2, 2020, revised ABCs, ACLs, sector allocations, and recreational AMs. Additionally, Dolphin Wahoo Amendment 10 allowed possession of dolphin or wahoo when specified unauthorized gear types are onboard a vessel, removed the operator card requirement, and reduced the vessel limit for dolphin.

Present Actions

Regulatory Amendment 3 to the Dolphin and Wahoo FMP considers extending size limits and recreational bag and vessel limits for dolphin.

Reasonably Foreseeable Future Actions

The Council is considering revisiting the subject of longline gear in the dolphin and wahoo fishery. Development of this amendment could start in late 2023 and continue through 2024.

Actions Affecting the Snapper Grouper Fishery

Past Actions

Amendment 36 to the Snapper Grouper FMP, effective on July 31, 2017, was implemented to establish new spawning special management zones (SMZ) to protect spawning areas for snapper grouper species.

Amendment 37 to the Snapper Grouper FMP, effective on August 24, 2017, modified the hogfish fishery management unit in response to genetically different stocks along the South Atlantic, specified fishing levels for the two stocks, established a rebuilding plan for the Florida Keys/East Florida stock, and established or revised management measures for both hogfish stocks such as size limits, recreational bag limits, and commercial trip limits.

Amendment 43 to the Snapper Grouper FMP, effective on July 26, 2017, specified recreational and commercial annual catch limits (ACL) for red snapper beginning in 2018.

Abbreviated Framework 1 to the Snapper Grouper FMP, effective on August 27, 2018, was implemented to address overfishing of red grouper, and reduced the commercial and recreational ACLs for red grouper in the South Atlantic exclusive economic zone (EEZ).

Abbreviated Framework 2 to the Snapper Grouper FMP, effective on May 9, 2019, revised fishing levels for black sea bass and vermilion snapper in response to the latest stock assessments for those species in the South Atlantic.

Amendment 42 to the Snapper Grouper FMP, effective on January 8, 2020, added three newly approved sea turtle release devices and updated the regulations to simplify and clarify the specifications for other release gear requirements. The new devices and updates provide more options to fulfill the requirements for sea turtle release gear on board vessels with commercial and charter/for-hire snapper grouper permits in the South Atlantic. The amendment also streamlines the procedure to implement newly approved devices and handling procedures in the future.

Regulatory Amendment 27 (Vision Blueprint Regulatory Amendment 27) to the Snapper Grouper FMP, effective on February 26, 2020, addresses specific action items in the 2016-2020 Vision Blueprint for the commercial sector of the snapper grouper fishery. The framework amendment revised commercial regulations for blueline tilefish, snowy grouper, greater amberjack, red porgy, vermilion snapper, almaco jack, Other Jacks Complex (lesser amberjack, almaco jack, and banded rudderfish), queen snapper, silk snapper, blackfin snapper, and gray triggerfish. Actions include modifying fishing seasons, trip limits, and minimum size limits.

Regulatory Amendment 30 to the Snapper Grouper FMP, effective on March 9, 2020, revised the rebuilding plan for red grouper, extended the annual spawning closure for that species off North and South Carolina, and established a commercial trip limit.

Regulatory Amendment 26 (Vision Blueprint Regulatory Amendment 26) to the Snapper Grouper FMP, effective on March 30, 2020, addresses specific action items in the 2016-2020 Vision Blueprint for the recreational sector of the snapper grouper fishery. The framework

amendment modified the 20-fish aggregate bag limits, and minimum size limits for certain species.

Regulatory Amendment 29 to the Snapper Grouper FMP, effective July 15, 2020, modified gear requirements for South Atlantic snapper grouper species. Actions included requirements for descending and venting devices, and modifications to requirements for circle hooks and powerheads.

Abbreviated Framework 3 to the Snapper Grouper FMP, effective August 17, 2020, revised fishing levels for blueline tilefish in the South Atlantic region.

Regulatory Amendment 33 to the Snapper Grouper FMP, effective August 17, 2020, removed the requirement that if projections indicate the South Atlantic red snapper season (commercial or recreational) would be three days or fewer, the commercial and/or recreational seasons would not open for that fishing year. If this requirement is removed, red snapper harvest could be open for either recreational or commercial harvest for fewer than four days.

Regulatory Amendment 34 to the Snapper Grouper FMP, effective May 3, 2021, created 34 special management zones around artificial reefs off North Carolina and South Carolina.

Present Actions

Amendment 44 to the Snapper Grouper FMP will address the results of the latest stock assessment for the yellowtail snapper stock in the southeast.

Amendment 49 to the Snapper Grouper FMP would address the results of the latest stock assessment for the greater amberjack stock in the South Atlantic region.

Amendment 51 to the Snapper Grouper FMP would address the results of the latest stock assessment for the snowy grouper stock in the South Atlantic region. Snowy grouper was determined to be overfished and undergoing overfishing.

Amendment 53 to the Snapper Grouper FMP would address the results of the latest stock assessment for the gag stock in the South Atlantic region. Gag was determined to be overfished and undergoing overfishing.

Reasonably Foreseeable Future Actions

Amendment 46 to the Snapper Grouper FMP proposes actions to focus on private recreational permit requirements and reporting. Development of this amendment is currently on hold.

Regulatory Amendment 31 to the Snapper Grouper FMP could include actions to revise recreational accountability measures to allow more flexibility in managing recreational fisheries. Development of this framework amendment is currently on hold.

Regulatory Amendment 35 to the Snapper Grouper FMP could include actions to end overfishing of red snapper and management actions to reduce discard mortality for snapper grouper species.

Actions Affecting the Golden Crab Fishery

Past Actions
Amendment 9 to the Golden Crab FMP modified commercial AMs for golden crab.

Amendment 8 to the Golden Crab FMP modified permitting and reporting requirements for seafood dealers receiving golden crab.

Amendment 5 to the Golden Crab FMP established ABC Control Rule, ABC, ACL, Optimum Yield, and AMs for golden crab.

Present Actions
There are currently no actions affecting the Golden Crab FMP under development in addition to the Comprehensive Acceptable Biological Catch Control Rule Amendment.

Reasonably Foreseeable Future Actions
There are no upcoming actions affecting the Golden Crab FMP.

Expected Impacts from Past, Present, and Future Actions
The intent of Comprehensive Acceptable Biological Catch Control Rule Amendment is to revise the ABC control rule by clarifying the incorporation of scientific uncertainty and management risk, modifying the approach used to determine the acceptable risk of overfishing, and prioritizing the use of stock rebuilding plans for overfished stocks. Additionally, this amendment will specify conditions and procedures for using carry-overs and phase-ins in setting catch limits, including modification of framework procedures to accommodate implementation of carry-overs when applicable. The proposed actions in Comprehensive Acceptable Biological Catch Control Rule Amendment are not expected to result in significant cumulative adverse biological or social and economic effects (see Chapter 4). The reader is referred to the Regulatory Impact Review (RIR, Appendix B) for an assessment of the cumulative economic effects of all the actions in this amendment.

In Action 1, no immediate and direct biological effects (positive or negative) are expected for the stocks managed under these FMPs from the alternatives and sub-alternatives, because current ABC levels for all the species in the FMPs in this amendment are not being changed. Similarly, no immediate economic effects are expected, but incorporating economic factors to better inform management risk and scientific uncertainty into the ABC control rules for dolphin and wahoo, snapper grouper species, and golden crab, could lead to better economic outcomes and increase net economic benefits in a fishery for a given species. Incorporation of the social factors would have long-term social benefits in the form of a more accurate ABC. Additionally, formally considering human dimensions in the scientific process may help to improve stakeholder perceptions of the science going into management decisions.

In Action 2, positive biological effects would be greatest by not allowing phase-in of a decrease in ABC, because this could allow harvest above ABC levels that would be recommended if

phase-ins were not allowed. Phase-in of increase in ABC would be specified by the Council. Phasing-in an increase in the ABC could result in potential foregone economic benefits if the phase-in process results in restrictions to landings, along with the associated economic benefits of those landings, that otherwise could have been realized if the phase-in had not occurred and the full ABC, along with the resulting ACL, had been implemented immediately. Phasing-in reductions to the ABC could also allow for economic stability and thus increased economic benefits in a fishery by allowing commercial and for-hire business to taper down their dependence on a specific species. Phasing in an increase in ABC may result in foregone social benefits if the phase-in process resulted in resources users meeting or exceeding their respective ACLs. Phasing in a decrease in ABC could allow commercial and for-hire businesses additional time to adjust their business plans to account for the full decrease in the ABC level, and associated management restrictions. It would also ensure that fishing opportunities remained available to private recreational fishermen in the interim.

In Action 3, regarding carry-over eligibility and how much of a sector's unharvested ACL may be carried over to the next year, the greatest positive biological effects would be expected from measures that most limit the occurrence of carry-overs. It is difficult to compare the economic effects of each alternative and sub-alternative across sub-actions due to the wide range of applicable circumstance and species. Allowing carry-over of unused ACL would allow for increased harvest which would increase associated economic benefits. For the recreational sector, these increased economic benefits may be characterized by improved consumer surplus (CS) for anglers from elevated harvest levels and increased PS for for-hire businesses if higher ACLs result in increases in demand for trips onboard charter vessels or headboats. For the commercial sector these increased economic benefits may be characterized by improved net operating revenue and thus PS for commercial fishing vessels and dealers. There also may be increases to CS for seafood consumers. Generally, positive effects would be expected for fishermen from a carryover of uncaught quota if the quota provides additional opportunities to retain a fish that would otherwise be unavailable the following year. However, there would be no effects from providing a quota carryover for a given fish stock if the additional quota goes unused.

In Action 4, no biological effects on any species under the Snapper Grouper, Dolphin and Wahoo, and Golden Crab FMPs would be expected because this action does not impact the harvest levels of any species in any manner. Plan amendments typically take longer to put into place, thus increasing the time that the initial potential economic benefits from carry-over could occur. Allowing carry-over to be implemented via framework would likely result in more timely economic benefits and fewer costs. No direct social effects would be expected, rather, indirect social effects would be expected and would result in broad, long-term social benefits, and minimal negative social effects.

Fishing behavior is not expected to change as a result of the actions in Comprehensive Acceptable Biological Catch Control Rule Amendment, because catch levels are not being changed and therefore, the actions are not expected to negatively affect discards and bycatch. The proposed actions in Comprehensive Acceptable Biological Catch Control Rule Amendment would not change fishing methods for the dolphin and wahoo, snapper grouper, and golden crab fisheries in the U.S. exclusive economic zone (EEZ), and therefore would perpetuate the existing

level of risk for interactions between Endangered Species Act listed species and the fisheries. Thus, there is likely to be no additional effects, positive or negative, to protected species from the actions.

When combined with the impacts of past, present, and future actions affecting the dolphin and wahoo, snapper grouper, and golden crab fisheries, minor cumulative impacts are likely to accrue. For example, there could be beneficial cumulative effects from the actions in this amendment, in addition to future proposed actions to revisit ABCs, ACLs, AMs, allocations, gear types, size limits, and other management measures. Also, there may be cumulative social and economic effects by promoting access to these fisheries, which would improve recreational fishing opportunities and benefits to associated businesses and communities. The actions in this amendment are not expected to result in significant cumulative adverse biological or social and economic effects to the dolphin and wahoo, snapper grouper, and golden crab fisheries when combined with the impacts of past, present, and future actions (see Chapter 4).

6.3 Consideration of Climate Change and Other Non-Fishery Related Issues

Climate Change

Global climate changes could have significant effects on Atlantic fisheries, though the extent of these effects on the dolphin and wahoo, snapper grouper, and golden crab fisheries is not known at this time. The Environmental Protection Agency's climate change webpage (https://www.epa.gov/climate-indicators/marine-species-distribution), and NOAA's Office of Science and Technology climate webpage (https://www.fisheries.noaa.gov/topic/climate), provides background information on climate change, including indicators which measure or anticipate effects on oceans, weather and climate, ecosystems, health and society, and greenhouse gases. The United Nations Intergovernmental Panel on Climate Change's Sixth Assessment Report (February 28, 2022), U.S. Global Change Research Program (USGCRP)'s Fourth Climate Assessment (2018), and the Ecosystem Status Report for the U.S. South Atlantic Region (Craig et al. 2021) also provide a compilation of scientific information on climate change. Those findings are summarized below.

Ocean acidification, or a decrease in surface ocean pH due to absorption of anthropogenic carbon dioxide emissions, affects the chemistry and temperature of the water. Increased thermal stratification alters ocean circulation patterns, and causes a loss of sea ice, sea level rise, increased wave height and frequency, reduced upwelling, and changes in precipitation and wind patterns. Changes in coastal and marine ecosystems can influence organism metabolism and alter ecological processes such as productivity, species interactions, migration, range and distribution, larval and juvenile survival, prey availability, and susceptibility to predators. The "center of biomass," a geographical representation of each species' weight distribution, is being used to identify the shifting of fish populations. Warming sea temperature trends in the southeast have been documented, and animals must migrate to cooler waters, if possible, if water temperatures exceed survivable ranges (Needham et al. 2012). Rising water temperatures, ocean acidification, retreating arctic sea ice, sea level rise, high-tide flooding, coastal erosion, higher storm surge, and heavier precipitation events are projected to continue, putting ocean and marine species at risk, decreasing the productivity of certain fisheries, and threatening communities that

rely on marine ecosystems for livelihoods and recreation (USGCRP 2018). Harvesting and habitat changes also cause geographic population shifts. Changes in water temperatures may also affect the distribution of native and exotic species, allowing invasive species to establish communities in areas they may not have been able to survive previously. The numerous changes to the marine ecosystem may cause an increased risk of disease in marine biota. An increase in the occurrence and intensity of toxic algae blooms will negatively influence the productivity of keystone animals, such as corals, and critical coastal ecosystems such as wetlands, estuaries, and coral reefs (Kennedy et al. 2002; IPCC 2022). Free et al. (2019) investigated the impacts of historical warming on marine fisheries production and found that climate change is altering habitats for marine fishes and invertebrates, but the net effect of these changes on potential food production is unknown.

Climate driven movement of fish stocks is causing commercial, small-scale, artisanal, and recreational fishing activities to shift poleward and diversify harvests (IPCC 2022).
In the South Atlantic Region, species richness and abundance of offshore hard bottom reef fishes have generally declined over time while richness and abundance of demersal fishes in soft sediment habitats on the nearshore shelf have increased. Potential explanations for these patterns include changes in harvest (directed and bycatch), trophic interactions, and environment effects on recruitment (Craig et al. 2021). Climate change may impact dolphin and wahoo, snapper grouper species, and golden crab in the future, but the level of impacts cannot be quantified at this time, nor is the time frame known in which these impacts will occur. Public comments stating the lack of large dolphin in the Florida Keys may have to do with the fish moving out of the area in search of suitable temperature and food availability. Studies have shown that seasonal abundance of dolphin along the east coast of the U.S. and Gulf of Mexico is heavily influenced by sea surface temperature and distance to temperature fronts, cholorphyll-*a* concentration, and *Sargassum* mats (Kleisner 2009; Farrell et al. 2014; Merten et al. 2014). Patterns from stock assessments in the South Atlantic Region indicate biomass of most assessed species generally show declines from the 1970s through the 1990s with some species showing signs of recovery beginning in the early to mid-2000s. Recruitment of a number of snapper-grouper species has declined since the early 2010s whereas recruitment of Red Snapper and some pelagic species has increased in recent years (Craig et al. 2021). In the near term, it is unlikely that the actions in Comprehensive Acceptable Biological Catch Control Rule Amendment would compound or exacerbate the ongoing effects of climate change on dolphin and wahoo, snapper grouper species, and golden crab.

Weather Variables

Hurricane season is from June 1 to November 30, and accounts for 97% of all tropical activity affecting the Atlantic basin. These storms, although unpredictable in their annual occurrence, can devastate areas when they occur. Although these effects may be temporary, those fishing-related businesses whose profitability is marginal may go out of business if a hurricane strikes.

6.4 Overall Impacts Expected from Past, Present, and Future Actions

The proposed actions would 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 2020 NMFS guidance on carry-over and phase-in provisions. The actions are expected to incorporate scientific uncertainty and management risk, acceptable risk of overfishing, and the use of stock rebuilding plans for overfished stocks into the ABC control rules for dolphin and wahoo, snapper grouper species, and golden crab. The proposed management actions and comparison of alternatives are summarized in Chapter 2 of this document. Detailed discussions of the magnitude and impacts of the alternatives on the human environment appear in Chapter 4 of this document. None of the impacts of the actions in this amendment, in combination with past, present, and future actions have been determined to be significant. Although several other management actions, in addition to this amendment, are expected to affect dolphin and wahoo, snapper grouper species, and golden crab, any additive effects, beneficial and adverse, are not expected to result in a significant level of cumulative impacts.

The proposed actions would not adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places as these are not in the Atlantic EEZ. These actions are not likely to result in direct, indirect, or cumulative effects to unique areas, such as significant scientific, cultural, or historical resources, park land, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas as the proposed action is not expected to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort within the Atlantic region. The Stellwagen Bank off the Northeastern U.S., U.S. Monitor, Gray's Reef, and Florida Keys National Marine Sanctuaries are within the boundaries of the Atlantic EEZ. The proposed actions are not likely to cause loss or destruction of these national marine sanctuaries because the actions are not expected to result in appreciable changes to current fishing practices. Additionally, the proposed actions are not likely to change the way in which the dolphin and wahoo fishery is prosecuted; therefore, the actions are not expected to result in adverse impacts on health or human safety beyond the status quo.

6.5 Monitoring and Mitigation

Fishery-independent and fishery-dependent data comprise a significant portion of information used in stock assessments. While there is no stock assessment for some of the species included in this amendment, these data aid in allowing sustainable harvest of these species, while monitoring biological, social, and economic parameters. Fishery dependent commercial data are collected through the commercial logbook data and recreational data are collected through the Marine Recreational Information Program, Headboat logbook data, and the For-hire electronic logbook program. Fishery-independent data are collected through the Southeast Fishery Information Survey and the Marine Resources Monitoring Assessment and Prediction Program. The effects of the proposed actions are, and would continue to be, monitored through collection of landings data by the states of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida. The National Marine Fisheries Service would continue to monitor and collect information on dolphin and wahoo, snapper grouper species, and golden crab, for life history studies, economic and social analysis, and other scientific

observations. The proposed actions relate to the harvest of indigenous species in the Atlantic, and the activities/regulations being altered do not introduce non-indigenous species, and are not reasonably expected to facilitate the spread of such species through depressing the populations of native species. Additionally, these alternatives do not propose any activity, such as increased ballast water discharge from foreign vessels, which is associated with the introduction or spread on non-indigenous species.

Chapter 7. List of Preparers

Name	Agency/Division	Title
Mike Schmidtke	SAFMC	Fishery Scientist/IPT Lead
Myra Brouwer	SAFMC	Deputy Director for Management
Chip Collier	SAFMC	Deputy Director for Science and Statistics
Mike Errigo	SAFMC	Data analyst
Judd Curtis	SAFMC	Data analyst
Christina Wiegand	SAFMC	Social Scientist
John Hadley	SAFMC	Economist
Cameron Rhodes	SAFMC	Outreach Program Manager
Roger Pugliese	SAFMC	Habitat and Ecosystem Scientist
Nikhil Mehta	SERO/SF	Fishery Biologist/IPT Lead
Rick DeVictor	SERO/SF	South Atlantic Branch Chief
Adam Bailey	SERO/SF	Technical Writer and Editor
Mike Larkin	SERO/SF	Data Analyst
Edward Glazier	SERO/SF	Social Scientist
Adam Stemle	SERO/SF	Economist
Mike Travis	SERO/SF	Economist
Rich Malinowski	SERO/SF	Fishery Biologist (Gulf of Mexico)
Pat O'Pay	SERO/PR	Biologist
David Dale	SERO/Habitat	Regional EFH Coordinator
Noah Silverman	SERO/Directorate	Regional NEPA Coordinator
Shepherd Grimes	NOAA GC	General Counsel
Manny Antonaras	SERO/OLE	Deputy Special Agent in Charge
Matt Walia	SERO/OLE	Enforcement Technician
Erik Williams	SEFSC	Biologist
Scott Crosson	SEFSC	Economist

HC = Habitat Conservation Division, GC = General Counsel, NMFS = National Marine Fisheries Service, PR = Protected Resources Division, SAFMC = South Atlantic Fishery Management Council, SEFSC = Southeast Fisheries Science Center, SERO = Southeast Regional Office, SF = Sustainable Fisheries Division, OLE = Office of Law Enforcement.

Chapter 8. Agencies and Persons Consulted

Responsible Agencies

South Atlantic Fishery Management Council (Administrative Lead)
4055 Faber Place Drive, Suite 201
N. Charleston, South Carolina 29405
843-571-4366/ 866-SAFMC-10 (TEL)
843-769-4520 (FAX)
www.safmc.net

NMFS, Southeast Region
263 13th Avenue South
St. Petersburg, Florida 33701
727- 824-5301 (TEL)
727-824-5320 (FAX)

List of Agencies, Organizations, and Persons Consulted

SAFMC Law Enforcement Advisory Panel
SAFMC Snapper Grouper Advisory Panel
SAFMC Scientific and Statistical Committee
North Carolina Coastal Zone Management Program
South Carolina Coastal Zone Management Program
Georgia Coastal Zone Management Program
Florida Coastal Zone Management Program
Florida Fish and Wildlife Conservation Commission
Georgia Department of Natural Resources
South Carolina Department of Natural Resources
North Carolina Division of Marine Fisheries
North Carolina Sea Grant
South Carolina Sea Grant
Georgia Sea Grant
Florida Sea Grant
Atlantic States Marine Fisheries Commission
National Marine Fisheries Service
- Washington Office
- Office of Ecology and Conservation
- Southeast Regional Office
- Southeast Fisheries Science Center

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Appendix A. Other Applicable Law

Administrative Procedures Act

All federal rulemaking is governed under the provisions of the Administrative Procedure Act (APA) (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Under the APA, National Marine Fisheries Service (NMFS) is required to publish notification of proposed rules in the *Federal Register* and to solicit, consider, and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day waiting period from the time a final rule is published until it takes effect. Comprehensive Acceptable Biological Catch Control Rule Amendment complies with the provisions of the APA through the South Atlantic Fishery Management Council's (Council) extensive use of public meetings, requests for comments and consideration of comments. The proposed rule associated with this amendment will include a request for public comment, and if approved, upon publication of the final rule, there will be a 30-day wait period before the regulations are effective in compliance with the APA.

Information Quality Act

The IQA (Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-443)) which took effect October 1, 2002, directed the Office of Management and Budget (OMB) to issue government-wide guidelines that "provide policy and procedural guidelines to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by federal agencies." OMB directed each federal agency to issue its own guidelines, establish administrative mechanisms allowing affected persons to seek and obtain correction of information that does not comply with OMB guidelines, and report periodically to OMB on the number and nature of complaints. The NOAA Section 515 Information Quality Guidelines require a series of actions for each new information product subject to the IQA. Comprehensive Acceptable Biological Catch Control Rule Amendment uses the best available information and made a broad presentation thereof. The information contained in this document was developed using best available scientific information. Therefore, this document is in compliance with the IQA.

Coastal Zone Management Act

Section 307(c)(1) of the federal CZMA of 1972 requires that all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. While it is the goal of the Council to have management measures that complement those of the states, federal and state administrative procedures vary and regulatory changes are unlikely to be fully instituted at the same time. The Council believes the actions in this amendment are consistent to the maximum extent practicable with the Coastal Zone Management Plans of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and east Florida to Key West. Pursuant to Section 307 of the CZMA, this determination will be submitted to the responsible state agencies who administer the approved Coastal Zone Management Programs in the States of Maine, New Hampshire, Massachusetts,

Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and east Florida to Key West.

Executive Order 12612: Federalism

E.O. 12612 requires agencies to be guided by the fundamental federalism principles when formulating and implementing policies that have federalism implications. The purpose of the Order is to guarantee the division of governmental responsibilities between the federal government and the states, as intended by the framers of the Constitution. No federalism issues have been identified relative to the actions proposed in this document and associated regulations. Therefore, preparation of a Federalism assessment under E.O. 12612 is not necessary.

Executive Order 12962: Recreational Fisheries

E.O. 12962 requires federal agencies, in cooperation with states and tribes, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities through a variety of methods. Additionally, the Order establishes a seven-member National Recreational Fisheries Coordination Council responsible for, among other things, ensuring that social and economic values of healthy aquatic systems that support recreational fisheries are considered by federal agencies in the course of their actions, sharing the latest resource information and management technologies, and reducing duplicative and cost-inefficient programs among federal agencies involved in conserving or managing recreational fisheries. The National Recreational Fisheries Coordination Council also is responsible for developing, in cooperation with federal agencies, states and tribes, a Recreational Fishery Resource Conservation Plan to include a five-year agenda. Finally, the Order requires NMFS and the U.S. Fish and Wildlife Service to develop a joint agency policy for administering the ESA.

The alternatives considered in this document are consistent with the directives of E.O. 12962.

Executive Order 13089: Coral Reef Protection

E.O. 13089, signed by President William Clinton on June 11, 1998, recognizes the ecological, social, and economic values provided by the Nation's coral reefs and ensures that federal agencies are protecting these ecosystems. More specifically, the Order requires federal agencies to identify actions that may harm U.S. coral reef ecosystems, to utilize their program and authorities to protect and enhance the conditions of such ecosystems, and to ensure that their actions do not degrade the condition of the coral reef ecosystem.

The alternatives considered in this document are consistent with the directives of E.O. 13089.

Executive Order 13158: Marine Protected Areas (MPAs)

E.O. 13158 was signed on May 26, 2000, to strengthen the protection of U.S. ocean and coastal resources through the use of MPAs. The E.O. defined MPAs as "any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or

regulations to provide lasting protection for part or all of the natural and cultural resources therein." It directs federal agencies to work closely with state, local and non-governmental partners to create a comprehensive network of MPAs "representing diverse U.S. marine ecosystems, and the Nation's natural and cultural resources."

The alternatives considered in this document are consistent with the directives of E.O. 13158.

National Marine Sanctuaries Act (NMSA)

Under the NMSA (also known as Title III of the Marine Protection, Research and Sanctuaries Act of 1972), as amended, the U.S. Secretary of Commerce is authorized to designate National Marine Sanctuaries to protect distinctive natural and cultural resources whose protection and beneficial use requires comprehensive planning and management. The National Marine Sanctuary Program is administered by the Sanctuaries and Reserves Division of NOAA. The NMSA provides authority for comprehensive and coordinated conservation and management of these marine areas. The National Marine Sanctuary Program currently comprises 13 sanctuaries around the country, including sites in American Samoa and Hawaii. These sites include significant coral reef and kelp forest habitats, and breeding and feeding grounds of whales, sea lions, sharks, and sea turtles. The three sanctuaries in the South Atlantic exclusive economic zone are the USS Monitor, Gray's Reef, and Florida Keys National Marine Sanctuaries.

The alternatives considered in this document are not expected to have any adverse impacts on the resources managed by the National Marine Sanctuaries.

Paperwork Reduction Act (PRA)

The purpose of the PRA is to minimize the burden on the public. The PRA is intended to ensure that the information collected under the proposed action is needed and is collected in an efficient manner (44 U.S.C. 3501 (1)). The authority to manage information collection and record keeping requirements is vested with the Director of the Office of Management and Budget (OMB). This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications. The PRA requires NMFS to obtain approval from the OMB before requesting most types of fishery information from the public. Actions in this document are not expected to affect PRA.

Public Law 99-659: Vessel Safety

Public Law 99-659 amended the Magnuson-Stevens Fishery Conservation and Management Act to require that a Fishery Management Plan (FMP) or FMP amendment must consider, and may provide for, temporary adjustments (after consultation with the U.S. Coast Guard and persons utilizing the fishery) regarding access to a fishery for vessels that would be otherwise prevented from participating in the fishery because of safety concerns related to weather or to other ocean conditions. No vessel would be forced to participate in Atlantic fisheries under adverse weather or ocean conditions as a result of the imposition of management regulations proposed in this amendment. No concerns have been raised by Atlantic fishermen or by the U.S. Coast Guard

that the proposed management measures directly or indirectly pose a hazard to crew or vessel safety under adverse weather or ocean conditions.

Appendix B. Regulatory Impact Review

Appendix C. Regulatory Flexibility Act Analysis

Appendix D. Essential Fish Habitat and Move to Ecosystem Based Management

EFH and EFH-HAPC Designations and Cooperative Habitat Policy Development and Protection

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires federal fishery management Councils and the National Marine Fisheries Service (NMFS) to designate essential fish habitat (EFH) for species managed under federal fishery management plans (FMP). Federal regulations that implement the EFH program encourage fishery management Councils and NMFS also to designate subsets of EFH as a way to highlight priority areas within EFH for conservation and management. These subsets of EFH are called EFH-Habitat Areas of Particular Concern (EFH-HAPCs or HAPCs) and are designated based on ecological importance, susceptibility to human-induced environmental degradation, susceptibility to stress from development, or rarity of the habitat type. Information supporting EFH and EFH-HAPC designations was updated (pursuant to the EFH Final Rule) in Fishery Ecosystem Plan (FEP) II.

South Atlantic Council EFH User Guide

The EFH Users Guide (https://safmc.net/download/SAFMCEFHUsersGuideAugust21.pdf) developed during the FEP II development process is available through the FEP II Dashboard and provides a comprehensive list of the designations of EFH and EFH-HAPCs for all species managed by the South Atlantic Fishery Management Council (South Atlantic Council) and the clarifications identified during FEP II development. As noted above, additional detailed information supporting the EFH designations appears in FEP, FEP II, and in individual FMPs, and general information on the EFH provisions of the Magnuson-Stevens Act and its implementing regulations (50 CFR 900 Subparts J and K) can be found at https://www.fisheries.noaa.gov/region/southeast#habitat. These sources should be reviewed for information on the components of EFH assessments, steps to EFH consultations, and other aspects of EFH program operation.

South Atlantic Council EFH Policy and EFH Policy Statements

Policy for Protection and Restoration of EFH

South Atlantic Council Habitat and Environmental Protection Policy

In recognizing that species are dependent on the quantity and quality of their essential habitats, it is the policy of the South Atlantic Council to protect, restore, and develop habitats upon which fisheries species depend; to increase the extent of their distribution and abundance; and to improve their productive capacity for the benefit of present and future generations. For purposes of this policy, "habitat" is defined as the physical, chemical, and biological parameters that are necessary for continued productivity of the species that is being managed. The objectives of the South Atlantic Council policy will be accomplished through the recommendation of no net loss or significant environmental degradation of existing habitat. A long-term objective is to support and promote a net-gain of fisheries habitat through the restoration and rehabilitation of the productive capacity of habitats that have been degraded, and the creation and development of productive habitats where increased fishery production is probable. The South Atlantic Council

will pursue these goals at state, Federal, and local levels. The South Atlantic Council shall assume an aggressive role in the protection and enhancement of habitats important to fishery species, and shall actively enter Federal decision making processes where proposed actions may otherwise compromise the productivity of fishery resources of concern to the South Atlantic Council.

South Atlantic Council *EFH Policy Statements*
Considerations to Reduce or Eliminate the Impacts of Non-Fishing Activities on EFH
In addition to implementing regulations to protect habitat from degradation due to fishing activities, the South Atlantic Council in cooperation with NMFS, actively comments on non-fishing projects or policies that may impact fish habitat. The South Atlantic Council established a Habitat Protection and Ecosystem Based Management Advisory Panel (AP) and adopted a comment and policy development process. Members of the AP serve as the South Atlantic Council's habitat contacts and professionals in the field and have guided the South Atlantic Council's development of the following Policy Statements:

- EFH Policy Statement on South Atlantic Climate Variability and Fisheries (December 2016)
- EFH Policy Statement on South Atlantic Food Webs and Connectivity (December 2016)
- Protection and Restoration of EFH from Marine Aquaculture (June 2014)
- Protection and Enhancement of Marine Submerged Aquatic Vegetation (June 2014)
- Protection and Restoration of EFH from Beach Dredging and Filling, Beach Re-nourishment and Large Scale Coastal Engineering (March 2015)
- Protection and Restoration of EFH from Energy Exploration, Development, Transportation and Hydropower Re-Licensing (December 2015)
- Protection and Restoration of EFH from Alterations to Riverine, Estuarine and Nearshore Flows (June 2014)
- Policies for the Protection of South Atlantic Marine & Estuarine Ecosystems from Non-Native and Invasive Species (June 2014)
- Policy Considerations for Development of Artificial Reefs in the South Atlantic Region and Protection of Essential Fish Habitat (September 2017)

Habitat Conservation and Fishery Ecosystem Plans

The South Atlantic Council, views habitat conservation as the foundation in the move to Ecosystem Based Fishery Management (EBFM) in the region. The South Atlantic Council has been proactive in advancing habitat conservation through extensive gear restrictions in all South Atlantic Council FMPs and by directly managing habitat and fisheries affecting those habitats through two FMPs, the FMP for Coral, Coral Reefs and Live/Hard Bottom Habitat of the South Atlantic Region (Coral FMP) and the FMP for the Sargassum Fishery of the South Atlantic Region. The FMP for the Dolphin and Wahoo Fishery in the Atlantic represents a proactive FMP which established fishery measures and identified EFH in advance of overfishing or habitat impacts from the fisheries.

Building on the long-term conservation approach, the South Atlantic Council facilitated the evolution of the Habitat Plan into the first FEP to provide a clear description and understanding of the fundamental physical, biological, and human/institutional context of ecosystems within which fisheries are managed and identify information needed and how that information should

be used in the context of FMPs. Developing a South Atlantic FEP required a greater understanding of the South Atlantic ecosystem, including both the complex relationships among humans, marine life, the environment and essential fish habitat and a more comprehensive understanding of the biological, social, and economic impacts of management necessary to initiate the transition from single species management to EBFM in the region. To support the move towards EBFM, the South Atlantic Council adopted broad goals: (1) maintaining or improving ecosystem structure and function; (2) maintaining or improving economic, (3) social, and cultural benefits from resources; and (4) maintaining or improving biological, economic, and cultural diversity.

Ecosystem Approach to Conservation and Management of Deep-water Ecosystems
The South Atlantic Council's Habitat Protection and Ecosystem Based Management AP and Coral AP supported an ecosystem approach and proactive efforts to identify and protect deep-water coral ecosystems in the South Atlantic region. Through Comprehensive Ecosystem-Based Amendment 1, Comprehensive Ecosystem-Based Amendment 2, and Coral Amendment 8, the South Atlantic Council established and expanded deep-water coral HAPCs (CHAPCs) and co-designated them as EFH-HAPCs to protect the largest continuous distribution (>23,000 square miles) of pristine deep-water coral ecosystems in the world from fishing and non-fishing activities.

FEP II Development
The South Atlantic Council developed FEP II (https://safmc.net/fishery-ecosystem-plan-ii-introduction/), in cooperation with NMFS, as a mechanism to incorporate ecosystem principles, goals, and policies into the fishery management process, including consideration of potential indirect effects of fisheries on food web linkages when developing harvest strategies and management plans. South Atlantic Council policies developed through the process support data collection, model and supporting tool development, and implementation of FEP II. FEP II and the FEP II Implementation Plan provide a system to incorporate of ecosystem considerations into the management process.

FEP II was developed employing writing and review teams established from the South Atlantic Council's Habitat Protection and Ecosystem Based Management AP, and experts from state, federal, NGOs, academia and other regional organizations and associations. Unlike the original Plan, FEP II is a living continually developing online information system presenting core sections and sections with links to documents or other online systems with detailed updated information on species, habitat, fisheries and research. A core part of the FEP II development process involved engaging the South Atlantic Council's Habitat Protection and Ecosystem Based Management AP and regional experts in developing new sections and ecosystem- specific policy statements to address South Atlantic food webs and connectivity and South Atlantic climate variability and fisheries. In addition, standing essential fish habitat policy statements were updated and a new artificial reef habitat policy statement was approved. In combination, these statements advance habitat conservation and the move to EBFM in the region. They also serve as the basis for further policy development, consideration in habitat and fish stock assessments and future management of fisheries and habitat. They also support a more comprehensive view of conservation and management in the South Atlantic and identify long-term information needs, available models, tools, and capabilities that will advance EBFM in the region.

FEP II Dashboard

The FEP II Dashboard and associated online tools provide a clear description of the fundamental physical, biological, human, and institutional context of South Atlantic ecosystems within which fisheries are managed. The FEP II Digital Dashboard layout and online links follow are below:

- Introduction
- South Atlantic Ecosystem
- South Atlantic Habitats
- Managed Species
- Social and Economic
- Essential Fish Habitat
- SAFMC Managed Areas
- Research & Monitoring
- SAFMC Tools

NOAA EBFM Activities Supporting FEP II

NOAA EBFM Policy and Road Map

To support the move to EBFM, NMFS developed an agency-wide EBFM Policy and Road Map (available through Ecosystem page of the FEP II Dashboard https://safmc.net/fishery-ecosystem-plan-ii-introduction/) that outlines a set of principles to guide actions and decisions over the long-term to implement ecosystem-level planning; advance our understanding of ecosystem processes; prioritize vulnerabilities and risks of ecosystems and their components; explore and address trade-offs within an ecosystem; incorporate ecosystem considerations into management advice; and maintain resilient ecosystems.

FEP II Implementation Plan Structure and Framework

The Implementation Plan (http://safmc.net/download/SAFMC-FEP-II-Implementation-Plan-March-2018.pdf) is structured to translate approved policy statements of the South Atlantic Council into actionable items. The plan encompasses chapters beginning with an introduction to the policy statement, a link to the complete policy statement, and a table which translates policies and policy components into potential action items. The actions within the plan are recommendations for activities that could support the South Atlantic Council's FEP II policies and objectives.

FEP II Two Year Roadmap

The FEP II Two Year Roadmap (http://safmc.net/download/SAFMC-FEP-II-Two-Year-Roadmap-March-2018.pdf) draws from the Implementation Plan and presents three to five priority actions for each of the nine approved policy statements of the South Atlantic Council which would be initiated or completed over the next two years (2019-2020). The Roadmap provides "Potential Partners" and other potential regional collaborators, a focused list of priority actions they could cooperate with the South Atlantic Council on to advance policies supporting the move to EBFM in the South Atlantic region.

Monitoring/Revisions to FEP II Implementation Plan

FEP II and this supporting Implementation Plan are considered active and living documents. The Implementation Plan will be reviewed and updated periodically. During their spring meeting in 2021 and every three years following, the Habitat Protection and Ecosystem Based Management AP will engage regional experts as needed, to determine whether additional actions addressing council policies should be added to the implementation plan. The South Atlantic Council's Habitat Protection and Ecosystem Based Management Committee will review, revise and refine those recommendations for South Atlantic Council consideration and approval for inclusion into the implementation plan.

Regional Habitat and Ecosystem Partners

The South Atlantic Council, with the Habitat Protection and Environmental Based Management AP as the foundation, collaborates with regional partners to create a comprehensive habitat and ecosystem network in the region to enhance habitat conservation and EBFM.
Detailed information and links to partners are highlighted online:
https://ocean.floridamarine.org/safmc_dashboard/partners.html.

Regional Ecosystem Modeling in the South Atlantic

South Atlantic Ecopath with Ecosim Model

The South Atlantic Council worked cooperatively with the University of British Columbia and the Sea Around Us project to develop a straw-man and preliminary food web models (Ecopath with Ecosim) to characterize the ecological relationships of South Atlantic species, including those managed by the South Atlantic Council. This effort helped the South Atlantic Council and cooperators identify available information and data gaps while providing insight into ecosystem function. More importantly, the model development process provided a vehicle to identify research necessary to better define populations, fisheries, and their interrelationships. While individual efforts were underway in the South Atlantic, only with significant investment of resources through other programs was a comprehensive regional model further developed.

A subsequent collaboration building on the previous Ecopath model developed through the Sea Around Us project for the South Atlantic Bight focused on simulating forage fish population changes that could result from environmental or oceanographic variation associated with climate change effect and how it could potentially affect managed species.

As part of the FEP II development process a new generation South Atlantic ecosystem modeling effort funded by the SALCC, was conducted to engage a broader scope of regional partners. This effort facilitated development of a new generation Ecopath with Ecosim (EwE) model which will ultimately provide evaluation tools for the SSC and South Atlantic Council and inform other regional conservation planning efforts.

The new South Atlantic EwE model provides a more complete view of the system and supports potential future evaluations that may be possible with the model. With the model complete and tuned to the available data it can be used to address broad strategic issues, and explore "what if" scenarios that could then be used to address tactical decision-making questions such as provide ecosystem context for single species management, address species assemblage questions, and address spatial questions using Ecospace.

A modeling team comprised of FWRI staff, South Atlantic Council staff and other technical experts as needed, will coordinate with members of the original Ecosystem Modeling Workgroup to maintain and further refine the South Atlantic Model. Online access to Managed Species Section http://safmc.net/uncategorized/safmc-managed-species/ .

Tools to support EBFM in the South Atlantic Region

The South Atlantic Council developed a Habitat Conservation and Ecosystem Management Section of the website http://safmc.net/fishery-ecosystem-plan-ii-introduction/which provides access to the FEP II Digital Dashboard and associated tools. Florida's FWRI maintains and distributes GIS data, imagery, and documents relevant to habitat conservation and ecosystem-based fishery management in their jurisdiction. Over the last several years, FWRI has created web services and applications using the ArcGIS for Server (AGS) software. AGS enables collaboration among various federal, state and local agencies to evaluate and analyze fisheries-related information in a new way. By transitioning to the AGS platform, the South Atlantic Council enhanced their online suite of tools to support fisheries management in their region. The South Atlantic Council has continued its collaboration with FWRI in the evolution to Web Services provided through the regional South Atlantic Habitat and Ecosystem Atlas (https://safmc-myfwc.hub.arcgis.com/). The Atlas is a platform for searching and visualizing GIS data relevant to the Council's mission. You can view story maps, dashboards, web maps and applications and the South Atlantic Digital Dashboard (http://ocean.floridamarine.org/safmc_dashboard/). The online systems provide access to the following Services:

South Atlantic Fisheries Webservice: (http://ocean.floridamarine.org/SA_Fisheries/)
The service provides access to species distribution and spatial presentation of regional fishery independent data from the Southeast Area Monitoring and Assessment Program (South Atlantic) SEAMAP-SA, the Marine Resources Monitoring, Assessment, and Prediction program (MARMAP), and NOAA Southeast Fishery-Independent Survey (SEFIS).

South Atlantic EFH Webservice: (http://ocean.floridamarine.org/sa_efh/)
The EFH service provides access to spatial representation of EFH and EFH-HAPCs for South Atlantic Council-managed species and Highly Migratory Species.

South Atlantic Managed Areas Service:
(http://ocean.floridamarine.org/safmc_managedareas/).
The Managed Area service provides access to spatial presentations of South Atlantic Council and other managed areas in the region. A new data layer of gear restrictions to include in the Managed Areas map service. Restrictions for black sea bass pots, fish traps, roller rigs, octocoral harvest, spiny lobster closed areas, golden crab closed areas, pelagic sargassum harvest, and longline prohibited areas are provided.

South Atlantic Artificial Reefs Web Application:
(http://myfwc.maps.arcgis.com/apps/webappviewer/index.html?id=f3c6ac59ee5f49e59f1ae5c96c5bc76b). This application provides a regional view of artificial reefs locations, contents and

eventually imagery associated with programs in the southeastern U.S. overseen by individual states (Florida, Georgia, South Carolina, North Carolina).

South Atlantic ACCSP Web Map and Application:
A new ArcGIS Online web map displays Atlantic Coastal Cooperative Statistics Program (ACCSP) Statistical Areas with related ACCSP non-spatial tables of non-confidential data binned into 5-year time steps to better represent catch and values of Council-managed species across time. The web map provides an easy interface to view landings of a statistical area over time. FWRI also created an ACCSP web application for users to query by species for each time step or query by ACCSP Statistical Areas. The ACCSP web application is powered by the web map to display charts of landings and values for ACCSP Statistical Areas. The related table widgets summarize the fields for "live_pounds" and "dollar_values" by species and time step.

South Atlantic Council Habitat and Ecosystem Digital Dashboard Enhancements:
To further enhance the South Atlantic Council's Digital Dashboard and enhance linkages with regional partners mapping and characterizing habitats and documenting species use of habitats in the South Atlantic Region, a live link to the *Okeanos Explorer* while on cruise was added to the Projects page and a link to the Atlantic Coastal Fish Habitat Partnership (ACFHP) was added to the Partners page.

Ecosystem-Based Action, Future Challenges and Needs

The South Atlantic Council has implemented ecosystem-based principles through several existing fishery management actions including establishment of deep-water Marine Protected Areas for the Snapper Grouper fishery, proactive harvest control rules on species (e.g., dolphin and wahoo) which are not overfished, implementing extensive gear area closures which in most cases eliminate the impact of fishing gear on EFH, and use of other spatial management tools including Special Management Zones and Spawning Special Management Zones. Through development of the Comprehensive Ecosystem-Based Amendments, the Council has taken an ecosystem approach to protecting deep-water ecosystems while providing for traditional fisheries for the Golden Crab in areas where they do not impact deep-water coral habitat. The stakeholder-based process tapped into an extensive regional Habitat and Ecosystem network. Support tools facilitate South Atlantic Council deliberations and with the help of regional partners, are being refined to address long-term habitat conservation and EBFM needs.

One of the greatest challenges to enhance habitat conservation and EBFM in the region is funding high priority research, including comprehensive benthic mapping and ecosystem model and management tool development. In addition, collecting detailed information on fishing fleet dynamics including defining fishing operation areas by species, species complex, and season, as well as catch relative to habitat is critical for assessment of fishery, community, and habitat impacts and for South Atlantic Council use in place-based management measures. Additional resources need to be dedicated to expanding regional coordination of modeling, mapping, characterization of species use of habitats, and full funding of regional fishery independent surveys (e.g., MARMAP, SEAMAP, and SEFIS) which are linking directly to addressing high priority management needs. The FEP II Implementation Plan includes Appendix A to highlight research and data needs excerpted from the SEAMAP 5 Year Plan because they represent short

and long-term research and data needs that support EBFM and habitat conservation in the South Atlantic Region.

Development of ecosystem information systems to support South Atlantic Council management should build on existing tools (e.g., Regional Habitat and Ecosystem GIS and Arc Services) and provide resources to regional cooperating partners for expansion to address long-term South Atlantic Council needs. NOAA should support and build on the regional coordination efforts of the South Atlantic Council as it transitions to a broader management approach. Resources need to be provided to collect information necessary to update information supporting FEP II, which support refinement of EFH designations and spatial representations and future EBFM actions. These are the highest priority needs to support habitat conservation and EBFM, the completion of mapping of near-shore, mid-shelf, shelf edge, and deep-water habitats in the South Atlantic region and refinement in the characterization of species use of habitats.

Appendix E. Alternatives considered but eliminated from detailed analysis

Appendix F. Preliminary Stock Risk Ratings and Attribute Scores

Table F.1. Preliminary biological attribute scores used to develop stock risk ratings.

Species	Est. Natural Mortality	Age at Maturity	Bio Score	Species	Est. Natural Mortality	Age at Maturity	Bio Score
Atlantic Spadefish	3	3	3.0	Silk Snapper		1	1.0
Bar Jack			2.0	Yellowedge Grouper	1		1.0
Black Grouper	1	1	1.0	Almaco Jack			2.0
Black Sea Bass	2	3	2.5	Banded Rudderfish			2.0
Blueline Tilefish	1	2	1.5	Lesser Amberjack			2.0
Gag	1	2	1.5	Cubera Snapper			2.0
Golden Tilefish	1	2	1.5	Gray Snapper	2	2	2.0
Gray Triggerfish	2	3	2.5	Lane Snapper	2	3	2.5
Greater Amberjack	2	3	2.5	Margate	2		2.0
FLK/EFL Hogfish	1	1	1.0	Sailors Choice			2.0
GA-NC Hogfish	1	1	1.0	Tomtate	2	2	2.0
Mutton Snapper	1	2	1.5	White Grunt	2	2	2.0
Red Grouper	1	2	1.5	Coney	3		3.0
Red Porgy	2	3	2.5	Graysby	3	2	2.5
Red Snapper	1	3	2.0	Red Hind	2		2.0
Scamp	1	3	2.0	Rock Hind	3	1	2.0
Snowy Grouper	1	1	1.0	Yellowfin Grouper	1		1.0
Vermilion Snapper	2	3	2.5	Yellowmouth Grouper	1	2	1.5
Wreckfish	1	1	1.0	Jolthead Porgy		2	2.0
Yellowtail Snapper	1	3	2.0	Knobbed Porgy	2	1	1.5
Blackfin Snapper			2.0	Saucereye Porgy			2.0
Misty Grouper	1		1.0	Scup	3	2	2.5
Queen Snapper	1	3	2.0	Whitebone Porgy	3		3.0
Sand Tilefish			2.0	Dolphin	3	3	3.0
				Wahoo	3	3	3.0

Table F.2. Preliminary human dimension attribute scores used to develop stock risk ratings.

Species	Ability to Regulate Fishery	Potential for Discard Losses	Annual Commercial Value	Recreational Desirability	Social Concerns	Human Dim Score
Atlantic Spadefish	3		3	2		2.67
Bar Jack	3		3	3		3.00
Black Grouper	3		2	2		2.33
Black Sea Bass	3	1	2	1	3	2.00
Blueline Tilefish	1	3	2	3		2.25
Gag	3	2	2	2	3	2.40
Golden Tilefish	2	3	1	3		2.25
Gray Triggerfish	2		2	2	3	2.25
Greater Amberjack	3	3	2	2	1	2.20
FLK/EFL Hogfish	1	3	3	1		2.00
GA-NC Hogfish	1		3	3		2.33
Mutton Snapper	3	3	2	1		2.25
Red Grouper	3	1	2	2	3	2.20
Red Porgy	3	3	2	3	2	2.60
Red Snapper	1	1	3	2		1.75
Scamp	3		2	3	3	2.75
Snowy Grouper	1	3	2	3		2.25
Vermilion Snapper	2	3	1	2		2.00
Wreckfish	3		3	3		3.00
Yellowtail Snapper	3	3	1	1		2.00
Blackfin Snapper	1		3	3		2.33
Misty Grouper	3		3	3		3.00
Queen Snapper	1		3	3		2.33
Sand Tilefish	3		3	3		3.00
Silk Snapper	3		3	3		3.00
Yellowedge Grouper	2		3	3		2.67
Almaco Jack	2		3	3		2.67
Banded Rudderfish	2		3	3		2.67
Lesser Amberjack	1		3	3		2.33

Species	Ability to Regulate Fishery	Potential for Discard Losses	Annual Commercial Value	Recreational Desirability	Social Concerns	Human Dim Score
Cubera Snapper	2		3	3		2.67
Gray Snapper	2		2	1		1.67
Lane Snapper	3		3	3		3.00
Margate	3		3	3		3.00
Sailors Choice	2		3	3		2.67
Tomtate	3		3	3		3.00
White Grunt	3		3	3		3.00
Coney	3		3	3		3.00
Graysby	1		3	3		2.33
Red Hind	3		3	3		3.00
Rock Hind	3		3	3		3.00
Yellowfin Grouper	3		3	3		3.00
Yellowmouth Grouper	3		3	3		3.00
Jolthead Porgy	1		3	3		2.33
Knobbed Porgy	2		3	3		2.67
Saucereye Porgy	2		3	3		2.67
Scup	3		3	3		3.00
Whitebone Porgy	1		3	3		2.33
Dolphin	3		1	1		1.67
Wahoo	2		2	1		1.67

Table F.3. Preliminary environmental attribute scores used to develop stock risk ratings. The Environmental score is evaluated as whether there is a presence (1) or absence (0) of identified environmental factors that could make that species at greater risk of overfishing.

Species	Ecosystem Importance	Climate Change	Other Env Variables	Environmental Score
Atlantic Spadefish				0
Bar Jack				0
Black Grouper				0
Black Sea Bass				0
Blueline Tilefish		1		1
Gag				0
Golden Tilefish		1		1
Gray Triggerfish				0
Greater Amberjack				0
FLK/EFL Hogfish				0
GA-NC Hogfish				0
Mutton Snapper				0
Red Grouper	1		1	1
Red Porgy			1	1
Red Snapper				0
Scamp				0
Snowy Grouper				0
Vermilion Snapper				0
Wreckfish				0
Yellowtail Snapper				0
Blackfin Snapper				0
Misty Grouper				0
Queen Snapper				0
Sand Tilefish				0
Silk Snapper				0
Yellowedge Grouper				0
Almaco Jack				0
Banded Rudderfish				0
Lesser Amberjack				0
Cubera Snapper				0
Gray Snapper				0
Lane Snapper				0
Margate				0
Sailors Choice				0
Tomtate				0

White Grunt				0
Coney				0
Graysby				0
Red Hind				0
Rock Hind				0
Yellowfin Grouper				0
Yellowmouth Grouper				0
Jolthead Porgy				0
Knobbed Porgy				0
Saucereye Porgy				0
Scup				0
Whitebone Porgy				0
Dolphin				0
Wahoo				0

Table F.4. Preliminary overall risk scores (averages of attribute scores from Tables 1-3) and stock risk ratings. High Risk: Risk Score > 2.4; Medium Risk: 2 ≤ Risk Score ≤ 2.4; Low Risk: Risk Score < 2.

Species	Risk Score (Avg of Attribute Scores)	Stock Risk Rating	Species	Risk Score (Avg of Attribute Scores)	Stock Risk Rating
Atlantic Spadefish	2.83	Low	Banded Rudderfish	2.33	Medium
Bar Jack	2.50	Low	Lesser Amberjack	2.17	Medium
Black Grouper	1.67	High	Cubera Snapper	2.33	Medium
Black Sea Bass	2.25	Medium	Gray Snapper	1.83	High
Blueline Tilefish	1.58	High	Lane Snapper	2.75	Low
Gag	1.95	High	Margate	2.50	Low
Golden Tilefish	1.58	High	Sailors Choice	2.33	Medium
Gray Triggerfish	2.38	Medium	Tomtate	2.50	Low
Greater Amberjack	2.35	Medium	White Grunt	2.50	Low
FLK/EFL Hogfish	1.50	High	Coney	3.00	Low
GA-NC Hogfish	1.67	High	Graysby	2.42	Low
Mutton Snapper	1.88	High	Red Hind	2.50	Low
Red Grouper	1.57	High	Rock Hind	2.50	Low
Red Porgy	2.03	Medium	Yellowfin Grouper	2.00	High
Red Snapper	1.88	High	Yellowmouth Grouper	2.25	Medium
Scamp	2.38	Medium	Jolthead Porgy	2.17	Medium
Snowy Grouper	1.63	High	Knobbed Porgy	2.08	Medium
Vermilion Snapper	2.25	Medium	Saucereye Porgy	2.33	Medium
Wreckfish	2.00	High	Scup	2.75	Low
Yellowtail Snapper	2.00	High	Whitebone Porgy	2.67	Low
Blackfin Snapper	2.17	Medium	Dolphin	2.33	Medium
Misty Grouper	2.00	High	Wahoo	2.33	Medium
Queen Snapper	2.17	Medium			
Sand Tilefish	2.50	Low			
Silk Snapper	2.00	High			
Yellowedge Grouper	1.83	High			
Almaco Jack	2.33	Medium			

Appendix G. Fishery Impact Statement

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires a FIS be prepared for all amendments to Fishery Management Plans (FMPs). The FIS contains an assessment of the likely biological, social, and economic effects of the conservation and management measures on: 1) fishery participants and their communities; 2) participants in the fisheries conducted in adjacent areas under the authority of another Council; and 3) the safety of human life at sea.

Actions Contained in Comprehensive Acceptable Biological Catch Control Rule Amendment

Comprehensive Acceptable Biological Catch Control Rule Amendment proposes four actions using best scientific information available to incorporate scientific uncertainty and management risk, acceptable risk of overfishing, use of stock rebuilding plans for overfished stocks, phase-in and carry-over into the acceptable biological catch (ABC) control rules for the Fishery Management Plans (FMP) for dolphin and wahoo, snapper grouper species, and golden crab. The actions and their preferred alternatives are:

- **Action 1. Modify the acceptable biological catch control rule**
  - **Preferred Alternative 2**. Specify an acceptable biological catch control rule for the Dolphin Wahoo, Golden Crab, and Snapper Grouper Fishery Management Plans that categorizes stocks based on the available information and scientific uncertainty evaluation and incorporates the Council's risk tolerance policy through an accepted probability of overfishing (P*). The Council will specify the P* based on relative stock biomass and a stock risk rating.
  - When possible, the Scientific and Statistical Committee will determine the overfishing limit and characterize its uncertainty based on, primarily, the stock assessment or, secondarily, the Scientific and Statistical Committee's expert opinion. The overfishing limit and its uncertainty would then be used to derive and recommend the acceptable biological catch, based on the risk tolerance specified by the Council.
  - Acceptable biological catch for unassessed stocks will be recommended by the Scientific and Statistical Committee based on applicable data-limited methods. Unassessed stocks will be assigned the moderate biomass level unless there is a recommendation from the Scientific and Statistical Committee that justifies a different level.
  - For overfished stocks, the Council will specify a stock rebuilding plan, considering recommendations from the Scientific and Statistical Committee and fishery management plan advisory panel, which will determine the acceptable biological catch while the rebuilding plan is in effect. Per requirements of the Magnuson-Stevens Act, the probability of success for rebuilding plans (1-P*) must be at least 50%.

- **Action 2. Allow phase-in of acceptable biological catch changes under the acceptable biological catch control rule**
  - **Preferred Alternative** . None selected.

- **Action 3. Allow carry-over of unharvested portion of the annual catch limit under the acceptable biological catch control rule**
  - **Preferred Alternative** . None selected.

- **Action 4. Modify framework procedures for the Snapper Grouper, Dolphin and Wahoo, and Golden Crab Fishery Management Plans**
  - **Preferred Alternative** . None selected.

Assessment of Biological Effects

To be completed after all preferred alternatives are available.

Assessment of Economic Effects

To be completed after all preferred alternatives are available.

Assessment of the Social Effects

Setting of the biological parameters for harvest thresholds (Action 1) has few direct social effects as the effects are more indirect from the implementation of the ABC and any subsequent reduction through other alternatives setting ACLs and ACTs/AMs. The more risk averse a control rule or threshold is, the more chances of negative social effects accruing in the short term if harvest is reduced. The inclusion of social factors in the ABC Control Rule will allow the Council to directly consider the importance of a given species to fishing communities and businesses when determining risk tolerance. Incorporation of the social factors would have long-term social benefits in the form of a more accurate ABC. Additionally, formally considering human dimensions in the scientific process may help to improve stakeholder perceptions of the science going into management decisions.

Establishing the criteria for when phase-in of a new ABC would be allowed and the approach for that phase in (Action 2) would provide additional social benefits to fishing communities. Management measures that reduce the number of fish an angler can land typically result in foregone social benefits. However, the ABC and corresponding ACL for any stock do not directly affect resource users unless the ACL is met or exceeded, in which case AMs that restrict, or close harvest could negatively impact commercial, for-hire, and private anglers by restricting harvest during the current season and following seasons. Phasing in decreases to an ABC would allow commercial and for-hire business time to adjust their business plans to account for the full decrease in the ABC level, and associated management restrictions. It would also ensure that fishing opportunities remained available to private recreational fishermen in the interim.

Positive social effects would be expected for fishermen from allowing carryover of uncaught quota (Action 3) if the quota provides additional opportunities to retain a fish that would otherwise be unavailable the following year. However, there would be no effects from providing a quota carryover for a given fish stock if the additional quota goes unused. If fishing regulations were not a factor in restricting opportunities to retain additional fish, then carrying over additional quota would not provide additional fishing opportunities. However, broad social

benefits would be expected from having a carryover provision in place, particularly in the event that regulations become more restrictive and the given stock's ACL is not met in the future due to fishing regulations.

Modification of the framework procedure of for the Snapper Grouper, Dolphin Wahoo and Golden Crab FMPs (Action 4) would not be expected to result in any direct social impacts. Rather, indirect social effects would be expected and would result in broad, long-term social benefits, and minimal negative social effects. Although a framework procedure is currently in place for each FMP, modifications to improve timeliness and incorporate regulatory updates would be expected to contribute to improved management of the stocks and would allow the Council to respond to management needs. The relative speed at which beneficial regulatory changes can be implemented can play a role in determining the magnitude of the anticipated indirect social effects.

Assessment of Effects on Safety at Sea

Amendment 11 to the Golden Crab FMP, Amendment 11 to the Dolphin Wahoo FMP, and Amendment 45 to the Snapper Grouper FMP are not expected to result in direct impacts to safety at sea.

Appendix H. Acceptable Biological Catch Conceptual Diagrams and 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*).

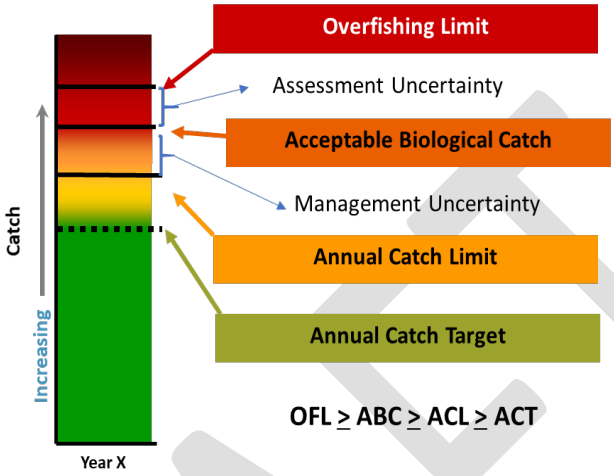

Figure 1. Illustrated general relationship between OFL, ABC, ACL, and ACT. The difference between OFL and ABC addresses assessment uncertainty, while the difference between ABC and ACL addresses management uncertainty.

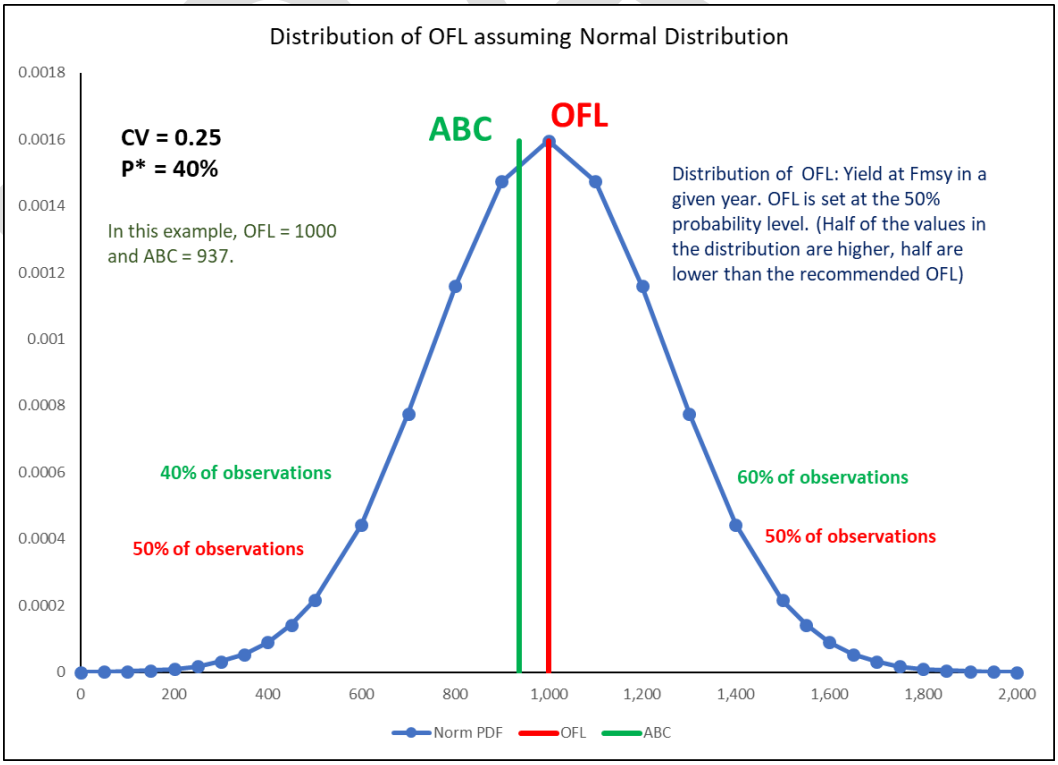

Figure 2. Example distribution illustrating OFL and ABC for a hypothetical stock with OFL=1000 pounds, a chosen risk tolerance or P* pf 40% (40% chance that overfishing occurs), and an assessment CV of 0.25.

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 (50^{th} 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 30^{th} 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 I. Carry-Over Example

Shadow Shark Stock Status: Not Overfished and Overfishing Not Occurring
OFL: 12,000 lbs
Via amendment, Council has approved:

- **ABC = Total ACL** = 10,000 lbs
- **Sector Allocation:** 50/50
- **Both sector ACLs will carry-over when eligible**

Criteria for annual eligibility: Not overfished and not overfishing status, underage of the sector ACL (Action 3-Sub-Action 3.1-Alternative 2 [No Sub-Alternatives])
Amount eligible for carry-over: Temporary revised ABC and total ACL may not exceed OFL (Action 3-Sub-Action 3.2-Alternative 2)

Year	Effective ABC (lbs)	Com ACL (lbs)	Com Landings (lbs)	Com Carry-Over	Rec ACL (lbs)	Rec Landings (lbs)	Rec Carry-Over
2023	10,000	5,000	4,000	1,000 lbs to 2024	5,000	5,200	None
2024	11,000	6,000	5,200	None	5,000	4,500	500 lbs to 2025
2025	10,500	5,000	5,500	None	5,500	4,500	500 lbs to 2026
2026	10,500	5,000	3,000	1,000 lbs to 2027	5,500	3,500	1,000 lbs to 2027
2027	12,000	6,000	2,500	2,000 lbs to 2028	6,000	6,500	None
2028	12,000	7,000			5,000		

2023: First year of the time series. Sector ACLs are as specified in the FMP. The commercial sector underharvests its ACL by 1,000 lbs.

Year	Effective ABC (lbs)	Com ACL (lbs)	Com Landings (lbs)	Com Carry-Over	Rec ACL (lbs)	Rec Landings (lbs)	Rec Carry-Over
2023	10,000	5,000	4,000	1,000 lbs to 2024	5,000	5,200	None

2024: ABC is temporarily increased to 11,000 lbs. 1,000 lbs of commercial ACL is carried over, temporarily increasing the commercial ACL to 6,000 lbs. The recreational ACL is as specified in the FMP (5,000 lbs).

The commercial sector underharvests its temporary ACL (6,000 lbs). However, because commercial harvest (5,200 lbs) is greater than the commercial ACL specified in the FMP (5,000 lbs), the commercial sector is not eligible for carry-over.

The recreational sector underharvests its ACL (5,000 lbs) by 500 lbs.

Year	Effective ABC (lbs)	Com ACL (lbs)	Com Landings (lbs)	Com Carry-Over	Rec ACL (lbs)	Rec Landings (lbs)	Rec Carry-Over
2024	11,000	6,000	5,200	None	5,000	4,500	500 lbs to 2025

- NOTE: If only one sector is eligible for carry-over, the carried over amount is allocated completely to that sector.
- NOTE: Carry-over amounts are evaluated based on the ACL(s) specified in the FMP, not temporary revised ACLs.

2025: ABC is temporarily increased to 10,500 lbs. The commercial ACL is as specified in the FMP (5,000 lbs). 500 lbs of recreational ACL is carried over, temporarily increasing the recreational ACL to 5,500 lbs.

The commercial sector overharvests its ACL by 500 lbs and is not eligible for carry-over.

The recreational sector underharvests its temporary ACL (5,500 lbs) by 1,000 lbs. However, this is only an underharvest of 500 lbs relative to the recreational ACL specified in the FMP (5,000 lbs). Therefore, only 500 lbs of recreational ACL is eligible for carry-over in 2026.

- NOTE: Carry-over amounts are evaluated based on the ACL(s) specified in the FMP, not temporary revised ACLs.

Year	Effective ABC (lbs)	Com ACL (lbs)	Com Landings (lbs)	Com Carry-Over	Rec ACL (lbs)	Rec Landings (lbs)	Rec Carry-Over
2025	10,500	5,000	5,500	None	5,500	4,500	500 lbs to 2026

… Continue example in similar fashion

Appendix J. Glossary